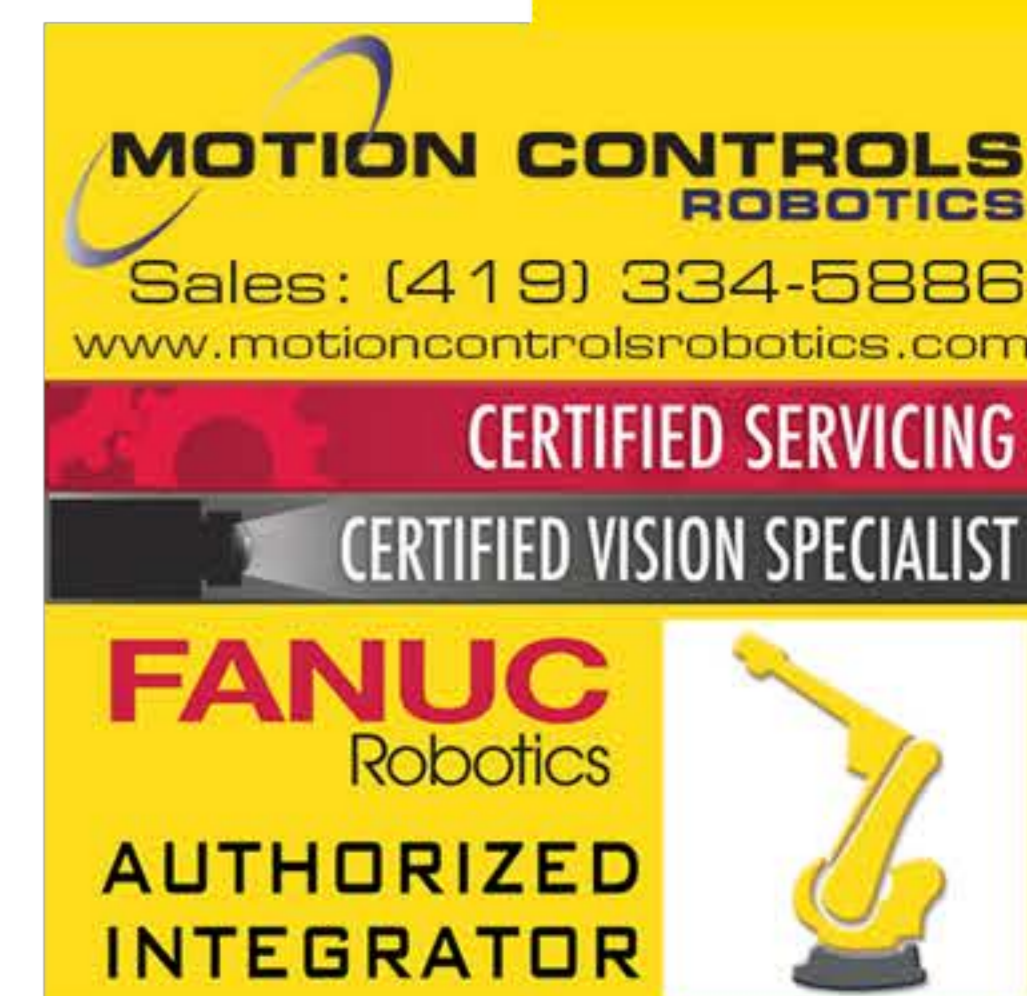


# M-20iA™ Series



## Basic Description

The evolutionary design of the M-20iA solves two of the oldest problems for industrial robots. The first issue is the time it takes to engineer the robot dressout and the second is the down-time caused when the dressout is disrupted by contact with plant equipment. The innovative M-20iA solves these issues with a hollow upper arm and wrist. This unique design permits the utilities to be neatly contained within the arm, eliminating dress out issues like snagging, tearing and rubbing. A shelf with ample space on the back of the upper arm completes the package by allowing peripheral equipment to be easily mounted. The hollow arm and wrist together with the shelf greatly simplifies the integration engineers job.

To complement the built-in vision, the M-20iA has an integrated vision cable from the J1 base to J3 interface panel. This makes the addition of vision to the robot application much easier.

