MOOV Panasonic

Wafer Bonder

Model: MD-P200

Model : NM-EFD1B

1. Specifications

Subject No.	

1.1 Basic Specifications 1

Power Supply	Rated voltage	3ÿ:AC 200V±10V,AC208V±10V,AC 220V±10V			
		AC 380V ±20V,AC400V ±20V,AC 415V ±20V,AC 480V ±20V			
		50 /60 Hz			
	Equipment rating	Equipment rating 1kVA, maximum 4kVA (heating specification maximum 7kVA) Rated capacity and power supply of			
	Please ensure a production line that can fully satisfy the above capacity. ·Please prepare a 4-core 3.5 mm2 (AWG#12) or larger cable to connect the power supply. •For power supplies other than 200 V, it is necessary to install a switch socket for a transformer outside				
2 Air pressure source	the	0.4ÿ0.5 MPa (Max. 0.8 MPa)			
	equipment.	30 L /min (ANR) (Maximum 150 L /min with all options (including cooling air))			
	Pressure discharge flow · Compressors should be equipped with moisture and oil separators to supply clean				
	and dry compressed air. Vacuum source - below 80 kPa, exhaust volume above 240 L/min (ANR) If there is no				
	pump specifications Achieved vacuum: -80 kPa * (optional) Exhaust speed: 240 L/min (ANR) (50Hz), 260 L/min (ANR) (60Hz) Manufacturer: ULVAC, Type: DA-241SE	vacuum source in the factory, a vacuum pump is required. Vacuum			
3	Equipment size	Standard specifications (when the maximum substrate length is 200mm): W 1 950 mm × D 1 190 mm × H 1 720 mm (Including feeder/discharger, please refer to 2. Machine configuration for detailed dimensions) Reference: (Equipment body: W 1 190 mm × D 1 190 mm × H 1 720 mm) * Maximum substrate length 100mm limited specification: W 1 750 mm × D 1 190 mm × H 1 720 mm * Maximum substrate length 280mm specification: W 2 050 mm × D 1 190 mm × H 1 720 mm •The above dimensions do not include signal towers, monitors, front operation parts, MR units, handles, etc.			
4	weight	Body weight	2 200 kg (Including feeder, discharger) *Varies depending on the unit configuration.		
5 environmental conditions			20 ÿ ~ 25 ÿ 10 000	humidity	40 % ÿ 70 % (without condensation)
	temperature cleanliness	grades •Set			
	ground state	ground state flatness ±10 mm •Set ground strength The supporting strength of the required area (1.4m2) of the equipment main body (2.2t) (If the ground strength is insufficient, a weight distribution plate is required.) In There must be no noise			
	other	or vibration sources nearby. Up to 1000 items/disk			
6	program	memory capacity	(internal memory device: 80GB hard disk drive) •Varies with data capacity. Standard SD card memory drive × 1 standard attachment 2		
		external data storage	SD cards ÿ for system installation (1GB) ÿ for data storage (512MB) up to 1000 types / SD card (including all input data of each model such as identification data and coordinate data)) *Varies with data size and remaining capacity. Display of production management information, operation information, time information, frequency information, and identification		
7 other		information (operation information and time information are based on SEMI specifications) error count and error history Transfer standard: Front side/center standard Mounting height: 1 from the ground			
		050 mm (Transportation height: 1 059 mm (LD side), 1 080 mm (ULD side) Adjustment bolts for fixing required for transport: 4 places (However, they cannot be used for lifting.)			

1.2.1 Summary of basic

1	performance equipment	This equipment is a high-speed, high-quality bonding machine for mounting the most advanced device - bare IC. The basic structure is: it can correspond to the maximum wafer size of 200mm, and perform fixed-point picking and fixed-point mounting. Various functions can be selected in response to production innovation technologies such as multi-functionalization, miniaturization and thinning, and layering. (Optional functions: multi-functional chip mounting function, optical pre-positioning function, interactive resin drawing function, flip chip mounting, heating mounting, ultrasonic mounting, etc.)	
2	device function * Varies depending on the target product, not a guaranteed value.	Cycle time (best action time)	0.56 s/wafer (the speed under the following optimum conditions) •Operation cycle for continuous mounting of qualified wafers through the optical pre-alignment function •No alternate resin supply (transfer, drawing) and no missing wafer detection•When the mounting camera position is *100mm, when the mounting pitch is less than 5mm <simple calculation (reference)> time required for each board (basic mounting point, mounting 1-point wafer, all qualified wafers, none bad mark) = (A × number of wafers) + (C × (number of wafer types - 1)) + B [unit: s] time 0.56 s / wafer 10 s / substrate 10 s / wafer

Item			Remarks
A	Bonding Time		The above optimal speed conditions do not
B	Transfer Substrate Time		include the board AB point recognition time. Under
C	Switching Wafer Time		the specifications using the pallet changer, when the

actual camera position is 140mm and 150mm, the speed is approximately 0.03s and 0.035s longer, respectively. (1) Pre-positioning

Loading Accuracy (Not the best conditions above.)	mounting mode (without using up-looking camera) XY = ± 0.015 mm (3ÿ) , ÿ = ± 0.3 (3ÿ) (2) Direct mounting mode (without using up-looking camera) XY = ± 0.025 mm (3ÿ) , ÿ = ± 0.5 (3) In flip-chip mounting mode (Using Up-looking camera (3s) XY = ± 0.007 mm (3ÿ), ÿ = ± 0.3 The two conditions are as follows · (3s) Loading conditions: use double-sided adhesive tape to evaluate the flat suction nozzle, glass substrate and joint condition without ultrasonic waves, and the working head and mounting base are not heated.•The above is the accuracy obtained by using our standard glass substrate and analog chip (ÿ 1.2 mm).
Wafer Bonding Quality	BLT: range from 0.005mm to 0.0020 mm, TILT: within 0.015mm, wafer size: 1.2 mm, bonding resin: Ablebond 84-1LMISR4 mounting mode, pre-positioning, recognition, alternate resin supply cycle time, no 0.76 s/ wafer

Each mounting and resin supply work and basic functions (reference value)

transfer 0.76 s/chip dot 0.76 s/chip 0.82 s/chip* 0.87 s/chip* 0.95 s/chip* 0.56 s/chip						Mounting accuracy (3ÿ)
Direct installation (installation after the air pressure head is directly picked up)	none	none	describe			XY = ±0.025 mm ÿ = ±0.5
				1mm cross		
				3mm cross		
				5mm cross		
Pre-positioning and installation (temporary placement on the front abutment, (camera after pre-positioning recognition and correction) is carried out through the air pressure head)		none	No transfer		0.70 s/chip 0.65	XY = ±0.015 mm ÿ = ±0.3
			describe	dot	s/chip 0.72 s/	
				1mm cross	chip* 0.78 s/chip*	
				3mm cross	0.83 s/chip*	
				5mm cross		
Flip-chip placement (pick up and flip and transfer to the placement head for placement)	Yes (flip camera)	have (Up looking camera)	none		0.75 s/wafer (including bonding 0.2s) VCM50N pressure head detection height is 0.2mm	XY = ±0.007 mm ÿ = ±0.3

* The rate of plotting XY is completely under the condition of 100%

Subject No.	

1.2.2 Basic performance

3 Model switching time	Standard model switching time (reference value based on measurement results based on our company's conditions)	Operation	time	* Within 2 minutes replacement time, 0.5 minutes of confirming the quality and 0.5 minutes of running conditions are not included
		Create data (for new models)	20 min	
		Replacing injectors in resin supply part (one by one)	2 min	
		Replacing suction nozzles and height teaching of	1 min	
		resin supply part Replacing wafer pallets in wafer	of	
		supply part (total 5 pieces) Replacing wafers in	of confirming	
		wafer supply part Pallet (1 piece)	minutes of	
		Substrate supply part, magazine	not included	
		replacement, substrate storage part,	3 min	
		magazine replacement, transfer	3 min	
		part base, screen	2 min	
		change, transfer part track width	1 min	

4 Joint Specifications	replacement, head nozzle replacement, ejection part,	
	Mounting Head Specifications	ejector head, maximum number of mounting points in the substrate , 30 000 points ÿ Pneumatic head loading (static) load: 0.5 ~ 10 N (voltage regulator controls air pressure) movable height: wafer pick-up position ~ mounting position (ball screw drive) ÿ VCM pressure head (50N pressure head/ 100N pressurizing head (2 types) Mounting (static) load: 1 to 50 N / 2 to 100 N (VCM load control) Movable height: Flip-chip receiving position to mounting position (VCM drive) Available height (electrode Ball Break) Monitor performance (resolution 0.1 ÿm) * Ultrasonic (US) tool can be installed on the tip of the VCM pressure head. Ultrasonic mounting is possible
	Ultrasonic mounting function	with an ultrasonic (US) tool and a US controller. (1) US controller The US controller depends on the specifications, please choose from the following 2 types. ÿUS controller unit ÿWith power booster

Type of US controller		ÿUS controller unit	ÿWith power booster
Vibration frequency		55 ÿ 65 kHz	
Maximum output	range Maximum voltage (Note 1)	20 Vrms (40 ÿ)	60 Vrms (340 ÿ)
	maximum current (Note 1)	0.6 Arms (below 30ÿ)	0.6 Arms (under 90 ÿ)
	Maximum power (Note 2)	5 W (15 ÿ), 9 W (40 ÿ)	30 W (100 ÿ) 0.8
power (60kHz) Each control	Power Setting - Constant Voltage Control	to (20) Vrms (Note 3) 1.2 to (60) Vrms (Note 3)	
	Current setting - constant current	0.02 ÿ ÿ 0.6 ÿ Arms	
	control Power setting - constant power control	0.05ÿÿ12ÿW	0.1ÿÿ36ÿW

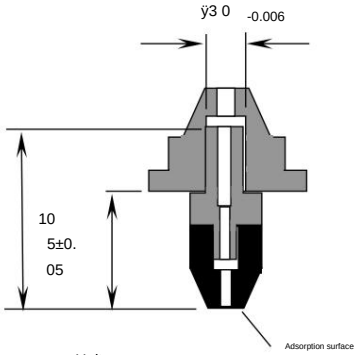
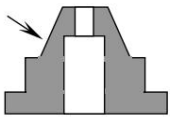
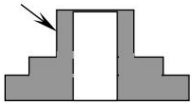
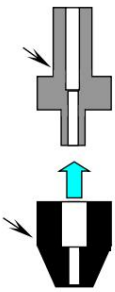
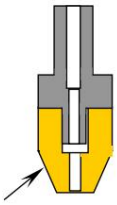
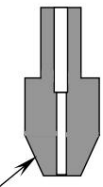
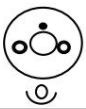
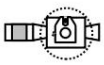
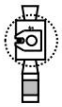
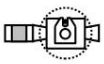
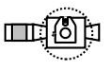
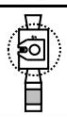
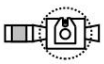
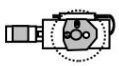
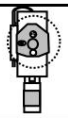
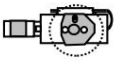
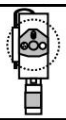
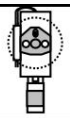
mode and setting value (Note 4) (Note 1) This is the maximum output power of this unit. Depending on the resistance in the actual installation, the maximum power value may not be reached. (Note 2) The maximum value when specifying resistance. (It will vary depending on the installed resistance) (Note 3) In the case of power setting-constant voltage control, it is the value converted from the voltage setting value. (Note 4) Due to the resistance, it may not be able to reach the set maximum value.

(2) US tools

Our old equipment (FB50, FCX501 series) is equipped with a US tool interchangeable (below table) The wafer size that can be used with the US tool is the all-pin corresponding to the split type ÿ3 mm or less ÿ7 mm or less and the middle pin is corresponding to the split type* Same as before, The tool tip needs to be selected according to the chip installed parameters may be without X/Y X/ Y (wafer) size. * The different from the old model (FCX501 series), and need to be confirmed again.

Subject No.	

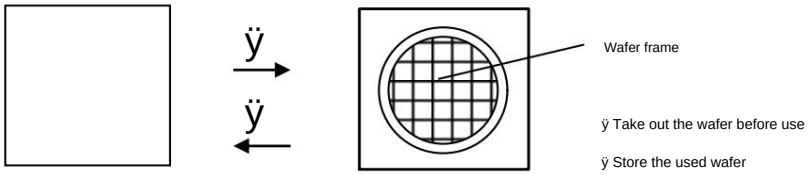
1.2.3 Basic performance 5

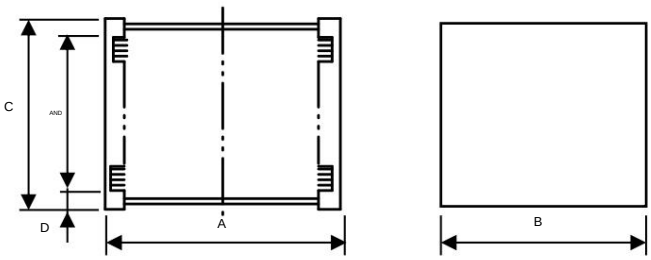
suction nozzle specification	Dimensions when installing the nozzle	There are 3 types of tapered nozzles, resin nozzles and metal nozzles. ÿ According to wafer size, shape, material, Usually an individual correspondence.  Unit: mm				
	Nozzle holder (2 types available)	Automatic replacement type nozzle holder (multiple)  Manual fixed type nozzle holder (single) 				
	Nozzle (There are 3 types)	Nozzle attachment  Tapered nozzle resin nozzle  metal nozzle  (Conical nozzles only have interchangeable tips)				
6	Installation of US tool (option)		50N pressure head (pin position on the inside & left side (2 positions)) 		100N pressure head (pin position is only on the inner side) 	
			X direction	Y direction	X direction	Y direction
		Small sales split type : X direction	vibrator left 	The vibrator is on the outside 	vibrator left 	Locating pins cannot be used
		Fewer pins and small amplitude type: X direction	vibrator left 	The vibrator is on the outside 	vibrator left 	Locating pins cannot be used
		Middle pin heated split vibrator type: left side in X direction		The vibrator is on the outside 	vibrator left 	Locating pins cannot be used
		Middle pin heating split type: Y direction	Locating pins cannot be used	The vibrator is on the outside 	Locating pins cannot be used	The vibrator is on the outside 

1.2.4 Basic performance

<table>
<tr><td>7</td><td>wafer pallet
supply</td><td>Replace pallet</td><td>Clamping & swinging (180°) transfer method
Wafer pallet replacement time: 10s (except for pallets) Wafer pallet supply
method: Each pallet is supplied by hand. Up to 5 pallets can be used.
(Standard is 1 piece) When preparing for model switching</td></tr>
<tr><td></td><td></td><td>Expansion of cutting tape</td><td>externally, perform expansion operations on the pallet.</td></tr>
<tr><td>8</td><td>Automatic wafer changer supply

(option)</td><td>Wafer switching time 20 s/wafer (varies with heating and air blowing time.) Storage method Wafer frame Wafer
expansion and
shrinkage
Wafer ÿ axis

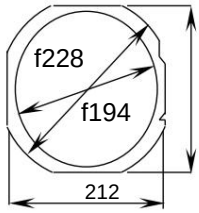
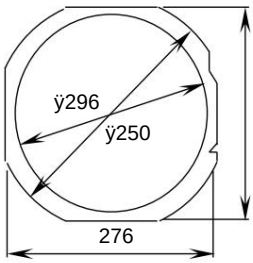
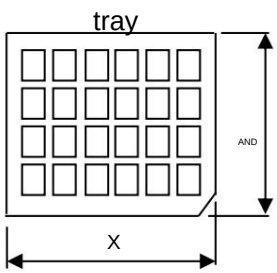
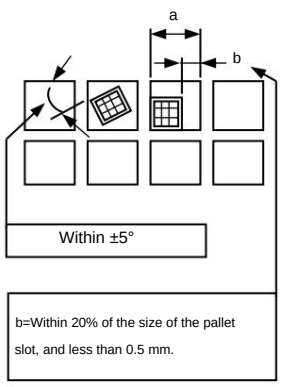
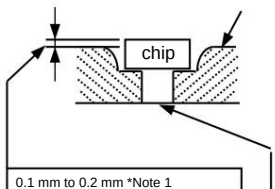
Wafer switching method</td><td>Wafer frame storage box (manufactured by DISCO, PFSC)
Wafer frame heating gas method for DISCO type 8
and type 6 (optional) ÿ-axis rotation angle:
360° Resolution: 0.002°


Wafer lifter automatic expanders are roughly divided into the following three</td></tr>
<tr><td></td><td></td><td>type</td><td>types, with 200mm and 150mm specifications. Type Variety Layer Quantity Frame Push Rod Expansion
<table><tr><td>Single 25 Available 3-10 mm Variety 25 Available</td><td></td><td></td><td></td><td></td></tr><tr><td>ÿFor flat ring</td><td></td><td></td><td></td><td></td></tr><tr><td>ÿFor flat ring without extension</td><td></td><td></td><td></td><td>0ÿ7 mm</td></tr></table></td></tr>
<tr><td></td><td></td><td>Corresponding wafer storage
box</td><td>DISK:ÿDTC2-6-1AÿÿDTC2-8 Unit: m
PFSC: ÿ Type 6 wafer storage box (P12X10 layer), ÿ Type 8 wafer storage box (P14X12 layer)


<table><tr><td></td><td>ÿ</td><td>ÿ</td><td>ÿ</td><td>ÿ</td></tr><tr><td>A</td><td>222</td><td>288</td><td>222</td><td>286</td></tr><tr><td>B</td><td>212</td><td>276</td><td>212</td><td>276</td></tr><tr><td>C</td><td>143</td><td>205.5</td><td>146</td><td>192</td></tr><tr><td>D</td><td>12.5</td><td>12.5</td><td>15</td><td>15</td></tr><tr><td>E</td><td>25 floors P4.76 25 floors P6.35</td><td></td><td>10 layers P12</td><td>12 layers P14</td></tr></table>Note) Storage boxes for all 25th floors cannot be used if there is no specification for wafer frame pushers. In this case, skip 1-layer use.</td></tr>
</table>

Subject No.	

