
DATE: March 13, 2006

ESTIMATE No.

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CONTENTS: **XU-RC350S-C03 (M101) Manipulator Specification**

NOTE	COPIES		ENG. Technology Development Section 2 Semiconductor Robot Plant Semiconductor Robot Business Division Robotics Automation Division
	CUSTOMER		DR. March.13.'06 H. Sanemasa
	USER		CK. March.13.'06 H. Yamamoto
			APP. March.13.'06 T. Shiraki
			DWG No.
			HU0480578 1/6

Revision History

Document No.		Document Name	Revised	Approved
HU0480578		Clean Manipulator Specification		
Date	Rev.#	Contents		
June.30.'06	1	Page 4: Correct CDA pressure.	H.Sanemasa	M.Ogasawara
Dec.27.'07	2	Page 4: Correct R-axis acceleration/deceleration time. Page 4: Change standard 3 rd arm + EE length. Page 6: Add Chapter 13.Information.		

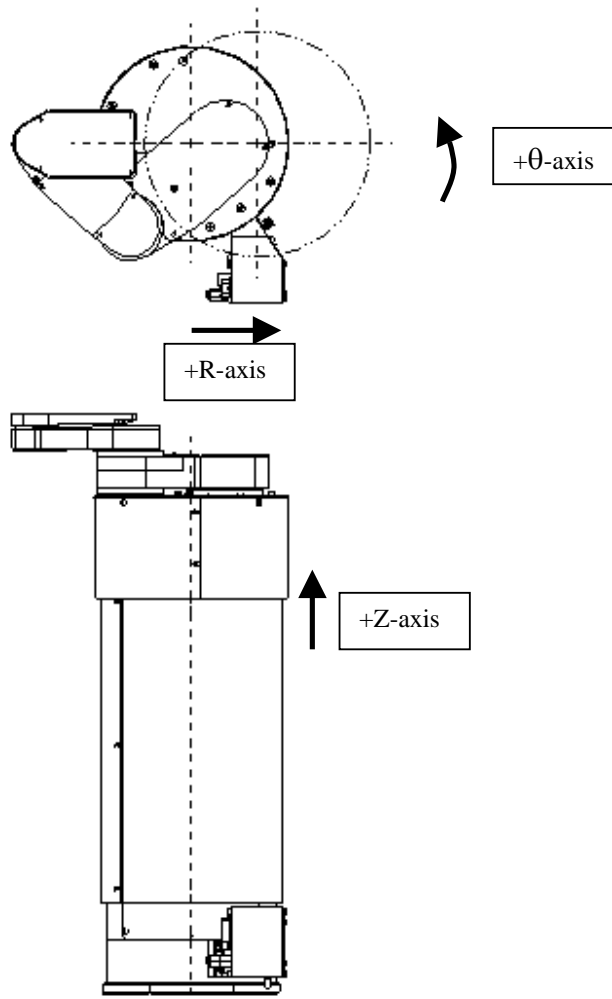
Application

This document describes the specifications of the clean manipulator.
Outline drawing HU0380309.

1. Basic Configuration

The manipulator is capable of: extending arm (R axis), arm rotation (θ axis) and arm elevation (Z axis).

- (1) arm extension
-extends and retracts the arm
- (2) arm rotation
-rotates the arm
- (3) arm elevation
-moves the arm vertically



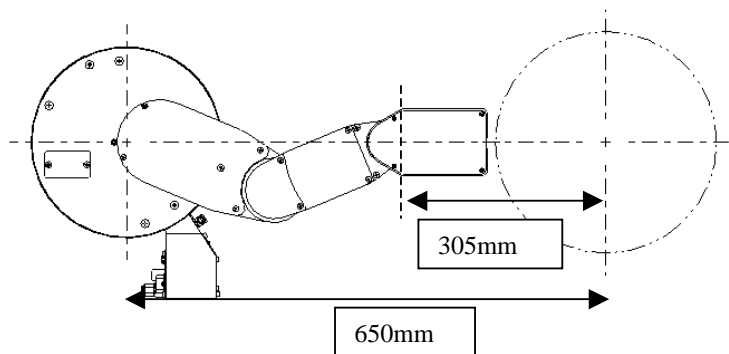
Mechanical Specifications

Basic specifications are shown in the table below.

