





This high-speed machine features the strongest structural rigidity in its class and attains a rapid feed rate of 63m/min (2480ipm) with a 1G acceleration.

> SMT 5X 4000

Horizontal Machining Center

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Mechanical layout

Machine design enables high-speed movement

The column mass is optimized to allow movement of 63m/min (2480ipm) rapid feed rate with acceleration of 1G. This combined with a servo driven ATC realizes a C-to-C time of 2.8 seconds and large reduction of non-cutting time.



Core cooling ball screws and Double-anchor pre-tension system



Lubrication oil cooler unit

HMC400 uses core cooling ball screws on the X, Y and Z axes. Circulation of cooling oil through the ball screws, around ball screw support housings and motor mounting surfaces reduces the thermal displacement and maintains accuracy during long machining time.



The double-anchoring method limits elongation of the ball screws and improves the minute-feed characteristics and the lowers lost-motion characteristics. Accuracy in round cutting has also been improved largely.



The spindle nose reaches close to the pallet center

Providing a minimum distance of 50mm (1.97") from the spindle nose to the pallet center makes it possible to use tools with short overhangs and allowing highly-rigid machining.



Highly rigid structure

The NX4000 utilizes a wide column and highly rigid roller guides. This produces great aluminum machining performance and also the machining of a wider range of workpieces, including cast iron.

Highly rigid roller guides

Improved reliability

The X-axis and Z-axis shutters are of single-plate construction.

This design eliminates the risk of binding during cutting and achieves an improvement in the reliability.

Shutters of single-plate construction (X-axis and Z-axis)

User-friendly construction

The operation panel is located on the left-hand side, which enables the operator to see the whole interior of the machine, thus increasing the operator's work efficiency.

Photograph of operation panel and interior

Spindle

The spindle bearings are oil-air lubricated. Circulating temperature controlled oil is in the groove around the spindle housing suppressing the growth of the spindle. Furthermore, SMT's unique radiant cooling system prevents the conduction of heat generated from the motor into the spindle.

(The performance is different due to the cutting

tools and cutting conditions.)

Table

The SX4000 adopts a table with a multi-clamp pallet system for a maximum workpiece height of 920mm (36.22"), thus easily accommodating automatic fixture interfaces.

* The available workpiece height will become lower when a fixture is used.

| Horizontal | Machining | Center : | SX | 400 | 0 |
|------------|-----------|----------|----|-----|---|
|------------|-----------|----------|----|-----|---|

Drill Milling ø26.5mm (1.04")

300min⁻¹ 26.5mm (1.04")

50mm/min (2ipm)

27.5cm³/min (1.7in³/min)

30% S45C

Tap Milling M30×P3.5

100min⁻¹

350mm/min (14 ipm)

61%

S45C

Machining capabilities

| Type of machining | Face milling ø100mm (3.94")×6T |
|--------------------|--|
| Spindle speed | 800min ⁻¹ |
| Width of cut | 80mm (3.15") |
| Depth of cut | 4mm (0.16") |
| Feed rate | 1100mm/min (43 ipm) |
| Cutting amount | 352cm ³ /min (21.5in ³ /min) |
| Spindle motor load | 95% |
| Workpiece material | S45C |

| Type of machining | Side milling with End mill ø32mm (1.26")×6T | |
|--------------------|---|---|
| Spindle speed | 250min ⁻¹ | |
| Width of cut | 25mm (0.98") | |
| Depth of cut | 20mm (0.79") | |
| Feed rate | 100mm/min (4 ipm) | |
| Cutting amount | 50cm ³ /min (3.1 in ³ /min) | |
| Spindle motor load | 42% | |
| Workpiece material | S45C | 1 |
| | | |

| Type of machining | Slotting with End mill ø32mm (1.26")×6T |
|--------------------|--|
| Spindle speed | 250min ⁻¹ |
| Width of cut | 32mm (1.26") |
| Depth of cut | 12mm (0.47") |
| Feed rate | 140mm/min (6ipm) |
| Cutting amount | 54cm ³ /min (3.3in ³ /min) |
| Spindle motor load | 45% |
| Workpiece material | S45C |
| | |

Cutting data

Type of machining

Spindle speed

Width of cut

Feed rate Cutting amount

Spindle motor load

Workpiece material

Type of machining Spindle speed

Feed rate

Spindle motor load

Workpiece material

Values shown here are for reference to provide an indication of cutting capability.

Workpiece material: A7075

Workpiece material: S50C

High-precision Machining in a Shorter Cutting Time

The maximum tool length of 450mm (17.72") allows a tool longer than a pallet size of 400mm (15.75"). The SX4000 performs deep boring operations without rotating the pallet. This allows high-precision machining in a shorter cutting time.

* There is a limit on the diameter of a tool with a length of 350mm (13.78") or larger.

ATC [Automatic Tool Changer]

The machine uses a servomotor-driven ATC and magazine, thus providing a stable tool change with excellent durability. The standard includes a variable-speed ATC function that automatically slows down the ATC turning speed for a heavy tool. This allows the tool to be changed smoothly by simply selecting the slow turning speed during tool registration.

Max. tool diameter ø170mm (6.69")

Max. tool length **450**mm (17.72")

Max. tool mass **12**kg (26 lbs)

APC [Automatic Pallet Changer]

APC units use the straight forward direct-turn lifting and turning mechanism. The units have been designed to take into consideration their expansion for systematization (to 6-pallet APC, 8-pallet APC or automatic pallet transfer system) which can be integrated flexibly into the machining line.

Chip disposal measures

The standard ceiling shower and two coil-type conveyors on the left- and right-hand side thoroughly remove cutting chips from the machine. The troughs of the coil conveyors shield heat transfer to the bed from cutting chips and coolant.

Ceiling shower [Standard]

Coil-type chip conveyors [Standard]

Environmental measures

LED lamps [Standard]

The machine incorporates LED lamps due to their low heat generation and power consumption savings. Furthermore, the LED lamps have a long life to save replacement money and maintenance.

ECO sleep function [Standard]

If the machine remains idle longer than the specified time period, the machine's present mode is switched to a power-saving mode to reduce wasteful consumption of power, air and so on. When the power-saving mode is active, the equipment such as servos and chip conveyors are turned off. It is cancelled automatically when the setup operation is completed i.e. when the doors are closed.

LED lamps [Standard]

Power consumption comparison

A power consumption of 1130Wh under normal standby condition is reduced to 743Wh with the eco-sleep function, a reduction of 35%.

Maintenance

All of the maintenance devices are centrally located on operator door side for simple daily inspection.

Lift-up chip conveyor [Option]

Suitable lift up chip conveyor according to type of chips OMost suitable Usable Usable Usable under condition × Not usable - Not applicable

| | | т | ype of chip conveyors | Hinge | e type | Scrap | er type | Mag Scrape | gnet er type | Scrape with dru | er type um filter | Magnet so with dru | raper type um filter |
|--------|--------|-------|---------------------------|-------|---------|-------|---------|---------------|-----------------|--------------------|----------------------|-----------------------|-------------------------|
| | | Us | se or not use coolant oil | Use | Not use | Use | Not use | Use | Not use | Use | Not use | Use | Not use |
| | | | Short curl | | | | | | | | - | | _ |
| | S | | Spiral ODDD | | | *2 | *2 | *2 | *2 | × | - | × | _ |
| | e chip | Steel | Long | | | × | × | × | × | × | - | × | _ |
| | izabl€ | | Needle shape | × | *1 | × | | *3 | | | - | | _ |
| s | agnet | | Powder and small lump | × | *1 | × | | *3 | | | - | | _ |
| chip | Ŵ | iron | Needle shape | × | *1 | × | | *3 | | | _ | | _ |
| /pe of | | Cast | Powder and small lump | × | *1 | × | | *3 | | *3 | - | | _ |
| f | ips | | Short curl | × | | *4 | | _ | - | | - | | _ |
| | ble cł | E | Spiral OOOOO | | | | | _ | - | *5 | - | *5 | _ |
| | ietiza | minu | Long | | | | | _ | - | *5 | - | *5 | _ |
| | magr | A | Needle shape | × | *1 | × | | _ | - | | - | | _ |
| Non- | -noN | | Powder and small lump | × | *1 | × | | _ | - | | - | | _ |

*1 Minute chips can enter the conveyor through a gap on the hinged plate. So, inside of the conveyor needs frequent cleaning.

*2 Scraper can easily catch long chips. So, shortening the chips (for example by using the step feed) or removing such chips is required.

*3 When flow rate of the coolant is large, filters can be clogged with chips flowed out of the conveyor case. Therefore, combined use with a magnet plate is recommendable.

*4 When flow rate of the coolant is large, filters can be clogged with chips flowed out of the conveyor case. Therefore, filters require frequent cleaning.

*5 Scraper can easily catch long chips. Therefore, periodical removal of chips is needed. If they remain, a drum filter may be damaged.

