

# M-420iA/M-421iA™

## Basic Description

The M-420iA series is FANUC Robotics' latest-generation, high-performance, high-speed family of industrial robots. Based on a simple and reliable design, the M-420iA and M-421iA provide sophisticated motion control and consistent performance with high productivity. The series is supported by the intelligent robot control system.

The M-420iA is a four-axis, modular construction, electric servo-driven robot designed for high-speed case packing and material handling applications. The M-421iA is a two-axis variant designed for the high-speed top-loading packing market.

## M-420iA/M-421iA, the Solution for:

- High-speed packaging
- High-speed palletizing
- Machine loading
- Mechanical assembly

## Benefits

- Features highest motion speeds in its class for maximum performance and productivity.
- Highest payload in its class helps achieve maximum throughput by handling multiple parts.
- Four-axis dexterity enables access to multiple packaging lines with one unit.
- Additional auxiliary amplifiers available in the robot controller offer ability to control complete high-speed packaging line with robot controller.
- FANUC's *iR*Vision™ (Integrated Robot Vision) Option for Visual Line Tracking provides an integrated vision based solution for locating randomly-oriented product on a moving line for robotic picking and packing operations.



## Features

- M-420iA - 4 axes of motion, 40 kg capacity.
- M-421iA - 2 axes of motion, 50 kg capacity. Waist and wrist rotation removed from four-axis unit.
- *iPendant*™, a color, Internet-ready teach pendant for even easier programming and custom cell user interface design.
- Large work envelope with 1855 mm horizontal reach developed around packaging applications.
- Repeatability of +/- 0.5 mm at full speed and full payload within entire work envelope.
- Linear motion speeds up to 4200 mm/sec.
- Dedicated pneumatic and electrical (8 digital inputs/8 digital outputs) connections at wrist to simplify user's end-of-arm tooling design and integration.
- Material handling style teach pendant with large LCD screen and ergonomic design offers intuitive control over automated process.
- Sealed bearings and brushless AC motor drives provide protection and improve reliability.

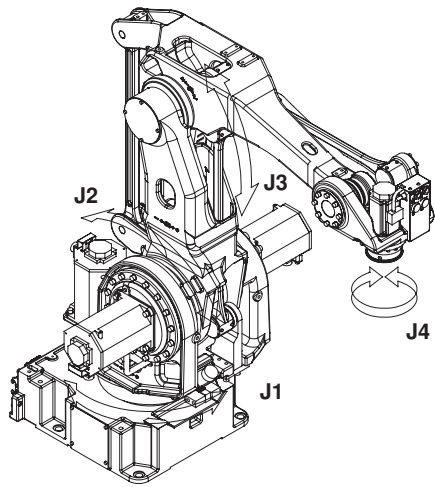
## Options

- M-420iA high-speed wrist option, J4 wrist speed increases from 350 to 720 degrees/sec. for applications that require high-speed wrist motions. Maximum payload decreases from 40 kg to 30 kg.
- *iPendant* is also available with touch screen support.
- Various robot connection cable lengths for flexible cabinet placement and optional track rated cables.
- A cleanable unit coated with white polyurethane to meet requirements in typical secondary food packaging applications.
- Monochrome pendant available.
- FANUC's *iR*Vision system delivers high performance 2-D and 3-D machine vision capabilities with FANUC reliability. Additional option for Error Proofing can provide integrated vision based capabilities to check for product completeness before product is packaged or further operations are performed.

