JANOME

JS Series

JS/JSTH series

New Multi Purpose SCARA Robot

250/350/450/550
350TH/450TH/550TH
650TH/750TH/880TH/1000TH

JANOME
JS 350

JS

Series

High Reliability Acquired by Years and Years of Experience

The JS series servo SCARA robot is a multipurpose robot for various applications, developed with sophisticated technology gained through years of experience and accumulated knowledge. Janome proudly introduces the JS series to all those wanting compact, low-cost production lines, automatic and laborsaving production sites, but still needing to maintain high productivity and quality.

1 High Speed Operation

The top-level standard cycle time can be achieved by the high-powered AC servomotor and JANOME original high rigid mechanism. It ensures a higher level of productivity.

The following illustration shows the standard cycle time.

300

0.3 seconds of cycle time is achieved.

25

2 High Rigid Arm

A 0.04mm deflection amount (d) under a 4 kg portable weight (W) is achieved even when the Arm is fully extended. You can select heavier workpieces and wider applications.

3 Wide Square Area Suitable for CP Movement

210mm × 210mm square areas b × b (Righty) and b' × b'(Lefty) are guaranteed for Model JS350.

Square Area a×a

a

Square Area b×b

Square Area b'×b'

a

b

b'

b

b'

4 Stable CP* Movement by Double Shaft Mechanism

The high precision CP drive and easy Z- and R-Axes control can be achieved by the separated Z and R-Axes motors control.

＊"CP" stands for "continuous path."

Ball Screw (Z-Axis)

Spline (R-Axis)

5 Single shaft allows a compact wiring layout.

All the cables for the application tools can be bundled together in the hollow Z-axis shaft; this enables simple and compact integration of application tools with the SCARA robot.

6 R-Axis Acceptable Moment of Inertia

The large R-Axis acceptable moment of inertia allows you a wider tool selection.

Approximately 60mm (maximum)

7 User Friendly Tool Piping

Fourteen signal wires and four air tubes (Φ4) come equipped with the robot as service wiring and piping. It allows you to create a compact layout.

8 Position Memory Function

The JS series can memorize the current Arm position while the power is off. You do not need to return to the work home position after rebooting the robot. Accordingly, you can reduce the work time.

Software

Work Position Input

Before entering a work position, select JOG or MDI mode simply by pressing the button on the teaching pendant. **Clearly-displayed coordinate values** allow you to correct positions easily.

Work Position Setting Screen

```
Program 1                          P 1
   R X                          0 mm
   R Y                      4 4 0 mm
   Z                            0 mm
   R                            0deg

   High


FUNC      POS      JOG     MDI     DIRECT
```

Teaching Pendant
(Optional)

Application Software Examples

●Screw Tightening Software

Register **screw tightening conditions**, such as **Thread Pitch**, **Screw Length**, and **Rotate Speed**, then enter the "**screw tightening**" position and the **screw tightening condition number** for the point. The screw tightening program is now complete. You can set different tightening condition numbers to each point in order to create different screw tightening conditions in your program.

●Dispensing Software

Complete a dispensing program **simply by entering work positions, such as** "**Point Dispense**", "**Start of Line Dispense**", "**Line Passing**", and "**End of Line Dispense**." You can set "**Dispense Time**" to each "Point Dispense" point. You can change **Dispense Conditions**, such as "**Device Mode**", "**Signal Operation**" type (for dispenser), "**Wait Time**" (from Dispense ON to start shifting), "**Up Amount**" and "**Up Speed**" (at end dispensing), simply by **setting and registering data**.

●Palletizing or Work Position Adjustment by Camera

By setting a "**Pallet Number**", you can repeat the same operation at different points. By setting a "**Work Adjustment Number**", you can easily adjust a position error between the standard position captured by the camera.

