



# FOUP Load Port

MODEL: TAS300

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TYPE: E4

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## Product Specifications



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## 1. Introduction

The TAS 300 is installed in a variety of semiconductor manufacturing machines and is a standard load port that automatically opens/closes the FOUP (Front Opening Unified Pod) used in the semiconductor manufacturing process.

All semiconductor-manufacturing machines require a low dust level, high throughput and repetition durability. And the TAS 300 provides the highest performance to meet these demands.

## 2. Features

- (1) Complies with the SEMI Standard.

E15.1-1104	Specification for 300mm tool load port
E57-0600E	Mechanical specification for kinematic couplings used to align and support 300mm wafer carriers
E62-0703E	Provisional specification for 300mm front-opening interface mechanical standard (FIMS)
E63-1104	Mechanical specification for 300mm box opener/loader to tool standard (BOLTS-M) interface
E64-0600	Specification for 300mm cart to SEMI E15.1 docking interface port

- (2) The movable parts (including the mapping unit) are installed in level below the wafer surface. The world's highest level particle free environment is achieved by complete airflow analysis.
- (3) An air-cushion method is used for the docking plate and the FIMS door. This means that TAS300 provides complete and reliable opening/closing of various FOUP (according to SEMI E47.1 and E62) without an individual adjustment.
- (4) An optional mapping unit (transmission sensor) can be installed.
- (5) The TAS 300 maintains reliable and high performance for door opening/closing repeated operations over prolonged periods and has high durability.
- (6) The TAS 300 has an obstacle detection function when the FOUP is docked.
- (7) The TAS 300 has functions that detect the FOUP (when the FOUP is loaded) and detect its correct position.
- (8) The TAS 300 has a load port positioning mechanism on the BOLTS surface that shortens the load port installation/removal time.

### 3. Basic Specifications

#### 3-1 Applicable FOUPs

Manufacturer	Model	Notes
Entegris	F300·A300	A300: Manufactured by former Asyst
Shin-Etsu Polymer	300E·300EX	
Dainichi Shoji	SF300-02	
Miraial	KT-3003	
Other		300mm FOUP complies with SEMI E47.1 and E62.

#### 3-2 Mechanical Specifications

Dimensions/Weight			
Height		1,386mm	
Width		472mm	
Depth		493mm	From the BOLTS surface
Weight		60kg	Mapping: included, Other options: not included
Operation time			
No mapping ( Standard specifications )	Open	10sec or less	FOUP insertion ~ Robot access enabled
	Close	10sec or less	Robot access enabled ~ FOUP ejection enabled
With mapping ( Optional specifications )	Open	20sec or less	FOUP insertion ~ Robot access enabled
	Close	10sec or less	Robot access enabled ~ FOUP ejection enabled
Docking mechanism			
FOUP clamp		Front Retaining Feature	Air driven
FOUP door hold		Vacuum suction	
Docking stroke		70mm	
Repeatability precision		±0.1mm	
FDP ~ FIMS door distance		165.0mm	
FDP ~ frame distance		166.5mm	
Utility/Other			
Clean dry air	Pressure	0.52 ~ 0.60MPa ( G )	External diameter 6mm air tube
	Flow	30L/min ( ANR )	
Vacuum	Pressure	-61 ± 10kPa ( G )	External diameter 6mm air tube
	Flow	10L/min ( ANR )	
Exhaust			External diameter 6mm air tube
Noise		MAX 60Db ( Aeq )	

### 3-3 Electrical Specifications

Interface specifications *1		
Connector	Purpose	Notes
CNA1	Power	DC24V 3A
CNA2	Upper communication	RS-232C communication : D-sub 9 pin ( male )
CNA3	Maintenance terminal communication	RS-232C communication : D-sub 9 pin ( male )
CNA4	Parallel I/O	D-sub 25 pin ( male ) *2
CNA5	Operation panel I/O	TAS300 indicator control : D-sub 15 pin ( female )
CNA6	CID communication	CID communication ( option ) : D-sub 9 pin ( male/female )
CNA7	AMHS communication	AMHS communication ( option ) : D-sub 25 pin ( male )
CNA8	CID communication	CID communication ( option ) : D-sub 9 pin ( male/female )
Utility		
Power	DC24V±5% 3A ( Full-load current : 2A ) Circuit breaker rating : 50A	

\*1. For details, see the separate interface specifications.