Optional accessories

Automatic fixture interface (Rotary joint on pallet system) [Option]

Fixture example

CARDING STREET

Option check sheet

| Item Description Changing the type of pull stud Image attraction Image attraction Dual-contact tool Image attraction Image attraction Tool mage attraction Image attraction Image attraction Multi-pallet APC Image attraction Image attraction Pallet top surface Image attraction Image attraction Additional pallet Image attraction Image attraction Image attraction Image attractin Image attractin | | |
|--|--|--|
| Changing the type of pull stud IMAS 60° Dual-contact tool IMSK-A63 Tool magazine 60 tools 116 tools Multi-pallet APC IGAPC BAPC Pallet top surface In-slot Interpallet top surface Interpallet top surface Additional pallet Interpallet top surface Interpallet top surface Interpallet top surface Additional pallet Interpallet top surface Interpallet top surface Interpallet top surface Oil skimmer Interpallet top surface Interpallet top surface Interpallet top surface Signal lamp Interpallet top surface Interpallet top surface Interpallet top surface Coolant unit Interpallet (290 si) Interpallet (290 | Item | Description |
| Dual-contact tool In HSK-A63 Tool magazine In 60 tools 116 tools Multi-pallet APC In APC In APC Pallet top surface In T-slot In T-slot Additional pallet In T-slot In T-slot In APC Safety door automatic open / close In T-slot In T-slot In APC Safety door automatic open / close In T-slot In T-slot In APC Safety door automatic open / close In T-slot In T-slot In Signal lamp In J-amps type without buzzer In Apps type without buzzer In T-slot In Coolant-through-spindle In Center through In Coolant-through-spindle In Coolant-through In Coolant unit In Apps type without buzzer In NaPa (1015psi) With coolant cooler Without coolant cooler Swint stopper block In For angle attachment In Nozer In Store graper type In Magnet scraper type Is flaget type Scraper type with drum filter (for aluminum + iron) In Hinged type Scraper type with drum filter (for aluminum + casting) In Fixed type Swint scraper type Is flaget type Is flaget type Scraper type with drum filter (for aluminum + | Changing the type of pull stud | □ MAS 60° |
| Imagazine Imagazine Imagazine | Dual-contact tool | D HSK-A63 |
| Image: standard base standard base base standard base base standard base standard base base base standard base base base base base base base base | Tool magazine | □ 60 tools □ 116 tools |
| Pallet top surface □ T-slot Additional pallet □ Additional pallet □ APC safety door automatic open / close □ □ Oil skimmer □ □ Signal lamp □ □ Coolant-through-spindle □ □ Coolant unit □ □ Coolant unit □ □ Arb blow nozzle □ □ Morkpiece flushing equipment □ □ Shower gun type □ □ Mist collector □ □ Inget type with drum filter (for aluminum + icon) □ Lift-up chip conveyor □ □ find bucket □ □ find type □ Scraper type with drum filter (for aluminum + icon) □ find bucket □ □ find bucket □ □ find type □ Sking type □ □ find type □ Sking type □ □ find bucket □ □ find bucket □ □ find type □ Sking type □ □ find type □ Sking type □ □ find type □ Sking type □ □ find type □ Sking type< | Multi-pallet APC | |
| Additional pallet | □ Pallet top surface | □ T-slot |
| APC safety door automatic open / close | Additional pallet | |
| Oil skimmer Image: signal lamp Signal lamp Image: signal lamp stype without buzzer Immig: signal lamp Coolant-through-spindle Immige: contert through Coolant unit Immige: contert through Immige: contert through Immige: contert through | APC safety door automatic open / close | |
| Signal lamp 3-lamps type without buzzer3-lamps type with buzzer Coolant-through-spindle Center through Coolant unit 2 MPa (290psi) _ 7 MPa (1015psi) _ With coolant cooler _ Without coolant cooler Air blow nozzle 1 nozzle Swirl stopper block For angle attachment Workpiece flushing equipment Shower gun type Mist collector Hinged type _ Scraper type _ Magnet scraper type Lift-up chip conveyor Scraper type with drum filter (for aluminum + iron) Chip bucket Including a tool box Angle plate Including a tool box Angle plate 3 ports _ 6 ports Fixture interface Workpiece measurement _ Tool length measurement / Tool break detection | □ Oil skimmer | |
| Coolant-through-spindle Center through Coolant unit 2 MPa (290psi) _ 7 MPa (1015psi) _ With coolant cooler _ Without coolant cooler Air blow nozzle 1 nozzle Swirl stopper block For angle attachment Workpiece flushing equipment Shower gun type Mist collector Hinged type _ Scraper type _ Magnet scraper type Lift-up chip conveyor Scraper type with drum filter (for aluminum + iron) Chip bucket Magnet scraper type with drum filter (for aluminum + casting) Standard tool set Including a tool box Angle plate Including a tool box Fixture interface 3 ports _ 6 ports Touch sensor system T1 Workpiece measurement _ Tool length measurement / Tool break detection | □ Signal lamp | □ 3-lamps type without buzzer □ 3-lamps type with buzzer |
| Coolant unit 2 MPa (290psi) 7 MPa (1015psi) With coolant cooler Without coolant cooler Air blow nozzle 1 nozzle Swirl stopper block For angle attachment Workpiece flushing equipment Shower gun type Mist collector Hinged type Scraper type Magnet scraper type Lift-up chip conveyor Scraper type with drum filter (for aluminum + iron) I Magnet scraper type with drum filter (for aluminum + casting) Standard tool set Standard tool set Including a tool box Angle plate Including a tool box Fixture interface 3 ports 6 ports Tooch sensor system T1 Workpiece measurement Tool length measurement / Tool break detection | Coolant-through-spindle | Center through |
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| Mist collector Hinged type _ Scraper type _ Magnet scraper type Lift-up chip conveyor Scraper type with drum filter (for aluminum + iron) Magnet scraper type with drum filter (for aluminum + casting) Magnet scraper type with drum filter (for aluminum + casting) Chip bucket Fixed type _ Swing type Standard tool set Including a tool box Mass block Including a tool box Angle plate Standard tool set - Arace angle plate Sorts _ 6 ports - Touch sensor system T1 Workpiece measurement _ Tool length measurement / Tool break detection | Workpiece flushing equipment | □ Shower gun type |
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| Chip bucket Fixed type _ Swing type Standard tool set Including a tool box Mass block Including a tool box Angle plate Including a tool box 2-face angle plate Including a tool box Fixture interface Including a tool box Touch sensor system T1 Including a tool box Tool break detection inside the magazine Including a tool box | | □ Magnet scraper type with drum filter (for aluminum + casting) |
| Standard tool set Including a tool box Mass block Including a tool box Angle plate Including a tool box 2-face angle plate Including a tool box Fixture interface Including a tool box Touch sensor system T1 Including a tool box Including a tool box Including a tool box Including a tool box Including a tool box | □ Chip bucket | □ Fixed type □ Swing type |
| Mass block Image: Mass block Angle plate Image: Mass block 2-face angle plate Image: Mass block Fixture interface Image: Mass block Touch sensor system T1 Image: Mass block | Standard tool set | □ Including a tool box |
| Angle plate 2-face angle plate Fixture interface 3 ports 6 ports Touch sensor system T1 Workpiece measurement Tool length measurement / Tool break detection Tool break detection inside the magazine | Mass block | |
| 2-face angle plate Fixture interface 3 ports 6 ports Touch sensor system T1 Workpiece measurement Tool length measurement / Tool break detection Tool break detection inside the magazine | □ Angle plate | |
| □ Fixture interface □ 3 ports □ 6 ports □ Touch sensor system T1 □ Workpiece measurement □ Tool length measurement / Tool break detection □ Tool break detection inside the magazine □ | □ 2-face angle plate | |
| Touch sensor system T1 Workpiece measurement Tool length measurement / Tool break detection Tool break detection inside the magazine Automatic restart at tool damage | Fixture interface | □ 3 ports □ 6 ports |
| Tool break detection inside the magazine | □ Touch sensor system T1 | \square Workpiece measurement \square Tool length measurement / Tool break detection |
| - Automatic restart at tool domage | □ Tool break detection inside the magazine | |
| | Automatic restart at tool damage | |

Mist collector [Option]

Mist collector suctions mist from the splash guards and is recommended when high-pressure coolant is used.

Air blow nozzle [Option]

For dry cutting applications.

SMT's dedicated control functions

Setup support function

T1-A: Automatic workpiece measurement/ compensation [Option]

The touch sensor attached to the spindle is moved to a workpiece in the automatic operation until it contacts the workpiece then based on the travel distance at that time, the required compensation amount is calculated and set as the data for the workpiece coordinate system.

The measurement and compensation program is created according to the specified format and then executed.

T0 Software [Option]

This screen enables the simple manual measurement using the touch sensor (option: T1-A or T1-B).

You can move the sensor to the desired measuring point by handle mode then the machine starts the automatic measurement after the sensor contacts the workpiece. You can set the results of the measurement as the data for the desired workpiece coordinate system and tool offset number through the single key operation.

High-efficiency control technologies

Hyper HQ control [Option]

High-speed processing is enabled by improved capability of processing fine line segment toolpaths.

<FAi Capability of look-ahead processing>

| Туре | Look-ahead processing | Command method |
|---|-----------------------|----------------|
| without Hyper HQ contro (HQ control) | Max.20 blocks | ON : G5.1Q1 |
| Hyper HQ control A mode | Max.200 blocks | OFF : G5.1Q0 |

HQ tuner [Option]

The HQ tuner provides the programmer a 10-step adjustment of parameters for hyper HQ control in accordance with processing conditions. It adjusts the hyper HQ control in accordance with the current process. For example, during roughing routines the programmer can place a higher priority on speed and in finishing routines a higher priority on dimensional accuracy at corners and circular arcs.

Technologies for reduced setup and unmanned operation

Soft AC [Option]

The soft AC function applies the feed rate override control automatically so that the value of the spindle load meter does not change significantly. This helps to prevent damages of tools caused by overload and improves cutting efficiency.

