SUGINO

Mechanical feed and electronic control drilling unit

selfeeder™

SERVO
series

SUGINO MACHINE LIMITED

Highly rigid and long stroke (up to 300mm) drill unit with compact size. Variety of models available for wide ranges of machining requirements.

selfeeder servo series is a high-precision CNC controlled drilling unit capable to drill newly developed material and exotic material.

High quality servo motor for feed and precise ball screw designed eliminate the feed rate fluctuation of feed speed by drilling force; less burr generation for through hole drilling and longer tool life.

High precision, high efficiency, less space and cost reduction that are critical for the machining operation can be gained with this selfeeder servo series.

Features of Selfeeder Servo series

Selfeeder Varimec

A new generation model of Selfeeder Mechatric that has high rigidity to make a high performance with compact body.

- Max. 20,000min⁻¹
- Multi-spindle heads attachable
- Variable Spindle speed variable type
- Small dia. and deep hole drilling
- Linear guide (JP PAT.)
- Light & Compact
- Long stroke
- Large dia. drilling

Selfeeder Mechatric

Multi functionable basic unit featured with higher torque for large hole drilling and coolant center through etc.

- Multi-spindle heads attachable
- Variable Spindle speed variable type
- Long stroke
- Small dia. and deep hole drilling
- Large dia. drilling
- Coolant center-through
- Round shaped body
- Linear guide

CNC Turret Head

High-efficient model for intensive production to be capable for 4 different operations with single unit that is flexible for installation for new line as well as existing line as it is unit type.
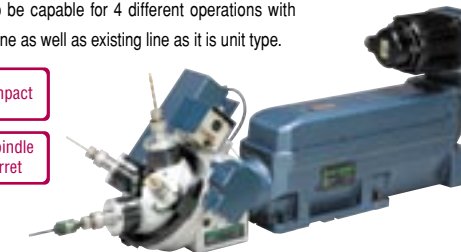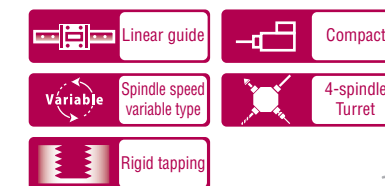
- Linear guide
- Variable Spindle speed variable type
- Rigid tapping
- Compact
- 4-spindle Turret

Programming console, Touch panel, Computer monitoring software, Process patterns Standrill NC, Varimotor

High quality drilling
The fluctuation of the feed speed is eliminated by the precise angular bearing supporting spindle and the high quality ball screw. As the result the generation of burr is reduced and the tool life is longer.

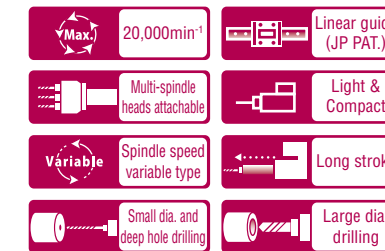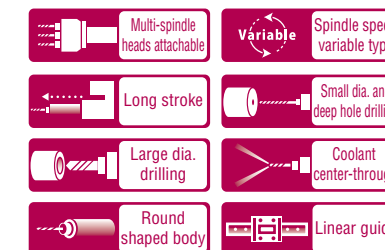### High-rigidity, high-precision structure
A newly developed structure holds the spindle ball screw and linear guide making the drill unit body rigid and strong enough to step spot face and burnish drilling. (JP PAT.)

High-efficient deep hole drilling
Coolant center through type (Max. 6.8MPa) is available for Mechatric series for efficient deep hole drilling by oil hole drill tool.

High-flexibility
Spindle rotation speed is variable by attached inverter.
Optimize speeds to adapt to different cutting requirements.

Easy operation
5.7inch touch panel type color display (liquid crystal) makes it easy to make a CNC program and operate even for a beginner operator. Four different languages are available for the oversea usage.

Selfeeder Varimec

SSV2

- ▼Max. 20,000min⁻¹
- Linear guide (JP PAT.)
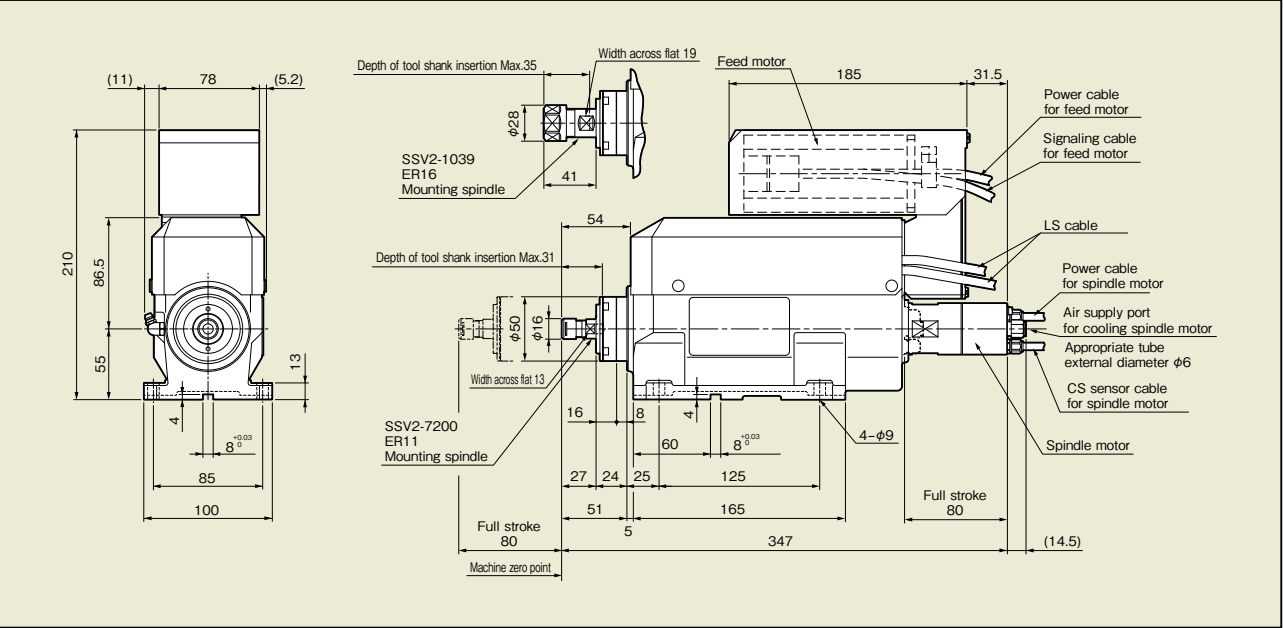- Light & Compact
- Variable · Spindle speed variable type

The smallest model of Varimec utilizes a high-performance motor (high-speed and high-power) into a small, compact sized body.

It provides high performance for production of small parts and small-diameter drilling.

Specification Chart

Specs. Model	Spindle speed (no load)		Chuck type (Collet chuck)	Chucking capacity	Max. Drilling size			Stroke	Spindle motor	Feed motor	Thrust	Rapid approach speed	Cutting speed	Weight
	50Hz	60Hz			AL* (ADC)	FC* (FC200)	ST* (S45C)							
	min⁻¹	—	—	mm	mm	mm	mm	mm	kW	kW	N	mm/sec	mm/sec	kg
SSV2-7200	2,000~20,000		ER11MS	0.5~7.0	5	4	3.5	Max. 80	0.9 15,000min⁻¹/hr. DC brushless motor	0.4 AC servo motor	1,200	Max. 200	Max. 16.7	15
SSV2-1039	390~3,900		ER16	0.5~10.0	8.5	7.5	6.5							

Notes 1. To select your model, refer to the workpiece configurations, material, cutting properties, diameter of the hole, and rotation speed.(cutting speed)
2. The drilling capacity shown above is for a depth equivalent to the drill diameter times two.
3. The power voltage of the main spindle inverter is a 3-phase 200V AC±10%, 50/60Hz. (Feeding axis controller is single-phase.)
4. In the case of a servo motor with a holding brake (optional), add "B" to the end of the model number.
5. AL*···Aluminium, FC*···Cast Iron, ST*···Steel

Dimensions (mm)

(11) 78 (5.2)
210
86.5
55
13
4
8 +0.03 0
85
100

Depth of tool shank insertion Max.35
Width across flat 19
Feed motor 185 31.5
φ28
SSV2-1039 ER16 Mounting spindle
41
Power cable for feed motor
Signaling cable for feed motor

Depth of tool shank insertion Max.31
54
φ50 φ16
SSV2-7200 ER11 Mounting spindle
Width across flat 13
16 8 4 60 8 +0.03 0 4-φ9
27 24 25 125
51 165
5 347
Full stroke 80
Machine zero point
Full stroke 80
(14.5)

LS cable
Power cable for spindle motor
Air supply port for cooling spindle motor
Appropriate tube external diameter φ6
CS sensor cable for spindle motor
Spindle motor

Note : Air must be supplied to cool the spindle motor as to protect the spindle bearings. Be sure to supply clean dry air.

Adjustable spindle nose (option)

Please specify the adjustable spindle nose when ordering your servo drill.

Sugino supplies adjustable spindle noses other than those shown below, upon request.

Applicable selfeeder	Fig. No.	Spindle nose model No.
SSV2-7200	1	KH-12E
SSV2-1039	2	KH-14E

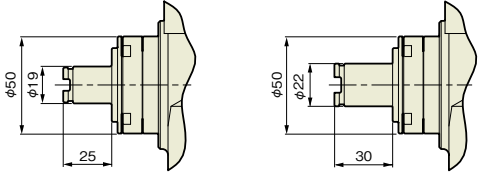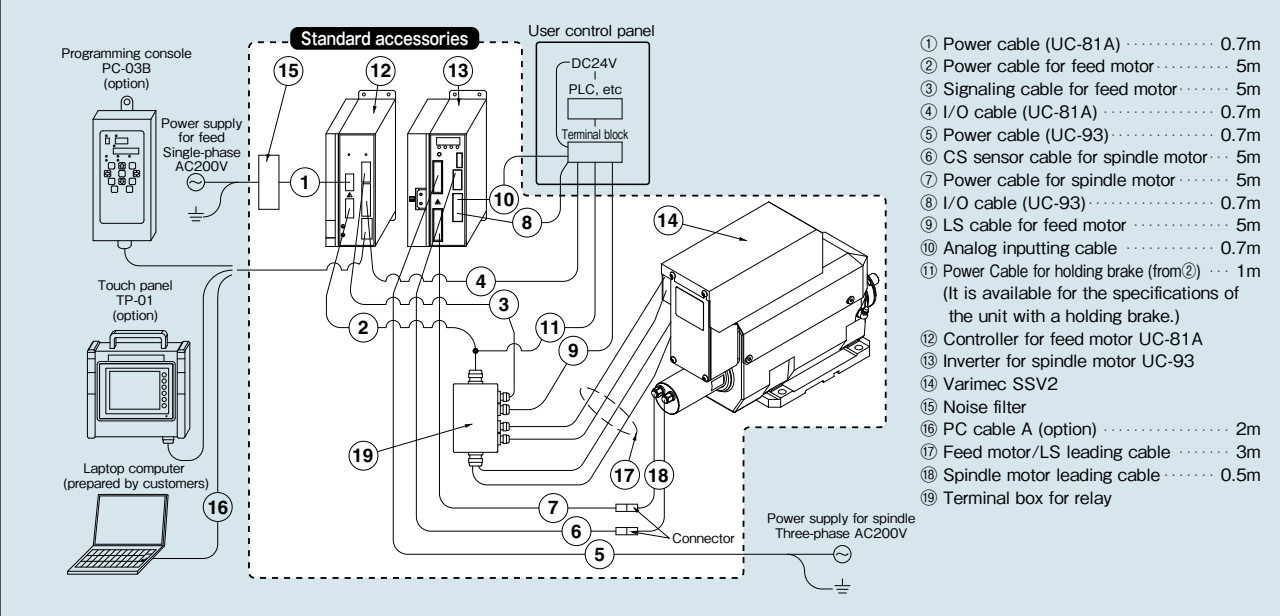### Dimensions(mm)

φ50 φ19 25

φ50 φ22 30

Fig. 1 KH-12E   Fig. 2 KH-14E

Notes 1. Spindle noses KH-E model are applicable to the quick change stub holder of KH-A or KH-E model of NT Tool Co.,Ltd.
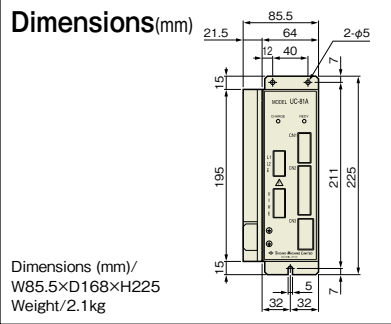2. Quick change stub holder can not use in over 10,000min⁻¹ spindle speed operation.

Electric system diagram

All the electric parts supplied as standard are indicated in ⌐⌐⌐ box.
The purchaser is responsible for and needs to have the other cables and equipment.

Programming console PC-03B (option)
Power supply for feed Single-phase AC200V
Touch panel TP-01 (option)
Laptop computer (prepared by customers)
Standard accessories
User control panel
DC24V PLC, etc
Terminal block
Connector
Power supply for spindle Three-phase AC200V

① Power cable (UC-81A) ··········· 0.7m
② Power cable for feed motor ······· 5m
③ Signaling cable for feed motor ···· 5m
④ I/O cable (UC-81A) ·············· 0.7m
⑤ Power cable (UC-93) ············· 0.7m
⑥ CS sensor cable for spindle motor ·· 5m
⑦ Power cable for spindle motor ······ 5m
⑧ I/O cable (UC-93) ··············· 0.7m
⑨ LS cable for feed motor ·········· 5m
⑩ Analog inputting cable ··········· 0.7m
⑪ Power Cable for holding brake (from②) ··· 1m
(It is available for the specifications of the unit with a holding brake.)
⑫ Controller for feed motor UC-81A
⑬ Inverter for spindle motor UC-93
⑭ Varimec SSV2
⑮ Noise filter
⑯ PC cable A (option) ············· 2m
⑰ Feed motor/LS leading cable ······ 3m
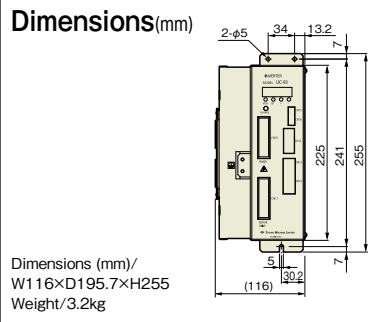⑱ Spindle motor leading cable ······ 0.5m
⑲ Terminal box for relay

Notes 1. The feed controller and the spindle inverter are standard accessories.
2. The programming console and touch panel is optionally available. The attached cable is 3m long.
3. Programming from a computer is possible using a ⑯ PC cable A. In such case, a dedicated computer monitoring software is required.
Working environment: OS Windows 95/98/XP (The mode setting is necessary), Communication interface RS232C-port.

