

## Product Lineup 2024



**Leading Manufacturer  
of Clean Robot**

# SCR3160CSN-300-CM

## 3-Axis Cylindrical Coordinate Type Single-Arm Clean Robot

### Clean Robot SCR3000CSN Series

Featuring a step-out-less closed-loop control system, built-in batteryless absolute encoders and stepping motors, this series ensures high convenience, safety and stability as well as various ways of transferring. Suitable for various types of wafers up to 300 mm.



● Usage environment and specifications

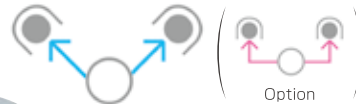


● Option



\*CE or KCs marking is available upon request.

● Transfer method



Atmosphere



Controller: C4000B

- Control method: RS232C and parallel photo I/O



Teaching box: JCT3B



### Characteristics

- ◆ Step-out-less closed-loop control system under rapid load change or acceleration
- ◆ Equipped with batteryless multi-rotation absolute sensors.
- ◆ Path planning handling suitable for parallel layout is optional.
- ◆ Payload capacity: 3 kg or less (calculated on the arm 3rd joint)
- ◆ Compatible with the former SHR model and current SCR3000CS series, this SCR3000CSN series ensures easier replacement.

### Specifications

| Carrying object                     | Wafers up to 300 mm                                    |                |                 |
|-------------------------------------|--|----------------|-----------------|
|                                     | Arm  | Rotation angle | Vertical stroke |
| Operating range* (3rd joint center) | 340 mm   | 340 degrees    | 300 mm          |
| Speed (Avg)*                        | 610 mm/sec   | 340 degree/sec | 250 mm/sec      |
| Speed (Max)*                        | 1220 mm/sec  | 500 degree/sec | 320 mm/sec      |
| Resolution*                         | 10.0 μm or less  | 0,0015 degrees | 2,00 μm         |
| Handling level*                     | 536 mm (Base mounting level to the end-effector level) |                |                 |
| Repeatability                       | Within +/- 0.1 mm                                      |                |                 |
| Cleanliness                         | ISO Class 2 (when exhausted from the driving area)     |                |                 |
| Utility*                            | Power: 24 V DC +/- 10%, 10 A; Vacuum: -53 kPa or more  |                |                 |

\*Specifications of SCR3160CSN-300-CM with a JEL standard vacuum type end-effector. Provide positive pressure depending on the wafer holding method such as edge grip or Bernoulli.

- Robot's main body weight: Approximately 22 kg
- Dimensions of C4000B controller: 297 (W) x 180 (D) x 120 (H), Weight: Approximately 5 kg
- Note: A CE/KCs compliant controller has different dimensions and weight.

### SCR3000 series

- ◆ A wide range of variations to meet system layouts

SCR3160CSN-300-CM

| Arm length | Z-axis stroke |
|------------|---------------|
| 100        | 200           |
| 130        | 400*          |
| 200        | 500*          |
|            | 600*          |

\*Optional variation

- Check our website for our product drawings and videos.

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# STCR4160SN-300-CM

## 4-Axis Cylindrical Coordinate Type Twin-Arm Clean Robot

### Clean Robot STCR4000SN Series

Featuring a step-out-less closed-loop control system, built-in batteryless absolute encoders and stepping motors, this series ensures high convenience, safety and stability as well as various ways of transferring. Suitable for various types of wafers up to 300 mm.



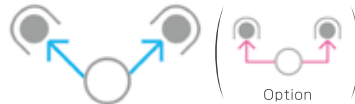
● Usage environment and specifications



● Option



● Transfer method



Controller: C4000B  
● Control method: RS232C and parallel photo I/O



Teaching box: JCT3B



### Characteristics

- ◆ Twin-arm reduces tact time to replace wafers.
- ◆ Step-out-less closed-loop control system under rapid load change or acceleration
- ◆ Equipped with batteryless multi-rotation absolute sensors.
- ◆ Path planning handling suitable for parallel layout is optional.
- ◆ Payload capacity: 3 kg or less (calculated on the arm 3rd joint)
- ◆ Compatible with the former STHR model and current STCR4000S series, this STCR4000SN series ensures easier replacement.

### Specifications

| Carrying object                     | Wafers up to 300 mm                                    |                |                 |
|-------------------------------------|--|----------------|-----------------|
|                                     | Arm  | Rotation angle | Vertical stroke |
| Operating range* (3rd joint center) | 315 mm   | 340 degrees    | 300 mm          |
| Speed (Avg)*                        | 570 mm/sec   | 220 degree/sec | 200 mm/sec      |
| Speed (Max)*                        | 1140 mm/sec  | 270 degree/sec | 250 mm/sec      |
| Resolution*                         | 12.6 μm or less  | 0.0045 degrees | 6.25 μm         |
| Handling level*                     | 620 mm (Base mounting level to the end-effector level) |                |                 |
| Repeatability                       | Within +/- 0.1 mm                                      |                |                 |
| Cleanliness                         | ISO Class 2 (when exhausted from the driving area)     |                |                 |
| Utility*                            | Power: 24 V DC +/- 10%, 10 A; Vacuum: -53 kPa or more  |                |                 |

\*Specifications of STCR4160SN-300-CM with JEL standard vacuum type twin end-effectors. Provide positive pressure depending on the wafer holding method such as edge grip or Bernoulli.

- Robot's main body weight: Approximately 30 kg
  - Dimensions of C4000B controller: 297 (W) x 180 (D) x 120 (H), Weight: Approximately 5 kg
- Note: A CE/KCs compliant controller has different dimensions and weight.

### STCR4000 series

- ◆ A wide range of variations to meet system layouts

|       |  |  |            |   |   |               |   |   |   |   |    |
|-------|--|--|------------|---|---|---------------|---|---|---|---|----|
| STCR4 |  |  | 1          | 6 | 0 | SN-           | 3 | 0 | 0 | - | CM |
|       |  |  | Arm length |   |   | Z-axis stroke |   |   |   |   |    |
|       |  |  | 1          | 0 | 0 |               |   |   |   |   |    |
|       |  |  | 1          | 3 | 0 |               |   |   |   |   |    |
|       |  |  | 2          | 0 | 0 |               |   |   |   |   |    |
|       |  |  |            |   |   | 2             | 0 |   |   |   |    |
|       |  |  |            |   |   | 4             | 0 |   |   |   |    |
|       |  |  |            |   |   | 5             | 0 |   |   |   |    |
|       |  |  |            |   |   | 6             | 0 |   |   |   |    |

\*Optional variation

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Atmosphere

# SCR3160CS-300-PM

## 3-Axis Cylindrical Coordinate Type Single-Arm Clean Robot

### Clean Robot SCR3000CS Series

Featuring an open-loop control system and stepping motors, this series ensures high safety and stability. This JEL's long-term standard robot allows users to customize easily. Suitable for various types of wafers up to 300 mm.



● Usage environment and specifications



● Option



\*CE marking is available upon request.

