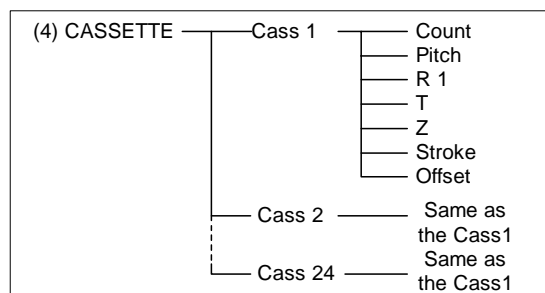


8.5 "CASSETTE" and "STAGE"

< "CASSETTE" >

The position data to "GET" / "PUT" the wafer from / to the cassette is stored in "CASSETTE".

The right figure is the block diagram of "CASSETTE".



<The second parameter of "CASSETTE">

Three types of the teaching data for cassette are stored in Cass 1-24.

Parameter	Wafer size	Cassette table	Pcs*	Mode
CASS 1	4-inch	Right	25	T/1
CASS 2	5-inch			
CASS 3	6-inch			
CASS 4	8-inch			
CASS 5	4-inch	Left	25	T/1
CASS 6	5-inch			
CASS 7	6-inch			
CASS 8	8-inch			
CASS 9	4-inch	Right	12	T/2
CASS 10	5-inch			
CASS 11	6-inch			
CASS 12	8-inch			
CASS 13	4-inch	Left	12	T/2
CASS 14	5-inch			
CASS 15	6-inch			
CASS 16	8-inch			
CASS 17	4-inch	Right	12	T/3
CASS 18	5-inch			
CASS 19	6-inch			
CASS 20	8-inch			
CASS 21	4-inch	Left	12	T/3
CASS 22	5-inch			
CASS 23	6-inch			
CASS 24	8-inch			

(*) Types of the teaching data:

Different types of the teaching data (T1, T2, and T3) can be saved for the same cassette.

<Example>

T1: Standard wafer

T2: Thin wafer

T3: Thick wafer

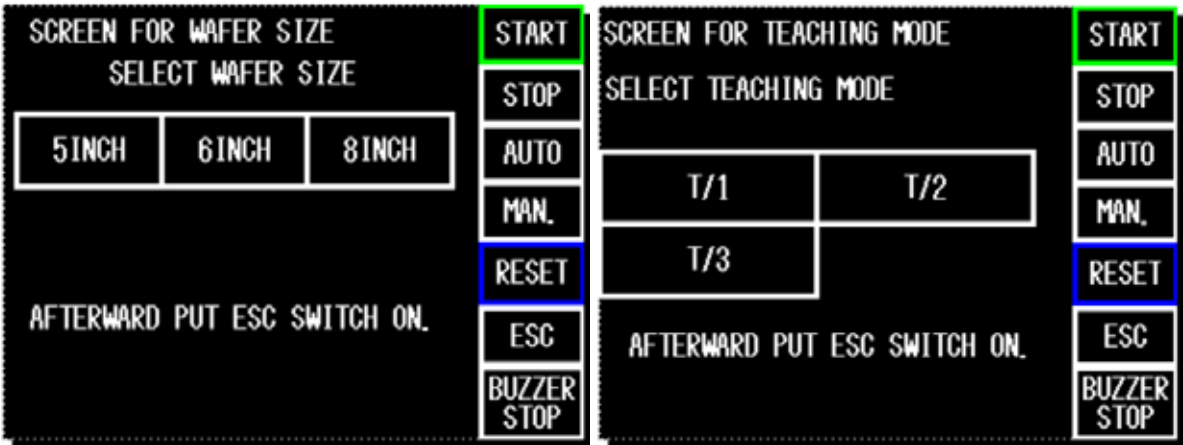
(**) T3 is unused data. It is available input the new data in T3 by customer.

8.5 “CASSETTE” and “STAGE” (Continued)

<The data for auto operation>

The teaching data used for auto operation depends the setting in (1)-(3).