Controller for feed motor UC-81A

Dimensions(mm)

85.5
21.5 64 2-φ5
(2) 40
15
195 211 225
15
32 32 5 7

Dimensions (mm)/
W85.5×D168×H225
Weight/2.1kg

Inverter for spindle motor UC-93

Dimensions(mm)

34 13.2 2-φ5 7
225 241 255
5 20.2 7
(116)

Dimensions (mm)/
W116×D195.7×H255
Weight/3.2kg

Specification of signal

I/O	Signal	Contents
Analog Output	ORD	Command for spindle speed
	COM	Ground of command for spindle speed
Input ※1	IN0	Emergency stop
	IN1	Manual coolant ON/OFF
	IN2	Start up
	IN3	Machine zero return
	IN4	Single step
	IN5	Spindle alarm
	IN6	JOG+
	IN7	JOG−
	IN8	Forward side OT
	IN9	Backward side OT (Combine with origin LS)
	NC	No contact terminal
	IN10	Alarm clear
	IN11	EXT/MANUAL
	IN12	Manual spindle ON/OFF
	IN13	Program 1
	IN14	Program 2
	IN15	Program 4
	IN16	Program 8
	IN17	Program 10
	IN18	Program 20
	IN19	Program 40
	IN20	Program 80

I/O	Signal	Contents
Output ※2	OUT0	RDY
	OUT1	Under Auto Operation
	OUT2	Program end
	OUT3	Origin
	OUT4	Spindle ON
	OUT5	Ready for single step
	OUT6	Coolant ON
	OUT7	Forward Limit ON
	OUT8	Alarm

※1 Voltage: DC24V, Electric current: 10mA
※2 Voltage: DC24V, Electric current: 90mA

Max. Drilling size (mm)

Aluminium
φ12

Steel
φ8

Selfeeder Varimec

SSV3

- Max 10,000min⁻¹
- Multi-spindle heads attachable
- Variable Spindle speed variable type
- Small dia. and deep hole drilling
- Linear guide (JP PAT.)
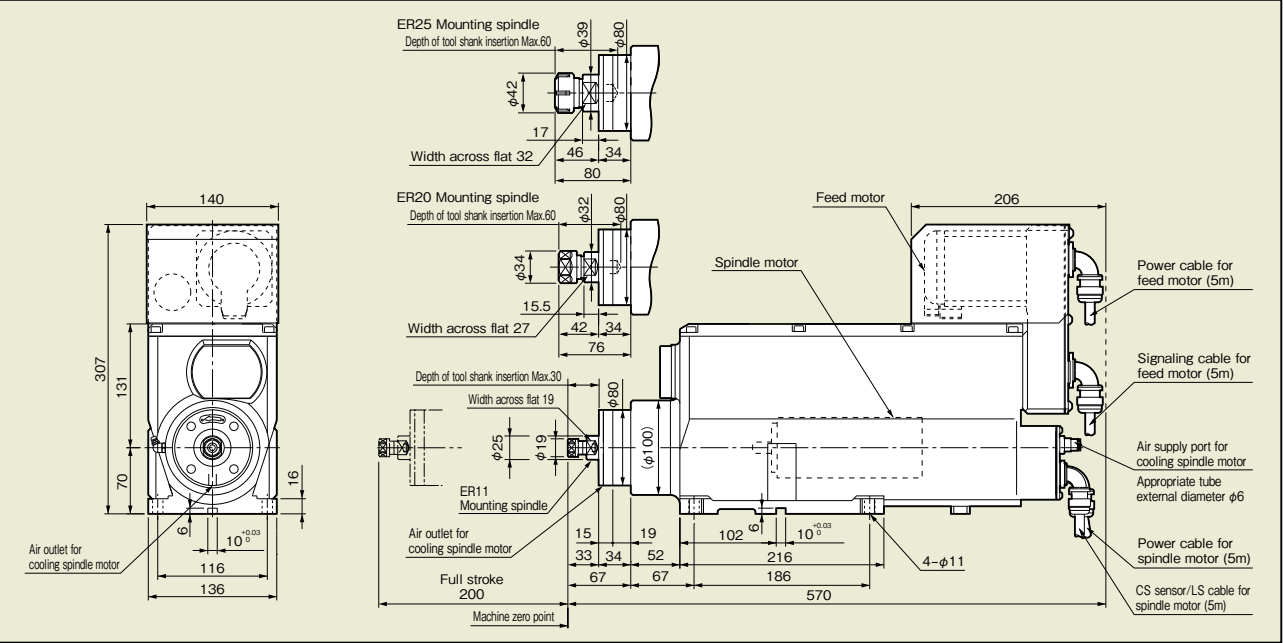- Light & Compact
- Long stroke

Short length, compact sized unit capable to drill small diameter and deep holes.
Well suited unit for designing/producing low cost and flexible drilling machine.

Specification Chart

Specs.	Spindle speed (no load)		Chuck type (Collet chuck)	Chucking capacity	Max. Drilling size			Stroke	Spindle motor	Feed motor	Thrust	Rapid approach speed	Cutting speed	Weight
	50Hz	60Hz			AL* (ADC)	FC* (FC200)	ST* (S45C)							
Model	min⁻¹		—	mm	mm	mm	mm	mm	kW	kW	N	mm/sec	mm/sec	kg
SSV3-7100C	1,000~ 10,000		ER11	0.5~7.0	6.5	5	4	Max. 200	0.4 DC brushless motor	0.4 AC servo motor	1,660	Max. 200	Max. 16.7	43
			ER20	0.5~13.0										
SSV3-1626C	265~ 2,650		ER20	0.5~13.0	12	9	8							
			ER25	0.5~16.0										

Notes 1. To select your model, refer to the workpiece configurations, material, cutting properties, diameter of the hole, and rotation speed.(cutting speed)
2. The drilling capacity shown above is for a depth equivalent to the drill diameter times two.
3. The power voltage of the main spindle inverter is a 3-phase 200V AC±10%, 50/60Hz. (Feeding axis controller is single-phase.)
4. In the case of a servo motor with a holding brake (optional), add "B" to the end of the model number.
5. AL*···Aluminium, FC*···Cast Iron, ST*···Steel

Dimensions (mm)

ER25 Mounting spindle
Depth of tool shank insertion Max.60
Width across flat 32

ER20 Mounting spindle
Depth of tool shank insertion Max.60
Width across flat 27

Depth of tool shank insertion Max.30
Width across flat 19

ER11 Mounting spindle

Feed motor

Power cable for feed motor (5m)

Signaling cable for feed motor (5m)

Air supply port for cooling spindle motor

Appropriate tube external diameter φ6

Power cable for spindle motor (5m)

CS sensor/LS cable for spindle motor (5m)

Air outlet for cooling spindle motor

Full stroke 200
Machine zero point

Note : Air must be supplied to cool the spindle motor as to protect the spindle bearings. Be sure to supply clean dry air.

SUGINO MACHINE LIMITED

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Adjustable spindle nose (option)

Please specify the adjustable spindle nose when ordering your servo drill.

Sugino supplies adjustable spindle noses other than those shown below, upon request.

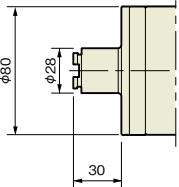| Applicable selfeeder	Fig. No.	Spindle nose model No.
SSV3-7100	1	KH-14AR
SSV3-1626	2	KH-25A

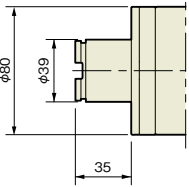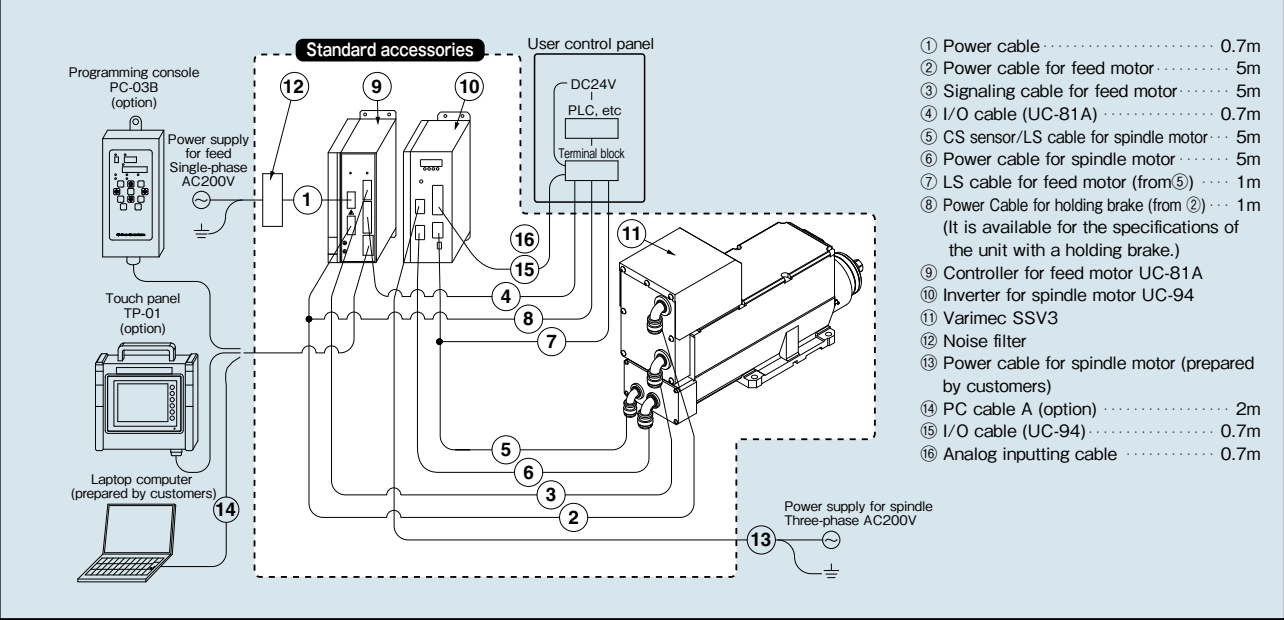### Dimensions(mm)

Fig. 1 KH-14AR   Fig. 2 KH-25A

Note : Spindle noses KH-A model is applicable to the quick change stub holder of KH-A model of NT Tool Co.,Ltd.
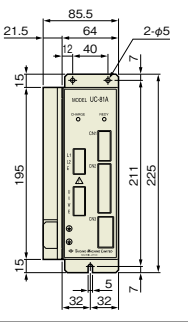
Electric system diagram

All the electric parts supplied as standard are indicated in ⌐ ¬ box.
The purchaser is responsible for and needs to have the other cables and equipment.

① Power cable ················· 0.7m
② Power cable for feed motor ········ 5m
③ Signaling cable for feed motor ····· 5m
④ I/O cable (UC-81A) ··········· 0.7m
⑤ CS sensor/LS cable for spindle motor ·· 5m
⑥ Power cable for spindle motor ····· 5m
⑦ LS cable for feed motor (from⑤) ····· 1m
⑧ Power Cable for holding brake (from ②) ·· 1m
　(It is available for the specifications of
　the unit with a holding brake.)
⑨ Controller for feed motor UC-81A
⑩ Inverter for spindle motor UC-94
⑪ Varimec SSV3
⑫ Noise filter
⑬ Power cable for spindle motor (prepared by customers)
⑭ PC cable A (option) ··········· 2m
⑮ I/O cable (UC-94) ··········· 0.7m
⑯ Analog inputting cable ········· 0.7m

Notes 1. The feed controller and the spindle inverter are standard accessories.
2. The programming console and touch panel is optionally available. The attached cable is 3m long.
3. Programming from a computer is possible using a ⑭ PC cable A. In such case, a dedicated computer monitoring software is required.
Working environment: OS Windows 95/98/XP (The mode setting is necessary), Communication interface RS232C-port.
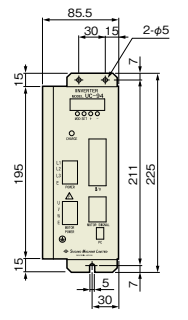
Controller for feed motor UC-81A

Dimensions(mm)

Dimensions (mm)/
W85.5×D168×H225
Weight/2.1kg
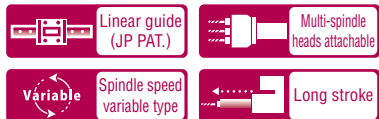
Inverter for spindle motor UC-94

Dimensions(mm)

Dimensions (mm)/
W85.5×D168×H225
Weight/2.1kg

Specification of signal

I/O	Signal	Contents
Analog Output	ORD	Command for spindle speed
	COM	Ground of command for spindle speed
Input ※1	IN0	Emergency stop
	IN1	Manual coolant ON/OFF
	IN2	Start up
	IN3	Machine zero return
	IN4	Single step
	IN5	Spindle alarm
	IN6	JOG+
	IN7	JOG−
	IN8	Forward side OT
	IN9	Backward side OT (Combine with origin LS)
	NC	No contact terminal
	IN10	Alarm clear
	IN11	EXT/MANUAL
	IN12	Manual spindle ON/OFF
	IN13	Program 1
	IN14	Program 2
	IN15	Program 4
	IN16	Program 8
	IN17	Program 10
	IN18	Program 20
	IN19	Program 40
	IN20	Program 80

I/O	Signal	Contents
Output ※2	OUT0	RDY
	OUT1	Under Auto Operation
	OUT2	Program end
	OUT3	Origin
	OUT4	Spindle ON
	OUT5	Ready for single step
	OUT6	Coolant ON
	OUT7	Forward Limit ON
	OUT8	Alarm