Adaptive control function

Feed override control range: 10 to 200%. (Changeable with parameters) Alarms are output at the lower limit override value.

Air-cut reduction function

Feed rates during non-cutting operation can be increased up to 200%. (Changeable with parameters)

Tool failure monitoring function Specifications similar to the soft CCM.

Continuous unmanned processing at the time of tool failure Combined operation with the automatic restart function (Another option) is possible.

Soft CCM [Option]

The Soft CCM monitors the spindle load meter, and stops operation when the meter value exceeds the preset value (set by M signal or set for each of the T numbers through setting screen) and generation of abnormal tool load is determined which is convenient for unmanned operation at night.

Network function

Data server [Option]

Large machining programs can be transferred to the data server through the network connected to the host computer at high speed. The transferred machining programs are executed as the main program or the sub program called up with the M198.

Specifications

Specifications

| Tava or X adi (Colum : alphaler) mm 560 (22.05) Tava or X adi (Spinde hadi upplet) mm 880 (22.05) Tava or X adi (Spinde hadi upplet) mm 880 (22.05) Delance from table paufacio kny mm 880 (22.05) Delance from table paufacio kny mm 64-740 (197-26.13) Data (Fallet) back/fall (Norm / Spinde note) mm 650-720 (04.07.5) Table (Pallet) work strafce area mm 650-720 (04.07.5) Table (Pallet) work strafce area mm 650-720 (04.07.5) Table (Pallet) work strafce area mm 650-720 (04.07.5) Table (Pallet) work strafce area mm 650-720 (04.07.5) Table (Pallet) work strafce area mm 650 (04.07.5) Table (Pallet) work strafce area mm 660 (0.01.1) Table (Pallet) work strafce area 0.1 7.24 taper No.6 Dual-contact type Spindle aspindle motion mm 630 (27.5) 7.24 taper No.6 Dual-contact type Spindle basing (Inform the straffer area M×r Y Z mm 630 (27.5) Table tark (Informina Intrumbe) X×r Y X Z mm <t< th=""><th>lte</th><th>m</th><th></th><th>HMC400</th></t<> | lte | m | | HMC400 |
|---|---|--------------|-------------------|---|
| Tava (n x ass (§pinde nead: upidown) mm 660 (27.7) Distance from table top sufficience to spindle center (spindle none) mm 80-640 (15^-25.20) Distance from table top sufficience vegindle center (spindle none) mm 0.600 (27.7) Table (field) vork surfaces areas mm 0.600 (15.75) Max. workproze secto locable on table (pallet) mf 0.600 (27.87) Table (field) vork surfaces areas mg 4.600 (16.75) Max. workproze secto locable on table (pallet) mf 0.600*** Table (field) vork surfaces configuration 24.4416 tap 24.4416 tap Max. indexable angle of table (gallet) mf 0.00** Table (healt) index time (fri indexing 00*) 88c 0.7 Spindle speeds min** 7.72 (tapper) Spindle speeds min** 0.60 (27.87) Rapid travers rate mm* 670 (27.87) | Travel on X axis (Column : right/left) | | mm | 560 (22.05") |
| Tavel on 2 axis (Patit: 1ackNorth) mm 800 (27.17) Distance from table ounder to spindle note mm 65-740 (197-26.13) Table (Patit) work surbee area mm 65-740 (197-26.13) Table (Patit) work surbee area mm 65-740 (197-26.13) Table (Patit) work surbee area mm 650-720 (197-26.13) Table (Patit) york surbee one table (patit) mm 650-720 (26.260 '36.27) Table (Patit) york surbee one table (patit) mm 650-720 (26.260 '36.27) Table (Patit) york surbee one table (patit) mm 650-720 (26.260 '36.27) Table (Patit) york surbee one table (patit) mm 650-720 (26.260 '36.27) Table (Patit) york surbee one table (patit) mm 660 Max: notadian surbee one table (patit) mm 100 - 15000 Number of spindle paed 772 taper Na.04 Dual-context type Spindle paed daming tore daming mm 100 - 400 4' Regula taysees rate mm 133 6.330 F140 Did table (maint) number) mm 450 (17.27) 'S Number of spindle pauge line) mm 455 (17.41 (167.669) with no tods in adjacent pold | Travel on Y axis (Spindle head : up/down) | | mm | 560 (22.05") |
| Distance from table top surface to spindle center to spindle nose mm 80-640 (3.15 ^{-25.20}) Distance from table center to spindle nose mm 4.00 (15.75) Table (Pallet) work surface configuration kg 4.00 (15.75) Max. workpices size loadable on table (pallet) kg 4.00 (15.75) Table (Pallet) top surface configuration deg 0.011* Max. workpices size loadable on table (pallet) deg 0.011* Table (Pallet) index time (in indexing 90") sec 0.7 Spindle speeds min 100-15000 Number of spindle speeds min 63 (2469)m) Spindle basing bare diameter X × Y × Z mm/min Spindle basing bare diameter X × Y × Z mm/min Catting fearts * Max 1.02 (2.75) Rapid traverste rate X × Y × Z mm/min 53 (2469)m) Tot shank (nominal number) X × Y × Z mm/min 1.03 S 63 (2469)m) Number of storable tools K × Y × Z mm/min 63 (2.74) (270 (6.897) which notos in edgesen polls Number of storable molesh K × Y × Z mm/min | Travel on Z axis (Pallet : back/forth) | | mm | 690 (27.17") |
| Distance from table center to spindle nose mm 967-769.13;) Table (Fallel) wite windpices excludable on table (pallel) kg 400 (822ne) [Uniform) distributed bad] Max. workpices excludable on table (pallel) mm e830-820 (624.857-86.22') Table (Fallel) op surface configuration 24-44.16 tap 24-44.16 tap Table (Fallel) op surface configuration 8ec 0.7 Spindle spied Sec 0.7 Spindle spied mm 7.24 tapin No.40 Dual-context type Spindle spied for tar (100-15000 Number of spindle spied | Distance from table top surface to spindle center | | mm | 80~640 (3.15"~25.20") |
| Table (Pailet) work surface area mm | Distance from table center to spindle nose | | mm | 50~740 (1.97"~29.13") |
| Max. workpiece weight loadshie on table (pallet) Mg 400 (825hs) (unform') distributed load] Max. workpiece size loadshie on table (pallet) mm 650:920 (24:80:'36.27') Table (Pallet) the surface configuration deg 0.001" Max. indexable angle of table (pallet) (milet) deg 0.001" Spindle speed min' 100-15000 Spindle speed min' 100-15000 Spindle nose (norminal number) mm 63 (2450µm) Spindle nose (norminal number) mmin' 63 (2450µm) Spindle nose (norminal number) mmin' 133 3 Cutting feed rate ''. X × Y × Z mm/nin Oid shark (nonnal number) MAS (65') MAS (65') Number of storable toxis mm e95 (374') (e170 (65') with not toxis in adjacent pots) Max. toxi diamater mm e95 (374') (e170 (65') with not toxis in adjacent pots) Max. toxi diamater ks 100 40 *'' Max. toxi diamater ks 100 40 *'' Max. toxi diamater ks 100 40 *'' Max. toxi diagen motod | Table (Pallet) work surface area | | mm | □400 (15.75") |
| Max. workpiece size loadable on table (paller) mm 06.09-020 (d24.80° x36.22°) Max. indexable angle of table (paller) deg 0.001° Table (Paller) index time (tori indexing 90°) sec 0.7 Spinde speeds min' 10.0001 Number of spinde speeds min' 2.step (Winding change system) Spinde baaring bore diameter mm e70 (2.76°) Rapid traverse rate N N/X Y X Z mm/min Spinde loading baaring bore diameter N 0.7 (2.76°) N/X Y X Z Rapid traverse rate N N/X Y X Z mm/min 68 (2480°m) Cutting feed rate ¹ X X Y X Z mm/min 1.4 (2400°m) N/X S (25°) Tool shark (nominal number) J/X Y X Z mm/min 1.4 (2400°m) N/X S (25°) Number of stockel tools N/X S (27°) M/X S (27°) N/X S (27°) N/X S (27°) Number of stockel tools N/X S (27°) M/X S (27°) N/X S (27°) N/X S (27°) Number of stockel tools N/X S (27°) N/X S (27°) N/X S (27°) Number of stockel to | Max. workpiece weight loadable on table (pallet) | | kg | 400 (882lbs) [Uniformly distributed load] |
