



**AVEMAX MACHINERY CO., LTD**

**VERTICAL TURRET MILLING MACHINE  
SUPER PRECISION VERTICAL TURRET MILLING MACHINE / BED TYPE MILLING MACHINE**



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## 2TM

NST#30/R8(NST#40 Optional)

MODEL	2TM	2VS
HEAD	8 Steps	Variable speed
MOTOR	3HP	3HP
SPINDLE SPEED	50HZ : Low 66-270 High 550-2270 60HZ : Low 80-325 High 660-2720	50HZ : Low 50-420 High 420-3750 60HZ : Low 60-500 High 500-4500
QUILL TRAVEL	127mm	127mm



**2VS**  
NST#30/R8  
(NST#40 Optional)



**2TM**



**4KS**

## 4KS

NST#40/R8 (NST#40 Optional)

MODEL	4KS	4KV
HEAD	8 Steps	Variable speed
MOTOR	3HP	3HP
SPINDLE SPEED	50HZ : Low 66-270 High 550-2270 60HZ : Low 80-325 High 660-2720	50HZ : Low 50-420 High 420-3750 60HZ : Low 60-500 High 500-4500
QUILL TRAVEL	127mm	127mm



**4KV**  
NST#30/R8  
(NST#40 Optional)

2TM	2VS	○ Standard — Not available
○	○	Spindle material made from SCM440 Cr-Mo alloy steel with heat treatment
○	○	Centralized one shot lubrication system for ways, nuts, and leadscrews of axes.
○	○	Precision angular contact spindle bearing
○	—	8 speeds step-pulley drive (16 speeds is optional)
—	○	Infinite variable speed drive up to 4500 rpm/60Hz 3750 rpm/50Hz.
○	—	Unique designed on Hi-Low gear speed commutation, bearings support on both sides of spindle pulley
○	—	Adjustable brake handle increases the life of brake shoe
—	○	Patented special copper alloy SAM214 for vari-disc keys, precision ground with grease lubrication system.
—	○	Bearing support at the end of motor shaft
—	○	Double sided vari-disc belt provides lower noise level
—	○	Motor shaft material made from alloy steel, dia. 28mm

4KS	4KV	○ Standard — Not available
○	○	Spindle material made from SCM440 Cr-Mo alloy steel with heat treatment
○	○	Centralized one shot lubrication system for ways, nuts, and leadscrews of axes
○	○	Precision angular contact spindle bearing
○	—	8 speeds step-pulley drive (16 speeds is optional)
—	○	Infinite variable speed drive up to 4500 rpm/60Hz 3750 rpm/50Hz.
○	—	Unique designed on Hi-Low gear speed commutation, bearings support on both sides of spindle pulley
○	—	Adjustable brake handle increases the life of brake shoe
—	○	Patented special copper alloy SAM214 for vari-disc keys, precision ground with grease lubrication system.
—	○	Bearing support at the end of motor shaft
—	○	Double sided vari-disc belt provides lower noise level
—	○	Motor shaft material made from alloy steel, dia. 28mm

# 450TM

NST#30/R8(NST#40 Optional)

MODEL	450TM	450VS
HEAD	8 Steps	Variable speed
MOTOR	3HP	3HP
SPINDLE SPEED	50HZ : Low 66-270 High 550-2270 60HZ : Low 80-325 High 660-2720	50HZ : Low 50-420 High 420-3750 60HZ : Low 60-500 High 500-4500
QUILL TRAVEL	127mm	127mm



450TM



**450VS**  
NST#30/R8  
(NST#40 Optional)

# 5KS

NST#40

MODEL	5KS	5KV
HEAD	10 Steps	Variable speed
MOTOR	5HP	5HP
SPINDLE SPEED	50HZ : Low 54-330 High 475-2875 60HZ : Low 65-400 High 570-3450	50HZ : Low 50-415 High 415-3600 60HZ : Low 60-500 High 500-4300
QUILL TRAVEL	127mm	127mm



5KS



**5KV**  
NST#40

- |       |       |  |
|-------|-------|--|
| 450TM | 450VS | ○ Standard — Not available   |
| ○     | ○     | Spindle material made from SCM440 Cr-Mo alloy steel with tempering treatment   |
| ○     | ○     | Centralized one shot lubrication system for ways, nuts, and leadscrews   |
| ○     | ○     | Precision angular contact spindle bearing  |
| ○     | —     | 8 speeds step-pulley drive (16 speeds is optional)   |
| —     | ○     | Infinite variable speed drive up to 4500 rpm/60Hz 3750 rpm/50Hz  |
| ○     | ○     | Unique designed on Hi-Low gear speed commutation, bearings support on both sides of spindle pulley                                       |
| ○     | —     | Adjustable brake handle increases the life of brake shoe   |
| —     | ○     | Patented special copper alloy SAM214 for vari-disc keys, precision ground with grease lubrication groove designed to prevent overheating |
| —     | ○     | Bearing support to the end of motor shaft  |
| —     | ○     | Double sided vari-disc belt to give lower noise level  |
| —     | ○     | Motor shaft material made from SCM425 Cr-Mo alloy steel, dia. 28mm.  |
| ○     | ○     | Lifting screw dia. 38mm  |
| ○     | ○     | Extra long saddle (650mm) support to the table provides high accuracy & rigid machining  |
| ○     | ○     | Turcite-B coated on X Y ways   |
| ○     | ○     | Square way designed on Y   |

- |     |     |  |
|-----|-----|--|
| 5KS | 5KV | ○ Standard — Not available   |
| ○   | ○   | Spindle material made from SCM415(SAE4115) Cr-Mo alloy steel with tempering treatment, fully hardened & ground, spindle run out: 0.005mm |
| ○   | ○   | Centralized one shot lubrication system for ways, nuts, and leadscrews   |
| ○   | ○   | Precision angular contact spindle bearing  |
| ○   | ○   | 10 speeds step-pulley drive  |
| —   | ○   | Infinite variable speed drive up to 4300 rpm/60Hz 3600 rpm/50Hz.   |
| ○   | —   | Unique designed on Hi-Low gear speed change, bearing support on both side of spindle pulley  |
| ○   | —   | Adjustable brake handle increases the life of brake shoe   |
| —   | ○   | Patented special copper alloy SAM214 for vari-disc keys, precision ground with grease lubrication groove designed to prevent overheating |
| —   | ○   | Bearing support at the end of motor shaft  |
| —   | ○   | Double sided vari-disc belt to give lower noise level  |
| —   | ○   | Motor shaft material made from SCM425 Cr-Mo alloy steel, dia. 28mm   |
| ○   | ○   | Lifting screw dia. 38mm  |
| ○   | ○   | Extra long saddle (650mm) support to the table provides high accuracy & rigid machining  |
| ○   | ○   | Turcite-B coated on X Y ways   |
| ○   | ○   | Square way designed on Y & column slideway   |

# 6KS

NST#40  
 FP: X axis driven by inverter motor  
 SP: X axis driven by servo motor

