

ROBOTICS

# Product specification

## IRB 910SC



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## **Product specification**

**IRB 910SC-3/0.45**

**IRB 910SC-3/0.55**

**IRB 910SC-3/0.65**

**IRC5**

**Document ID: 3HAC056431-001**

**Revision: E**

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# Overview of this specification

## About this product specification

It describes the performance of the manipulator or a complete family of manipulators in terms of:

- The structure and dimensional prints
- The fulfilment of standards, safety and operating requirements
- The load diagrams, mounting of extra equipment, the motion and the robot reach
- The specification of variants and options available

## Usage

Product specifications are used to find data and performance about the product, for example to decide which product to buy. How to handle the product is described in the product manual.

## Users

It is intended for:

- Product managers and product personnel
- Sales and marketing personnel
- Order and customer service personnel

## References

Documentation referred to in the manual, is listed in the table below.

Document name	Document ID
<i>Product manual - IRB 910SC</i>	3HAC056430-001
<i>Product manual, spare parts - IRB 910SC</i>	3HAC056433-001
Reference to the circuit diagram for the robot.	Document ID
<i>Product manual - IRC5 Compact</i>	3HAC035738-001
<i>Operating manual - IRC5 with FlexPendant</i>	3HAC050941-001
<i>Product specification - Controller software IRC5</i>	3HAC050945-001
<i>Product specification - Controller IRC5</i>	3HAC047400-001
<i>Product specification - Robot user documentation, IRC5 with RobotWare 6</i>	3HAC052355-001

## Revisions

Revision	Description
-	First edition.

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## Overview of this specification

Continued

Revision	Description
A	<ul style="list-style-type: none"><li>• The force and torque values under endurance load and maximum load have been updated. See <a href="#">Floor mounted on page 18</a>.</li><li>• Ball screw spline unit is added to the warning listing the parts that are easily damaged due to overload. See <a href="#">Information on page 20</a>.</li><li>• Working range of axis 4 has been updated. See <a href="#">Robot motion on page 31</a>.</li><li>• Performance data of IRB 910SC-3/0.45 and IRB 910SC-3/0.65 has been added. See <a href="#">Performance according to ISO 9283 on page 35</a>.</li><li>• Velocity of axis 3 changes from 1.02 m/s to 1 m/s. See <a href="#">Velocity on page 36</a>.</li><li>• Minor changes.</li></ul>
B	Published in release R16.2. The following updates are done in this revision: <ul style="list-style-type: none"><li>• Dimension drawing for fitting the end effector is updated. See <a href="#">Fitting of end effector to the ball screw spline shaft on page 26</a>.</li></ul>
C	Published in release R17.1. The following updates are done in this revision: <ul style="list-style-type: none"><li>• Restriction of load diagram added.</li><li>• Changed protection from IP30 to IP20</li></ul>
D	Published in release R17.2. The following updates are done in this revision: <ul style="list-style-type: none"><li>• Updated list of applicable standards.</li><li>• Improved picture of end effector dimension.</li></ul>
E	Published in release R18.2. The following updates are done in this revision: <ul style="list-style-type: none"><li>• Updated the COG figure for describing max. moment of inertia.</li></ul>



# 1 Description

## 1.1 Structure

### 1.1.1 Introduction to structure

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#### General

The IRB 910SC is ABB Robotics first generation SCARA robot, with 4 axes and a rated payload of 3 kg (maximum payload of 6 kg) in three different reach variants 0.45 m, 0.55 m, and 0.65 m, designed specifically for manufacturing industries that use flexible robot-based automation, e.g. 3C industry. The robot has an open structure that is especially adapted for flexible use, and can communicate extensively with external systems.

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#### Operating system

The robot is equipped with the IRC5 Compact (IRC5C) controller and robot control software, RobotWare. RobotWare supports every aspect of the robot system, such as motion control, development and execution of application programs, communication etc. See *Product specification - Controller IRC5 with FlexPendant* (IRC5C included).

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#### Safety

The safety standards are valid for the complete robot, manipulator and controller.

---

#### Additional functionality

For additional functionality, the robot can be equipped with optional software for application support - for example dispensing and cutting, communication features - network communication - and advanced functions such as multitasking, sensor control etc. For a complete description on optional software, see *Product specification - Controller software IRC5*.