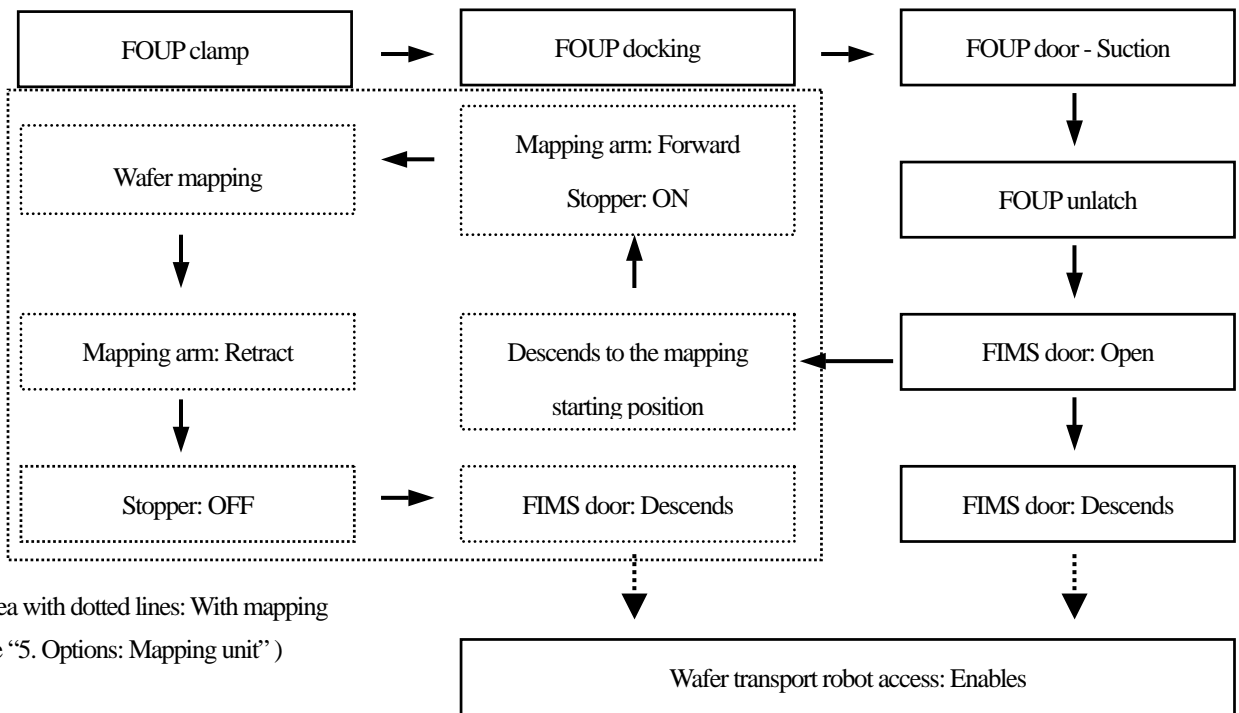
\*2. The D-sub 15 pin connector can be used ( option ).

### 3-4 Environment

Usage environment		
Ambient temperature	5 ~ 30°C	
Ambient humidity	30~80% ( no condensation )	20°C : 90% or less, 40°C : 50% or less
Ambient brightness	Working area	300Lux
	Operation area	500Lux
Altitude	Sea level 1,000m or lower	
Other	Install the machine in a clean room	
Storage environment		
Ambient temperature	-10 ~ 55°C	
Ambient humidity	30 ~ 85% ( no condensation )	

