



FOUP Load Port

MODEL : TAS300

TYPE : E3

Product Specifications

CE Marking

02TE3138~02TE3140



CE

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1. Overview

The TAS300 is a standard load port that automatically opens and closes the FOUP (Front Opening Unified Pod). (The FOUP is used in the semiconductor manufacturing process.)

Installed in a variety of semiconductor systems, the TAS300 provides the highest level of low dusting characteristics and the high throughput and repetition durability required in manufacturing semiconductors.

2. Features

- (1) SEMI Standard compliance
 - E15.1-0600
 - E57-0600
 - E62-0302A
 - E63-0600
 - E64-0600
- (2) The moving components including the mapping unit are housed under the wafer surface. Complete airflow analysis has been carried out to achieve the world's best particle-free system.
- (3) Through its use of a docking plate and the FIMS door's air-cushion system, the TAS300 is compatible with a variety of FOUPs—securing the opening and closing of the FOUPs.
- (4) A mapping unit (transmission sensor) can be installed on the FIMS door. (Optional)
- (5) The TAS300 continues to provide high performance in repetitive door opening and closing over long periods while providing high durability.
- (6) The TAS 300 has an obstacle detection function when the FOUP is docked.
- (7) The TAS300 can detect the FOUP and determine whether it has been correctly loaded.
- (8) To reduce the load port loading/unloading time, a load port positioning mechanism has been implemented on the BOLTS surface.

3. Basic Specifications

3.1 Applicable FOUPs

300mm FOUP (Using 25 wafers)

F300-1003 (Entegris, Inc.)

300mm FOUP (Shin-Etsu Polymer Co., Ltd.)

SEMI E47.1/E62 compliant

3.2 FOUP Positioning Clamp

Kinematic pin positioning

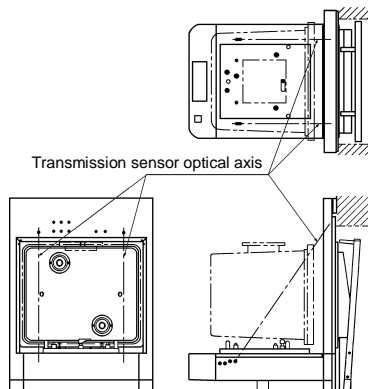
Using the Front Retaining Feature (air driven)