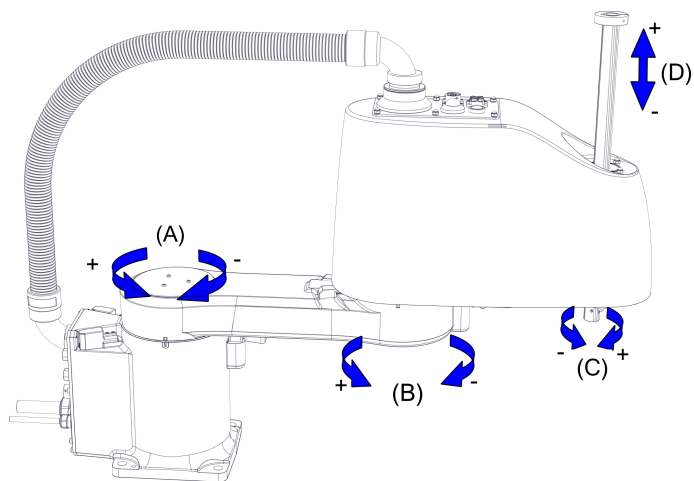
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# 1 Description

## 1.1.1 Introduction to structure

*Continued*

### Manipulator axes



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Position	Description	Position	Description
A	Axis 1	B	Axis 2
C	Axis 4	D	Axis 3

### 1.1.2 The robot

#### General

The IRB 910SC is available in three versions and all can only be mounted on floor or other flat surface, no other mounting position is permitted.

Robot type	Rated handling capacity (kg)	Maximum handling capacity (kg)	Reach (m)
IRB 910SC	3 kg	6 kg	0.45 m
IRB 910SC	3 kg	6 kg	0.55 m
IRB 910SC	3 kg	6 kg	0.65 m

#### Manipulator weight

Data	Weight
IRB 910SC-3/0.45	24.5 kg
IRB 910SC-3/0.55	25 kg
IRB 910SC-3/0.65	25.5 kg

#### Other technical data

Data	Description	Note
Airborne noise level	The sound pressure level outside	< 70 dB (A) Leq (acc. to the working space Machinery directive 2006/42/EG)

#### Power consumption

Robot in 0 degree position	IRB 910SC-3/0.45	IRB 910SC-3/0.55	IRB 910SC-3/0.65
Brakes engaged	71 W	71 W	71 W
Brakes disengaged	127.6 W	127.6 W	127.6 W

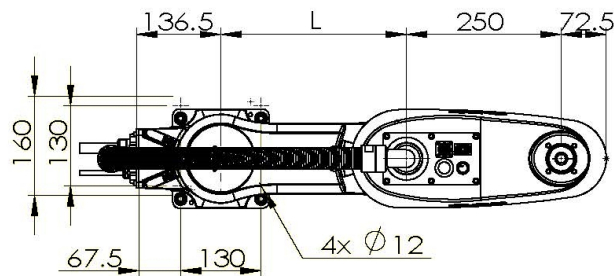
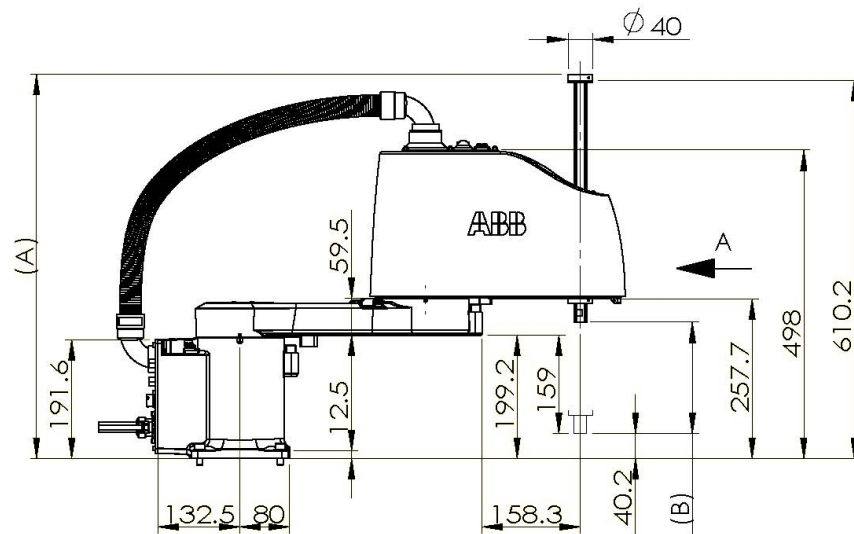
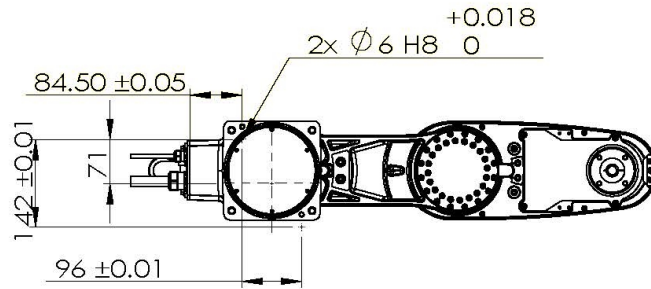
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# 1 Description

