

S-420i™

Basic Description

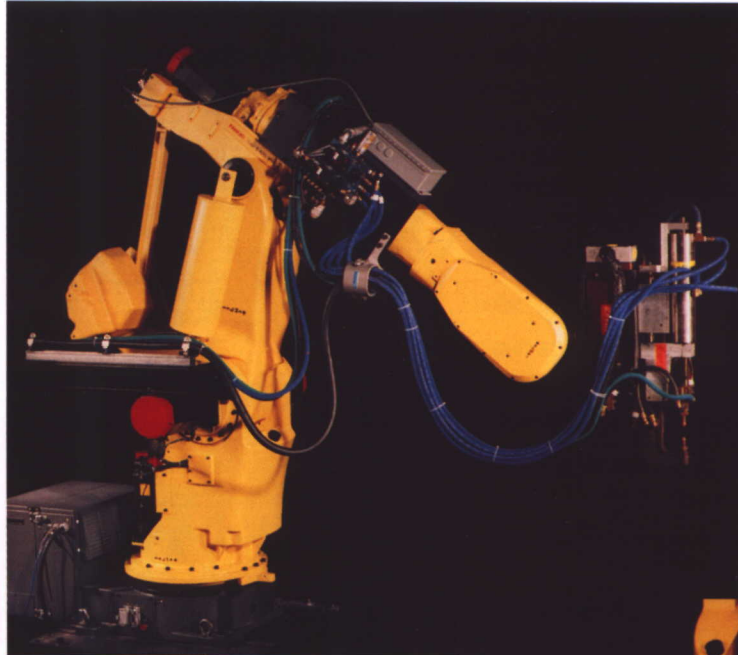
The FANUC S-420i line of robots is engineered for maximum performance and reliability in the automotive body shop and is supported by our extensive application technology and service/parts network. It provides a unique integrated controller, six-axis modular construction, electric servo-driven flexible design for high-speed and heavy payload processes.

S-420i the Solution for:

- Automotive spot welding and body assembly
- General industrial spot welding
- General material handling

Benefits

- Work envelope allows processing of large fabrications
- Modular robot design allows conversion from one model to another
- Combined mechanical unit and robot controller reduces floor space, point-to-point wiring and installation cost
- Minimum mechanical/electrical parts increase reliability
- High motion speeds reduce time between welds
- 360° Axis 1 rotation
- User power/signal/air lines internal to arm increase reliability
- Easy to learn and use application programming packages
- "Quick Change" electronics cabinet reduces catastrophic failure downtime to less than 15 minutes
- Low mass arm design allows high speed positioning
- Proven arm design in over 13,000 S-420 robot installations



Flexibility Features

- Extension arm, heavy payload wrist, wedge pedestal, reduction ratio and balancer modules allow simple robot conversion to single point weld, rack mount, long arm or heavy duty types
- Flexible and expandable I/O system internal to controller
- Distributed I/O blocks to reduce wiring