| Table (Pailet) top surface configuration 24-M16 tap Max. indexable angle of table (pailet) 6eg 0.001* Table (Pailet) index time (for indexing 80') sec 0.7 Spindle speed min *1 100-15000 Number of spindle speeds 2-step (Winding change system) 7/74 taper No.400 Duil-contact type Spindle nose (nominal number) min *1 63 (2460)(m) 8 Spindle nose (nominal number) N 8 min *1 63 (2460)(m) Tool shark (nominal number) X × Y × Z mm/min 63 (2460)(m) 1.8 Is 8338 F14.0 Puil tatu (nominal number) Max. tool diamender Max. 50 (477) (170 (6.679) with no toots in adjacent polis) Number of storable tools Max. tool amender mm 69 (17.72) *1 Max. tool lamgth (from the gauge line) mm 68 (2.74) (170 (2.670) with stow ATC cycle) Max. tool lamgth (from the gauge line) mm 64 (17.27) *1 Max. tool lamenter mm 9.6 (7.12 kiths) Tool sechange time (cult-to-cult) Sec 2.8 Pallet exchange method N × m 9.0 (7.2 kiths) | Max. workpiece size loadable on table (pallet) | | mm | ø630×920 (ø24.80"×36.22") |
| Max. indexable angle of table (pallet) 6eg 0.01** Table (Pallet) index time (for indexing 90*) 5ec 0.7 Spiralle speed min*1 100-15000 Number of spinale speeds 724 tape (Winding change system) 724 tape (Winding change system) Spirale nose (noninal number) 724 tape (Minding change system) 724 tape (Minding change system) Spirale nose (noninal number) min*1 3.3 724 tape (Minding change system) Cutting feed rate "1 X * Y * Z mn/nin 1-40000 (0.04-157.5pm) Cutting feed rate "1 X * Y * Z mn/nin 1-40000 (0.04-157.5pm) Otd shark (nominal number) JLS 65.33 B f1.0 JLS 65.33 B f1.0 Number of storable tools MAS (d 5') MAS (d 5') Number of storable tools Mod (find the gauge line) MAS (d 5') Max. tool length (from the gauge line) mm 450 (17.27)* MAS (d 5') Max. tool length (from the gauge line) kq 51 (11b.5) (12 (5bls) with show ATC cycle) Max. tool length (from the gauge line) kq 51 (11b.5) (12 (5bls) with show ATC cycle) Max. tool length (from the gauge line) | Table (Pallet) top surface configuration | | | 24×M16 tap |
| Table (Pailet) index time (for indexing 90") Sec 0.7 Spindle speed min 1 100-15000 Number of spindle speeds 2-step (Winding change system) 2-step (Winding change system) Spindle nose (nominal number) mm 8.702 (2.76") 7.72 taper No.40 Dual-contact type Spindle nose (nominal number) mm 8.72 taper No.40 Dual-contact type 7.72 taper No.40 Dual-contact type Rapid traverse rate X * Y × Z mm/min 6.32 (2.86)(pm) 3.3 Cutting feer rate " X * Y × Z mm/min 1-40000 (0.04-157 Sigm) Tool shark (nominal number) JLIS B 6.338 BT40 JLIS B 6.338 BT40 Pull stud (nominal number) Max. tool and shark (nominal number) Max. tool and shark (nominal number) Number of storable tools mm 95 (3.74) [47.07 (6.97 with no tools in adjacent poly Max. tools in adjacent poly Max. tools in adjacent poly Max. tool length (from the gauge line) mm 95 (11bit) [12.68 bit with sith war XC cycle) Max. tool length (from the gauge line) Mr 9.8 (7.2 rths) Tool scharing time (cut-to-cut) Kg 5 (11bit) [12.68 bit) with sith war XC cycle) Max. tool length (from t | Max. indexable angle of table (pallet) | | deg | 0.001° |
| Spindle speed min ⁻¹ 100-15000 Number of spindle speeds Spindle nese (nominal number) 724 tape (Winding change system) 724 tape (Winding change system) Spindle nese (nominal number) mm a70 (2.76) Rapid traverse rate mm a70 (2.76) Rapid traverse rate mm/min 62 (240)(pm) Cutting fed rate " X×Y×Z mm/min Tool shank (nominal number) JI S 6 533 B140 JI S 6 533 B140 Pull stud (nominal number) JI S 6 533 B140 MAS (645') Number of storicits blools Mod (645') MAS (645') Number of storicits blools mm e5 (3.74 (1970 (6.69) with no tools in adjacent poils) Max. tool langh (mth be gauge line) mm e5 (3.74 (1970 (6.69) with no tools in adjacent poils) Max. tool weight kg 5 (11be) (12 (28)bs) with slow ATC cycle) Max. tool method mm e5 (3.74 (164) P) Tool selection method N*m 9.8 (7.2 Hos) Tool selection method MS Sindle moter (15%ED/Continuous rating) Spindle moter (15%ED/Continuous rating) Seac 9.0 Pall | Table (Pallet) index time (for indexing 90°) | | sec | 0.7 |
| Number of spindle speeds 2-step (Winding change system) Spindle speeds 7/24 taper No.40 Dual-contact type Spindle speing bore diameter mm 6.70 (2.76) Rapid traverse rate Mm 6.31 (2480)gm) Cutting feed rate * X * Y * Z mm/nin 6.31 (2480)gm) Tool shark (nominal number) X * Y * Z mm/min 1-40000 (0.04-1575)gm) Tool shark (nominal number) X * Y * Z mm/min 1-40000 (0.04-1575)gm) Tool shark (nominal number) X * Y * Z mm/min 1-40000 (0.04-1575)gm) Number of storable tools Max (b of limester 05 (3.77) (pt 70 (6.87) with no tools in adjacent pots) Max. tool length (from the gauge line) mm 95 (3.77) (pt 70 (6.87) with no tools in adjacent pots) Max. tool length (from the gauge line) mm 95 (3.77) (pt 70 (6.87) with no tools in adjacent pots) Max. tool length (from the gauge line) Mr 95 (3.77) (pt 70 (6.87) with no tools in adjacent pots) Max. tool length (from the gauge line) Mr 95 (3.77) (pt 70 (6.87) with no tools in adjacent pots) Tool section method Nr <m< td=""> 9.8 (7.2 Ft hos) Tool section method</m<> | Spindle speed | | min ⁻¹ | 100~15000 |
| Spindle nose (nominal number) mm 7/24 taper No 40 Dual-contact type Spindle bearing bore diameter mm a70 (2.76) Rapid traverse rate mminin 63 (2480pm) Cutting feed rate "1 N × Y × Z mm/nin 3.3.3 Cutting feed rate "1 X × Y × Z mm/nin 1.3.8.8.33.8 Tool shark (nominal number) I/J & B 6.339 BT40 I/J & B 6.339 BT40 Pull stud (nominal number) I/J & B 6.339 BT40 I/J & B 6.339 BT40 Number of storable tools tool 40 ° Max. tool diameter mm e95 (3.74?) (B170 (6.89) with not tools in adjacent pots) Max. tool inself (from the gauge line) mm e95 (3.74?) (B170 (6.89) with not tools in adjacent pots) Max. tool inself (from the gauge line) mm e95 (3.74?) (B170 (6.89) with not tools in adjacent pots) Max. tool inself (from the gauge line) mm e95 (3.74?) (B170 (6.89) with not tools in adjacent pots) Max. tool inself (from the gauge line) mm e95 (3.74?) (B170 (6.89) with not tools in adjacent pots) Tool selection method N - m 9.8 (7.21 h/bs) Tool seloction method Soft (for thoo with sole A40 ° <td>Number of spindle speeds</td> <td></td> <td></td> <td>2-step (Winding change system)</td> | Number of spindle speeds | | | 2-step (Winding change system) |
| Spindle basing bore diameter mm 970 (2.76') Rapid travense rate Mmin 63 (2460)cm) Cutting feed rate '1 X × Y × Z mm/min 63 (2460)cm) Cutting feed rate '1 X × Y × Z mm/min 140000 (0.04-1575pm) Tool shan (nominal number) JIS B 5330 BT40 JIS B 5330 BT40 Pull stud (nominal number) MAS (45') MAS (45') Number of storable tools mm 695 (3.74') [ø170 (6.69') with no tools in adjacent pots] Max. tool lengtin (from the gauge line) mm 495 (17.2') *1 Max. tool lengtin (from the gauge line) kg 5 (111be) [12 (281bs) with slow ATC cycla] Max. tool lengtin (cut-to-cut) kg 5 (111be) [12 (281bs) with slow ATC cycla] Tool selection method N × m 9.8 (7.2 ft/sb) Tool selection method sec 2.8 Pallet acxhange inte (ull cut-cut) sec 9.0 Pallet acxhange inte (ull sevaluatin time) sec 9.0 Spindle motor (15% ED/Centinuous rating) KW 3.7 (16.3HP/) E0.2 (7.0 (0.9HP) Hydraulic pump motor KW 0.017 (0.02HP) | Spindle nose (nominal number) | | | 7/24 taper No.40 Dual-contact type |
| X×Y×Z m/min 63 (2480pm) B min' 33.3 Cutting feed rate ''. X×Y×Z mm/min 14000 (0.04-1575pm)) Tool shak (nominal number) JIS B 6339 BT40 JIS B 6339 BT40 Pull stud (nominal number) MAS (d5') MAS (d5') Number of storable tools tool 40 °. Max. tool diameter mm 69 (3.74') [9170 (6.69') with no tools in adjacent pots) Max. tool weight kg 5 (111bs) [12 (26lbs) with slow ATC cycle] Max. tool moment N*m 9.8 (7.2 ft:bs) Tool selection method Sec C 2.8 Pallet exchange time (uL14-cut) sec C 9.0 Coldent pump method sec C 9.0 Pallet exchange time (uL14-cut) sec C 9.0 Spindle motor (15%ED/Continuous rating) KW 37(18.5 (50HP/25HP) Feed motors KW 37(18.5 (50HP/25HP) Feed motors KW 10.7 (5 (1.3HP/1HP) [Corpression/discharge] Spindle and feed system coling oil pump motor (oil cooler) KW 10.7 (5 (1.3HP/1HP) [Corpression/discharge] | Spindle bearing bore diameter | | mm | ø70 (2.76") |
