

RECEIPT

Machine name BESTEM-D310 #1
 Contents Delivery specification document
 Serial No. _____
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BESTEM – D310 #1 Delivery Specification

Order: _____

Serial number: _____

User: SHEN ZHEN FINE MADE ELECTRONICS GROUP CO., LTD

Document no:	11813 – 105821		
Date	14 October 2015		
Issued by	Canon Machinery Inc Semicon System Division		
Approve	Check	Prepare	

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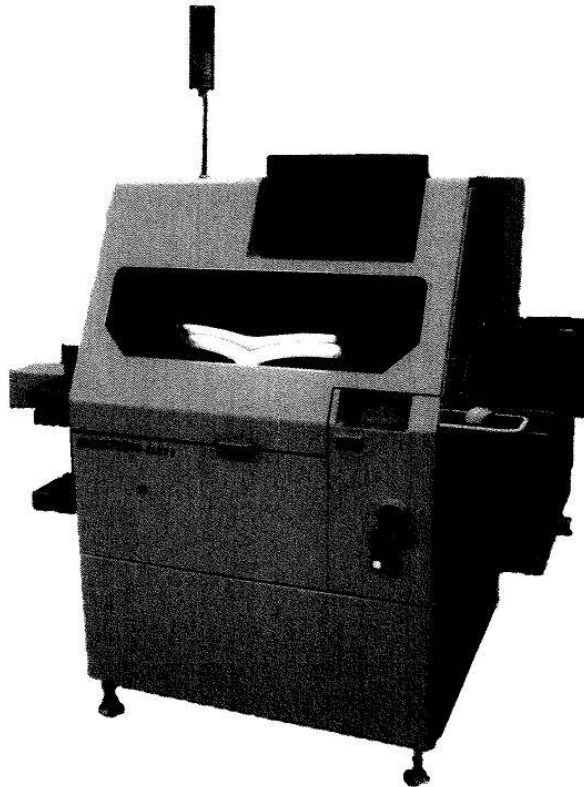
1. Model Name: BESTEM-D310

2. Machine Overview

This machine is a fully automatic high speed die bonder machine which has loader unit that can vacuum to pick up a work (Lead frame or other) or magazine loader which can push out work 1 by 1 to supply it to feeder. During frame transfer at feeder, island recognition will be performed at preform position to detect the island position and then adhesive paste will be dispensed based on the island position data. After this, island recognition will be performed at bonding position to detect the island position and then based the island position data, chip that is being pick up from wafer sheet will be mounted on the island. After completing, the work will be stored into magazine.

Specialty

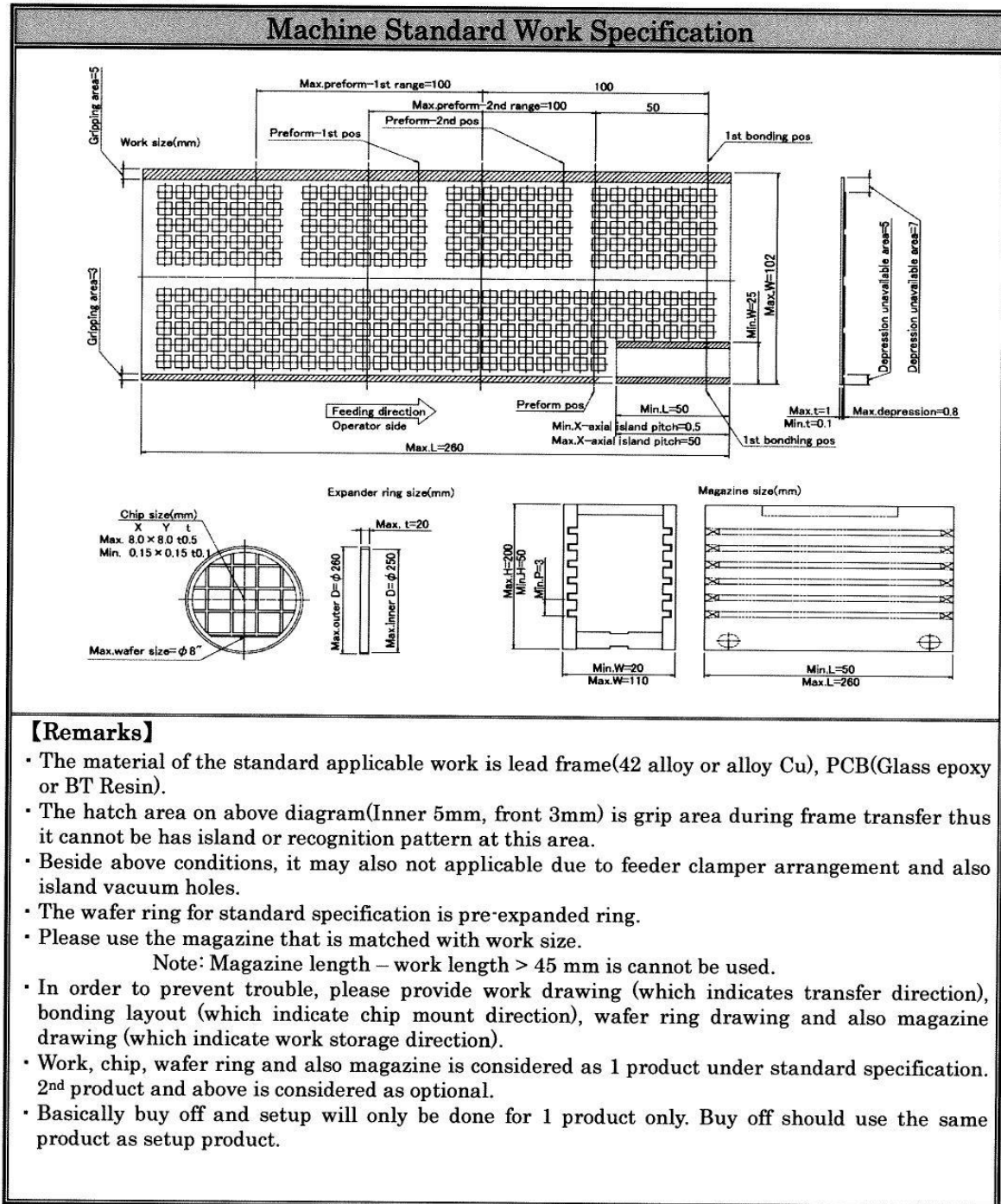
- Equipped with a full digital control bonding head which has a potential to become world's fastest. Each unit position data can be registered based on work data and also various teaching functions that are integrated with HMI which made this machine a high productivity machine, but yet easy adjust, stable and flexible.
- In order to increase productivity and function up, the part for product conversion is minimum so that customer satisfaction can be full filled.