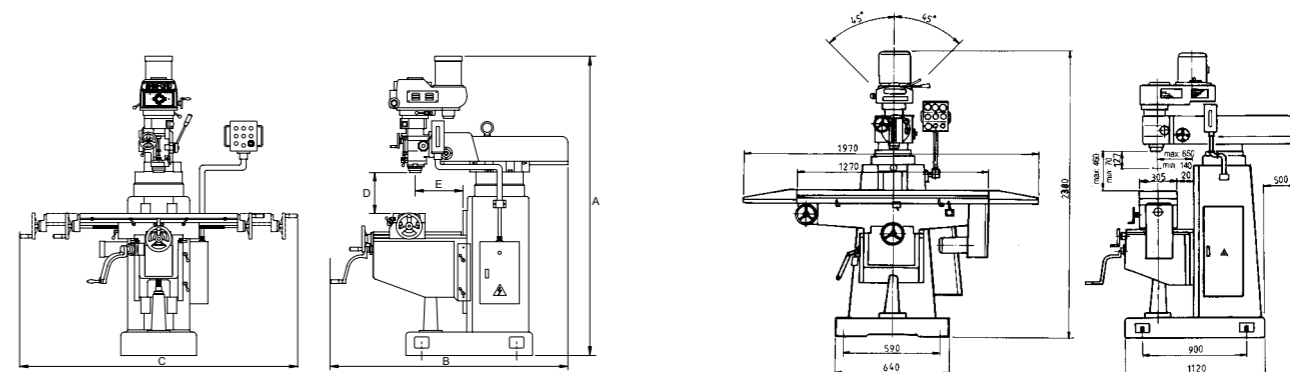
MODEL	6KS	6KV
HEAD	10 Steps	Variable speed
MOTOR	5HP	5HP
SPINDLE SPEED	50HZ: Low 54-330 High 475-2875 60HZ: Low 65-400 High 570-3450	50HZ: Low 50-415 High 415-3600 60HZ: Low 60-500 High 500-4300
QUILL TRAVEL	127mm	127mm



**6KV**  
NST#40



**6KS**



2TM 2VS 4KS 4KV 6KS-FP 6KS-SP  
 450TM 450VS 5KS 5KV 6KV-FP 6KV-SP

Specification	2TM 2VS	4KS 4KV	450TM 450VS	5KS 5KV	6KS-FP 6KV-FP	6KS-SP 6KV-SP
Table size	230 x 1067mm (9"x42")	254x1270mm(10"x50")			305x1270mm (12"x50")	
T slot of table(Q'ty x size)	3x16mm(3"x0.629")					
Longitudinal Travel(X axis)	Manual	762mm(30")	776mm (30.551")			850mm(33.464")
	Auto	682mm(26.85")	696mm (27.4")			850mm(33.464")
Cross travel	305mm(12.007")	406mm(15.984")		410mm(16.141")	390mm(15.354")	
Vertical travel of Knee(Z axis)	406mm(156.984")			450mm(17.716")	400mm(15.748")	
Ram travel	390mm(15.354")	560mm(10.236")			510mm(20")	
Quill travel	127mm(5")					
Spindle nose to table surface (D)	34 ~ 440mm (1.338" ~ 17.322")	100 ~ 506mm (3.937" ~ 19.921")		85 ~ 535mm (3.346"~21.063")	85 ~ 485mm (3.346" ~ 19.094")	
Over swivel on turret	360°					
Head swivel (R&L)	±45°					
Head tilt(up & down)	±45°			Option		
Spindle center to column front surface (E)	154 ~ 544mm (6" ~ 21.4")	159 ~ 719mm (6.26" ~ 28.307")		178 ~ 738mm (7.007"~29.055")	140 ~ 650mm (5.511"~25.59")	
Spindle motor	3HP			5HP		
X axis motor	None				1/2HP Inverter motor	
Lifting motor	None		1/2HP(Optional)	1HP gear type motor		
Spindle taper	NST#30 (or R8 & NST#40)			NST#40		
Quill Feed (mm/rpm)	0.04mm ~ 0.08mm ~ 0.14mm(0.0015" ~ 0.003" ~ 0.006") mm/rpm					
X axis rapid speed	Nil				2000mm/rpm	3750mm/rpm
Lifting motor speed	Nil		Option		430mm/rpm	
Spindle Speed (rpm)	Step Head	50Hz Low:66 ~ 270 High:550~2270 60Hz Low:80 ~ 325 High:660~2720			50Hz Low:54~330 High:470~2875 60Hz Low:65~400 High:570~3450	
	Variable Step Head	50Hz Low:50 ~ 420 High:420~3900 60Hz Low:60 ~ 500 High:500~4500			50Hz Low:40~415 High:415~3600 60Hz Low:60~500 High:500~4300	
Overall height(A)	2105mm (82.874")	2120mm (83.464")	2120mm (83.464")	2360mm (92.913")	2380mm(93.7")	
Overall depth(B)	1618mm(63.7")	1984mm(78.11")	2073mm(81.614")	2120mm(83.464")	2120mm(83.464")	
Overall width(C)	1497mm (58.937")	1666mm (65.59")	1680mm (66.141")	1790mm (70.472")	1790mm(70.472")	
Net weight	950kgs (2200lbs)	1200kgs (2625lbs)	1250kgs (2730lbs)	1600kgs (3500lbs)	1800kgs (3938lbs)	

We reserve the right to modify and improve the specification without notice, the specification shown above is for reference only.

Standard Accessories	For	Standard Accessories	For
● Draw bar/Tools box/Rubber chip cover	All machine	● X axis feed (by inverter or servo)	6KS, 6KV
● Lifting motor & Electric box	5K / 6K	● Ball screws on X & Y axis/ Coolant/ Automatic lubrication	6KS, 6KV

- |     |     |  |
|-----|-----|--|
| 6KS | 6KV | ○ Standard — Not available   |
| ○   | ○   | Spindle material made from SCM415(SAE4115) Cr-Mo alloy steel with tempering treatment, fully hardened & ground, spindle run out: 0.005mm |
| ○   | ○   | Quill dia. 105mm   |
| ○   | ○   | Centralized one shot lubrication for ways, nuts, and leadscrews  |
| ○   | ○   | Precision angular contact spindle bearing, P47210 for high accuracy and heavy duty cutting   |
| ○   | —   | 10 speeds step-pulley drive  |
| —   | ○   | Infinitely variable speed drive up to 4300 rpm/60Hz 3600 rpm/50Hz  |
| ○   | —   | Unique designed on Hi-Low gear speed change, bearing support on both side of spindle pulley  |
| ○   | —   | Adjustable brake handle increases the life of brake shoe   |
| —   | ○   | Patented special copper alloy SAM214 for vari-disc keys, precision ground with grease lubrication groove designed to prevent overheating |
| —   | ○   | Bearing support to the end of motor shaft  |
| —   | ○   | Double sided vari-disc belt to give lower noise level  |
| —   | ○   | Motor shaft material made from SCM425 Cr-Mo alloy steel, dia. 33mm.  |
| ○   | ○   | Procrise ball screw on X & Y   |
| ○   | ○   | Lifting screw dia. 38mm  |
| ○   | ○   | Extra long saddle (1016mm) support to the table provides high accuracy & rigid machining   |
| ○   | ○   | Turcite-B coated on X Y ways   |
| ○   | ○   | Square way designed on Y & column slideway   |
| ○   | ○   | Lifting motor & for knee up-down, electric box & panel   |

## V200

NST#40

MODEL	V200	V200VS
HEAD	16 Steps	Variable speed
MOTOR	5HP	5HP
SPINDLE SPEED	50HZ : Low 62.5-416 High 458-3000 60HZ : Low 75-500 High 550-3600	Low 0-480 High 0-3600
QUILL TRAVEL	140mm	140mm