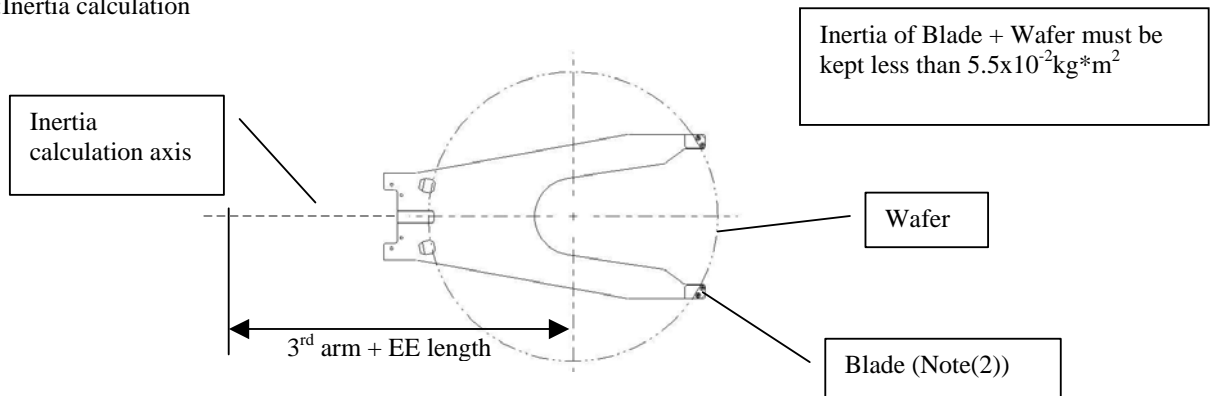
Basic Specifications

Item		Specifications
Payload (Blade(Note(2)) + wafer / each wrist)		1.0 kg
End-effector + Wafer Inertia (Note(3))		$5.5 \times 10^{-2} \text{kg} \cdot \text{m}^2$
Range of Motion	R-axis (extension)	650 mm (reach) ^{Note(1)}
	θ -axis (rotation)	360 deg
	Z-axis (elevation)	380 mm
Repeatability	R-axis (extension)	p-p 0.1mm
	θ -axis (rotation)	
	Z-axis (elevation)	
Maximum Speed (Acceleration /Deceleration time)	R-axis (extension)	250deg/sec=1467mm/sec (0.2/0.18sec)
	θ -axis (rotation)	330deg/sec (0.2sec)
	Z-axis (elevation)	300mm/sec (0.2sec)
Minimum rotation diameter		475 mm with 305 endeffector
Path Trajectory (side to side)		± 0.8 mm
Wafer Transfer Surface Level (With 300mm Wafer)		p-p1.0mm
Clean Class (Without End-effector at minimum z height wafer plane)		ISO Class1 with 0.16m/s down-flow
Motor Type		AC200V with 16 bit Absolute Encoder Z-axis: Brake in the motor
CDA Requirement (DAP: Double action plunger, SAP: Single action plunger)		DAP: 0.207 to 0.221Mpa (30 to 32) PSI, 56L/min SAP: 0.57 to 0.62Mpa (82 to 90) PSI, 56L/min
Vacuum Requirement		-80 to -70kPa (-11.6 to -10.2PSI), 22L/min
Position detection		Absolute encoder for R, θ and Z axis Backup battery for encoder is built into the manipulator
Approximate mass		Robot: 37 kg

Note (1): Reach is based on the dimension shown below.



Note(3):Inertia calculation



2. Exterior

Anodized aluminum or Brushed SS.

3. Pneumatically powered Line

The pneumatically powered line is located on the inside of the manipulator.

- ♦ The coupling used to provide air is located at the Manipulator connector panel. (See Outline Drawing: HU0380309)
- ♦ For each wafer clamp line a solenoid valve is NOT provided.

4. Operating & Storage Environments

Operating environment

Temperature: 20 ~ 30 °C

Humidity: 35 ~ 55 %RH (non-condensing)

Storage environment

Temperature: 0 ~ 40 °C

Humidity: 20 ~ 80 %RH (non-condensing)

9. Mounting Requirements

See outline drawing HU0380309.

10. Maintenance

Refer to the Operator Manual and Maintenance Manual

11. Packaging

Manipulator, Controller, and included parts are collectively packaged and shipped.

12. Warranty

The warranty shall be as follows.

12-1 Range of warranty

Manipulator

12-2 Terms

One year after delivery of the product to the END USER , or 18 months after the shipment from YASKAWA factory, whichever comes first.

12-3 Details

If defects in design, material, or workmanship occur within the term of the warranty, the defective part will be replaced with a similar item or repaired free of charge. In this case, upon request, YASKAWA will send an engineer to your company or the END USER if necessary.

This warranty shall cover YASKAWA products only. It does not apply to secondary damage as a result of the customers or END USER's product failure.

12-4 Exceptions

The following cases shall not be covered even if a product is still under warranty.

- If defects occur as a result of not conducting maintenance or inspection as described in the maintenance manual.
- If defects occur as a result of improper repair, modification, transportation or carelessness in handling by your company or the END USER.
- If defects occur as a result of acts of Nature such as a fire, flood, earthquake, lightning, etc.

13. Information

13-1 Full stroke operation time

Axis	Full stroke	Operation time
R	567.5mm	0.97sec
θ	360°	1.61sec
Z	380mm	1.78sec