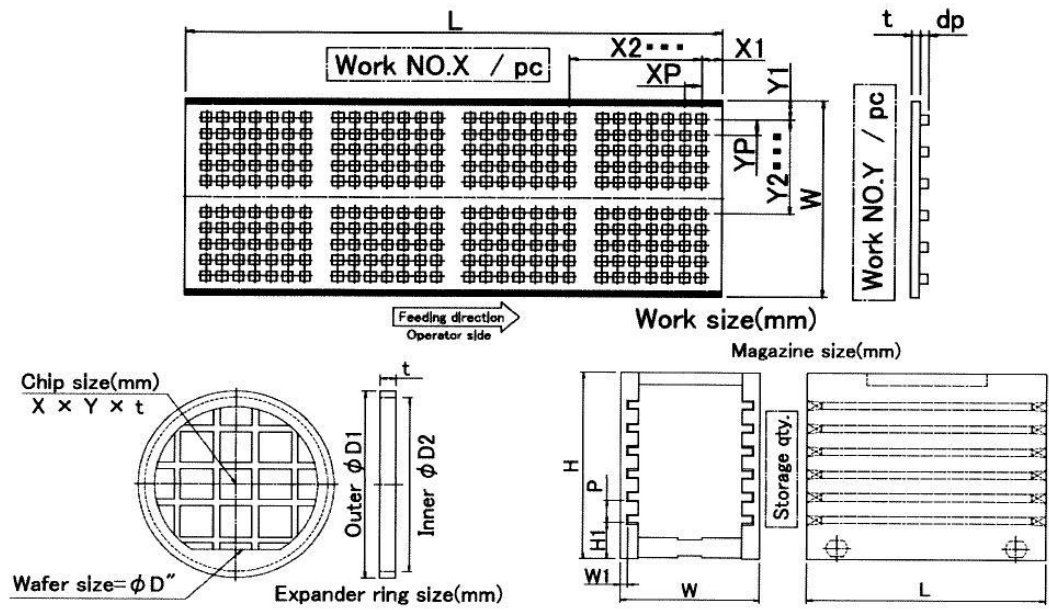
Machine External Overview

3. Machine Specification

Applicable Work



Actual Work Specification



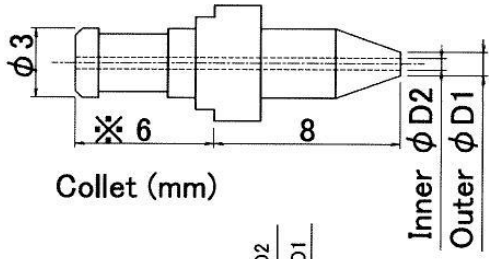
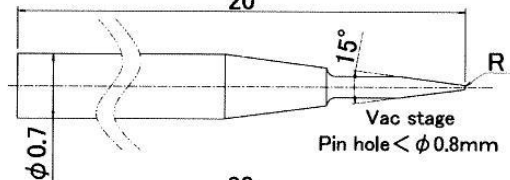
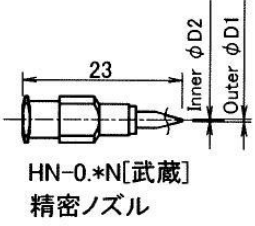
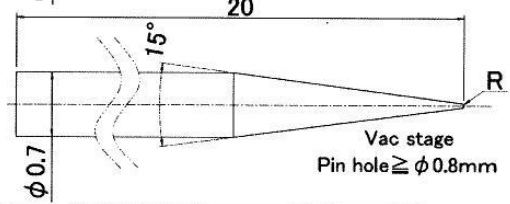
Work size	Product name	SOT26	QSOP24
	L×W	234×48	264.6×70
	t (dp)	0.152	0.203 (0.165)
	X×Y/pc	52×8=416	20×8=160
	XP	4.5	13.25
	YP	5.288	8
	X1	2.25	6.425
	X2...	-	-
	Y1	5.492	7
	Y2...	-	-
Chip size Wafer size	X×Y×t	0.53×0.6	1.1×1.6
	φD''	DTF2-8-1	
	φD1		
	φD2		
	t		
Magazine size	L×W×H		
	H1·P·W1		
	Storage qty.		
Adhesive	Precaution items		
	Kind	Ag paste	
	Maker	台湾翊華	
	Syringe	5, 10ml	
	Type	9246	
	Color		
	Viscosity		
	Curing condition	℃	Cps hour

Actual Work Specification

【Remarks】

- Buy off and setup product name: SOT26 , QSOP24
- In case the product is new, please provide work and chip sample to us.
Note: Especially surface condition, bad mark and colour must be checked in advance.