## V250

NST#40

MODEL	V250	V250VS
HEAD	16 Steps	Variable speed
MOTOR	5HP	5HP
SPINDLE SPEED	50HZ : Low 62.5-416 High 458-3000 60HZ : Low 75-500 High 550-3600	Low 0-480 High 0-3600
QUILL TRAVEL	140mm	140mm

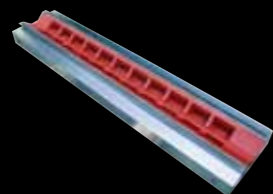


### V-200/V200VS FEATURES

- NST#40 spindle, quill dia. 110mm
- 5HP heavy duty head, Hi-Low speed change by gear transmission (without timing belt)
- Spindle is made from SCM-415 (SAE4115) through carbonized heat treatment and precise ground
- Spindle bearing appliance with P4 angular contact bearings
- Meehanite casting with annealing & stress relieving treatment
- Ram is movable directly on extra heavy duty column without turret
- Hardened & ground on the XYZ slideways and T-slot of table
- Rubber wipers installed on all slideways (column, table, ram and knee)



Hardened & Grounded double-nut ballscrews are pre-tensioned to minimize backlash, provide high precision movement and reduce heat deformation on all axes.



Strengthened table ribs ensure the stability during heavy duty machining



- Spindle made from SCM415 steel, through both carburizing harden and precise ground.
- P4 angular contact spindle bearings limit temperature variations

### V-250-FP/V-250-SP FEATURES

- Meehanite casting with annealing & stress relieving treatment
- Rubber wipers installed on all slideways (column, table, ram and knee)
- Square way designed on Y & column slideways
- Longer saddle ensures the working stability
- Turcite-B coated on X & Y ways
- Precision ballscrews on X & Y ways
- 5HP heavy duty head, HI-Low speed change by gear transmission (without timing belt)
- Inverter or servo motor on X & Y with variable speed change, both offer high working efficiency
- Electromagnetic clutch on X & Y, protect workpieces or tools from damage

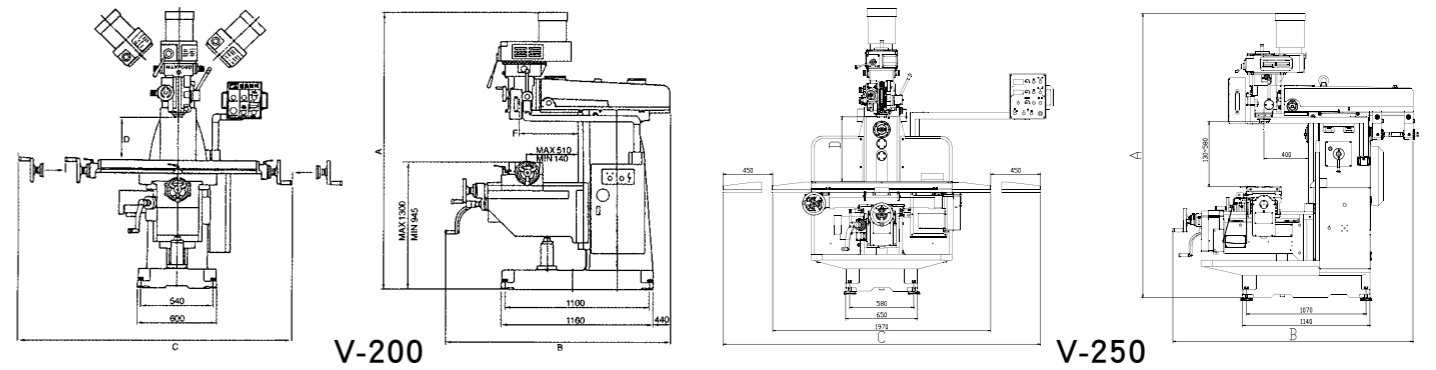
Model specification:

Description	V250-FP	V250VS-FP	V250-SP	V250VS-SP	VH250VS-FP	VH250VS-SP
5HP horizontal spindle motor					○	○
XY inverter motor	○	○			○	
XY servo motor			○	○		○

# VH-250VS

NST#40

MODEL	VH250VS
HEAD	Variable speed
MOTOR	5HP
SPINDLE SPEED	Low 0-480 High 0-3600
QUILL TRAVEL	140mm



V-200

V-250

## VH-250-FP/SP FEATURES

- Meehanite casting with annealing & stress relieving treatment
- Rubber wipers installed on all slidways (column, table, ram and knee)
- Square way designed on Y & column slideways
- Longer saddle ensures the working stability
- Turcite-B coated on X & Y ways
- Precision ballscrews on X & Y ways
- 5HP heavy duty head, HI-Low speed change by gear transmission (without timing belt)
- Inverter or servo motor on X & Y with variable speed change, both offer high working efficiency
- Electromagnetic clutch on X & Y, protect workpieces or tools from damage



5HP heavy cutting milling head transmitted by gears

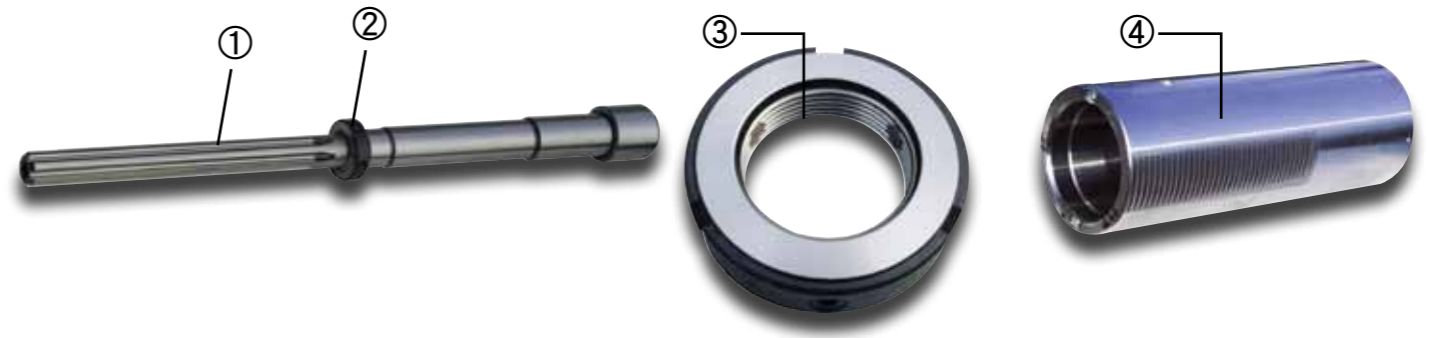
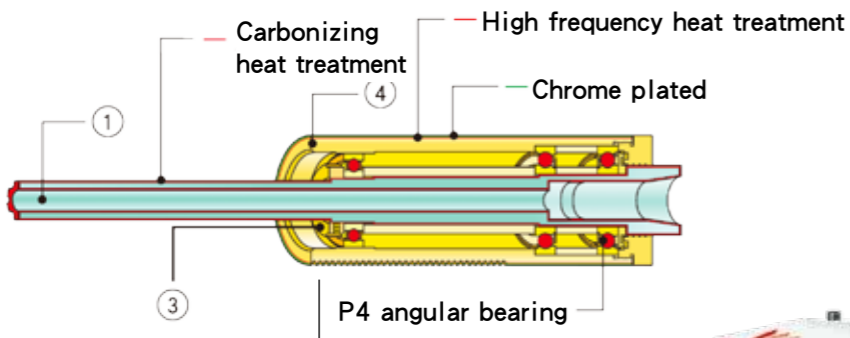


