Robotics

IRB 6700
The next generation of large industrial robots

The IRB 6700 family of robots is a natural evolution following 40 years of large robot heritage at ABB. This 7th generation of large ABB robots features a multitude of next generation improvements derived from intimate customer relationships and exhaustive engineering studies.

After four decades of interaction with our customers they have decisively told us that reliability is the single most important factor when choosing a robot. So when we decided to upgrade our most popular large robot range, we closely evaluated every possible change we could make to increase their reliability more than ever, while simultaneously improving their efficiency.

Introducing the “new generation” IRB 6700 family – the highest performance robots in the 150-300 kilogram class, now with a 20 percent reduction in total cost of ownership achieved through more robust design, longer service intervals, increased efficiency and simplified maintenance versus the previous generation.

ABB’s expertise and innovation come together to create a robot you can count on in today’s fast-paced and ever-changing production environments. In fact, we are so confident in their quality and reliability that they are fully supported by our ABB Robot Care “flat-fee” service contracts.

Our leading technology has created a new generation of robots that will quickly become indispensable members of your operation.

The IRB 6700 is more robust than its predecessor and maintenance has been simplified, making it the highest performing robot for the lowest total cost of ownership in the 150-300 kg class. Not only have accuracy, payload and speed been enhanced in the IRB 6700, but energy consumption has been lowered by 15 percent and overall serviceability has been improved with mean time between failures calculated at a significant 400,000 hours.

Multiple variants

The IRB 6700 enhances ABB’s portfolio by combining greater uptime, higher payloads and longer reach for use in Spot Welding, Material Handling and Machine Tending applications. A complete array of robot variants with payloads from 150 to 300 kg and reaches from 2.6 to 3.2 meters makes the IRB 6700 easily adaptable to the large variety of tasks required in both the automotive and general industries.

Robust and reliable

Anchored by a new generation of accurate, efficient and reliable motors and compact gearboxes, the IRB 6700 is underpinned with quality from the earliest stages of manufacturing. The entire robot structure has been strengthened with higher rigidity, resulting in increased accuracy, shorter cycle time and better protection. It has been built to withstand the harshest working environments and is available with ABB’s ultimate Foundry Plus 2 protection system.

To ensure predictions for reliability were accurate in the real world, the IRB 6700 was validated and tested with more robot prototypes than ever before.

Simplified maintenance

In designing the new robot, easier serviceability was identified as a critical aspect for improving its total cost of ownership. The end result is a doubling of time between service intervals and an optimization of maintenance. On average it takes ABB technicians 20 minutes to conduct an annual inspection, and service and repair time has been reduced by as much as 15 percent.

Access to motors has also been improved and technical documentation for maintenance has become easier to read and understand through the use of improved graphics and 3D simulations called “Simstructions.”

Built around LeanID

Every robot in the 6700 family has been designed to accommodate LeanID—a new Integrated Dressing (ID) solution meant to achieve a balance between cost and durability by integrating the most exposed parts of the dress pack into the robot. Equipping an IRB 6700 with LeanID makes it easier to program and simulate with predictable cable movements, creates a more compact footprint, and lengthens service intervals due to lessened wear and tear.

Features and benefits

- Increased service intervals and decreased service times
- Longer uptime—mean time between failures 400,000 hours
- Available with LeanID for cost effectively increasing dress pack lifetimes
- More robust with a rigid structure and a new generation of motors and compact gearboxes
- Increased speed and shorter cycle times—on average 5 percent faster
- Improved accuracy and higher payloads
- Built to operate in the harshest environments—available with Foundry Plus 2 package
- 15 percent lower energy consumption

Specification without LeanID

Robot versions IRB	Reach	Handling capacity	Center of gravity	Wrist torque
6700-200	2.60 m	200 kg	300 mm	981 Nm
6700-155	2.85 m	155 kg	300 mm	927 Nm
6700-235	2.65 m	235 kg	300 mm	1324 Nm
6700-205	2.80 m	205 kg	300 mm	1263 Nm
6700-175	3.05 m	175 kg	300 mm	1179 Nm
6700-150	3.20 m	150 kg	300 mm	1135 Nm
6700-300	2.70 m	300 kg	300 mm	1825 Nm
6700-245	3.00 m	245 kg	300 mm	1693 Nm
Extra loads can be mounted on all variants. 50 kg on upper arm and 250 kg on frame of axis 1.				
Number of axes		6		
Protection		Complete robot IP 67		
Mounting		Floor mounted		
IRC5 Controller variants		Single cabinet, Panel Mounted Controller		