※1 Voltage: DC24V, Electric current: 10mA
※2 Voltage: DC24V, Electric current: 90mA

Selfeeder Varimec

SSV4

- Linear guide (JP PAT.)
- Multi-spindle heads attachable
- Variable — Spindle speed variable type
- Long stroke

Max. Drilling size (mm)

Aluminium φ16

Steel φ13

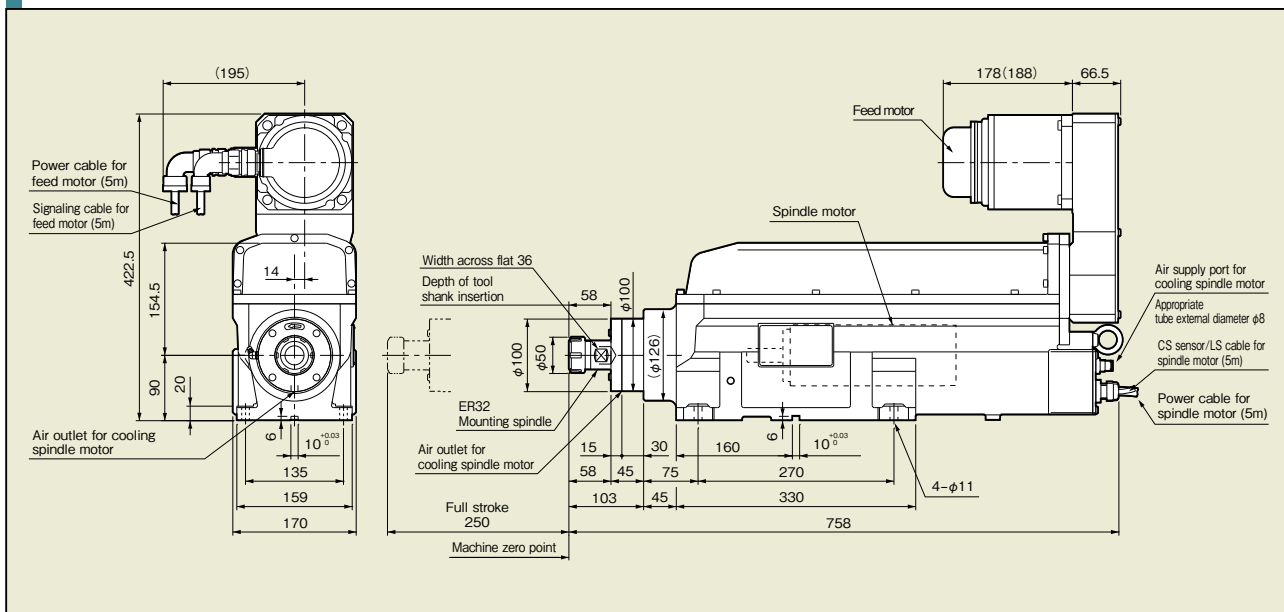Model which has most suitable body structure for doing stepped spot-facing or burnishing drill operations.

Also it is possible to do more high-efficient processing

when you use this drill unit with multi-spindle heads.

Specification Chart

Specs.	Spindle speed (no load)		Chuck type (Collet chuck)	Chucking capacity	Max. Drilling size			Stroke	Spindle motor	Feed motor	Thrust	Rapid approach speed	Cutting speed	Weight
	50Hz	60Hz			AL* (ADC)	FC* (FC200)	ST* (S45C)							
Model	min⁻¹		—	mm	mm	mm	mm	mm	kW	kW	N	mm/sec	mm/sec	kg
SSV4-2070	1,000~ 7,000		ER32	1.0~20.0	9	8	7	Max. 250	1.0 DC brushless motor	1.2 AC servo motor	4,600	Max. 220	Max. 16.7	80
SSV4-2017	250~ 1,750				16	15	13							

Notes 1. To select your model, refer to the workpiece configurations, material, cutting properties, diameter of the hole, and rotation speed.(cutting speed)
2. The drilling capacity shown above is for a depth equivalent to the drill diameter times two.
3. The power voltage of the feed controller and main spindle inverter is a 3-phase 200V AC±10%, 50/60Hz.
4. In the case of a servo motor with a holding brake (optional), add "B" to the end of the model number.
5. AL*···Aluminium, FC*···Cast Iron, ST*···Steel

Dimensions (mm)

Notes 1. In the case of a servo motor with a holding brake (optional), the dimension of the feed motor is different.
2. Air must be supplied to cool the spindle motor as to protect the spindle bearings. Be sure to supply clean dry air.

Adjustable spindle nose (option)

Please specify the adjustable spindle nose when ordering your servo drill.

Sugino supplies adjustable spindle noses other than those shown below, upon request.

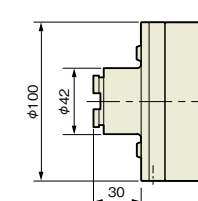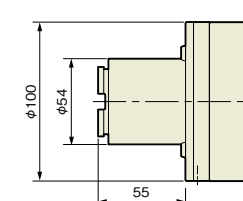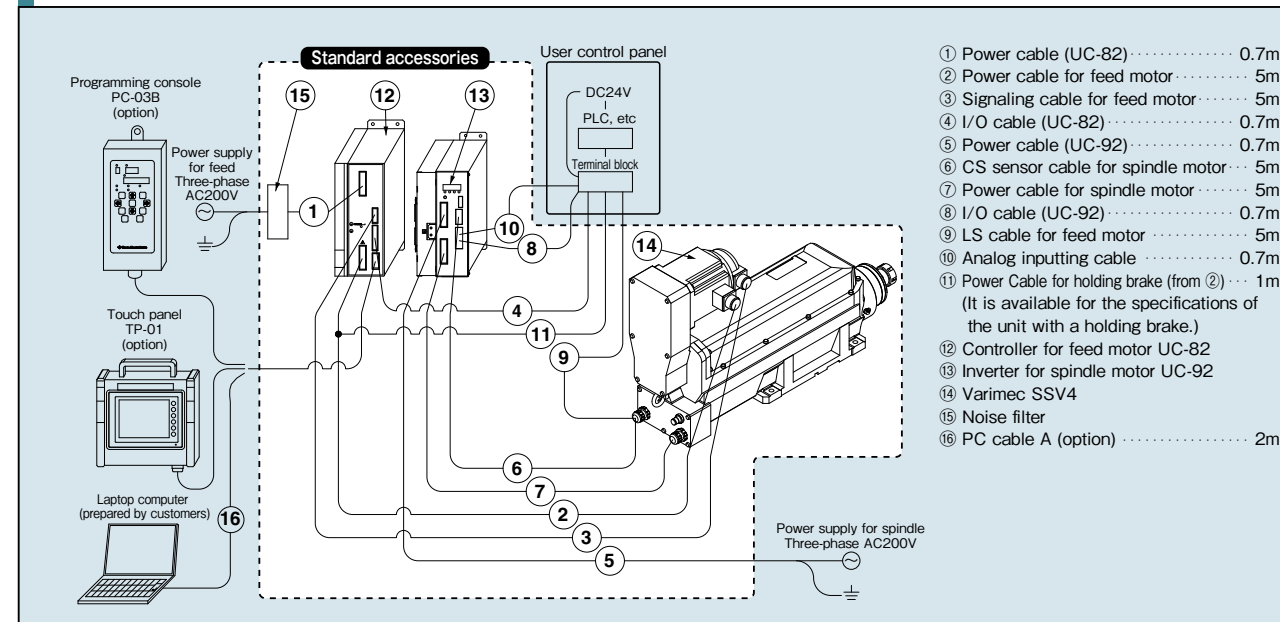| Applicable selfeeder	Fig. No.	Spindle nose model No.
SSV4-2070	1	KH-22A
SSV4-2017	2	KH-32A

Dimensions(mm)

Fig. 1 KH-22A   Fig. 2 KH-32A

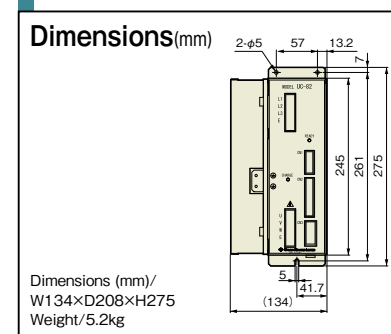Note : Spindle noses KH-A model is applicable to the quick change stub holder of KH-A model of NT Tool Co.,Ltd.

Electric system diagram

All the electric parts supplied as standard are indicated in ⸤ ⸥ box.
The purchaser is responsible for and needs to have the other cables and equipment.

① Power cable (UC-82)·············· 0.7m
② Power cable for feed motor········ 5m
③ Signaling cable for feed motor···· 5m
④ I/O cable (UC-82)·················· 0.7m
⑤ Power cable (UC-92)·············· 0.7m
⑥ CS sensor cable for spindle motor···· 5m
⑦ Power cable for spindle motor······· 5m
⑧ I/O cable (UC-92)·················· 0.7m
⑨ LS cable for feed motor············ 5m
⑩ Analog inputting cable············· 0.7m
⑪ Power Cable for holding brake (from ②)···· 1m
(It is available for the specifications of the unit with a holding brake.)
⑫ Controller for feed motor UC-82
⑬ Inverter for spindle motor UC-92
⑭ Varimec SSV4
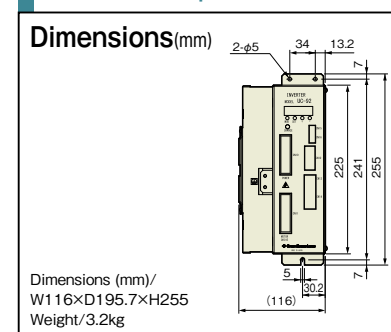⑮ Noise filter
⑯ PC cable A (option) ················ 2m

Notes 1. The feed controller and the spindle inverter are standard accessories.
2. The programming console and touch panel is optionally available. The attached cable is 3m long.
3. Programming from a computer is possible using a ⑯ PC cable A. In such case, a dedicated computer monitoring software is required.
Working environment: OS Windows 95/98/XP (The mode setting is necessary), Communication interface RS232C-port.

Controller for feed motor UC-82

Dimensions(mm)

Dimensions (mm)/
W134×D208×H275
Weight/5.2kg

Inverter for spindle motor UC-92

Dimensions(mm)

Dimensions (mm)/
W116×D195.7×H255
Weight/3.2kg

Specification of signal

I/O	Signal	Contents
Analog Output	ORD	Command for spindle speed
	COM	Ground of command for spindle speed
Input ※1	IN0	Emergency stop
	IN1	Manual coolant ON/OFF
	IN2	Start up
	IN3	Machine zero return
	IN4	Single step
	IN5	Spindle alarm
	IN6	JOG+
	IN7	JOG−
	IN8	Forward side OT
	IN9	Backward side OT (Combine with origin LS)
	NC	No contact terminal
	IN10	Alarm clear
	IN11	EXT/MANUAL
	IN12	Manual spindle ON/OFF
	IN13	Program 1
	IN14	Program 2
	IN15	Program 4
	IN16	Program 8
	IN17	Program 10
	IN18	Program 20
	IN19	Program 40
	IN20	Program 80

I/O	Signal	Contents
Output ※2	OUT0	RDY
	OUT1	Under Auto Operation
	OUT2	Program end
	OUT3	Origin
	OUT4	Spindle ON
	OUT5	Ready for single step
	OUT6	Coolant ON
	OUT7	Forward Limit ON
	OUT8	Alarm

※1 Voltage: DC24V, Electric current: 10mA
※2 Voltage: DC24V, Electric current: 90mA

Max. Drilling size (mm)

Aluminium ϕ25

Steel ϕ18

Selfeeder varimec

Selfeeder Mechatric

CNC Turret Head

Data input system / other attachments

Selfeeder Varimec

SSV5

- Linear guide (JP PAT.)
- Multi-spindle heads attachable
- Variable Spindle speed variable type
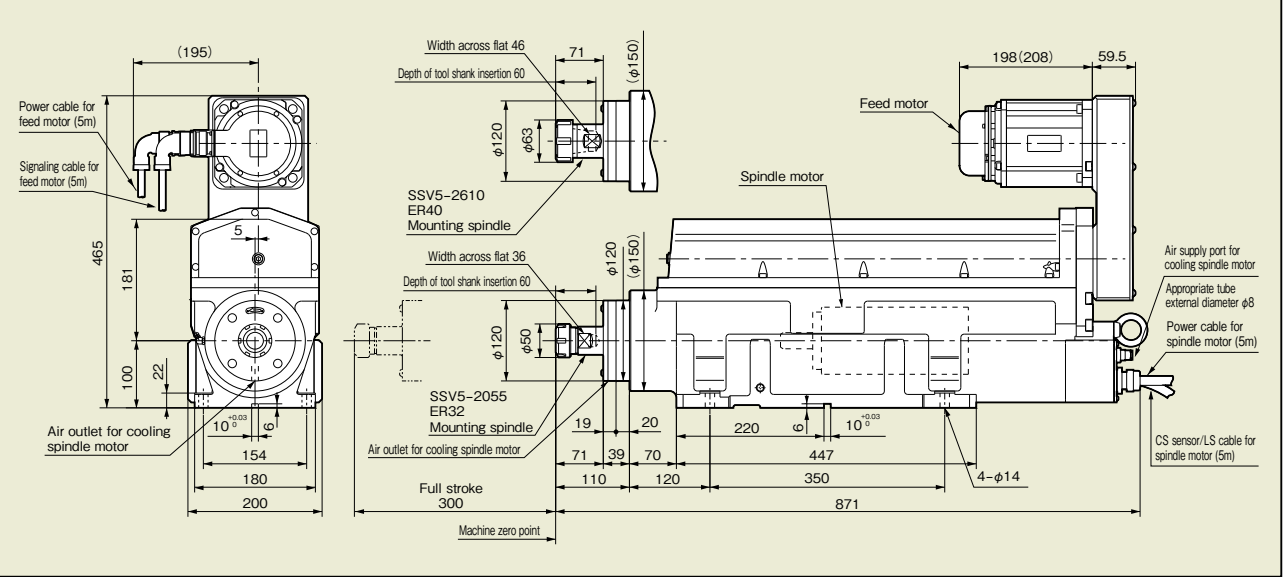- Long stroke
- Large dia. drilling

High-power model which has 1.6kW spindle motor and 7,700N thrust.
It is capable of end-mill, facing or 18mm diameter drilling operations into steel material utilizing a unique linear guide system (JP PAT.).