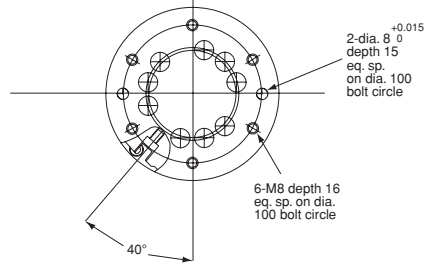
**FANUC**  
Robotics

# M-420iA Dimensions

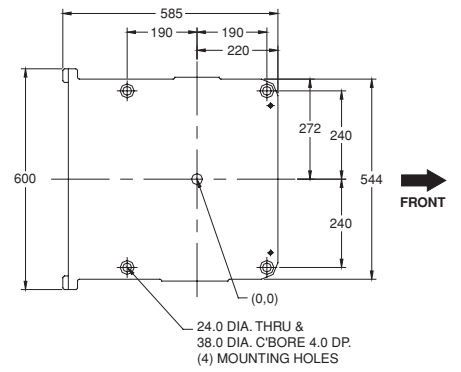
## Isometric



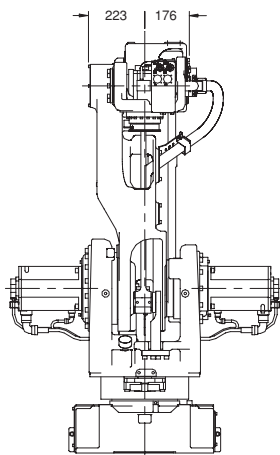
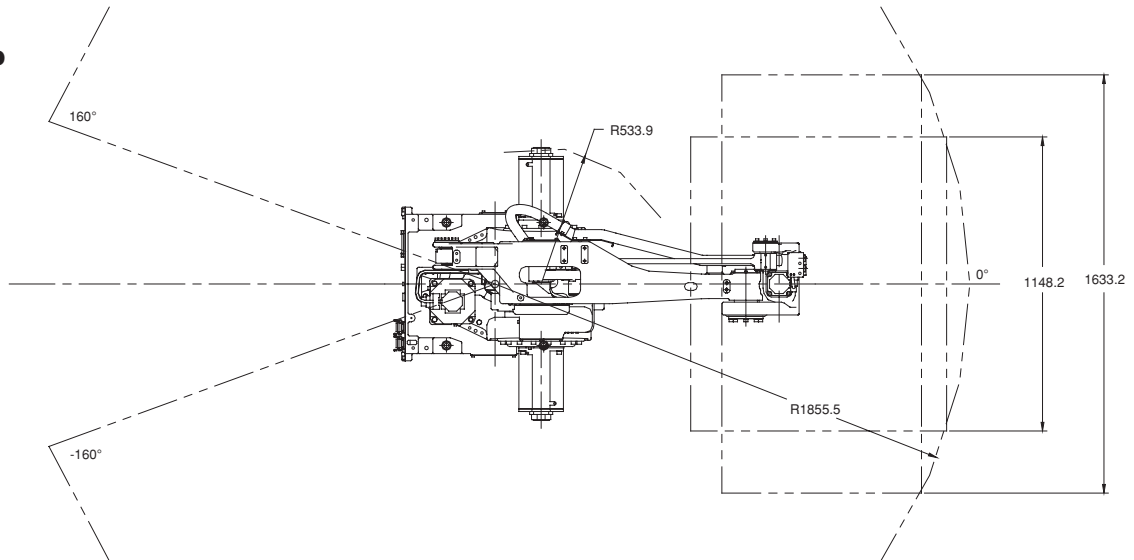
## Wrist