Applicable Tool

Machine Standard Tool Specification			
 <p>Collet (mm)</p>		<p>Ejector pin (mm) R25、50、75、100、150、250 μm</p>  <p>Vac stage Pin hole < φ0.8mm</p>	
 <p>HN-0.*N[武蔵] 精密ノズル</p>		 <p>Vac stage Pin hole ≥ φ0.8mm</p>	
<p>【Remarks】</p> <ul style="list-style-type: none"> Tools that are other than above specification will be consider as special design. Note) Drawing must be provided for doing design. It may have tool that cannot be made. Multi nozzle is also possible, please indicate it at drawing. The dimension of collet(except φD1 and φD2) is constant due to bonding arm structure. If the collet has several different sizes, collet holder is needed to base on product type. Note) Especially part indicated by ※6, the variety of this part may cause vacuum leaks. 			
Actual Tool Specification			
Collet	Product name	S0T26	QS0P24
	φD1 x φD2	R3-716	R3-703
	Material	Rubber	Rubber
	Supply	Yes · No	Yes · No
	Required qty.	10	10
Nozzle	Designation/Specified	Yes · No	Yes · No
	φD1 x φD2	HN-0. 2N	HN-0. 2N
	Supply	Yes · No	Yes · No
	Required qty.		
Ejector pin	R	50 μm	50 μm
	Required qty.	20pcs	
<p>【Remarks】</p> <p>※ If not specified or provide, the Musashi Engineering precision nozzle will be used. For standard: 4 will be provided per machine. If 2 types are prepared, 2 per type and total 4 will be provided.</p> <p>1) Nozzle, and prepares each two Musashi Engineering made precision nozzle HN-0. 15N, the HN-0. 20N. 2) Eject pin prepares 10 pcs φ0.7 × R50μ × L20mm stepped thrust needle Eject pin prepares 20 pcs/2devices φ0.7 × R50μ × L10mm needle 3) push-up varieties corresponding parts, prepare the φ16, φ22 push-up attachment and adsorption stage diameter φ12 minute push-up attachment.</p>			

Bonding Accuracy

Machine Standard Specification	Actual Specification
<p>Accuracy</p> <ul style="list-style-type: none"> ▪ <u>XY accuracy: $\pm 25\mu\text{m}$ (3σ)</u> ▪ <u><input type="checkbox"/> Chip above 1mm θ accuracy: $\pm 1^\circ$ (3σ)</u> ▪ <u><input type="checkbox"/> Chip below 1mm θ accuracy: $\pm 3^\circ$ (3σ)</u> <p>【Adhesive Coverage Condition】</p> <ul style="list-style-type: none"> ▪ Adhesive wettability 100% and above <p>【Measuring Condition】</p> <ul style="list-style-type: none"> ▪ Accuracy is measured based in island recognition pattern. ▪ Measure quantity n=30 (Continuous bonding). 	<ul style="list-style-type: none"> ▪ <u>XY Accuracy: $\pm 25\mu\text{m}$ (3σ)</u> ▪ <u><input type="checkbox"/> Chip above 1mm θ accuracy: $\pm 1^\circ$ (3σ)</u> ▪ <u><input type="checkbox"/> Chip below 1mm θ accuracy: $\pm 3^\circ$ (3σ)</u> <p>【Quality Condition】</p> <ol style="list-style-type: none"> 1. Silver paste wettability chip under 100%, four sides is 100% heading 2. BLT : 10-25 μm 3. Silver paste creeping 25%-75% of the chip thickness 4. Void: 10% or less, concentration: 5% or less 5. No needle trace on the chip back side 6. Check 1 hour operation <p>【Measuring Condition】</p> <ul style="list-style-type: none"> ▪ Accuracy is measured based in island recognition pattern. <p>Measure quantity n=30 (Continuous bonding)</p>
<p>【Remarks】</p>	

Cycle Time

Machine capability				Machine Standard Specification			
Cycle time • 0.180sec/cycle 【Measuring Condition】 • Continuous good chip and average Y row transfer is only 1 pitch. • No rotation of bonding chip. • No clamper up down movement., • When Pf DBI-ON, Chip DBI ON 【Work Condition】 • Canon Machinery Standard lead frame. • Chip Size □0.15mm t0.15mm • Work dimension detail and fastest parameter setting value is as following:				• UPH 17000 (Chip size□0.3mm) • UPH 12800 (Chip size□1.0mm) • UPH 10800 (Chip size□3.0mm) <Work condition> • X : 88 islands Y : 28 islands matrix type lead frame. • Transfer pitch is 2.3mm (Continuous transfer, skip bonding row is 0) • Average cycle time is measured during continuous good chip. (Measure during 28 continuous good chips)			
Work size	Product name		L/F when fastest cycle time measuring				
	L x W		240×74				
	t(dp)(dp)		0.1 (0)				
	X Y /pc		68×18=1224/pc				
	XP		3.35				
	YP		3.35				
	X1		7.875				
	X2 . . .		—				
	Y1		8.525				
Y2 . . .		—					
Parameter	PU search level	0μm	Dispense search level	0μm			
	PU search speed	8mm/sec	Dispense search speed	10mm/sec			
	Bd search level	0μm	Dispense down timer	0msec			
	Plunge offset up	75μm	Post dispense up stroke	0μm			
	1 st plunge up height	80μm	Post dispense up speed	20mm/sec			
	2 nd plunge up height	160μm	Post dispense up timer	0msec			
	Plunge speed up	15mm/sec	Dispense ON time	20msec			
	Delay after plunge up	0msec	Chip recognition delay timer	10msec			
	PU timer down	0msec	Bonding recognition delay timer	10msec			
	Delay after bonding	0msec	Pf recognition delay timer	10msec			
				<Other condition> • No chip rotation, no scrub. • Paste dispense is 1 shot per island. (EWS is no use.) • Chip and paste DBI function is ON. (Chip Xyθ position, paste volume and XY position) Note) When chip size is smaller than □0.3mm, DBI function cannot be guaranteed. • Bonding timer: 10msec is included. • Pick up search:50μm-8mm/s is included (Mount side search is not included) • Dispense ON time:40msec (Start dispense when preform Z axis start to move down.) • The slow up and delay time to prevent paste stringing after dispensing is within 10ms. • Other time (PU, Mt) is not included. • Ring exchange time is not included.			