This design is also a great benefit for offline simulations because the dress out and control boxes can all be designed to fit with in the confined space of the robot arm and eliminates the guess work of dress out interference.

This exceptional design comes with out sacrificing any of the robot's performance specifications. In fact this robot is an industry leader in payload, reach and axes speed. Add this to the industry leader in reliability and this robot is the perfect solution for your robotic application.



## M-20iA Series, the Solution for:

- Assembly
- Dispensing
- Material handling
- Machine load/unload
- Material removal
- Waterjet cutting
- Laser cutting
- Machine tending
- Picking and packing
- Testing and sampling

## Features and Benefits

- 6 degrees of freedom
- $\pm 0.10$  mm repeatability
- 20 kg payload at wrist
- Large wrist moments and inertias for real-world EOATs and workpieces
- Supplementary payload mount on J3 casting
- Pneumatic and electrical (8 DI/8 DO) connections for EOAT on J3
- 2D vision cables from J1 to J3 as a standard option

- Compact size, slim wrist, and small footprint permit operation in tight work spaces
- Robot can be floor, angle, wall or ceiling mounted
- High joint speeds maximize throughput
- Absolute encoder positioning eliminates homing at power-up
- Intelligent color graphic teach pendant is network ready
- Built-in Solution Arm, 50 mm hollow wrist and upper arm

## Reliability

- RV reducer and gear drivetrains provide rigidity and performance in a compact package
- Sealed bearings and brushless, maintenance-free AC motors provide protection and improve reliability