1.2.5 Basic Performance

9	Chip Specifications	chip	Material: Si, GaAs, others Size: L 0.25mmÿ6mm, W 0.25mmÿ6mm, t 0.07mmÿ0.5mm Aspect ratio: W/Lÿ1/3 or more (L is the long side) t/Wÿ1 or less (W is the short side) Number of varieties: Wafer pallet specification (wafer only): Up to 5 varieties (1 wafer 1 variety) Wafer pallet specification (including tray): Up to 10 types (1 pallet with 2 types) Wafer pallet weight: Max. 2 kg (1 piece) *Even if the mounting angle is different for the same wafer, each operation is different Varieties are counted. *Pallet specifications are optional. Angle mounting is an individual specification. Nozzle changer: up to 24 (for max 6 mm size) *Replaceable nozzles are pickup nozzles, mounting nozzles (excluding US nozzles), transfer pins
		wafer dicing wafer frame	Corresponding to wafers after integral dicing, 8-inch (standard) and 6-inch (optional) wafer frames made by DISCO are available, and customer-specific frames are individually available. unit:mm  Made of SUS t = 1.2mm MODTF 2ÿ6ÿ1 Corresponds to 6  Made of SUS t = 1.2mm MODTF 2ÿ8ÿ1 corresponds to 8 inches
		Wafer pad	inches Compatible mats: blue mats (weak adhesion mats), UV hardening mats 2, 3, 4
10 pallet size		Pallet specifications (optional)	customer-specific trays are individually compatible  |	X	AND | |---|---|---| | Type 2 | 50.8mm | 50.8mm | | Type 3 | 76.2mm | 76.2mm | | 4 type | 101.6mm | 101.6mm | Choose a variety from the sizes above Pallet Considerations bÿ0.2 a  b=Within 20% of the size of the pallet slot, and less than 0.5 mm. Tray color is satin black. * Note 1  0.1 mm to 0.2 mm *Note 1 For wafers larger than 4 mm × 4 mm, holes need to be opened at the bottom. *Note 1 This is a necessary condition when picking up through the pyramid seat . *Need to maintain both angle tolerance and gap tolerance

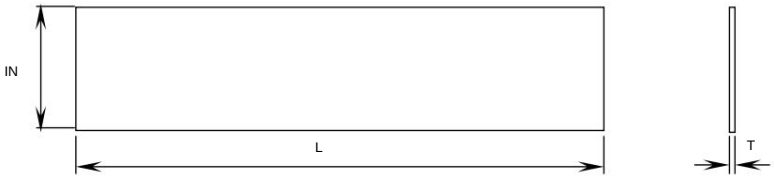
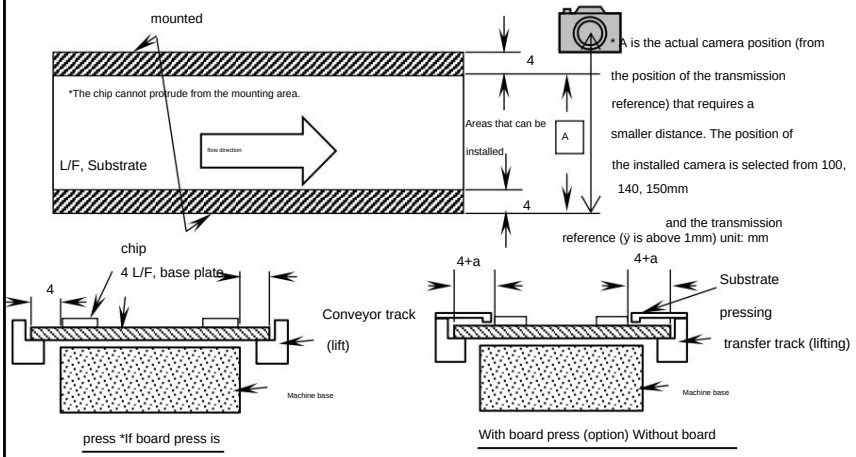
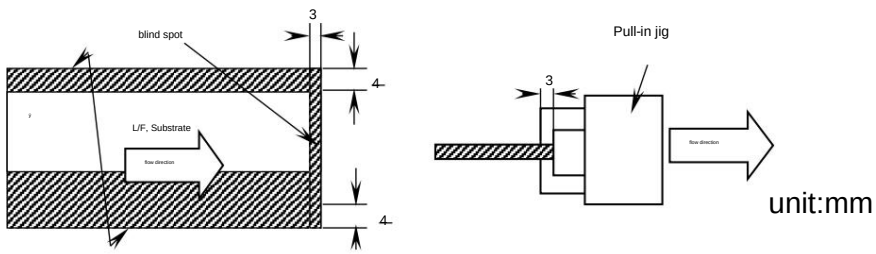
1.2.6 Basic performance 11

Specification comparison of wafer supply method

Wafer supply method	Workpiece replacement form	type	Workpiece shape		Expansion drive volume		Number of Frame Push Rod	ÿ Axis Varieties (number of storage)	Automatic replacement time
pallet changer	No pallet ÿ (for pallet changer)	Pallet changer without theta	flat ring	ÿ200mmÿDISCO)	manual	2ÿ6mm	·	5 varieties (5 layers)	10s
				ÿ150mmÿDISCO)					
			handle ring	ÿ247-227xT6mm		·			
				ÿ210-195xT6mm		·			
				ÿ186-170xT6mm		·			
				ÿ152-140xT6mm		·			
			pallet board	2 inches x 6 pcs		·			
				3 inches x 2 pcs		·			
				4 inches x 1		·			
	Attached pallet ÿ (for pallet changer)	The pallet changer has ÿ	flat ring	ÿ200mmÿDISCO)		2ÿ6mm	none	±10°	
				ÿ150mmÿDISCO)					
			handle ring	ÿ247-227xT6mm		·			
				ÿ210-195xT6mm		·			
				ÿ186-170xT6mm		·			
				ÿ152-140xT6mm		·			
			pallet board	2 inches x 6 pcs		·			
				3 inches x 2 pcs		·			
				4 inches x 1		·			
AWC	Wafer storage box	200mm flat ring corresponds to	flat ring	ÿ200mmÿDISCO)	Motor 3ÿ10mm		have	360°	1 variety (25 layers)	20s
		150mm flat ring		ÿ150mm (DISCO)	injector 3,5,7mm		none	±5°		
		150mm flat ring correspondence (ejector type)								
		200mm without extension corresponding	flat ring	ÿ200mmÿDISCO)	motor	0ÿ7mm	have	360°	25 varieties (25 layers)	
		to 150mm without extension corresponding		ÿ150mm (DISCO)						
		200mm non-extension & pallet mixed load support	flat ring ÿ200mm (DISCO)			0ÿ2mm	none		12 varieties (12 layers)	
			Handle ring ÿ200-195xT6mm special pallet			·				
						·				

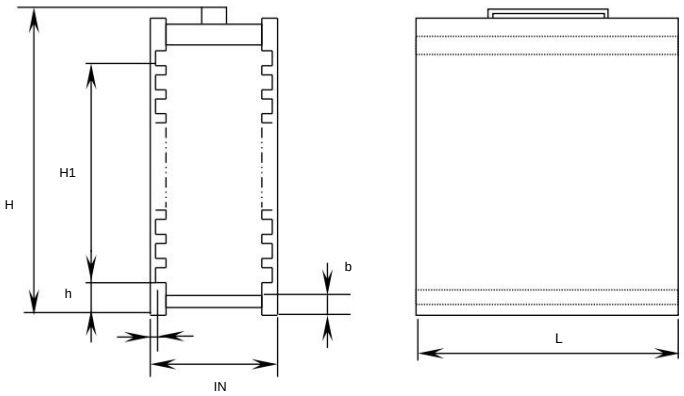
12 multifunction axes	Shaft equipped with function	The multi-function (X) axis has the following functions. (1) Pre-positioning abutment (2 kinds of suction abutment position switching correspondence) Pick up a wafer from a wafer, put it on the abutment temporarily, and recognize the position with a camera (2) Nozzle changer (change nozzle from the nozzle memory , transfer pin) Automatic exchange of bonding nozzles, pick-up nozzles, transfer pins (3) Pickup head for wafer recovery, abutment cleaning and recovery Wafers picked up by the pick-up nozzle (suction type, cleaning from above the abutment) (4) Up-looking camera (2-point recognition for both X-axis) Use the Up-looking camera to recognize the back of the wafer, and 2 points for camera operation recognition (5) Z-axis height calibration of the head (Rubber) The height of the tip of the nozzle is measured through a sensor (6) The wafer detection sensor corresponding to the pickup head detects whether the tip of the pickup nozzle is stuck to the wafer and brought back
	Pre-positioned abutments	The position on which the wafer is temporarily placed on the abutment can be selected from 1 position type or 2 position types. If two position types are used, wafers with a large difference in size can be used respectively.
	Nozzle changer (optional)	Standard maximum wafer size: ÿ 6 mm (nozzle memory) Number of installed nozzles: up to 24 (for pick-up, for splicing, for transfer) Nozzle position data can be set arbitrarily.

1.2.7 Basic Performance

Specifications13	Substrate	supply form	Container supply, line specifications (options) Organic substrates
		Substrate material	(glass epoxy, BT resin, polyamide, etc.) Ceramic substrates (corresponding to options) Metal substrates (lead frames, carriers) *Before mounting options Items such as inspection and post-installation inspection need to be verified in advance.
		Board size that can be transferred (including carrier)	L (length): 50 ~ 280mm (varies according to the supply specification of the box.) W (width): 30 ~ 150mm (varies according to the supply specification of the box.) T (thickness): 0.1 ~ 3.0mm Board bending: within 1mm * Please contact us separately for bending conditions other than the above. 
	14 Substrate base	Areas that can be installed	ÿIn the width direction, there is an unmountable area of 4mm or more from both ends. ÿDepending on the position of the camera to be mounted, the unmountable area may occur inside the board. (Example: When the substrate width is 120mm and the camera position is 100mm, it cannot be mounted on the inside 20mm) Areas that cannot be mounted  equipped, the area that cannot be mounted is 4mm from the end surface of the board press. ÿIn the jig transfer method, there is an area of 3mm or more that cannot be mounted at the front end. 
		Joint abutment size	ÿMaximum substrate size: L 280 mm XW 140 mm ÿMaximum substrate size: L 200 mm XW 140 mm ÿMaximum substrate size: L 200 mm XW 150 mm heating specification ÿMaximum substrate size: L 200 mm XW 150 mm heating specification ÿMaximum Substrate size: L 100 mm XW 100 mm Heating specifications Heating method: constant temperature heating Bonding abutment: heating set temperature from room temperature to 300°C (250x100mm, abutment 200°C) The temperature difference is less than 10% Bonding abutment
		Abutment heating (optional)	before installation: heating Set temperature from room temperature to 300°C (250x100mm, abutment 200°C) with a temperature difference of 10% or less

Subject No.	

1.2.8 Basic performance 15

<table>
<tr><td rowspan="14">Substrate material box</td><td rowspan="14">Bin size</td><td colspan="5">Dimensions of material boxes for substrates (customer’s box conditions) Unit: mm Box support type</td></tr>
<tr><td colspan="5">2015 Width: W Length: L 280-130 mm Thickness: T Width: W Length: L 289-153 mm Height: H</td></tr>
<tr><td rowspan="3">Substrate size</td><td>Bottom</td><td>140ÿ30 mm</td><td>140ÿ30 mm</td><td>150ÿ30 mm</td></tr>
<tr><td>layer height : h Lower floor gap: hb</td><td></td><td>200ÿ50 mm</td><td>200ÿ50 mm</td></tr>
<tr><td>Groove</td><td colspan="3">0.1ÿ3.0 mm</td></tr>
<tr><td rowspan="8">Bin size</td><td>spacing:</td><td>155.5ÿ42 mm</td><td>155.5ÿ42 mm</td><td>167.5ÿ42 mm</td></tr>
<tr><td>P Groove stroke: H1 Side plate</td><td></td><td>209ÿ109 mm *</td><td>209ÿ109 mm</td></tr>
<tr><td></td><td colspan="3">75ÿ264 mm</td></tr>
<tr><td>thickness: Tw *</td><td colspan="3">15ÿ20 mm</td></tr>
<tr><td>When the length</td><td colspan="3">5 mm or</td></tr>
<tr><td>of the material</td><td colspan="3">more, 4 mm</td></tr>
<tr><td>box is less</td><td colspan="3">or more, 196 mm</td></tr>
<tr><td>than 150mm, the</td><td colspan="3">or less, 6.2 mm (standard)</td></tr>
<tr><td colspan="5">side plates (2 on the feed side) need to be replaced.• 0 ÿ ((box length) - (substrate length)) ÿ 59 mm

</td></tr>
<tr><td rowspan="2">16 substrate supply</td><td>supply form</td><td colspan="3">Bin to bin •Feed
side (LD): 2-station bin switching method with push rod (standard) •Outlet side
(ULD): 2-station bin switching method (standard) 10 s (varies</td></tr>
<tr><td>Substrate transfer time</td><td colspan="3">depending on the target product , is not a guaranteed value.) * Time
to replace the bonded abutment substrate</td></tr>
</table>

1. Specifications

Subject No.	

1.2.9 Basic performance 17

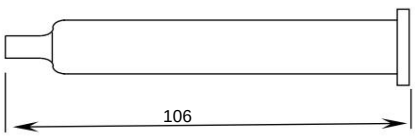
Maximum substrate size of		The selection specifications for substrate transfer and abutment association are as follows. The S type is a general term for specifications corresponding to only one type.				
the substrate transfer system			L280 × W140mm L200 × W140mm		L250 × W100mm	L200 × W150mm 2015 (MG
Substrate feed	no switch			2015 (MG width: 167.5ÿ42mm) (MG length: 209ÿ109mm) (Substrate length: 200ÿ		width: 167.5ÿ42mm) (MG length: 209ÿ109mm) (Base length: 200ÿ50mm)
	2 switches		50mm) 2814 2014 (MG width: 155.5ÿ42mm) (MG length: 289ÿ153mm) (Base length: 280~130mm)	(MG width: 155.5ÿ42mm) (MG length: 209~109mm) (Base length: 200~50mm) ÿWithout	2814 (MG width: 155.5ÿ42mm) (MG length: 289ÿ153mm) (Base length: 280ÿ130mm)	
	Online		extension rail ÿWith extension rail			
Substrate output	No Toggle			2015		2015
	2 Toggles		2814	2014	2814	
	Online		ÿWithout extension rail ÿWith extension rail			
Substrate bin			2814 (5P×40)	ÿ2014 (5P×40) (ÿ2010 (5P×40))	2814 (5P×40)	2015 (5P×40)
	Substrate Transfer		Substrate Transfer Unit			
	Substrate Supply Chuck Unit		Substrate Supply Chuck Unit			
	Substrate Transfer Claw		Substrate Transfer Claw ÿStandard ÿSpecial			
	board transfer rail	Standard material base board corresponding to	ÿL280 X W140mm, no front abutment specification ÿL280 X W140mm, front abutment specification		L250 X W100mm, anterior abutment specification	ÿL200 X W150mm, no anterior abutment specification ÿL200 X W150mm, anterior abutment specification
		Ceramic substrate pair should	ÿL280 X W140mm, no front abutment specification ÿL280 X W140mm, front abutment specification			L200 X W150mm ÿSpecification without anterior abutment ÿSpecification of anterior abutment ÿSquare corner area 3mm corresponding
front base	without anterior abutment		L280 X W140mm	ÿL280 X W140mm ÿL200 X W150mm	L280 X W140mm	L200 X W150mm
	Anterior abutment	No heating	L280 X W140mm (drawable area: L200 X W140mm)			L200 X W150mm
		with heated		L200 X W100mm	L250 X W100mm	L200 X W150mm
	Individual design	support plate	Anterior abutment support			
		Substrate pressing unit	plate Anterior abutment pressing unit			
Joint abutment	without heating		L280 X W140mm			L200 X W150mm
		collection box ÿ	ÿ Wafer collection box (for bonding base) Wafer Wafer collection box & Alternate nozzle height detection sensor ÿ Trial operation			
		operation base	base (for bonding base front side) Trial operation base ÿ Trial (bonding base Rear side) ÿ Resin waste box (BS front side) Resin			Trial movement abutment (150mm wide substrate corresponds to B/S)
			waste box ÿ Resin waste box (BS rear side)			
	with heating			L200 X W150mm L250 X W100mm		L200 X W150mm
		Wafer collection box	Wafer collection box (for heating bonding base)			
	individual design	support plate	Splicing Abutment Support			
		Substrate pressing unit	Plate Splicing Abutment Substrate Depressing			
	other options	Object	Unit Splicing Abutment Target Mark			
		Marker Ionizer	Substrate Corresponding Ionizer (Corresponding to Splicing			
		prevent thermals	Abutment) Substrate Recognition Thermal Airflow Prevention Air Blowing Unit ÿRight Side Only ÿLeft and Right			
		automatic grinding				150mm wide base plate corresponding to US tool automatic grinding unit
						Whetstone ÿ For non-heated tools ÿ For heated tools
	Substrate outgoing track		Substrate outgoing track			
	Substrate bending press		Substrate bending press			
	Substrate air cooling		Substrate air cooling			