Tightening Condition Setting Screen

```
Tightening Condition 1                1/2
Type              Full Tightening(With Pickup)
Thread Pitch                        0.5mm
Rotate Speed                        600rmp
Screw Length                          8mm
Check Precision                     Normal
Float Amount                        0.5mm
Time After Tightening               0.2sec
Feeder ESC Signal                       NO
Point of Feeding
Screw Feed Time                     0.5sec
Stop After Feeding                      NO
Error Restart                   Next Point
```

Point Type Setting Screen

```
Program 28                        P16   1/2
Point Dispense
Start of Line Dispense
Passing of Line Dispense
CP Arc Point
End of Line Dispense
Wait Start Point
PTP Point
CP Start Point
CP Passing Point
CP Stop Point
CP End Point
PTP Evasion Point
```

Point Setting Screen

```
Program 1
        RX+23.2  RY+312.5  Z+25  R+12
Type                        Point Dispense
Dispense Time                       1.3sec
Pallet Routine Number                    1
Work Adjustment Number                   5
Condition Number
Job before Moving
Job while Moving
Point Job Number
PTP Condition Number
Tool Number
    S.MARK     E.MARK    J.EXEC    P.EXEC
```

How to Create Application Software

You can create **original application software** for a variety of needs. For example, **define a point type** "Point Dispense" when creating the "**Dispensing Application**" software.

Register the contents of the "**point dispense**" **operation in the point type definition**.
[e.g. Start the dispenser (set #genOut1), wait for a dispense time (delay Dispense Time* 100), and then stop the dispenser (reset #genOut1).]

Register the "**Common Setting Variables Definition**" in the point type definition **in order to set the** "**Dispense Time**" **at each point**. The process is completed **simply by entering necessary items**, **such as** "**Variable Type**", "**Variable Caption**", **and** "**Input Unit**".
Set "**Enumeration Type**" or "**Numeric Type**" **as the** "**Variable Type**". If you select the "**Enumeration Type**", you can select a value from the "**Selection Item Caption**" list.
Furthermore, you can set the "**Variable Caption**", as well as variable names (identifiers), as a **caption display**.

Point Type Definition Setting Screen

```
          Point Type Definition
                            pointDispense
Protect Mode                         Public
Base Type                         PTP Point
Point Type Title
Job before Moving
Job while Moving
Point Job
Job while CP Moving
Additional Function Number
Point Setting Variables
Definition
```

Point Job Setting Screen

```
Point Job                            2/3
013
014    Id DispenserSignalType==1
015    then
016       waitCondTime 500
017          Id #genIn1
018       timeUp
019       reset #genOut1
020       jump L1
021    endWait
022    endIf
023    delay DispenseTime*1000
024    reset #genOut1
```

Point Setting Variables Definition Setting Screen

```
       Point Setting Variables Definition
                            DispenseTime
Variable Type                 Numeric Type
Variable Caption
TP Input Method
Input Unit                             sec
Decimal Figure
Default Value                            1
Maximum Value                         9.99
Minimum Value                         0.01
```

Sequencer Function

You can create simple sequencer circuits, such as a self-holding circuit, non-cumulative timer, pulse output circuit, and counter. An additional sequencer is not necessary

Sequencer Command Setting Screen

```
Sequencer 1                           2/3
001   Id #genIn3
002   and #genIn5
003   out #genOut1
004   mps
005   Id #mv(1)
006   or #mv(2)
007   and #genIn2
008   out #genOut2
009   out #mv(3)
010   mrd
011   and #mv(3)
012   set #genOut3
```

PC Software "JR C-Points" (Optional)
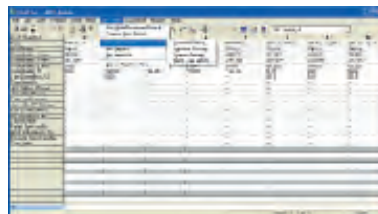
The **JR C-Points** is an enhanced version of JR Points, the PC software for desktop robots. Tried and tested **simple programming methods for various applications remain**. Furthermore, **additional and enhanced compile function** (**robot language**) **and customizing functions are available**.
The main screen is the plural point data setting screen. You can create a program simply by entering necessary items, such as the **point type**, **work position**, **line speed**, **pallet number**, **and work adjustment numbers**.
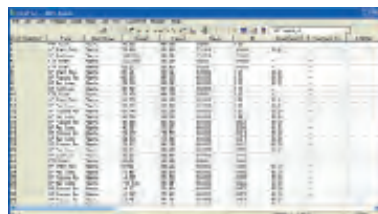
You can select a **horizontal display** or **vertical display** for point alignments. You can also check the points using a graphic display.
Coodinate data edited by **spreadsheets** such as Microsoft Excel can be downloaded easily using the **Copy & Paste function**. You can also convert drawings into coordinate values and download them onto a PC using **CAD data (DXF file)**.
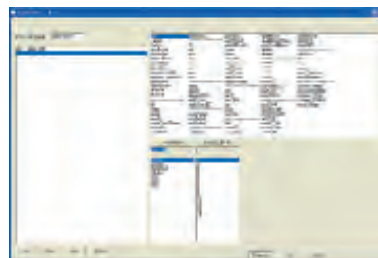
You can enter and edit a **point job** easily by selecting the desired command from the **job command list**.
Using the **compile function**, you can also read the point job data from **text files**. You can use **setting variables** to set values as teaching parameters as well as **local variables**, **global variables**, **and keep variables**. As one of the robotic features, various **special commands**, such as the "waitCondTime" command to wait for an input signal (timeouts are available until receiving the input signal), are available.