3.3 FOUP Door Lock

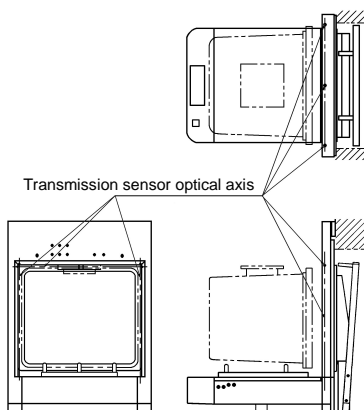
Vacuum suction

3.4 Detection Functions

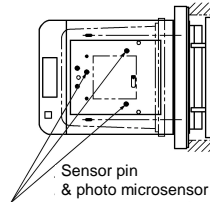
(1) FOUP presence check



(3) Obstacle detection

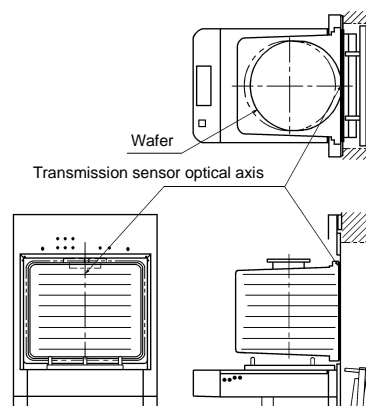


(2) FOUP placement check



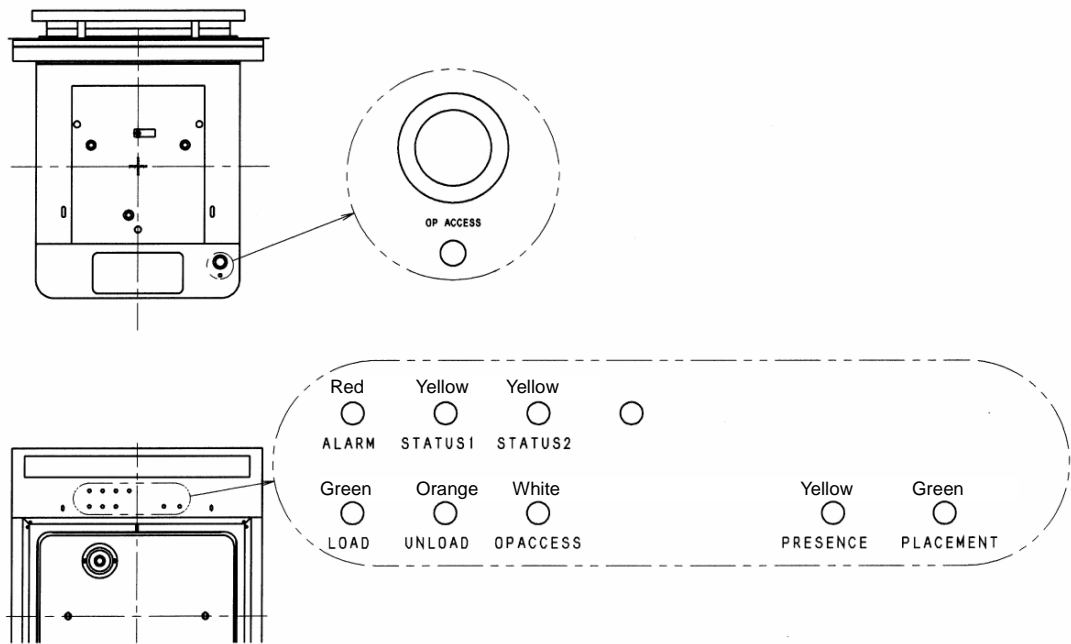
(4) Wafer protrusion in FOUP

Wafer protrusion (3mm) is detected from the FOUP shell seal surface .



Note: The glass wafer specification is optional.

3.5 Indicator



3.6 Strokes

Y-axis (FOUP: Forward/Retract): 70mm (SEMI Standard)

Z-axis (FOUP door up/down): 375mm

3.7 Repetition Precision

Y-axis (FOUP: Forward/Retract): ± 0.1 mm

Z-axis (FOUP door up/down): ± 0.1 mm

3.8 Operation Time

No mapping

FOUP open: 10 seconds (From when the FOUP is set to when the wafer is ready to be picked up)

FOUP close: 10 seconds (From when the door is ready to be closed to when the FOUP is ready to be picked up.)

Mapping (Optional)

FOUP open: 20 seconds

FOUP close: 10 seconds

3.9 Weight

55kg

3.10 Utilities

Power: $24V \overline{\dots} \pm 5\%$ /3A (Full-load current: 2A)

Circuit breaker rating: 50A

Dry air: 0.52MPa ~ 0.6MPa 5L/min ($\phi 6$ mm air tube)

Vacuum: 30kPa ~ 50kPa 10L/min ($\phi 8$ mm air tube)

Exhaust: ($\phi 6$ mm air tube)

3.11 Usage Environment (The system must be installed in a clean room.)

- (1) Ambient temperature: 5°C ~ 30°C
- (2) Ambient humidity: 30% ~ 80% (No condensation)
Note: 20°C: 90% or less / 40°C: 50% or less
- (3) Luminosity: 300 Lux (Working area)
500 Lux (Operation area)
- (4) Altitude: Sea level 1,000 m or less

3.12 Storage Environment

- (1) Storage temperature: -10°C ~ 55°C
- (2) Storage humidity: 30% ~ 80% (No condensation)