1.2.10 Basic Performance 18

Injector Specifications		the needle	Standard size L (length): 19mm (for standard injector specifications) 12mm (for small- diameter injector specifications) D (diameter): 0.7mm ÿ (tip angle): 10° (specifications vary by customer) SR (sharp rate of tip): 0.040mm (Specification varies by each customer) When the diameter
		special matters	of the needle head is larger than the diameter of the spray cylinder hole, the amount of ejection from the bottom can be limited. Please note that the ejection amount varies depending on the tip curvature and tip angle. Use a
		needle holder	dedicated needle holder. The minimum needle pitch is 3mm, and the 4-pin jacking frame is a special specification to match the customer's
		size. Injector Correspondence Table (Note 2)	
		Wafer injector type maximum	1 pin specification (Note 1) 3
		corresponding number of varieties	types (1 pin 3 pcs)
		injector head	A) 1 pin: ÿ22mm B) Small diameter correspondence (1 pin): ÿ14mm •Up to 3 pieces (combinable)
		Injector head bracket	up to 3
		Injector X-axis wiring fixing tool required quantity	3 - (number of injector heads)
		Pepper Pot	ÿSpray cylinder (ÿ22-0.8): center hole ÿ0.8mm (corresponding to A) ÿspray cylinder (ÿ22-0.5): center hole ÿ0.5mm (corresponding to A) ÿspray cylinder (ÿ22-0.25): center hole ÿ0.25mm (Corresponding to A) ÿSpray cylinder (ÿ14-0.8): center hole ÿ0.8mm (corresponding to B) ÿSpray cylinder (ÿ14-0.5): center hole ÿ0.5mm (corresponding to B) ÿSpray cylinder (ÿ14-0.25): center Hole ÿ0.25mm (corresponding to B) ÿ20ÿmR-12L (corresponding to B) ÿ20ÿmR-19L
		injector needle	(corresponding to A) ÿ40ÿmR-12L (corresponding to B) ÿ40ÿmR-19L (corresponding to A)
		Pepper Pot heater (optional)	ÿ Corresponding to standard diameter (ÿ22mm) ÿ Corresponding to small diameter (ÿ14mm) •Up to 3 pieces (can be combined)
		special matters	(Note 1) The 1-pin specification is a general term for the types with one needle ejection mechanism for each injector head, and the number, arrangement, and layout of needles other than the standard specifications are individual specifications. (Note 2) When the maximum number of corresponding types exceeds 3 types (maximum 6 types), the injector needle ejection of each injector head, the inner and outer switchable type (common name: 1/4 pin switching specification) is also an individual specification. (Need to negotiate)

Subject No.	

1.2.11 Basic performance

	bonding resin supply 19	Resin supply method	Air pressure dispensing drawing method, transfer pin Dispensing method method (alternative drawing, transfer printing, and jet dispensing can only be selected from
		Drawing method specification (option)	3 methods.) Drawing position: ÿJoint abutment position drawing (in the case of alternate drawing method)•Can be used with Alternate mounting •Fixed-point drawing (fixed drawing center position, substrate side movement) Drawing position: ÿFront abutment position drawing (pre-installation drawing method) Position movement, fixed substrate side) •Drawable area: L200mm × W140mm Graphics (example): dot, line, double Y, cross, double cross, triple cross, snowflake drawing speed (example): 0.3s (cross pattern, ÿ 5mm) Heating mechanism on the suction nozzle: The maximum set temperature is 80°C (option) Injector size: 10 cm3 , 5 cm3 The number of injectors: 1 (standard), 2 (option) Air pressure point Glue spit pressure specification •Made by PFSC: 5ÿ100kPa •Made by MUSASHI ENGINEERING: 5ÿ200kPa
		Transfer pin specification (optional)	Transfer position: Transfer at the joint base position (alternate transfer method) •Alternate with mounting possible •Fixed point transfer (fixed transfer center position, substrate side movement) Single type transfer pin: Transfer pin can be exchanged automatically , With ÿ-axis transfer plate: 1 rail type and 2 rail types (resin type or film thickness 2 types) can be selected Position is fixed, board side moves) Dispensing
		Jet Dispensing Specifications (Option)	shape: dot (dot) Injector size: 5 cm3 (optional 10 cm Injector quantity: 1 attached) The temperature adjustment function of the dispensing tip can be maintained Larger dispensing intervals. 3 ÿÿ
			(Optional) Dispensing nozzle tip cleaning unit: There is a cleaning mode that automatically rolls and feeds the non-woven fabric roll, and a simple wiping mode on the abutment that has cut the
20 Jointing resin (for drawing) Jointing resin			non-woven fabric. Applicable viscosity: 8Pa·s ÿ 30Pa·s (25ÿ, 5r /min) *Resin with a viscosity outside the above range shall be evaluated after each discharge to determine whether it can be used.
		injector	MUSASHI ENGINEERING. Sprayer PSY-10E (10ml)  PSY-10E shape *Please prepare the injector, needle, and adapter tube by the customer. *Other injectors correspond individually

Subject No.	

1.2.12 Selection of camera

for basic performance 21 recognition

The types and specifications of cameras for identification and corresponding (LED) lighting are as follows.

camera	lens		magnification	vision HxW [mm]	The optimum chip size is approximately HxV [mm] (70-30% of the field of view)	Pixel rate [ym]	coaxial			oblique lighting					
										fixed point lighting					
										high angle			low angle		
							coaxial	External coaxial	Pseudo coaxial	1 light	2 lights	4 lights	1 light	2 lights	ring lighting
wafer camera	Electric focus	Medium magnification	0.13ÿ0.74 37.2ÿ27.9ÿ6.4ÿ4.8		26x20ÿ1.9x1.4	36.3ÿ6.3	•	• (any one)		• -		- • -			·
		High magnification	0.39ÿ2.2	12.4ÿ9.3ÿ2.1ÿ1.6	8.7x6.5ÿ0.6x0.5	12.1ÿ2.1									
	fixed magnification	x1	1	4.8x3.6	3.4x2.5ÿ1.4x1.1	4.65	•	·	- • -			·	●	·	·
joint abutment camera	Electric focus	Medium	0.13ÿ0.82	38.1ÿ28.6ÿ5.7ÿ4.3	27x20ÿ1.7x1.3	37.2ÿ5.6	•	·	·	• (any one)			- •		·
		magnification	0.38ÿ2.5 12.7ÿ9.5ÿ1.9ÿ1.4		8.9x6.7ÿ0.6x0.4	12.4ÿ1.9									
	Magnification switching type	High magnification x0.5/1	0.5/1	9.5 x 7.1/4.8 x 3.6	6.7x5.0ÿ1.4x1.1	9.3/4.65	• -	·	·	• (any one)			·	•	·
		x0.75/1.5	0.75/1.5	6.3 x 4.8/3.2 x 2.4	4.4x3.4ÿ1.0x0.7	6.2/3.1									
		x1/2	1/2	4.8 x 3.6/2.4 x 1.8	3.4x2.5ÿ0.7x0.5	4.65/2.33									
		x1.5/3	x1.5/3	3.2x2.4/1.6x1.2	2.2x1.7ÿ0.5x0.4	3.1/1.55									
	fixed magnification	x1	1	4.8x3.6	3.4x2.5ÿ1.4x1.1	4.65	• -	·	·	• (any one)			·	•	·
		x1.5	1.5	3.2x2.4	2.2x1.7ÿ1.0x0.7	3.1									
		ÿ2	2	2.4x1.8	1.7x1.3ÿ0.7x0.5	2.33									
		x3	3	1.6x1.2	1.1x0.8ÿ0.5x0.4	1.55									
Up lookingCamera	Magnification switching type	x0.5/1	0.5/1	9.5 x 7.1/4.8 x 3.6	6.7x5.0ÿ1.4x1.1	9.3/4.65	• -	·	·	·	·	·	·	- •	·
		x1/2	1/2	4.8 x 3.6/2.4 x 1.8	3.4x2.5ÿ0.7x0.5	4.65/2.33									
		x1.5/3	x1.5/3	3.2x2.4/1.6x1.2	2.2x1.7ÿ0.5x0.4	3.1/1.55									
	fixed magnification x2	x1	1	4.8x3.6	3.4x2.5ÿ1.4x1.1	4.65	•	·	·	·	·	·	-	- •	·
		x1.5	1.5	3.2x2.4	2.2x1.7ÿ1.0x0.7	3.1									
		x2	2	2.4x1.8	1.7x1.3ÿ0.7x0.5	2.33									
		x3	3	1.6x1.2	1.1x0.8ÿ0.5x0.4	1.55									
pre-positioning camera	Magnification switching type	x0.5/1	0.5/1	9.5 x 7.1/4.8 x 3.6	6.7x5.0ÿ1.4x1.1	9.3/4.65	• -	·	·	·	·	- •	·	·	·
		x1/2	1/2	4.8 x 3.6/2.4 x 1.8	3.4x2.5ÿ0.7x0.5	4.65/2.33									
		x1.5/3	x1.5/3	3.2x2.4/1.6x1.2	2.2x1.7ÿ0.5x0.4	3.1/1.55									
front abutment camera	fixed magnification	x0.5	0.5	9.5x7.1	6.7x5.0ÿ2.9x2.1	9.3	•	·	·	·	·	·	·	·	•
		x1	1	4.8x3.6	3.4x2.5ÿ1.4x1.1	4.65									
		x1.5	1.5	3.2x2.4	2.2x1.7ÿ1.0x0.7	3.1									
flip camera	manual focus		0.3ÿ2.4	15.9ÿ11.9ÿ2.0ÿ1.5	11x8ÿ0.6x0.5	15.5ÿ1.9 -		·	•	·	·	·	·	·	·
	fixed magnification	x1	1	4.8x3.6	3.4x2.5ÿ1.4x1.1	4.65	•	·	·	·	·	·	·	·	·
magnification wafer code camera	Fixed bar (CCTV mirror photo)	80mm correspondence	0,04	127x95	89x67ÿ38x29	124	·	(• Note 1)		·	·	·	•	·	·
		50mm correspondence	0,06	80x60	56x42ÿ24x18	79									
		25mm correspondence	0,12	40x30	28x21ÿ12x9	39									
Substrate Barcode Camera	Fixed magnification (CCTV lens)		0,53	8.9x6.7	6.2x4.7ÿ2.7x2.0	8.7	·	·	·	·	·	- •		·	·

•: Camera standard lighting •: Additional optional lighting

(Note 1) When there is a pseudo-coaxial lighting for wafer cameras or an external coaxial lighting, it can be used as lighting.

Subject No.	

1.2.13 Selection of basic

	performance frame grabber board 22	The allocation (ranking) of the frame grabber board and the cameras in each part is as follows.

No	camera	board #1ÿStÿ				#2ÿUp) 2			#3ÿUp) 2		
		Ch 1		2	3	1		3	1		3
	ÿ Wafer camera ÿ	St 1 place									
	Bonding abutment camera ÿ Up-	St		1 person							
	looking camera ÿ Pre-alignment	On			1 bit						
	camera ÿ Front abutment	On			2 bit 1 bit						
	camera ÿ Flip-chip camera	On					1 person				
	ÿ Wafer barcode camera	On						1 digit			
	ÿ Substrate barcode camera	On				2 digits		3 digits	1 person		
	Recognition camera The selection	On					2 digits	2 digits		1 person	

23	Selection of LED lighting panels	of the corresponding LED lighting board is as follows.

camera	LED lighting		St/ On	#board/channel																			
				#1(Stÿ				#2(Stÿ				#3(Onÿ				#4(Onÿ				#5(Onÿ			
				1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
wafer camera	Coaxial lighting/External coaxial lighting	Lighting		•																			
	Pseudo-coaxial	Color White S White	On		•																		
	lighting Fixed-point LED lighting (high angle) (not	ÿ	On																		•		
	corresponding) Fixed-point LED lighting (low angle)	white	On																	•			
joint abutment camera	(Note 2)	white	St					•															
	Coaxial lighting Fixed-point LED	white	On						•														
	lighting (high-angle) Fixed-point LED lighting (low angle)	blue	On														•						
Up-looking Camera Ring Lighting	coaxial lighting	in	On				•																
	Coaxial		On			•																	
pre-positioning camera	Lighting Fixed		On								•												
	Point LED Lighting (High Angle) (Not Corresponding)	vain in vain	On																				•
	Fixed Point LED Lighting (Low Angle) (Note 2)	in	On									•											
front abutment camera	Coaxial		On												•								
	Lighting Ring	vain	Op													•							
Lighting Inverted Camera	Coaxial Lighting/Pseudo-	in	Op										•										
Wafer Barcode Camera	Coaxial Lighting Fixed Point LED lighting		Op											•									
Substrate Barcode Camera	(Note 1) (Note 2) Fixed-point LED lighting	vain	Op															•					

(Note 1) Not required when there is a pseudo-coaxial illuminator for the wafer camera or an external coaxial illuminator. (Note 2)

One common bracket for low-angle lighting installation is required. (Note 3)

Regarding the LED lighting board, St indicates that it is equipped as standard, and Op indicates that an additional option is required.

1.2.14 Basic performance 24

solder ball inspection (optional)		Inspection camera: Before picking up: Wafer camera, Before mounting: Up-Looking camera Before chip picking or chip mounting, the presence or absence of solder balls is inspected by the above-mentioned camera identification. According to the pass/fail judgment standard, check one field of view, and then select the subsequent action. Only the presence or absence of solder balls can be judged, but the location cannot be judged. * Before the implementation, when starting the solder ball inspection, the speed is about 0.1s slower. * Depending on the solder ball, it may not be possible to inspect, please consult the person in charge.
25 Inspection after joining (option)		Inspection camera: Bonding base camera uses the above cameras to identify the state of the wafer after mounting for inspection. Based on the pass/fail judgment criteria, inspection is performed in one field of view after chip mounting, and subsequent actions are selected.•Inspection of wafer position and angular misalignment* When inspection is performed simultaneously with mounting, the inspection accuracy is lower than that of overall inspection. * When checking at the same time as actual installation, the speed is about 0.1s slower. * Depending on the bonding resin, inspection may not be possible, so please consult the person in charge. Offset adjustment for each board: The first 5 boards of each board are mounted, the amount of shift is measured, fine-tuned and produced. Feedback of inspection results: Production is carried out while automatically correcting the positional deviation detected by inspection after joining.
26	Automatic saving of production management information (optional)	This is software that automatically files and saves production management information at a specified time (date and time).
27 nozzle inspection (optional)		Inspection camera: Pick-up nozzle: Flip-chip camera, Bonding nozzle: Up-Looking camera Before the wafer is transferred, the shape and surface condition of the nozzle are inspected by the above-mentioned camera recognition. According to the pass/fail judgment standard, check one field of view, and then select the next action. * Since the nozzle check is performed after an error occurs in the chip processing, the cycle speed is about 0.1s slower. * Depending on the nozzle, it may not be possible to check, please consult the person in charge.
28 Inter-host communication software Line-PC (option)		When the device and the host (customer's LAN environment) are connected for data communication (mapping drawing), etc., a PC is installed between the device and the host. Line-PC is installed in this PC and plays a role in the communication between the device and the host. Intermediary software. PC hardware, please prepare by customer. (for Windows 10) Can read
29 Wafer mapping (option)		barcode labels attached to wafer rings or wafer adhesive sheets. Load the wafer map data corresponding to the barcode into the device to select and pick up wafers. The details are described in the separate specification sheet (individual correspondence). Micro-wafer pick-up function: When performing wafer mapping on micro-wafers (ý1.0mm or less), you can use this function to search for wafers. Read the 2D code of the board, read the
30 Board Mapping (Option)		corresponding board mapping data into the device, and select the mounting position of the board. The details are described in the specification sheet (individual correspondence) in a separate volume. Traceability: Information such as board ID, wafer ID, etc. at each mounting position and management number at the time of mounting can be collected Production information confirmation: Board ID and wafer ID verification. * When corresponding to the customer format, it is an additional specification. * In order to perform ID recognition, an additional
31 GEM corresponding software (optional)		hardware option is required. Software for GEM (corresponds to basic commands of GEM) * License for GEM Package software included * When adapting to customer format, it can be used as additional specification.