Specification with LeanID

Robot versions IRB	Reach	Handling capacity	Center of gravity	Wrist torque
6700-200	2.60 m	175 kg	300 mm	981 Nm
6700-155	2.85 m	140 kg	300 mm	927 Nm
6700-235	2.65 m	220 kg	300 mm	1324 Nm
6700-205	2.80 m	200 kg	300 mm	1263 Nm
6700-175	3.05 m	155 kg	300 mm	1179 Nm
6700-150	3.20 m	145 kg	300 mm	1135 Nm
6700-300	2.70 m	270 kg	300 mm	1825 Nm
6700-245	3.00 m	220 kg	300 mm	1693 Nm
Extra loads can be mounted on all variants. 50 kg on upper arm and 250 kg on frame of axis 1.				
Number of axes		6		
Protection		Complete robot IP 67		
Mounting		Floor mounted		
IRC5 Controller variants		Single cabinet, Panel Mounted Controller		

Performance

	6700-200	6700-155	6700-235	6700-245
Pos. repeatability RP (mm)	0.05	0.05	0.05	0.05
Path repeatability RT (mm)	0.06	0.12	0.08	0.12
	6700-205	**6700-175**	**6700-150**	**6700-300**
Pos. repeatability RP (mm)	0.05	0.05	0.06	0.06
Path repeatability RT (mm)	0.08	0.12	0.14	0.07

IRB 6700-200, IRB 6700-155

Axis movements	Working range	Axis max speed
Axis 1 Rotation*	+170° to - 170°	110°/s
Axis 2 Arm	+85° to - 65°	110°/s
Axis 3 Arm	+70° to - 180°	110°/s
Axis 4 Wrist	+300° to - 300°	190°/s
Axis 5 Bend**	+130° to - 130°	150°/s
Axis 6 Turn***	+360° to - 360°	210°/s

A supervision function prevents overheating in applications with intensive and frequent movements.

* Option ±220°, ** ±120° for LeanID option, *** ±220° for LeanID option

IRB 6700-235, IRB 6700-205, IRB 6700-175, IRB 6700-150

Axis movements	Working range	Axis max speed
Axis 1 Rotation*	+170° to -170°	100°/s
Axis 2 Arm	+85° to -65°	90°/s
Axis 3 Arm	+70° to -180°	90°/s
Axis 4 Wrist	+300° to -300°	170°/s
Axis 5 Bend**	+130° to -130°	120°/s
Axis 6 Turn***	+360° to -360°	190°/s

A supervision function prevents overheating in applications with intensive and frequent movements.

* Option ±220°, ** ±120° for LeanID option, *** ±220° for LeanID option

IRB 6700-300, IRB 6700-245

Axis movements	Working range	Axis max speed
Axis 1*	+170° to -170°	100°/s
Axis 2****	+85° to -65°	88°/s
Axis 3	+70° to -180°	90°/s
Axis 4	+300° to -300°	140°/s
Axis 5**	+130° to -130°	110°/s
Axis 6***	+360° to -360°	180°/s

A supervision function prevents overheating in applications with intensive and frequent movements.