| B min ⁻¹ 33.3 Cutting feed rate *' X × Y × Z mm/min 1-40000 (0.04-1575ipm) Tool shark (normial number) JJS B 6339 BT4.0 JJS B 6339 BT4.0 Pull stud (normial number) MAS (45°) MAS (45°) Number of storable tools tool 40 *² Max. tool limmeter mm a95 (3.74°) [a170 (6.59°) with no tools in adjacent pots] Max. tool limmeter mm 450 (17.27) *² Max. tool weight Kg 5 (11bs) [12 (26ibs) with slow ATC cycle] Max. tool weight N *m 9.9 (7.2 f.*bs) Tool seak (norment N*m 9.9 (7.2 f.*bs) Tool selection method N*m 9.8 (7.2 f.*bs) Tool selection method Sec 2.8 Pallet exchange time (ut-ls-cut) sec 9.0 Spindle motor (15%ED/Continuous rating) kW X, Y, Z: 5 (7.4HP) B: 2.7 (3.6HP) Feed motors kW 60H2: 1.2 (1.6HP) Spindle notor (15%ED/Continuous rating) kW 10.75 (1.3HP/1HP) Econpression/discharge] Spindle and feed system cooling oil pump motor (oil cooler) kW 10.0 | | X×Y×Z | m/min | 63 (2480ipm) |
| Cutting feed rate *1 X × Y × Z mm/min 1-40000 (0.04-1757bjpm) Tool shark (nominal number) JIS B 6339 BT40 JIS B 6339 BT40 Pull stud (nominal number) Max (ol 0) Max (45°) Number of storable tools tool 40 *² Max. tool diameter mm ø95 (3.74') [ø170 (6.69') with no tools in algacent pots] Max. tool weight mm 450 (17.72') *² Max. tool weight mm 95 (3.74') [ø170 (6.69') with no tools in algacent pots] Max. tool weight mm 450 (17.72') *² Max. tool weight Ms (ds °) 12 (26bis) with slow ATC cycle] Max. tool mentod N*m 9.8 (7.2 ft/bs) Tool selection method Sec 2.8 Tool selection method Sec 9.0 Pallet exchange time (JIS evaluation time) sec 9.0 Spindle motor (15% ED/Continuous rating) KW X, Y. Z: 55 (7.4HP) B: Z: 7 (3.6HP) Feed motors KW 10.7 (1.3HP/HPH/P) Spindle exchange time outry motor (oil cooler) KW 10.7 (1.3HP/HPH/P) Spindle and feed system cooling oil pump motor (oil cooler)< | Rapid traverse rate | В | min ⁻¹ | 33.3 |
| Tool shank (nominal number) JIS B 6339 BT40 Pull stud (nominal number) MAS (45°) Number of storable tools fool 40 ° ² Max. tool length (from the gauge line) mm e95 (3.74°) [e170 (6.69°) with no tools in adjacent pots] Max. tool length (from the gauge line) mm 450 (17.72) ° ³ Max. tool weight kg 51(11bs) [12 (26lbs) with slow ATC cycle] Max. tool weight kg 51(11bs) [12 (26lbs) with slow ATC cycle] Max. tool weight kg 51(11bs) [12 (26lbs) with slow ATC cycle] Max. tool weight kg 51(11bs) [12 (26lbs) with slow ATC cycle] Max. tool weight sec 2.8 Pallet exchange time (cut-to-cut) sec 9.0 Spindle motor [15%/ED/Continuous rating) KW 37(18.5 (50HP/25HP) Feed motors KW 60Hz: 1.2 (16HP) 50Hz: 0.7 (0.9HP) Your pump motor kW 60Hz: 1.2 (16HP) 50Hz: 0.7 (0.9HP) Spindle notor [15%/ED/Continuous rating) KW 10.75 (1.3HP/1HP) [compression/discharge] Spindle notor [15%/ED/Continuous rating) KW 10.27 (1.3HP/1HP) [compression/discharge] Spin | Cutting feed rate *1 | X×Y×Z | mm/min | 1~40000 (0.04~1575ipm) |
| Pull stud (nominal number) MAS (45°) Number of storable tools tool 40° Max. tool immeter mm e95 (3.74') [6170 (6.69') with no tools in adjacent pots] Max. tool length (from the gauge line) mm 450 (17.72') *3 Max. tool weight kg 5 (111bs) (12 (26liss) with slow ATC cycle] Max. tool weight N*m 98 (7.2 ft-lbs) Tool selection method Address fixed random method Tool selection method Sec 2.8 Pallet exchange time (UIS evaluation time) sec 9.0 Spindle motor (15%ED/Continuous rating) kW 37(18.5 (50HP/25HP) Feed motors kW 37(18.5 (50HP/25HP) Feed motors kW 60Hz: 12 (1.6HP) 50Hz: 0.7 (0.9HP) Hydraulic pump motor kW 60Hz: 12 (1.6HP) 50Hz: 0.7 (0.9HP) Hydraulic pump motor (oil coller) kW 10.75 (1.3HP/HP) [E: 2.7 (0.9HP) Spindle bubrication oil pump motor (oil coller) kW 10.75 (1.3HP/HP) [E: 2.7 (0.9HP) ACC motor kW 10.75 (1.3HP/HP) 51 Tool Magazine motor kW 10.75 (1.3HP/HP) AC motor kW 1.8 (2.4HP) Power supply AC200V±10% 50/60Hz±1Hz kW 1.8 (2.4HP) Power supply AC200V±10% 50/60Hz±1Hz kVA 5 | Tool shank (nominal number) | | | JIS B 6339 BT40 |
| Number of storable tools tool 40 ⁻² Max. tool diameter mm e95 (3.74) [9170 (6.69) with no tools in adjacent pots] Max. tool weight mm e450 (17.72) *3 Max. tool weight kg 5 (11lbs) [12 (26lbs) with slow ATC cycle] Max. tool moment N*m 9.8 (7.2 ft/bs) Tool selection method Address fixed random method Address fixed random method Tool selection method sec 2.8 Pallet exchange time (LUt-to-cut) sec 9.0 Spindle motor (15%ED/Continuous rating) KW 37/18.5 (50HP/25HP) Feed motors KW 37/18.5 (50HP/25HP) Coolant pump motor KW 60Hz: 1.2 (1.6HP) 5H2: 0.7 (0.9HP) Hydraulic pump motor KW 10.75 (1.3HP/1HP) [compression/discharge] Spindle and feed system cooling oil pump motor (oil air lubrication) kW 1.0 (1.6HP) ATC motor KW 1.2 (1.6HP) 1.6 (1.6HP) Tool dedded system cooling oil pump motor (oil air lubrication) kW 1.2 (1.6HP) ATC motor KW 1.2 (1.6HP) 1.6 (1.6HP) Compressed | Pull stud (nominal number) | | | MAS (45°) |
| Max. tool diameter mm e95 (3.74') [ø170 (6.69') with no tools in adjacent pots] Max. tool length (from the gauge line) mm 450 (17.72') ^{s3} Max. tool length (from the gauge line) kg 5 (111bs) [12 (261bs) with slow ATC cycle] Max. tool moment N *m 9.8 (7.2 ft-lbs) Tool selection method Sec 2.8 Tool exchange time (cut-loc-cut) sec 9.0 Pallet exchange method Direct turn method Pallet exchange time (JIS evaluation time) sec 9.0 Spindle motor (15%ED/Continuous rating) KW 37(18.5 (50HP/25HP) Feed motors KW 37(18.5 (50HP/25HP) Coolant pump motor kW X.2 : 55 (7.4HP) B: 2.7 (3.6HP) Coolant pump motor kW 10.75 (1.3HP/1HP) B: 2.7 (3.6HP) Spindle ubrication oil pump motor (oil cooler) KW 10.75 (1.3HP/1HP) [compression/discharge] Spindle ubrication oil pump motor (oil cooler) KW 10.75 (1.3HP/1HP) [compression/discharge] Spindle ubrication oil pump motor (oil cooler) KW 10.75 (1.3HP/1HP) [compression/discharge] Spindle ubricaton oil pump motor (oil cooler) KW | Number of storable tools | | tool | 40 *2 |
| Max. tool length (from the gauge line) mm 450 (17.72') *3 1 / 2 Max. tool weight kg 5 (11lbs) [12 (26lbs) with slow ATC cycle] Max. tool moment N *m 9.8 (7.2 ft-lbs) Tool selection method Address fixed random method Tool selection method Address fixed random method Pallet exchange time (ut-to-cut) sec 2.8 Pallet exchange time (ut-to-cut) sec 9.0 Spindle motor (15%ED/Continuous rating) kW 37/18.5 (50HP/25HP) Feed motors kW 37/18.5 (50HP/25HP) Coolant pump motor kW 60H2:12 (1.6HP) 50H2: 0.7 (0.9HP) Hydraulic pump motor kW 60H2:12 (1.6HP) 50H2: 0.7 (0.9HP) Hydraulic pump motor (oil air lubrication) kW 1.0 (75 (1.3HP/1HP) [compression/discharge] Spindle lubrication oil pump motor (oil cooler) kW 1.0 (1.5HP) ATC motor kW 1.2 (1.6HP) Tool Magazine motor kW 1.2 (1.6HP) APC motor kW 1.2 (1.6HP) Coolant tank capacity kW 1.2 (1.6HP) Coolant ack capacity kW 1.2 (1.6HP) Cool da | Max. tool diameter | | mm | ø95 (3.74") [ø170 (6.69") with no tools in adjacent pots] |
| Max. tool weight kg 5 (11lbs) [12 (26lbs) with slow ATC cycle] Max. tool moment N*m 9.8 (7.2 fthbs) Tool selection method Address fixed random method Tool selection method Sec 2.8 Pallet exchange time (cut-lo-cut) sec 9.0 Spindle motor (15%ED/Continuous rating) kW 37/18.5 (50HP/25HP) Feed motors kW 37/18.5 (50HP/25HP) Coolant pump motor kW 60Hz: 1.2 (1.6HP) 50Hz: 0.7 (0.9HP) Hydraulic pump motor kW 1.5 (2HP) Spindle motor (16 deed system cooling oil pump motor (oil cooler) kW 1/0.75 (1.3HP/1HP) [compression/discharge] Spindle short cool in pump motor (oil air lubrication) kW 1/0.75 (1.3HP/1HP) ATC motor kW 1.2 (1.6HP) Tool Magazine motor kW 1.2 (1.6HP) APC motor kW 1.8 (2.4HP) Power supply AC200V±10% 50/60Hz±Hz AC220V±10% 60Hz±Hz KVA 51 Coolant tank capacity L 50 (140ga) Spindle and feed system cooling oil tank capacity (oil cooler) L 2.0 (58qa) Spindle and feed system cooling oil tank capacity (oil cooler) L 2.0 (59qa) Max. tool make capacity L 2.0 (59qa) Compressed air supply Coolont ta | Max. tool length (from the gauge line) | | mm | 450 (17.72") *3 |