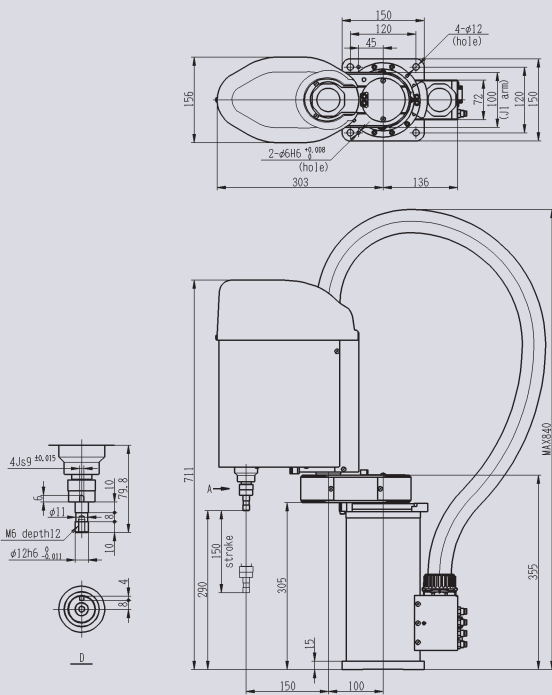## Operation Box (Optional)

The operation box with start switch, program change switch, and emergency stop switch is available.
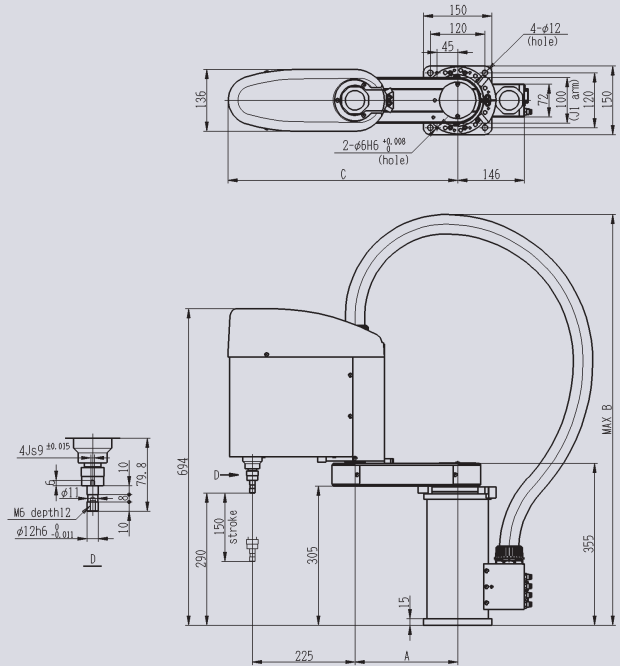
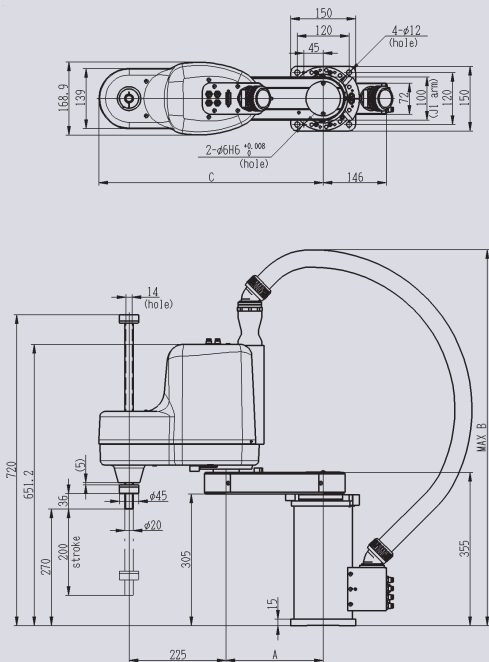## External Dimensions   ※please contact us for the external dimensions.