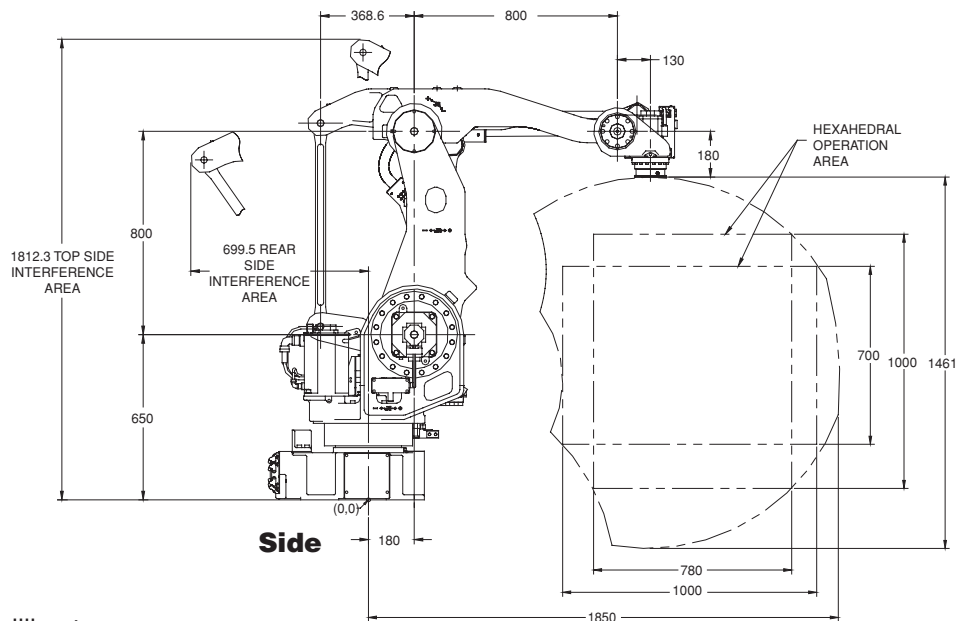
## Footprint



## Top



## Front

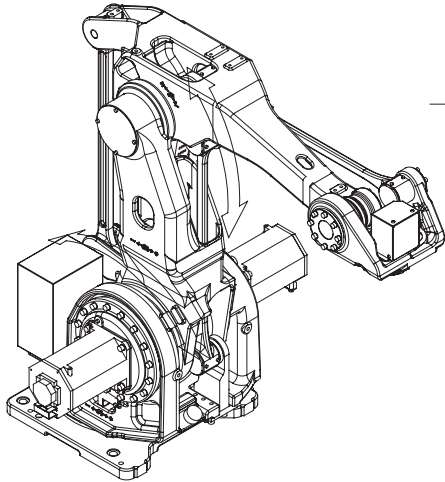


## Side

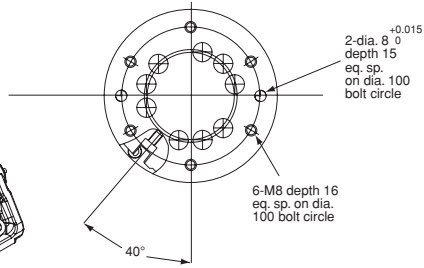
**Note:** Dimensions are shown in millimeters.  
Detailed CAD data are available upon request.

# M-421iA Dimensions

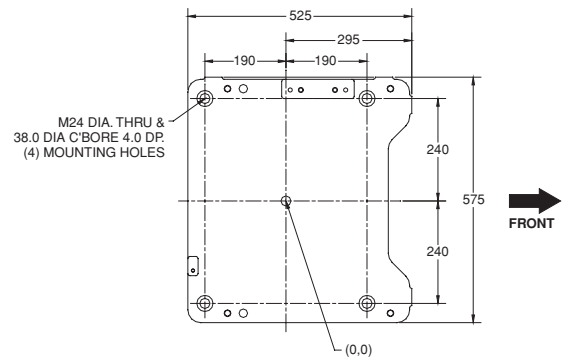
**Isometric**



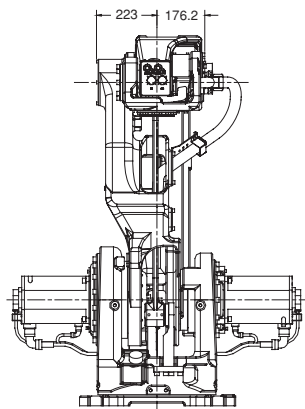
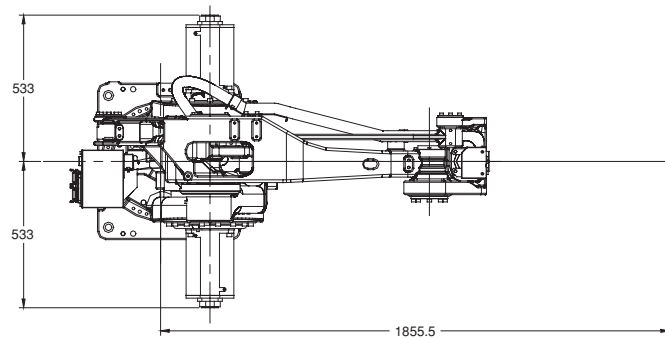
**Wrist**