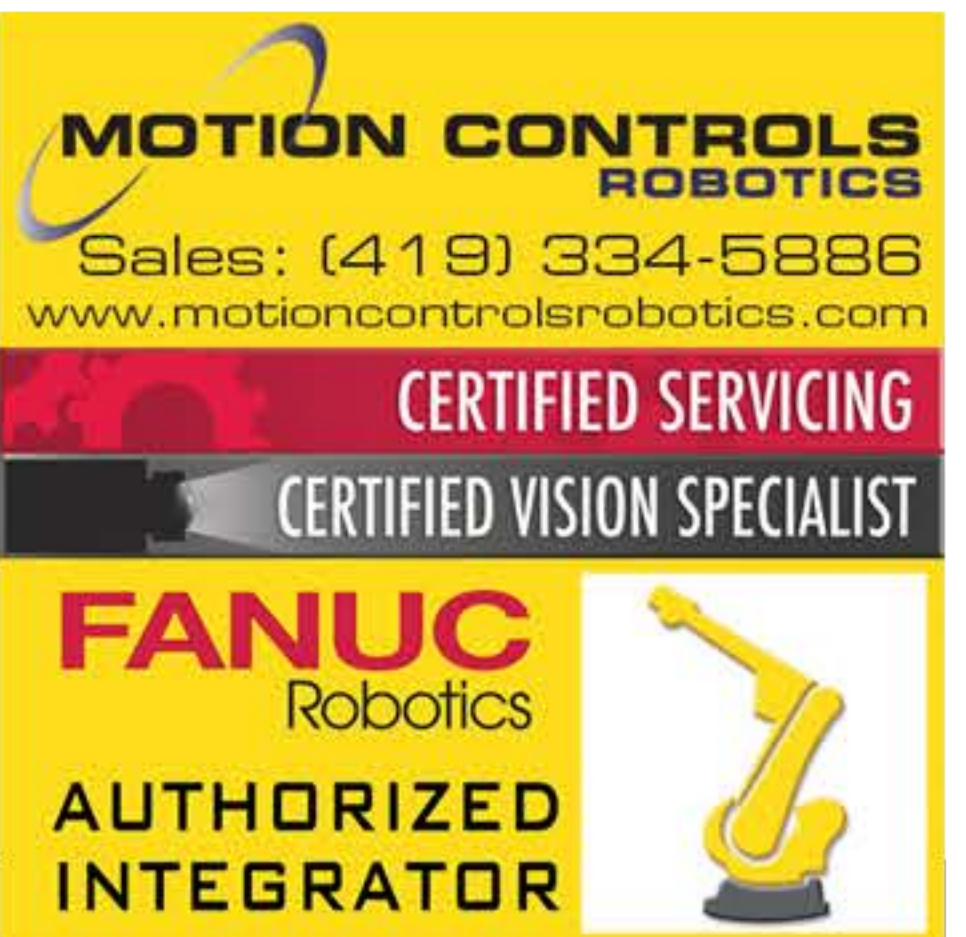
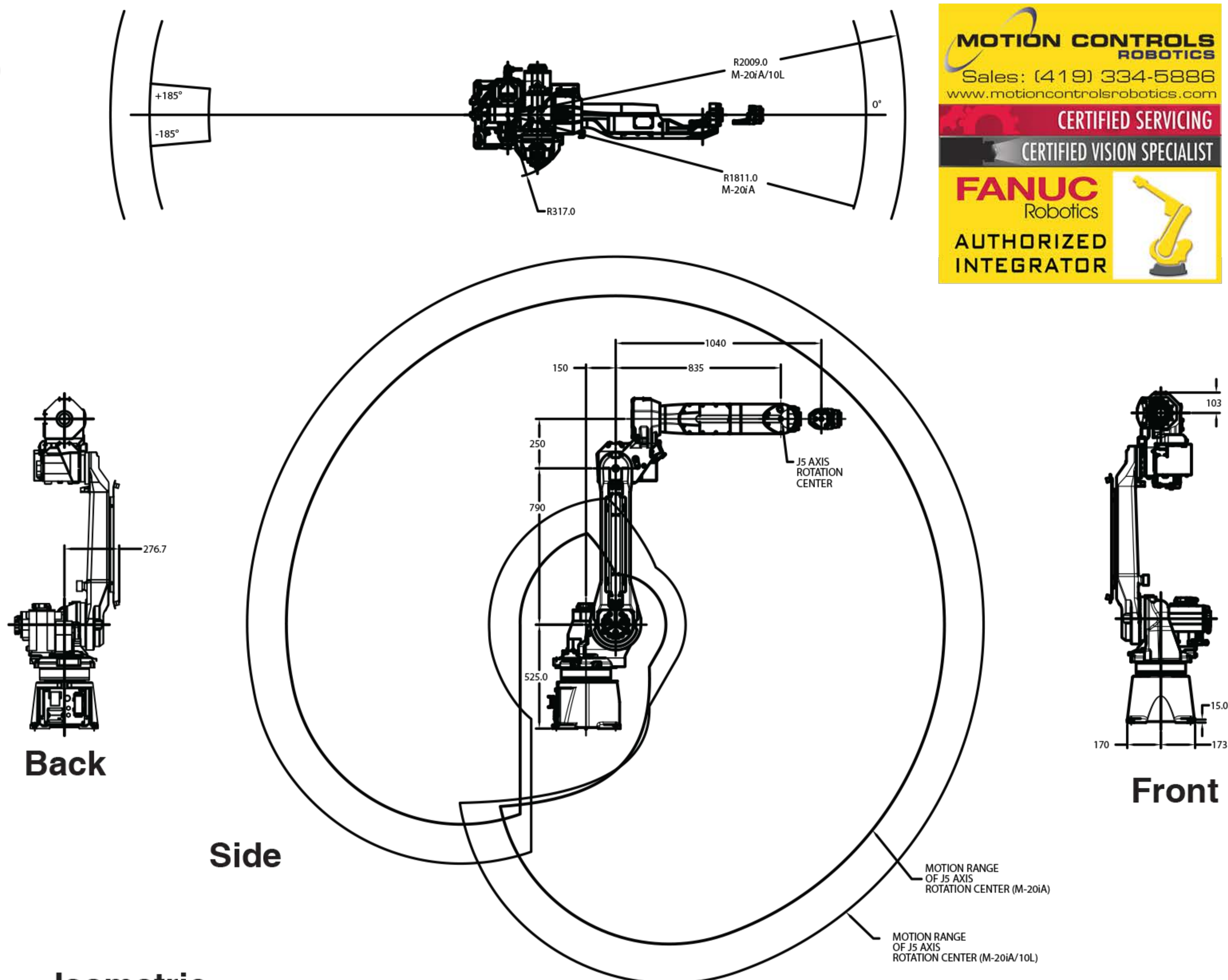
Note: *iRvision*® is a registered trademark of FANUC LTD.