■ Double shaft/JS series

JS 250

JS 350/450/550

Model	A	B	C
JS350	125	840	403
JS450	225	900	503
JS550	325	900	603

■ Single shaft/JSTH series

JS 350TH/450TH/550TH

Model	A	B	C
JS350TH	125	780	419.5
JS450TH	225	870	519.5
JS550TH	325	880	619.5

JS 650TH/750TH/880TH/1000TH
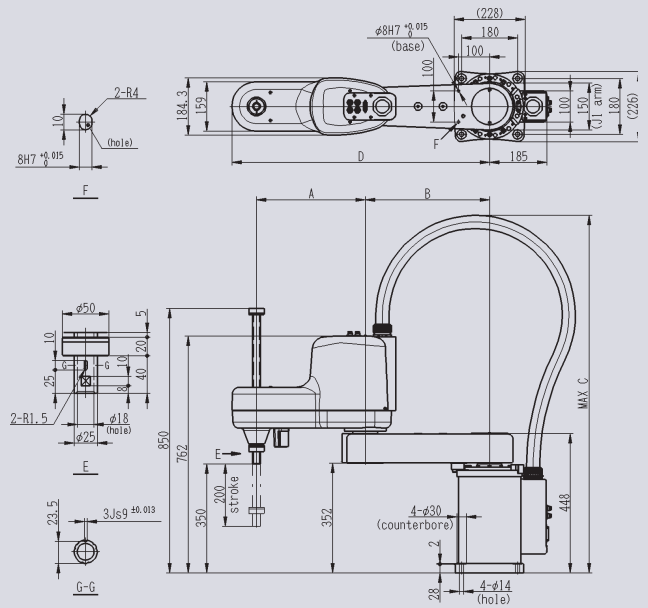
Model	A	B	C	D
JS650TH	350	300	1180	729.5
JS750TH	350	400	1150	829.5
JS880TH	480	400	1150	959.5
JS1000TH	480	520	1080	1079.5

Operation Range

JS 250 350 450 550

160
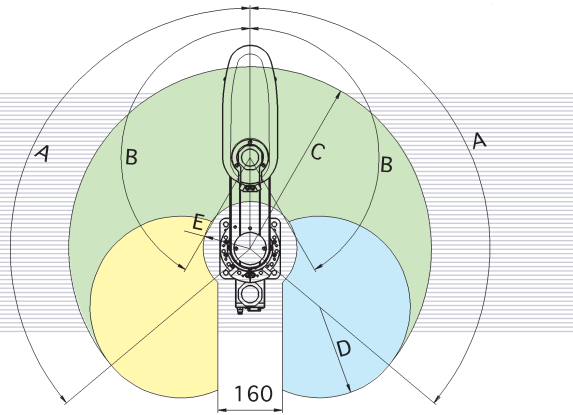
MODEL	A	B	C	D	E	Z stroke
JS250		145°	R250	R150	R89	
JS250CL		135°			R106	
JS350(CL)	130°		R350		R132	150
JS450(CL)		150°	R450	R225	R116	
JS550(CL)			R550		R172	

JS 350TH 450TH 550TH

160
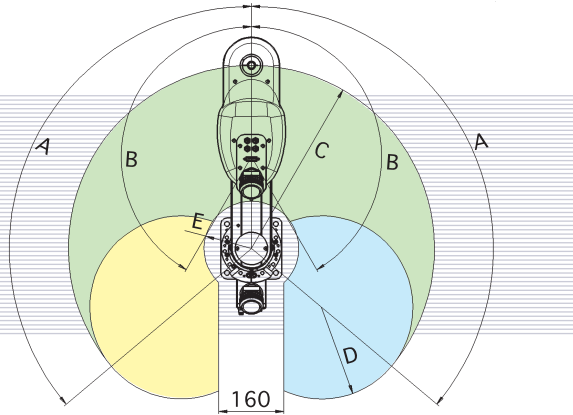
MODEL	A	B	C	D	E	Z stroke
JS350TH			R350		R132	200
JS450TH	130°	150°	R450	R225	R116	
JS550TH			R550		R172	200/300