- (1) Selected wafer size on “SCREEN FOR WAFER SIZE SELECT SCREEN”.
- (2) Selected teaching mode on “SCREEN FOR TEACHING MODE”.
- (3) Cassette table used for the process (Right / Left cassette for use)



<Example>

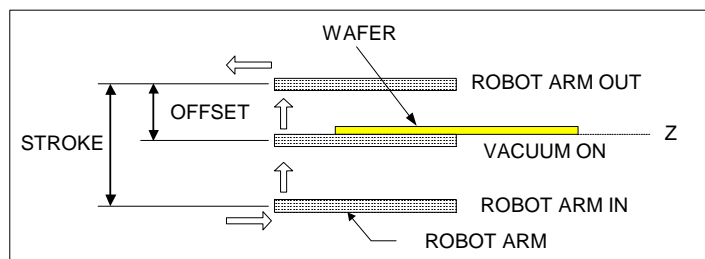
Given condition: Wafer size = 6-inch, Teaching mode = T1, Cassette table for use = Right cassette
CASS 3 data is used to operate the robot.

Given condition: Wafer size = 8-inch, Teaching mode = T2, Cassette table for use = Left cassette
CASS 16 data is used to operate the robot.

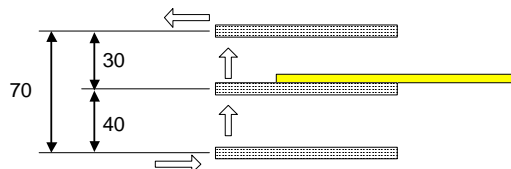
8.5 "CASSETTE" and "STAGE" (Continued)

<The third parameter in "CASSETTE" >

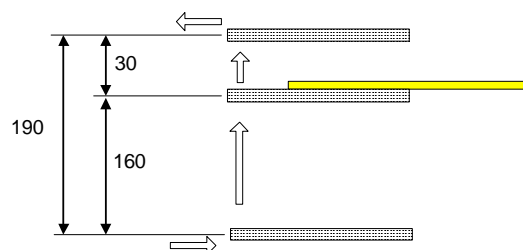
- Count: Shows the total number of the slots of the cassette.
- Pitch: Shows the difference in height between two slots.
- R 1: Shows the value in R-axis in the position where the robot arm gets a wafer from the cassette.
- T: Shows the robot arm rotation to get a wafer from the cassette. (Theta-axis)
- Z: Shows the value in Z-axis in the position where the robot arm turns on the vacuum for the wafer of the 1st slot. (Z-axis)
 The robot arm inserting height to get a wafer from the 1st slot: **Z - (Stroke – Offset)**
 The robot arm inserting height to get a wafer from the 2nd slot:
The height for 1st slot + Pitch
- Stroke: Shows the difference in Z-axis between the inserting height and getting height.
- Offset: Shows the difference in Z-axis between vacuuming height and getting height.