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## Options

- M-20iA/10L variant available for applications that require greater reach
- Up to 40 axes (robot + auxiliary) on same controller
- Extended communications capabilities: FTP, DeviceNet, Profibus, Genius, FANUC Model A I/O rack, CC-Link, etc.
- 14 m or 21 m controller-to-robot cables
- Many unique robot and application-driven software options available
- iRVision® (Integrated Robot Vision) system delivers high performance 2-D and 3-D machine vision capabilities with FANUC reliability

Top

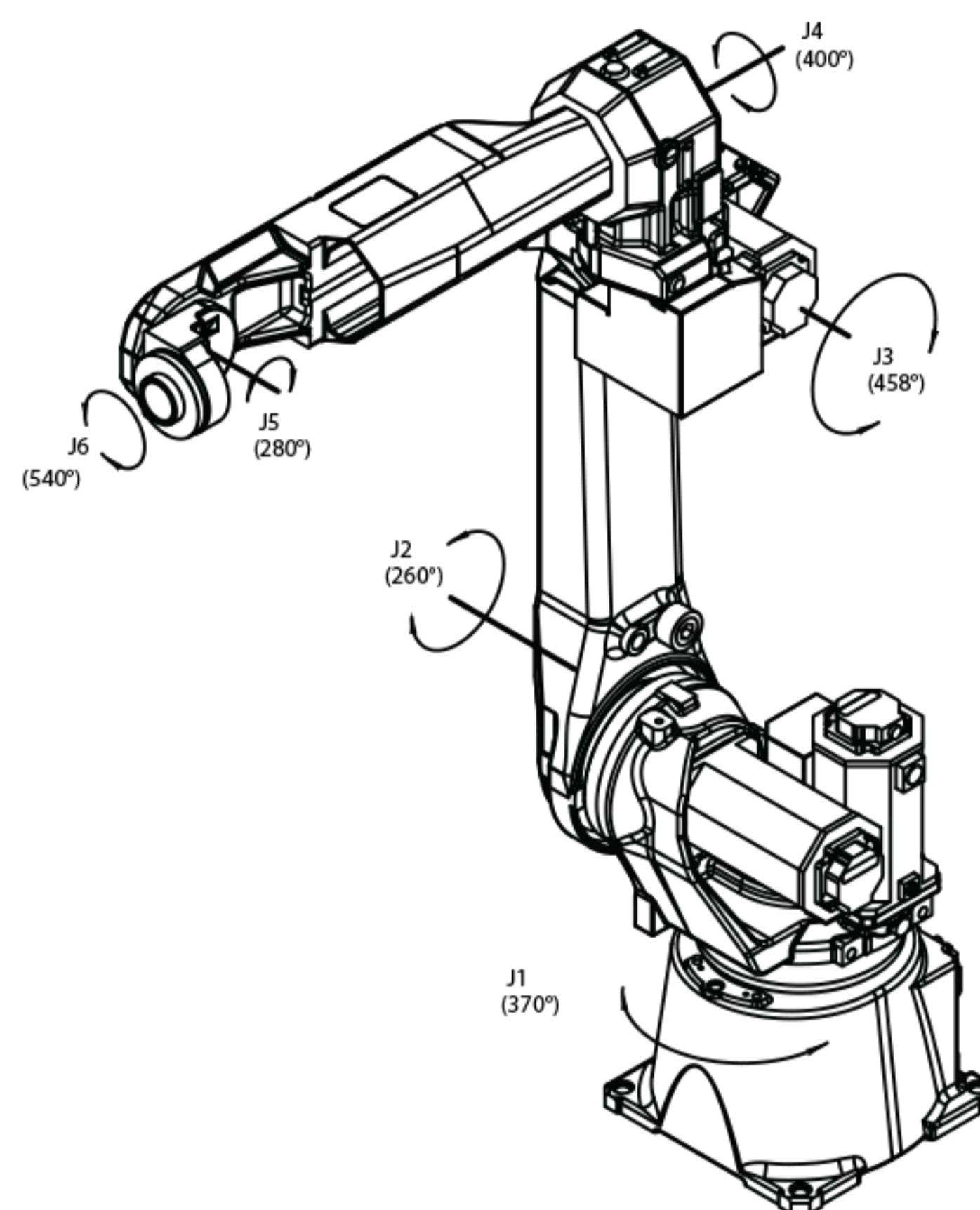


Note: Dimensions are shown in millimeters. Detailed CAD data are available upon request.