Actual Specification			
<p>Cycle Time <u>SOT26 UPH 20000 (Target)</u> <u>QSOP24 UPH 17000 (Target)</u> 【Measuring condition】 • Standard parameter setting as shown at right side.</p> <p>※Cycle time will change due to the following reasons.</p> <ul style="list-style-type: none"> • Chip size • Frame shape. (Pitch, island number, width) • Chip arrangement and good chip rate. • Wafer adhesive strength. • Paste condition (Paste volume, viscosity, EWS pattern) 	Pick up condition	Search level	100 μm
		Search speed	15mm/sec
		1 st plunge up height	100 μm
	Bonding condition	2 nd plunge up height	470 μm
		Plunge up speed	20mm/sec
		Delay after plunge up	0msec
		Search level	100 μm
	Paste dispense condition	Down timer	10msec
		Search level	0μm
		Search speed	10mm/sec
	Post paste condition	Down timer	0msec
		Post dispense up stroke	0μm
		Post dispense up speed	20mm/sec
	Recognition condition	Post dispense up timer	0msec
		Chip recognition delay timer	10msec
Mt recognition delay timer		10msec	
	PF recognition delay timer	0msec	

Operation Environment

Item	Note
<p>【Workability】</p> <p>【Conversion Contents (When product data is registered)】 ※Depend on product, some items are no need. ①Collet change※ ②Vacuum stage change※ ③Adapter plate change※ ④Loader magazine change※ ⑤Dispenser nozzle change※ ⑥Product data download and origin return ⑦Collet position and height teaching(Pick up and bonding)※ ⑧Plunge up pin center teaching※ ⑨Adjust work vacuum pad position※ ⑩Dispense nozzle height teaching※ <Condition> • ①、②、⑦、⑧、⑩ is using HMI wizard. • Loader magazine is prepared for each product. • Vacuum stage is assembled for each product.</p> <p>【New Product Register Contents】 ① Register new chip data ② Register new work data ③ Teaching chip/island recognition ④ Carry out step ① ~ ⑩ of Conversion Contents(When product data is registered).</p>	

Unit Specification

1. Bonding Head Unit		Note	
<ul style="list-style-type: none"> • X axis Driven by AC servo motor + ball screw (lead 5mm) Resolution: 3μm Movable range: \pm 2mm (Bonding center position is 0) Y axis Driven by AC servo motor + ball screw (lead 30mm) Resolution: 3μm Movable range: -2mm ~ +137mm (Pick up position is 0) (+35mm is transfer rail front position) Z axis Driven by AC servo motor + ball screw (lead 30mm) Resolution: 3μm Movable range: +2mm ~ -30mm (Z up end position is 0) ⊖ axis Driven by pulse motor + belt Resolution: 0.036° Movable range: \pm90° • Pick up / bonding force setting 0.5 ~ 1.5N. (Cannot set individual) Force is adjusted by parameters which are set by using elector-pneumatic regulator. ※If not specified, the force will be adjusted to 0.8N. • Chip vacuum miss will be detected by optic sensor. • Collet touch sensor function. • Collet height auto teaching function. • Bonding scrub function. 			
Optional Function			
1 - ① Wafer blow Remove the dust on wafer before chip pick up by using air blow. Note) Function for various blow timing is available.		<input checked="" type="checkbox"/>	NO
1 - ② Ionizer For ionizer blow on wafer surface. Note 1) Blow ON-OFF function is not available. Note 1) Fan type blow		<input checked="" type="checkbox"/>	NO

2. Chip ejector Unit		Note	
<ul style="list-style-type: none"> • Bonding head Z axis synchronize method • Driven by pulse motor + Cam Resolution: 3μm • Plunge up method: 1-1plunge up or 4-4 plunge up (4-4 plunge up is option) • Plunge up stroke: 1.0mm (Include offset 100μm) • Plunge up speed: 5 ~ 20mm/sec • Detect wafer table movable area 			
Optional Function			
2 - ① 1-1 Plunge up <ul style="list-style-type: none"> • Counter measure for small chip (Chip size \varnothing0.15mm ~ \varnothing2.00mm) • Enable 1 plunge up pin. (Attach with 1-1 corresponding unit) • When option 「1-1 Plunge up」 is selected, needle length is 20mm. (Cannot be changed) 		YES	<input checked="" type="checkbox"/>

3. Preform Unit	Note
<ul style="list-style-type: none"> • Twin dispense method. (2 preform unit at 2 location) • 1st unit is placed near to loader and is dispensing on work front half island. 2nd unit is placed near to bonding unit and is dispensing on work inner half island. <p>If Y island number is an odd number, 1st unit will dispense on 1 island more compare to 2nd unit.</p> <ul style="list-style-type: none"> • Can operate 1 unit only by changing setting. • Paste area <ul style="list-style-type: none"> 1st unit: 100(110) mm position to 200(190) mm position, calculated from bonding center to loader. Y direction is frame front 3mm until frame center. 2nd unit: 55 mm position to 150 mm position, calculated from bonding center to loader. Y direction is from frame inner 5mm to frame center. • X axis is driven by servo motor + ball screw Resolution: 3µm/pulse Y axis is driven by servo motor + ball screw Resolution: 3µm/pulse Z axis is driven by servo motor + ball screw Resolution: 3µm/pulse • Applicable syringe: 5、10、30、50 ml (Please inform syringe maker in advance) • Standard dispenser: Internal musashi dispenser Equipped liquid drop prevention suction function, attached with digital display gauge for dispensing pressure and VAC pressure, digital dispense pressure can be set by electro-pneumatic regulator. (VAC pressure is manually adjusted) • Z axis auto teaching • Equipped with paste time up function. • Equipped with standard EWS: Epoxy write function which is using dispenser. • Equipped with paste discharge function. • Paste dispense pressure can be compensated by paste volume recognition result. • Function for max 16 dispense points x max 200 dispense points for 1 chip is available. • UPH will drop if Y direction island number is decreased. • UPH also may be dropped by paste viscosity and EWS drawing conditions. 	