● Transfer method



Atmosphere



Controller: C4000

- Control method: RS232C and parallel photo I/O



Teaching box: JCT1



### Characteristics

- ◆ Base or flange mounting type is selectable according to system layouts.
- ◆ Optimal end-effector is selectable according to the carrying object and line layout.
- ◆ Payload capacity: 3 kg or less (calculated on the arm 3rd joint)
- ◆ Compatible with the former SHR model and current SCR3000CSN series, this SCR3000CS series ensures easier replacement.

### Specifications

| Carrying object                     | Wafers up to 300 mm                                    |                |                 |
|-------------------------------------|--|----------------|-----------------|
|                                     | Arm  | Rotation angle | Vertical stroke |
| Operating range* (3rd joint center) | 340 mm   | 340 degrees    | 300 mm          |
| Speed (Avg)*                        | 610 mm/sec   | 340 degree/sec | 250 mm/sec      |
| Speed (Max)*                        | 1220 mm/sec  | 500 degree/sec | 320 mm/sec      |
| Resolution*                         | 12.6 μm or less  | 0.0045 degrees | 6.25 μm         |
| Handling level*                     | 536 mm (Base mounting level to the end-effector level) |                |                 |
| Repeatability                       | Within +/- 0.1 mm                                      |                |                 |
| Cleanliness                         | ISO Class 2 (when exhausted from the driving area)     |                |                 |
| Utility*                            | Power: 24 V DC +/- 10%, 15 A; Vacuum: -53 kPa or more  |                |                 |

\*Specifications of SCR3160CS-300-PM with a JEL standard vacuum type end-effector. Provide positive pressure depending on the wafer holding method such as edge grip or Bernoulli.

- Robot's main body weight: Approximately 20 kg
- Dimensions of C4000 controller: 300 (W) x 110 (D) x 120 (H). Weight: Approximately 2 kg
- Note: A CE/KCs compliant controller has different dimensions and weight.

### SCR3000 series

- ◆ A wide range of variations to meet system layouts

SCR3160CS-300-PM

| Arm length |
|------------|
| 100        |
| 130        |
| 200        |

| Z-axis stroke |
|---------------|
| 200           |
| 400*          |
| 500*          |
| 600*          |

\*Optional variation

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# STCR4160S-300-PM

## 4-Axis Cylindrical Coordinate Type Twin-Arm Clean Robot

### Clean Robot STCR4000S series

Featuring an open-loop control system and stepping motors, this series ensures high safety and stability. This JEL's long-term standard robot allows users to customize easily. Suitable for various types of wafers up to 300 mm.



● Usage environment and specifications



● Option



● Transfer method



Controller: C4000  
● Control method: RS232C and parallel photo I/O



Teaching box: JCT1



### Characteristics

- ◆ Twin-arm reduces tact time to replace wafers.
- ◆ Base or flange mounting type is selectable according to system layouts.
- ◆ Optimal end-effector is selectable according to the carrying object and line layout.
- ◆ Payload capacity: 3 kg or less (calculated on the arm 3rd joint)
- ◆ Compatible with the former STHR model and current STCR4000SN series, this STCR4000S series ensures easier replacement.

### Specifications

| Carrying object                     | Wafers up to 300 mm                                    |                |                 |
|-------------------------------------|--|----------------|-----------------|
|                                     | Arm  | Rotation angle | Vertical stroke |
| Operating range* (3rd joint center) | 315 mm   | 340 degrees    | 300 mm          |
| Speed (Avg)*                        | 570 mm/sec   | 220 degree/sec | 200 mm/sec      |
| Speed (Max)*                        | 1140 mm/sec  | 270 degree/sec | 250 mm/sec      |
| Resolution*                         | 12.6 μm or less  | 0.0045 degrees | 6.25 μm         |
| Handling level*                     | 620 mm (Base mounting level to the end-effector level) |                |                 |
| Repeatability                       | Within +/- 0.1 mm                                      |                |                 |
| Cleanliness                         | ISO Class 2 (when exhausted from the driving area)     |                |                 |
| Utility*                            | Power: 24 V DC +/- 10%, 16 A; Vacuum: -53 kPa or more  |                |                 |

\*Specifications of STCR4160S-300-PM with JEL standard vacuum type twin end-effectors. Provide positive pressure depending on the wafer holding method such as edge grip or Bernoulli.

- Robot's main body weight: Approximately 30 kg
- Dimensions of C4000 controller: 300 (W) x 110 (D) x 120 (H). Weight: Approximately 2 kg  
Note: A CE/KCs compliant controller has different dimensions and weight.

### STCR4000 series

- ◆ A wide range of variations to meet system layouts

STCR4160S-300-PM

| Arm length | Z-axis stroke |
|------------|---------------|
| 100        | 200           |
| 130        | 400*          |
| 200        | 500*          |
|            | 600*          |

\*Optional variation

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# GCR4210-300-PM

## 4-Axis Horizontal and Multi-Joint Type Single-Arm Clean Robot

### Clean Robot GCR4000-PM Series

Featuring stepping motors with absolute encoders, this series ensures high safety and stability. This JEL's long-term standard robot allows users to customize easily. Suitable for various types of wafers up to 300 mm.



● Usage environment and specifications



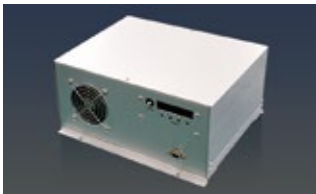
● Option



● Transfer method



Atmosphere



Controller: C4451  
● Control method: RS232C and parallel photo I/O



Teaching box: JCT5B



### Characteristics

- ◆ 2 FOUF access without a track
- ◆ Base or flange mounting type is selectable according to system layouts.
- ◆ Payload capacity: 3 kg or less (calculated on the arm 3rd joint)

### Specifications

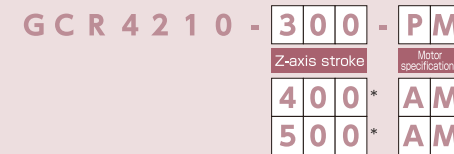
| Carrying object                     | Wafers up to 300 mm                                    |                |                 |
|-------------------------------------|--|----------------|-----------------|
|                                     | Arm  | Rotation angle | Vertical stroke |
| Operating range* (3rd joint center) | 400 mm   | 335 degrees    | 300 mm          |
| Speed (Avg)*                        | 730 mm/sec   | 280 degree/sec | 200 mm/sec      |
| Speed (Max)*                        | 1100 mm/sec  | 400 degree/sec | 250 mm/sec      |
| Resolution*                         | 0.0055 degrees   | 0.0025 degrees | 6.25 μm         |
| Handling level*                     | 620 mm (Base mounting level to the end-effector level) |                |                 |
| Repeatability                       | Within +/- 0.1 mm                                      |                |                 |
| Cleanliness                         | ISO Class 2 (when exhausted from the driving area)     |                |                 |
| Utility*                            | Power: 24 V DC +/- 10%, 15 A; Vacuum: -53 kPa or more  |                |                 |

\*Specifications of GCR4210-300-PM with a JEL standard vacuum type end-effector. Provide positive pressure depending on the wafer holding method such as edge grip or Bernoulli.