| Max. tool moment N*m 9.8 (7.2 ft/bs) Tool selection method Address fixed random method Tool exchange time (cut-to-cut) sec 2.8 Pallet exchange method Direct turn method Pallet exchange method sec 9.0 Spindle motor (15%ED/Continuous rating) kW 37/18.5 (60HP/25HP) Feed motors kW 37/18.5 (60HP/25HP) Feed motors kW 60Hz: 1.2 (1.6HP) 50Hz: 0.7 (0.9HP) Hydraulic pump motor kW 60Hz: 1.2 (1.6HP) 50Hz: 0.7 (0.9HP) Hydraulic pump motor kW 0.017 (0.02HP) Spindle lubrication oil pump motor (oil cooler) kW 10.75 (1.3HP/1HP) [compression/discharge] Spindle lubrication oil pump motor (oil air lubrication) kW 0.017 (0.02HP) ATC motor kW 1.2 (1.6HP) Tool Magazine motor kW 1.4 (1.9HP) APC motor kW 1.8 (2.4HP) Power supply AC200V±10% 50/60Hz±1Hz AC220V±10% 60Hz±1Hz kVA 51 Coolant tank capacity L 24 (6gal) Spindle lubrication oil tank capacity (oil cooler) L 24 (6gal) Spindle lubrication oil tank capacity (oil cooler) L 24 (6gal) Spindle lubrication oil tank capacity (oil air lubrication) L 2 (0.5gal) | Max. tool weight | | kg | 5 (11lbs) [12 (26lbs) with slow ATC cycle] |
| Tool selection methodAddress fixed random methodTool exchange time (cut-to-cut)sec2.8Pallet exchange methodDirect turn methodPallet exchange time (JIS evaluation time)sec9.0Spindle motor (15%ED/Continuous rating)kW37/18.5 (50HP/25HP)Feed motorskW37/18.5 (50HP/25HP)Coolant pump motorkW00Hz: 1.2 (1.6HP) 50Hz: 0.7 (0.9HP)Hydraulic pump motorkW1.5 (2HP)Spindle notor (15%ED/Continuous rating)kW1/0.75 (1.3HP/1HP) (copression/discharge]Spindle and feed system cooling oil pump motor (oil cooler)kW1/0.75 (1.3HP/1HP) (copression/discharge]Spindle lubrication oil pump motor (oil air lubrication)kW0.017 (0.02HP)ATC motorkW1.2 (1.6HP)Tool Magazine motorkW1.4 (1.9HP)Power supply AC200V±10% 50/60Hz±1Hz AC220V±10% 60Hz±1HzkVA51Conpressed air supplyMpa,t/min[ANR]0.4-0.6 (58~87ps) **, Min.500 (132gpm) ****Coolant tank capacity (oil cooler)L24 (6gal)Spindle and feed system cooling oil tank capacity (oil cooler)L24 (6gal)Spindle lubrication oil tank capacity (oil air lubrication)L2 (0.5gal)Lubrication oil tank capacity (oil cooler)L20 (5gal)Spindle and feed system cooling oil tank capacity (oil cooler)L20 (5gal)Required floor spacemm2605×4480 (102.56*176.38")Machine height (from floor surface)kg8500 (19000lbs)Operating environment temperature'C <td>Max. tool moment</td> <td></td> <td>N•m</td> <td>9.8 (7.2 ft·lbs)</td> | Max. tool moment | | N•m | 9.8 (7.2 ft·lbs) |
| Tool exchange time (cut-to-cut)sec2.8Pallet exchange methodDirect turn methodPallet exchange time (JIS evaluation time)sec9.0Spindle motor (15%ED/Continuous rating)kW37(8.5 (6)HP/25HP)Feed motorskWX, Y, Z: 5.5 (7.4HP) B: 2.7 (3.6HP)Coolant pump motorkW60Hz: 1.2 (1.6HP) 50Hz: 0.7 (0.9HP)Hydraulic pump motorkW10.75 (1.3HP/1HP) (compression/discharge]Spindle and feed system cooling oil pump motor (oil cooler)kW10.75 (1.3HP/1HP) (compression/discharge]Spindle ubfraction oil pump motor (oil air lubrication)kW0.017 (0.02HP)ATC motorkW1.2 (1.6HP)Tool Magazine motorkW1.4 (1.9HP)APC motorkW1.4 (1.9HP)Power supply AC200V±10% 50/60Hz±1Hz AC220V±10% 60Hz±1HzkVA51Conpressed air supplyD4-0.6 (58~87ps)**, Min.500 (132gpm)***5Coolant tank capacityL24 (6gal)Spindle and feed system cooling oil tank capacity (oil cooler)L2 (0.5gal)Lubrication oil tank capacity (oil cooler)L20 (5gal)Machine height (from floor surface)mm2605×4180 (102.56*176.38")Machine weightMg8500 (10000lbs)Operating environment temperature°C5-40 | Tool selection method | | | Address fixed random method |
| Pallet exchange methodDirect turn methodPallet exchange time (JIS evaluation time)sec9.0Spindle motor (15%ED/Continuous rating)KW37/18.5 (50HP/25HP)Feed motorsKWX, Y, Z: 5.5 (7.4HP) B: 2.7 (3.6HP)Coolant pump motorKW60Hz: 1.2 (1.6HP) 50H2: 0.7 (0.9HP)Hydraulic pump motorKW1.5 (2HP)Spindle and feed system cooling oil pump motor (oil cooler)KW10.75 (1.3HP/1HP) [compression/discharge]Spindle lubrication oil pump motor (oil air lubrication)KW0.017 (0.02HP)ATC motorKW1.2 (1.6HP)Tool Magazine motorKW1.4 (1.9HP)APC motorKW1.4 (1.9HP)Power supply AC200V±10% 50/60Hz±1Hz AC220V±10% 60Hz±1HzkVA51Compressed air supplyU500 (132gpm) *4 *5Coolant tank capacityL24 (6gal)Spindle and feed system cooling oil tank capacity (oil cooler)L24 (6gal)Spindle and feed system cooling oil tank capacity (oil cooler)L20 (5gal)Lubrication oil tank capacity (oil cooler)L20 (5gal)Required floor spacemm2605×4480 (102.56**176.38*)Machine height (from floor surface)mm2605×4480 (102.56**176.38*)Machine weightkg8500 (19000lbs) | Tool exchange time (cut-to-cut) | | sec | 2.8 |
| Pallet exchange time (JIS evaluation time)sec9.0Spindle motor (15%ED/Continuous rating)kW37/18.5 (50HP/25HP)Feed motorskWX, Y, Z: 5.5 (7.4HP) B: 2.7 (3.6HP)Coolant pump motorkW60H2: 1.2 (1.6HP) 50Hz: 0.7 (0.9HP)Hydraulic pump motorkW1.5 (2HP)Spindle and feed system cooling oil pump motor (oil cooler)kW1/0.75 (1.3HP/1HP) [compression/discharge]Spindle lubrication oil pump motor (oil air lubrication)kW0.017 (0.02HP)ATC motorkW1.2 (1.6HP)Tool Magazine motorkW1.4 (1.9HP)APC motorkW1.4 (1.9HP)Power supply AC200V±10% 50/60Hz±1Hz AC220V±10% 60Hz±1HzkVA51Conpressed air supplyMpa,l/min[ANR]0.4-0.6 (58~87psi)**, Min.500 (132gpm)***5Coolant tank capacityL24 (6gal)Spindle and feed system cooling oil tank capacity (oil cooler)L20 (5gal)Lubrication oil tank capacity (oil air lubrication)L20 (5gal)Required floor spacemm2605×4480 (102.56*×176.38")Machine height (from floor surface)mm2605×4480 (102.56*×176.38")Machine neightkg8500 (19000lbs) | Pallet exchange method | | | Direct turn method |
| Spindle motor (15%ED/Continuous rating) kW 37/18.5 (50HP/25HP) Feed motors kW X, Y, Z: 5.5 (7.4HP) B: 2.7 (3.6HP) Coolant pump motor kW 60Hz: 1.2 (1.6HP) 50Hz: 0.7 (0.9HP) Hydraulic pump motor kW 1.5 (2HP) Spindle and feed system cooling oil pump motor (oil cooler) kW 1/0.75 (1.3HP/1HP) [compression/discharge] Spindle lubrication oil pump motor (oil air lubrication) kW 0.017 (0.02HP) ATC motor kW 0.017 (0.02HP) Tool Magazine motor kW 1.2 (1.6HP) APC motor kW 1.4 (1.9HP) Power supply AC200V±10% 50/60Hz±1Hz AC220V±10% 60Hz±1Hz kVA 51 Compressed air supply 0.4-0.6 (58~87ps)* 4*, Min.500 (132gpm)*4*5 Coolant tank capacity Spindle lubrication oil tank capacity (oil cooler) L 24 (6gal) Spindle lubrication oil tank capacity (oil cooler) L 24 (6gal) Spindle lubrication oil tank capacity (oil air lubrication) L 2 (0.5gal) Lubrication oil tank capacity (oil air lubrication) L 2 (0.5gal) Lubrication oil tank capacity (oil cooler) L 2 (0 | Pallet exchange time (JIS evaluation time) | | sec | 9.0 |
| Feed motorskWX, Y, Z: 5.5 (7.4HP) B: 2.7 (3.6HP)Coolant pump motorkW60Hz: 1.2 (1.6HP) 50Hz: 0.7 (0.9HP)Hydraulic pump motorkW1.5 (2HP)Spindle and feed system cooling oil pump motor (oil cooler)kW1/0.75 (1.3HP/1HP) [compression/discharge]Spindle lubrication oil pump motor (oil air lubrication)kW0.017 (0.02HP)ATC motorkW1.2 (1.6HP)Tool Magazine motorkW1.4 (1.9HP)APC motorkW1.4 (1.9HP)Power supply AC200V±10% 50/60Hz±1Hz AC220V±10% 60Hz±1HzkVA51Conpressed air supplyMpa,I/min[ANR]0.4~0.6 (58~87psi) *4 , Min.500 (132gpm) *4 *5Coolant tank capacityL530 (140gal)Spindle ubrication oil tank capacity (oil cooler)L2 (0.5gal)Lubrication oil tank capacity (oil air lubrication)L2 (0.5gal)Machine height (from floor surface)mm2640 (103.94")Machine weightkg8500 (19000lbs)Operating environment temperature°C5-40 | Spindle motor (15%ED/Continuous rating) | | kW | 37/18.5 (50HP/25HP) |
| Coolant pump motorkW60Hz: 1.2 (1.6HP) 50Hz: 0.7 (0.9HP)Hydraulic pump motorkW1.5 (2HP)Spindle and feed system cooling oil pump motor (oil cooler)kW1/0.75 (1.3HP/1HP) [compression/discharge]Spindle lubrication oil pump motor (oil air lubrication)kW0.017 (0.02HP)ATC motorkW1.2 (1.6HP)Tool Magazine motorkW1.4 (1.9HP)APC motorkW1.4 (1.9HP)Power supply AC200V±10% 50/60Hz±1Hz AC220V±10% 60Hz±1HzkVA51Compressed air supply0.4~0.6 (58~87psi) *4 , Min.500 (132gpm) *4 *5Coolant tank capacityL530 (140gal)Spindle lubrication oil tank capacity (oil cooler)L24 (6gal)Spindle lubrication oil tank capacity (oil air lubrication)L20 (5gal)Machine height (from floor surface)mm2640 (103.94")Machine weightkg8500 (19000lbs)Operating environment temperature'C5~40 | Feed motors | | kW | X, Y, Z: 5.5 (7.4HP) B: 2.7 (3.6HP) |