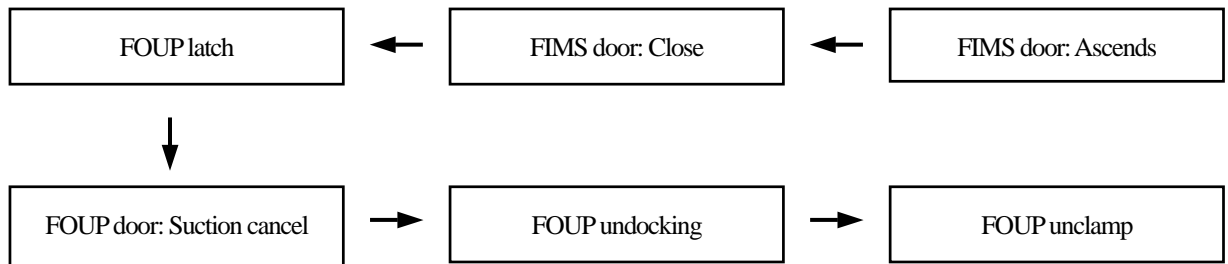
### 3-5 Operation Flow

#### (1) Load

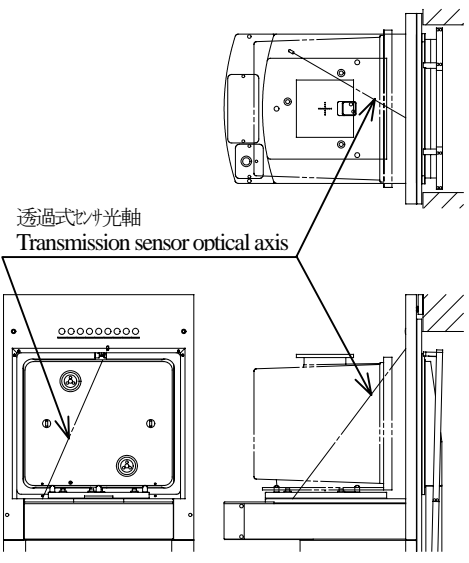
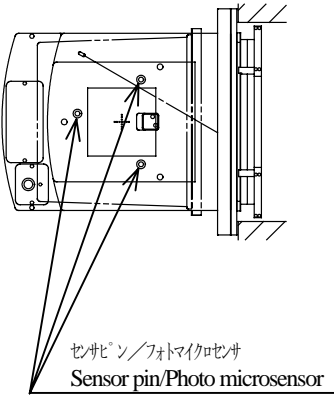
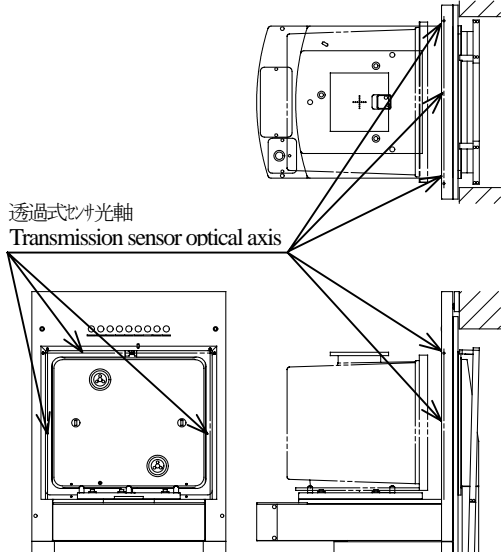
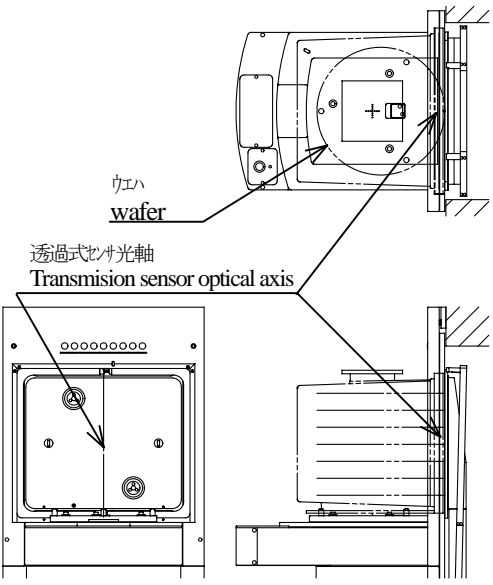
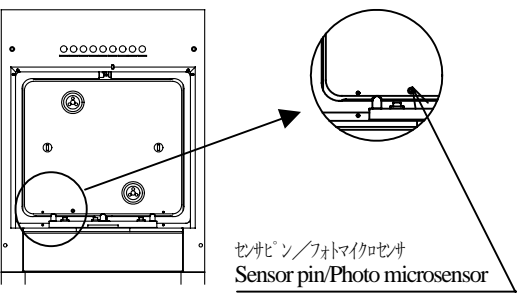


\* Area with dotted lines: With mapping  
( See “5. Options: Mapping unit” )

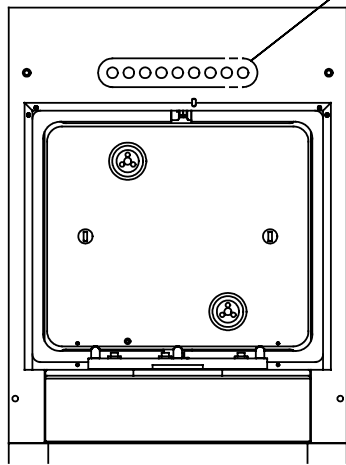
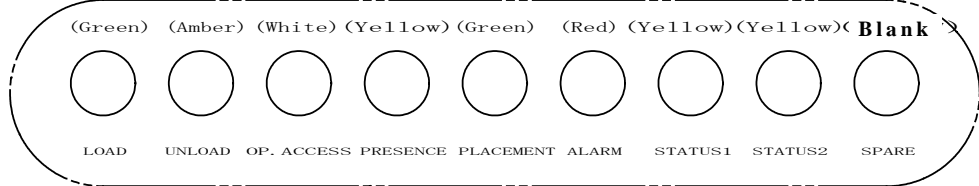
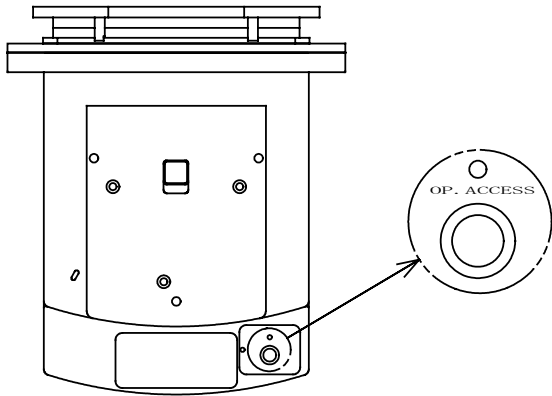
#### (2) Unload