- This series comes in two types of motors: stepping motors or AC servo motors.
- Robot's main body weight: Approximately 28 kg
- Dimensions of C4451 controller: 300 (W) x 230 (D) x 142 (H). Weight: Approximately 2 kg
- Note: A CE/KCs compliant controller has different dimensions and weight.

### GCR-PM series

- ◆ A wide range of variations to meet system layouts



\*Optional variation

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# GTCR5280-300-AM

## 5-Axis Horizontal and Multi-Joint Type Single-Arm Twin End-Effector Clean Robot

### Clean Robot GTCR5000 Series

Twin end-effectors mounted on its single-arm, this series has the same function as a twin-arm robot. AC servo motors capable of high-speed handling ensures high safety and stability. Suitable for various types of wafers or substrates as well as wafers up to 300 mm.



● Usage environment and specifications



● Option



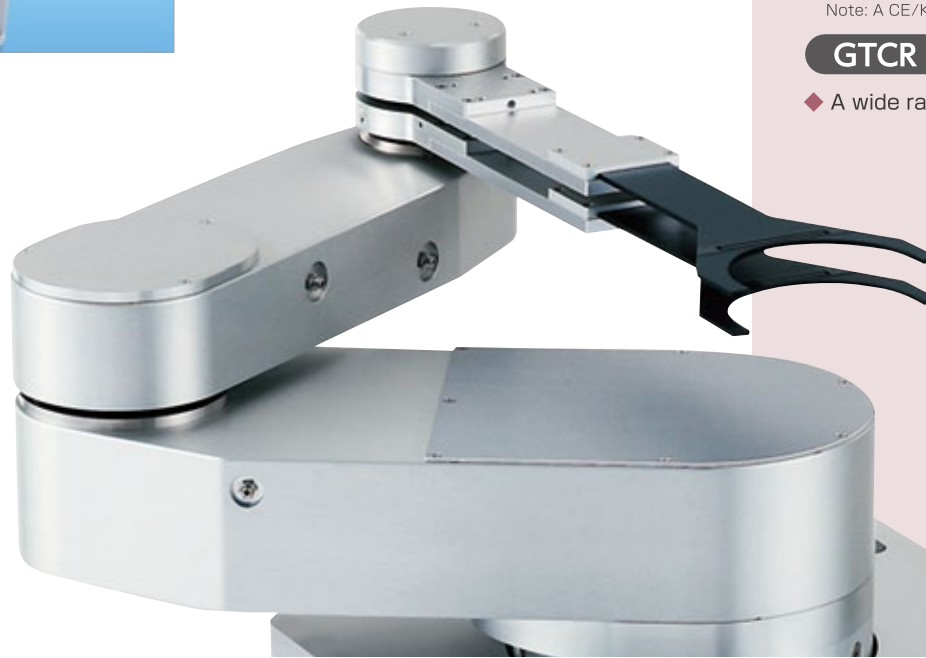
● Transfer method



Controller: C5000S  
● Control method: RS232C and parallel photo I/O



Teaching box: JCT5B



### Characteristics

- ◆ Capable of transferring large diameter wafers and small FPD glass substrates.
- ◆ High-speed 3 FOUF access without a track for 300 mm wafers.
- ◆ AC servo motors with absolute encoders are installed in all axes.
- ◆ High-speed and high-accuracy wafer handling by optimizing pass control.
- ◆ Payload capacity: 4 kg or less (calculated on the arm 3rd joint)

### Specifications

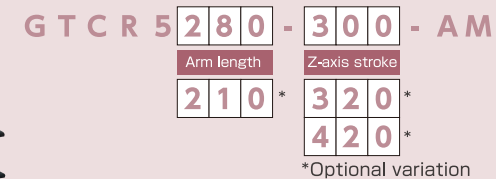
| Carrying object                     | Wafers up to 300 mm   |                |                 |
|-------------------------------------|---|----------------|-----------------|
|                                     | Arm   | Rotation angle | Vertical stroke |
| Operating range* (3rd joint center) | 553 mm  | 335 degrees    | 300 mm          |
| Speed (Avg)*                        | 833 mm/sec  | 250 degree/sec | 300 mm/sec      |
| Speed (Max)*                        | 1400 mm/sec   | 350 degree/sec | 450 mm/sec      |
| Resolution*                         | 0.0011 degrees  | 0.0013 degrees | 1.96 μm         |
| Handling level*                     | 698 mm (Base mounting level to the end-effector level)              |                |                 |
| Repeatability                       | Within +/- 0.1 mm   |                |                 |
| Cleanliness                         | ISO Class 2 (when exhausted from the driving area)                  |                |                 |
| Utility*                            | Power: Single phase 200 V AC +/- 10%, 20 A; Vacuum: -53 kPa or more |                |                 |

\*Specifications of GTCR5280-300-AM with JEL standard vacuum type twin end-effectors. Provide positive pressure depending on the wafer or substrate holding method such as edge grip or Bernoulli.

- Robot's main body weight: Approximately 53 kg
  - Dimensions of C5000S controller: 370 (W) x 330 (D) x 270 (H). Weight: Approximately 15 kg
- Note: A CE/KCs compliant controller has different dimensions and weight.

### GTCR series

- ◆ A wide range of variations to meet system layouts



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# SVCR3260-020-PM

## 3-Axis Cylindrical Coordinate Type Single-Arm Clean Robot

### Vacuum Clean Robot SVCR3000 Series

Suitable for various types of wafers up to 300 mm in a vacuum environment. Featuring an open-loop control system and stepping motors, this series ensures high safety and stability. This JEL's long-term standard robot allows users to customize easily.



● Usage environment and specifications



● Option



● Transfer method



Vacuum



Controller: C4000  
● Control method: RS232C and parallel photo I/O



Teaching box: JCT1



### Characteristics

- ◆ Suitable for vacuum environment
- ◆ Magnetic fluid sealing is used in each arm joint.
- ◆ Vacuum sealing: Magnetic fluid sealing and a bellows are used.
- ◆ Cleanliness: A mesh filter is installed for the internal exhaust of the arm.
- ◆ Payload capacity: 2 kg or less (calculated on the arm 3rd joint)
- ◆ Compatible with the former SVHR model, this series ensures easier replacement.