| Hydraulic pump motorkW1.5 (2HP)Spindle and feed system cooling oil pump motor (oil cooler)kW1/0.75 (1.3HP/1HP) [compression/discharge]Spindle lubrication oil pump motor (oil air lubrication)kW0.017 (0.02HP)ATC motorkW1.2 (1.6HP)Tool Magazine motorkW1.4 (1.9HP)APC motorkW1.8 (2.4HP)Power supply AC200V±10% 50/60Hz±1Hz AC220V±10% 60Hz±1HzkVA51Compressed air supplyMpa,l/min[ANR]0.4~0.6 (58~87ps) *4, Min.500 (132gpm) *4 *5Coolant tank capacityL530 (140gal)Spindle lubrication oil tank capacity (oil cooler)L24 (6gal)Spindle lubrication oil tank capacity (oil air lubrication)L20 (5gal)Machine height (from floor surface)mm2605×4480 (102.94")Required floor spacemm2605×4480 (102.66"×176.38")Machine weightkg8500 (19000lbs)Operating environment temperature"C5~40 | Coolant pump motor | | kW | 60Hz: 1.2 (1.6HP) 50Hz: 0.7 (0.9HP) |
| Spindle and feed system cooling oil pump motor (oil cooler)kW1/0.75 (1.3HP/1HP) [compression/discharge]Spindle lubrication oil pump motor (oil air lubrication)kW0.017 (0.02HP)ATC motorkW1.2 (1.6HP)Tool Magazine motorkW1.4 (1.9HP)APC motorkW1.8 (2.4HP)Power supply AC200V±10% 50/60Hz±1Hz AC220V±10% 60Hz±1HzkVA51Compressed air supply0.4~0.6 (58~87psi) *4, Min.500 (132gpm) *4 *5Coolant tank capacityL530 (140gal)Spindle lubrication oil tank capacity (oil cooler)L24 (6gal)Spindle lubrication oil tank capacity (oil air lubrication)L20 (5gal)Machine height (from floor surface)mm2605×4480 (102.56*×176.38")Machine weightkg8500 (19000lbs)Operating environment temperature°C5~40 | Hydraulic pump motor | | kW | 1.5 (2HP) |
| Spindle lubrication oil pump motor (oil air lubrication)kW0.017 (0.02HP)ATC motorkW1.2 (1.6HP)Tool Magazine motorkW1.4 (1.9HP)APC motorkW1.4 (1.9HP)Power supply AC200V±10% 50/60Hz±1Hz AC220V±10% 60Hz±1HzkVA51Compressed air supplyMpa,l/min[ANR]0.4~0.6 (58~87psi) *4 , Min.500 (132gpm) *4 *5Coolant tank capacityL530 (140gal)Spindle and feed system cooling oil tank capacity (oil cooler)L24 (6gal)Lubrication oil tank capacityL20 (5gal)Machine height (from floor surface)mm2605×4480 (102.56*×176.38")Machine weightkg8500 (19000lbs)Operating environment temperature°C5~40 | Spindle and feed system cooling oil pump motor (| bil cooler) | kW | 1/0.75 (1.3HP/1HP) [compression/discharge] |
| ATC motor kW 1.2 (1.6HP) Tool Magazine motor kW 1.4 (1.9HP) APC motor kW 1.8 (2.4HP) Power supply AC200V±10% 50/60Hz±1Hz AC220V±10% 60Hz±1Hz kVA 51 Compressed air supply 0.4~0.6 (58~87psi) *4 , Min.500 (132gpm) *4 *5 Colant tank capacity Coolant tank capacity L 530 (140gal) Spindle and feed system cooling oil tank capacity (oil cooler) L 24 (6gal) Lubrication oil tank capacity L 20 (5gal) Machine height (from floor surface) mm 2605×4480 (102.56*×176.38") Required floor space mm 2605×4480 (102.56*×176.38") Machine weight kg 8500 (19000lbs) Operating environment temperature °C 5~40 | Spindle lubrication oil pump motor (oil air lubrication | n) | kW | 0.017 (0.02HP) |
| Tool Magazine motor kW 1.4 (1.9HP) APC motor kW 1.8 (2.4HP) Power supply AC200V±10% 50/60Hz±1Hz AC220V±10% 60Hz±1Hz kVA 51 Compressed air supply Mpa,i/min[ANR] 0.4~0.6 (58~87psi) *4 , Min.500 (132gpm) *4 *5 Coolant tank capacity L 530 (140gal) Spindle and feed system cooling oil tank capacity (oil cooler) L 24 (6gal) Spindle lubrication oil tank capacity (oil air lubrication) L 2 (0.5gal) Lubrication oil tank capacity L 20 (5gal) Required floor space mm 2605×4480 (102.56"×176.38") Machine weight kg 8500 (19000lbs) Operating environment temperature °C 5~40 | ATC motor | | kW | 1.2 (1.6HP) |
| APC motor kW 1.8 (2.4HP) Power supply AC200V±10% 50/60Hz±1Hz AC220V±10% 60Hz±1Hz kVA 51 Compressed air supply Mpa,t/min[ANR] 0.4~0.6 (58~47psi) *4 , Min.500 (132gpm) *4 *5 Coolant tank capacity L 530 (140gal) Spindle and feed system cooling oil tank capacity (oil cooler) L 24 (6gal) Spindle lubrication oil tank capacity (oil air lubrication) L 2 (0.5gal) Lubrication oil tank capacity L 20 (5gal) Machine height (from floor surface) mm 2605×4480 (102.56*×176.38") Machine weight kg 8500 (19000lbs) Operating environment temperature °C 5~40 | Tool Magazine motor | | kW | 1.4 (1.9HP) |
| Power supply AC200V±10% 50/60Hz±1Hz AC220V±10% 60Hz±1Hz kVA 51 Compressed air supply Mpa,l/min[ANR] 0.4~0.6 (58~87psi) *4, Min.500 (132gpm) *4 *5 Coolant tank capacity L 530 (140gal) Spindle and feed system cooling oil tank capacity (oil cooler) L 24 (6gal) Spindle lubrication oil tank capacity (oil air lubrication) L 2 (0.5gal) Lubrication oil tank capacity L 20 (5gal) Machine height (from floor surface) mm 2640 (103.94") Required floor space mm 2605×4480 (102.56"×176.38") Machine weight kg 8500 (19000lbs) Operating environment temperature "C 5~40 | APC motor | | kW | 1.8 (2.4HP) |
| Compressed air supply Mpa,l/min[ANR] 0.4~0.6 (58~87psi) *4 , Min.500 (132gpm) *4 *5 Coolant tank capacity L 530 (140gal) Spindle and feed system cooling oil tank capacity (oil cooler) L 24 (6gal) Spindle lubrication oil tank capacity (oil air lubrication) L 20 (5gal) Lubrication oil tank capacity L 20 (5gal) Machine height (from floor surface) mm 2640 (103.94") Required floor space mm 2605×4480 (102.56"×176.38") Machine weight kg 8500 (19000lbs) Operating environment temperature "C 5~40 | Power supply AC200V±10% 50/60Hz±1Hz AC220V±10% 60Hz±1Hz | | kVA | 51 |
| Coolant tank capacityL530 (140gal)Spindle and feed system cooling oil tank capacity (oil cooler)L24 (6gal)Spindle lubrication oil tank capacity (oil air lubrication)L2 (0.5gal)Lubrication oil tank capacityL20 (5gal)Machine height (from floor surface)mm2640 (103.94")Required floor spacemm2605×4480 (102.56"×176.38")Machine weightkg8500 (19000lbs)Operating environment temperature"C5~40 | Compressed air supply | | Mpa, {/min[ANR] | 0.4~0.6 (58~87psi) *4, Min.500 (132gpm) *4 *5 |
| Spindle and feed system cooling oil tank capacity (oil cooler) L 24 (6gal) Spindle lubrication oil tank capacity (oil air lubrication) L 2 (0.5gal) Lubrication oil tank capacity L 20 (5gal) Machine height (from floor surface) mm 2640 (103.94") Required floor space mm 2605×4480 (102.56"×176.38") Machine weight kg 8500 (19000lbs) Operating environment temperature "C 5~40 | Coolant tank capacity | | L | 530 (140gal) |
| Spindle lubrication oil tank capacity (oil air lubrication) L 2 (0.5gal) Lubrication oil tank capacity L 20 (5gal) Machine height (from floor surface) mm 2640 (103.94") Required floor space mm 2605×4480 (102.56"×176.38") Machine weight kg 8500 (19000lbs) Operating environment temperature °C 5~40 | Spindle and feed system cooling oil tank capacity | (oil cooler) | L | 24 (6gal) |
| Lubrication oil tank capacity L 20 (5gal) Machine height (from floor surface) mm 2640 (103.94") Required floor space mm 2605×4480 (102.56"×176.38") Machine weight kg 8500 (19000lbs) Operating environment temperature °C 5~40 | Spindle lubrication oil tank capacity (oil air lubricat | ion) | L | 2 (0.5gal) |
| Machine height (from floor surface) mm 2640 (103.94") Required floor space mm 2605×4480 (102.56"×176.38") Machine weight kg 8500 (19000lbs) Operating environment temperature °C 5~40 | Lubrication oil tank capacity | | L | 20 (5gal) |
| Required floor space mm 2605×4480 (102.56"×176.38") Machine weight kg 8500 (19000lbs) Operating environment temperature °C 5~40 | Machine height (from floor surface) | | mm | 2640 (103.94") |
| Machine weight kg 8500 (19000lbs) Operating environment temperature °C 5~40 | Required floor space | | mm | 2605×4480 (102.56"×176.38") |
| Operating environment temperature °C 5~40 | Machine weight | | kg | 8500 (19000lbs) |
| | Operating environment temperature | | °C | 5~40 |