Regarding adhesive paste handling ※Please check because it is important to product adjustment. Storage temperature °C Freezing or refrigeration Normal temperature recover time Hours Surrounding temperature during usage °C Usage period Can reuse? (Freezing again) Can or Cannot Other handling precaution items Yes No Please specified if Yes :		
Optional Function		
3 - ① Paste remain detect Detect the liquid inside syringe by using electric static capacity proximity sensor.	YES	<input type="checkbox"/> NO
3 - ② High quality dispenser • With high quality dispenser, water head different compensation. Paste remain detection and etc. is possible. () SuperΣCM II-V2 [Musashi Engineering] Dispense pressure 5~200kPa () SuperΣCM II-V5 [Musashi Engineering] Dispense pressure 20~500kPa	YES	<input type="checkbox"/> NO
3 - ③ Specified EWS (Having special drawing for EWS or not) If YES Target chip size: • Drawing pattern:	YES	<input type="checkbox"/> NO

4. Frame Feeder Unit	Note
<ul style="list-style-type: none"> • Grip feed method by using gripper • After work is supplied, work will be aligned to rail front as standard. 3 phase DC pulse motor + Eccentric cam follower Resolution : 0.36°/P Movable range : 13mm (When work is supplied from PP loader) : 3mm (When work is supplied from stacker loader) • After work is aligned to standard position, 1st gripper (front side grip) will grip in the work. Driven by 3 phase DC pulse motor + belt Resolution: 45μm Movable range: -305mm (Right terminal is 0) • After gripping in the work, 2nd and 3rd gripper(Back side grip) will transfer the work to preform and bonding position.(Pitch transfer) Driven by linear motor Resolution : 1μm Movable range : 297.7mm (2nd) 306.7 (3rd) • After bonding, discharge gripper (front side grip) will discharge the work to unloader. Driven by 3 phase DC pulse motor + belt Resolution : 45μm Movable range: +129mm (Left terminal is 0) • Each gripper open/close stroke is as following: 1st gripper : 1.5mm (Lower grip) 2.5mm(Upper grip) 	

<p>2nd, 3rd gripper : 0.5mm (Lower grip) 2.0mm(Upper grip) Discharge gripper : 1.5mm (Lower grip) 2.5mm(Upper grip)</p> <ul style="list-style-type: none"> • Able to do irregular pitch and block frame transfer. • Transfer height is 920mm from floor level. • Function to detect frame orientation is available (Use same sensor with edge detection.) • Preform position, transfer pitch, supply and discharge will be automatically set after frame dimension is being entered to work data. • Work width is determined by adapter plate width.(Manual change) • Standard machine has work vacuum function at preform position and bonding position of adapter plate. • Standard machine has spring or bearing work clamber at preform and bonding position. 		
Optional function		
<p>4 - ① Up down movement clamber Work clamber at preform and bonding position are driven up down by cylinder. Clamber front part is conversion part. Note: If this option is attached, the clammers up/down time may drop the machine UPH.</p>	<input type="checkbox"/> YES	NO
<p>4 - ② Island Vacuum Island vacuum function from adapter plate.</p>	<input type="checkbox"/> YES	NO

5. Chip Recognition Unit	Note
<ul style="list-style-type: none"> • Recognition method : Multi level pattern matching method. • Illumination : Coaxial LED illumination and slant LED illumination.(Light colour: White) The digital brightness can be registered for each product(Teaching) Flash light during running. • Camera: 2/3 type CMOS Image capture pixel range 2040pix×1088pix • Len magnification/view area: ×0.37 fix magnification. View area□15mm • Detection ability <ul style="list-style-type: none"> : Chip size □0.3mm~□8.00mm : NG mark detection(Except black mark, recognition test is needed) : Maximum chip size for forward recognition is 3.0mm. : Chip crack detection • In order to simply the chip registration teaching, digital zoom and rotation compensation function is available. ※ Depending on chip pattern and surface condition, recognition maybe cannot be done. To prevent this, please give sample to test in advance. 	
Optional Function	

<p>5 - ① Small chip solution: Len and attach part need to be changed. • Len magnification/view area:×1 fix magnification, view area□4.8mm Applicable chip size□0.15~□2.0 mm ※Need when chip size is smaller than 0.3mm. If small chip solution is needed, please confirm whether standard optical system is needed or not. <u>Need</u> • <u>No need</u></p>	YES	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
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6. Bonding Island Recognition Unit	Note	
<ul style="list-style-type: none"> • Y table for island recognition camera movement. Driven by servo motor + ball screw(Lead 10mm) Resolution: 5µm/pulse Movable range : +92mm (Position 5 mm from transfer rail front to back is 0) • Recognition method : Multi level pattern matching • Illumination : Coaxial LED illumination + Slant LED illumination (Light colour: RED) Brightness adjustment is each product digital setting and flash light during running. • Camera : 2/3 type CMOS Image capture pixel range 2040pix×1088pix • Len magnification and view area: ×0.4 Fix magnification, view area □14.9mm • Chip bonding position detection function (Chip DBI function) : Applicable chip size □0.3mm~□8.00mm ※Machine alarm stop NG number can be set to any number. • Function for detecting paste position and volume before bonding is available. ※Bonding will be skipped if NG due this function. Any NG number can be set for this machine to alarm stop. • In order to make pattern registration teaching easy, digital zoom function is available. <p>Note) Depending on island shape, recognition maybe cannot be done. To prevent this, please provide sample in advance.</p>		
Optional Function		
<p>6 - ① Small chip solution: Len magnification, illumination change Applicable chip size □0.15~□2.00 mm ※ Need when chip size is necessary smaller than □0.3mm and do not carry out DBI. If small chip solution is needed, please specify whether still need standard optical system or not. <u>Need</u> • <u>No Need</u></p>	YES	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO

7. Preform Island Recognition Unit	Note	
<ul style="list-style-type: none"> • Recognition method : Multi level pattern matching method • Illumination : Coaxial LED illumination + slant LED illumination (Light colour: RED) Brightness adjustment is each product digital setting.(Teaching) 		