Specification Chart

Specs. Model	Spindle speed (no load) 50Hz	60Hz	Chuck type (Collet chuck)	Chucking capacity	Max. Drilling size AL* (ADC)	FC* (FC200)	ST* (S45C)	Stroke	Spindle motor	Feed motor	Thrust	Rapid approach speed	Cutting speed	Weight
	min⁻¹		—	mm	mm	mm	mm	mm	kW	kW	N	mm/sec	mm/sec	kg
SSV5-2055	800~	5,500	ER32	1.0~20.0	14.5	11.5	9.5	Max. 300	1.6 DC brushless motor	2.7 AC servo motor	7,760	Max. 300	Max. 16.7	100
SSV5-2610	150~	1,010	ER40	2.0~30.0	25	20.5	18							

Notes 1. To select your model, refer to the workpiece configurations, material, cutting properties, diameter of the hole, and rotation speed.(cutting speed)
2. The drilling capacity shown above is for a depth equivalent to the drill diameter times two.
3. The power voltage of the feed controller and main spindle inverter is a 3-phase 200V AC±10%, 50/60Hz.
4. In the case of a servo motor with a holding brake (optional), add "B" to the end of the model number.
5. AL*···Aluminium, FC*···Cast Iron, ST*···Steel

Dimensions (mm)

Notes 1. In the case of a servo motor with a holding brake (optional), the dimension of the feed motor is different.
2. Air must be supplied to cool the spindle motor as to protect the spindle bearings. Be sure to supply clean dry air.

Adjustable spindle nose (option)

Please specify the adjustable spindle nose when ordering your servo drill.
Sugino supplies adjustable spindle noses other than those shown below, upon request.

Dimensions(mm)

Fig. 1 KH-32A

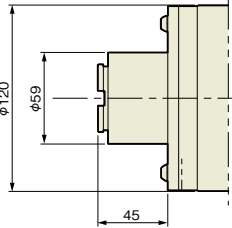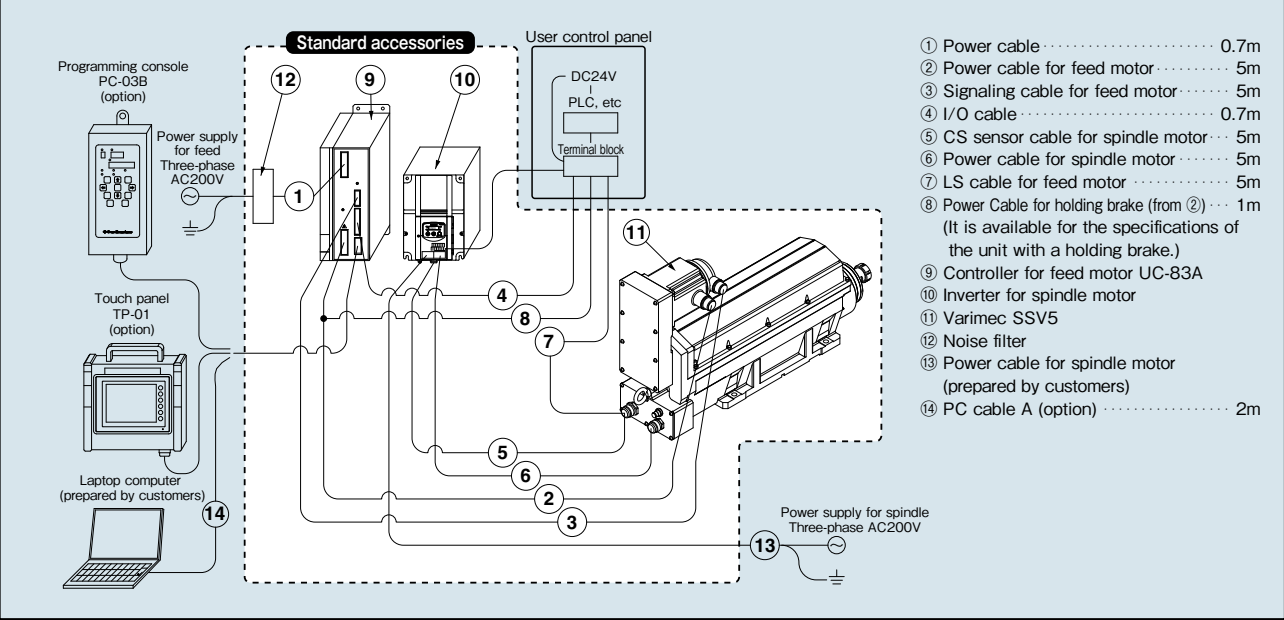| Applicable selfeeder	Fig. No.	Spindle nose model No.
SSV5-2055	1	KH-32A
SSV5-2610		

Note : Spindle noses KH-A model is applicable to the quick change stub holder of KH-A model of NT Tool Co.,Ltd.
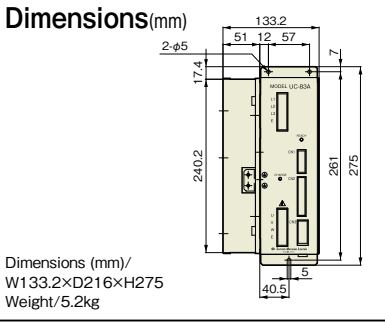
Electric system diagram

All the electric parts supplied as standard are indicated in ┌┈┈┐ box.
The purchaser is responsible for and needs to have the other cables and equipment.

① Power cable ························ 0.7m
② Power cable for feed motor ········· 5m
③ Signaling cable for feed motor ······ 5m
④ I/O cable ························· 0.7m
⑤ CS sensor cable for spindle motor ··· 5m
⑥ Power cable for spindle motor ······· 5m
⑦ LS cable for feed motor ············ 5m
⑧ Power Cable for holding brake (from ②) · 1m
   (It is available for the specifications of the unit with a holding brake.)
⑨ Controller for feed motor UC-83A
⑩ Inverter for spindle motor
⑪ Varimec SSV5
⑫ Noise filter
⑬ Power cable for spindle motor (prepared by customers)
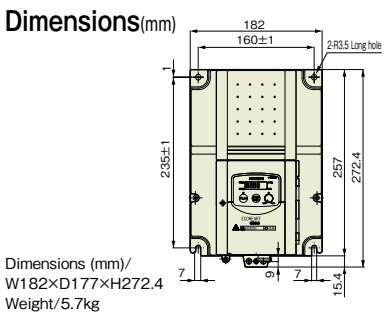⑭ PC cable A (option) ··············· 2m

Notes 1. The feed controller and the spindle inverter are standard accessories.
2. The programming console and touch panel is optionally available. The attached cable is 3m long.
3. Programming from a computer is possible using a ⑭ PC cable A. In such case, a dedicated computer monitoring software is required.
Working environment: OS Windows 95/98/XP (The mode setting is necessary), Communication interface RS232C-port.

Controller for feed motor UC-83A

Dimensions(mm)

Dimensions (mm)/
W133.2×D216×H275
Weight/5.2kg

Inverter for spindle motor E100-075LFR2

Dimensions(mm)

Dimensions (mm)/
W182×D177×H272.4
Weight/5.7kg

Specification of signal

I/O	Signal	Contents
Analog Output	ORD	Command for spindle speed
	COM	Ground of command for spindle speed
Input ※1	IN0	Emergency stop
	IN1	Manual coolant ON/OFF
	IN2	Start up
	IN3	Machine zero return
	IN4	Single step
	IN5	Spindle alarm
	IN6	JOG+
	IN7	JOG−
	IN8	Forward side OT
	IN9	Backward side OT (Combine with origin LS)
	NC	No contact terminal
	IN10	Alarm clear
	IN11	EXT/MANUAL
	IN12	Manual spindle ON/OFF
	IN13	Program 1
	IN14	Program 2
	IN15	Program 4
	IN16	Program 8
	IN17	Program 10
	IN18	Program 20
	IN19	Program 40
	IN20	Program 80

I/O	Signal	Contents
Output ※2	OUT0	RDY
	OUT1	Under Auto Operation
	OUT2	Program end
	OUT3	Origin
	OUT4	Spindle ON
	OUT5	Ready for single step
	OUT6	Coolant ON
	OUT7	Forward Limit ON
	OUT8	Alarm

※1 Voltage: DC24V, Electric current: 10mA
※2 Voltage: DC24V, Electric current: 90mA

Selfeeder Mechatric

SSM4

Max. Drilling size (mm)

Aluminium φ16

Steel φ11

- Multi-spindle heads attachable
- Variable — Spindle speed variable type
- Small dia. and deep hole drilling
- Coolant center-through

Most suitable unit for doing small diameter and deep hole drilling. The spindle rotation speed is easily adjusted in the program.

It can utilize coolant center-through tooling specification as an option for doing more high-efficient processing.

Specification Chart

Specs. Model	Spindle speed (no load) 50Hz	60Hz	Chuck type (Collet chuck)	Chucking capacity	Max. Drilling size AL* (ADC)	FC* (FC200)	ST* (S45C)	Stroke	Spindle motor	Feed motor	Thrust	Rapid approach speed	Cutting speed	Weight
	min⁻¹	—		mm	mm	mm	mm	mm	kW	kW	N	mm/sec	mm/sec	kg
SSM4-1673	1,470~ 7,320				6	5	4		0.75 DC brushless motor Rated speed 3,600min⁻¹					
SSM4-1636	720~ 3,600		ER25	0.5~16	8	7	6	Max. 150		0.4 AC servo motor	2,320	Max. 150	Max. 16.7	60
SSM4-1618	360~ 1,800				11	9	8		0.75 DC brushless motor Rated speed 1,800min⁻¹					
SSM4-1608	180~ 880				16	12	11							

Notes 1. To select your model, refer to the workpiece configurations, material, cutting properties, diameter of the hole, and rotation speed.(cutting speed)
2. The drilling capacity shown above is for a depth equivalent to the drill diameter times two.
3. The power voltage of the main spindle inverter is a 3-phase 200V AC±10%, 50/60Hz. (Feeding axis controller is single-phase.)
4. In the case of a servo motor with a holding brake (optional), add "B" to the end of the model number.
5. "CL" is added to the end of model No. for coolant center-through specification.
6. AL*···Aluminium, FC*···Cast Iron, ST*···Steel

Dimensions (mm)
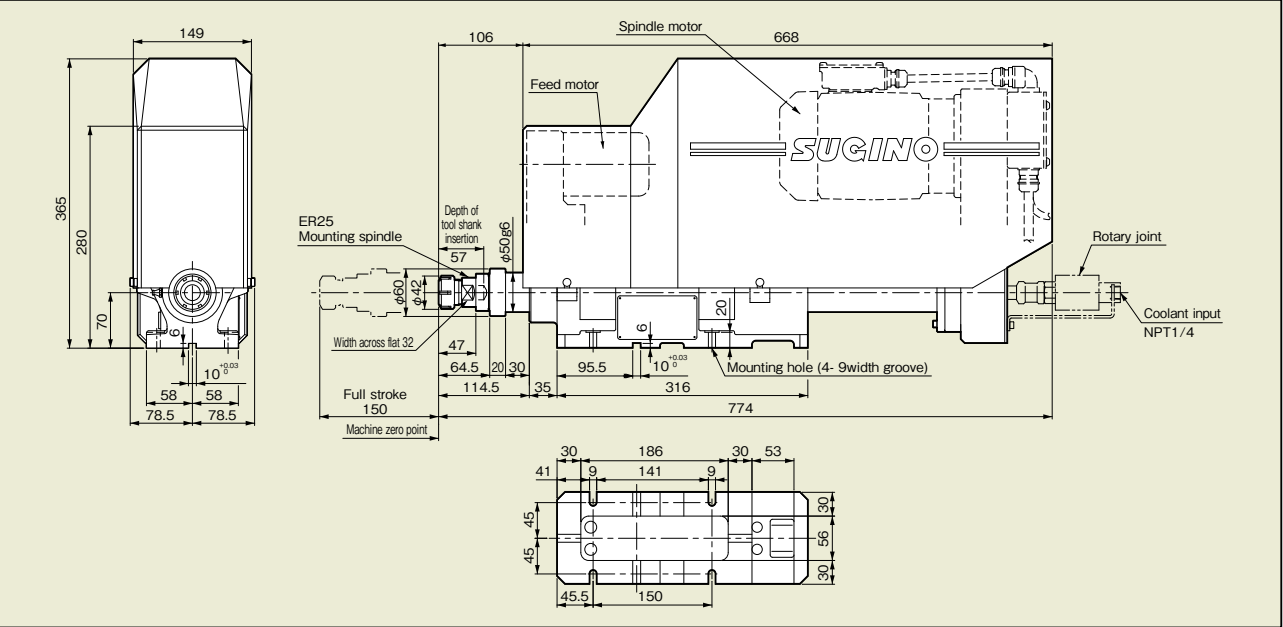
Notes 1. Rotary joint is included in the standard supply for coolant center-through specification.
2. In case that coolant center-through specification is adopted, the figure and size of spindle noses will be changed. For details, please contact sales office.

Adjustable spindle nose (option)

Please specify the adjustable spindle nose when ordering your servo drill.

Sugino supplies adjustable spindle noses other than those shown below, upon request.