Subject No.	

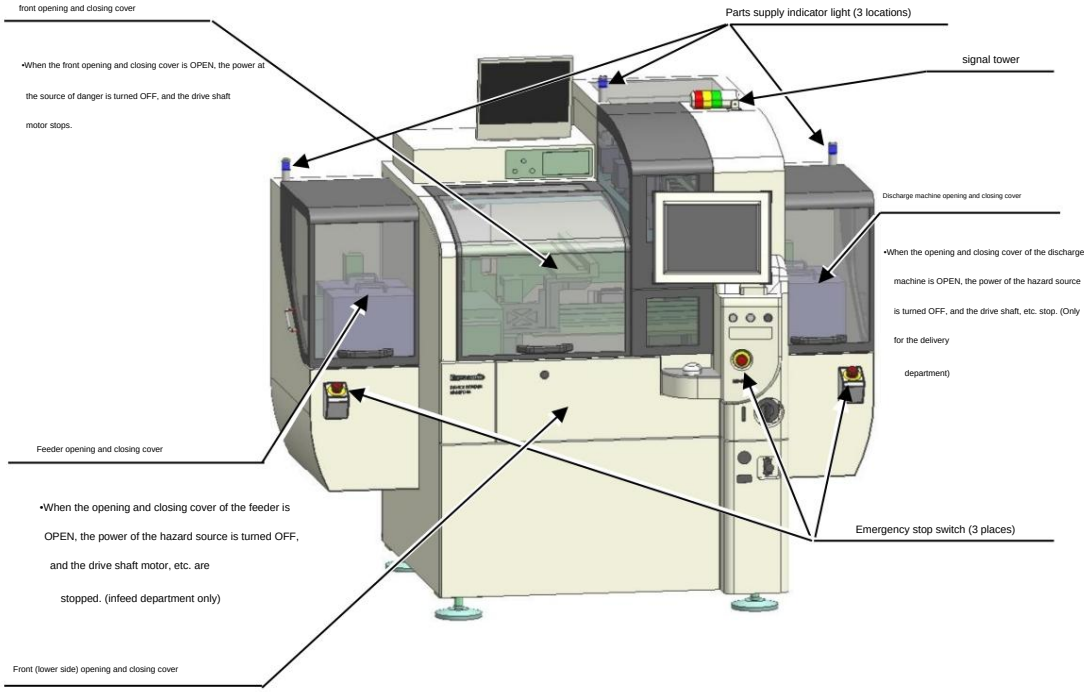
1.2.15 Selection of Basic

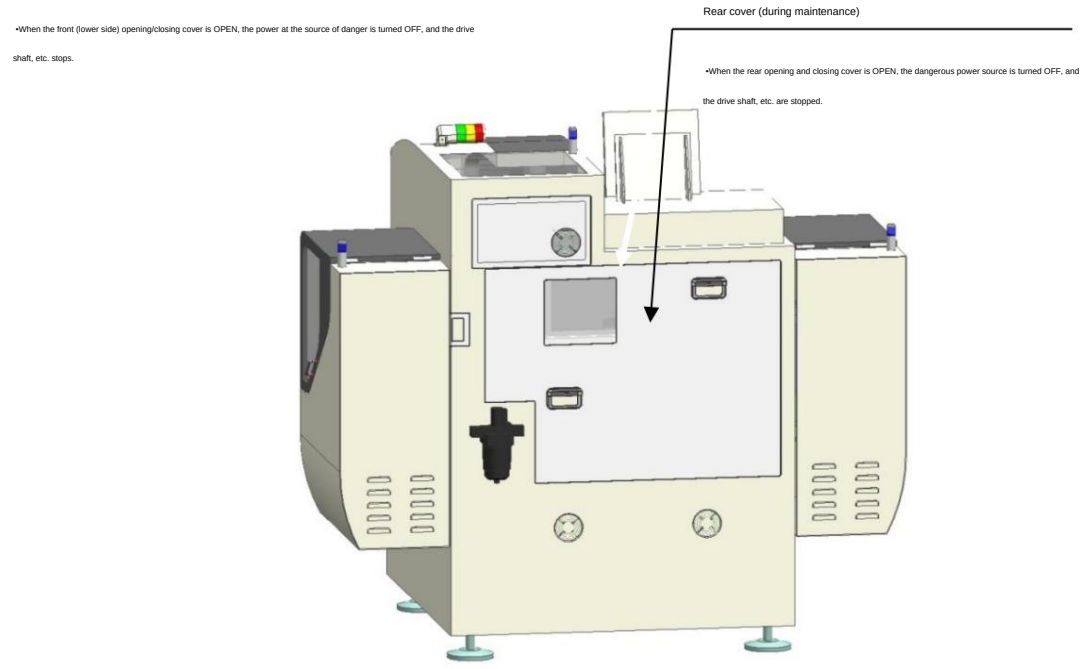
	Performance Heater Type 33	The types of heaters are as follows. Do not select when the heater is not required at all.							
		heater part			Heater Type				
					Type A	Type B	Type C	Type D	Type E
		Abutment heater	Joint abutment corresponds		•	•	•	•	•
			to front abutment		•	•	•	•	•
		corresponds to joint head heater			•	•	•	•	•
		Bonding head compatible heater	forward	constant temperature	•	•	•	•	•
				Ceramic (not applicable)	×	×	×	×	•
			back	Constant temperature (not	×	•	×	•	×
				applicable) Ceramic (not applicable)	×	×	×	×	×
		injector heater		1	•	•	•	•	×
				2	•	•	•	•	×
				3	•	•	•	•	×
		Depicting the nozzle heater	Alternate drawing correspondence	1	•	•	•	•	×
				2	×	•	×	•	×
			Anterior abutment correspondence	1	•	•	•	•	×
				2	×	•	×	•	×
		Wafer blowing heaters (for AWC) can be			×	×	•	•	•

34	Multiple sizes and single size	selected from multiple specifications and single specifications (S type) as follows.			
		unit		Various specifications	Single Specification (GGI)
		pick up unit	pick up unit	ÿWithout reversing ÿWith reversing, variable	Overturned, load unchanged
			Nozzle seat	load Automatic replacement type Manual fixed type	Tapered nozzle, resin
			pick up nozzle	nozzle, metal nozzle With or without 1/2 nozzle memory	
		multifunction shaft	multifunctional	(maximum 6mm) -	
			axis pre-positioning		
			abutment nozzle memory		
			Wafer Recycling Box	ÿ Abutment cleaning ÿ ÿ Chips below 1.5mm are sucked and recovered	Install directly on the fixed part
			Up-looking camera magnification switching	type	fixed magnification
		wafer injector	wafer injector	1 pin specification	1 pin specification

1.2.16 Basic performance 35

Safety devices	signal tower	ÿRed: Lights up when an abnormality occurs (equipment stops) ÿYellow: Lights up when there are no workpieces on the feeder / Lights up when the workpieces on the discharger are full (equipment stops) ÿGreen: Lights up during automatic operation Can be accessed through the touch panel To change the lighting method of the indicator light in various situations.



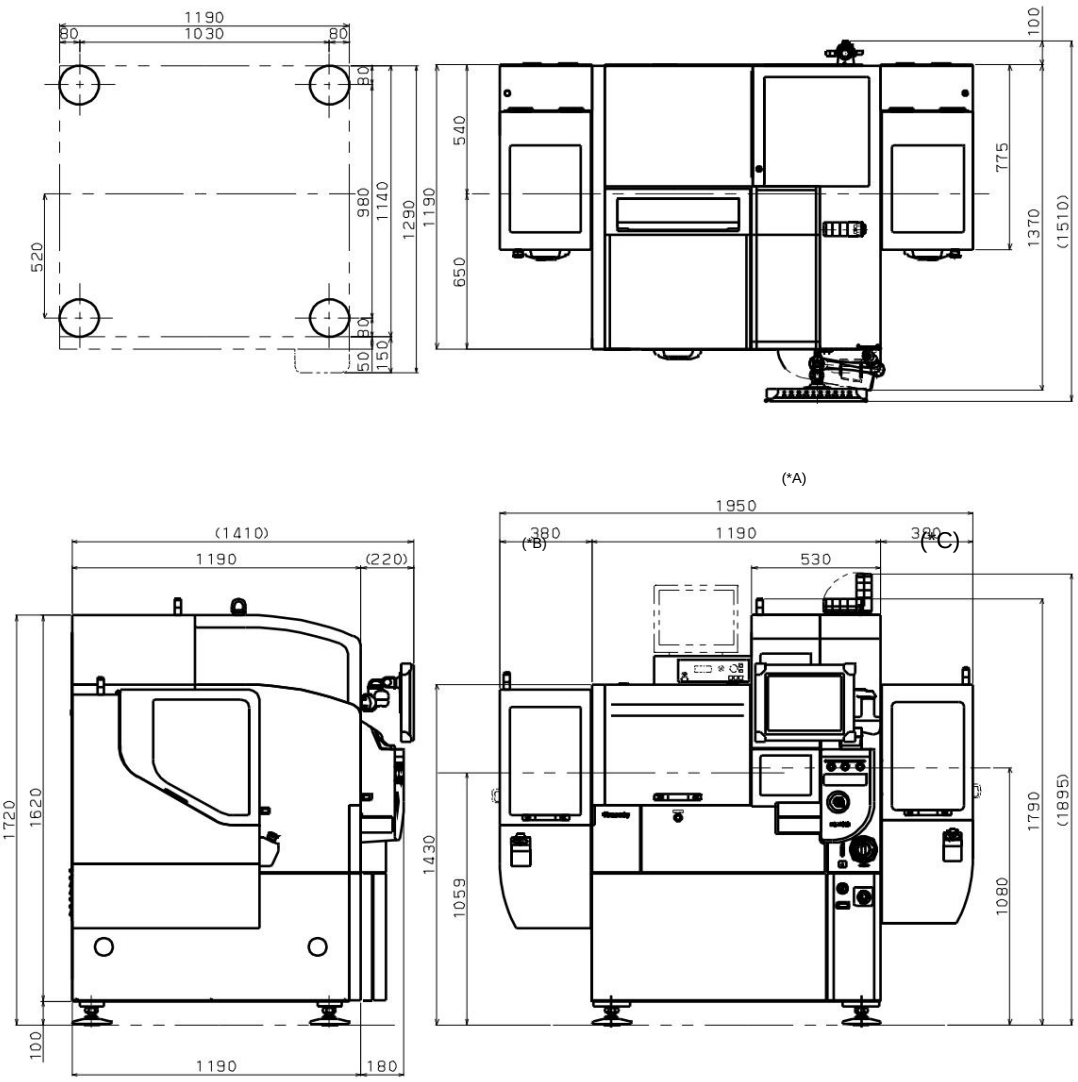


36 Special notes	•Do not let the safety switch be disabled. Failure to do so may result in electric shock, burns and injuries. The above-mentioned behaviors are very dangerous, please never implement them.

Subject No.	

1 Device size

unit:mm



* The above dimensions are the dimensions of the equipment with a substrate length of Max 200mm and equipped with a feeder/discharger.

ÿDepending on the maximum substrate length, the device size (width) will change. The details are as follows.

Maximum substrate length	A	B	C
200 mm 1 950 mm		380 mm 380 mm	
100 mm	1 750 mm	280 mm	280 mm
280 mm	2 050 mm 480 mm 380 mm		

3. Specifications of optional parts

Part Name No.	

*:##) Please contact the technical person in charge of our company for the customer's individual specification information.

3.1 Main Department, Standard Department, Basic Equipment

	project	quantity	Contents •DA: Dedicated function for die bonder •US: Dedicated function for ultrasonic implementation •MD: Both functions can be selected	
1	Main body (common part)		The [Standard Specifications] of the MD-P200 main body (common part) include the following specifications.•Body part•Air piping•Body control parts	
	MD-P200 main body		ÿStandardÿ	ÿÿStandard specificationÿrefers to the most basic specification configuration necessary to mount a chip picked up from a single wafer directly on a substrate. ÿPlease select the resin supply unit, feeder & discharger, various corresponding units, and pre-positioning units according to your needs.
2 Standards Department				
	Standard Department Body Department			
	MD-P200 Standard part (joining machine specification)		ÿStandardÿ	DA: This is a necessary option for the joining machine.
	MD-P200 Standard Department (DA/Heated Abutment Specifications)		DA: Wafer bonding machine type, please select when heating the bonding base or head is required.	
	MD-P200 Standard Department (GGI/Heated Abutment Specifications)		US: GGI specification, please choose when you need to join the abutment or the heating of the head.	
	For motorized zoom lens drive PMC additional		US: GGI standard, wide range of chip size correspondence When selecting a zoom lens, it is necessary to add a PMC for driving, so please select it. Please	
	dispenser specifications		select the equipped dispenser and the corresponding main body cover.	
	Dispenserless Specifications		ÿStandardÿ	MD: This is the main body cover. Select when not using the injector at all.
	Dispenser PFSC specification × 1 set		DA: It is the equipped dispenser and the corresponding main body cover. Please select when equipped with 1 PFSC dispenser.	
	Dispenser PFSC specifications × 2 units		DA: It is the equipped dispenser and the corresponding main body cover. Please select when installing 2 PFSC dispensers.	
	Dispenser Musashi engineering for small quantity and low pressure x 1 Dispenser Musashi engineering for		DA: It is the equipped dispenser and the corresponding main body cover. Please select when installing one dispenser for small quantity and low pressure (manufactured by Musashi engineering).	
	small quantity and low pressure x 2 Jet dispenser specification: Alternate action x 1		DA: It is the equipped dispenser and the corresponding main body cover. Please select when installing 2 dispensers for small quantity and low pressure (manufactured by Musashi engineering).	
			DA: It is the equipped dispenser and the corresponding main body cover. Please select when equipped with 1 jet dispenser.	
	other options			
	Additional identification dedicated monitor		MD: Additional identification monitor (LCD).	
	Lighting inside the device		MD: Please add this item when lighting (LED) for auxiliary work is required in the equipment.	
3 basic equipment			Please select the number of sliders to be used for mounting, dispensing, etc.	
	Alternate Action Unit			
	single slider		[Standard Specifications]	MD: Please select this item if you do not need an alternate action unit. (When alternating resin supply is not required)
	double slider		MD: Please select this item when using alternate action units. (When alternate resin supply is required)	

Part Name No.	

*:##) Please contact the technical person in charge of our company for the customer's individual specification information.

3.2.1 Joint Head

	project	quantity	Contents •DA: Dedicated function for die bonder •US: Dedicated function for ultrasonic implementation •MD: Both functions can be selected
4	joint head		Please select the head for mounting.
	air head air head		
	☑ (Max 10 N)		DA: Load: 0.5 to 10 N (air pressure control) Automatic tool exchange is possible. ÿStandardÿ
	☑ Engage the nozzle holder	4	DA: For wafers with a size of 6mm or less [Standard specification] (same shape as the pick-up nozzle holder)
	◉ Rubber nozzles for	4	##) DA: This is a combination of rubber nozzles (20pcs) and nozzle attachments. [Standard Specifications] (Need to specify the size) Heating head cannot be
	○ joining Resin nozzles for joining		selected ##) DA: This is a nozzle with a cutting-edge resin nozzle and a metal attachment. (Need to specify the size) Heating head is not optional
	○ Metal Nozzle Bonding		##) DA: This is an integrated metal nozzle. (Need to specify the size)
	Head for Bonding Other Options		
	◉ Wafer Detection Sensor (with Base) Wafer		MD: This is an optical reflective detection sensor for wafers mounted on the bonding nozzle. [Standard Specifications] (Select this item when there is no transfer printing or front abutment drawing unit configured)
	○ Detection Sensor (with Casting)		DA: This is an optical reflective detection sensor for wafers mounted on the bonding nozzle. (Select this item under Transfer Specifications, Front Abutment Drawing Specifications)
	VMC pressurized head		
	○ VMC pressure head (Max 50 N)		US: Please select during ultrasonic bonding process. Load: 1 ~ 50 N (VCM control) can automatically exchange tools.
	○ VMC pressure head (Max 100 N)		US: Please select during ultrasonic bonding process. Load: 2 ~ 100 N (VCM control) Automatic tool exchange is not available.
	○ split type US tool: X direction ÿIt is necessary to		##)US: Chip size: Please choose when it is less than 3mm. Small pin specify the chip material, size, and electrode ball configuration. (X-direction vibration) US tools with few
	○ pins and small amplitude: X square ##) US: Please		choose when the chip size is below 3mm and the output power is low. Please specify the chip material, size, and electrode ball configuration to ÿ. (X-direction vibration) ##) US: Please choose when chip size: 7mm. (Heating setting:
	○ arrangement need to be specified. (X-direction		max. 300°C) Middle pin heating split type US tool: X direction ÿChip material, size, and electrode ball vibration) ##) US: Please choose when chip size: 7mm. (Heating setting: max. 300°C) Middle pin heating split type US tool: Y direction ÿIt is necessary to
	○ exchange jig		specify the chip material, size, and electrode ball arrangement. (Vibration in Y direction) US nozzle
	☐ Pin Split Type US Nozzle Replacement This option is		US: Please select during ultrasonic bonding process. Fewer required for replacing pin split type nozzles with a small number of pin split type nozzles.
	☐ of pins and small amplitude type US nozzle replacement jig This option is required for replacing the nozzles of the small pins and small amplitude type.		US: Please select during ultrasonic bonding process. Small number
	☐ Medium-pin heated split type US nozzle exchange jig This option is required for replacing medium-sized pin heated split type nozzles.		US: Please select during ultrasonic bonding process.
	US controller		
	○ US controller		US power: 5 W (15 ÿ), 9 W (40 ÿ) *Varies depending on the impedance of the tool.
	○ with US power booster US controller		US power: 30 W (100 ÿ) ÿVaries depending on the impedance of the tool.