3.13 Noise

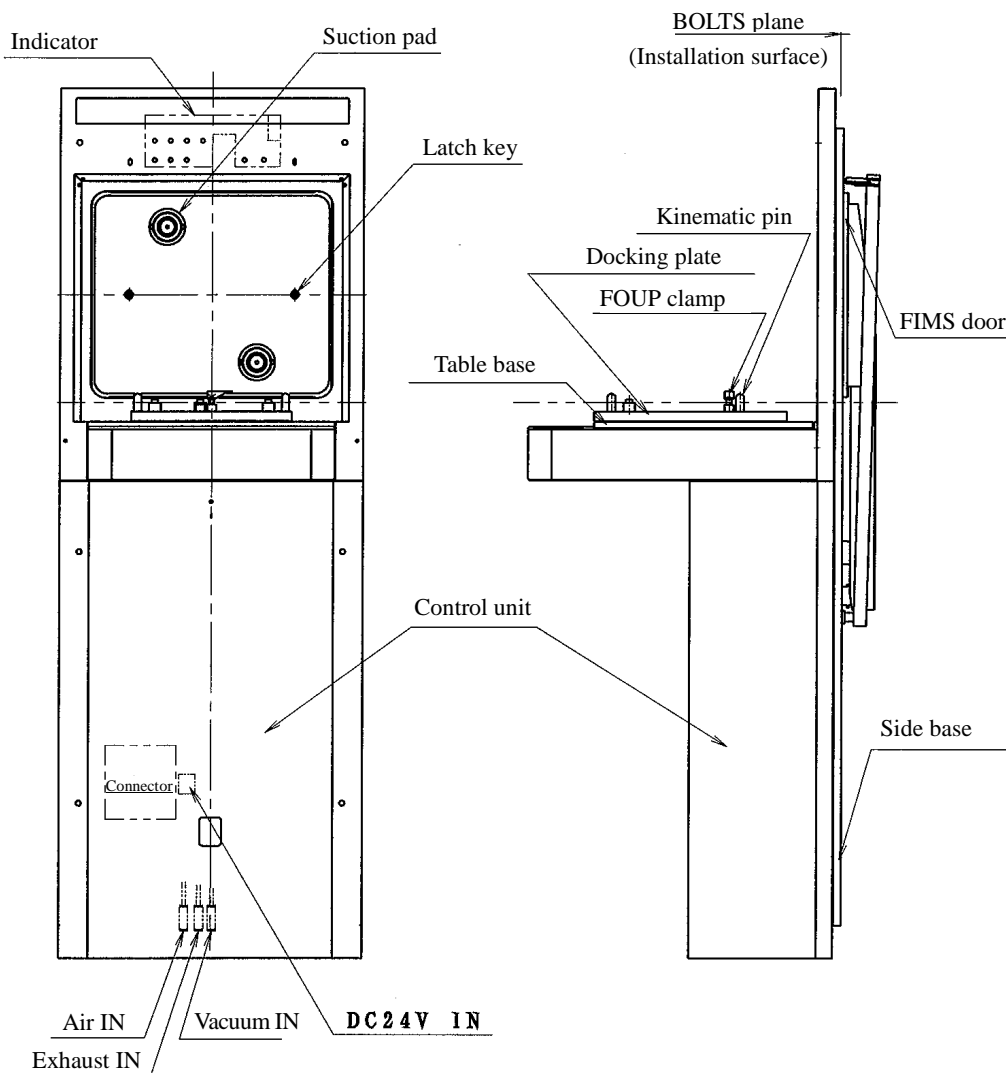
Max: 60 dB (Aeq)