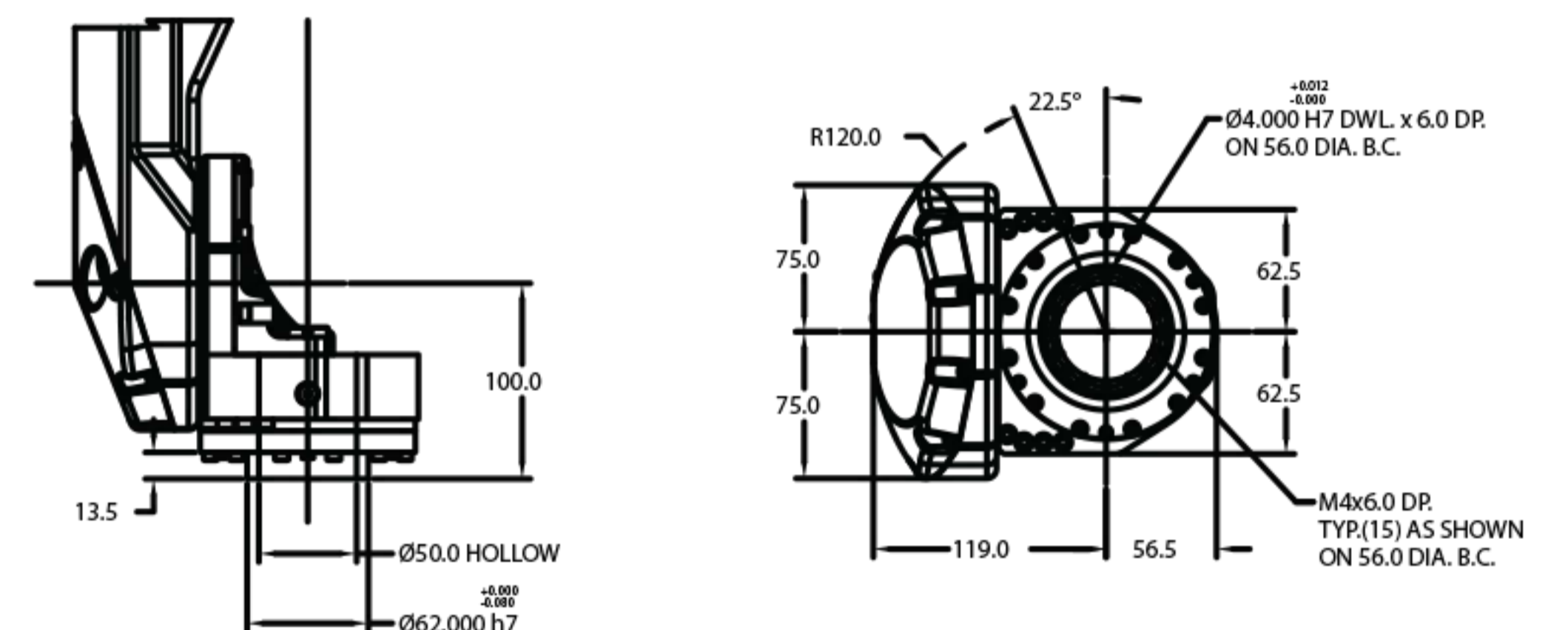
## M-20iA Specifications

Items	M-20iA	M-20iA/10L	
Axes	6	6	
Payload (kg) <sup>(1)</sup>	20	10	
Payload (kg) on J3 casting	12	12	
Reach (mm)	1811	2009	
Repeatability <sup>(2)</sup> (mm)	±0.08	±0.10	
Interference radius (mm)	321	321	
Motion range (degrees)	J1	340/370	340/370
	J2	260	260
	J3	458 <sup>(3)</sup>	460 <sup>(3)</sup>
	J4	400	400
	J5	360	360
	J6	900	900
Motion speed (degrees/s)	J1	195	195
	J2	175	175
	J3	180	180
	J4	360	400
	J5	360	400
	J6	550	600
Wrist moments N-m (kgf-m)	J4	44 (4.48)	15.7 (1.60)
	J5	44 (4.48)	9.8 (1.00)
	J6	22 (2.24)	5.9 (0.60)
Wrist load inertia (kg-m <sup>2</sup> )	J4	1.04	0.63
	J5	1.04	0.22
	J6	0.28	0.06
Mechanical brakes	All axes		
Mechanical weight (kg)	250	250	
Mounting method <sup>(4)</sup>	Floor, Ceiling, Angle, and Wall		
Installation environment	Temperature (°C)		
	0 to 45		
Humidity	Normally: 75% or less		
	Short term (within a month): 95% or less. No condensation		
Vibration (m/s <sup>2</sup> )	4.9 or less (0.5 G or less)		
IP rating(s) <sup>(5)</sup>	IP54 Std. (IP55 optional) Wrist and Joint 3 arm IP67		