* Option ±220°, ** ±120° for LeanID option, *** ±220° for LeanID option

**** Working range +85 to -58 when axis 3 is within +70 to -40

Electrical Connections

Supply voltage	200-600 V,50/60 Hz
Energy consumption	ISO-Cube 2.85kW

Physical

Dimensions robot base	1004 x 720 mm
Weight	1170 - 1280 kg

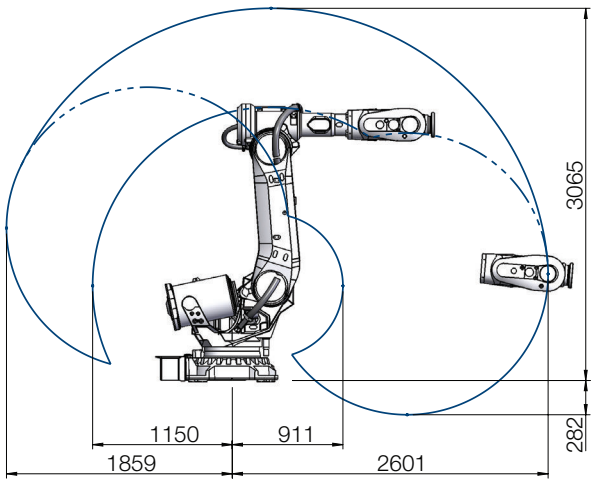
Environment

Ambient temperature for mechanical unit	
During operation	+ 5°C (41°F) -+50°C (122°F) *
During transportation and storage for short periods (max 24h)	- 25°C (13°F) -+55°C (131°F) up to +70°C (158°F)
Relative humidity	Max 95 %
Noise level	Max 71 dB
Safety	Double circuits with supervision, emergency stops and safety functions, 3-position enable device
Emission	EMC/EMI-shielded
Options	Foundry Plus 2 LeanID

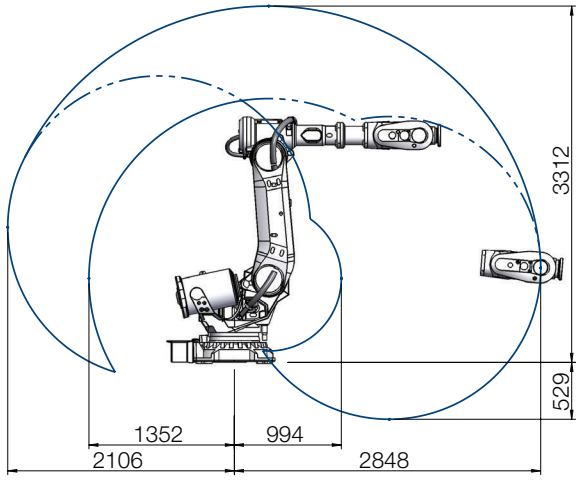
* Data and dimensions may be changed without notice.

Working range IRB 6700

IRB 6700-200/2.60



IRB 6700-155/2.85



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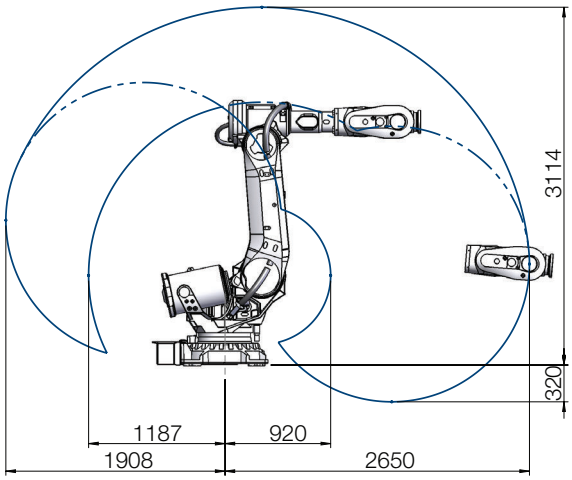