3.14 Over-rotation Latch Key

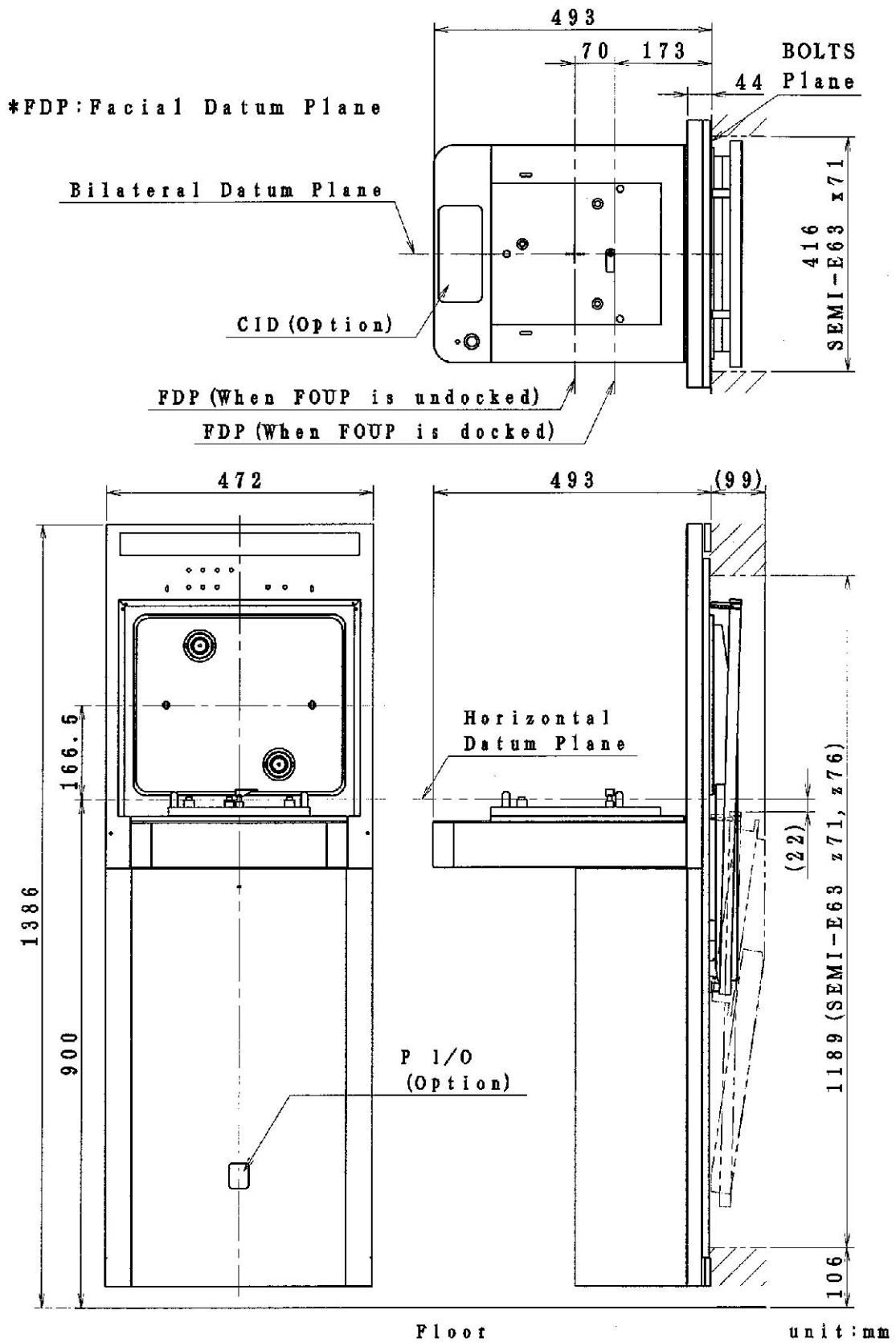
Corrects the FOUP latch key hole position to the regular position (90°) when the FOUP is latched.