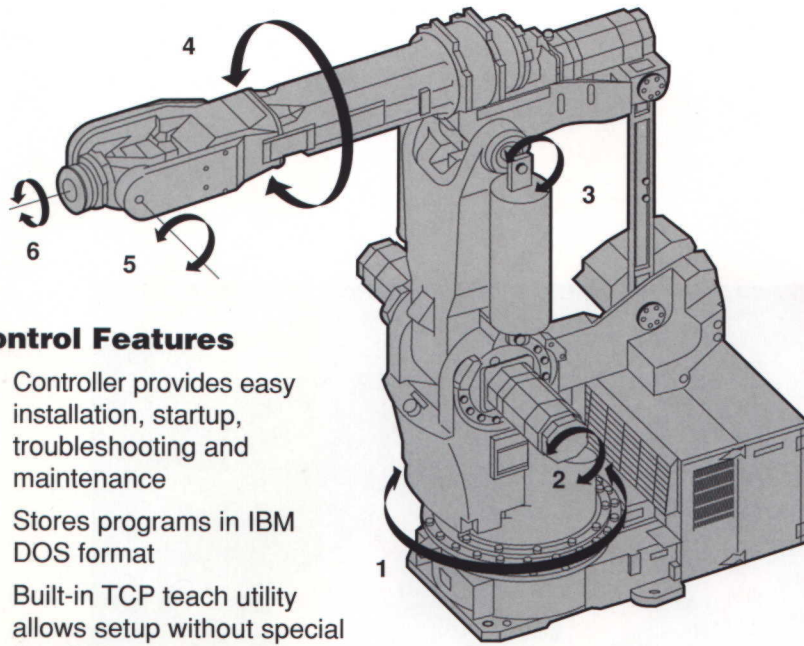
Mechanical Features

- Mechanical construction provides precise positioning and high speed motions
- Direct drive on all axes results in higher reliability and reduced maintenance
- RV speed reducers provide smooth motion at all speeds and long life
- Simple modular design with few components
- Sealed bearings and drives provide protection and improve reliability



- Absolute serial encoder positioning
- Wrist axis torque and inertia allows rated motion speed with large guns/tools
- Unique hollow RV speed reducers simplify cable routing
- Compact remote mount operator panel reduces aisle and floor space
- Waist mounted forklift brackets can be used for peripheral and weld transformer mounting
- Compact arm option for close spacing of units

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Control Features

- Controller provides easy installation, startup, troubleshooting and maintenance
- Stores programs in IBM DOS format
- Built-in TCP teach utility allows setup without special fixturing
- Easy to apply user multi-tasking programming environment
- Six-axis servo drive and single board control maximizes integration and reliability
- Distributed I/O blocks eliminate costly multi-conductor cables
- Common R-J2 interface to PLC, peripheral control, valve packs, robot programs and training increase customers' ease of use
- Advanced TurboMove motion control increases throughput

Software Features

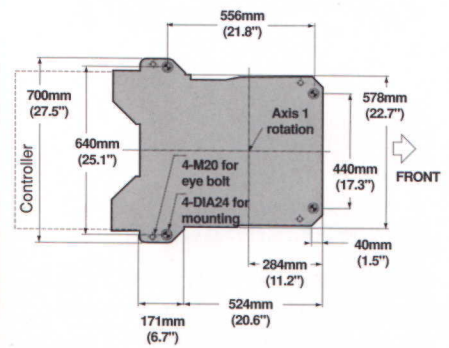
- Teach pendant uses menu-driven, plain English commands and process specific built-in functions
- English commands, comments, user-defined jog frames and consistent speed paths make setup and programming quick and easy
- Tool packages allow positional and speed adjustments during robot cycles
- SpotTool soft panel on teach pendant reduces hard wired buttons, switches and signal lights
- Other standard software features include:
 - Alarm logging and diagnostics

- Simple robot setup
- Production monitoring
- File utilities
- Menu windows
- Optional SpotWorks cell PC graphical interface supplements controller functionality and provides the following features:
 - Cause and recovery fault diagnostics
 - Three-dimensional path editor
 - PLC connectivity support
 - Weld controller network support
 - On-line manuals
 - Direct PC connection on plant network

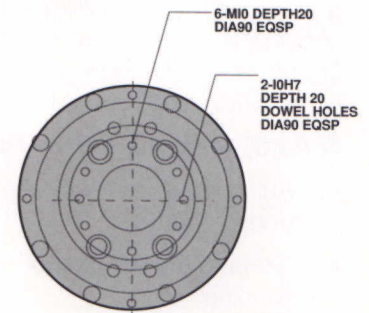
Options

- Internal arm user I/O and power wiring and air tube
- Tool Frame adjustment
- Ethernet and RS-232 Communications
- Remote TCP programming and jogging control
- Remote cabinet mounting with 7m (23 ft.) or 14m (46 ft.) cables
- Remote I/O communications to A-B or GE Fanuc