Rigid designed on spindle auto-feed  
1. One piece designed on overload clutch  
2. Spline support on pinion shaft & clutch

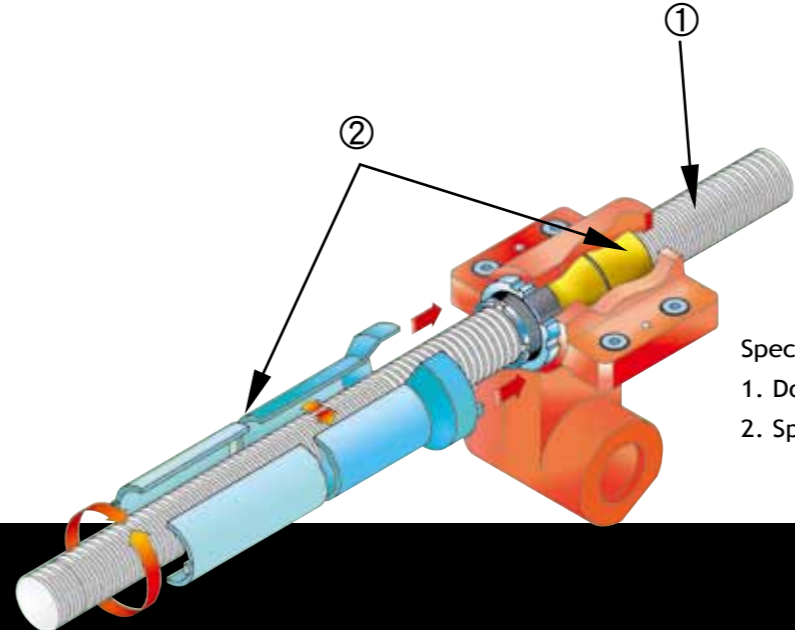
Specification	V-200tm V-200VS	V-250 V-250VS	VH-250VS
<b>Table</b>			
Table size(L x W)	280x1320mm (12"x50")	305x1270mm(12"x50")	
T-slot(Q'ty x Size)	3 x 16 mm (3 x 0.63")		
Longitudinal (X axis)	Manual	920mm(36")	--
	Auto feed	840mm(33")	900mm(35")
Cross travel(Y axis)	380mm(15")	400mm(16")	
Vertical travel (Z axis)	406mm(16")	450mm(18")	
Max. table load	350kgs	600kgs	
Ram travel	485mm(19")	600mm(24")	
<b>Vertical spindle</b>			
Taper	NST#40		
Spindle speed (r.p.m)	Step head	50Hz Low:62.5 ~ 416 High:458 ~ 3000 60Hz Low:75 ~ 500 High:550 ~ 3600	--
	Variable speed head	Low 0 ~ 480 High 0 ~ 3600	
Quill stroke	140 mm		
Quill feed rate	0.035/0.007/0.14 mm/rev		
Head swivel	45°		
Spindle nose to table surface	(2.362"~18.346")	(5.118"~22.835")	
Spindle center to column front surface	(7.48"~26.575")	(7.283"~26.989")	
<b>Horizontal spindle</b>			
Taper	--	NST#40	
Spindle speed (rpm)	--	--	50Hz Low:40 ~ 200 Hi:200 ~ 980 60Hz Low:48 ~ 240 Hi:240 ~ 1180
	--	--	--
<b>Feed rates</b>			
X/Y Cutting Speed	--	0~1500 mm/min	
Rapid traverse X,Y axes	--	3000 mm/min	
<b>Motor</b>			
Vertical spindle	5HP	5HP	5HP Inverter motor
Horizontal spindle	--	--	5HP Inverter motor
XY axes motor	--	1/2 HP lifting motor	
Lifting motor	1HP lifting motor		
Coolant pump	1/8 HP	1/6 HP	
Overall height (A)	2245mm (88")	2550mm (100")	
Overall depth (B)	2080mm (82")	2150mm(85")	
Overall width (C)	1775mm (70")	1970mm (78")	
Net weight	1700kgs	2500kgs	

We reserve the right to modify and improve the specification without notice, the specification shown above is for reference only.

Standard Accessories	For	Standard Accessories	For
● Tool box/Rubber chip cover (Front & Rear)	All machine	● Lifting motor & Electrical box	All machine
● Auto lubrication pump	All machine	● XY Ballscrew	All machine
● Leveling screws & pads	All machine	● Simple tapping function	All machine
● Coolant system	V-250 / VH-250	● Quartz work light	V-250 / VH-250



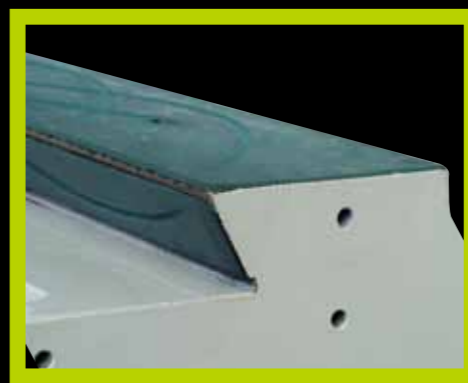
- 1. Spindle material is SAE4115 full hardened through carbonizing heat treatment
- 2. Spindle thread is ground
- 3. Internal thread of spindle nut is left hardened and ground
- 4. Quill material is S45C(SAE1045) steel bar, induction hardened, chrome plated and precision ground



- Special backlash adjustment
- 1. Double nuts made of PBC 2 phosphor bronze
  - 2. Special tool for nut backlash adjustment



Leveling screws and pads are included in standard accessories



Turcite-B coated on X & Y ways



Strict hand scraping (16 point per square inch) Turcite-B coated on X & Y gibs

## SP-150TM

NST#30/R8

MODEL	SP-150TM	SP-150VS
HEAD	8 Steps	Variable speed
MOTOR	3HP	3HP
SPINDLE SPEED	50HZ : Low 66-270 High 550-2270 60HZ : Low 80-325 High 660-2720	50HZ : Low 50-420 High 420-3750 60HZ : Low 60-500 High 500-4500
QUILL TRAVEL	127mm	127mm



**SP-150VS**  
NST#30/R8



**SP-150TM**



**SP-460TM**

## SP-460TM

NST#30/R8

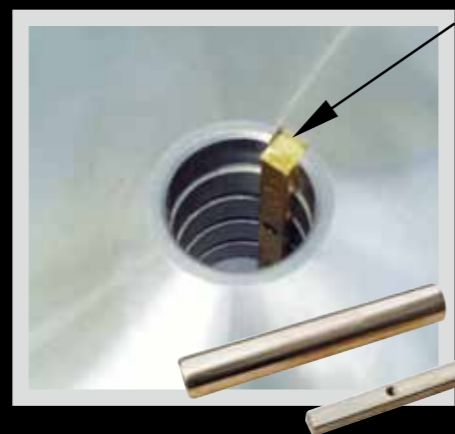
MODEL	SP-460TM	SP-460VS
HEAD	8 Steps	Variable speed
MOTOR	3HP	3HP
SPINDLE SPEED	50HZ : Low 66-270 High 550-2270 60HZ : Low 80-325 High 660-2720	50HZ : Low 50-420 High 420-3750 60HZ : Low 60-500 High 500-4500
QUILL TRAVEL	127mm	127mm