<Example> STROKE=70, OFFSET=30



<Example> STROKE=190, OFFSET=30



<Example>

Given condition: Pitch=1900, Z=400, Stroke=70, Offset=30

The robot arm height to get a wafer from the 1st slot = $400 - (70 - 30) = 360$

The robot arm height to get a wafer from the 2nd slot = $360 + 1900 = 2260$

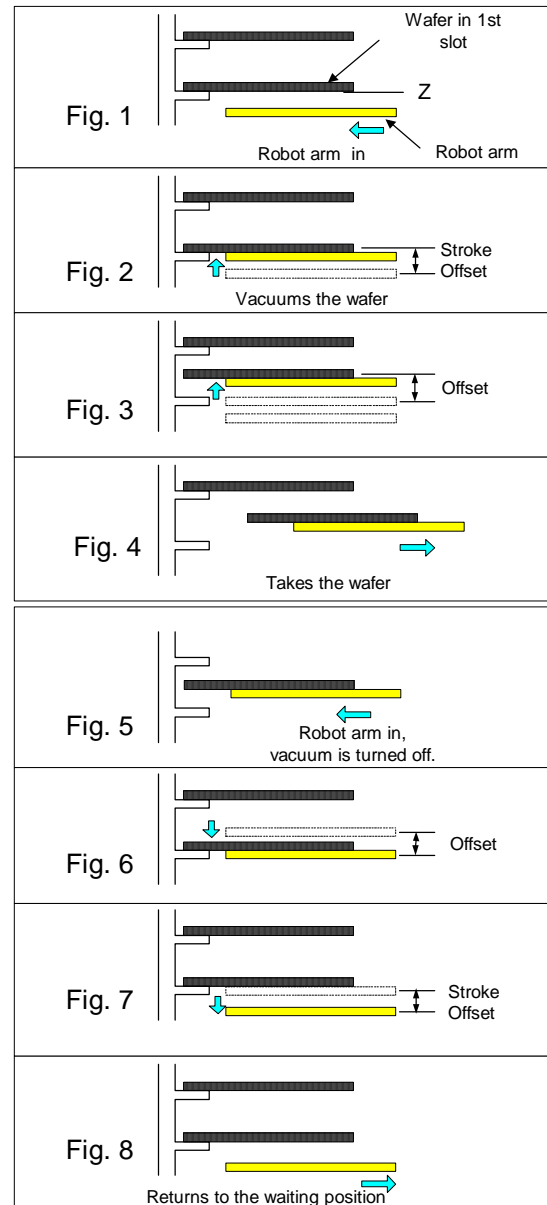
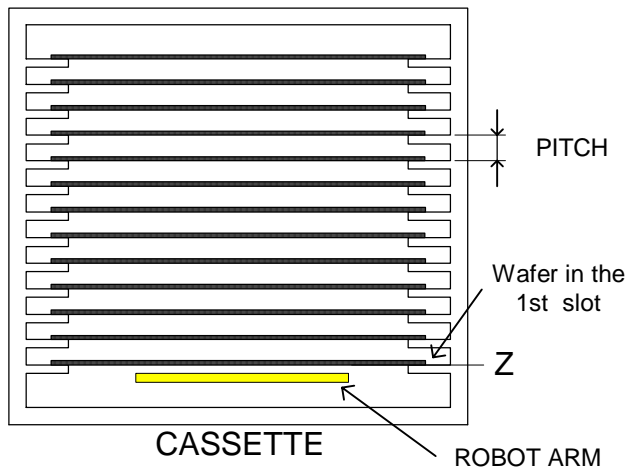
8.5 "CASSETTE" and "STAGE" (Continued)

<"GET" the wafer from the cassette>

- (1) The robot arm is inserted to the cassette. (Fig. 1)
- (2) The robot arm moves upward by "Stroke - Offset" and vacuums the wafer. (Fig. 2)
- (3) The robot arm moves upward by "Offset". (Fig. 3)
(If the wafer is not in the slot, the robot moves downward in "Stroke", then backs to the waiting position)
- (4) The robot arm gets the wafer. (Fig. 4)

<"PUT" the wafer into the cassette>

- (1) After the robot arm has been inserted into the cassette, the robot arm vacuum is turned off. (Fig. 5)
- (2) The robot arm moves downward by "Offset". (Fig. 6)
- (3) The robot arm moves downward by "Stroke - Offset". (Fig. 7)
- (4) The robot arm returns to the waiting position. (Fig. 8)

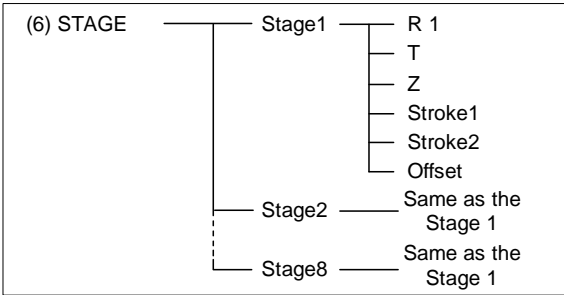


8.5 “CASSETTE” and “STAGE” (Continued)

< “STAGE” >

The position data “GET” / “PUT” the wafer from / to the aligner and “GET” / “PUT” the wafer from / to the chuck table are stored.

The right figure is the block diagram of “STAGE”.