<p>Flash light when running</p> <ul style="list-style-type: none"> • Camera : 2/3 type CMOS Image capture pixel range 2040pix×1088pix Attach to preform unit front part, carry out island recognition before AGP paste is dispensed on transfer pitch. • Len magnification/view area : ×0.37 fix magnification、view area□15mm • Detection ability : NG mark detection Note) NG mark colour and frame colour combination may because recognition cannot be done. Please provide NG mark sample in advance. • After paste, paste position and volume detection function ※Bonding will be skipped if NG due to this detection function. Any NG island number can be set for this machine to alarm stop. • In order to make pattern registration teaching easy, digital zoon function is available. Note) Depend on island shape, recognition may be cannot be done. To prevent this, please provide sample in advance. 	
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8. Loader	Note	
<p>P&P Loader</p> <ul style="list-style-type: none"> • Pick & Place method single arm vacuum loader. • Come with Pick & Place magazine(Stack height is 70mm) • Function to detect work inside P&P magazine is available. • P&P magazine guide (Flexible adjustment) can be changed to cater different work size. • Work vacuum pad position can also be changed to cater with different work size. • Work vacuum miss is detected by work vacuum sensor. • Function to detect in case double works are supplied is available. Detect when 1st gripper grips frame after frame width is aligned with front guide. (Threshold value will be automatically set during 1st/2nd work thickness teaching which is using displacement sensor.) Note) 2 pieces detect function only available when P&P loader is installed. 		
Optional Function		
8 - ①Additional P&P magazine Standard machine will include 1 magazine only.	<input checked="" type="checkbox"/> YES (1SET)	NO
8 - ②Ionizer specification Ionizer specification detail is at other place.	YES	<input type="checkbox"/> NO
8 - ③Separation paper Note) UPH maybe affected, if the lead frame being taken is below 100.	YES	<input type="checkbox"/> NO

9. Unloader		Note	
<ul style="list-style-type: none"> Magazine stacker method Magazine move direction: Upper stacker(Supply)→Lower stacker(Discharge) Magazine specification is same as described in work specification. Magazine store space W275mm Work storage can be set to from lower pitch to upper pitch or from upper pitch to lower pitch. If not specified, it will store from lower pitch to upper pitch. 			
Optional Function			
9 - ① Storage sequences Magazine top pitch h→ Bottom pitch	YES	<input type="checkbox"/> NO	

10. Wafer Table		Note	
<ul style="list-style-type: none"> Driven by XY axis 5 phase AC pulse motor + ball screw(lead 5mm) Resolution : 5μm Movable range : X axis +125mm~-240mm (Pick up position is 0) Y axis +120mm~-120mm (Pick up position is 0) Pick up area is determined by wafer ring size and vacuum stage diameter. Part for movable area detection is no need to change when vacuum stage and wafer ring are changed. 			
10 - ① θ Axis [360° movable, resolution: 0.0045°/p]	YES	<input type="checkbox"/> NO	
<ul style="list-style-type: none"> Wafer table θ compensation function. (5 Phase pulse motor + gear drive) 			

11. Ring Holder		Note	
<ul style="list-style-type: none"> Holder for pre-expanded ring. Pre-expanded ring is manually set to ring holder. Ring specification is same as described in work specification. 			
Optional Function			
11 - ① Change to semi auto expander	<input type="checkbox"/> YES Ring Size DTF2-8-1	NO	
<ul style="list-style-type: none"> Pulse motor driven type expander Expander stroke 3~10mm Wafer ring is manually set to expander. Standard wafer ring is DISCO flat ring. (MAXφ8") ※Please provide drawing if not same as mentioned above. Note: Hot air blower using at expander is using commercial type drier and its fan life expectancy is about 2 years, please change it periodically.			
11 - ② Ring changer / Ring elevator	YES	<input type="checkbox"/> NO	
<ul style="list-style-type: none"> Only applicable to flat ring. 			

12. Electrical Control	Note
<ul style="list-style-type: none"> • PC control. • Control panel is installed in front of machine. • Errors, messages are displayed at monitor. • Data save method. Hard disc or compact flash memory.(Connected by USB) 	

13. Signal Tower	Note	
<ul style="list-style-type: none"> • Maker : Patlight • Model : LME-302FBL-RYG (3 colour LED type) • Colour : Red, yellow and green.(From top) • Buzzer : Capable for 2 sounds • Position : At machine upper right • Light ON specification : <ul style="list-style-type: none"> Red blink—Error stop Yellow blink—No work Green ON— Auto run 		
Optional Function		
13-①Changing light ON, light blink and light colour Please inform detail specification	YES	<input type="checkbox"/> NO

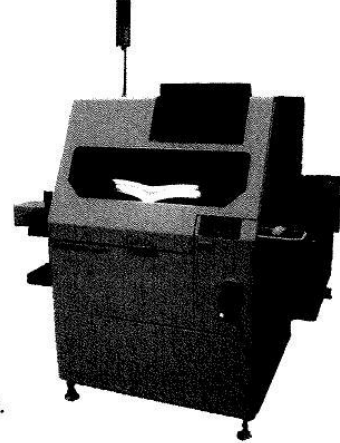
14. Utility	Note	
<ul style="list-style-type: none"> • Power : AC200V±10% Single phase 50/60Hz 15A • Power cable : CE-362 4.0sq 3core 5m (M5 round terminal) (Please use earth resistance below 100Ω) • Dry air : Above 0.4MPa Above 50L/min Internal piping colour : Black Input Fitting : φ8mm quick joint Vacuum : Below -66.7kPa (Factory vacuum) Above 100L/min Internal piping colour : Clear blue Input Fitting : φ8mm quick joint 		
Optional Function		
14 - ①Power supply specification change <ul style="list-style-type: none"> • Only possible for changing within AC200V~220V 	<input checked="" type="checkbox"/> YES (220V)	NO
14 - ②Specified power connector <ul style="list-style-type: none"> • Please specify connector maker/model/cable length. 	YES	<input type="checkbox"/> NO
14 - ③Vacuum pump supply <ul style="list-style-type: none"> • Put separately (But power supply is from machine)、Single phase 200V or 220V • Model : 200V or 220V Maker : UNI-CROWN (AC220V) 	YES	<input type="checkbox"/> NO
14 - ④Convum <ul style="list-style-type: none"> • Please prepare extra compressed air with φ8 pipe. 	<input checked="" type="checkbox"/> YES	NO