**SP-460VS**  
NST#30/R8

### SP150TM/SP150VS FEATURES

- 9"x49" table
- R8 (NST#30) spindle material SCM415 (SAB4115) hardened & ground
- Turcite-B on X & Y ways, slideways and gibs
- Hardened & ground X & Y slideways
- Hardened & ground table with ground T-slots
- Electro less nickel-phosphorus process on X & Y leadscrews
- Patented FA381 keys used for vari-speed head
- 1-1/4"(32mm) diameter lifting screw
- Leveling screws & pads on base
- Strict required hand scraping with high precise accuracy



High improvement in vari-speed head  
1. Roller bearing support on motor shaft  
2. Patented vari-disc keys FA381



Rigid designed on spindle auto-feed  
1. One piece designed on overload clutch  
2. Spline support on pinion shaft & clutch

### SP460TM/SP460VS FEATURES

- 10"x54" table
- Hardened & ground X & Y slideways
- Hardened & ground table with ground T-slots
- 1-1/2"(38mm) diameter lifting screw
- Leveling screws & pads on base
- R8 (NST#30) spindle material SCM415 (SAB4115) hardened & ground
- Turcite-B on X & Y ways, slideways and gibs
- Electro less nickel-phosphorus process on X & Y leadscrews
- Highly improved vari-speed head
- Strict required hand scraping with high precise accuracy



### Optional : (EVS inverter motor)

5000 rpm EVS spindle head (option)  
3HP inverter motor with 3HP inverter drive.  
For: 2TM/2VS, 4K, 450TM/VVS  
SP-150, SP-460, SP-500  
(NST#30 or 8 spindle)



## SP-500TM

NST#30/R8

MODEL	SP-500TM	SP-500VS
HEAD	8 Steps	Variable speed
MOTOR	3HP	3HP
SPINDLE SPEED	50HZ : Low 66-270 High 550-2270 60HZ : Low 80-325 High 660-2720	50HZ : Low 50-420 High 420-3750 60HZ : Low 60-500 High 500-4500
QUILL TRAVEL	127mm	127mm



**SP-500VS**  
NST#30/R8



**SP-500TM**



**SP-520TM**

## SP-520TM

NST#40

MODEL	SP-520TM	SP-520VS
HEAD	10 Steps	Variable speed
MOTOR	5HP	5HP
SPINDLE SPEED	50HZ : Low 54-330 High 475-2875 60HZ : Low 65-400 High 570-3450	50HZ : Low 50-415 High 415-3600 60HZ : Low 60-500 High 500-4300
QUILL TRAVEL	127mm	127mm



**SP-520VS**  
NST#40

### SP500TM/SP500VS FEATURES

- 10"x54" table
- R8 spindle material SAE4115(SCM415) hardened & ground
- Turcite-B on X & Y ways, slideways, and gibs
- Hardened & ground X & Y slideways
- Hardened & ground table with ground T-slots
- Electroless nickel-phosphorus process on X & Y leadscrews
- Square ways on Y & Column ways
- Patented FA381 keys used for vari-speed
- Dia. 1 1/2"(38mm) lifting screw
- Leveling screws & pads on base
- Strict hand scraping with high precise accuracy



Fix screws on the rear of head, more stability on the connection of head and ram. (SP-520TM/VS)

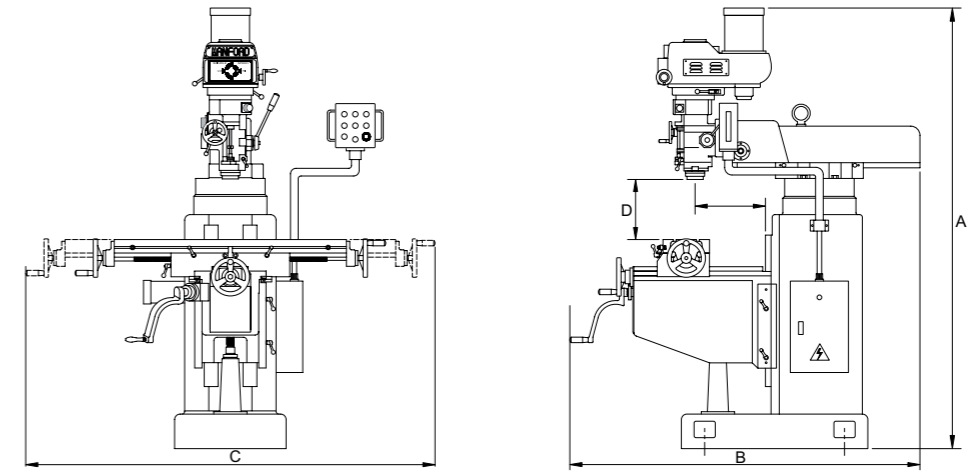
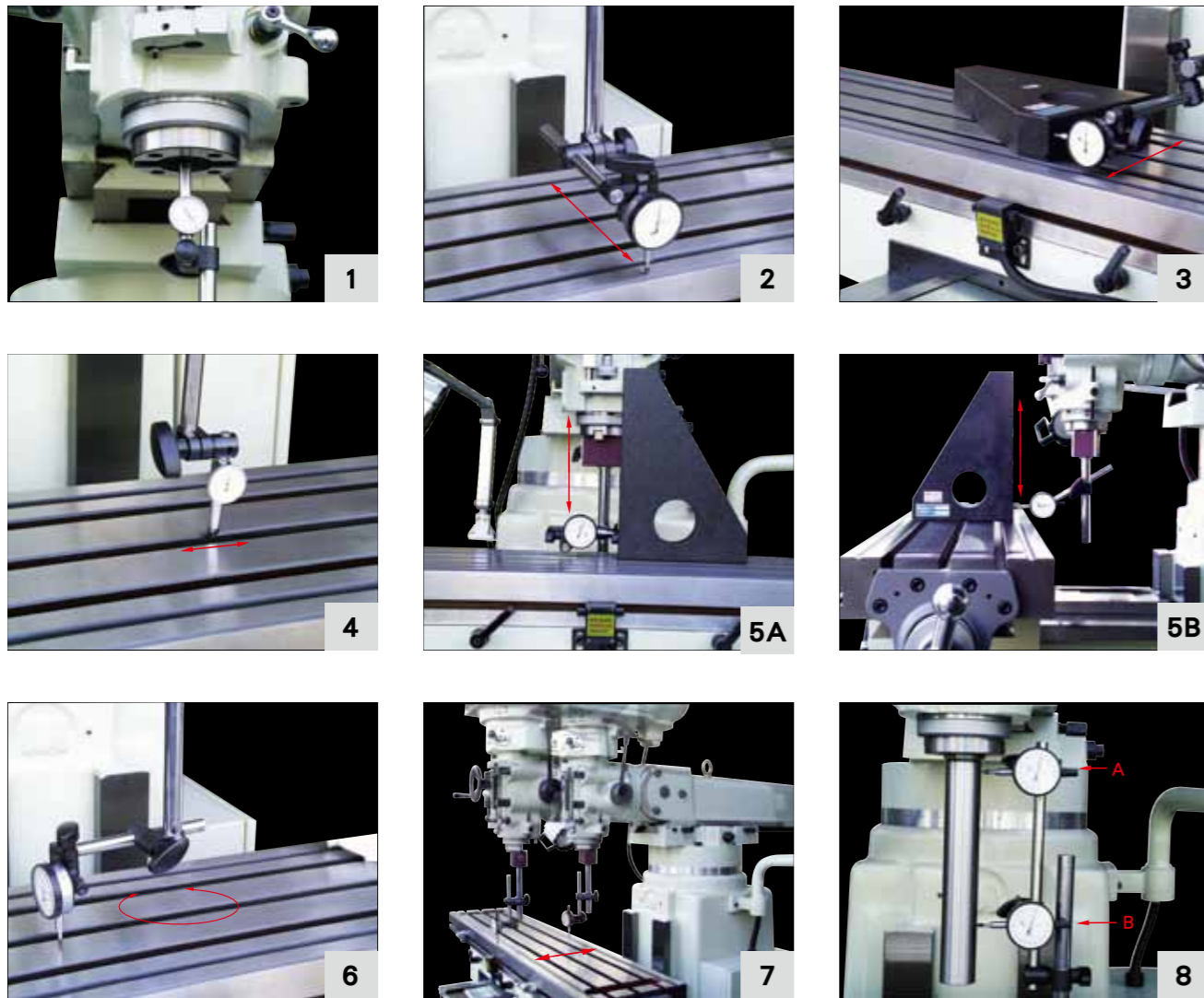
Option: (EVS inverter motor)