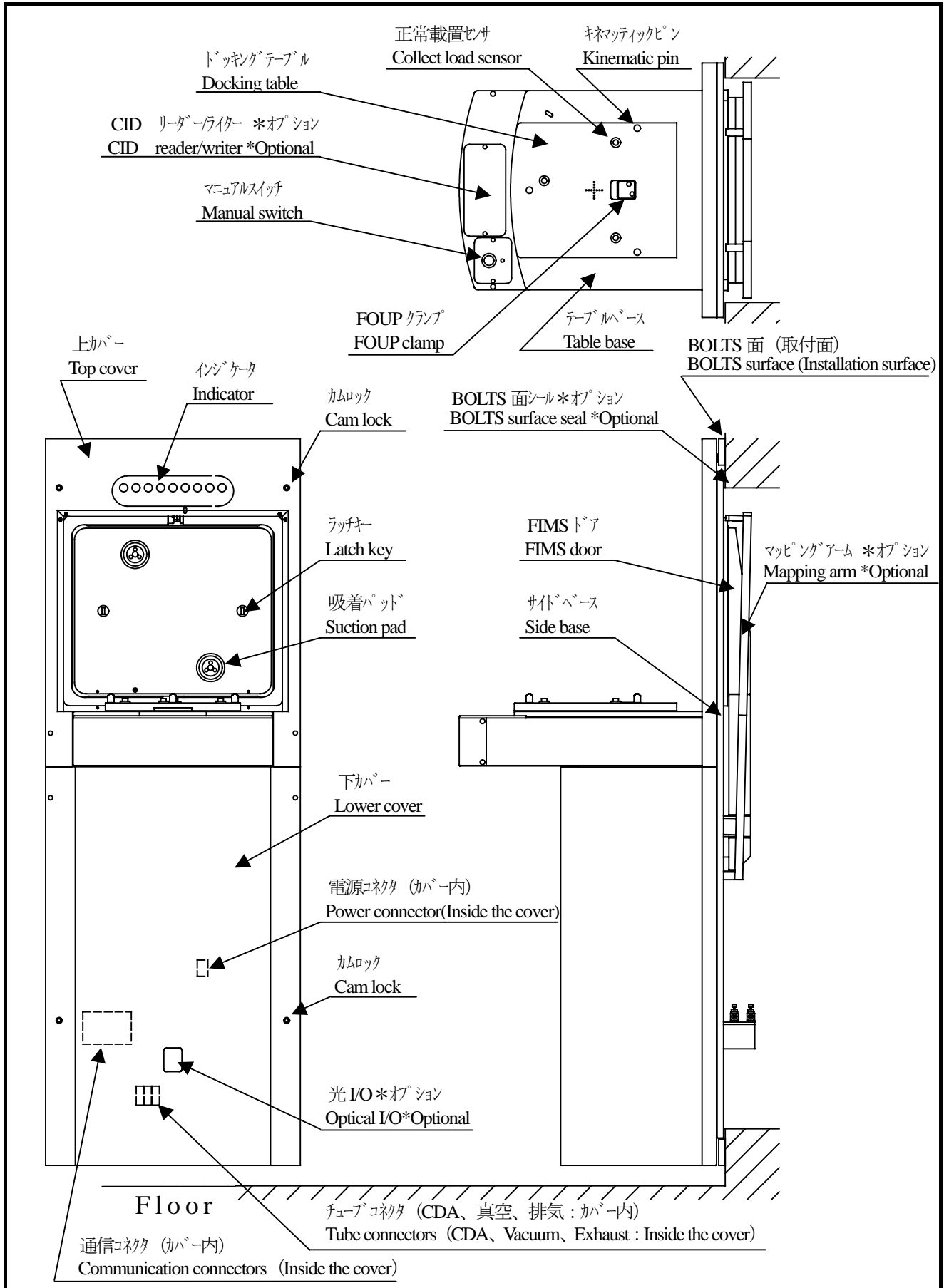
3-6 Detection Function

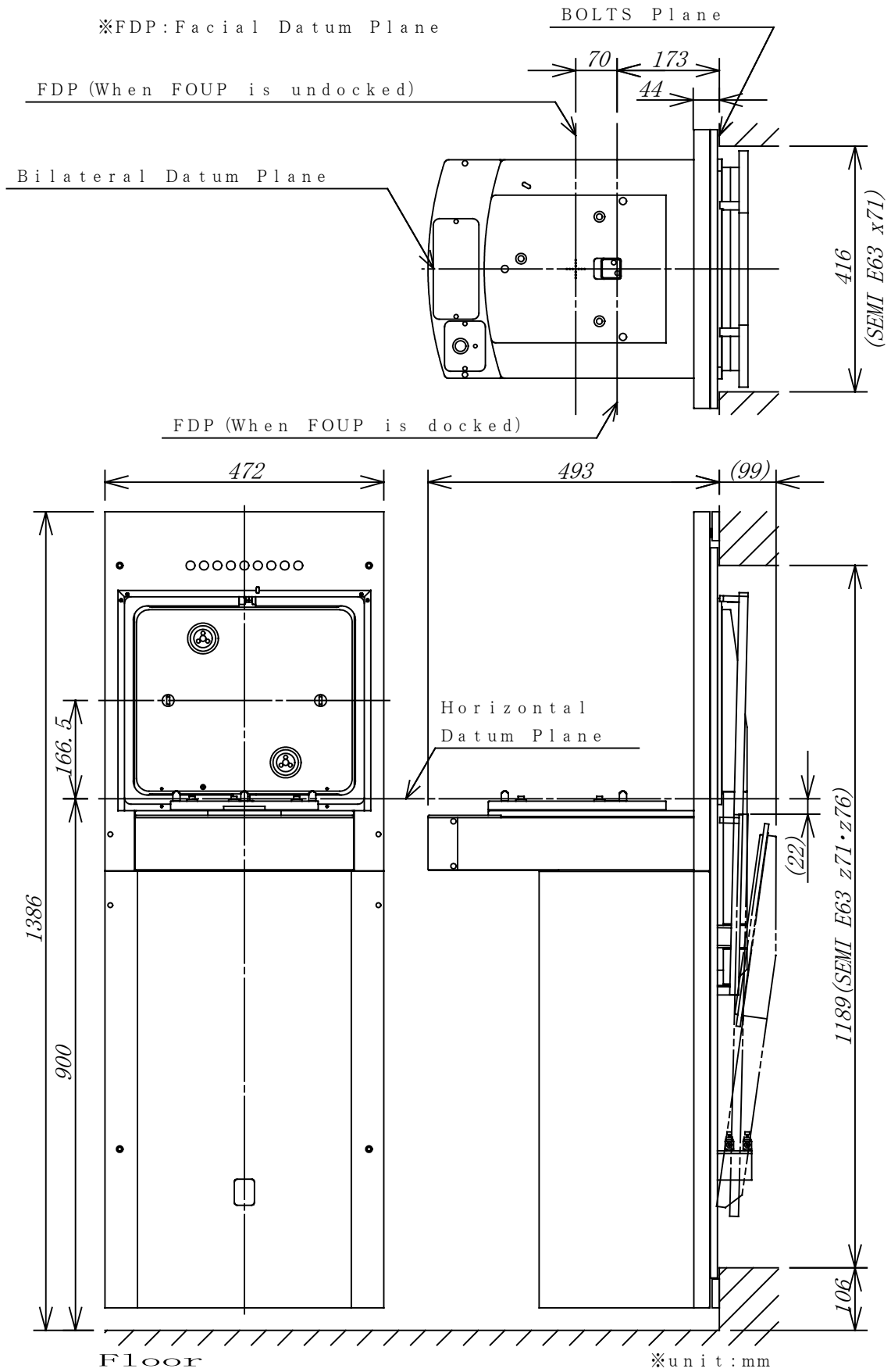
<p style="text-align: center;"><b>FOUP presence detection</b></p>  <p>透過式センサ光軸 Transmission sensor optical axis</p>	<p style="text-align: center;"><b>FOUP placement check</b></p>  <p>センサピン/フォトマイクロセンサ Sensor pin/Photo microsensor</p>
<p style="text-align: center;"><b>FOUP docked: Obstacle detection</b></p>  <p>透過式センサ光軸 Transmission sensor optical axis</p>	<p style="text-align: center;"><b>Wafer protrusion in FOUP</b></p>  <p>ウエハ wafer</p> <p>透過式センサ光軸 Transmission sensor optical axis</p> <p>* Wafer protrusion (3mm) is detected from the FOUP shell seal surface. * Glass wafer function: Optional</p>
<p style="text-align: center;"><b>FOUP door detection</b></p>  <p>センサピン/フォトマイクロセンサ Sensor pin/Photo microsensor</p>	