## 1.1.2 The robot

Continued

### Dimensions



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Item	Description	Variant		
		IRB 910SC-3/0.45	IRB 910SC-3/0.55	IRB 910SC-3/0.65
L	Length of lower arm	200 mm	300 mm	400 mm
A	Maximum height	620 mm	620 mm	620 mm

Continues on next page

## 1 Description

### 1.1.2 The robot *Continued*

Item	Description	Variant		
		IRB 910SC-3/0.45	IRB 910SC-3/0.55	IRB 910SC-3/0.65
B	Z stroke	180 mm	180 mm	180 mm

# 1 Description

## 1.2.1 Applicable standards

## 1.2 Standards

### 1.2.1 Applicable standards



#### Note

The listed standards are valid at the time of the release of this document. Phased out or replaced standards are removed from the list when needed.

### Standards, EN ISO

The product is designed in accordance with the requirements of:

Standard	Description
EN ISO 12100:2010	Safety of machinery - General principles for design - Risk assessment and risk reduction
EN ISO 13849-1:2015	Safety of machinery, safety related parts of control systems - Part 1: General principles for design
EN ISO 13850:2015	Safety of machinery - Emergency stop - Principles for design
EN ISO 10218-1:2011	Robots for industrial environments - Safety requirements -Part 1 Robot
ISO 9787:2013	Robots and robotic devices -- Coordinate systems and motion nomenclatures
ISO 9283:1998	Manipulating industrial robots, performance criteria, and related test methods
EN ISO 14644-1:2015 <sup>i</sup>	Classification of air cleanliness
EN ISO 13732-1:2008	Ergonomics of the thermal environment - Part 1
EN 61000-6-4:2007 + A1:2011 IEC 61000-6-4:2006 + A1:2010 (option 129-1)	EMC, Generic emission
EN 61000-6-2:2005 IEC 61000-6-2:2005	EMC, Generic immunity
EN IEC 60974-1:2012 <sup>ii</sup>	Arc welding equipment - Part 1: Welding power sources
EN IEC 60974-10:2014 <sup>ii</sup>	Arc welding equipment - Part 10: EMC requirements
EN IEC 60204-1:2006	Safety of machinery - Electrical equipment of machines - Part 1 General requirements
IEC 60529:1989 + A2:2013	Degrees of protection provided by enclosures (IP code)

<sup>i</sup> Only robots with protection Clean Room.

<sup>ii</sup> Only valid for arc welding robots. Replaces EN IEC 61000-6-4 for arc welding robots.

### European standards

Standard	Description
EN 614-1:2006 + A1:2009	Safety of machinery - Ergonomic design principles - Part 1: Terminology and general principles

*Continues on next page*

# 1 Description

## 1.2.1 Applicable standards

*Continued*

Standard	Description
EN 574:1996 + A1:2008	Safety of machinery - Two-hand control devices - Functional aspects - Principles for design

### Other standards

Standard	Description
ANSI/RIA R15.06	Safety requirements for industrial robots and robot systems
ANSI/UL 1740	Safety standard for robots and robotic equipment
CAN/CSA Z 434-14	Industrial robots and robot Systems - General safety requirements

# 1 Description

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## 1.3.1 Introduction to installation

## 1.3 Installation

### 1.3.1 Introduction to installation

---

#### General

IRB 910SC is adapted for normal industrial environment. An end effector with max. weight of 6 kg, including payload, can be mounted on the lower end of the ball screw spline shaft (axis 3). For more information about mounting of extra equipment, see [Mounting of equipment on page 26](#).