Footprint



Mounting plate



Product Line

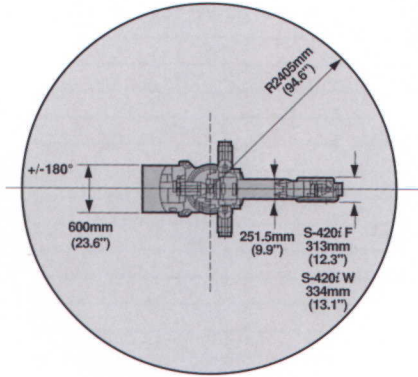
S-420i flexible robot models

- S-420i F - floor mounted
2.40m (7 ft., 11 in.) reach
120kg (265 lbs) load capacity
- S-420i F - floor mounted
2.85m (9 ft., 4 in.) reach
120kg (265 lbs) load capacity
- S-420i W - heavy duty
2.40m (7 ft., 11 in.) reach
155kg (342 lbs) load capacity
- S-420i L - long arm
3.00m (9ft., 9 in.) reach
75kg (165 lbs) load capacity
- S-420i S - single point weld
2.25m (7 ft., 5 in.) reach
80kg (176 lbs) load capacity
- S-420i R - rack mount
3.11m (10 ft., 2 in.) reach
100kg (220 lbs) load capacity
- S-420i R - rack mount
3.11m (10 ft., 2 in.) reach
120kg (265 lbs) load capacity