5000rpm EVS spindle head. (option)  
5HP inverter motor with 5HP inverter drive.  
For 5K/5KV, SP-520TM/VS (NST#40)

### SP520TM/SP520VS FEATURES

- 10"x54" table
- NST#40 spindle material SAE4115 (SCM415) full piece by hardened & ground
- Turcite-B on X & Y ways, slideways, X & Y gibs
- Hardened & ground on X Y Z slideways & table
- Electroless nickel-phosphorus process on X & Y leadscrews
- Grinding on table T-slot
- Square ways on Y & Column
- Patented FA381 keys used for vari-speed head
- Dia. 1 1/2"(38mm) lifting screw
- Lifting motor & electric box
- Strict hand scraping with high precise accuracy



SP150VS SP150TM SP460VS SP460TM  
 SP500VS SP500TM SP520VS SP520TM

Specification	SP-150TM SP-150VS	SP-460TM SP-460VS	SP-500TM SP-500VS	SP-520TM SP-520VS
Table size(L x W)	230X1245mm(9"x49")	254x1270mm(10"x50")	245x1370mm(10"x54")	
T-slot(Number x Size)	3 x 16 mm ( 3 x 0.63" )			
Longitudinal Travel(X axis)	Manual	930mm(36")	870mm(34")	
	Auto feed	850mm(33.7")	775mm(30.5")	
Cross travel(Y axis)	305mm(12")	390mm (15-3/8")	410mm(16")	410 mm(16")
Vertical travel (Z axis)	406mm(16")	390mm (15-3/8")	450mm(18")	450mm(18")
Ram travel	356mm(14")	560mm(22")		
Quill travel	127mm(5")			
Spindle nose to table surface (D)	34~440mm (1-3/8" ~ 17-3/8")	100~506mm (4" ~ 20")	85~535mm(3.3" ~ 21")	
Over swivel on turret	360°			
Head swivel (R&L)	±45°			
Head tilt (up & down)	±45°			Option
Spindle to column (E)	154 ~ 544mm (6" ~ 21.4")	159 ~ 719mm (6.25" ~ 28.3")	170 ~ 730mm (6.6" ~ 28.7")	178 ~ 738mm (7" ~ 29")
Spindle motor	3HP			5HP
Spindle taper	NST#30 (R8)			NST#40
Quill feeds	0.04mm ~ 0.08mm ~ 0.14mm(0.0015"-0.003"-0.006")			
Spindle speed (r.p.m)	Step head	50Hz Low:66 ~ 270 High:550 ~ 2270 60Hz Low:80 ~ 325 High:660 ~ 2720		50Hz Low:54 ~ 330 High:475 ~ 2875 60Hz Low:65 ~ 400 High:570 ~ 3450
		Variable speed head	50Hz Low:50 ~ 420 High:420 ~ 3750 60Hz Low:60 ~ 500 High:500 ~ 4500	
Overall height (A)	2140mm (84")		2011mm(87")	2262mm (90")
Overall depth (B)	1618mm (63-5/8")	2087mm(82")	2120mm(83-1/2")	2120mm(83-1/2")
Overall width (C)	1670mm (65.7")	1840mm (72.4")		
Net weight	950kgs(2200lbs)	1300kgs(3000lbs)	1500kgs(3360lbs)	1600kgs(3500lbs)

We reserve the right to modify and improve the specification without notice, the specification shown above is for reference only.

**SP series accuracy requirement:**

NO	Inspection items	SP series requirement	Standard for knee type mills
1	Run-out of the spindle taper	0.003mm (0.00012")	0.005mm(0.0002")
2	Parallelism of the table top with (A) Traverse movement (B) Longitudinal movement	(A)0.015mm in any 300mm (0.0006" in any 12" length) (B)0.02mm in any 500mm (0.0008" in any length 20")	(A)0.02mm in any 300mm (0.0008" in any 12" length) (B)0.03mm in any 500mm (0.0012" in any length 20")
3	Perpendicularity of the table Way to the saddle movement	0.01mm(0.0004") in any 300mm (12") length	0.02mm(0.0008") in any 300mm(12")length
4	Parallelism of the table central Groove in the longitudinal direction	0.02mm(0.0008") in any 500mm (20") length	0.03mm(0.0012") in any 500mm (20") length
5	Traverse of the column, Perpendicularity in A and B planes	(A)0.015mm (0.0006") (B)0.015mm (0.0006") in any 300mm (12")	(A)0.025mm (0.0009") (B)0.025mm (0.0009") in any 300mm (12")
6	Perpendicularity of the spindle With the table top (sweeping)	(A)0.015mm (0.0006") (B)0.015mm(0.0006") in any 300mm(12")	(A)0.02mm(0.0008") (B)0.02mm(0.0008") in any 300mm (12")
7	Parallelism of the traverse movement of the ram with table top (the width of the table is within 300mm)	0.015mm(0.0005") in any 300mm (12") length	0.02mm (0.0008") in any 300mm (12") length
8	Rounout of the spindle (A)Next to spindle nose (B)1500mm(6") down from spindle nose	(A)0.01mm(0.0004") (B)0.02mm(0.0008")	(A)0.01mm (0.0004") (B)0.02mm(0.0008")

Standard Accessories	For	Standard Accessories	For
● Drawbar/Tool box/ Rubber chip cover (Front & Rear)	All machine	● Leveling screws & pads	All machine
● XY Leadscrews	All machine	● Lifting motor & Electrical box	SP-520TM / VS

# B180

NST#40

MODEL	B180	B180VS
HEAD	10 Steps	Variable speed
MOTOR	5HP	5HP
SPINDLE SPEED	50HZ : Low 54-330 High 475-2875 60HZ : Low 65-400 High 570-3450	50HZ : Low 50-415 High 415-3600 60HZ : Low 60-500 High 500-4300
QUILL TRAVEL	127mm	127mm