4. Configuration

4.1 External View

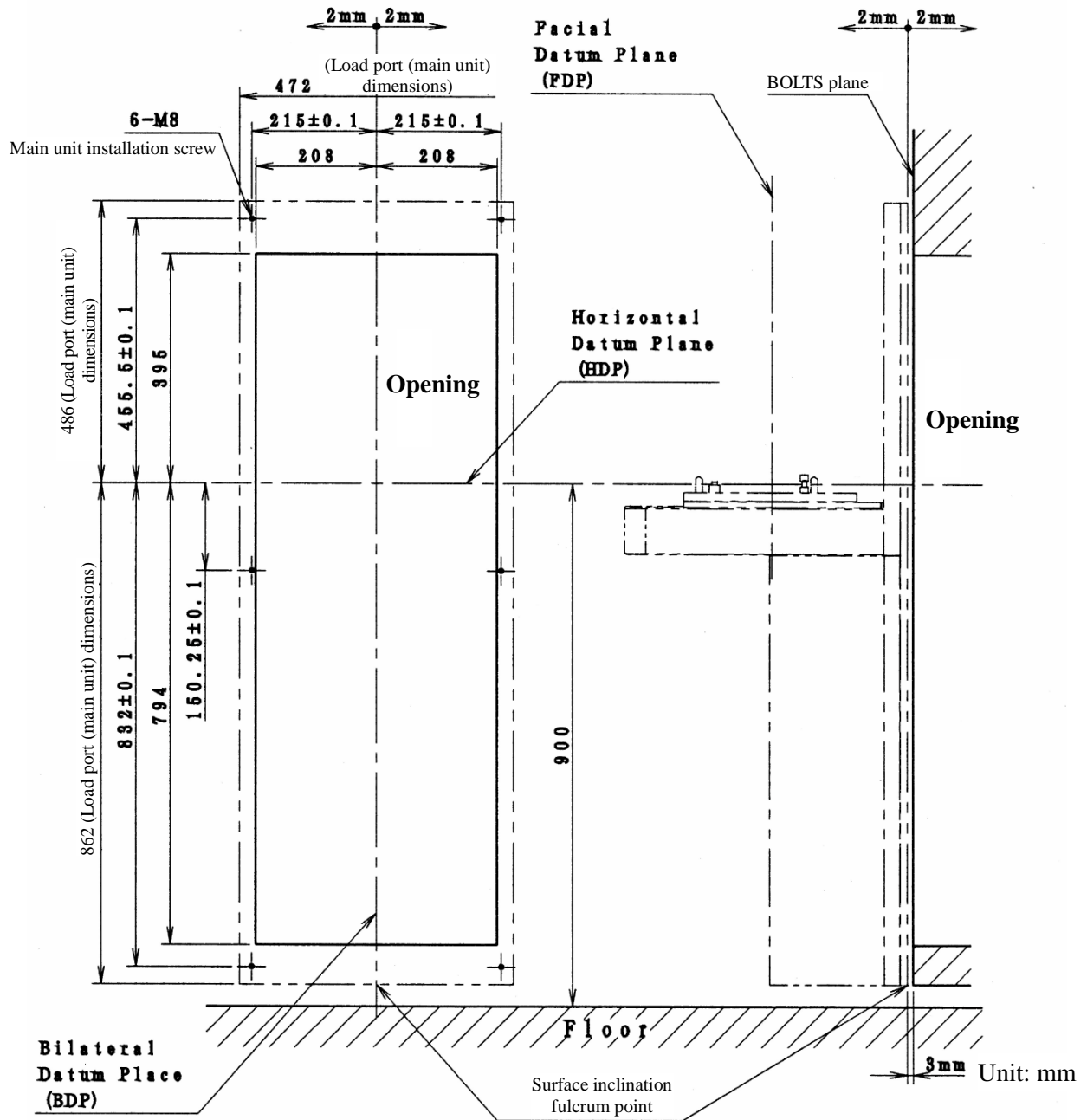


4.2 Dimensions



4.3 Mechanical Interface (Complies with the SEMI Standard (E63-0600))

This section describes the interface that must have been installed in the system before the load port is installed.