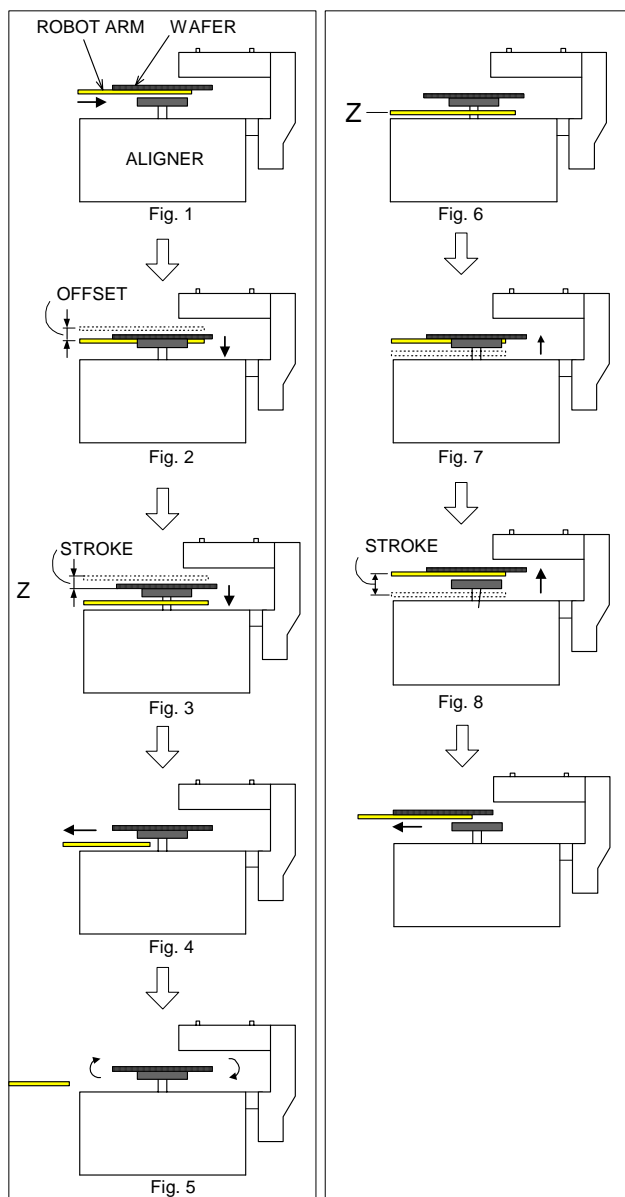


<The second parameter of “STAGE”>

STAGE #	STAGE POISITION
STAGE 1	Aligner GET / PUT
STAGE 2	Chuck table PUT
STAGE 3	CASSETTE WAITING POINT
STAGE 4	UV irradiation (option)
STAGE 5	ALIGNER WAITING POINT
STAGE 6	CHUCK TABLE GET
STAGE 7	CHUCK TABLE WAITING POSITION (DOWN)
STAGE 8	CHUCK TABLE WAITING POSITION (UP)
STAGE 9	PRESS DOWN PLATE
STAGE 10	ROTATING POINT (LEFT)
STAGE 11	UV TABLE GET DOWN POSITION (after rotating)

8.5 "CASSETTE" and "STAGE" (Continued)

<The third parameter of "STAGE">

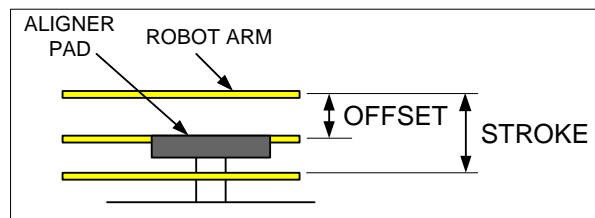


The robot arm is operated at the aligner as below.