**B180VS**  
NST#40



**B180**

# B185

NST#40

MODEL	B185	B185VS
HEAD	10 Steps	Mechanic variable speed
MOTOR	5HP	5HP
SPINDLE SPEED	50HZ : Low 54-330 High 475-2875 60HZ : Low 65-400 High 570-3450	50HZ : Low 50-415 High 415-3600 60HZ : Low 60-500 High 500-4300
QUILL TRAVEL	127mm	127mm



**B185**



**B185VS**  
NST#40

## B180 FEATURES

- X, Y power feed by option
- XY axes double nut ACME leadscrews
- Table size: 10" x 50" with longer saddle 650mm (25.6")
- Rigid square ways on cross & column
- Licensed meehanite casting
- Hardened & ground on X,Y,Z slideways and table
- Turcite-B coated on X, Y, Z axes slideways & gibs
- Head can be tilted 90 right & left for angular machining
- Counter-balance weight device for milling head

## B185 FEATURES

- X auto feed vari-speed by servo motor ( Y auto feed vari-speed by AC servo motor by option)
- XY axes high precision ballscrews
- Heavy duty widen saddle length 1016mm (40") full support to table
- Rigid square ways on Y & Z
- Licensed meehanite casting
- Hardened & ground on X, Y, Z slideways and table
- Turcite-B coated on X, Y, Z axes slideways & gibs
- Head can be tilted 90 right & left for angular machining
- Counter-balance weight device for milling head
- Telescopic steel cover to protect the slideway & ball screw from dust (option)
- Counter-balance weight device for milling head



Precision ground ballscrews on X and Y (B185&B410)

Model	X/Y/Z auto Feed
B180 / B180VS	manual (option: X or Y axis power feed)

Standard Accessories	For	Standard Accessories	For
● Tool & Tool box	All machine	● Rubber chip cover (Front & Rear)	B180
● Leveling screws & pads	All machine	● Rear rubber cover	B185 / B410
● Auto lubrication pump	B185 / B410	● Telescopic cover (metal) in front of saddle	B185 / B410
● Coolant system & chip tray	B185 / B410	● XY Ballscrew	B185 / B410
● Electrical box & Lifting motor	B185 / B410	● Quartz work light	B185 / B410

# B410

NST#40

MODEL	B410	B410VS
HEAD	16 Steps	Variable speed by Inverter system
MOTOR	5HP	5HP inverter motor
SPINDLE SPEED	50HZ: Low 62-416 High 458-3000 60HZ: Low 75-500 High 550-3600	Low 0-480 High 0-3600
QUILL TRAVEL	140mm	140mm



# B410VS

NST#40



B410

## B410VS FEATURES

- 5HP strong head can be swiveled 90 degrees or left for angular machining
- Quill dia. 110mm (4.3"). NST#40 spindle
- XY axes high precision ballscrews, Z axis leadscrew (Z axis ball screw by option)
- Heavy duty saddle length 1200mm (47.2") support to table
- Rigid square ways on cross & column
- Licensed meehanite casting
- Hardened & ground on X, Y, Z slideways & table
- Turcite-B coated on X, Y & Z axes slideways & gibs
- Counter-balance weight device for milling head
- Telescopic steel cover to protect the slideway & ball screw from dust

Model	X/Y/Z Auto feed
B410/B410VS-FP	XYZ Variable speed by inverter system
B410/B410VS-SP	XYZ Variable speed by servo motor

Large quill dia. 110mm (4.33") material S45C (SAE1045) with high frequency heat treatment & chrome plated



NST#40 spindle material SCM415 (SAE4115) fully hardened & precise ground

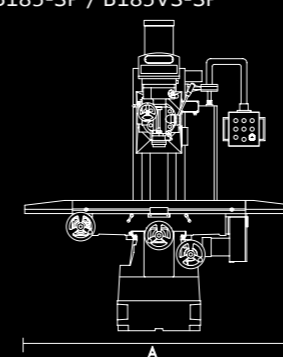


Strong back gear transmitting instead of timing belt for Hi-Low speed

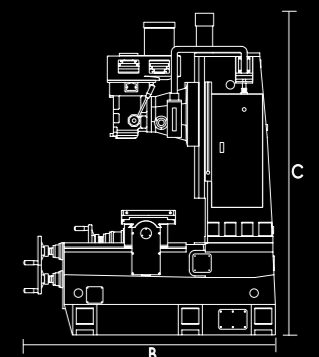
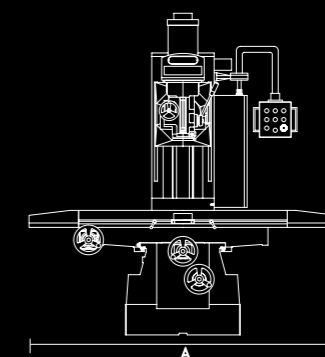
Specification	B180 B180VS	B185-SP B185VS-SP	B410 B410VS-FP
<b>Table</b>			
Table size(L x W)	1270X250mm(50"x10")	1270x305mm(50"x12")	1270x380mm(50"x15")
T-slot(Number x Size)	3 x 16 mm (3x0.63")		
Longitudinal Travel (X axis)	Manual	776mm(30.55")	1000mm(40")
	Auto feed	696mm(27.4")	1000mm(40") Option: 1200mm(47")
Cross travel(Y axis)	540mm(21.2")	500mm (20")	500mm (20")
Vertical travel (Z axis)	500mm(20")	450mm (17.7")	500mm(20")
Spindle nose to table surface (D)	95~540mm(3.74" ~ 21.26")		140~600mm(5.512" ~ 23.622")
<b>Spindle</b>			
Spindle taper NST#40			
Spindle speed (r.p.m)	Step head	50Hz Low: 54 ~ 330 High: 475 ~ 2875 60Hz Low: 65 ~ 400 High: 570 ~ 3450	50Hz Low: 62 ~ 416 Hi: 458 ~ 3000 60Hz Low: 75 ~ 500 Hi: 550 ~ 3600
	Variable speed head	50Hz Low: 50 ~ 415 High: 415 ~ 3600 60Hz Low: 60 ~ 500 High: 500 ~ 4300	Low 0 ~ 480 High 0 ~ 3600
Quill travel	127mm(5")		140mm(5.51")
Quill feeds rate	0.04mm ~ 0.08mm ~ 0.14mm (0.0015"-0.003"-0.006")		0.035mm ~ 0.07mm ~ 0.14mm (0.0013"-0.0027"-0.055")
Head swivel (R&L)	45°		
Spindle center to column front surface	565mm(18.3")		490mm(19.3")
<b>Feed rates</b>			
XYZ axes feed rates (per min)	Manual (Power feed by option)	0-1800 mm (0-71") adjustable steplessly	
Rapid traverse X, Y axes (per min)	Manual (Power feed by option)	1800 mm (71")	1800 mm (71")
Rapid traverse of Z axes (per min)	Lifting motor by option	900 mm(35.4")	900 mm (35.4")
<b>Motor</b>			
Spindle drive motor	5HP		5HP(B410) 5HP inverter motor (B410VS)
Drive on X axis	Manual (Power feed by option)	1HP servo motor	1HP servo motor for B410 (VS)-SP
Drive on Y axis	Manual (Power feed by option)	Servo motor (by option)	1/2HP reduction motor with inverter driver for B410(VS)-FP
Drive on Z axis	Manual (1/2HP lifting motor by option)	1/2HP lifting motor	
Coolant pump	By option ( 1/8HP)	1/8HP	1/6HP
Overall width (A)	1800mm(70.87")	2230mm(87.80")	2250mm(88.58")
Overall depth (B)	1600mm(63")	1750mm(68.90")	2050mm(80.71")
Overall height (C)	2050mm(80.71")	2050mm(80.71")	2090mm(82.28")
Net weight	2000kgs(4480lbs)	2600kgs(5732lbs)	3100kgs(6834lbs)