JS 650TH 750TH 880TH 1000TH

300
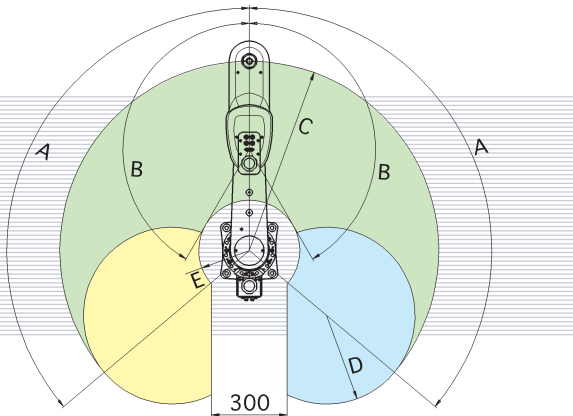
MODEL	A	B	C	D	E	Z stroke
JS650TH		150°	R650	R350	R175	200
JS750TH	130°		R750		R200	
JS880TH		160°	R880	R480	R172	
JS1000TH			R1000		R178	200/300/500

Controller

External Dimensions

Full CE Specifications

398

368

298

Safety Circuit Specifications

398

368

315.4
248

Standard Specifications

328

343

315.4
248
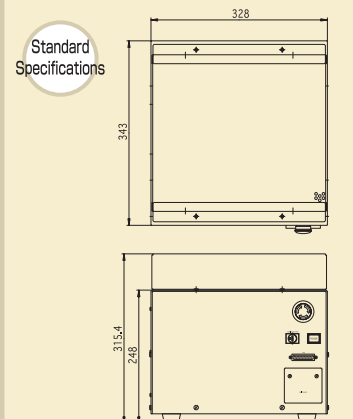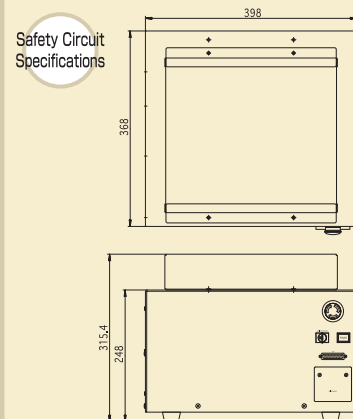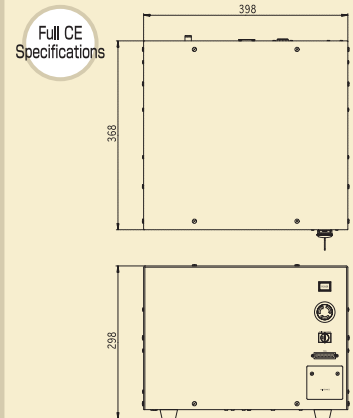
■ JS Series Specifications JS250/JS350/JS450/JS550

Item	Model	JS250	JS350	JS450	JS550
Axis Type		4 (synchronous control)			
Arm Length	J1 Arm	100mm	125mm	225mm	325mm
	J2 Arm	150mm	225mm	225mm	225mm
	J1+J2	250mm	350mm	450mm	550mm
Operation Range	J1 Arm	±130°	±130°	±130°	±130°
	J2 Arm	±145°	±150°	±150°	±150°
	Z-Axis	150mm	150mm	150mm	150mm
	R-Axis	±360°	±360°	±360°	±360°
Maximum Portable Weight		4kg	6kg	6kg	6kg
Acceptable Moment of Inertia		0.1kg·m²	0.1kg·m²	0.1kg·m²	0.1kg·m²
Maximum Speed[1]	J1 and J2 (combined)	4,200mm/sec	6,300mm/sec	5,600mm/sec	6,200mm/sec
	Z-Axis	1,400mm/sec	1,850mm/sec	1,850mm/sec	1,850mm/sec
	R-Axis	1,750°/sec	1,900°/sec	1,900°/sec	1,900°/sec
Repeatability[2]	X- and Y-Axis	±0.01mm	±0.01mm	±0.015mm	±0.015mm
	Z-Axis	±0.01mm	±0.01mm	±0.01mm	±0.01mm
	R-Axis	±0.01°	±0.01°	±0.01°	±0.01°
Standard Cycle Time[3]	When carrying 1kg of workpiece	0.39sec	0.38sec	0.39sec	0.41sec
	When carrying 2kg of workpiece	-	-	-	-
Machine Weight		27kg	27kg	28kg	29kg
Control Box Weight		20kg			