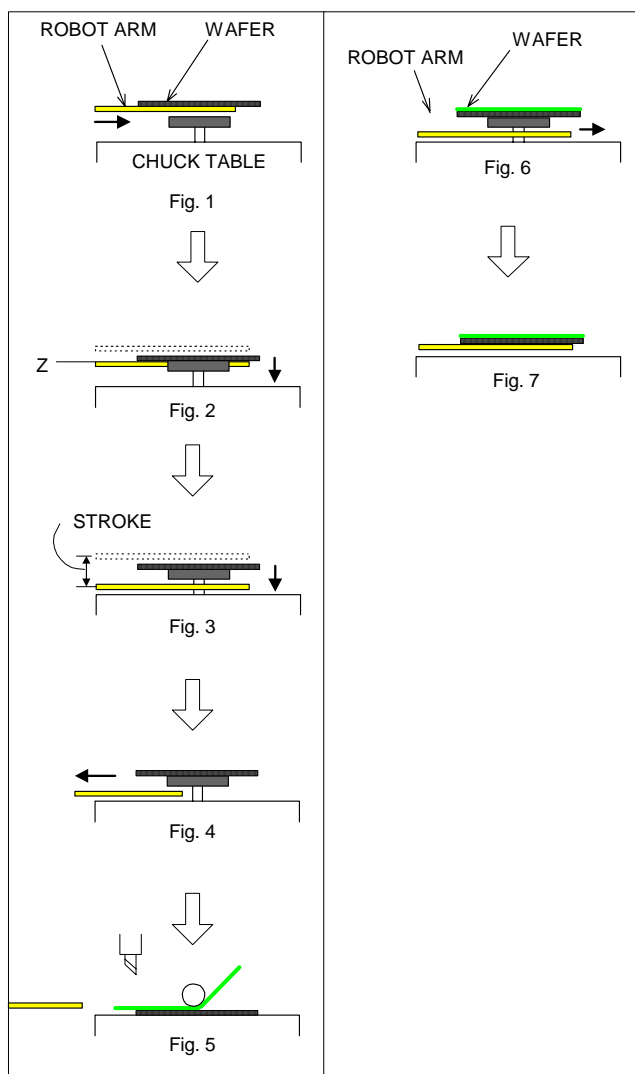
- (1) The robot arm vacuuming the wafer is inserted onto the aligner pad. (Fig. 1)
- (2) The robot arm moves downward by "OFFSET". The robot arm vacuum is turned off, and the aligner pad vacuum is turned on. (Fig. 2)
- (3) The robot arm moves down by "STROKE - OFFSET". (Fig. 3)
- (4) The robot arm returns to the waiting position. (Fig. 4)
- (5) The wafer is aligned. (Fig. 5)
- (6) The robot arm is inserted underneath the aligner pad to get the aligned wafer. The robot vacuum is turned on, and the aligner pad vacuum is turned off. (Fig. 6)
- (7) The robot arm moves up by "STROKE - OFFSET". (Fig. 7)
- (8) The robot arm moves up by "OFFSET". (Fig. 8)
- (9) The robot arm backs to the waiting position vacuuming the wafer. (Fig. 9)

<STAGE 1>

- R: The value of R-axis at Fig. 1, 2, 3, 6, 7, 8
- T: The value of T-axis at Fig. 1, 2, 3, 6, 7, 8
- Z: The value of Z-axis at Fig. 3, 6
- Stroke1: The Z-axis moving distance shown Fig. 3 and 8
- Stroke2: Nonuse
- Offset: The Z-axis moving distance shown Fig. 2.



8.5 "CASSETTE" and "STAGE" (Continued)



The robot arm is operated at the chuck table as below.

- (1) The robot arm vacuuming the wafer is inserted onto the table pad. (Fig. 1)
The robot arm vacuum is turned off, and the table pad vacuum is turned on. (Fig. 2)
- (2) The robot arm moves down by "OFFSET".
- (3) The robot arm moves down by "STROKE - OFFSET". (Fig. 3)
- (4) The robot arm returns to the waiting position. (Fig. 4)
- (5) The table pad moves down, and the chuck table vacuum is turned on. After that the table pad vacuum is turned off.
- (6) The BG tape is applied on the wafer and cut along the circumference. (Fig. 5)
- (7) The peeling unit moves to right direction.
- (8) The table pad vacuum is turned on. The table pad moves up after the chuck table vacuum is turned off.
- (9) The robot arm is extended onto the chuck table. The robot arm vacuum is turned on, and the table pad vacuum is turned off. (Fig. 6)
- (10) The table pad moves down. (Fig. 7)

<STAGE 2>

- R: The value of R-axis at Fig. 1-3
- T: The value of T-axis at Fig. 1-4
- Z: The value of Z-axis at Fig. 2
- Stroke1: The Z-axis moving distance shown Fig. 3.
- Stroke2: Nonuse
- Offset: The Z-axis moving distance shown in Fig. 2.

<STAGE 6>

- R: The value of R-axis at Fig. 6-8
- T: The value of T-axis at Fig. 6-9
- Z: The value of Z-axis at Fig. 7.
- Stroke1: The Z-axis moving distance shown Fig. 3.
- Stroke2: Nonuse.
- Offset: The Z-axis moving distance shown Fig. 2.