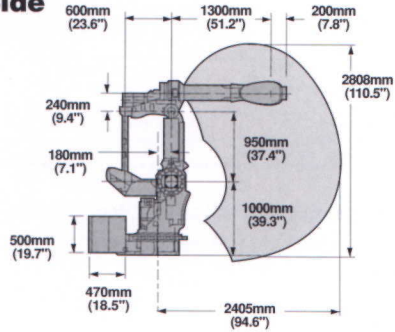
S-420i Dimensions

S-420i F/W

Top

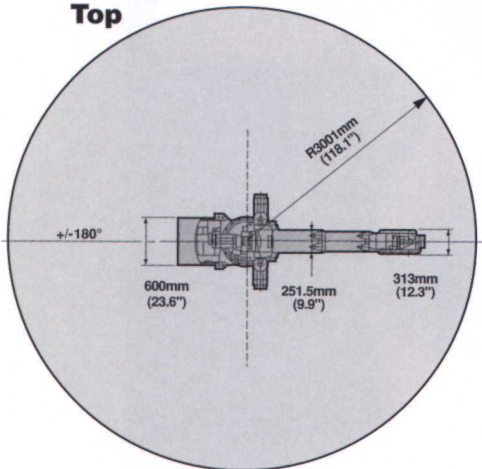


Side

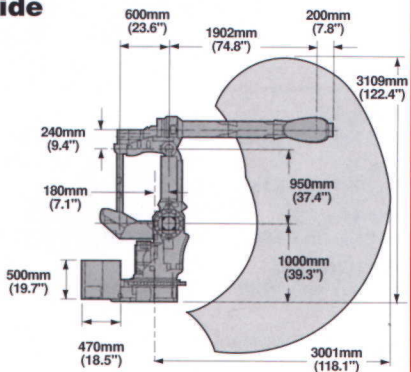


S-420i L

Top

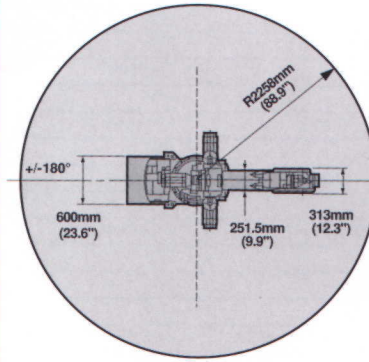


Side

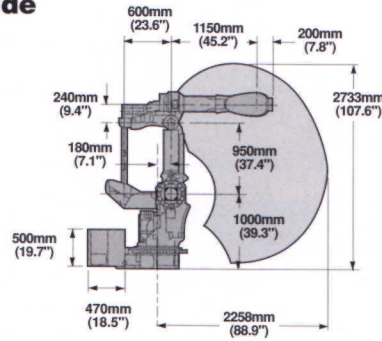


S-420i S

Top

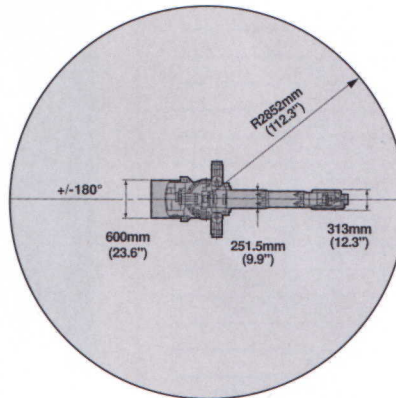


Side

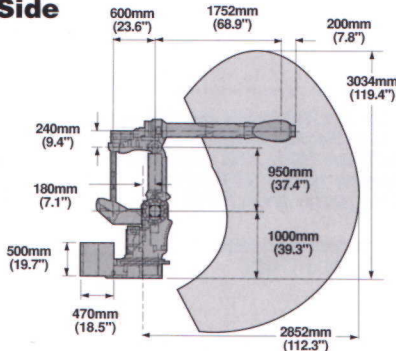


S-420i F 2.85

Top

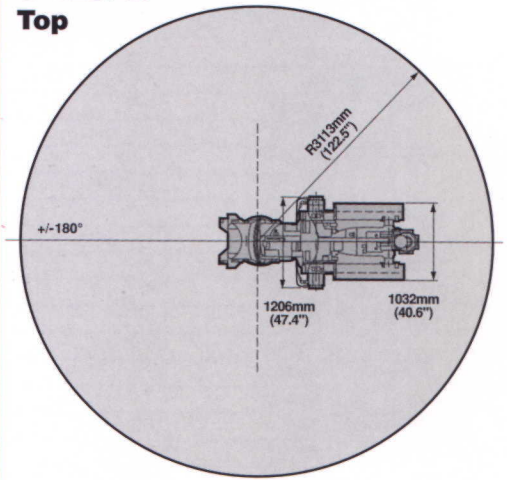


Side

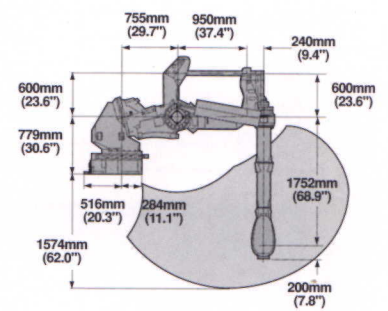


S-420i R

Top

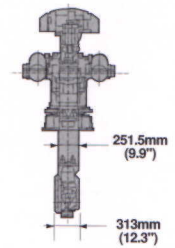


Side



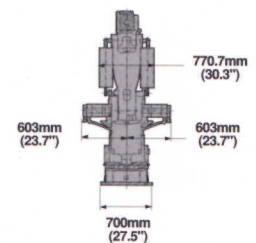
Front

for S-420iR



Front

for S-420i F/W/L/S



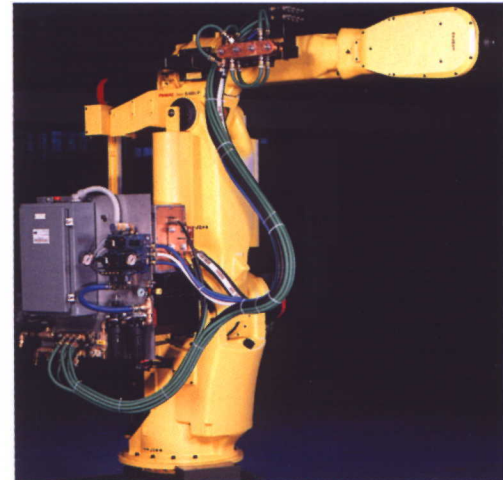
S-420i Specifications

Items	S-420i F	S-420i F	S-420i L	S-420i S	S-420i W	
Maximum reach	2.40m	2.85m	3.00m	2.25m	2.40m	
Load capacity	120kg (265 lbs)	120kg (265 lbs)	75kg (165 lbs)	80kg (176 lbs)	155kg (342 lbs)	
Axis 1	Range	360°	360°	360°	360°	
	Speed	100°/sec	90°/sec	100°/sec	70°/sec	90°/sec
Axis 2	Range	142°	142°	142°	142°	142°
	Speed	110°/sec	100°/sec	110°/sec	110°/sec	100°/sec
Axis 3	Range	135°	135°	135°	135°	135°
	Speed	100°/sec	90°/sec	100°/sec	100°/sec	75°/sec
Axis 4	Range	600°	600°	600°	480°	600°
	Speed	210°/sec	210°/sec	210°/sec	210°/sec	140°/sec
Axis 5	Range	260°	260°	260°	260°	260°
	Speed	150°/sec	150°/sec	150°/sec	150°/sec	110°/sec
Axis 6	Range	720°	720°	720°	720°	720°
	Speed	210°/sec	210°/sec	210°/sec	210°/sec	140°/sec
Moments	Axis 4	60kgf · m	60kgf · m	53kgf · m	54kgf · m	86kgf · m
	Axis 5	60kgf · m	60kgf · m	53kgf · m	54kgf · m	86kgf · m