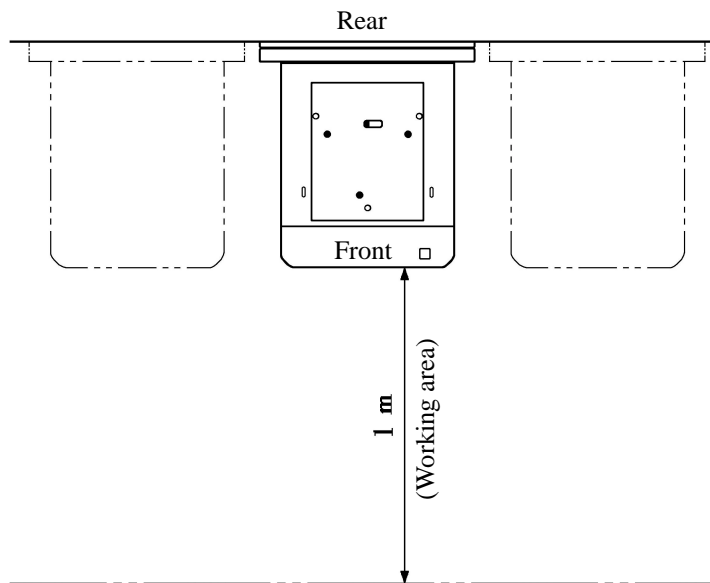
To prevent intrusion of external particles, maintain the air pressure as follows:

$$(\text{System pressure}) - (\text{load port pressure}) = 2\text{Pa}$$

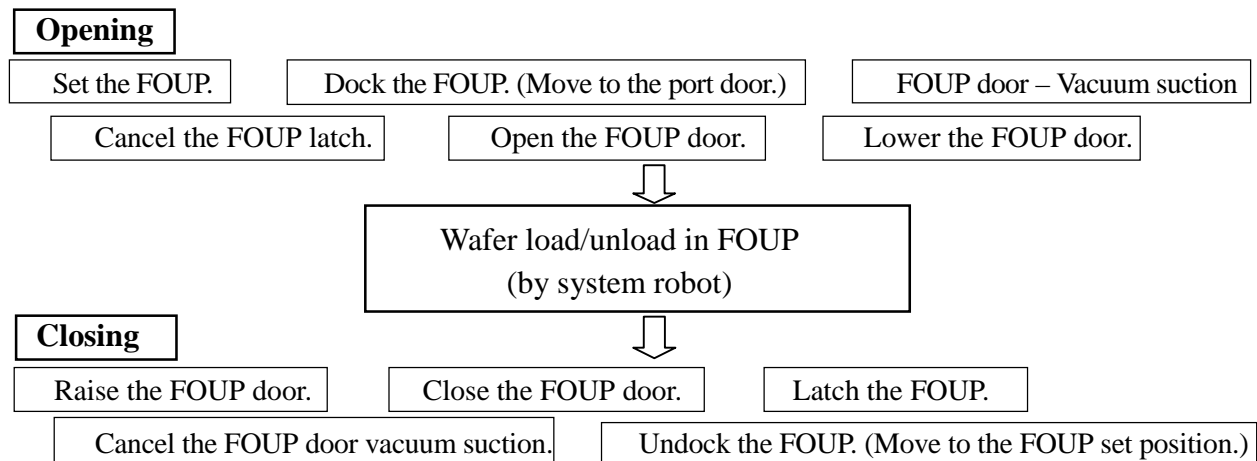
For details on the communication interface, see the "Interface Specifications".

4.4 Working Area

Load port front 1m



4.5 Operation Flow



4.6 Installation Environment (Preparation)

(1) Installation tools

Level Plumb-bob Square (with frame, 300mm (Recommended))
Parallel bar (L=250mm, H=35mm, W=25mm (Recommended)) Scale (1,000mm)
General tools Installation jig (TDK)

(2) Operation check

Power cable (Connector: 206060-1, Pin: 66101-1 (Tyco Electronics AMP K.K.))

--- Optionally purchased

Air tube $\phi 6$ (Air source)

Air tube $\phi 8$ (Vacuum source)

Air tube $\phi 6$ (Air exhaust)

Personal computer (Windows 95, 98, ME, NT4.0 or 2000. Serial I/F)

RS232C cable (Dsub 9-pin cross cable)

Maintenance tool --- (FD or CD-R: Included)

4.7 Accessories

Adjustment plate A

Adjustment plate B

Installation jigs (Left/Right, Total 2) --- Provided when the system is purchased for the first time.