### Specifications

| Carrying object                     | Wafers up to 300 mm                                     |                |                 |
|-------------------------------------|---|----------------|-----------------|
|                                     | Arm   | Rotation angle | Vertical stroke |
| Operating range* (3rd joint center) | 520 mm  | 330 degrees    | 20 mm           |
| Speed (Avg)*                        | 300 mm/sec  | 120 degree/sec | 20 mm/sec       |
| Speed (Max)*                        | 550 mm/sec  | 170 degree/sec | 30 mm/sec       |
| Resolution*                         | 82 μm or less   | 0.009 degrees  | 1.25 μm         |
| Handling level*                     | 98 mm (Flange mounting level to the end-effector level) |                |                 |
| Repeatability                       | Within +/- 0.1 mm                                       |                |                 |
| Cleanliness                         | Magnetic fluid sealing and a filter                     |                |                 |
| Vacuum resistance                   | 1.33 x 10 <sup>-6</sup> Pa                              |                |                 |
| Utility*                            | Power: 24 V DC +/- 10%, 8 A                             |                |                 |

\* Representative specifications of SVCR3260-020-PM (stepping motor type)

- This series comes in two types of motors: stepping motors or AC servo motors.
  - Robot's main body weight: Approximately 25 kg
  - Dimensions of C4000 controller: 300 (W) x 110 (D) x 120 (H), Weight: Approximately 2 kg
- Note: A CE/KCs compliant controller has different dimensions and weight.

### SVCR3000 series

- ◆ A wide range of variations to meet system layouts

|   |   |   |   |   |            |   |   |   |               |   |   |   |                      |   |
|---|---|---|---|---|------------|---|---|---|---------------|---|---|---|----------------------|---|
| S | V | C | R | 3 | 2          | 6 | 0 | - | 0             | 2 | 0 | - | P                    | M |
|   |   |   |   |   | Arm length |   |   |   | Z-axis stroke |   |   |   | Motor specifications |   |
|   |   |   |   |   | 160        |   |   |   | 040           |   |   |   | AM                   |   |
|   |   |   |   |   | 190        |   |   |   |               |   |   |   |                      |   |
|   |   |   |   |   | 330        |   |   |   |               |   |   |   |                      |   |

- Check our website for our product drawings and videos.

<https://www.jel-robot.com>





# STVCR4160S-050-PM

## 4-Axis Cylindrical Coordinate Type Twin-Arm Clean Robot

### Vacuum Clean Robot STVCR4000S Series

Suitable for various types of wafers up to 300 mm in a vacuum environment. Featuring an open-loop control system and stepping motors, this series ensures high safety and stability. This JEL' s long-term standard robot allows users to customize easily.



● Usage environment and specifications



● Option



● Transfer method



Controller: C4000  
● Control method: RS232C and parallel photo I/O



Teaching box: JC4B



### Characteristics

- ◆ Suitable for vacuum environment
- ◆ Twin-arm reduces tact time to replace wafers.
- ◆ Magnetic fluid sealing is used in each arm joint.
- ◆ Vacuum sealing: Magnetic fluid sealing and a bellows are used.
- ◆ Cleanliness: A mesh filter is installed for the internal exhaust of each arm.
- ◆ Payload capacity: 2 kg or less (calculated on the arm 3rd joint)
- ◆ Compatible with the former STVHR model, this series ensures easier replacement.

### Specifications

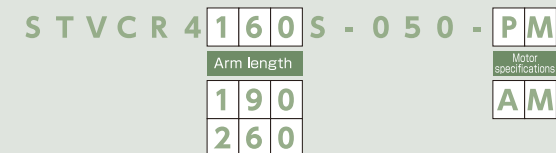
| Carrying object                     | Wafers up to 300 mm  |                 |                 |
|-------------------------------------|--|-----------------|-----------------|
|                                     | Arm  | Rotation angle  | Vertical stroke |
| Operating range* (3rd joint center) | 310 mm   | 330 degrees     | 50 mm           |
| Speed (Avg)*                        | 300 mm/sec   | 110 degree/sec  | 30 mm/sec       |
| Speed (Max)*                        | 550 mm/sec   | 150 degree/sec  | 50 mm/sec       |
| Resolution*                         | 10.06 μm or less   | 0.00225 degrees | 0.625 μm        |
| Handling level*                     | 196 mm (Flange mounting level to the upper end-effector level) |                 |                 |
| Repeatability                       | Within +/- 0.1 mm  |                 |                 |
| Cleanliness                         | Magnetic fluid sealing and filters                             |                 |                 |
| Vacuum resistance                   | 1.33 x 10 <sup>-6</sup> Pa                                     |                 |                 |
| Utility*                            | Power: 24 V DC +/- 10%, 16 A                                   |                 |                 |

\* Representative specifications of STVCR4160S-050-PM (stepping motor type)

- This series comes in two types of motors: stepping motors or AC servo motors with absolute encoders.
  - Robot' s main body weight: Approximately 80 kg
  - Dimensions of C4000 controller: 300 (W) x 110 (D) x 120 (H), Weight: Approximately 2 kg
- Note: A CE/KCs compliant controller has different dimensions and weight.

### STVCR4000 series

- ◆ A wide range of variations to meet system layouts



● Check our website for our product drawings and videos.

<https://www.jel-robot.com>

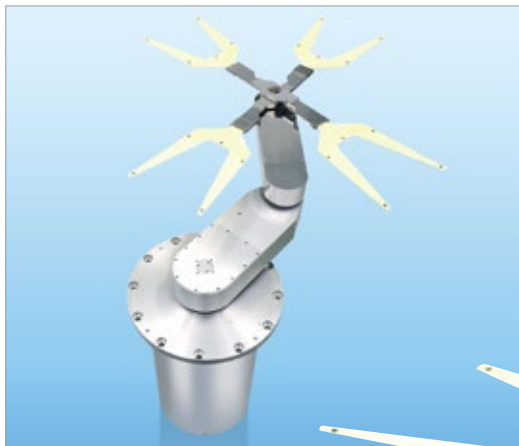
Please contact our sales representatives for details of this product.

# GTVCR5330-060-AM

## 5-Axis Horizontal and Multi-Joint Type Single-Arm Twin End-Effector Clean Robot

### Vacuum Clean Robot GTVCR5000 Series

Capable of transferring to parallel stages in vacuum chambers. Featuring AC servo motors that are capable of high-speed handling, this series ensures high safety and stability. Suitable for various types of wafers or substrates as well as wafers up to 300 mm in a vacuum environment.