	Axis 6	30kgf · m	30kgf · m	27kgf · m	28kgf · m	50kgf · m
Load Inertia	Axis 4	306kgf · cm · sec ²	306kgf · cm · sec ²	387kgf · cm · sec ²	376kgf · cm · sec ²	486kgf · cm · sec ²
	Axis 5	306kgf · cm · sec ²	306kgf · cm · sec ²	387kgf · cm · sec ²	376kgf · cm · sec ²	486kgf · cm · sec ²
	Axis 6	77kgf · cm · sec ²	77kgf · cm · sec ²	104kgf · cm · sec ²	100kgf · cm · sec ²	164kgf · cm · sec ²
Repeatability	±0.4mm (±0.016")	±0.4mm (±0.016")	±0.4mm (±0.016")	±0.4mm (±0.016")	±0.4mm (±0.016")	
Mounting method	Upright	Upright	Upright	Upright	Upright	
Mechanical brakes	All axes	All axes	All axes	All axes	All axes	
Weight	1500 kg (3300 lbs)	1600 kg (3520 lbs)	1600 kg (3520 lbs)	1500 kg (3300 lbs)	1500 kg (3300 lbs)	

Items	S-420i R	S-420i R
Maximum reach	3.11m	3.11m
Load capacity	100kg (220 lbs)	120kg (265 lbs)
Axis 1	Range	360°
	Speed	100°/sec
Axis 2	Range	123°
	Speed	100°/sec
Axis 3	Range	106°
	Speed	100°/sec
Axis 4	Range	600°
	Speed	210°/sec
Axis 5	Range	260°
	Speed	150°/sec
Axis 6	Range	720°
	Speed	210°/sec
Moments	Axis 4	57kgf · m
	Axis 5	57kgf · m
	Axis 6	29kgf · m
Load Inertia	Axis 4	337kgf · cm · sec ²
	Axis 5	337kgf · cm · sec ²
	Axis 6	86kgf · cm · sec ²
Repeatability	±0.4mm (±0.016")	±0.4mm (±0.016")
Mounting method	Rack	Rack
Mechanical brakes	All axes	All axes
Weight	1700 kg (3740 lbs)	1700 kg (3740 lbs)

FANUC Robotics offers complete S-420i application dressout featuring:

- Maintainability
- Reliability
- Unique configurations



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