3. Specifications of optional parts

Part Name No.	

*:##) Please contact the technical person in charge of our company for the customer's individual specification information.

3.3.1 Alternate movement of the head

	project	quantity	Contents •DA: Dedicated function for die bonder •US: Dedicated function for ultrasonic implementation •MD: Both functions can be selected.
5	alternate action head		Please select this item only when performing alternate actions such as dispensing.
	Drawing Unit		
	○ Single Injector Unit: Alternate Action		##) DA: Loaded with 1 injector, and able to use air pressure dispenser to draw (need to specify injector size (5cm3 or 10cm3))
	◉ Dual Injector Unit: Alternate Action		##) DA: Switch 2 injectors, and can use the air pressure dispenser to draw (need to specify the injector size (5cm3 or 10cm3)) DA: It is a nozzle adapter for drawing.
	☑ Drawing Nozzle Adapter: Alternate Action Drawing	2	(MUSASHI ENGINEERING precision suction nozzle: for FN•HN series) ##) DA: It is a suction nozzle for drawing.
	☑ Nozzle: Alternate Action Special	2	Precision nozzle made by MUSASHI ENGINEERING: FN•HN series##)DA: This is a nozzle for special drawing. Select according to size, material, manufacturer, etc. DA: add heater for drawing nozzle. (for single injector)
	☐ Drawing Nozzle: Alternate Action		
	☐ Nozzle heater (for single injector)		
	☐ Nozzle Heater (For Dual Injector)		DA: A heater for the drawing nozzle is added. (for dual injectors)
	Adapter assembly (alternate action head)		
	☑ Adapter assembly for 10cc injector (manufactured by Musashi engineering): Alternate action head	2	DA: This is the air supply tube that connects the dispenser to the injector, etc. (For 10cc injector made by Musashi engineering) Tube material: Polyurethane
	☑ Adapter assembly for 5cc injector (made by Musashi engineering) : Alternate movement of the head	2	DA: This is the air pressure supply tube that connects the dispenser to the injector, etc. (For 5cc injectors made by Musashi engineering) Tube material: Polyurethane
	☐ Adapter assembly for 10cc injector (manufactured by Sanei-Tech): Alternate action head		DA: This is the air pressure supply tube that connects the dispenser to the injector, etc. (For 10cc injector made by Sanei-Tech) Tube material: Polyurethane
	☐ Adapter assembly for 5cc injector (manufactured by Sanei-Tech): Alternate movement of the head		DA: This is the air pressure supply tube that connects the dispenser to the injector, etc. (For 5cc injectors made by Sanei-Tech) Tube material: Polyurethane
	transfer unit		
	☐ Transfer unit (with ÿ axis)		DA: 1 transfer pin specification (with ÿ axis): Automatic replacement of TOOL is possible
	○ Transfer plate & scraper (for 1		DA: This is a transfer plate and scraper for 1 variety of epoxy resin. (transfer plate for 1 rail and 1 scraper)
	○ rail) Transfer plate & scraper (for 2 rails)		DA: This is the transfer disc and scraper for 2 varieties of epoxy resin. (transfer plate with 2 rails and corresponding 2 scrapers)
	☐ Transfer pin seat		DA: For wafer size ÿ6mm or less (same shape as bonding nozzle holder)
	☐ transfer pin		##) DA: Transfer pin (individual specifications such as size) When installing, it is necessary to attach the nozzle holder (small), please add it.

3. Specifications of optional parts

Part Name No.	

*:##) Please contact the technical person in charge of our company for the customer's individual specification information.

3.3.2 Alternate operation of the head and substrate supply unit

	project	quantity	Contents •DA: Dedicated function for die bonder •US: Dedicated function for ultrasonic implementation •MD: Both functions can be selected.
5	alternate action head		Please select this item only when performing alternate actions such as dispensing.
	Jet-type dispensing unit Jet-		
	○ type dispensing unit: alternate action		DA: air pressure dispenser can do point (dot) dispensing
	☐ Injector Hose 5cc (EFD)		DA: (manufactured by EFD) A hose for injectors. (For 5cc injector) DA: (manufactured
	☐ Injector Hose 10cc (EFD)		by EFD) Hose for injector. (For 10cc Injector) DA: This is the self-cleaning unit for the tip of
	☐ cleaning unit		the ejection nozzle. Add this option when cleaning the nozzle tip frequently.
	☐ Cleaning non-woven roll (1 roll) Cleaning		DA: is a roll of non-woven fabric for cleaning nozzle tips. (1 volume)
	☐ non-woven roll (5 rolls) Cleaning non-		DA: is a roll of non-woven fabric for cleaning nozzle tips. (5 volumes)
	☐ woven roll (10 rolls)		DA: is a roll of non-woven fabric for cleaning nozzle tips. (10 volumes)
	☐ Dispensing head jig		DA: It is a jig for ultrasonic cleaning and ejection and vacuum pump for dispensing head.
6 Substrate supply part			Please select items such as substrate supply and fixation.
	Bonding		
	○ Abutments Bonding Abutments (Maximum Substrate: L280XW140mm, without heating) Bonding		[Standard Specifications] MD: This is a bonding base dedicated to substrates. Maximum substrate: L280 x W140mm, non-heated MD: This is a
	○ abutment (Maximum substrate: L200XW150mm, without heating) Bonding		bonding base dedicated to substrates. Maximum substrate: L200 x W150mm, non-heated MD: *New This is a bonding
	◉ abutment (maximum substrate: L250×W100mm, with heating) Bonding		base dedicated to substrates. Maximum substrate: L200 x W100mm, with heating (maximum 200°C) MD: This is a bonding base dedicated to substrates. Maximum
	○ abutment (Maximum substrate: L200XW150mm, with heating) Bonding abutment		substrate: L200 x W150mm, with heating (maximum 300°C)
	☐ support plate: without heating type bonding abutment		ÿStandard Specificationsÿ##) MD: This is a non-heated pallet used to support the substrate on the bonding base. (requires individual design)
	☑ support plate: with heating type bonding abutment		##)US: This is a heated plate used to support the substrate on the bonding base. (requires individual design)
	☑ substrate pressing		##) MD: Please add this item when mechanically pressing the board from top to bottom. (requires individual design)

3. Specifications of optional parts

Part Name No.	

*:##) Please contact the technical person in charge of our company for the customer's individual specification information.

3.4.1 Board supply section

	project	quantity	Contents •DA: Dedicated function for die bonder •US: Dedicated function for ultrasonic implementation •MD: Both functions can be selected
6 Substrate supply section			Please select items such as substrate supply and fixation.
	Wafer collection box (for bonding base)		
	○ Wafer collection box (for bonding base)		[Standard Specifications] DA: This is the recovery box for recovering the wafers on the bonding nozzle. (With TOOL Height Measuring Unit)
	◉ Wafer Recycle Cassette & Alternate Dispenser Nozzle Height Detection Sensor		DA: This is a unit for measuring the wafer recovery of the bonding head and the height of the dispensing head when the specifications are drawn alternately.
	○ Wafer recovery box (for heating bonding base)		MD: This is the recycling box for recycling the wafers on the bonding nozzle. Please select this option for heated abutment specifications.
	○ Wafer collection box (for S-type thermal bonding base) Substrate supply		MD: This is the recycling box for recycling the wafers on the bonding nozzle. Please select this option for S-type heated abutment specifications.
	section Other options		
	☑ Delineation Check: Alternate Action Actions		DA: This is a check function (software) for drawing shapes. After resin dispensing, check the state of the resin with the substrate camera, and check OK/NG according to the pass/fail judgment criteria. ÿDepending on the mounting specifications, equipment specifications, and resin appearance, inspection may not be possible. So it needs to be evaluated beforehand using customer artifacts. ÿA separate quotation may be required depending on the results of prior workpiece evaluation, optical system and software modifications, etc. ÿIf this check is activated, it may increase the implementation cycle time. ÿIt can be inspected with only one visual field.
	○ movement abutment (for joining the rear side of the abutment) (trial movement range: W 31 x L 223 mm, maximum substrate width: 106 mm)		DA: This is an abutment that uses the rear side of the joint abutment as the range of trial motion. Trial
	○ Trial movement abutment: Compatible with 150mm wide substrate (for BS)		DA: This is the abutment when the right side of the joint abutment is used as the trial motion range. (Testing range: W 73 x L 41.5 mm, maximum substrate width: 150 mm)
	☐ Resin waste box (for BS rear side)		DA: This is the resin waste box that needs to be selected when the trial movement range is on the back side of the abutment.
	◉ Trial movement abutment (joint abutment front side DA: This is the abutment that uses the front side of the joint abutment as the trial movement range. Use)		(Test motion range: W 14 x L 140 mm)
	☑ Resin waste box (for BS front side) Target mark		DA: This is the box for resin waste that needs to be selected when the trial movement range is on the front side of the abutment.
	☑ for bonding abutment 150mm width		Please choose when DA needs to be directly installed. (Required for position calibration)
	☐ substrate Compatible with US tool Automatic polishing unit		US: This is a unit that automatically grinds and removes dirt from the surface of the US tool tip.
	☐ Whetstone for automatic grinding (for non-heated tools)		US: This is a whetstone for automatic grinding. Please select when using non-heated type US tools. Roughness: #2000 pieces (different numbers are individual specifications) US: This is a whetstone for automatic
	☐ Whetstone for automatic grinding (for heating tools)		grinding. Please select when using heated US tools. Roughness: #2000 (different numbers are individual specifications)

3. Specifications of optional parts

Part Name No.	

*:##) Please contact the technical person in charge of our company for the customer's individual specification information.

3.4.2 Board supply section

	project	quantity	Contents •DA: Dedicated function for die bonder •US: Dedicated function for ultrasonic implementation •MD: Both functions can be selected
6 Substrate supply part			Please select items such as substrate supply and fixation.
	Splicing Abutment Other Options		
	☑ Board recognition moisture prevention blower (right side) Board		MD: Heated moisture on the abutment, prevented by the air blower on the right. (Accuracy may decrease due to conditions such as heating temperature.) MD: Heat moisture on the abutment, and
	☐ recognition moisture prevention blower (left and right)		prevent it with left and right air blowers. It cannot be used when drawing and transferring specifications before implementation. (There are individual specifications.) MD: Please add it when destaticizing the substrate
	☑ Ionizer for Substrate (for Bonding Abutment) Front		on the bonding base.
	Abutment		
	◉ Without Front Abutment (Maximum Substrate: L280XW140mmÿ		[Standard Specifications] MD: This is the incoming track when the substrate is delivered from the substrate magazine to the bonding base. Maximum substrate: L 280 × W 140 mm MD: This is the delivery
	○ Without anterior abutment (maximum base plate: L200XW150mmÿ		path when substrates are delivered from the substrate magazine to the bonding base. Maximum base plate: L200 x W150mm MD: Please select when an
	○ Anterior abutment (Maximum base plate: L280× W140mm, without heating) Anterior		anterior abutment is required. Maximum base plate: L280 x W140mm, non-heated MD: Please select when an anterior abutment
	○ abutment (Maximum base plate: L250× W100mm, with heating) Anterior		is required. Maximum base plate: L250 x W100mm, with heating (up to 200°C) MD: Please select when an anterior abutment is required. Maximum base plate:
	○ abutment (Maximum base plate: L200× W150mm, with heating)		L200 x W150mm, with heating (up to 300°C) ##)MD: This is a non-heated type plate that supports the base plate on the front abutment. (requires individual
	☐ Anterior abutment support plate: without heating		design)
	☐ type Anterior abutment support plate: with heating type		##)US: This is a heated plate that supports the substrate on the anterior abutment. (requires individual design)
	☐ Anterior abutment (substrate pressing)		##)MD: Please add this item when pressing the board mechanically from top to bottom. (requires individual design)
	posterior abutment		
	☑ Substrate outgoing track		MD: This is the outgoing track for handing over the mounted substrates to the material box. ÿStandardÿ
	☐ Substrate bending press		MD: Add a mechanism to ease the bending of the substrate when the substrate is conveyed into the discharge machine bin after being conveyed out. (Please add it when the board is
	☐ Substrate air cooling		warped greatly.) MD: *New The board after heating and mounting is air-cooled on the rail.
	Substrate transfer unit		
	☑ Substrate transfer unit		[Standard Specifications] MD: A unit that transfers substrates between the feeder and the discharger.
	☑ Substrate Supply Chuck Unit		[Standard Specifications] MD: This is the substrate chuck unit mounted on the tip of the substrate transfer arm. (combined with short push rod base LD)
	☐ claw (standard) [standard specification] (standard		##) MD: This is a substrate transfer claw MD: This is the jaw mounted on the tip of the substrate transfer arm. Substrate transfer
	☑ Special transfer jaw		with a special shape designed according to the substrate specification. (requires individual design)

3. Specifications of optional parts

Part Name No.	

*:##) Please contact the technical person in charge of our company for the customer's individual specification information.

3.4.3 Board supply section

	project	quantity	Contents •DA: Dedicated function for die bonder •US: Dedicated function for ultrasonic implementation •MD: Both functions can be selected	
6 Substrate supply section			Please select items such as substrate supply and fixation.	
	Substrate transfer track			
	◉ Conveyor rail for substrates made of standard materials (Maximum substrate: L280 × W140mm, without front [Standard specification)		[Standard specification] Maximum substrate: L280 × W140mm (without front abutment specification) Abutment	MD: This is the track required to transport substrates made of soft materials other than ceramics.
	○ rail for substrates made of standard materials (Maximum substrate: L280 × W140mm, Maximum substrate for front abutment : L280 × W140mm (front abutment specification) table specification) Transfer rail		MD: This is the track required to transport substrates made of soft materials other than ceramics. Transfer	
	○ for substrates made of standard materials (Maximum plate. Base plate: L200 × W150mm, specifications without front abutment)		MD: This is used to transfer soft materials other than ceramics The rail required for the material base Maximum base plate: L200 × W150mm (no front abutment specification)	
	○ Conveyor track for substrates made of standard materials (Maximum substrate: L200 × W150mm, Maximum substrate of front abutment : L200 × W150mm (front abutment specification) table specification)		MD: This is the track required to transport substrates made of soft materials other than ceramics.	
	○ substrates made of standard materials (Maximum substrate: L250XW100mm, Maximum substrate of anterior abutment: L250 x W100mm (specification of anterior abutment) Specifications)		MD: *New This is the track needed to transport substrates made of soft materials other than ceramics. Conveyor rail for	
	○ rails for ceramic substrates (Maximum substrate: L280 × W140mm, Maximum substrate without anterior abutment : L280 × W140mm (spec without anterior abutment) Specifications) All rails are super hard.		MD: This is a conveyor track for ceramic substrates. Transfer	
	○ substrates. Transfer rails for ceramic substrates (Maximum substrate: L280 × W140mm, Maximum substrate for front abutment gauge : L280 × W140mm (for front abutment specification) grid) All rails are super hard.		MD: This is a dedicated conveyor track for ceramic	
	○ rails for ceramic substrates (Maximum substrate: L200 × W150mm, Maximum substrate without anterior abutment : L200 × W150mm (spec without anterior abutment)) All rails are super hard.		MD: This is a conveyor track for ceramic substrates. Transfer	
	○ rails for ceramic substrates (additional frame grabber board for maximum substrate : L200 × W150mm, maximum substrate for front abutment gauge : L200 × W150mm (front abutment specification) grid) All rails are made of superhard.		MD: This is a conveyor track for ceramic substrates. Transfer	
	○ Transfer track for ceramic substrates (maximum substrate: L200XW150mm, dead zone 3mm corresponding)		MD: This is a conveyor track for ceramic substrates. Maximum base plate: L200 x W150mm (pre-abutment specifications) All rails are made of ultra-hard and can correspond to a dead zone of 3mm.	

Part Name No.	

*:##) Please contact the technical person in charge of our company for the customer's individual specification information.