● Usage environment and specifications

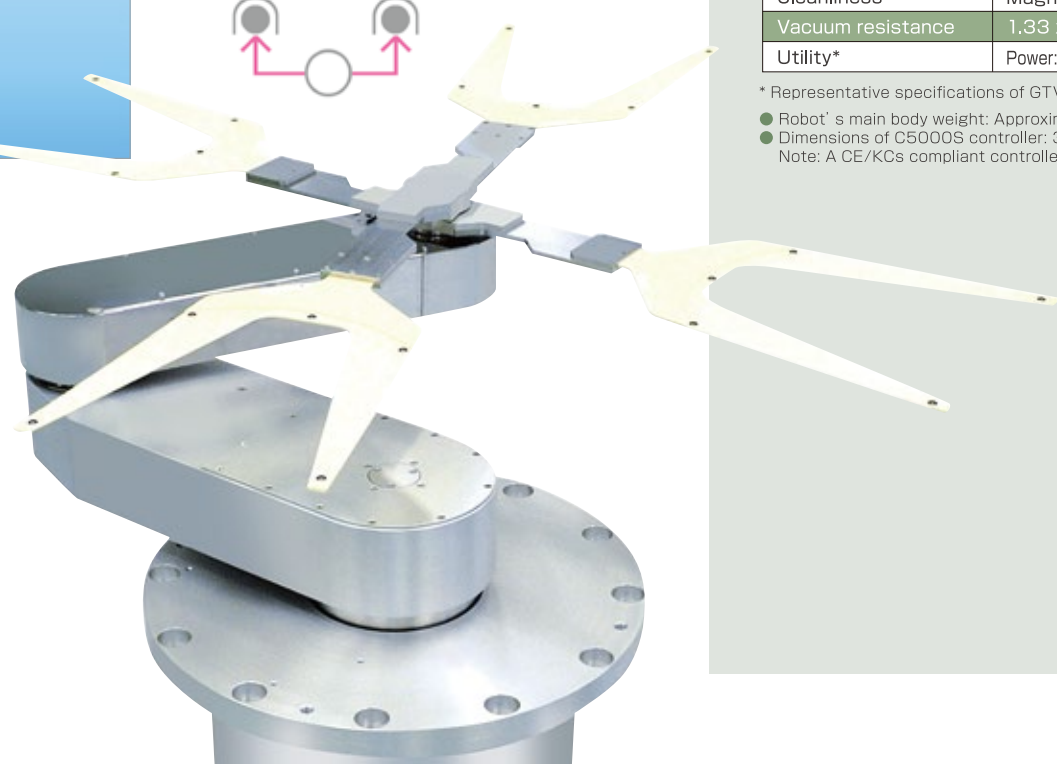


● Option



\*CE marking is available upon request.

● Transfer method



Controller: C5000S  
● Control method: RS232C and parallel photo I/O



Teaching box: JCT5B

### Characteristics

- ◆ Suitable for vacuum environment
- ◆ Capable of transferring to parallel stages in vacuum chambers.
- ◆ Magnetic fluid sealing is used in each arm joint.
- ◆ Vacuum sealing: Magnetic fluid sealing and a bellows are used.
- ◆ Cleanliness: A mesh filter is installed for the internal exhaust of each arm.
- ◆ Payload capacity: 4 kg or less (calculated on the arm 3rd joint)

### Specifications

| Carrying object                     | Wafers up to 300 mm   |                 |                 |
|-------------------------------------|---|-----------------|-----------------|
|                                     | Arm   | Rotation angle  | Vertical stroke |
| Operating range* (3rd joint center) | 635 mm  | 360 degrees     | 60 mm           |
| Speed (Avg)*                        | 640 mm/sec  | 160 degree/sec  | 60 mm/sec       |
| Speed (Max)*                        | 950 mm/sec  | 200 degree/sec  | 85 mm/sec       |
| Resolution*                         | 0.00081 degrees   | 0.00072 degrees | 0.98 μm         |
| Handling level*                     | 219 mm (Flange mounting level to the upper end-effector level)    |                 |                 |
| Repeatability                       | Within +/- 0.1 mm   |                 |                 |
| Cleanliness                         | Magnetic fluid sealing and a filter                               |                 |                 |
| Vacuum resistance                   | 1.33 x 10 <sup>-6</sup> Pa  |                 |                 |
| Utility*                            | Power: Single phase 200 to 230 V AC +10% to -15%, 2 kVA, 50/60 Hz |                 |                 |

\* Representative specifications of GTVCR5330-060-AM

- Robot's main body weight: Approximately 75 kg
  - Dimensions of C5000S controller: 370 (W) x 330 (D) x 270 (H), Weight: Approximately 23 kg
- Note: A CE/KCs compliant controller has different dimensions and weight.

### GTVCR5000 series

- ◆ A wide range of variations to meet system layouts

G T C R 5 **330** - 0 6 0 - A M

Arm length

**280**

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# SAL38C4HV

## Aligner for Multiple Types of Wafers

A prealigner for aligning multiple types of wafers—regardless of wafer materials such as mirror surface, transparent or translucent wafer; warped wafer; or non-standard notch or orientation flat.

Just one aligner handles ever-difficult positioning of wafers with irregular warpage or different light transmittance. (\*1)



● Usage environment and specifications



● Option



\*CE or KCs marking is available upon request.



### Characteristics

- ◆ Available for silicon wafers with BG tape as well as silicon, transparent, or translucent wafers.
- ◆ Available for non-SEMI standard notch or flat.
- ◆ Z-axis capable of redo operations is optional.
- ◆ Full auto-adjustment software JEL ALIGN TOOL comes with the aligner.
- ◆ Motor drivers and a controller are built in the aligner.

### Specifications

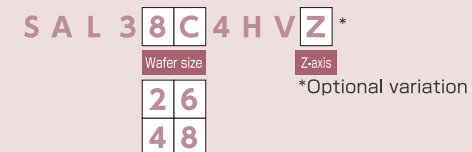
|                      |   |
|----------------------|---|
| Carrying object      | 2 inch to 150 mm (SAL3264HV)<br>100 to 200 mm (SAL3484HV)<br>200 to 300 mm (SAL38C4HV)            |
| Positioning time     | Centering: 3 sec (*1)   |
| Positioning accuracy | Centering: Within +/- 0.1 mm (*1)<br>Orientation flat/notch locating: Within +/- 0.1 degrees (*1) |
| Sensor method        | LED lighting with wafer edge detection using an image sensor unit                                 |
| Wafer size switching | Switching by command control or by communication  |
| Cleanliness          | ISO Class 2 (when exhausted from the driving area)  |
| Utility              | Power: 24 V DC +/- 10%, 3 A; Vacuum: -53 kPa or more  |

● Aligner's main body weight: Approximately 10 kg

(\*1): The accuracies of wafer detection, positioning time or positioning may vary depending on the wafer. An operation test using the target sample wafers is performed before delivery.

### SAL3000HV series

- ◆ A wide range of variations to meet your wafer size



● Check our website for our product drawings and videos.  
<https://www.jel-robot.com>

j e l  Search

Please contact our sales representatives for details of this product.

Atmosphere



## KHR3480-290-AM Atmosphere

**Linear arm type clean robot** (for 25 wafers batch transfer, 300 mm wafers)

Capable of transferring 25 wafers at once.  
The transfer time can be significantly reduced by batch transfer.  
Available for the layout with multiple cassettes by equipping a rotation axis.

### Characteristics

- ◆ RS232C are standard for control.
- ◆ End-effector material: ceramic
- ◆ Wafer holding: end-effector with passive edge, edge alignment.
- ◆ AC servo motors with absolute encoders installed in all axes (Batteryless)

## MTCR4160-300-AM Atmosphere

**4-Axis Cylindrical Coordinate Type Twin-Arm Clean Robot**

**Clean Robot MTCR4000 Series**

High-speed handling by AC servo motors for all axes.  
Suitable for high throughput.