### 1.3.2 Operating requirements

#### Protection standard

Robot variant	Protection standard IEC529
All variants, manipulator	IP20

#### Explosive environments

The robot must not be located or operated in an explosive environment.

#### Working range limitations

EPS will not be selectable and no mechanical limitations available.

#### Ambient temperature

Description	Standard/Option	Temperature
Manipulator during operation	Standard	+ 5 °C <sup>i</sup> (41 °F) to + 45 °C (113 °F)
For the controller	Standard/Option	See <i>Product specification - Controller IRC5</i>
Complete robot during transportation and storage	Standard	- 25 °C (-13 °F) to + 55 °C (131 °F)
For short periods (not exceeding 24 hours)	Standard	up to + 70 °C (158 °F)

<sup>i</sup> At low environmental temperature < 10°C is, as with any other machine, a warm-up phase recommended to be run with the robot. Otherwise there is a risk that the robot stops or run with lower performance due to temperature dependent oil and grease viscosity.

#### Relative humidity

Description	Relative humidity
Complete robot during operation, transportation and storage	Max. 95% at constant temperature

# 1 Description

## 1.3.3 Mounting the manipulator

### 1.3.3 Mounting the manipulator

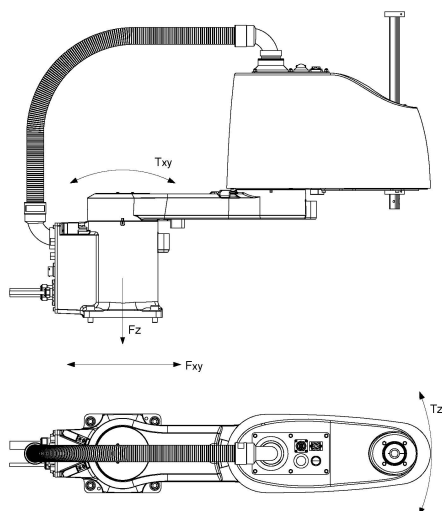
#### General

Maximum load in relation to the base coordination system. See Figure below.

#### Floor mounted

Force	Endurance load (in operation)	Max. load (emergency stop)
Force xy	$\pm 651$ N	$\pm 945$ N
Force z	$255 \pm 392$ N	$255 \pm 441$ N
Torque xy	$\pm 260$ Nm	$\pm 418$ Nm
Torque z	$\pm 121$ Nm	$\pm 238$ Nm

The illustration shows the directions of the robots stress forces.



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$F_{xy}$	Force in any direction in the XY plane
$F_z$	Force in the Z plane
$T_{xy}$	Bending torque in any direction in the XY plane
$T_z$	Bending torque in the Z plane

The table shows the various forces and torques working on the robot during different kinds of operation.



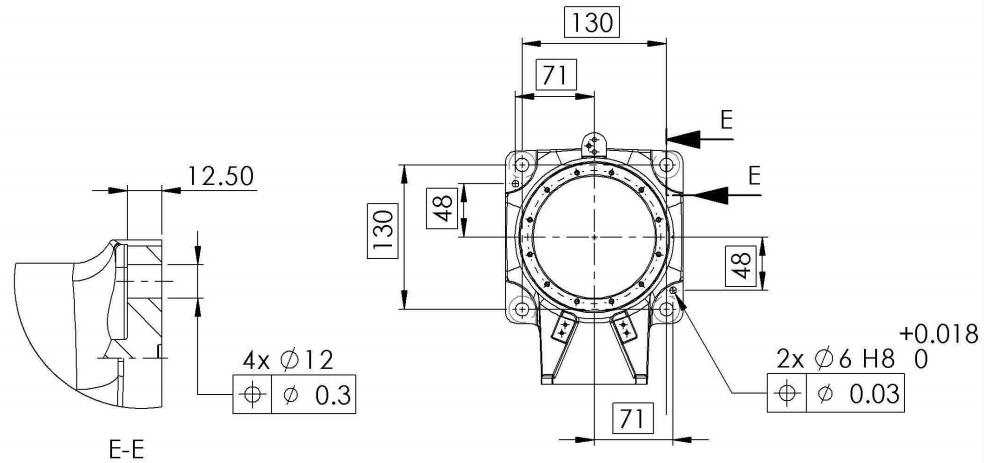
#### Note

These forces and torques are extreme values that are rarely encountered during operation. The values also never reach their maximum at the same time!