3.5 Substrate feeder & discharger

	project	quantity	Contents •DA: Dedicated function for die bonder •US: Dedicated function for ultrasonic implementation •MD: Both functions can be selected
7 Substrate feeder & discharger			Please select the supply form of the substrate.
	Substrate feeder		
	◉ Short pusher substrate LD (2014/2 switching) Short		MD: This is a feeder for switching 2 2014 size bin specifications. (combined substrate supply chuck)
	○ pusher substrate LD (2814/2 switching)		MD: *New This is a feeder for switching 2 2814 size bin specifications. (combined substrate supply chuck)
	○ Short pushrod base LD (2015/no switch)		MD: This is a 2015 size bin specification feeder. (Without bin switching) (Combined substrate supply chuck)
	○ In-line type without board LD (without extension rail) In-line type without		MD: This is an in-line specification without a substrate feeder. Please supply the board at the front connection part (customer side).
	○ board LD (with extension rail) Board discharger		MD: This is an in-line specification without a substrate feeder. Built-in front connection part (extension rail)
	◉ Substrate ULD (2014/2 switching)		MD: This is a discharge machine for switching 2 2014 size bin specifications.
	○ Substrate ULD (2814/2 switches)		MD: This is a discharge machine for switching two 2814 size bins.
	○ Substrate ULD (2015/no switch)		MD: This is a 2015 size bin specification discharger. (no bin switching)
	○ In-line type without base ULD (without extension rail) In-line type without		MD: This is an in-line specification without a substrate discharger. Please carry out board delivery at the connection part (customer side) at the back.
	○ base ULD (with extension rail) Substrate box Substrate box:		MD: This is an in-line specification without a substrate discharger. Built-in connection at the back (extension rail)
	☐ 2010(5PX40) base		MD: This is the standard substrate material box. Max substrate size: length 200mmX width 100mm (5mm pitch 40 layers)
	☐ material box: 2014(5PX40) base		MD: This is the standard substrate material box. Max substrate size: length 200mmX width 140mm (5mm pitch 40 layers)
	☐ material box: 2814(5PX40) base		MD: This is the standard substrate material box. Max substrate size: length 280mmX width 100mm (5mm pitch 40 layers)
	☐ material box: 2815(5PX40) base		MD: *New This is the standard PCB material box. Max substrate size: length 280mmX width 200mm (5mm pitch 40 layers)
	☐ material box: 1010(5PX40)		MD: *New This is the standard PCB material box. Max substrate size: length 100mmX width 100mm (5mm pitch 40 layers)

3. Specifications of optional parts

Part Name No.	

*:##) Please contact the technical person in charge of our company for the customer's individual specification information.

3.6.1 Wafer supply department

	project	quantity	Contents •DA: Dedicated function for die bonder •US: Dedicated function for ultrasonic implementation •MD: Both functions can be selected
8 wafer supply			Please select the supply form of the wafer.
	pallet changer		
	☐ Pallet changer (no ÿ)		[Standard Specifications] MD: Please select this item when supplying wafer pallets. (without ÿ
	☐ Without pallet ÿ (200mm wafer)		axis) ÿStandard specificationÿMD: ÿ200 mm wafer pallet (without ÿ axis) (1 pallet is included in the standard specification)
	☐ Without pallet ÿ (150mm wafer)		MD: ÿ150 mm wafer pallet (without ÿ axis)
	☐ Without plate ÿ (for 247mm handle ring)		MD: ÿ247 mm for handle ring (without ÿ axis)
	☐ Without plate ÿ (for 210mm handle ring)		MD: ÿ210 mm for handle ring (without ÿ axis)
	☐ Without plate ÿ (for 186mm handle ring)		MD: ÿ186 mm for handle ring (without ÿ axis)
	☐ Without plate ÿ (for 152mm handle ring)		MD: ÿ152 mm for handle ring (without ÿ axis)
	☐ Without pallet ÿ (for 2-inch pallet)		MD: Wafer pallet for tray (without ÿ axis) Number of trays: 2 inches x 6
	☐ Without pallet ÿ (for 3-inch pallet)		MD: Wafer pallet for tray (without ÿ axis) Number of trays: 3 inches x 2
	☐ Without pallet ÿ (for 4-inch pallet)		MD: Wafer pallet for tray (Without ÿ axis) Number of pallets: 4 inches x 1
	◉ Pallet changer comes with ÿ		MD: Please select this item when supplying wafer pallets. (ÿ±10° with rotation function) MD: ÿ200 mm
	☑ With pallet ÿ (200mm wafer) With	3	wafer pallet (with ÿ axis)
	☑ pallet ÿ (150mm wafer)	1	MD: ÿ150 mm wafer pallet (with ÿ axis)
	☐ Attached plate ÿ (for 247mm handle ring)		MD: ÿ247 mm For handle ring (with ÿ axis)
	☐ With supporting plate ÿ (for 210mm handle ring)		MD: ÿ210 mm for handle ring (with ÿ axis)
	☐ Attached plate ÿ (for 186mm handle ring)		MD: ÿ186 mm For handle ring (with ÿ axis)
	☐ With supporting plate ÿ (for 152mm handle ring)		MD: ÿ152 mm for handle ring (with ÿ axis)
	☐ With pallet ÿ (for 2-inch pallet) With		MD: Wafer pallet for tray (with ÿ axis) Number of trays: 2 inches x 6
	☐ pallet ÿ (for 3-inch pallet) With pallet		MD: Wafer pallet for tray (with ÿ axis) Number of trays: 3 inches x 2
	☐ ÿ (for 4-inch pallet)		MD: Wafer pallet for tray (with ÿ axis) Number of trays: 4 inches x 1

3. Specifications of optional parts

Part Name No.	

*:##) Please contact the technical person in charge of our company for the customer's individual specification information.

3.6.2 Wafer supply department (AWC, manual supply, etc.)

	project	quantity	Contents •DA: Dedicated function for die bonder •US: Dedicated function for ultrasonic implementation •MD: Both functions can be selected
8 wafer supply			Please select the supply form of the wafer.
	AWC		Automatic Wafer Changer (AWC) Specifications
	☐ With AWC ÿ, for 200mm flat ring (with frame pusher)		MD: Maximum 200mm automatic wafer ring replacement, expansion: 3~10mm (theta 360° rotation function wafer frame storage box can use up to 25 layers)
	☐ With AWC ÿ, for 150mm flat ring (with frame pusher) With AWC ÿ,		MD: Maximum 150mm automatic wafer ring replacement, expansion: 3~10mm (theta 360°rotation function wafer frame storage box can use up to 25 layers)
	☐ 200mm without extension for ÿ (with frame pusher) With AWC ÿ, 150mm without		MD: Maximum 200mm, automatic wafer ring replacement, expansion: 0~7mm (theta 360° rotation function wafer frame storage box can use up to 25 layers)
	☐ extension For MD: Max. 150mm Automatic wafer ring		exchange, expansion amount: 0ÿ7mm Applicable (with frame pusher) (Theta 360° rotation function wafer frame storage box can use up to 25 layers) MD: A
	☐ Wafer Mat Blowing Heater		heater that heats the wafer mat to make it expand and contract.
	Wafer Frame Storage Box		
	☐ Wafer Frame Storage Box Type 6 (manufactured by		MD: It is a type 6 wafer frame storage box made by PFSC. (10 layers with 12mm pitch)
	☐ PFSC) Wafer Frame Storage Box Type 8 (manufactured by		MD: 8-type wafer frame storage box made by PFSC. (12 layers with 14mm pitch)
	PFSC) Other common options for wafer supply section		
	☑ Wafer Barcode Camera ÿMax50mmÿ		MD: This is a camera designed specifically to recognize wafer barcodes. (Can handle barcodes up to Max50mm)
	☐ Wafer Barcode Camera ÿMax25mmÿ		MD: This is a camera designed specifically to recognize wafer barcodes. (Can handle barcodes up to Max25mm)
	☐ Wafer Barcode Camera ÿMax80mmÿ		MD: This is a camera designed specifically to recognize wafer barcodes. (Can handle barcodes up to Max80mm) MD: This is LED
	☑ LED Lighting for Wafer Barcode Cameras		lighting for wafer barcode cameras.
	☐ Wafer blower		MD: A unit that blows air on the surface of the wafer in order not to inhale dirt or chipped wafers when picking up the wafer.
	☑ Ionizer in wafer supply section		MD: Please add this item when destaticizing the pick-up system such as wafers.

Part Name No.	

*:##) Please contact the technical person in charge of our company for the customer's individual specification information.

3.7.1 Wafer transfer

project	quantity	Contents •DA: Dedicated function for die bonder •US: Dedicated function for ultrasonic implementation •MD: Both functions can be selected
9 Wafer transfer (wafer ejector)		Please select each item according to the type of wafer and supply form.
wafer injector		Please do not select this item when the injector is not required in the tray specification.
☑ Wafer injector (1-pin specification)		[Standard Specifications] MD: This is a wafer injector with 1-pin specification. A variety of specifications (can correspond to up to 3 varieties).
☑ Injector head bracket (1-pin specification)	2	Specificationsÿ (Max 3 can be loaded) MD: Bracket for injector head of 1-pin ejection specification. ÿStandard
☑ Injector X-axis wiring fixing metal tool	1	[Standard specification] MD: Fix the X-axis wiring of the unused injector head part. Required quantity = 3 - (total number of injector head holders installed)
☑ Jet injector head (1-pin specification)	2	[Standard Specifications] The tip diameter of the injector head is ÿ22mm MD: This is a standard injector head with 1-pin ejection specification.
☐ Spray barrel (ÿ 22-0.8)		ÿStandardÿ MD: This is the injection cylinder corresponding to the wafer size ÿ0.8mm or more. (1-pin specification, injector tip diameter is ÿ22mm, center hole diameter is ÿ0.8mm)
☑ Spray barrel (ÿ 22-0.5)	1	MD: This is a spray tube corresponding to wafer size ÿ0.5mm or more. (1-pin specification, injector head tip diameter ÿ22mm, center hole diameter ÿ0.5mm) MD: This is an injection cylinder corresponding to wafer
☐ Spray barrel (ÿ 22-0.25)		size ÿ0.25mm or more. (1-pin specification, injector head tip diameter is ÿ22mm, center hole diameter is ÿ0.25mm)
☑ Needle Mounting Fixture (19L)	1	[Standard Specifications] MD: This is an injector head mounting jig for a needle length of 19mm. 1-pin specification, MD for standard injector head (tip diameter ÿ22mm): Please add this
☐ Jet cartridge heater (ÿ22)		when the injector needs to be heated. 1-pin specification, MD for standard injector head (tip diameter ÿ22mm): This is a small-diameter injector
☐ Injection head for small diameter (1-pin specification)		head with 1-pin ejection specification. The tip diameter of the spray head is ÿ14mm MD: This is the spray cylinder
☐ Spray barrel (ÿ 14-0.8)		corresponding to the wafer size ÿ0.8mm or more. (1-pin specification, injector head tip diameter ÿ14mm, center hole diameter ÿ0.8mm) MD: This is an injection tube corresponding to wafer size ÿ0.5mm or
☐ Spray barrel (ÿ 14-0.5)		more. (1-pin specification, injector head tip diameter ÿ14mm, center hole diameter ÿ0.5mm) MD: This is an injection cylinder corresponding to wafer size ÿ0.25mm or more. (1-pin specification, injector tip
☐ Spray barrel (ÿ 14-0.25)		diameter ÿ14mm, center hole diameter ÿ0.25mm) MD: This is an injector tip mounting jig for a needle length of 12mm. MD for 1-pin specification, small-diameter injector head (tip diameter ÿ14mm): Please add this
☐ Needle Mounting Fixture (12L)		when the injector needs to be heated. 1-pin specification, MD for small-diameter injector head (tip diameter ÿ14mm): Please select when using the injector cartridge heater
☐ Jet cartridge heater (ÿ14)		with 1-pin injector head.
☐ Wiring for jet cartridge heater (for 1 jet head)		
☐ Wiring for spray cartridge heater (for 2 injector heads)		MD: Please select 2 injector heads when using the injector cartridge heater.
☐ Wiring for spray cartridge heater (for 3 injector heads)		Please select MD: 3 injector heads when using the injector cartridge heater.

Part Name No.	

*:##) Please contact the technical person in charge of our company for the customer's individual specification information.

3.7.2 Wafer transfer

	project	quantity	Contents •DA: Dedicated function for die bonder •US: Dedicated function for ultrasonic implementation •MD: Both functions can be selected
9	Wafer Transfer (Wafer Injector)		Please select each item according to the type of wafer and supply form.
	Injector Other Options Injector		
	☐ Needle (20ÿm R-12L) Injector Needle		MD: is the injector needle with tip R20ÿm. (10pcs) 1 pin option in small diameter injectors (needle length is 12mm)
	☐ (20ÿmR-19L) Injector Needle		MD: is the injector needle with tip R20ÿm. (10 pieces) Select from 1 pin specification (standard) (needle length is 19mm)
	☐ (40ÿmR-12L) Injector Needle		MD: is the injector needle with tip R40ÿm. (10pcs) 1 pin option in small diameter injectors (needle length is 12mm)
	☑ (40ÿmR-19L) Wafer Transfer (Pickup Unit)	1	MD: is the injector needle with tip R40ÿm. (10 pieces) Choose from 1-pin specification (standard) (pin length: 19mm)
10			On the pick-up unit, it is necessary to temporarily place the wafer on the pre-positioning base, and perform high-precision mounting or flip-chip mounting through optical recognition , select this item. The pick-up unit is not included in the standard
	pick up unit		specification. If there is no need to pick up the unit, then this item need not be selected.
	◉ Pickup unit (without		DA: Select this item when it is necessary to perform alignment on the optical base under the die bonding specification. (wafer does not flip)
	○ flipping) Pickup unit (turnover, variable load)		MD: *New Flip-chip chip can be flipped. (It can also be used without reversing) The pick-up load can be changed by air pressure.
	○ Pickup unit (with flipping, constant load)		MD: *New Flip-chip chip can be flipped. (It can also be used without flipping)
	◉ Nozzle holder: Automatic replacement	4	MD: Corresponding to the chip size ÿ6mm or less, it is a type that can be automatically replaced. (Same shape as the joint nozzle holder)
	○ type Nozzle holder: Manual fixed type		MD: Nozzle holder for the constant load specification, without automatic replacement. (Same shape as the junction of the pick-up nozzle of FCX501) ##) MD: This is a
	◉ Rubber nozzle for	4	combination of rubber nozzles (20pcs) and nozzle attachments. (Need to specify the size)
	○ pickup Resin nozzle		##) MD: This is a nozzle with a cutting-edge resin nozzle and a metal attachment. (Need to specify the size)
	○ for pickup Metal nozzle for pickup		##)MD: Integrated metal nozzle. (Need to specify the size)

Part Name No.	

*:##) Please contact the technical person in charge of our company for the customer's individual specification information.

3.7.3 Wafer transfer

	project	quantity	Contents •DA: Dedicated function for die bonder •US: Dedicated function for ultrasonic implementation •MD: Both functions can be selected.
11	Wafer transfer (select the specification of the multi-function axis)		Please select this item when you need to perform pre-positioning operation on the optical base or when you need to automatically change the nozzle under the die bonding specification. (Multifunction axis)
	Pre-positioned abutments		The multifunction axis is not included in the standard version. If you do not need the pre-positioning function, you do not need to select this item. Please select this item when the pre-positioning function or 2-point recognition is required.
	○ Without pre-positioning base (with multi-function		MD: Please select this item when no pre-positioned abutment is required. (Need to change the nozzle automatically, or need an Up-looking camera)
	○ shaft) Pre-positioning base (1		DA: Please select this item when there is only one wafer suction on the pre-positioning base.
	◉ place) Pre-		DA: Please select this item when there are 2 wafer suction points on the pre-positioned abutment.
	positioning base (2		
	☑ places) Nozzle storage Nozzle storage		DA: It can accommodate up to 24 pick-up nozzles with a wafer size below ÿ 6 mm.
	☐ (under 6mm) Cover for storing transfer pins		DA: This is a cover for storing transfer pins for the nozzle memory (ÿ6mm or less). (to prevent leakage of epoxy resin)
	☐ Cover jig for transfer pin storage		DA: This is a jig for removing the transfer pin storage cover for the nozzle memory (ÿ6mm or less).
	Chip recovery, cleaning pre-		
	☑ positioning abutment cleaning		DA: This is the unit for cleaning the upper part of pre-positioned abutments. (Wafer collection can also be used
	☐ Attraction collection of wafers below 1.5mm		together.) MD: This is a unit that attracts and collects wafers up to 1.5 mm in size.
	☐ Wafer Recycling (S Type)		MD: *New This is a recycling box for recycling wafers from pick nozzles. (Dedicated to S type without multi-function axis) It is used
	Up-looking camera		for wafer reverse recognition or nozzle deflection correction. Up-looking cameras are not included in the standard specifications.
	○ Up-looking camera (×1.5 /3 switchable)		MD: Magnification: 1.5 times and 3.0 times manual switching mode (corresponding to 2-point recognition) Recognition field of view: 3.2 × 2.4 or 1.6 × 1.2 mm
	○ Up-looking camera (×1/2 switchable)		MD: Magnification: 1.0 times and 2.0 times manual switching mode (corresponding to 2-point recognition) Recognition field of view: 4.8 × 3.6 or 2.4 × 1.8 mm
	○ Up-looking camera (×0.5 /1 switchable)		MD: Magnification: 0.5 times and 1.0 times manual switching mode (corresponding to 2-point recognition) Recognition field of view: 9.5 × 7.1 or 4.8 × 3.6 mm
	○ Up-looking camera (×3 fixed) Up-looking		MD: Fixed magnification: 3.0 times Lens (corresponding to 2-point recognition) Recognition field of view: 1.6 × 1.2 mm MD:
	◉ camera (×2 fixed) Up-looking camera (×1.5		Fixed magnification: 2.0 times lens (can be used for 2-point recognition) Recognition field of view: 2.4 × 1.8 mm MD: Fixed
	○ fixed) Up-looking camera (×1 fixed) Up-looking		magnification: 1.5 times lens (can be Corresponding to 2-point recognition) Recognition field of view: 3.2 × 2.4 mm MD: fixed
	○ camera (×3 fixed, directly attached to the		magnification: 1.0 times the lens (corresponding to 2-point recognition) Recognition field of view: 4.8 × 3.6 mm MD: fixed
	○ fixed part)		magnification: 3.0 times the lens (without multi-function axis, Directly installed on the fixed part) Recognition field of view: 1.6 × 1.2 mm (not corresponding to 2-point recognition) MD: fixed
	○ Up-looking camera (×2 fixed, directly installed on the fixed part)		magnification: 2.0 times the lens (no multi-function axis, directly installed on the fixed part) Recognition field of view: 2.4 × 1.8 mm (not Corresponding to 2-point recognition) MD: Fixed
	○ Up-looking camera (×1.5 fixed, directly installed on the fixed part)		magnification: 1.5 times the lens (no multi-function shaft, directly installed on the fixed part) Recognition field of view: 3.2 × 2.4 mm (not corresponding to 2-point recognition) MD: Fixed
	○ Up-looking camera (×1 fixed, directly installed on the fixed part)		magnification: 1.0 times the lens (No multi-function shaft, directly installed on the fixed part) Recognition field of view: 4.8 × 3.6 mm (does not correspond to 2-point recognition)

Subject No.	