### Characteristics

- ◆ Arm length: 160 mm, 200 mm, 280 mm
- ◆ Vertical stroke: 300 mm, 400 mm, 420 mm, 500 mm
- ◆ Payload capacity: 4 kg or less (calculated on the arm 3rd joint)
- ◆ Twin-arm reduces tact time to replace wafers.
- ◆ Base or flange mounting type is selectable according to system layouts.
- ◆ AC servo motors with absolute encoders are installed in all axes.
- ◆ Wafer holding: end-effector with vacuum suction, passive edge, edge grip, or Bernoulli type



## GCR4280-300-AM Atmosphere

**4-Axis Horizontal and Multi-Joint Type Single-Arm Clean Robot**

**Clean Robot GCR4280-AM Series**

### Characteristics

- ◆ Arm length: 280 mm
- ◆ 3 FOUP access for 300 mm wafers without a track
- ◆ Vertical stroke: 300 mm, 420 mm
- ◆ Payload capacity: 4 kg or less (calculated on the arm 3rd joint)
- ◆ Base or flange mounting type is selectable according to system layouts.
- ◆ AC servo motors with absolute encoders are installed in all axes.
- ◆ Wafer holding: end-effector with vacuum suction, passive edge, or edge grip



## MCR3160C-300-AM Atmosphere

**3-Axis Cylindrical Coordinate Type Single-Arm Clean Robot**

**Clean Robot MCR3000C Series**

High-speed handling by AC servo motors for all axes.  
Suitable for high throughput.

### Characteristics

- ◆ Arm length: 160 mm, 200 mm, 280 mm
- ◆ Vertical stroke: 300 mm, 400 mm, 420 mm, 500 mm
- ◆ Payload capacity: 4 kg or less (calculated on the arm 3rd joint)
- ◆ Base or flange mounting type is selectable according to system layouts.
- ◆ AC servo motors with absolute encoders are installed in all axes.
- ◆ Wafer holding: end-effector with vacuum suction, passive edge, edge grip, or Bernoulli type



## SVCR3330-060-AM Vacuum

**3-Axis Cylindrical Coordinate Type Single-Arm Clean Robot**

**Vacuum Clean Robot SVCR3000 Series**

Designed for handling of heavy weight carrying objects such as susceptors or trays in vacuum chambers.

### Characteristics

- ◆ Arm length: 330 mm
- ◆ Vertical stroke: 60 mm
- ◆ Payload capacity: 10 kg or less (calculated on the arm 3rd joint)
- ◆ Magnetic fluid sealing is used in each arm joint.
- ◆ Vacuum sealing: Magnetic fluid sealing and a bellows are used.
- ◆ Cleanliness: A mesh filter is installed for the internal exhaust of the arm
- ◆ AC servo motors with absolute encoders are installed in all axes.
- ◆ Wafer holding: end-effector with passive edge





## SWCR3160CS-300-PM Waterproof

### 3-Axis Cylindrical Coordinate Type Single-Arm Clean Robot

#### Waterproof Clean Robot SWCR3000 Series

Edge grip with the flip function for 300 mm wafers.  
Designed for handling wafers in LSI production lines under acid conditions or alkaline mist (IP64).

##### Characteristics

- ◆ Arm length: 160 mm
- ◆ Vertical stroke: 200 mm, 300 mm
- ◆ Payload capacity: 3 kg or less (calculated on the arm 3rd joint)
- ◆ Corrosion resistance teflon coatings protect the arm.
- ◆ V-type seals are used for waterproofing of the arm joint.
- ◆ FKM seals are used for parts joint.
- ◆ A bellows is used for waterproofing of the z-axis.
- ◆ 2-phase stepping motors are installed in all axes.
- ◆ Wafer holding: end-effector with vacuum suction, passive edge, or edge grip



## STWCR4160S-300-PM Waterproof

### 4-Axis Cylindrical Coordinate Type Twin-Arm Clean Robot

#### Waterproof Clean Robot STWCR4000 Series

Edge grip with the flip function for 300 mm wafers.  
Designed for handling wafers in LSI production lines under acid conditions or alkaline mist (IP64).

##### Characteristics

- ◆ Vertical stroke: 200 mm, 300 mm
- ◆ Payload capacity: 3 kg or less (calculated on the arm 3rd joint)
- ◆ Corrosion resistance teflon coatings protect the arm.
- ◆ V-type seals are used for waterproofing of the arm joint.
- ◆ FKM seals are used for parts joint.
- ◆ A bellows is used for waterproofing of the z-axis.
- ◆ Twin-arm reduces tact time to replace wafers.
- ◆ 2-phase stepping motors are installed in all axes.
- ◆ Wafer holding: end-effector with vacuum suction, passive edge, or edge grip



## SAL20C1 Atmosphere

### Edge Grip Type Aligner for 300 mm Wafers

Edge grip type prealigner minimizes a wafer contact.

##### Characteristics

- ◆ High-speed and high-accuracy wafer centering and notch locating by the edge grip function.
- ◆ Designed to reduce contamination of friction surface.
- ◆ Suitable for 150 mm, 200 mm or other sizes of wafers.
- ◆ Motor drivers and a controller are built in the aligner.



## Transfer System Atmosphere

### Tabletop Loader System / Sorter System / Automatic Wafer Transfer System for Wafer Container

A variety of systems from a tabletop to a large box shape to meet your needs

#### Tabletop Loader System



#### Sorter System



#### Automatic Wafer Transfer System for Wafer Container

SSY-10010  
(Automatic wafer transfer system for wafer container)



## SVVAL3001 Vacuum

### Vacuum Aligner

Edge grip type prealigner for positioning silicon wafers or susceptors in a vacuum environment.

##### Characteristics

- ◆ Payload capacity: 4 kg
- ◆ Stand-alone aligner using a vacuum resistance positioning sensor
- ◆ Vacuum sealing: Magnetic fluid sealing and a bellows are used.
- ◆ Rotation to any angle by index function which matches a layout of wafers in a tray



## ● End-Effector Lineup

### Vacuum Suction Type End-Effector

I-shaped and Y-shaped vacuum suction type end-effectors

Used extensively for atmospheric robots, these vacuum suction type end-effectors hold the backside of a wafer by vacuum suction (negative pressure). Conductive teflon coating on the surface of the end-effectors protect against damage from charging.

|                   |   |                       |               |               |               |          |
|-------------------|---|-----------------------|---------------|---------------|---------------|----------|
|                   |   |                       |               |               |               |          |
| Model             | SC-IW-200                                 | SC-IW-240             | SC-YW-200     | SC-YW-227     | 3D-02229      | 3D-01661 |
| Carrying object   | Mainly silicon wafers                     |                       |               |               |               |          |
| Size              | 3 inch, 100 to 200 mm                     | 3 inch, 100 to 200 mm | 100 to 200 mm | 100 to 200 mm | 150 to 300 mm | 300 mm   |
| Total length      | 200 mm                                    | 240 mm                | 200 mm        | 227 mm        | 242 mm        | 242 mm   |
| Thickness         | 2 mm                                      | 2 mm                  | 2 mm          | 2 mm          | 2 mm          | 3 mm     |
| Material          | High purity alumina ceramic sintered body |                       |               |               |               |          |
| Surface treatment | Conductive teflon coating                 |                       |               |               |               |          |
| Wafer holding     | Vacuum suction                            |                       |               |               |               |          |

Other end-effectors for various shapes and sizes of wafers or substrates are also available.