Standard accessories

| Item | Q'ty | Remarks |
|---|------|----------------------------------|
| Dual-contact tool | 1set | BT type |
| LED lamp | 1set | |
| Coolant tank (installed separately) | 1set | Tank capacity 530L (140gal) |
| Splash guard/APC safty guard | 1set | |
| Slide way protection sliding covers for X, Y and Z axes | 1set | |
| Earth leakage breaker | 1set | |
| Automatic power off | 1set | |
| Edge locator | 1set | |
| Signal lamp | 1set | 2-lamps type without buzzer |
| Direct-turn APC unit | 1set | |
| Coil-type chip conveyor | 1set | 1 set for each of right and left |

| Item | Q'ty | Remarks |
|---|------|-----------------|
| Hydraulic unit (installed separately) | 1set | |
| Ceiling shower | 1set | |
| Spindle head and ball screw cooling oil temperature controller (installed separately) | 1set | |
| Ball screw and tool magazine automatic grease lubrication unit | 1set | |
| Oil air lubrication unit | 1set | |
| Foundation parts for machine anchoring (Bond anchoring method) | 1set | with bond |
| Magazine tool holder remove device | 1set | Foot pedal type |
| Instruction manual | 1set | |
| Electrical instruction manual (including electrical diagrams) | 1set | |

*1: Under the HQ or Hyper HQ control

*2: The number of storable tools refers the total number of tools including the one attached to the spindle i.e. subtract one from the above for the number of tools storable in the tool magazine.

*3:Conditional. For details, refer to tool limits drawing.

*4: Purity of the supplied air should be equivalent to or higher than Class 3.5.4 specified in ISO 8573-1/JIS B8392-1.

*5: The flow rate for the standard specification machine is specified in the above. When optional specifications such as an air blower is added, add the corresponding air supply according to the operating frequency.

Dimensions [mm]

Controller

FANUC Controller 31i

Standard Specification

No. of controlled axes: 4 axes (X, Y, Z, B) No. of simultaneously controlled axes: 4 axes Least input increment: 0.001mm/0.0001* Max.programmable dimension: ±999999.999mm/±39370.0787" Absolute/Incremental command: G90/G91 Decimal point input/Pocket calculator type decimal point input Inch/Metric conversion: G20/G21 Program code: ISO/EIA automatic discriminaton Program format: FANUC standard format Nano interpolation(internal) Positioning: G00 Linear interpolation: G01 Circular interpolation: G02/G03 (CW/CCW), including radius designation Unidirectional positioning: G60 Helical interpolation Cylindrical interpolation Cutting feed rate: 6.3-digit F-code, direct command Dwell: G04 Manual handle feed: manual pulse generator 1 set (0.001, 0.01, 0.1mm) Rapid traverse override: 0/1/10/25/50/100% Cutting feed rate override: 0 to 200% (every 10%) Feed rate override cancel: M49/M48 Rigid tapping: G84, G74 (Mode designation: M29) One-digit F code feed Part program storage capacity: 1280m [512KB] No. of registered programs: 400 Background editing Extended part program editing 10.4" color LCD Clock function MDI (Manual Data Input) operation Run hour and parts count display Memory card/USB interface Spindle function: 5-digit S-code direct command Spindle speed override: 50 to 150% (every 5%) Tool function: 4-digit T-code direct command ATC tool registration Auxiliary function: 3-digit M-code programming Multiple M-codes in 1 block: 3 codes (Max. 20 settings) Tool length offset: G43, G44/G49 Tool diameter and cutting edge R compensation: G41, G42/G40 Tool offset sets: 400 sets in total Tool offset memory C Tool position offset Manual reference position return Automatic reference position return: G28/G29 2nd reference position return: G30 Reference position return check: G27 Automatic coordinate system setting Coordinate system setting: G92 Machine coordinate system: G53 Workpiece coordinate system: G54 to G59 Addition of workpiece coordinate system (48 sets in total): G54.1 P1 to P48 Local coordinate system: G52 Program stop: M00 Optional stop: M01 Optional block skip: /

Standard Specification Addition of optional block skip: 9 in total Dry run Machine lock Z-axis feed cancel Auxiliary function lock Graphic display Program number search Sequence number search Program restart Cycle start Auto restart Single block Feed hold Manual absolute on/off: parameter Sequence number comparison and stop Manual handle interruption Sub program control Canned cycle: G73, G74, G76, G80 to G89 Mirror image function: parameter Automatic corner override Exact stop check/mode Programmable data input: G10 Programmable mirror image Optional chamfering/corner R Custom macro Interruption type custom macro Addition of custom macro common variables: 600 Coordinate system rotation: G68, G69 Scaling: G50, G51 Backlash compensation for each rapid traverse and cutting feed Memory pitch error compensation Skip function Tool length manual measurement Automatic tool length measurement: G37/G37.1 Tool life management: 128 sets in total Emergency stop Data protection key NC alarm display/alarm history display Machine alarm display Stored stroke check 1 Stored stroke check 2. 3 Load monitor Self-diagnosis Absolute position detection Manual guide i (Basic)

Original SMK Software

| HQ control | STD |
|---|-----|
| Hyper HQ control mode A | OP |
| Special canned cycle (including circular cutting) | OP |
| Cycle mate F | OP |
| Soft scale m | STD |
| Touch sensor T0 software | OP |
| Tool failure detection system (Soft CCM) | OP |
| Adaptive control (Soft AC) | OP |
| Automatic restart at tool damage | OP |
| | |

STD: Standard

Optional Specification

Least input increment: 0.0001mm/0.00001" FS10/11 tape format Part program storage capacity: 5120m [2MB] (400 in total) RS232C interface: RS232C-1CH Data server: ATA card (1GB) Spindle contour control (Cs contour control) Chopping High-speed skip Manual guide i (Milling cycle)

Imported by SMT Group

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