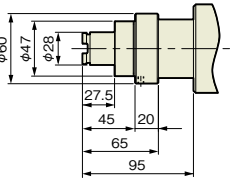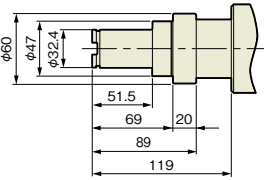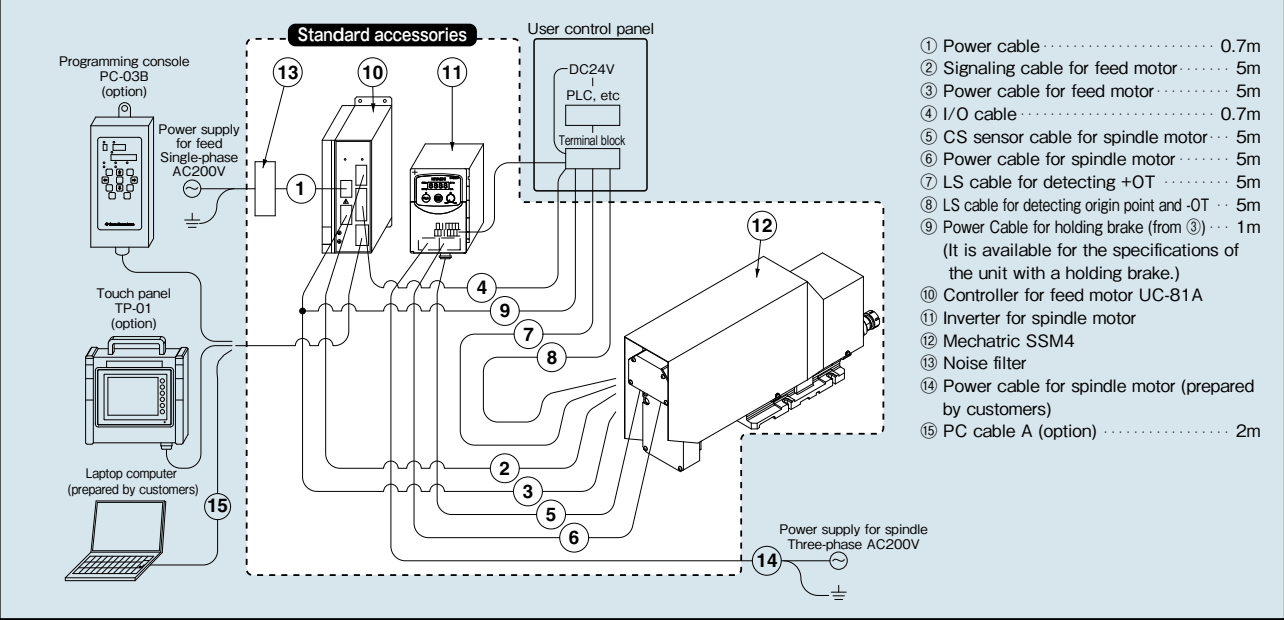| Applicable selfeeder	Fig. No.	Spindle nose model No.
SSM4-1673、SSM4-1636	1	KH-16A
SSM4-1618、SSM4-1608	2	KH-22A

Dimensions(mm)

Fig. 1 KH-16A   Fig. 2 KH-22A

Note : Spindle noses KH-A model is applicable to the quick change stub holder of KH-A model of NT Tool Co.,Ltd.
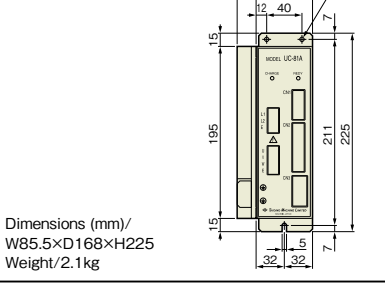
Electric system diagram

All the electric parts supplied as standard are indicated in 〔 〕 box.
The purchaser is responsible for and needs to have the other cables and equipment.

① Power cable ························· 0.7m
② Signaling cable for feed motor ······· 5m
③ Power cable for feed motor ········· 5m
④ I/O cable ························· 0.7m
⑤ CS sensor cable for spindle motor ··· 5m
⑥ Power cable for spindle motor ······· 5m
⑦ LS cable for detecting +OT ········· 5m
⑧ LS cable for detecting origin point and -OT ··· 5m
⑨ Power Cable for holding brake (from ③) ··· 1m
(It is available for the specifications of the unit with a holding brake.)
⑩ Controller for feed motor UC-81A
⑪ Inverter for spindle motor
⑫ Mechatric SSM4
⑬ Noise filter
⑭ Power cable for spindle motor (prepared by customers)
⑮ PC cable A (option) ················· 2m

Notes 1. The feed controller and the spindle inverter are standard accessories.
2. The programming console and touch panel is optionally available. The attached cable is 3m long.
3. Programming from a computer is possible using a ⑮ PC cable A. In such case, a dedicated computer monitoring software is required.
Working environment: OS Windows 95/98/XP (The mode setting is necessary), Communication interface RS232C-port.

Controller for feed motor UC-81A

Dimensions(mm)

Dimensions (mm)/ W85.5×D168×H225 Weight/2.1kg

Inverter for spindle motor E100-007LFR2

Dimensions(mm)

Dimensions (mm)/ W84×D137×H129 Weight/0.9kg

Specification of signal

I/O	Signal	Contents
Analog Output	ORD	Command for spindle speed
	COM	Ground of command for spindle speed
Input ※1	IN0	Emergency stop
	IN1	Manual coolant ON/OFF
	IN2	Start up
	IN3	Machine zero return
	IN4	Single step
	IN5	Spindle alarm
	IN6	JOG+
	IN7	JOG−
	IN8	Forward side OT
	IN9	Backward side OT (Combine with origin LS)
	NC	No contact terminal
	IN10	Alarm clear
	IN11	EXT/MANUAL
	IN12	Manual spindle ON/OFF
	IN13	Program 1
	IN14	Program 2
	IN15	Program 4
	IN16	Program 8
	IN17	Program 10
	IN18	Program 20
	IN19	Program 40
	IN20	Program 80

I/O	Signal	Contents
Output ※2	OUT0	RDY
	OUT1	Under Auto Operation
	OUT2	Program end
	OUT3	Origin
	OUT4	Spindle ON
	OUT5	Ready for single step
	OUT6	Coolant ON
	OUT7	Forward Limit ON
	OUT8	Alarm

※1 Voltage: DC24V, Electric current: 10mA
※2 Voltage: DC24V, Electric current: 90mA

Selfeeder Mechatric

SSM5

- Long stroke
- Small dia. and deep hole drilling
- Large dia. drilling
- Coolant center-through
- Linear guide

High-precision and high-rigidity unit which uses united structure of spindle unit and slide table.

It offers high-efficient deep hole drilling because of 300mm long stroke and coolant center-through system.

Specification Chart

Specs.	Spindle speed (no load)		Chuck type (Collet chuck)	Chucking capacity	Max. Drilling size			Stroke	Spindle motor	Feed motor	Thrust	Rapid approach speed	Cutting speed	Weight
	50Hz	60Hz			AL* (ADC)	FC* (FC200)	ST* (S45C)							
Model	min⁻¹		—	mm	mm	mm	mm	mm	kW	kW	N	mm/sec	mm/sec	kg
SSM5-2641BCL	4,100	4,900			8	4	4		2.2 Induction motor					
SSM5-2634BCL	3,400	4,000			9	5	5							
SSM5-2625BCL	2,500	3,000			12	6	6							
SSM5-2621BCL	2,100	2,500			10	5	5			2.7 AC servo motor				
SSM5-2617BCL	1,700	2,000	ER40	10~26	12	6	6	Max. 300	1.5 Induction motor		5,000	Max. 300	Max. 16.7	230
SSM5-2611BCL	1,100	1,300			16	9	8							
SSM5-2607BCL	700	850			19	14	12.5							
SSM5-2604BCL	400	480			19	15	13.5		0.75 Induction motor					
SSM5-2602BCL	220	260			24	21	19							

Notes 1. To select your model, refer to the workpiece configurations, material, cutting properties, diameter of the hole, and rotation speed.(cutting speed)
2. The drilling capacity shown above is for a depth equivalent to the drill diameter times two.
3. The power voltage of the feed controller and main spindle inverter is a 3-phase 200V AC±10%, 50/60Hz.
4. Holding brake is attached to the feed motor.
5. Coolant center-through is used for SSM5 as standard specification. Please direct if you do not need it.
6. AL*···Aluminium, FC*···Cast Iron, ST*···Steel

Dimensions (mm)

Air supply port Rc1/8
ER40 Mounting spindle
Width across flat 55
Spindle motor
φ138
φ93
Depth of tool shank insertion 55
Coolant input NPT1/4
Rotary joint
Feed motor
Full stroke 300
Machine zero point
126
806
1248
510
210
128 128
145 145
195
10 25
5

52 245 245 150 8–φ14
115
115

Note : Rotary joint attaches to SSM5 as standard.

Adjustable spindle nose (option)

Please specify the adjustable spindle nose when ordering your servo drill.

Sugino supplies adjustable spindle noses other than those shown below, upon request.

Applicable selfeeder	Fig. No.	Spindle nose model No.
SSM5-26**BCL	1	KH-32EC

Dimensions(mm)

φ18
φ53
25
98
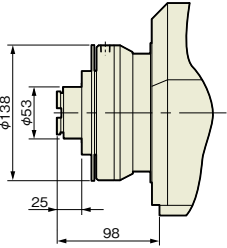
Fig. 1 KH-32EC

Note : Spindle noses KH-EC model is applicable to the quick change stub holder of KH-EC model of NT Tool Co.,Ltd.

Electric system diagram

All the electric parts supplied as standard are indicated in [ ] box.
The purchaser is responsible for and needs to have the other cables and equipment.

Programming console PC-03B (option)
Standard accessories
User control panel
DC24V
PLC, etc
Terminal block
Power supply for feed Three-phase AC200V
Touch panel TP-01 (option)
Laptop computer (prepared by customers)
Power supply for spindle Three-phase AC200V

① Power cable ··················· 0.7m
② Power cable for feed motor ········· 5m
③ Signaling cable for feed motor ······ 5m
④ I/O cable ····················· 0.7m
⑤ LS cable for detecting +OT ········· 5m
⑥ LS cable for detecting origin point and -OT ·· 5m
⑦ Power cable for spindle motor (prepared by customers)
⑧ Power Cable for holding brake (from ②) ··· 1m
⑨ Controller for feed motor UC-83A
⑩ Mechatric SSM5
⑪ Noise filter
⑫ PC cable A (option) ··············· 2m

Notes 1. The feed controller is standard accessories.
2. The programming console and touch panel is optionally available. The attached cable is 3m long.
3. Programming from a computer is possible using a ⑫ PC cable A. In such case, a dedicated computer monitoring software is required.
Working environment: OS Windows 95/98/XP (The mode setting is necessary), Communication interface RS232C-port.
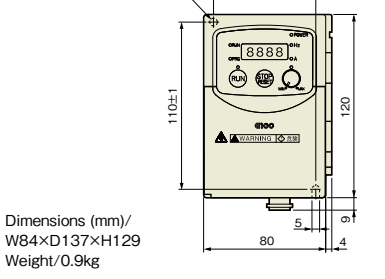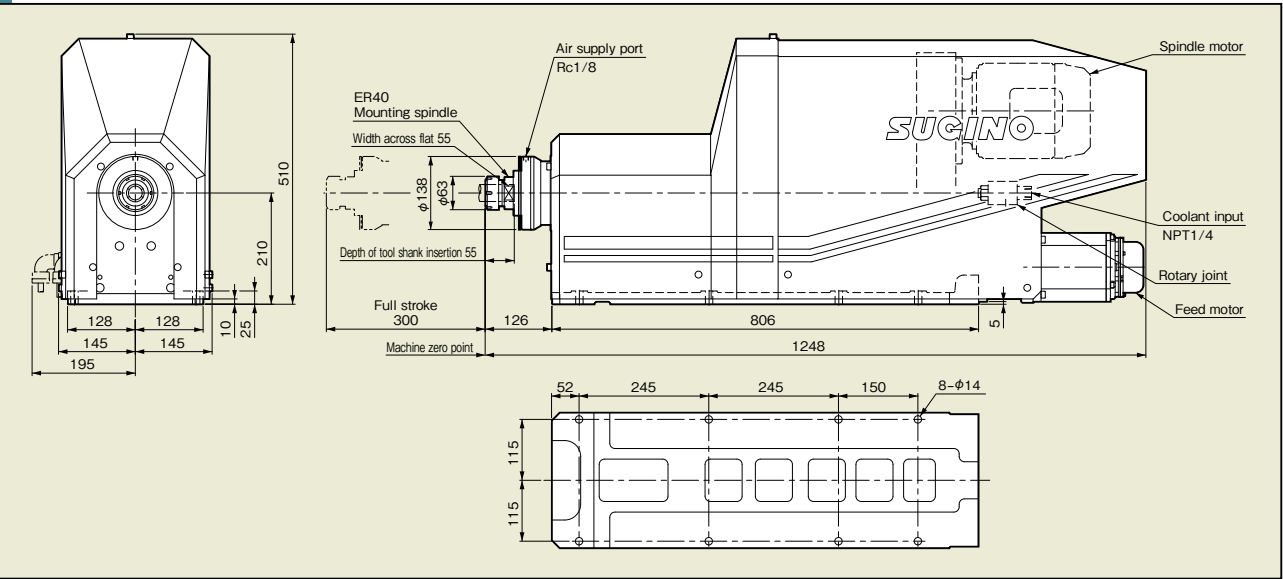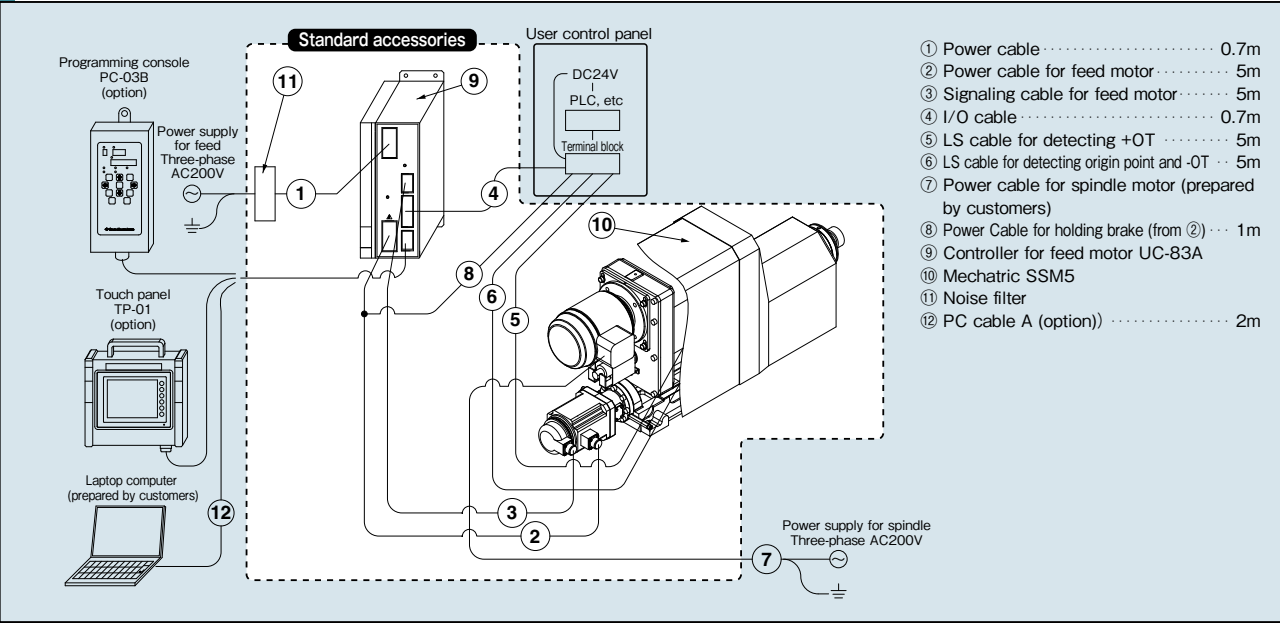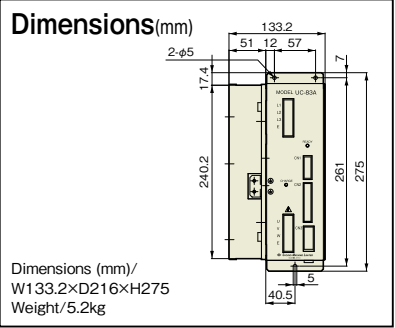
Controller for feed motor UC-83A