Standard Specification

Machine size, main bonding and visual inspection

- Width : 1,080 mm (Main frame)
: 1,860 mm (Exterior)
- Dept. : 1,260 mm (Main frame)
: 1,282 mm (Exterior)
- Height : 1,622 mm (Signal tower not excluded)
: 2,100 mm (Include signal tower)
- Base line : 920 mm (floor level)
- Weight : 1,500 kg

- Exterior full cover specification
- Machine colour : JPMA E 2 5 - 8 5 A OFF White
(Same as main body frame)
- Clear cover : PET electro-static plate
- Operate temperature : Please set room temperature within $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$.



<<Application of laws and regulations>>

This machine is applied with no laws or regulations excluding the Product Liability Law and environment-related laws.

Other (Remarks for special specification)

4. Supplied part

Please provide the following data and material without cost.

4-1. Design data when receiving order

No	Material items	Quantity	Reference	Check
1	Bonding condition specification			○
	•Bonding position drawing	All product	Include bonding direction	○
	•Other and special specification	All product		○
2	Wafer for recognition evaluation		Please provide wafer with NG mark and is pasted on ring.	-
	•The largest size among product	1 pc		
	•The smallest size among product	1 pc		
3	All work drawing			○
	•Lead frame, PCB	All product	Include transfer direction, chip mount direction.	○
	•Magazine	All product	Include work storage direction	○
	•Collet	All product	If provided	-
	•Wafer ring	All product	If other than DISCO standard	-
	•Dispenser	All product	If provided	-

4-2. Work sample for Adjustment (For each product) : 20 days before buy off

No	Sample for adjustment	Quantity required for adjustment
1	Lead frame, PCB <Criteria for setting quantity> For 2 hours operation time • Assume cycle time is 0.2sec/Chip (Hypothetical: May different from actual specification) • Island number <u>180 pcs/1pc</u> • For transfer adjustment <u>200pc</u> When magazine storage number is <u>50pcs</u> 4 magazines is required $(2H \times 3,600\text{sec} / 0.2\text{sec} / 180\text{pcs}) + 200 \approx \underline{400\text{pcs}}$	<u>400pcs</u>
2	Magazine	10pcs
3	Chip <Criteria for setting quantity> Quantity for 2 hours operation $2H \times 3,600\text{sec} / 0.2\text{sec} = 36,000\text{pcs}$ • Assume cycle time is 0.2sec/Chip (Hypothetical: May different from actual specification)	36,000pcs
4	Wafer ring (Already attached to sheet)	More than 2
5	Adhesive 1 pc each for adjustment, inspection and buy off. * Please specified if has special storage method.	Total 6
6	Collet (If provided)	_____ pcs
7	Stamping pin (If provided)	_____ pcs

4-3. Buy off sample: Buy off day

Work and chip quantity will be requested separately. Basically, only will buy off for 1 product.

5. Buy Off Inspection Standard

5-1. Buy Off inspection place

Basically, buy off is at Canon Machinery with the attendance of the personal you're your company.

5-2. Inspection standard

Please inform if your company has specified buy off condition and we will consider.

① General item

Item	Judgment
Machine exterior (Shape, dimension and surface finishing)	OK · NG
Plate on control panel, operation panel	OK · NG
Noise, vibration (No abnormal noise at folding part or no abnormal vibration)	OK · NG
Machine function	OK · NG

② Transfer test

Item	Judgment standard	Judgment
Work supply miss	0/200 pcs	OK · NG
Work transfer miss	0/200 pcs	OK · NG
Work storage miss	0/200 pcs	OK · NG
Abnormal movement	0/1hour	OK · NG

③ Bonding test (hypothetical standard)

Item	Test condition	Judgment standard	OK.NG
Adhesive supply miss	Visual inspection	0/1,000 chips	
No bonding	Visual inspection	0/1,000 chips	
Bonding accuracy (Island recognition position is standard)	All 30 chips are inspected (Real measurement) XY : $\pm 25 \mu\text{m}$ (3 σ)	0/30 chips	
	<ul style="list-style-type: none"> · $\square 1\text{mm}$ above chip θ accuracy : $\pm 1^\circ$ (3σ) · $\square 1\text{mm}$ below chip θ accuracy : $\pm 3^\circ$ (3σ) 		
Chip crack and scratch	Inspect with micrometer	0/30 chips	
Chip vacuum miss	Vacuum miss	0/1,000 chips	
Chip recognition miss	Good chip is remaining or bad chip being pick up.	0/1,000 chips	

6. Machine Delivery, Restore and Acceptance

- 6-1. Basically, machine will be delivered to your factory via road transportation.
However, unloading condition as specified in the quotation will be given priority.
- 6-2. Utilities (electrical, air, vacuum) connection will be carried out by your personnel with the supervision from our personnel.
- 6-3. Set-up and adjustment will be carried out by Canon Machinery.
Set-up schedule will be as decided in a separate discussion.
- 6-4. Operation check will be carried out with attendance of your personnel.
- 6-5. After the adjustment, auto run will be carried out based on "Buy-off Inspection Standard" in section 5. Actual measurement and judgment will be performed by your personnel.
- 6-6. Restore and on-site adjustment will use the same work that was used during the buy-off inspection in Canon Machinery. After that, when you satisfy the buy-off inspection standard, please proceed the acceptance approval.