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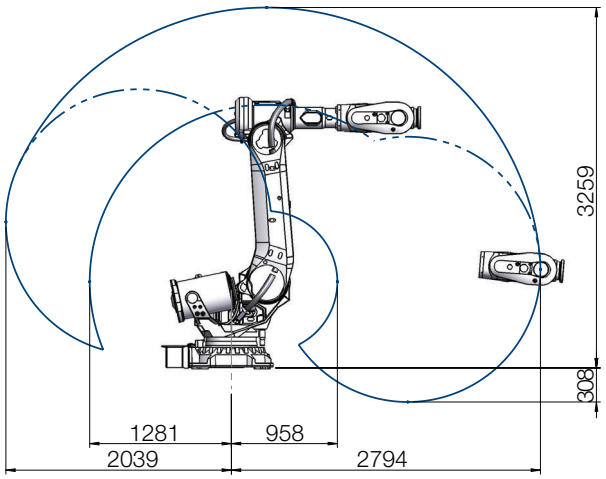
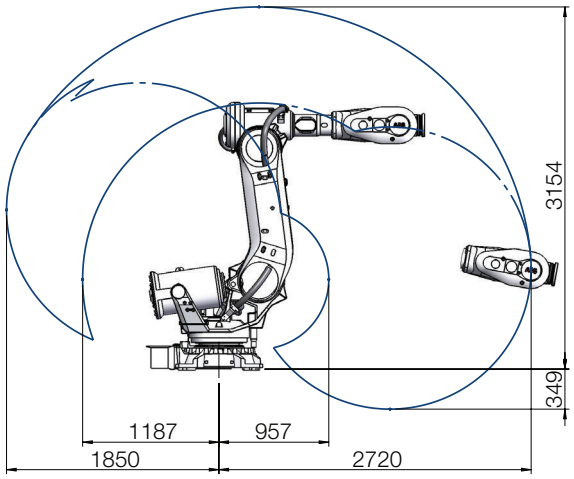


IRB 6700-300/2.70



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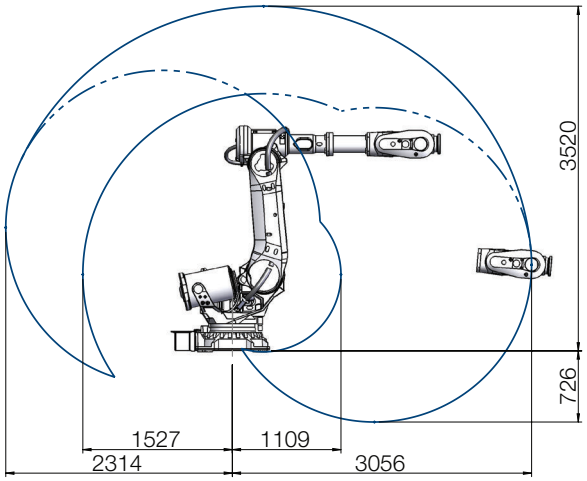

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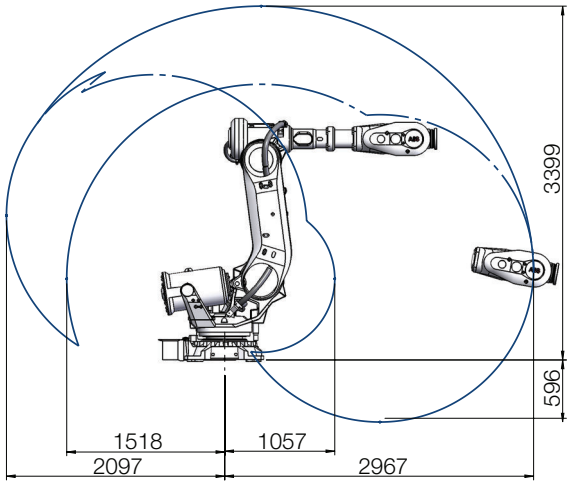
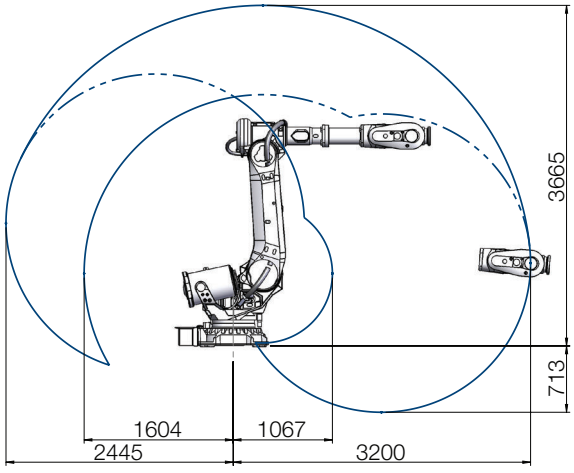


IRB 6700-150/3.20



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