■ JSTH Series Specifications JS350TH/JS450TH/JS550TH

Item	Model	JS350TH	JS450TH	JS550TH
Axis Type		4 (synchronous control)		
Arm Length	J1 Arm	125mm	225mm	325mm
	J2 Arm	225mm	225mm	225mm
	J1+J2	350mm	450mm	550mm
Operation Range	J1 Arm	±130°	±130°	±130°
	J2 Arm	±150°	±150°	±150°
	Z-Axis	200mm	200mm	200mm / 300mm
	R-Axis	±360°	±360°	±360°
Maximum Portable Weight		6kg	6kg	6kg
Acceptable Moment of Inertia		0.1kg·m²	0.1kg·m²	0.1kg·m²
Maximum Speed[1]	J1 and J2 (combined)	6,300mm/sec	5,600mm/sec	6,200mm/sec
	Z-Axis	1,800mm/sec	1,800mm/sec	1,800mm/sec
	R-Axis	1,900°/sec	1,900°/sec	1,900°/sec
Repeatability[2]	X- and Y-Axis	±0.01mm	±0.015mm	±0.015mm
	Z-Axis	±0.01mm	±0.01mm	±0.01mm
	R-Axis	±0.01°	±0.01°	±0.01°
Standard Cycle Time[3]	When carrying 1kg of workpiece	-	-	-
	When carrying 2kg of workpiece	0.43sec	0.45sec	0.43sec
Machine Weight		30kg	31kg	32kg
Control Box Weight		20kg		

■ JSTH Series Specifications JS650TH/JS750TH/JS880TH/JS1000TH

Item \ Model		JS650TH	JS750TH	JS880TH	JS1000TH
Axis Type		4 (synchronous control)			
Arm Length	J1 Arm	300mm	400mm	400mm	520mm
	J2 Arm	350mm	350mm	480mm	480mm
	J1+J2	650mm	750mm	880mm	1,000mm
Operation Range	J1 Arm	±130°	±130°	±130°	±130°
	J2 Arm	±150°	±150°	±160°	±160°
	Z-Axis	200mm	200mm	200mm	200mm / 300mm / 500mm
	R-Axis	±360°	±360°	±360°	±360°
Maximum Portable Weight		20kg	20kg	20kg	20kg
Acceptable Moment of Inertia		0.2kg·m²	0.2kg·m²	0.2kg·m²	0.2kg·m²
Maximum Speed[*1]	J1 and J2 (combined)	6,700mm/sec	7,200mm/sec	6,500mm/sec	7,000mm/sec
	Z-Axis	2,000mm/sec	2,000mm/sec	2,000mm/sec	2,000mm/sec
	R-Axis	1,800°/sec	1,800°/sec	1,800°/sec	1,800°/sec
Repeatability[*2]	X- and Y-Axis	±0.02mm	±0.02mm	±0.025mm	±0.025mm
	Z-Axis	±0.01mm	±0.01mm	±0.01mm	±0.01mm
	R-Axis	±0.01°	±0.01°	±0.01°	±0.01°
Standard Cycle Time[*3]	When carrying 1kg of workpiece	-	-	-	-
	When carrying 2kg of workpiece	0.44sec	0.46sec	0.47sec	0.50sec
Machine Weight		65kg	67kg	68kg	70kg
Control Box Weight		27kg			