Dimensions(mm)

133.2
2-φ5
51 12 57
17.4
7
240.2
261 275
40.5
5

Dimensions (mm)/
W133.2×D216×H275
Weight/5.2kg

Specification of signal

I/O	Signal	Contents		I/O	Signal	Contents
Input ※1	IN0	Emergency stop		Output ※2	OUT0	RDY
	IN1	Manual coolant ON/OFF			OUT1	Under Auto Operation
	IN2	Start up			OUT2	Program end
	IN3	Machine zero return			OUT3	Origin
	IN4	Single step			OUT4	Spindle ON
	IN5	Spindle alarm			OUT5	Ready for single step
	IN6	JOG+			OUT6	Coolant ON
	IN7	JOG−			OUT7	Forward Limit ON
	IN8	Forward side OT			OUT8	Alarm
	IN9	Backward side OT (Combine with origin LS)				
	NC	No contact terminal				
	IN10	Alarm clear				
	IN11	EXT/MANUAL				
	IN12	Manual spindle ON/OFF				
	IN13	Program 1				
	IN14	Program 2				
	IN15	Program 4				
	IN16	Program 8				
	IN17	Program 10				
	IN18	Program 20				
	IN19	Program 40				
	IN20	Program 80				

※1 Voltage: DC24V, Electric current: 10mA
※2 Voltage: DC24V, Electric current: 90mA

Selfeeder Mechatric

MS3P

- Multi-spindle heads attachable
- Small dia. and deep hole drilling
- Round shaped body

Most suitable unit for doing small diameter/deep hole drilling or high-precision drilling with carbide tooling.

Easy unit replacement on operations originally utilizing Selfeeder "Electric" types because it uses the same "circular body style".

Specification Chart

Specs. Model	Spindle speed (no load) 50Hz	60Hz	Chuck type (Collet chuck)	Chucking capacity	Max. Drilling size AL* (ADC)	FC* (FC200)	ST* (S45C)	Stroke	Spindle motor	Feed motor	Thrust	Rapid approach speed	Cutting speed	Weight
	min⁻¹		—	mm	mm	mm	mm	mm	kW	kW	N	mm/sec	mm/sec	kg
MS3P-3075LLZ	7.500	9,000	ER11	0.5~7	3	1.5	1.5		0.35 2P Induction motor	0.4 AC servo motor	1,760	Max. 200	Max. 16.7	34
MS3P-3060LLZ	6,000	7,200			4	1.5	1.5							
MS3P-6049LLZ	4,900	5,900			5	2	2							
MS3P-6034LLZ	3,400	4,100			7	3	3							
MS3P-1326LLZ	2,600	3,200	ER20	0.5~13	7.5	3.5	3.5	150						
MS3P-1318LLZ	1,800	2,200			8.5	5	4							
MS3P-1314LLZ	1,400	1,700			9.5	6	6		0.35 6P Induction motor					35
MS3P-1310LLZ	1,000	1,200			10	8	7							
MS3P-1307LLZ	700	800			12	9	8							
MS3P-1306LLZ	600	700			13.5	10.5	9							
MS3P-1305LLZ	500	600			14	12	10							

Notes 1. To select your model, refer to the workpiece configurations, material, cutting properties, diameter of the hole, and rotation speed.(cutting speed)
2. The drilling capacity shown above is for a depth equivalent to the drill diameter times two.
3. The power voltage of the main spindle motor is a 3-phase 200V AC±10%, 50/60Hz. (Feeding axis controller is single-phase.)
4. In the case of a servo motor with a holding brake (optional), add "B" to the end of the model number.
5. AL*···Aluminium, FC*···Cast Iron, ST*···Steel

Dimensions (mm)

Width across flat 12
MS3P-30**LLZ
MS3P-60**LLZ
ER11 Mounting spindle
Depth of tool shank insertion Max.23

MS3P-13**LLZ
ER20 Mounting spindle
Depth of tool shank insertion Max.41.5

Spindle motor
Feed motor
Power cable connection port G1/2

Clamping range 186
Drain Hole
Full stroke 150
Machine zero point
Signaling cable for feed motor (5m included as standard)

Model Symbol	A	B
MS3P-3075LLZ MS3P-3060LLZ MS3P-6049LLZ MS3P-6034LLZ MS3P-1326LLZ MS3P-1318LLZ	373	265
MS3P-1314LLZ MS3P-1310LLZ MS3P-1307LLZ MS3P-1306LLZ MS3P-1305LLZ	438	330

Note : Please do not clamp over or plug the drain hole, and install the selfeeder to adjust the drain hole facing down.

Selfeeder Mechatric

MS7

- Multi-spindle heads attachable
- Long stroke
- Large dia. drilling

High-power model which has a 3.7kW spindle motor and 7,800N thrust.

It can do facing, end-milling and 28mm diameter drilling operations into steel material.

Specification Chart

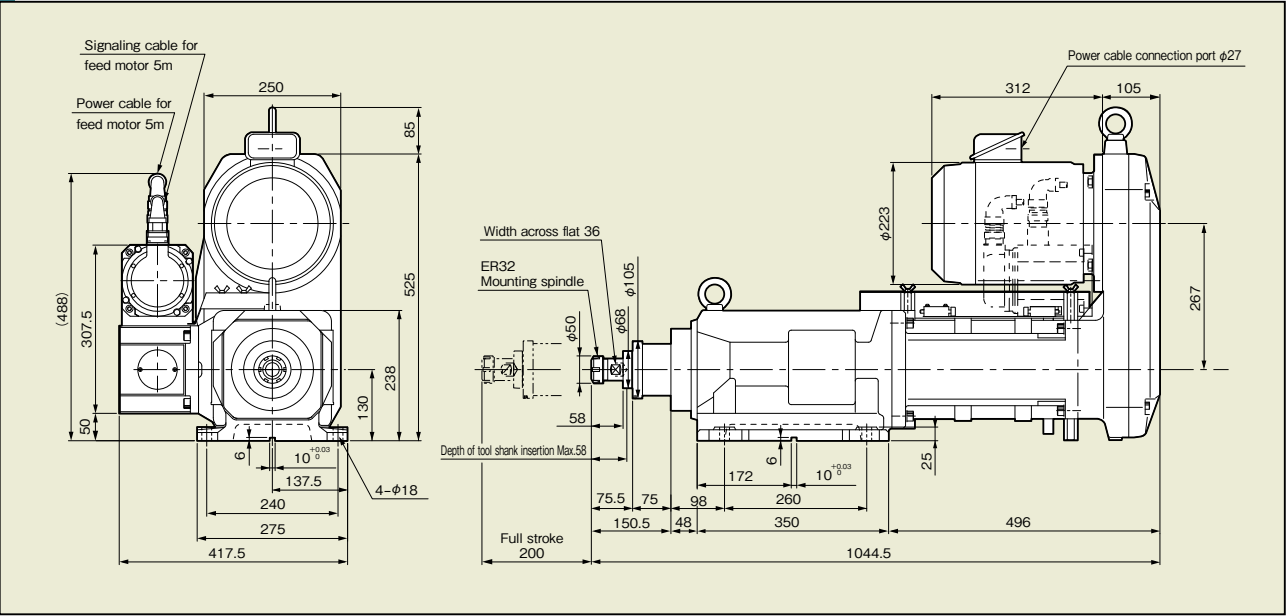| Specs. Model	Spindle speed (no load) 50Hz	60Hz	Chuck type (Collet chuck)	Chucking capacity	Max. Drilling size AL* (ADC)	FC* (FC200)	ST* (S45C)	Stroke	Spindle motor	Feed motor	Thrust	Rapid approach speed	Cutting speed	Weight
	min⁻¹		—	mm	mm	mm	mm	mm	kW	kW	N	mm/sec	mm/sec	kg
MS7-3229	2,900	3,500	ER32	1.0~20	11	4	3	200	3.7 4P Induction motor	2.7 AC servo motor	7,800	Max. 298	Max. 16.7	270
MS7-3222	2,200	2,700			13	5	4							
MS7-3215	1,500	1,800			17	7	6							
MS7-3210	1,000	1,200			20	14	12		2.2 6P Induction motor					
MS7-3206	650	800			25	19	16							
MS7-3205	500	600			31	24	21							
MS7-3203	340	410			40	32	28							

Notes 1. To select your model, refer to the workpiece configurations, material, cutting properties, diameter of the hole, and rotation speed.(cutting speed)
2. The drilling capacity shown above is for a depth equivalent to the drill diameter times two.
3. The power voltage of the feed controller and main spindle motor is a 3-phase 200V AC±10%, 50/60Hz.
4. In the case of a servo motor with a holding brake (optional), add "B" to the end of the model number.
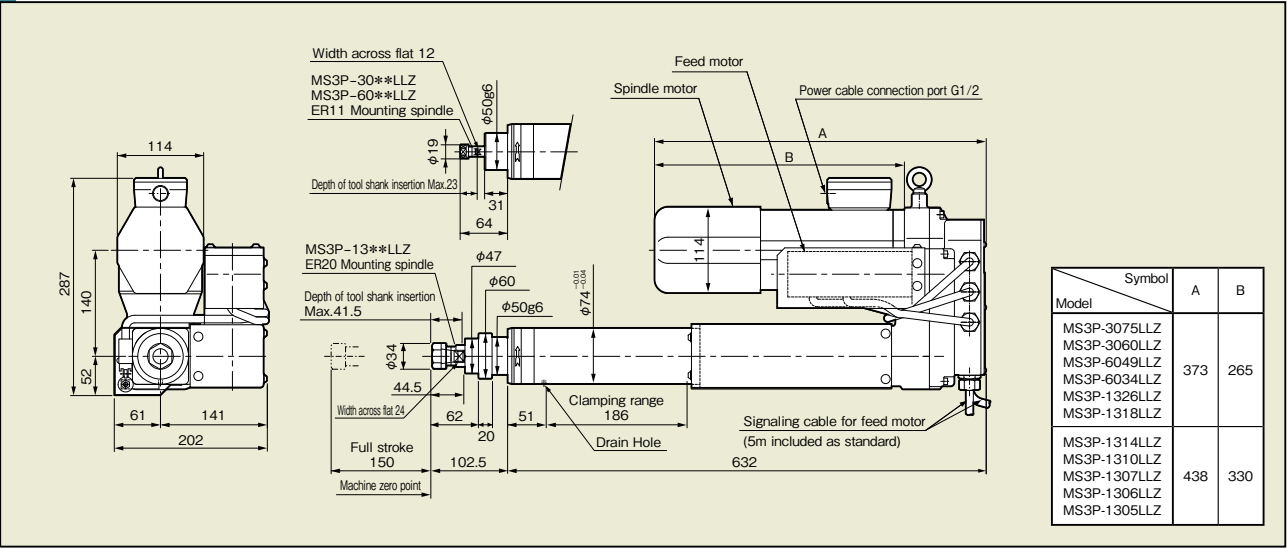5. AL*···Aluminium, FC*···Cast Iron, ST*···Steel

Dimensions (mm)

Signaling cable for feed motor 5m
Power cable for feed motor 5m
Power cable connection port φ27

Width across flat 36
ER32 Mounting spindle
Depth of tool shank insertion Max.58

Full stroke 200

Max. Drilling size (mm)

Aluminium
φ12

Steel
φ8

CNC Turret Head

4TH3S

- Linear guide (JP PAT.)
- Compact
- Variable Spindle speed variable type
- 4-spindle Turret

Compact sized turret which uses a Selfeeder "Varimec" as a drive unit. It has a tool change function so 1 machine can do 4 types of operations.

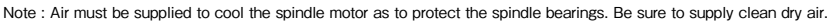Also it is useful for using by "automatic drilling machine style with tool change system".