### Bernoulli End-Effector

Contact type and non-contact type Bernoulli end-effectors

Low cost end-effectors for thin or warped wafers using the Bernoulli principle are suitable for any type of JEL atmospheric robots. Design solution and evaluation using sample wafers based on the customer's request about the wafer size, warpage or thickness.

|  |                      |   |  |
|--|----------------------|---|--|
|  | Material             | Aluminum  |  |
|  | Surface treatment    | Black alumite   |  |
|  | Wafer holding method | By Bernoulli's principle using Cyclone pads and guides (PEEK) (Various materials are available for the contact area.)           |  |
|  | Utility              | 30 to 80 L/min (Varies depending on the wafer size and thickness.)  |  |
|  | Material             | Aluminum  |  |
|  | Surface treatment    | Black alumite   |  |
|  | Wafer holding method | By Bernoulli's principle using Cyclone pads and friction rubber (H-NBR) (Various materials are available for the contact area.) |  |
|  | Utility              | 30 to 80 L/min (Varies depending on the wafer size and thickness.)  |  |

### Bernoulli Hand

A Bernoulli wand for 2 to 3 inch, 100 to 150 mm wafers

in semiconductor device production processes or in semiconductor wafer manufacturing factories, this wafer handling device is used to manually pick up/place thin wafers from/in wafer containers or cassettes.

Bernoulli Hand, a light and compact wand, holds thin wafers using the Bernoulli principle. Wafer breakage risk is minimized due to non-suction holding. With the flexible front edge, Bernoulli Hand picks up/places wafers from/in wafer containers or wafer cassettes. Accessible to various special substrates as well as wafers.

#### Characteristics

- ◆ Wafers are lifted by the Cyclone effect.
- ◆ Wafer holding by a pad (Fluorine-contained rubber)
- ◆ An operator can adjust Bernoulli Hand in various angles with a flexible tube.

Note: Please contact our sales representatives for various shapes and sizes of other wafers or substrates.



### Edge Grip End-Effector

An end-effector for handling the back side treated wafers, which contacts the edges only.

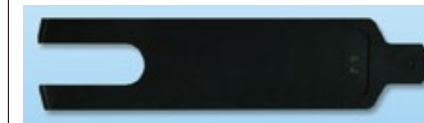
Centering of a wafer during operation is suitable for transferring to the drop-in type stage. An air cylinder moves a guide of the edge grip end-effector back and forth to hold a wafer.



### Passive Edge Holding Type End-Effector

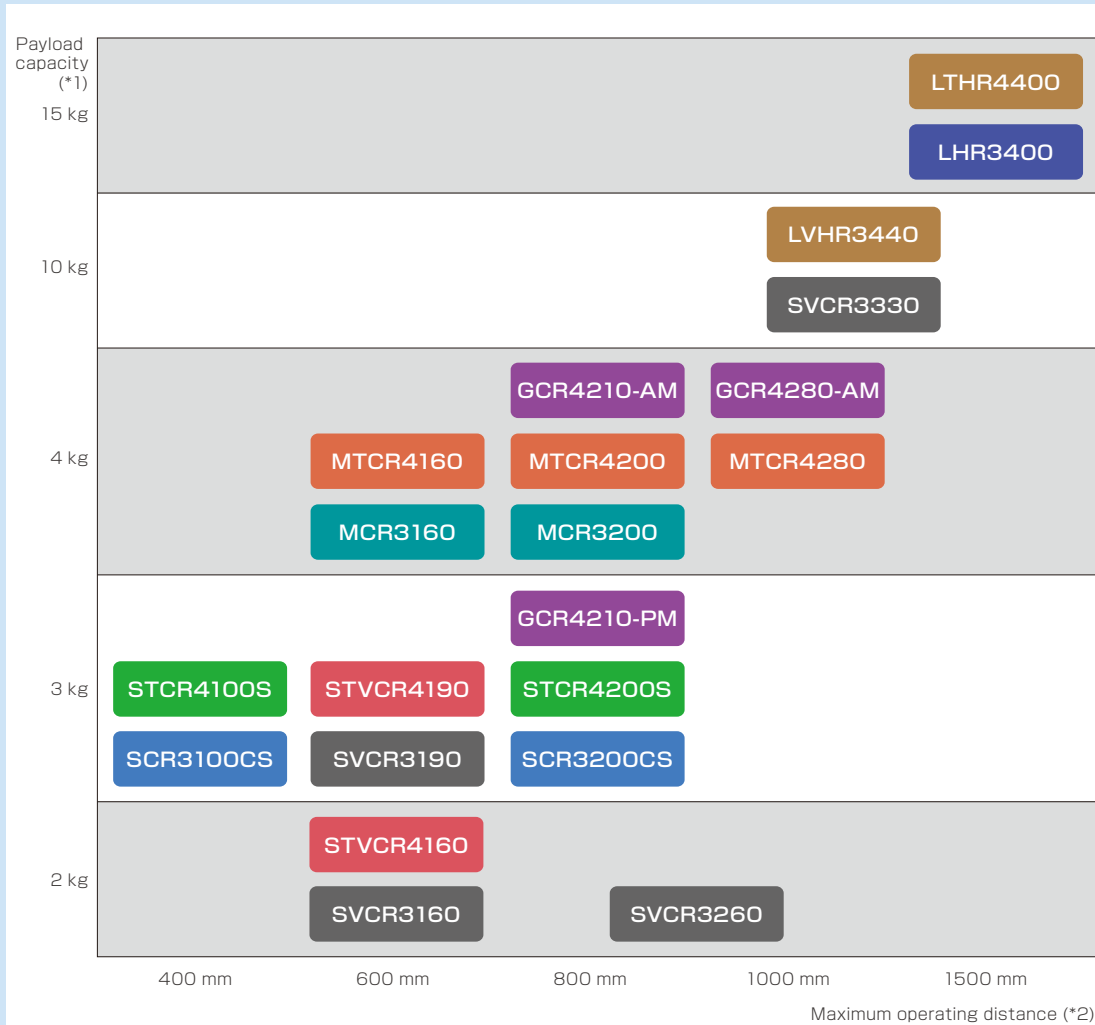
Suitable for handling warped wafers or thin wafers that cannot be held properly with a standard vacuum suction type end-effector.

An end-effector for handling wafers, which contacts the back side as well as the edges. A tapered guide is used to hold a wafer by the weight of a wafer (passive grip).