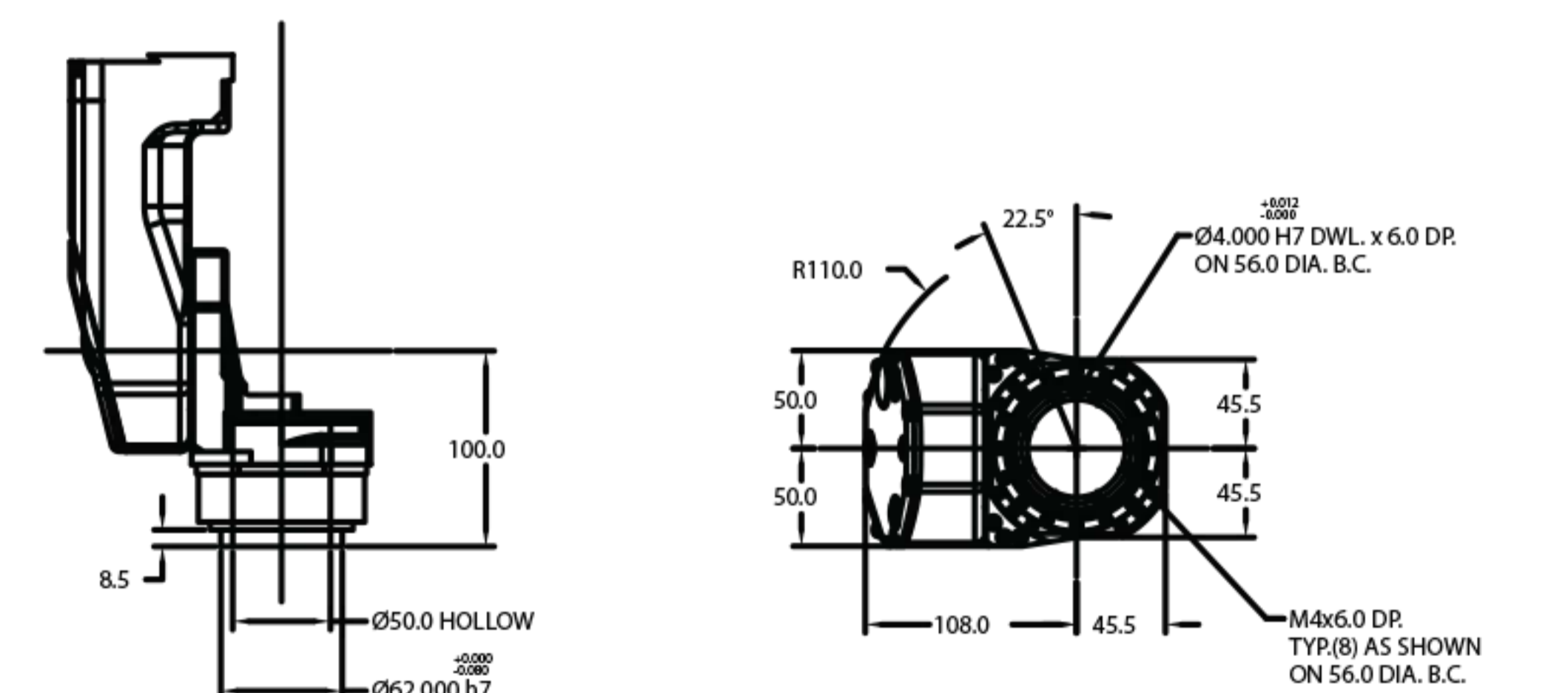
## Isometric



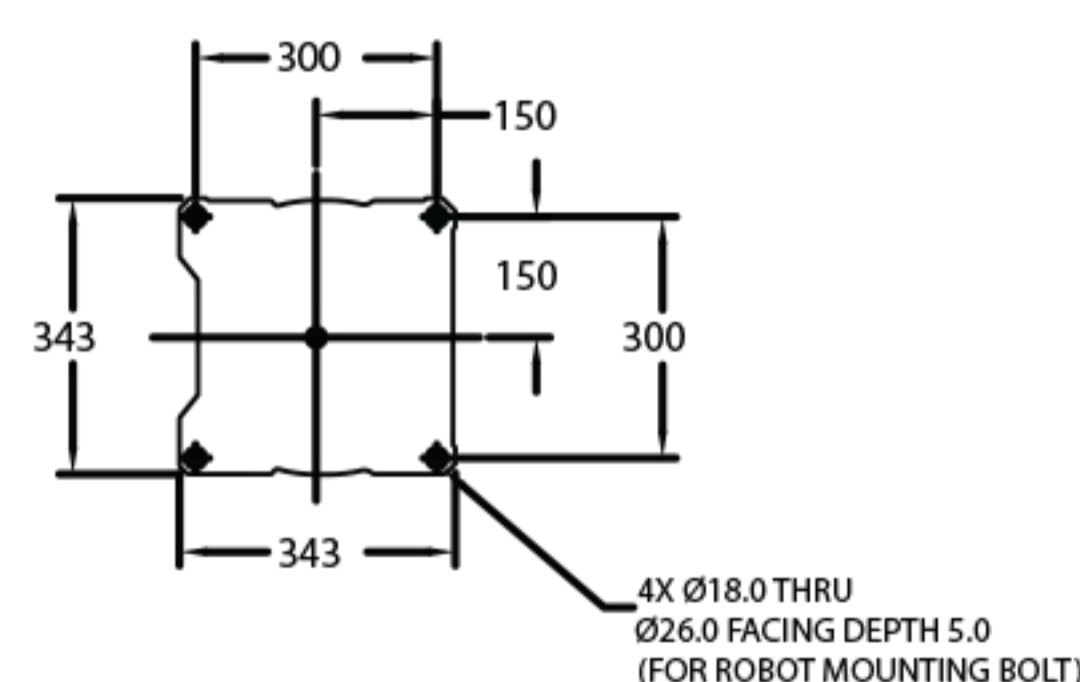
## Wrist M-20iA



## Wrist M-20iA/10L



## Footprint



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## Notes:

- (1) Payload on J3 casting is in addition to wrist payload capacity
- (2) Repeatability per JIS8432
- (3) Combined J2 & J3
- (4) J1 and J2 motion range de-rated when M-20iA & M-20iA/10L are angle or wall mounted
- (5) Organic solvents, acids, alkalis and chlorine/gasoline coolants or any chemicals which may harm NBR (nitrile rubber) must not be used