3-7 Indicator



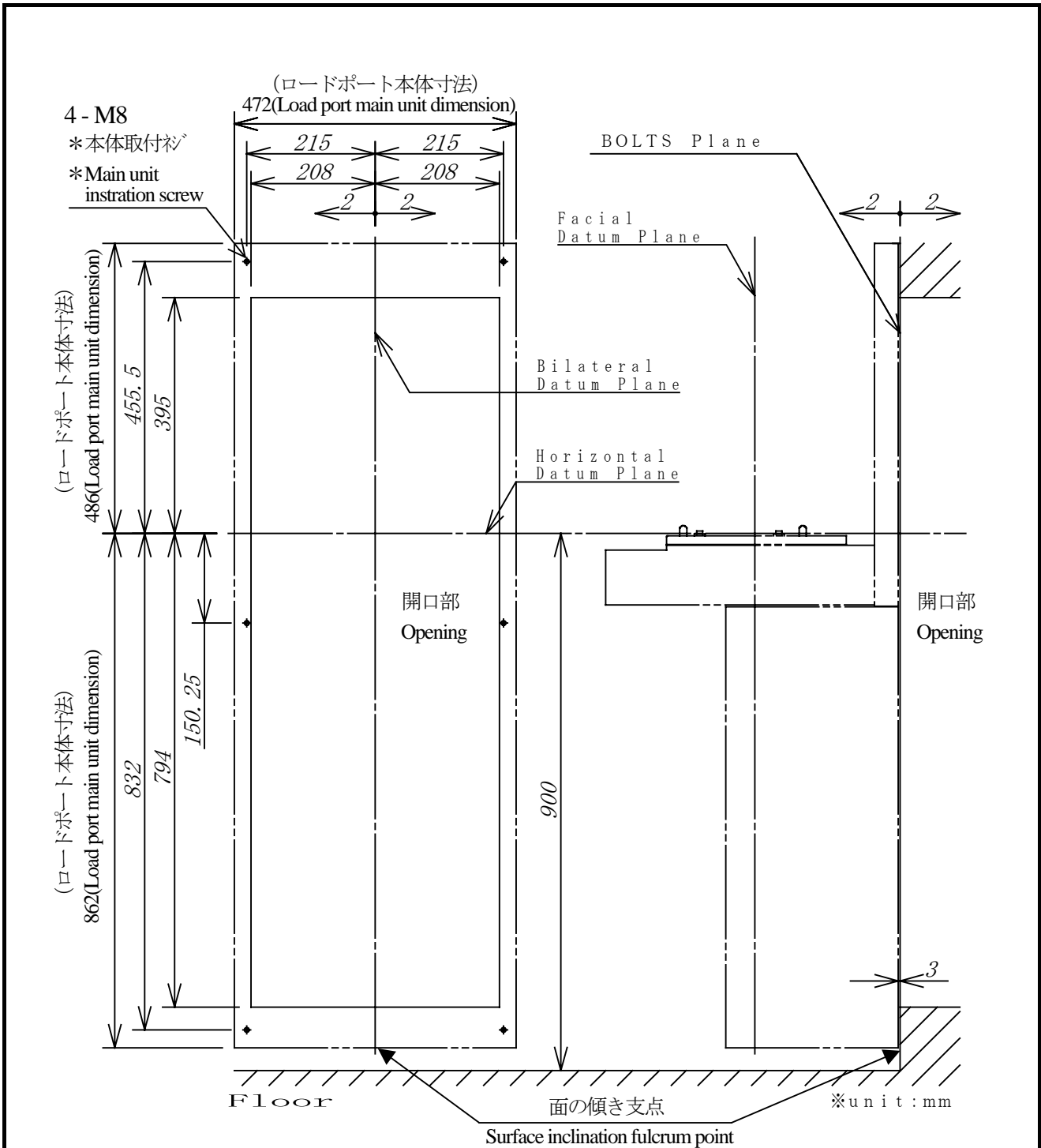
3-8 External View





## 4. Installation Environment

### 4-1 Mechanical Interface



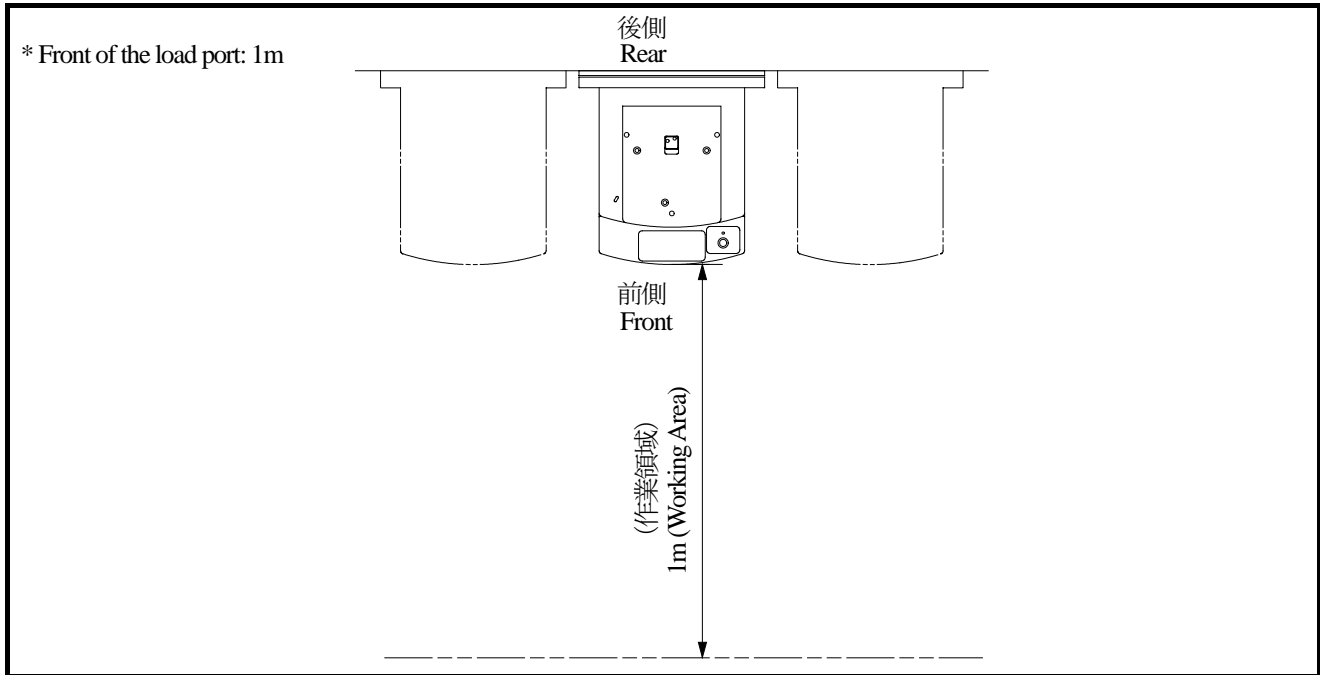
\* Complies with SEMI Standard E63-1104.

\* Specifications for the load port installation surface on the machine side.

\* In order to prevent particles from outside, maintain  $(\text{Internal pressure of equipment}) - (\text{External pressure of equipment}) \geq 2\text{Pa}$ .

\* For the communication interface, see the separate "Interface Specifications".

## 4-2 Working Area



## 4-3 Preparation

### (1) Installation tools

- ① Horizontal jig: Load port Horizon Calibration Jig ( 99MC104A: Nikon ) \*Recommended
- ② Plum bob: To check the inclination of the bolt plane
- ③ Square: 300mm with frame ( FD107: Ohbishi Keiki ) \*Recommended
- ④ Parallel ber: L250mm×H35mm×W25mm ( LC103: Ohbishi Keiki ) \*Recommended
- ⑤ Scale: 1,000mm
- ⑥ Flat level: L100mm×H40mm×W35mm×0.05mm/m ( AD102: Ohbishi Keiki ) \*Recommended
- ⑦ General tools
- ⑧ Load port installation jigs: Option ( S54F1550: TDK )