*: ##) Please contact the technical director of our company for the customer's individual specification information.

3.7.4 Chip transfer and pre-mounting drawing department

	project	quantity	Contents •DA: Dedicated function for die bonder •US: Dedicated function for ultrasonic implementation •MD: Both functions can be selected
11	Wafer transfer (select the specification of the multi-function axis)		The standard specification does not include the multifunction axis. Please select this item when you need an Up-looking camera, etc.
	Indirect lighting for up-looking Ring		
	☐ lighting (for magnification switching type up looking cameras) Ring lighting		MD: Please add this item if the chip cannot be seen clearly and indirect lighting is required.
	☑ (for fixed magnification type up looking cameras) Other options for wafer transfer		MD: *New Please add this item when you can't see the chip clearly and need indirect lighting.
	☑ Working head Z-axis height calibration unit		DA: This is the transmissive sensor required to measure the compensation brightness of the height sensor of the bonding head and the suction head. Required when using rubber nozzles.
	☑ Wafer detection sensor (for pick-up head) Pre-		DA: This is the sensor that detects the wafer attached to the pick-up nozzle. (Optical Reflection Method) Select
12	mounting drawing department		when performing overall drawing of the front abutment position before mounting.
	Dispenser unit Single		
	type dispenser unit (for front abutment): for drawing before mounting Double type		##) DA: Equipped with 1 injector, which can be drawn with an air pressure dispenser (need to specify the injector size (5cm3 or 10cm3))
	dispenser unit (for front abutment): for drawing before mounting		##) DA: Equipped with 2 injectors, it can be painted with an air pressure dispenser (need to specify the injector size (5cm3 or 10cm3))
	☐ Nozzle adapter for drawing: for drawing before mounting		DA: This is a nozzle adapter for drawing. (Musashi engineering precision nozzle: for FN•HN series) DA: This is a nozzle for drawing.
	☐ Nozzle for drawing: For drawing before mounting		Precision nozzle made by Musashi engineering: FN•HN series##)DA: This is a nozzle
	☐ Special drawing nozzle: for drawing before mounting		for special drawing. Select DA according to size, material, manufacturer, etc.: Add heater for drawing
	☐ Nozzle heater (for single injector): for drawing before mounting Nozzle heater (for		nozzle. (for single injector)
	☐ double injector): for drawing before mounting		DA: A heater for the drawing nozzle is added. (for dual injectors)
	Anterior abutment		
	camera Anterior abutment camera (×1.5 fixed		DA: Magnification: 1.5 times fixed recognition field of view: 3.2 × 2.4 mm DA: Magnification:
	magnification) Anterior abutment camera (×1.0 fixed		1.5 times fixed recognition field of view: 4.8 × 3.6 mm DA: Magnification: 1.5 times fixed
	magnification) Anterior abutment camera (×0.5 fixed magnification)		recognition field of view: 9.5 × 7.1mm

3. Specifications of options

Subject No.	

*: ##) Please contact the technical director of our company for the customer's individual specification information.

3.8 Pre-installation drawing part, heater option

	project	quantity	Contents •DA: Dedicated function for die bonder •US: Dedicated function for ultrasonic implementation •MD: Both functions can be selected
12	Pre-installation drawing department		Select when performing overall drawing of the anterior abutment position before installation.
	Other options for the pre-installation drawing department		
	☐ Height measuring unit: for drawing before mounting		DA: This is a contact-type substrate height measurement unit for anterior abutments. (Additional option drawn before installation)
	☐ Drawing inspection: for drawing before installation		DA: This is a check function (software) for drawing shapes. After resin dispensing, check the state of the resin with the substrate camera, and check OK/NG according to the pass/fail judgment criteria. ÿDepending on the mounting specifications, equipment specifications, and resin appearance, inspection may not be possible. So it needs to be evaluated beforehand using customer artifacts. ÿA separate quotation may be required depending on the results of prior workpiece evaluation, optical system and software modifications, etc. ÿIf this check is activated, it may increase the implementation cycle time. ÿIt can be inspected with only one visual field.
	☐ Trial drawing abutment (for anterior abutment)		DA: This is the abutment for the trial drawing of the front abutment. (Test drawing area: W 57.5 x L 174mm)
	Connector assembly (pre-installation drawing department)		
	☐ Adapter assembly for 10cc injector (manufactured by Musashi engineering): Drawing department before implementation		DA: This is the air pressure supply pipe (about 2m) that connects the dispenser and the injector, etc. (For 10cc injector made by Musashi engineering) Tube material: Polyurethane
	☐ Adapter assembly for 5cc injector (manufactured by Musashi engineering): Pre-installation drawing department		DA: This is the air pressure supply pipe (about 2m) that connects the dispenser and the injector, etc. (For 5cc injectors made by Musashi engineering) Tube material: Polyurethane
	☐ Adapter assembly for 10cc injector (manufactured by Sanei-Tech): Drawing department before installation		DA: This is the air pressure supply pipe (about 1.8m) that connects the dispenser and the injector, etc. (MD for 10cc injector made by Sanei-Tech) Tube material: Polyurethane
	☐ Adapter assembly for 5cc injector (Manufactured by Sanei-Tech): Drawing department before installation		DA: This is the air pressure supply pipe (about 1.8m) that connects the dispenser and the injector, etc. (For 5cc injectors made by Sanei-Tech) Tube material: Polyurethane
13	Heater Options		Standard specification does not include heater, please select when required. Please refer to 1.2.14 Basic Performance for details.
	◉ Heater Unit (Type A)		MD: Please select when one drawing nozzle heater is required for each of the abutment, injector, and injector head other than the post-installation abutment.
	○ Heater Unit (Type B)		MD: Please select when you need 2 nozzle heaters for each drawing nozzle in addition to the base, injector, and injector head.
	○ Heater Unit (Type C)		MD: *New In addition to type A, please select when you need the wafer pad blowing heater corresponding to AWC.
	○ Heater Unit (Type D)		MD: *New In addition to type B, please select when you need the wafer pad blowing heater corresponding to AWC.
	○ Heater Unit (Type E)		US: Please select GGI specification. (Abutments, injectors, injector heads outside the abutment after installation, equipped with a wafer blowing heater)

3. Specifications of optional parts

Part Name No.	

*:##) Please contact the technical person in charge of our company for the customer's individual specification information.

3.9.1 Identifying the camera

	project	quantity	Contents •DA: Dedicated function for die bonder •US: Dedicated function for ultrasonic implementation •MD: Both functions can be selected
14 Identifying the camera			In order to identify wafers and substrates, please select the identification optical system according to the size of the wafer.
	Jointed base camera Jointed		
	base camera (×1.5/3 switchable)		specification] MD: Magnification: 1.5 and 3.0 times manual switching [standard Recognition field of view: 3.2 × 2.4 or 1.6 × 1.2 mm
	Joint abutment camera (×1/2 switchable) Joint abutment		MD: Magnification: 1.0 and 2.0 times manual switching recognition field of view: 4.8 × 3.6 or 2.4 × 1.8 mm MD: magnification: 0.75 and 1.5
	camera (×0.75/1.5 switchable)		times manual switching recognition field of view: 6.2 × 4.8 or 3.2 × 2.4 mm MD: Magnification: 0.5 and 1.0 times manual switchable recognition
	Joint abutment camera (×0.5/1 switchable)		field of view: 9.5 × 7.1 or 4.8 × 3.6 mm MD: magnification: 0.38 to 2.5 times electric zoom specification (recommended for inspection before and
	Articulated abutment camera (high magnification motorized)		after installation) Recognition field of view: 12.7 × 9.5 to 1.9 × 1.4 mm MD: Magnification: 0.25 to 1.7 times electric zoom specification (recommended for pre-installation and post-installation inspections) Recognition field of view: 19.0 × 14.3
	Articulated abutment camera (medium magnification electric)		to 2.9 × 2.2 mm MD: Magnification: 1.0 times Fixed identification field of view: 4.8 × 3.6 mm MD: magnification: 1.5 times fixed identification field of view: 3.2 × 2.4 mm MD: magnification: 2.0 times fixed identification field of view: 2.4 × 1.8 mm
	Articulated abutment camera (×1 fixed magnification) Articulated		MD: magnification: 3.0 times fixed Recognition field of view: 1.6 × 1.2 mm
	abutment camera (×1.5 fixed magnification)		
	Joint Abutment Camera (×2 fixed magnification) Joint Abutment		
	Camera (×3 fixed magnification) Joint Abutment Camera with		
	Indirect Illumination		
	1 fixed-point LED oblique lighting (magnification switching type) 2 fixed-		switching [standard MD: Please add this item when indirect lighting is required because the substrate cannot be seen clearly. (Magnification specification] method)
	point LED oblique lighting (magnification switching) 4 fixed-point		MD: Please add this item when indirect lighting is required because the substrate cannot be seen clearly. (Magnification switching method) (Please select this item when you need to reduce the influence from one direction and increase the brightness)
	LED oblique lighting (magnification switching) 1 fixed-point LED oblique		MD: Please add this item when the substrate cannot be seen clearly and outline lighting is required. (Magnification switching type) Please select this item when you need to reduce the influence from 4 directions and increase the brightness.
	lighting (electric zoom) 2 lights Fixed-point LED oblique lighting		MD: Please add this item when indirect lighting is required because the substrate cannot be seen clearly. (electric zoom)
	(electric zoom) 4 lights fixed-point LED oblique lighting (electric		MD: Please add this item when the substrate cannot be seen clearly and indirect lighting is required. (Motorized zoom method) (When it is necessary to reduce the influence from one direction)
	zoom) 1 light fixed-point LED oblique lighting (fixed magnification)		MD: Please add this item when the substrate cannot be seen clearly and indirect lighting is required. (Motorized zoom method) (when it is necessary to reduce the influence from 4 directions)
			MD: Please add this item when indirect lighting is required because the substrate cannot be seen clearly. (fixed magnification)
	2 fixed-point LED oblique lighting (fixed magnification) 4 fixed-		MD: Please add this item when indirect lighting is required because the substrate cannot be seen clearly. (Fixed magnification) Please select this item when you need to reduce the influence from 4 directions and increase the brightness.
	point LED oblique lighting (fixed magnification)		MD: Please add this item when indirect lighting is required because the substrate cannot be seen clearly. (Fixed magnification) Please select this item when you need to reduce the influence from 4 directions and increase the brightness.
	2 lights fixed point LED low angle lighting		MD: Add this item when low-angle lighting is required because the subject cannot be seen clearly. It cannot be used for pre-installation drawing and transfer specifications.

Part Name No.	

*:##) Please contact the technical person in charge of our company for the customer's individual specification information.

3.9.2 Identify Camera

project	quantity	Contents •DA: Dedicated function for die bonder •US: Dedicated function for ultrasonic implementation •MD: Both functions can be selected
14 Identifying the camera		In order to identify wafers and substrates, please select the identification optical system according to the size of the wafer.
wafer camera		
◉ Wafer camera (high magnification motorized method)		[Standard specifications] MD: Magnification: 0.39 to 2.2 times electric zoom specification Recognition field of view: 12.3 × 9.2 ~ 2.2 × 1.6 mm
○ Wafer camera (medium magnification motorized method)		MD: Magnification: 0.26 to 1.5 times electric zoom specification Recognition field of view: 18.5 × 13.8 to 3.2 × 2.4 mm MD: *New
○ Wafer camera (X1 fixed)		Magnification: 1 times fixed recognition field of view: 4.8 × 3.6 mm
Indirect camera for wafer camera		
☐ Pseudo-coaxial illumination for wafer cameras		MD: Please add this item in cases where the wafer cannot be seen clearly and a wide area (pseudo-coaxial) illumination is required.
☑ External Coaxial Illumination for Wafer Cameras		MD: Please add this item when the chip cannot be seen clearly and the coaxial lighting range needs to be expanded. (This unit is used after replacing the existing standard specification coaxial lighting LED.) Fixed-point LED oblique lighting: MD for wafer
☐ camera: Please add this item when the wafer cannot be seen		clearly and indirect lighting is required . (Low Angle (Low Angle Specification) Specification) Recognizes the wafer temporarily placed on the pre-positioning base, and performs mounting correction. Standard
pre-positioning camera		specifications do not include pre-positioning cameras.
○ Pre-positioning camera (×1.5 /3 switchable)		DA: magnification: 1.5 and 3.0 times manual switching recognition field of view: 3.2 × 2.4 or 1.6 × 1.2 mm DA: magnification: 1.0 and
○ Pre-positioning camera (×1/2 switching type)		2.0 times manual switching recognition field of view: 4.8 × 3.6 or 2.4 × 1.8 mm DA: magnification: 0.5 and 1.0 times the manual
○ Pre-alignment camera (×0.5 /1 switching type)		switching mode to identify the field of view: 9.5 × 7.1 or 4.8 × 3.6 mm
Indirect lighting for pre-alignment camera		
☑ Fixed-point LED oblique lighting: For pre-alignment camera (low angle specification)		DA: Please add this item when the chip cannot be seen clearly and indirect lighting is required. (Low-angle specification)
flip camera		This is a presumptive recognition camera for improving the accuracy of bonding nozzles in flip-chip specification.
☐ Reverse camera (manual zoom type)		MD: Magnification: 0.3 to 2.4 times manual zoom Specifications Recognition field of view: 15.9 × 11.9 to 2.0 × 1.5 mm MD: *New Magnification: 1 times
☐ Flip camera (×1 fixed)		fixed Recognition field of view: 4.8 × 3.6 mm This is required when installing LED oblique lighting
Bracket for low angle oblique lighting		Selected bracket.
☑ Bracket for low angle oblique lighting		MD: *Add this item for any one of low-angle oblique lighting for wafer cameras, pre-alignment cameras, and oblique lighting for wafer barcode cameras. For details, refer to the selection column of the frame grabber board.
add frame grabber board		
☑ Add frame grabber board #2		MD: *New ÿFor Up-looking camera and pre-positioning camera, ÿWhen flipping camera, ÿFor front abutment camera, please add this item.
☐ Add frame grabber board #3		MD: *New ÿ When substrate barcode camera, front abutment camera and flip-chip camera, ÿWafer barcode camera, pre-alignment camera, flip-chip camera or substrate barcode camera, please add this item. Please refer to the selection column of the LED lighting board for details.
Additional LED lighting plate		
☑ Additional LED lighting board #3		MD: *New Please add this item when there is a front abutment camera, flip camera, wafer barcode camera or LED oblique lighting.
☐ Additional LED lighting board #4		MD: *New Add this when you have low-angle illumination for wafer cameras or low-angle or pseudo-coaxial illumination for bonding abutment cameras or substrate barcode cameras.
☐ Additional LED lighting board #5		MD: *New Please add this item when there is a high-angle illumination corresponding to a wafer camera or a high-angle illumination corresponding to a pre-positioning camera.

Subject No.	

*: ##) Please contact the technical director of our company for the customer's individual specification information.