Maintenance tool (FD or CD-R)

Interlock override key

Mechanical stopper

5. Optional Specifications

5.1 Power Cable

OPT3 24V $\overline{\text{...}}$ connection line (System side)

Connector name: CNA1 (System side)

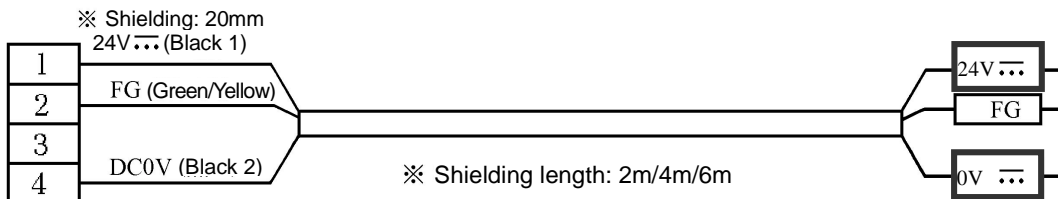
- Connector: 206060-1 (Tyco Electronics AMP K.K.)
- Contact pin: 66101-1 (Tyco Electronics AMP K.K.)

Fitting tool: 58495-1 (Tyco Electronics AMP K.K.)

Cable clamp: 206062-1 (Tyco Electronics AMP K.K.)

Wire: RO-FLEX 1100T AWG19, 3 cores (Nichigo Communication Electric Wire Co., Ltd.)

Wire length: 2m/4m/6m



Mark the tubes with
"24V $\overline{\text{...}}$ ", "FG" or "0V $\overline{\text{...}}$ ".

5.2 Mapping Unit

(1) Wafer detection

2 overlapped wafers	—————	×
Skew wafer	1 row (See Figure 1.)	○
	2 rows (See Figure 2.)	×

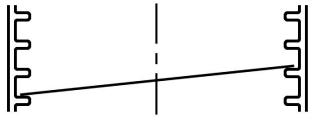


Figure 1

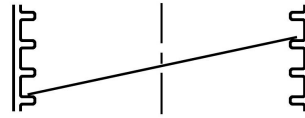


Figure 2

(2) Operation flow

Load port – Origin

Dock the FOUP.

Open the FIMS door.

Lower the FIMS door and mapping unit to mapping start position.

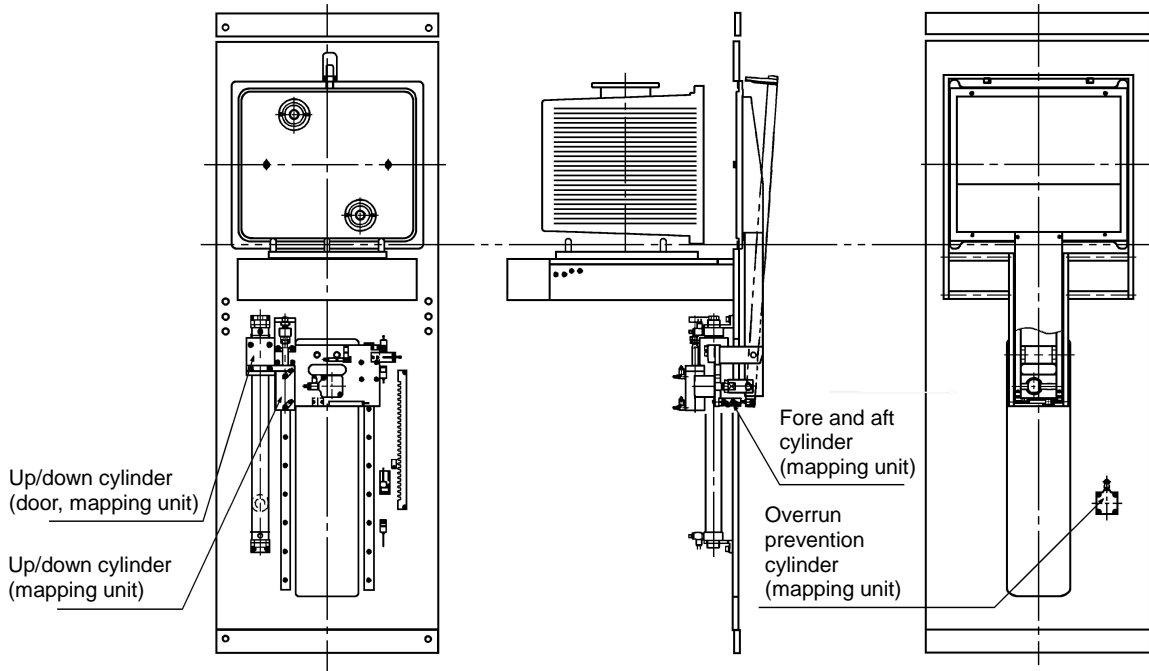
Move the mapping unit forward.