Specification Chart

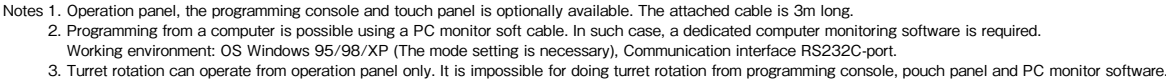| Specs.	Spindle speed (no load)		Chuck type (Collet chuck)	Chucking capacity	Max. Drilling size			Stroke	Spindle motor	Feed motor	Thrust	Rapid approach speed	Cutting speed	Indexing time		Weight
	50Hz	60Hz			AL* (ADC)	FC* (FC200)	ST* (S45C)							50Hz	60Hz	
Model	min⁻¹		—	mm	mm	mm	mm	mm	kW	kW	N	mm/sec	mm/sec	sec	sec	kg
4TH3S + SSV3-7100THB	1,000~ 7,000		Stub holder [KH-20E / NT tool]	2.6~9.0	6.5	5	4	Max. 200	0.4 DC brushless motor	0.4 AC servo motor	1,660	Max. 200	Max. 16.7	0.9	0.8	73
4TH3S + SSV3-1626THB	265~ 2,650				12	9	8									
4TH3S + SSV4-2070THB	1,000~ 7,000				9	8	7	Max. 250	1.0 DC brushless motor	1.2 AC servo motor	4,600	Max. 220				110

Notes 1. To select your model, refer to the workpiece configurations, material, cutting properties, diameter of the hole, and rotation speed.(cutting speed)
2. The drilling capacity shown above is for a depth equivalent to the drill diameter times two.
3. Indexing time is the time for turret rotation. It does not including the time of spindle start and stop.
4. When you install this turret head into SSV3-7100THB, please set "under 7,000min⁻¹" for spindle rotation speed.
5. Holding brake is attached to the feed motor.
6. AL*···Aluminium, FC*···Cast Iron, ST*···Steel

Dimensions (mm)

SSV3 install model

SSV4 install model

Note : Air must be supplied to cool the spindle motor as to protect the spindle bearings. Be sure to supply clean dry air.
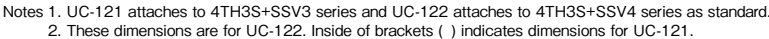
Electric system diagram

All the electric parts supplied as standard are indicated in [ ] box.
The purchaser is responsible for and needs to have the other cables and equipment.

① Turret head (4TH3S)
② Controller (UC-121, UC-122)
③ Power cable for indexing motor ········ 5m
④ LS cable ···························· 5m
⑤ Proximity switch cable ··········· 5m
⑥ Sequencer
⑦ Terminal board for input signal and main power
⑧ selfeeder 〈varimec〉
⑨ Controller for feed motor
⑩ Inverter for spindle motor
⑪ Power cable for feed motor ········ 5m
⑫ Signaling cable for feed motor ···· 5m
⑬ CS sensor/LS cable for spindle motor ·· 5m
⑭ Power cable for spindle motor ····· 5m
⑮ LS cable for detecting OT in forward direction
⑯ LS cable for detecting OT in backward direction
⑰ I/O cable (feed⇔Sequencer)
⑱ Power cable (Control⇔feed)
⑲ Power Cable for holding brake

Notes 1. Operation panel, the programming console and touch panel is optionally available. The attached cable is 3m long.
2. Programming from a computer is possible using a PC monitor soft cable. In such case, a dedicated computer monitoring software is required. Working environment: OS Windows 95/98/XP (The mode setting is necessary), Communication interface RS232C-port.
3. Turret rotation can operate from operation panel only. It is impossible for doing turret rotation from programming console, pouch panel and PC monitor software.

Operation panel and Controller

Dimensions(mm)

Operation panel OB-11   **Controller UC-121 (for SSV3) UC-122 (for SSV4)**

Notes 1. UC-121 attaches to 4TH3S+SSV3 series and UC-122 attaches to 4TH3S+SSV4 series as standard.
2. These dimensions are for UC-122. Inside of brackets ( ) indicates dimensions for UC-121.

Specification of signal

I/O	Signal	Contents
Input ※1	X110	Power "ON"
	X111	Machine zero return
	X112	Emergency stop
	X113	Alarm clear
	X114	Start up
	X115	Turret Indexing
	X116	Spare
	X117	Spare
Output ※2	Y50	All origin position
	Y51	Selfeeder Origin
	Y52	Turret cam Origin
	Y53	Program end
	Y54	Alarm
	Y55	Run
	Y56	Spare
	Y57	Spare
Power	+24V	External I/O power DC24V
	0V	External I/O power 0V

※1 Voltage: DC24V±10%, Electric current: less or equal 7mA
※2 Voltage: DC24V, Electric current: less or equal 100mA

Application

Automatic drilling machine utilizing 4TH3S

CNC Turret Head

4TH5

| Linear guide | Spindle speed variable type |
| 4-spindle Turret | Rigid tapping |

Max. Drilling size (mm)
Aluminium φ20
Steel φ13

Max. Tapping size (mm)
Aluminium M16
Steel M12

Designed to integratge onto space-saving and high-efficient production machines,

the versatile it can combine plural kinds of process like facing, drilling, chamfering, tapping and other kinds of processing.

Specification Chart

Specs.	Spindle speed (no load)		Chuck type (Collet chuck)	Chucking capacity	Max. Drilling/Tapping size			Stroke	Spindle motor	Feed motor	Thrust	Rapid approach speed	Indexing time		Weight
	50Hz	60Hz			AL* (ADC)	FC* (FC200)	ST* (S45C)						50Hz	60Hz	
Model	min⁻¹		—	mm	mm	mm	mm	mm	kW	kW	N	mm/sec	sec	sec	kg
4TH5-1660	Max.6,000		Stub holder [KH-25E NT tool]	3.6~16.0	14	11	9.5	Max. 200	2.0 AC servo motor	1.2 AC servo motor	Max. 1,960	Max. 500	1.2	1.0	260
					M10	M8	M8								
4TH5-1612	Max.1,200				20	15	13								280
					M16	M12	M12								

Notes 1. To select your model, refer to the workpiece configurations, material, cutting properties, diameter of the hole, and rotation speed.(cutting speed)
2. The upper row of the maximum drilling/tapping capacity section shows the maximum drilling capacity. And lower row shows the maximum tapping capacity.
3. The drilling capacity shown above is for a depth equivalent to the drill diameter times two. A spiral type or point type tapping tool is used for the tapping capacity section. Tapping capacities are conditional on the depth of tapping being limited to 1.5 times the tap diameter.
4. Holding brake is attached to the feed motor.
5. AL*···Aluminium, FC*···Cast Iron, ST*···Steel

Dimensions (mm)
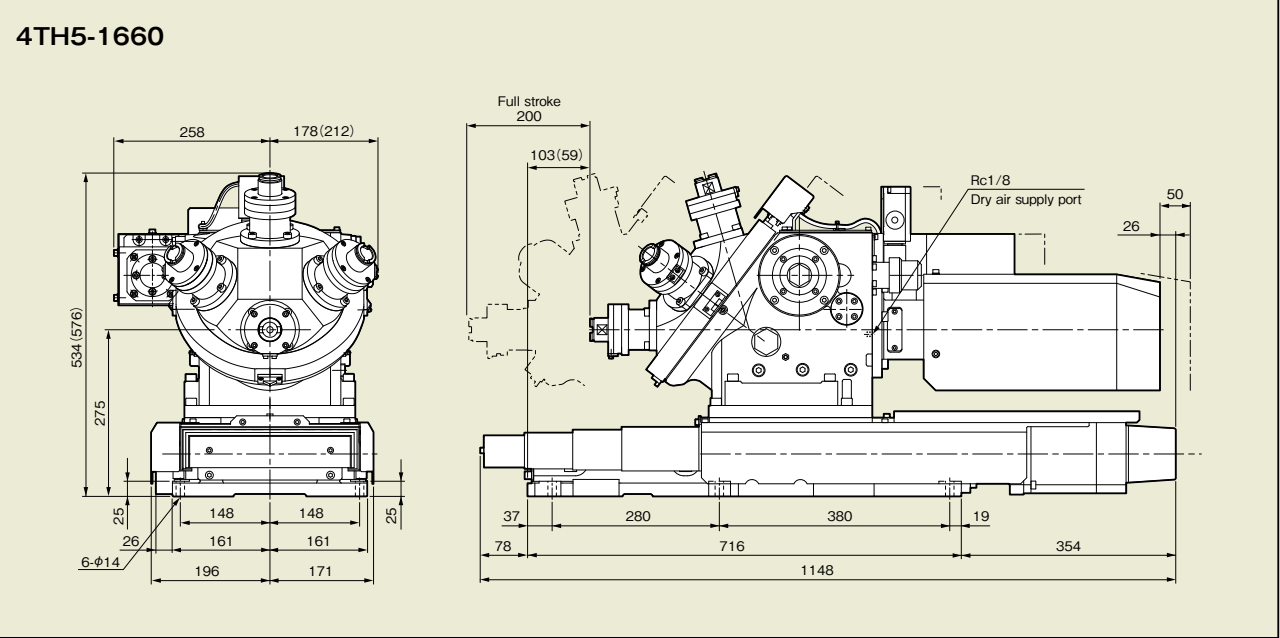
4TH5-1660
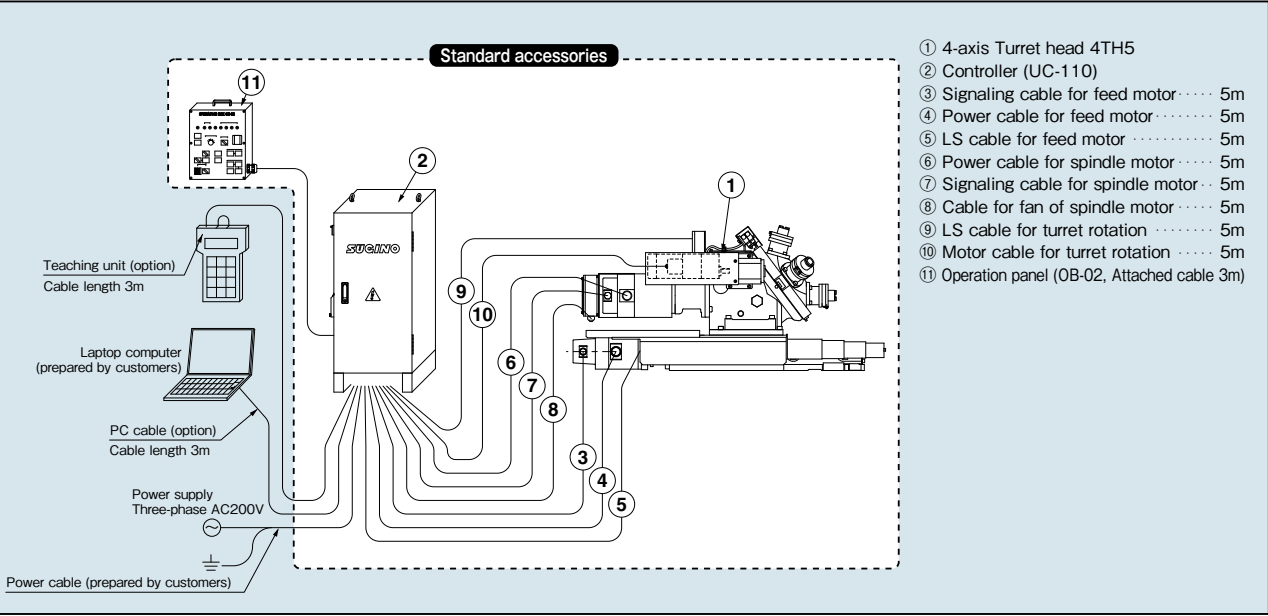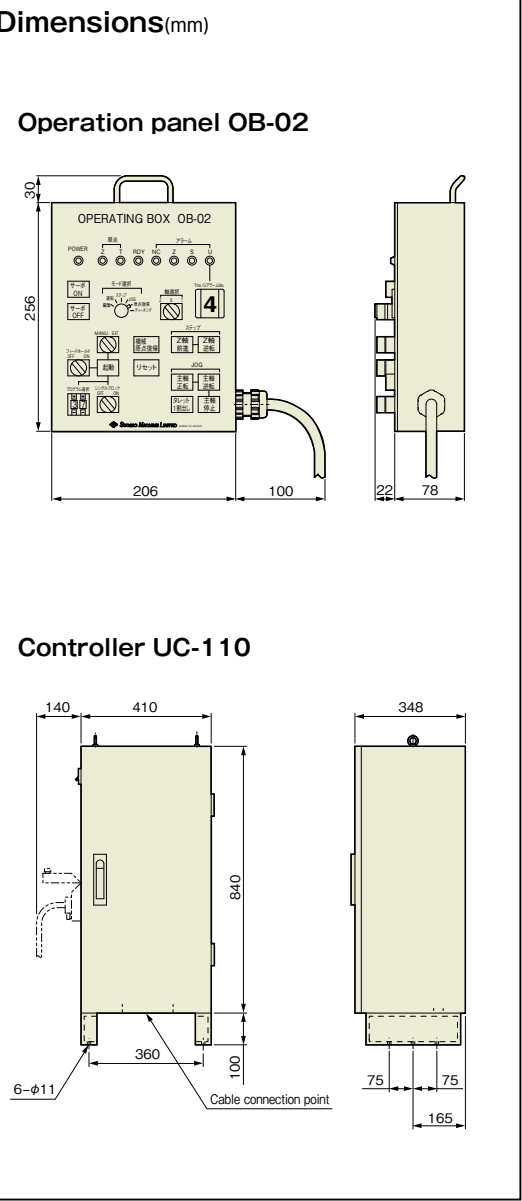

Notes 1. For protecting the inside structure, please input dry air for air-purge from Rc1/8.
2. Parenthesized numbers are showing the dimensions of 4TH5-1612.

SUGINO MACHINE LIMITED

Electric system diagram

All the electric parts supplied as standard are indicated in [ ] box.
The purchaser is responsible for and needs to have the other cables and equipment.