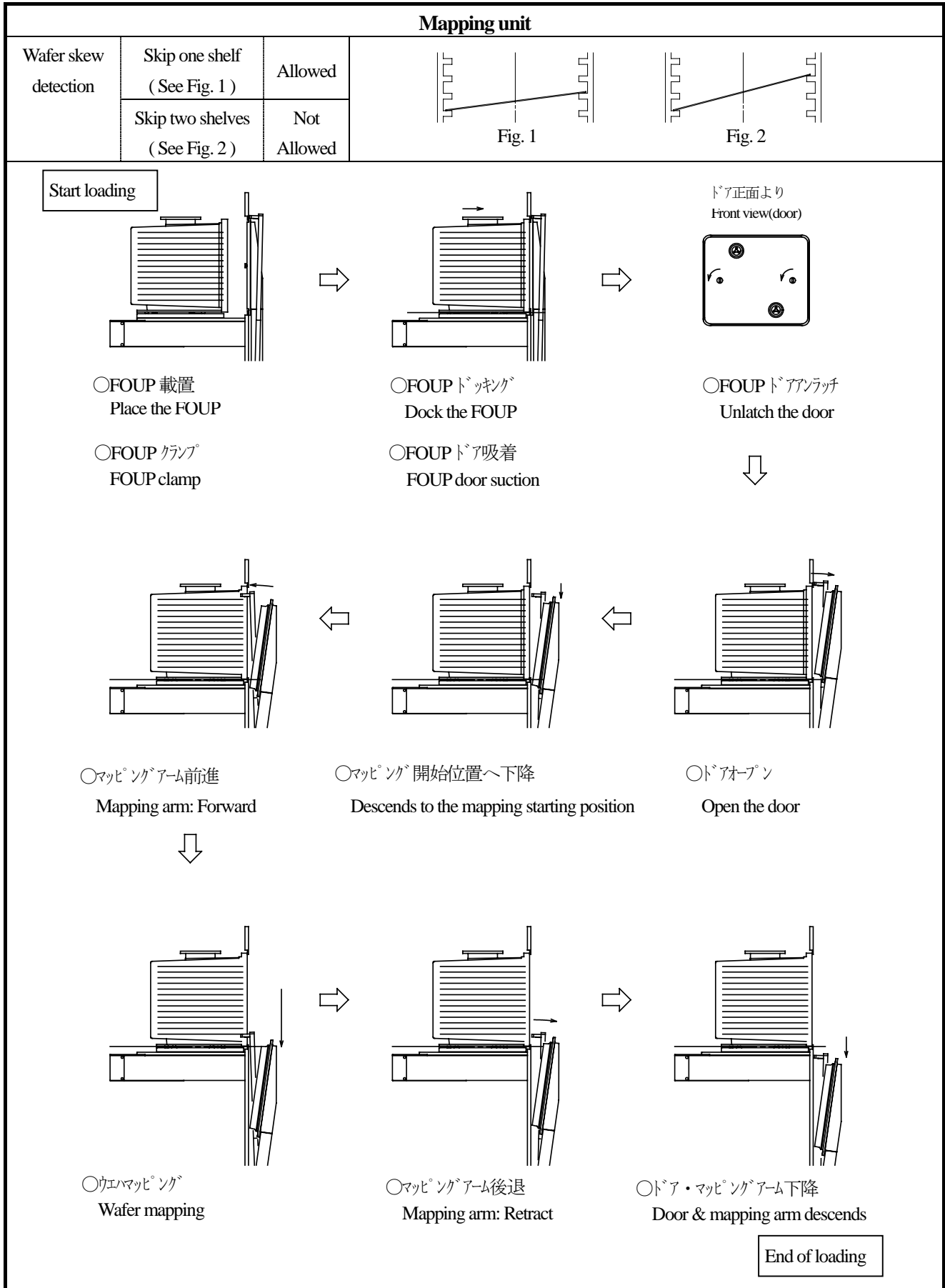
### (2) Operation check

- ① Power cable: Connector 206060-1・Pin 66101-1 ( Tyco Electronics AMP )
- ② Air tube: External diameter 6mm ( Clean dry air source・Vacuum source・Exhaust )
- ③ PC: Windows95・98・ME・NT4.0・2000・XP with serial I/F
- ④ RS232C cable: D-sub 9-Pin cross-cable
- ⑤ Maintenance tools: Option ( Recorded in the CD-R Manual )

## 4-4 Accessories

- ① Adjustment plate A・B
- ② Mechanical stopper
- ③ Interlock release key
- ④ Electrical setting management table
- ⑤ Inspection record form
- ⑥ Written guarantee
- ⑦ Invoice

## 5. Options



<b>Power cable</b>		
Connector name CNA1	Connector	206060-1 ( Tyco Electronics AMP )
	Contact pin	66101-1 ( Tyco Electronics AMP )
Fitting tool		58495-1 ( Tyco Electronics AMP )
Cable clamp		206062-1 ( Tyco Electronics AMP )
Wire		RO-FLEX 1100T AWG19 3 cores ( Nichigoh Communication Electric Wire )
Wire length		2m・4m・6m
<p style="text-align: center;">※ Sheathed length : 2m/4m/6m</p> <p style="text-align: right;">※ Mark the tubes with "DC24V"/"FG"/"and"/"DCOV"</p>		
<b>Other</b>		
Carrier ID Reader/Writer	Keyence	BL-601
	Omron	V700-HMD13A・V640
	Brooks	TLG Series ( Manufactured by former Hermos )
	Asyst	ATR9000・ATR9100・PB-90
	For other CID, contact TDK.	
AMHS (Optical I/O)		DMS-HB1・DMG-HB1 ( Hokuyo Automatic )
Info Pad Pin	Info Pad A・B	Electrical detection・Lock out pin
	Info Pad C・D	Lock out pin
Overlapped wafer sensor		Detects if two wafers are stacked in a slot. For details, contact TDK.
Quartz glass wafer protrusion sensor		The detection characteristics differ depending on the FOUP used. For details, contact TDK.
BOLTS surface seal material		T/#9096-TB-54 ( Nichias )
CE marking		For details, contact TDK.
Load port installation jig		For details, contact TDK.
Cross mark jig for OHT		For details, contact TDK.
Manual		CD-R ( Maintenance tools is Recorded ) ・Booklet

## 6. Warnings, Cautions and Notes on Operation Safety

TDK provides an instruction manual that describes product characteristics and specifications. To ensure safe operation and to prevent accidents by operating the machine incorrectly, please read carefully the instruction manual before using the product. Contact TDK for a copy of the instruction manual.