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B180 / VS  
B185-SP / B185VS-SP



B410 B410VS-FP



## MBG-1300

10HP, 6 STEPS, NT#50

- High-rigidity spindle completed with cylindrical roller bearing designed for accuracy cutting. No chatter happen, during the cutting process.
- Gears splined shaft and key are made from chrome molybdenum steel SCM415H, through both carburizing harden and precise grinding as grade, JIS 1. To make sure of running precision and long duration.
- Gear box is lubricated by forced lubrication system, and all leadscrews are covered by telescopic spring.



MBG-1300

## MBG-1600

10HP, 6 STEPS, NT#50



Horizontal Milling Attachment (Optional)

MBGH-1600

MBG-1600

### MBG-1300 FEATURES

- High grade casting is annealed & stress-released, providing high rigidity and wear assistance
- Hardened & ground double-nut ballscrews on 3 axes, provide high precision movement, and reduce heat deformation
- XYZ slideways, table and T-slot are hardened and ground
- 3 ways are coated with turcite-B
- Dovetail on X slideway, box ways on Y & Z
- 1:2 ratio timing belt boxes on XYZ, increase drive torque and save cost for axes motors
- XYZ axes driven by Servo motor, standard with pendant control box showing individual buttons for each function, allows the operator to work with ease
- YZ steel way covers protect slideways & ballscrew from dust and coolant

### MBG-1600 FEATURES

- Gear box is lubricated by forced lubrication system, and all leadscrews are covered by telescopic spring
- Gears splined shaft and key are made from chrome molybdenum steel SCM415H, through both carburizing harden and precise grinding as grade, JIS 1. To make sure of running precision and long duration
- High grade casting is annealed & stress-released, providing high rigidity and wear assistance
- Hardened & ground double-nut ballscrews on 3 axes, provide high precision movement, and reduce heat deformation.
- XYZ slideways, table and T-slot are hardened and ground
- Dovetail on X slideway, box ways on Y & Z
- 3 ways are coated with turcite-B
- 1:2 ratio timing belt boxes on XYZ, increase drive torque and save cost for axes motors
- XYZ axes driven by Servo motor, standard with pendant control box showing individual buttons for each function, allows the operator to work with ease
- YZ steel way covers protect slideways & ballscrew from dust and coolant

Specification	MBG-1300	MBG-1600/MBGH-1600
Table size(L x W)	1800X450mm(70.87"x17.72")	2200 x 500mm(86.61"x19.69")
T-slot(Number x Size)	18x5x70mm(0.71"x0.20"x2.76")	18x5x85mm(0.71"x0.20"x3.35")
Longitudinal travel	1300mm(51.18")	1600mm(62.99")
Cross travel	600mm(23.62")	700mm(27.56")
Vertical travel	700m(27.56")	700mm(27.56")
Table load capacity	1500kgs	1000kgs
Spindle nose to table surace	100~800mm(39.37" ~ 31.50")	70~770mm(2.76" ~ 30.31")
<b>Spindle</b>		
Spindle taper	NST#50 Gear head	
Spindle speed	50Hz Low: 104 ~ 466 Hi: 308 ~ 1400 60Hz Low: 125 ~ 560 Hi: 370 ~ 1100	
Spindle speed step	6 steps	
Spindle to column surface	610mm(24.02")	700mm(27.56")
<b>Feed rates</b>		
XYZ axes feed rate	0-750mm/min(0" ~ 29.53")	
Rapid traverse XYZ axes	12M	
<b>Motor</b>		
Spindle motor	10HP ( 2P / 4P )	
XYZ axis motor	DC Motor 1200W	
Coolant pump	1/6HP	
Air Press	6kg / cm <sup>2</sup>	
Power needed	12kw	
Overall height (A)	2930mm(115.35")	2930mm(115.35")
Overall depth (B)	2750mm(108.27")	3200mm(125.98")
Overall width (C)	2435mm(95.87")	2530mm(99.61")
Net weight	3960kgs(8730lbs)	4500kgs(9921lbs)

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Standard Accessories	For	Standard Accessories	For
● Tool/Tool box	All machine	● Spindle drawbar	All machine
● Auto lubrication pump	All machine	● XYZ Ballscrew & Telescopic way cover	All machine
● Leveling screws & pads	All machine	● Base splash guard (both side)	All machine
● Coolant system & Chip tray	All machine	● Quartz work light	All machine



Power feed



Gear type power feed



Auto feed by servo system



Air power drawbar



Digital readout



Auto lubrication pump



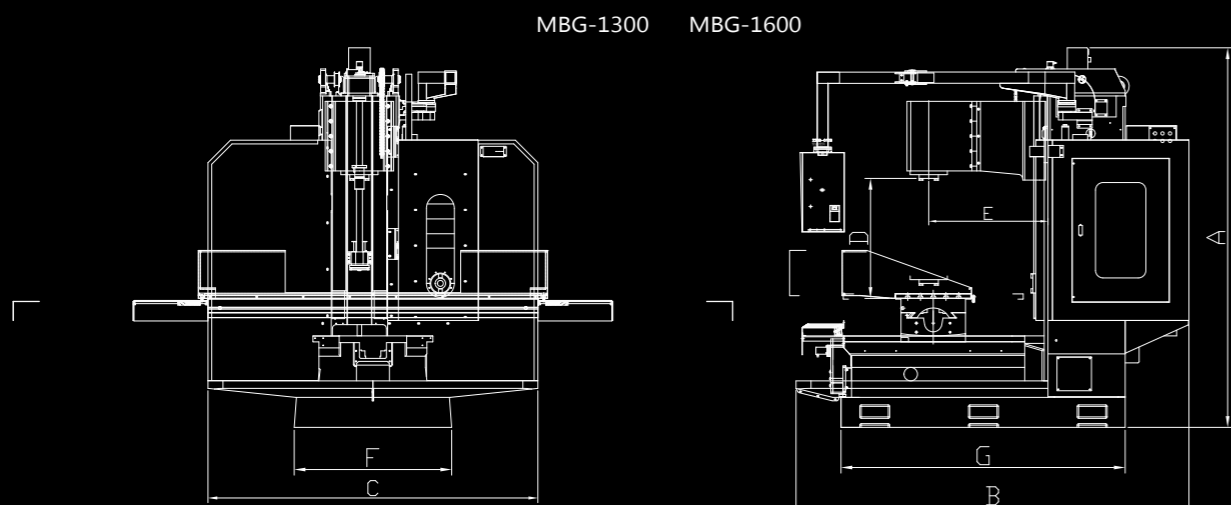
Quartz work light



Milling chuck



Clamping kit



K-type vise



Angle locked vise



Mechanical hydraulic vise