① 4-axis Turret head 4TH5
② Controller (UC-110)
③ Signaling cable for feed motor ····· 5m
④ Power cable for feed motor ········· 5m
⑤ LS cable for feed motor ·········· 5m
⑥ Power cable for spindle motor ····· 5m
⑦ Signaling cable for spindle motor · 5m
⑧ Cable for fan of spindle motor ····· 5m
⑨ LS cable for turret rotation ········ 5m
⑩ Motor cable for turret rotation ····· 5m
⑪ Operation panel (OB-02, Attached cable 3m)

Operation panel and Controller

Dimensions(mm)

Operation panel OB-02

Controller UC-110

Specification of Controller

Model No.	NCBOY–200	
Controlled axes	1 axis (Z axis) + S axis	
Input commands	Least input increment : 0.001mm	
	Least command increment : 0.001mm	
	Max. programmable dimension : 999999999.999mm	
	Decimal point input.	
	Cutting feed rate : F mm/min direct command	
NC Program ※1	G function (Any other G code can not accept except right G code)	G00 Positioning / G31 Skip function
		G01 Liner interpolation / G53 Command in machine coordinate system
		G04 Dwell / G90 Absolute command
		G09 Positioning check / G91 Incremental command
		G11 Time-fixed feeding / G92 Coordinate system setting
		G28 Automatic return to reference point
	M function (For external output)	M50~M57 : Codes for customer.
	Special function	RTAPX Tapping.
	S function	Command spindle speed, rotation start and stop.
	T function	Command assignment turret No. and turret index start.
	Various calculate function	○ (Available in NC program.)
	Confirm NC status, Setting or reference I/O parameter	○ (Available only in NC program.)
	Use of register	○ (Available for coordinate address.)
	Macro command	×
	Canned cycle	×
	Tool life management	×
Description for components	Operation panel	Using in case of manual operation.
	Teaching unit ※1	·Inputting, reference and changing the NC program. ·Reference and Changing the parameter of NC program and amplifier.
	PC software	·Monitoring the operating conditions of NC program and amplifier.
External I/O signal	Output signal ※2	Machine zero return.
		Servo motor ON.
		Cycle run.
		Program end.
		Alarm
		M50~M57 : Codes for customer.
	Input signal ※3	Automatic operation start.
		External emergency stop.
		Reset
		Program No.1 (Assign program No.)
		Program No.2 (Assign program No.)
		Program No.4 (Assign program No.)
		Program No.8 (Assign program No.)
		Program No.10 (Assign program No.)
		Program No.20 (Assign program No.)
		Program No.40 (Assign program No.)
		Program No.80 (Assign program No.)
		M code FIN.

※1 NC programming is recommended to use together with PC software.
※2 Voltage : DC24V, current : less or equal 40mA.
※3 Voltage : DC24V±10%, current : less or equal 40mA.

Data input system

Sugino's program input system; high-efficiency and easy-operation.

Processing program inputting method (Option)

For controller UC-81A, 82 and 83A, Sugino has **3 options** for inputting data, confirming the condition, single unit manual operating, and seeing alarms.

1 Programming console PC-03B

Key input small sized monitor type

Compact sized and light weight monitor which can set the stroke and spindle rotation speed in a one touch operation. With minimal key strokes quickly input programs.

Attached cable (3m)

2 Touch panel TP-01

Easy operation by touch panel

5.7inch color type liquid crystal pouch panel. Beginners are also able to produce and operate CNC programs very easily.

Indicate language:
→Japanese, English, Chinese and Korean
Attached cable (3m)
Back up memory (Option):
→Compact flash card (32MB)
→Compact flash reader writer

3 PC monitor soft

Programming operation from your PC

Use exclusive type monitor software which can do programming operation from your PC. Special cable for connecting with your PC is required.

Working environment
→OS Windows 95/98/XP (The mode setting is necessary)
Communication interface
→RS232C-port

■Multi drop connection

By connecting multiple controllers with multi drop cable, programming can be achieved without pulling out cables. (Maximum 10 controllers are connected.)

Touch panel TP-01
Programming console PC-03B
Controller UC-81A、82、83A
End station connector A
Multi drop cable A
Laptop computer
AC100V
5m
Multi drop PC cable A
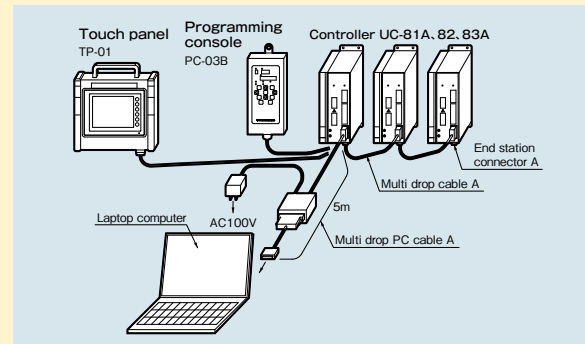
Process patterns

14 process patterns included in the UC-8✻ Controller.
Simply choose suitable pattern for your processing specification.

| Pattern No.	Function
01	Drilling
02	High-speed deep hole drilling (Step feed drilling)
03	Deep hole drilling (Step feed drilling)
04	Quill pipe drilling (Skip feed drilling)
05	Drilling Counterboring
06	Drilling (with inching feed)
07	High-speed deep hole drilling (with inching feed)
08	Deep hole drilling (with inching feed)
09	Quill pipe drilling (with inching feed)
10	Drilling Counterboring (with inching feed)
11	Back chamfering
12	Quill pipe multi-step drilling (with inching feed)
13	2-step front/rear chamfering
15	Non-step deep hole drilling

●Example of process patterns

No.03 Deep hole drilling (Step feed drilling)

Applied for Deep hole drilling, generally referred to as step drilling. Cutting oil delivered to edge of drill bit because the drill bit is pulled out of workpiece in each step motion.
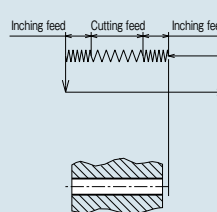
Cutting feed
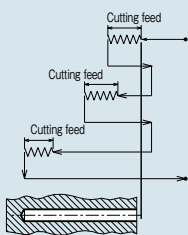
No.05 Drilling Counterboring

Applied to perform counterboring after drilling. Also applied to reduce burrs on the rear surface at through hole drilling.

Inching feed Cutting feed
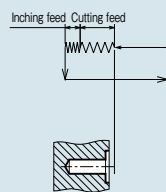
No.06 Drilling (with inching feed)

Applied to reduce burrs on the both front and rear surface.

Inching feed Cutting feed Inching feed

No.09 Quill pipe drilling (with inching feed)

Capable of inching feed for process pattern No.4 when drill biting and through-hole are performed.
Helps to reduce burrs.

Inching feed Cutting feed Inching feed Fast travel Cutting feed Inching feed
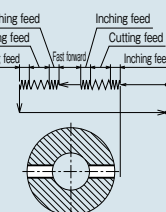
Other attachments

Additional Sugino products which can achieve high-efficient operations besides Selfeeder servo series.

NC automatic drilling machine
Standrill NC

All that is needed for operation on the same day is a connection with the main power supply. This is an NC automatic drilling machine available not only for drilling but also tapping. An optional touch panel allows easy operation of NC programs even if the user is a beginner.

High rigidity spindle motor
Varimotor

The same high-rigidity and high-power DC brushless motor and precise angular bearing as the Selfeeder Varimec are utilized. It is compact sized spindle unit and capable of doing heavy cut processing.

Application

1. Install into spindle unit for drilling and end-milling operation
2. Install into robot for de-burring operation.
3. Install into special purpose machine for various cutting operations.

Specification Chart

Specs. Model	Spindle speed (no load) 50Hz	Spindle speed (no load) 60Hz	Chuck type (Collet chuck)	Chucking capacity	Max. Drilling size AL* (ADC)	Max. Drilling size FC* (FC200)	Max. Drilling size ST* (S45C)	Spindle motor	Weight
	min⁻¹		—	mm	mm	mm	mm	kW	kg
SSV2-7200CM	2,000~20,000		ER11MS	0.5~7.0	5	4	3.5	0.9	4
SSV2-1039CM	390~ 3,900		ER16	0.5~10.0	8.5	7.5	6.5		
SSV3-7100CM	1,000~10,000		ER11	0.5~7.0	6.5	5	4	0.4	12
			ER20	0.5~13.0					
SSV3-1626CM	265~ 2,650		ER20	0.5~13.0	12	9	8		
			ER25	0.5~16.0					
SSV4-2070CM	1,000~ 7,000		ER32	1.0~20.0	9	8	7	1.0	24
SSV4-2017CM	250~ 1,750				16	15	13		
SSV5-2055CM	800~ 5,500		ER32	1.0~20.0	14.5	11.5	9.5	1.6	43
SSV5-2610CM	150~ 1,010		ER40	2.0~30.0	25	20.5	18		

Notes 1. To select your model, refer to the workpiece configurations, material, cutting properties, diameter of the hole, and rotation speed.(cutting speed)
2. The drilling capacity shown above is for a depth equivalent to the drill diameter times two.
3. The power voltage is a 3-phase 200V AC±10%, 50/60Hz.
4. For cooling the motor in inside, please input clean dry air into air-inlet.
5. Please take care for not closing the air-outlet for motor cooling by clamp fixture etc. Also please set the air-outlet certainly becomes downward.
6. The leading direction of cable is different from the type of Varimotor. If you need more detailed information, please ask your nearest sales offices.
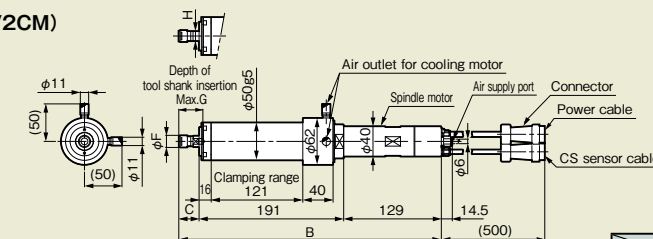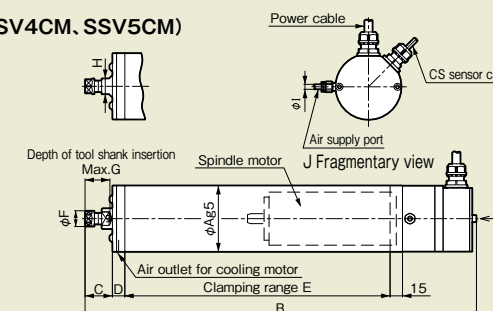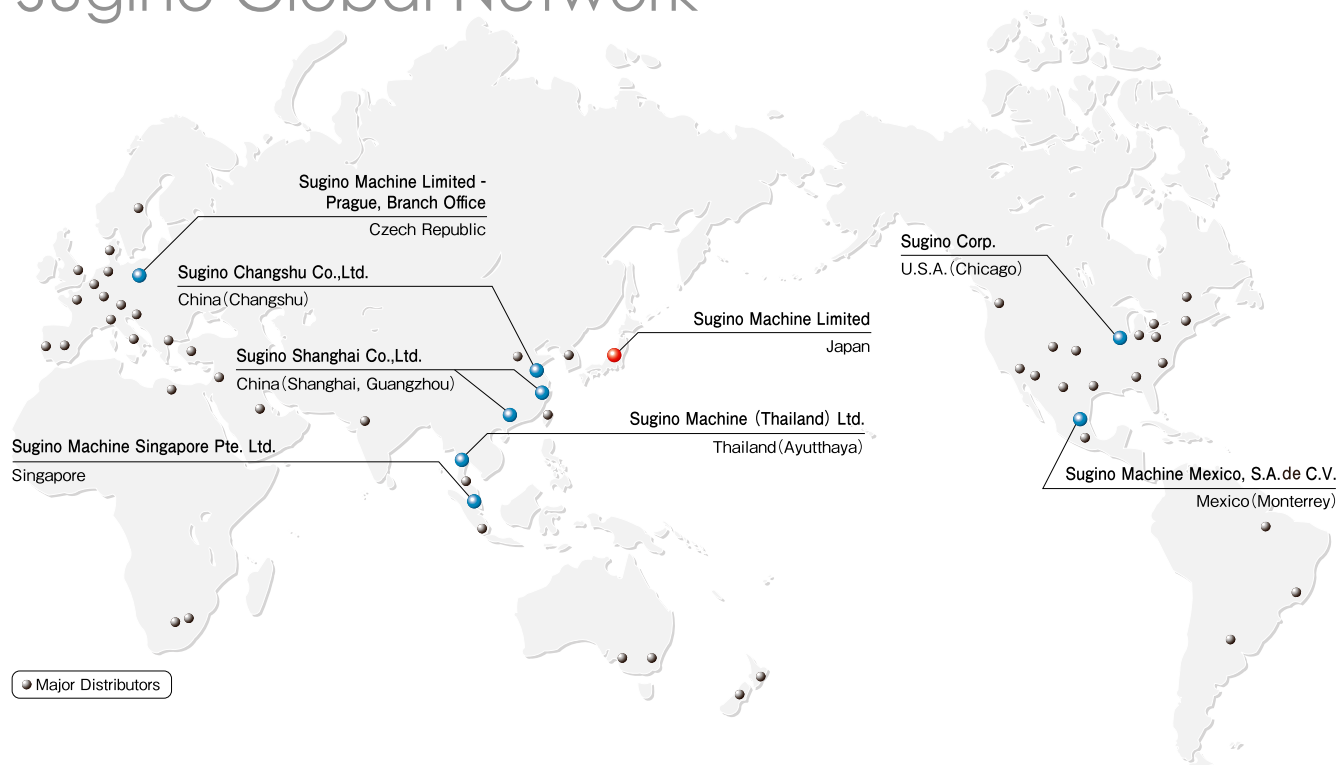7. AL*…Aluminium, FC*…Cast Iron, ST*…Steel

Dimensions(mm)

Fig.1 (SSV2CM)

φ11
(50)
φ11
(50)
Depth of tool shank insertion Max.G
φ50g6
φ62
φ10
Air outlet for cooling motor
Spindle motor
Air supply port
Connector
Power cable
φ61
CS sensor cable
Clamping range 121
40
129
14.5
(500)
191
B

Fig.2 (SSV3CM、SSV4CM、SSV5CM)

Power cable
φi
CS sensor cable
Depth of tool shank insertion Max.G
Spindle motor
Air supply port
J Fragmentary view
Air outlet for cooling motor
Clamping range E
15
φF
φAg5
J

Model	Symbol Fig. No.	A	B	C	D	E	F	G	H	I
SSV2-7200CM	1	—	347	27	—	—	16	31	13	—
SSV2-1039CM			361	41			28	35	19	
SSV3-7100CM	2	80	473	33	15	320	19	30	19	6
SSV3-1626CM			482	42			34	60	27	
SSV4-2070CM			486	46			42		32	
SSV4-2017CM		100	659.5	58		454.5	50	58	36	8
SSV5-2055CM		120	807.5	71	19	519	60	60	46	
SSV5-2610CM							63			

Note : The B, C, F, G and H dimension in this drawing will changes with the spindle specification which shown in the above capacity table.

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