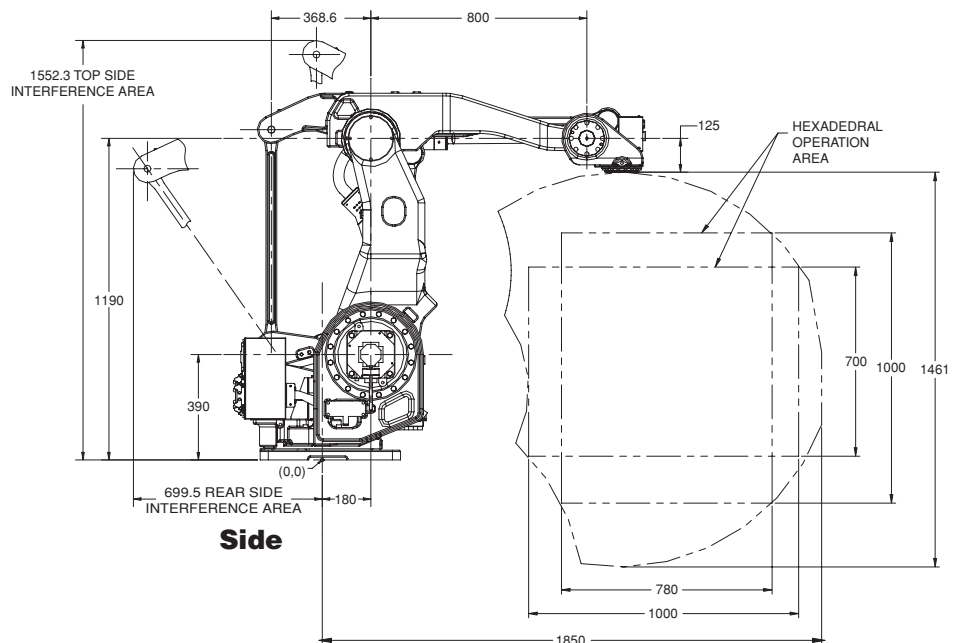
**Footprint**



**Top**

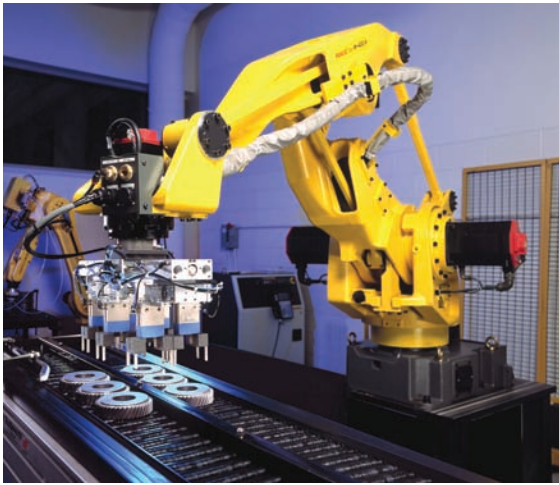


**Front**



**Side**

**Note:** Dimensions are shown in millimeters.  
Detailed CAD data are available upon request.



High-Speed Material Handling



High-Speed Packaging

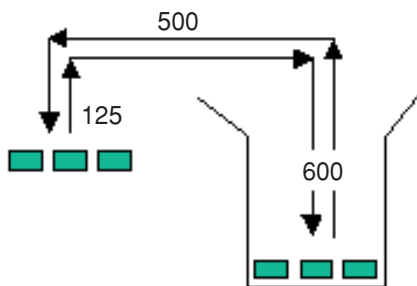


High-Speed Mini-Palletizing

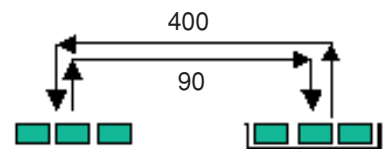
**M-420iA/M-421iA Specifications**

Items	M-420iA	M-421iA
Axes	4	2
Payload - Wrist (kg)	40	50
- High-Speed Wrist (kg)	30	-
- J3 Arm (kg)	10	10
Reach (mm)	1855	1855
Repeatability (mm)	±0.5	±0.5
Interference radius (mm)	543	-
Motion range (degrees)	J1	320
	J2	115
	J3	110
	J4	540
Motion speed (degrees/s)	J1	180
	J2	200
	J3	200
	J4	350
High-Speed	J4	720
	J4	98 (10)
Wrist moment N-m (kgf-m)	J4	98 (10)
	High-Speed	J4
Wrist inertia (kg-m <sup>2</sup> )	J4	2.6
Mechanical brakes	All axes	All axes
Mechanical weight (kg)	620	520
Mounting method	Floor	
Installation environment:		
Ambient temperature °C	0 to 45	
Humidity	Normally: 75% or less Short term (within a month): 95% or less No condensation (No dew or frost allowed)	
Vibration (m/s <sup>2</sup> )	4.9 or less	

**Fastest cycle times in its class:**



50 Cycles/Minute  
30 kg Payload



80 Cycles/Minute  
10 kg Payload

**Intelligent Robot Solutions**



**FANUC Robotics America, Inc.**  
**3900 W. Hamlin Road**  
**Rochester Hills, MI 48309-3253**  
**(248) 377-7000**  
**Fax (248) 377-7362**

Charlotte, NC  
 (704) 596-5121

Chicago, IL  
 (847) 898-6000

Cincinnati, OH  
 (513) 754-2400

Los Angeles, CA  
 (949) 595-2700

Toledo, OH  
 (419) 866-0788

Toronto, Canada  
 (905) 812-2300

Montréal, Canada  
 (450) 492-9001

Aguascalientes, Mexico  
 52 (449) 922-8000

Sao Paulo, Brazil  
 (55) (11) 3619-0599

**For sales or technical information, call:**  
**1-800-iQ-ROBOT • 1-800-47-ROBOT**

**marketing@fanucrobotics.com**  
**fanucrobotics.com**