7. Document to be supplied during delivery

- | | |
|--|-----------------------|
| 7-1. Operation Manual | CDR 1pc |
| 7-2. Supplied part list | Normal paper 1 set |
| 7-3. Electrical connection drawing(Circuit drawing for maintenance only) | Clean room paper 1set |

8. Machine warranty

8-1. Warranty period

1 year after delivery

Above warranty period is only applied when bonding is less than 150 million times, because normally bonding head LM guide is required to change in every 150 million bonding. In order to replace parts, special jig will be required and this jig is option.

8-2. Warranty scope

Within the above specified warranty period, should there be any machine performance or operation troubles that are clearly due to deficiency in our design or manufacturing aspect, prompt adjustment repair or parts replacement will be provided without cost. Nevertheless, please take note that the following incidents are not covered in this warranty.

- Any damages due to natural disaster.
- Any damages incurred via modification or repair not done by Canon Machinery.
- Any damages affected by troubles with its originating cause at your side.
- Any damages due to usage of spare parts beyond its life span.

9. Other

- 9-1. Please contact us should there be any changes on the current specifications.
Please take note that quotations may need to be revised depending on type of changes required.
- 9-2. The training and guidance for your personnel will be discussed separately.
- 9-3. Any act of copying or duplication of this machine or this Machine Specification is strictly prohibited.
- 9-4. The contents in this Machine Specification may be changed without prior notice for

BESTEM-D310 Accessory List

ORDER No :

Machine serial number:

I . Standard accessory (The assembly of the device is contained.)

	PARTS NAME	SPEC, type	MAKER	Quantity	NOTE
1	Polyurethane tube(Black)	TU0805B	SMC	5m × 3pcs	For Air
2	Tube (Air fiber blue)	UP-9102-20-CB-F1	CKD	1m	For Bonding arm
3	Micro fuse(1.0A)	LM10	Daito Communication Apparatus	1pc	
4	Micro fuse(2A)	LM20	Daito Communication Apparatus	3pcs	
5	Glass lid	SUF10421-000006	Canon Machinery	1pc	For Bonding arm For spare
6	Oring	CO3325A	NOK	1pc	For Bonding arm For spare
7	Feeder gripper JIG	SUF10501-005000R3	Canon Machinery	1SET	
8	Entrance rail	SUF10501-000023R1	Canon Machinery	1pc	For Flat frame
9	Exit rail	SUF10503-019027R1	Canon Machinery	1pc	For Flat frame
10	Entrance moving plate	SUF10501-000074R4	Canon Machinery	1pc	For Flat frame
11	Attached parts for PC		Canon Machinery	1SET	
12	Manual	By specification	Canon Machinery		

II. Option accessory (The assembly of the device is not contained.)

	PARTS NAME	SPEC, type	MAKER	Quantity	NOTE
1	L/F Magazine(W100,L270)	SUF10801-033000	Canon Machinery	2SETS	
2	Fiber lighting for adjustment	SUF10202-003000R2	Canon Machinery	1SET	
3	Microscope	SUF10203-003000R2	Canon Machinery	1SET	
4	Collet holder(ϕ 3-L8-W4)	SUF10421-007000R2	Canon Machinery	1SET	
5	Alignment needle height Jig	SD4434-00600+SD4434-00800	Canon Machinery	1SET	
6	Chip ejector Unit limit ring	SUF20441-101001	Canon Machinery	1pc	For ϕ 12stage
7	Chip ejector Unit limit ring	SUF20441-102001	Canon Machinery	1pc	For ϕ 16stage
8	Chip ejector Unit limit ring	SUF20441-103001	Canon Machinery	1pc	For ϕ 22stage
9	Vacuum Pad	ZP2-B02MUU	SMC	12pcs	Spare 6pcs

III. Conversion change parts List (The assembly of the device is contained.)					
	PARTS NAME	SPEC. type	MAKER	Quantity	NOTE
1	Collet adaptor	SD4423-59401	Canon Machinery	2pcs	For rubber collet 12U3
2	Rubber collet	R3-716	Micromechanics	10pcs	For SOT26
3	Rubber collet	R3-703	Micromechanics	10pcs	For QSOP24
4	Chip ejector attachment	SD4434-47600	Canon Machinery	1SET	ϕ 12VAC stage needle hole ϕ 0.25mm
5	Ejector needle (ϕ 0.7 \times L20 \times 15° \times R50 μ m)	SEN1-1204-06	Micromechanics	10pcs	Stepped pin
6	Chip ejector attachment	SD4434-47700	Canon Machinery	1SET	ϕ 16VAC stage
7	Chip ejector attachment	SD4434-47800	Canon Machinery	1SET	ϕ 22VAC stage
8	Ejector needle (ϕ 0.7 \times L10 \times 15° \times R50 μ m)	SD4435-12801	Canon Machinery	10pcs	
9	Feeder conversion parts (Adapter plate)	SUF10504-174000	Canon Machinery	1SET	For SOT26
10	Feeder conversion parts (Clamper)	SUF10504-175000	Canon Machinery	1SET	For SOT26
11	Feeder conversion parts (Adapter plate)	SUF10504-172000	Canon Machinery	1SET	For QSOP24
12	Feeder conversion parts (Clamper)	SUF10504-173000	Canon Machinery	1SET	For QSOP24
13	Depress conversion parts (DP0.5)	SUF10504-112000	Canon Machinery	1SET	
14	Expander conversion parts	SUX10741-002000R6	Canon Machinery	1SET	For DTF2-8-1
15	Nozzle holder (For MUSASHI Precision nozzle)	SUF20601-023000R5	Canon Machinery	1SET	
16	Nozzle holder (For MICA TECH nozzle)	SUF20601-059000	Canon Machinery	1SET	
17	Precision nozzle	HN-0.15N	MUSASHI	2pcs	
18	Precision nozzle	HN-0.2N	MUSASHI	2pcs	
19	Adaptor tube	M25-2344-008-00	MUSASHI	2pcs	For 5ml syringe
20	Adaptor tube	M25-2345-010-00	MUSASHI	2pcs	For 10ml syringe