3.10.1 Software (MD-P series)

	project	quantity	Contents •G: GGI dedicated function (standard) •C: C4 dedicated function (standard)
15 software			Each function may not work properly depending on the status of the customer's artifact, and it is necessary to evaluate it in advance using the client's artifact. Depending on the specification, additional charges and variations in delivery times may occur. Please inquire for details.
	Solder ball inspection		ÿAs pre-evaluation is required, please submit real wafers (good samples, limited samples lacking solder balls). ÿThis function is valid only for workpieces with solder balls on the wafer. ÿIf you need to change the optical system such as lighting, you need to quote separately.
	☐ Inspection of solder balls on wafer		##) Before wafer pick-up, use a wafer camera to check whether there are solder balls, and check OK/NG according to the pass/fail judgment criteria. Only the presence or absence of solder balls can be judged, but its position and size cannot be judged. ÿ The inspection is the lighting condition using the pick-up recognition. ÿDepending on the mounting specifications, equipment specifications and appearance of solder balls, inspection may not be possible. So it needs to be evaluated beforehand using customer artifacts. ÿA separate quotation may be required depending on the results of prior workpiece evaluation, optical system and software modifications, etc. ÿWhen starting this check, it may increase the implementation cycle time. ÿIt can be inspected with only one visual field. ##) Before chip mounting, use an Up-looking camera to check the presence or absence of solder balls, and make an OK/NG judgment based on the pass/fail judgment criteria. Only the presence or absence of solder balls can be judged, but the position and size cannot be judged. ÿDepending on the mounting specifications, equipment specifications and appearance of solder balls, inspection may not be possible. So it needs to be evaluated beforehand using customer artifacts. ÿA separate quotation may be required depending on the results of prior workpiece evaluation, optical system and software modifications, etc. ÿIf this check is activated, it may increase the implementation cycle time. ÿIt can be inspected with only one visual field.
	☐ Check whether there are solder balls on the chip before mounting		
	post-engagement inspection		Use the board recognition camera to check the state of the wafer after mounting. According to the pass/fail judgment standard, after checking in one field of view, select the follow-up action.
	☑ post-engagement inspection		##) Detects the position and angle of the mounted chip, and checks OK/NG based on the acceptance criteria. ÿDepending on the installed specifications, device specifications, and appearance (post-installed state), inspection may not be possible. So it needs to be evaluated beforehand using customer artifacts. ÿA separate quotation may be required depending on the results of prior workpiece evaluation, optical system and software modifications, etc. ÿIf this check is activated, it may increase the implementation cycle time. ÿIn MD-P200, only one visual field can be used for inspection. ##) This is a function to correct the mounting position of each board by using the position angle deviation check result
	☐ Position correction for each substrate: inspection after bonding		during automatic operation. ÿThis function is only available when the position angle offset check is selected.
	Increase productivity/automation		
	☐ drop altitude learning		In automatic production, the descending starting height of the mounting action can be memorized. Through automatic learning and adjustment, the descending distance when the actual installation is descending is kept constant. This stabilizes the fall time and shortens the duty cycle time. ÿThe shortening effect will vary depending on the operating conditions of the equipment. ÿOnly compatible with equipment equipped with a VCM pressure head.

Subject No.	

*: ##) Please contact the technical director of our company for the customer's individual specification information.

3.10.2 Software (MD-P series)

	project	quantity	Contents •G: GGI dedicated function (standard) •C: C4 dedicated function (standard)
15 software			Each function may not work properly depending on the status of the customer's workpiece, and evaluation using the customer's workpiece is required in advance. Depending on the specification, additional charges and variations in delivery times may occur. Please inquire for details.
	Increase productivity/automation		
	☐ Pickup nozzle dirty detection		##) At the time of wafer recovery of the pick-up nozzle, check whether there is foreign matter adhered to the pick-up nozzle with a flip-chip camera, and judge OK/NG according to the pass/fail judgment standard. It is impossible to determine whether the foreign object is dirty, scratched, or the size of the foreign object. ÿDepending on the actual mounting specifications, equipment specifications, and dirty appearance of the nozzle, inspection may not be possible. So it needs to be evaluated beforehand using customer artifacts. ÿA separate quotation may be required depending on the results of prior workpiece evaluation, optical system and software modifications, etc. ÿIt can be inspected with only one visual field. ##) After picking up the wafer
	☐ Confirmation after bonded nozzle wafer recovery		with the bonding nozzle, check whether the wafer is picked up normally with the Up-looking camera. According to the pass/fail judgment standard, after checking in one field of view, select the follow-up action. ÿDepending on the nozzle, the detection may not be possible, please consult the sales representative.
	Host communication		
	☑ LinePC: Host communication (with LAN cable)		When the device and the host (customer's LAN environment) are connected for data communication (mapping drawing), etc., a PC is installed between the device and the host, and LinePC is installed in this PC to mediate the communication between the device and the host software. PC hardware needs to be provided by the customer. ÿIt supports Windows10.
	Wafer Mapping (Pickup Side)		ÿMapping image data, picking order, etc. need to be discussed in conjunction with customer specifications.
	☑ Wafer Mapping (Pickup Side)		##) Read the map data corresponding to the wafer ID into the device, and you can choose to pick up the wafer. Please discuss the detailed operation separately. ÿWhen using the customer format, it can be used as an additional specification. ÿFor automatic ID recognition, related hardware is required. ÿLinePC is required. ÿEvaluation using customer artifacts and map data is required in advance.
	Board Mapping (Mounting Side)		ÿIt needs to be discussed in conjunction with the customer's
	☐ Board Mapping (Mounting Side)		specifications. ##) After the board ID is read, the corresponding map data is read into the device, and the mounting position of the board can be selected. Please discuss the detailed operation separately. ÿWhen using the customer format, it can be used as an additional specification. ÿFor automatic ID recognition, related hardware is required. ÿLinePC is required. ÿEvaluation using customer artifacts and map data is required in advance. ÿIt needs to be
	Traceability		discussed in conjunction with the customer's specifications.
	☑ Traceability (PFSF format)		##) Collect trace data. (Files are output using the PFSC standard format.) ÿPlease refer to the specifications for the compatible map image format. ÿWhen using the customer format, it can be used as an additional specification. ÿFor automatic ID recognition, related hardware is required. ÿLinePC is required.
	GEM		ÿIt needs to be discussed in conjunction with the customer's
	☑ Basic GEM correspondence (with license)		specifications. ##) corresponds to GEM. (The GEM command corresponds to the PFSC standard function) ÿIncludes the license of the GEM software package. ÿWhen using the customer format, it can be used as an additional specification. ÿLinePC is required.

Part Name No.	

*:##) Please contact the technical person in charge of our company for the customer's individual specification information.

3.11 User Manual

	project	quantity	Contents	•DA: Dedicated function for die bonder •US: Dedicated function for ultrasonic implementation •MD: Both functions can be selected
16	Other additional options			
	vacuum pump			
	☑ vacuum pump		MD: 1 additional vacuum pump.	
	power cable		The cable should be prepared by the customer.	
	☐ Mains power cable (6m)		MD: This is the main power cable from the host to the factory power supply. A minimum distance of 3m is required from the circuit breaker to the back of the device.	
	Jigs and Tools			
	☑ Joining nozzle installation jig		[Standard Specifications] DA: This is a jig for attaching a joint nozzle for pneumatics.	
	☑ Standard Tool (DA)		DA: DA This is the standard tool category. ÿStandardÿ	
	☐ Standard Tool (GGI)		[Standard Specifications] US: GGI This is a standard tool type.	
	☐ Operation jig (US)		US: This is a special type of fixture for GGI operation.	
17	user's Guide		One set each for Japanese (plain paper) and DVD-ROM is standard. If you need to add, please tick the check box and mark the quantity.	
	Instruction Manual (Manual)			
	☐ Instruction Manual (Japanese) Plain Paper		ÿStandardÿ	MD: This is plain paper in Japanese.
	☑ Instruction Manual (Japanese) Dust-free paper	1	MD: This is Japanese dust-free paper.	
	☐ Instruction Manual (English) Plain Paper		MD: This is English plain paper.	
	☐ Instruction manual (English) Dust-free paper		MD: This is English dust-free paper.	
	☐ Instruction Manual (Chinese) Plain Paper		MD: This is Chinese plain paper.	
	☑ Instruction Manual (Chinese) Dust-free paper	1	MD: This is Chinese dust-free paper.	
	Instruction Manual (DVD-ROM) Instruction			
	☑ Manual (Japanese) DVD-ROM	1		MD: This is the DVD-ROM in Japanese. ÿStandardÿ
	☐ User Manual (English) DVD-ROM		MD: Here is the DVD-ROM in English.	
	☑ User Manual (Chinese) DVD-ROM	1	MD: This is the corresponding DVD-ROM in Chinese.	

4. Additional optional specifications

Part Name No.	

*:##) Please contact the technical person in charge of our company for the customer's individual specification information.

4.1 Variety switching head: Please select the option from the 2nd variety.

	project	quantity	Contents •DA: Dedicated function for die bonder •US: Dedicated function for ultrasonic implementation •MD: Both functions can be selected
1 Variety Switch Header			Please add the necessary quantity when changing the type.
	Nozzle at the front of the head		
	☐ Variety switching: nozzle seat		MD: For wafer size up to ÿ6mm (Nozzle holders for bonding, pick-up and transfer pins are shared) ##) MD: This is a set of
	☐ Variety switching: rubber nozzle		rubber nozzles (20pcs) and nozzle accessories. (Need to specify the size)
	☐ Variety switching: resin nozzle		##) MD: This is a nozzle with a cutting-edge resin nozzle and a metal attachment. (Need to specify the size)
	☐ Variety switching: metal nozzle		##) MD: This is a one-piece metal nozzle. (Need to specify the size)
	US tools		
	☐ Variety switch: less sales split type US tool: X direction		##)US: Chip size: Please choose when it is less than 3mm. ÿIt is necessary to specify the chip material, size, and electrode ball configuration. (X direction vibration)
	☐ Variety switching: less pins and small amplitude US tools: X direction		##)US: Chip size below 3mm, please choose when low power output. ÿIt is necessary to specify the chip material, size, and electrode ball configuration. (X direction vibration)
	☐ Variety switching: Middle pin heating split type US tool: X direction		##)US: Chip size: Please choose when it is below 7mm. (Heating setting: up to 300°C) ÿIt is necessary to specify the chip material, size, and electrode ball configuration. (X direction vibration)
	☐ Variety switching: Middle pin heating split type US tool: Y direction		##)US: Chip size: Please choose when it is below 7mm. (Heating setting: up to 300°C) ÿIt is necessary to specify the chip material, size, and electrode ball configuration. (vibration in Y direction)
	transfer unit		
	☐ Variety switching: transfer pin		##) DA: transfer pin (need to specify size)
	☐ Type switching: Transfer tray (for 1 track)		DA: transfer plate for 1 track
	☐ Type switching: Transfer tray (for 2 tracks)		DA: transfer plate for 2 tracks
	☐ Type switching: Transfer blade (for 1 track) Type		DA: Squeegee for transfer printing (for 1 track)
	☐ switching: Transfer blade (for 2 tracks) Nozzle		DA: Squeegee for transfer printing (for 2 tracks)
	memory		
	☐ Variety switching: Nozzle memory (ÿ6mm or less)		DA: It can accommodate up to 24 pick-up nozzles with a wafer size below ÿ 6mm.

4. Additional optional specifications

Part Name No.	

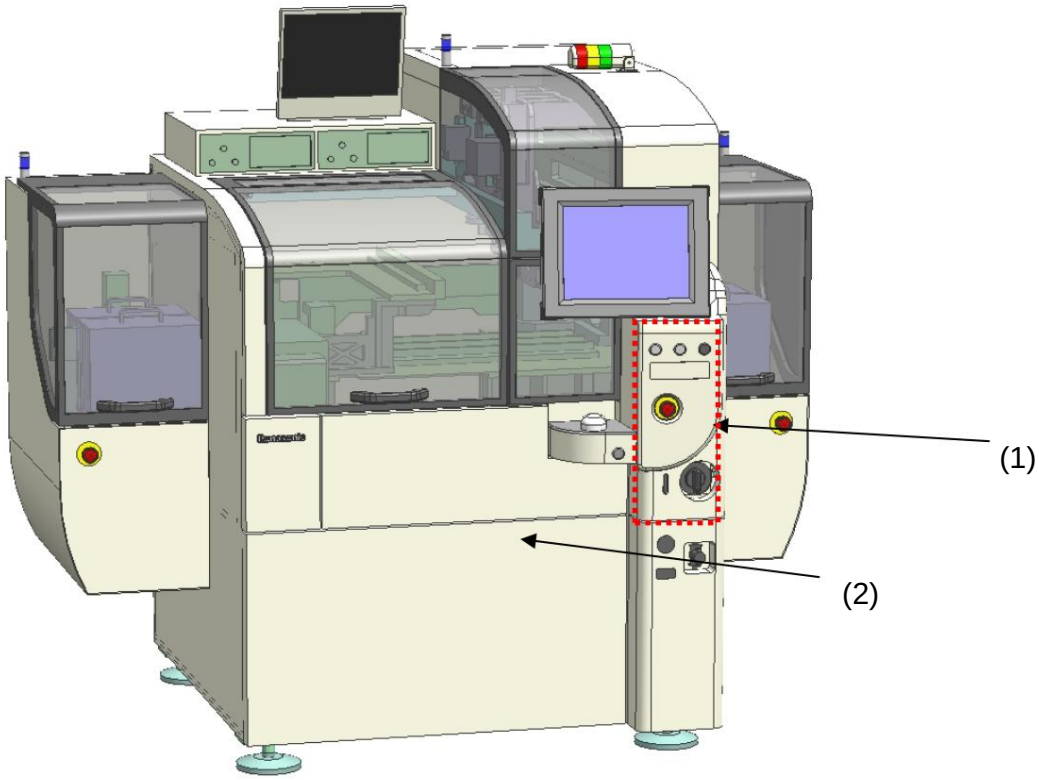
*:##) Please contact the technical person in charge of our company for the customer's individual specification information.

4.2 Type switching abutment part: Please select the option from the second type.

	project	quantity	Contents •DA: Dedicated function for die bonder •US: Dedicated function for ultrasonic implementation •MD: Both functions can be selected
2	Variety switching abutment		Each substrate is a dedicated design. Please add the necessary quantity when changing the type. Interference may occur when the wrong support plate is used.
	Type change of		
	☐ bonding abutment: support plate for bonding: without heating type		##) MD: This is a non-heated support plate for bonding abutments. (requires individual design)
	☑ switching: support plate for bonding: heating type switching: substrate	2	##) US: This is a heated support plate for bonding abutments. (requires individual design)
	☑ pressing for bonding Front abutment type switching:	2	##) MD: This is the substrate press for bonding abutments. (requires individual design)
	support plate		
	☐ for front abutment: without heating Switching of type and variety: support		##) MD: This is a support plate for an anterior abutment without heating. (requires individual design)
	☐ plate for anterior abutment: with heating type		##) US: This is a heated support plate for the anterior abutment. (requires individual design)
	☐ Variety switching: Substrate press for anterior abutment		##) MD: This is the anterior abutment pressed with the substrate. (requires individual design)

5. Finishing color

Subject No.	



(Parts	Part No. of paint that can be specified of our company's standard color) 1 Operation	Specify the finishing color (if specifying two colors, please fill in the finishing color serial
part	White W-13 (Molded product) Main part: White	number.) It is a resin model, so it cannot be changed.
2	W-13 (G50)	

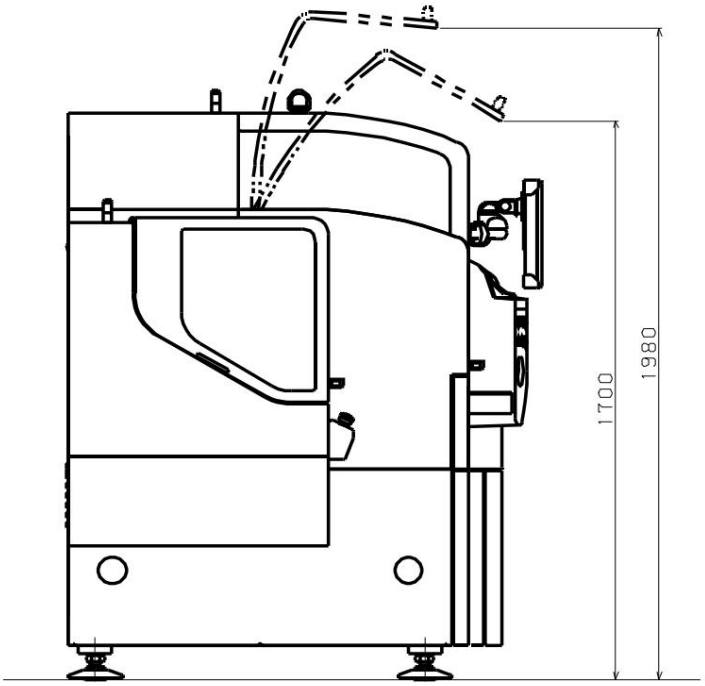
*

·If specifying a color, please suggest a color sample.•It is not possible
to respond to requests for changing the coating color of commercially available retail products.

5.2 Height when the front safety cover is opened

* The device is factory set to the height with the front safety cover open. Please choose from the following items.

No.	Height with front safety cover open	
1	1 980 mm	ÿStandardÿ
2	1 700 mm	



5.3 Position of board camera (refer to 1.2.7 Basic specifications)

* The speed is based on the position of 100mm, otherwise it will be slower.

No.	Mounting camera position (distance from the outside transmission reference)	
1	100 mm	ÿStandardÿ
2	140 mm	
3	150 mm	