■ JS /JSTH Series Common Specifications

Drive Method	AC servomotor
Control Method	PTP (Point to Point) control, CP (Continuous Path) control
Interpolating Function	3-Dimensional Line and Arc Interpolation
Position Detection	Absolute Encoder
Teaching Method	Remote Teaching (JOG) /Manual Data Input (MDI) /Direct Teaching
Teaching System	JANOME's original software JR C-Points: Simple and broad-use teaching system ●Simple: Easy teaching just by registering positions and parameters 　　　　Optional system programs are available for basic operations and various applications. ●Broad-use: User-oriented programming including I/O control using point job commands
Teaching Pattern	●Programming by teaching pendant (optional) ●Off line teaching using optional JR C-Points (PC software) via PC ●On line teaching using optional JR C-Points (PC software) via PC
Programming Capacity	255 programs
Data Memory Capacity[*4]	Maximum 30,000 points
Simple Sequencer	Maximum 1,000 steps
External Serial Interface	RS422 1ch (for teaching pendant) RS232C 1ch (for PC: COM1) RS232C 2ch (for external devices: COM2, COM3)
External Input/Output[*5]	I/O-SYS Input:15/Output:14 I/O-1 Input:18/Output:22 (4-relay contact) I/O-H Input:4/Output:4 (2-relay contact)
Power Consumption	950W (JS250)　1,050W (JS350 - 550)　1,900W (JS650 - 1000)
Power Supply	AC180 - 250V (single phase)
Tool Wiring and Piping	14 wires for signals, 4 air pipes: Φ4 (JS250 - 550)　14 wires for signals, 4 air pipes: Φ6 (JS650 - 1000)
Working Ambience	Ambient Temperature	0 - 40℃
	Relative Humidity	20 - 90% (non-condensing)

*1: Measured on a machine with regenerative resistors. Maximum speed cannot be achieved under the maximum portable weight setting.
*2: Repeatability was measured at a constant temperature, so absolute precision is not guaranteed.
*3: Measured on a machine with regenerative resistors. Continuous operation cannot be achieved at the maximum cycle time.
*4: The point data capacity will be reduced if the additional function data setting/point job data/sequencer data increases, due to the shared data storage area.
*5: NPN/PNP can be chosen before shipment.
● The specifications may be modified without prior notice to improve quality.

JS series

● JS 250

● JS 350

● JS 450

● JS 550

JSTH series

● JS 350TH

● JS 450TH

● JS 550TH

● JS 650TH

● JS 750TH

● JS 880TH

● JS 1000TH

Clean Room Type Models

JS250CL / JS350CL / JS450CL / JS550CL
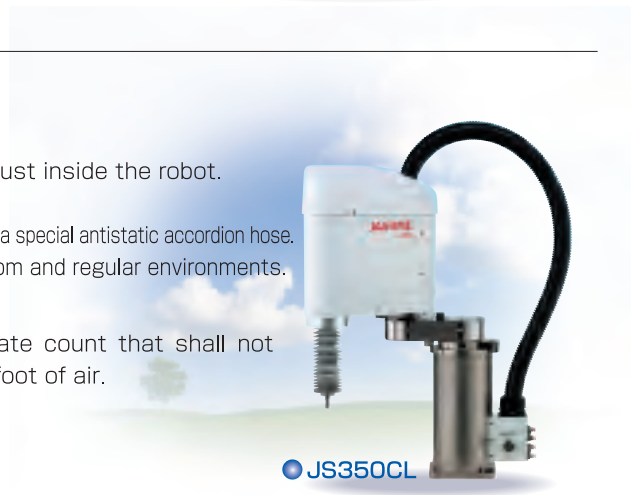
■ Clean Class 10 (0.3μm) *Specifications

① The special airtight structure and the vacuuming system minimize dust inside the robot.
② Special external conductive coating prevents static electricity.
③ Low dust grease is used for the Z-axis spline and ball screw; also, the Z axis is covered by a special antistatic accordion hose.
④ The robot's body (without the control box) can be used in both the clean room and regular environments.

■ What's Clean Class 10?

Clean Class 10 is defined by Federal Standard 209D as a particulate count that shall not exceed a total of 10 particles of a size of 0.5μm or greater per cubic foot of air.

Cleanliness	Class 10 (Federal Standard 209D)
Ventilator Diameter	Internal Diameter of Vent Pipe:Φ19
Outlet flow	180NL/min (11Nm³/h)

※Common to the robot body and control box

● JS350CL

Distributor

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