## ● How to Select JEL Robots

### Payload Capacity and Maximum Operating Range





(\*1) Payload capacity values are the values calculated on the arm 3rd joint, and not the weight of carrying objects.  
 (\*2) Maximum operating distance values are reference values including the end-effector and wrist-block.  
 Note: Many products other than those listed are available. For more details, visit our website: [www.jel-robot.com](http://www.jel-robot.com)

### Product Series

|                   | Single arm | Twin arm   | Main use and transfer method                    |
|-------------------|------------|------------|---|
| Atmospheric robot | SCR3000CS  | STCR4000S  | For semiconductors (Cylindrical)                |
|                   | SCR3000CSN | STCR4000SN | For semiconductors (Cylindrical)                |
|                   | MCR3000    | MTCR4000   | For semiconductors (Cylindrical)                |
|                   | GCR4000    | GTCR5000   | For semiconductors (Horizontal and multi-joint) |
|                   | LHR3000    | LTHR4000   | For FPD glass substrates (Cylindrical)          |
| Vacuum robot      | SVCR3000   | STVCR4000  | For semiconductors (Cylindrical)                |
| Waterproof robot  | SWCR3000CS | STWCR4000S | For semiconductors (Cylindrical)                |

### Transfer Method

|                                       |   |                              |
|---------------------------------------|---|------------------------------|
| Cylindrical coordinate type robot     |  | Suitable for arc layout      |
| Horizontal and multi-joint type robot |  | Suitable for parallel layout |

### Robot Training

JEL provides our customers with robot trainings for safe and effective operations.

[ Training place ]

- JEL Head office
- JEL Tokyo branch
- Overseas service base





## Domestic service base

JEL CORPORATION

### Head Office



2-8-20, Kusado-cho, Fukuyama-city,  
Hiroshima, 720-0831 JAPAN  
TEL: +81-84-932-6500  
E-mail: info@jel-robot.co.jp



### Tokyo Branch



Kanda Bundo Building  
2F, 4-18,  
Kandasakuma-cho,  
Chiyoda-ku, Tokyo,  
101-0025 JAPAN  
TEL: +81-3-5825-9071  
E-mail: tokyjim@jel-robot.co.jp



#### Company profile

- Name : JEL Corporation
- Capital : 74,570,000 (JPY)
- Founded : 1993
- President : Nobuo Sakiya
- Type of business : Manufacture and sales of electronic equipment
- Major products : Wafer transfer robots and wafer handling systems for semiconductor equipment  
FPD glass substrate transfer robots and FPD glass handling systems
- Main banks : The Bank of MUFG Bank, Ltd.

Contact our sales representative for product request or questions.

**JEL CORPORATION**  
<https://www.jel-robot.com>

JEL CORPORATION

## Domestic production base

JEL CORPORATION

### Saba Factory



245-1 Saba-cho, Fukuyama-city,  
Hiroshima, 720-0835 Japan  
TEL: +81-84-952-5590



### JEL Kochi



Techno Park 4, Tosayamada-cho,  
Kami-city, Kochi,  
782-0010 JAPAN  
TEL: +81-887-53-1181  
E-mail: kochi@jel-robot.co.jp



## Overseas sales base

JEL CORPORATION

### JEL (Shanghai) Robotics Co., Ltd.



625 6F, CHAMTIME Tower C, No.3,  
Lane 2889 Jinke Road, Pudong  
New District, Shanghai P.R., China  
TEL: +86-21-2050-1625(Landline)  
+86-13021105268(Mobile)  
E-mail: shanghai@jel-robot.com

### Korea Branch



F20Ho, 4F 401,402Ho, 526,  
Maesonggosaek-ro, Gwonseon-gu,  
Suwon-si, Gyeonggi-do 16634, Korea  
TEL: (Korea) +82-10-3481-6360  
Japan +81-80-6340-9905  
(080-6340-9905)  
E-mail: jkl@jel-robot.co.jp

### JEL (Changzhou) Robotics Technology Co., Ltd.



Building 5, Changzhou Oriental  
Automotive Electronics Industrial  
Park, No. 1668, Dongguan Road,  
Lucheng Street, Wujin District,  
Changzhou City, Jiangsu Province  
213025, China  
TEL: +86-13021105268(Mobile)

## Overseas Agents & Service Bases

### Korea



**JELK CO., LTD.**  
<https://www.jelk.co.kr>

75, Seokmun-gil, Seonggeo-eup,  
Seobuk-gu, Cheonan-si,  
Chungnam-do 31053, Korea  
TEL: +82-41-583-6360  
FAX: +82-41-583-6469  
E-mail: master@jelk.co.kr

### Taiwan



**Challengtech International Corporation**

<https://www.challengtech.com.tw>  
No.21, Taihe Rd., Zhubei City,  
Hsinchu County 30267, Taiwan (R.O.C.)  
TEL: +886-3-5536525  
FAX: +886-3-5531908  
E-mail: iobo@challengtech.com.tw

### Beijing



**Beijing REJE Automation Co., Ltd.**  
<https://www.reje.com.cn>

Building 3, No.10, Kechuang 10th Street,  
BDA, Beijing 101111, China  
TEL: +86-10-5382-2087  
+86-133-2115-2839  
E-mail: xiaoshou06@reje.com.cn

## Overseas Agents

### Korea



**Inatech & CORP Inc.**  
<http://www.inatechcorp.com>

#C-812, 168, Gasan digital  
1-ro, Geumcheon-gu,  
Seoul 08507, Korea  
TEL: +82-2-2026-0660  
FAX: +82-2-2026-0661  
E-mail: jel-robot@inacorp.co.kr

### Shanghai



**Shanghai REJE Robotics Co., Ltd.**  
<https://www.reje.com.cn>

Room 306-11, Building T4, Libao Plaza,  
36 Shenbin Road, Minhang District,  
Shanghai 201106, China  
TEL: +86-178-1202-2295  
E-mail: xiaoshou05@reje.com.cn

### Taiwan



**JEL Automation Co., Ltd.**  
<https://www.jel-automation.com>

1F, No. 29, Jiazheng 9th St.,  
Zhubei City, Hsinchu County 302053,  
Taiwan (R.O.C.)  
TEL: +886-3-6583741  
E-mail: alex.chen@jel-automation.com

### U.S.A (FL)



**Hine Automation, LLC**  
<https://hineautomation.com>

12495 34th St. North, Suite B  
St. Petersburg, FL 33716, U.S.A.  
TEL: +1-813-749-7519  
E-mail: sales@hineautomation.com

### U.S.A (CA)



**AES motomation Inc.**  
<http://www.motomation.com>

4041 Clipper Court Fremont,  
CA 94538, U.S.A.  
TEL: +1-510-490-9400  
E-mail: info@motomation.com

### Germany



**AES motomation GmbH**  
<http://www.motomation.com>

Duesselstrasse 8a D-41564 Kaarst,  
Germany  
TEL: +49-0-2131-7768-10  
E-mail: info@motomation.com

## Overseas Partners

### Shanghai



**Sintaike Semiconductor Equipment (Shanghai) Co., Ltd.**  
<http://www.sintaike.com>

Building 6, Nanfang Urban Park, Lane 1165, Jindu  
Road, Minhang District, Shanghai 201108, China.  
TEL: +86-021-6088-8500,  
+86-135-6466-5802  
E-mail: info@sintaike.com

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Products videos are provided



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