Stopper ON: Mapping

Stopper OFF: Retract the mapping unit.

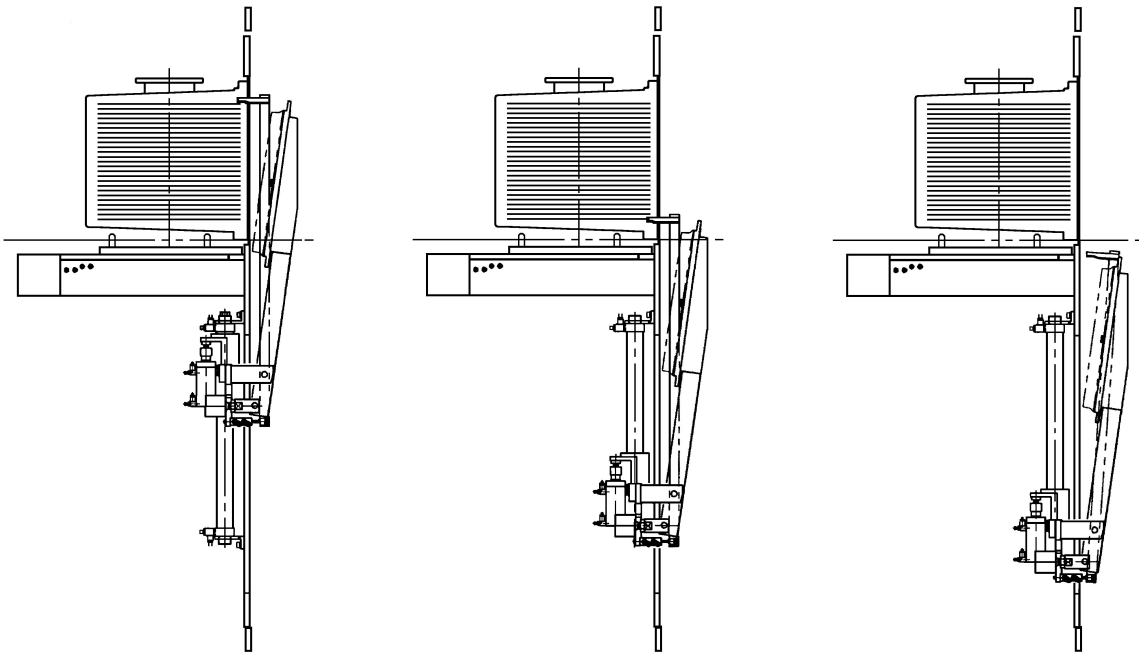
Lower the FIMS door and the mapping unit.

Load port – Origin



Dock the FOUP. Open the FIMS door. Stopper ON: Mapping
 Lower the FIMS door and mapping unit to mapping start position.
 Move the mapping unit forward.

Stopper OFF: Retract the mapping unit.
 Lower the FIMS door and the mapping unit.



5.3 Other Options

Carrier ID Reader (Writer)

BCR (KEYENCE)

RF-IDR/W (Omron)

Hermos/Asyst RF-IDR/W: Under review for implementation

Optical I/O (Hokuyo Automatic)

Sealing material (NICHIAS: T/#9096-TB-54)

Quartz glass wafer fly-out sensor

Info Pad pin

Info Pad A, B (Electrical detection and lock out pin)

Info Pad C, D (Lock out pin)

Registration pin

6. Safety Cautions and Warnings

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.