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Fastening holes robot base

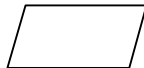
View from top.



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Attachment bolts, specification

The table specifies the type of securing screws and washers to be used to secure the robot directly to the foundation. It also specifies the type of pins to be used.

Suitable screws	M10x25
Quantity	4 pcs
Quality	8.8
Suitable washer	20x10.5x2
Guide pins	2 pcs, D6x20, ISO 2338 - 6m6x20 - A1
Tightening torque	45 Nm
Level surface requirements	<div style="border: 1px solid black; padding: 5px; display: flex; align-items: center; justify-content: center;">  <div style="margin-left: 20px; font-size: 24px; font-weight: bold;">0.1</div> </div>

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# 1 Description

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## 1.4.1 Introduction to load diagram

## 1.4 Load diagrams

### 1.4.1 Introduction to load diagram

---

#### Information



#### WARNING

It is very important to always define correct actual load data and correct payload of the robot. Incorrect definitions of load data can result in overloading of the robot.

If incorrect load data and/or loads are outside load diagram is used the following parts can be damaged due to overload:

- ball screw spline unit
- motors
- gearboxes
- mechanical structure



#### WARNING

In the robot system is the service routine LoadIdentify available, which allows the user to make an automatic definition of the tool and load, to determine correct load parameters. For detailed information, see *Operating manual - IRC5 with FlexPendant*.



#### WARNING

Robots running with incorrect load data and/or with loads outside diagram, will not be covered by robot warranty.

---

#### General

The load diagram includes a nominal pay load inertia,  $J_0$  of  $0.01 \text{ kgm}^2$ . At different moment of inertia the load diagram will be changed. For robots that are allowed tilted, wall or inverted mounted, the load diagrams as given are valid and thus it is also possible to use RobotLoad within those tilt and axis limits.

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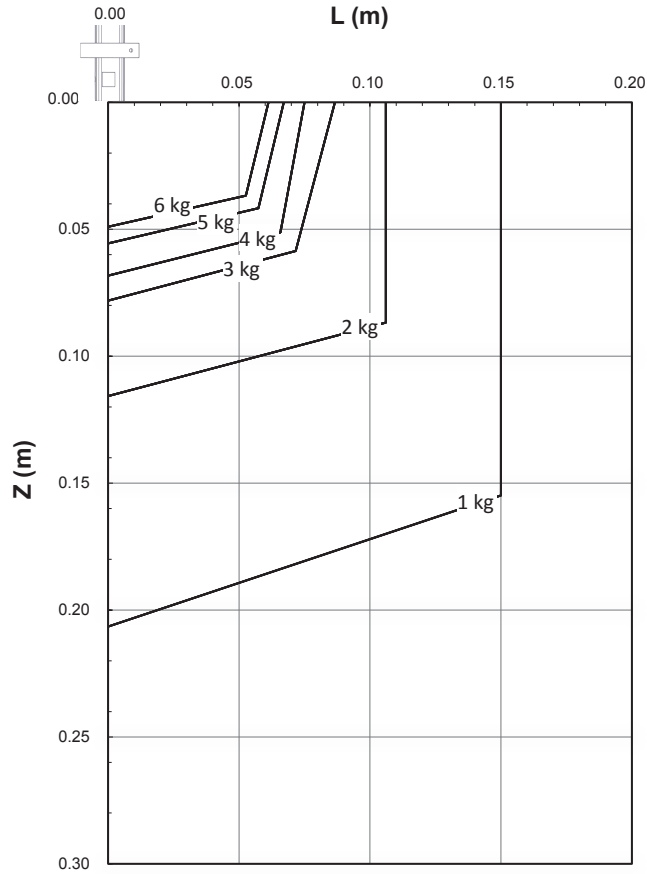
#### Control of load case by "RobotLoad"

To easily control a specific load case, use the calculation program ABB RobotLoad. Contact your local ABB organization for more information.

The result from RobotLoad is only valid within the maximum loads and tilt angles. There is no warning if the maximum permitted armload is exceeded. For over load cases and special applications, contact ABB for further analysis.

1.4.2 Load diagram

IRB 910SC-3/0.45



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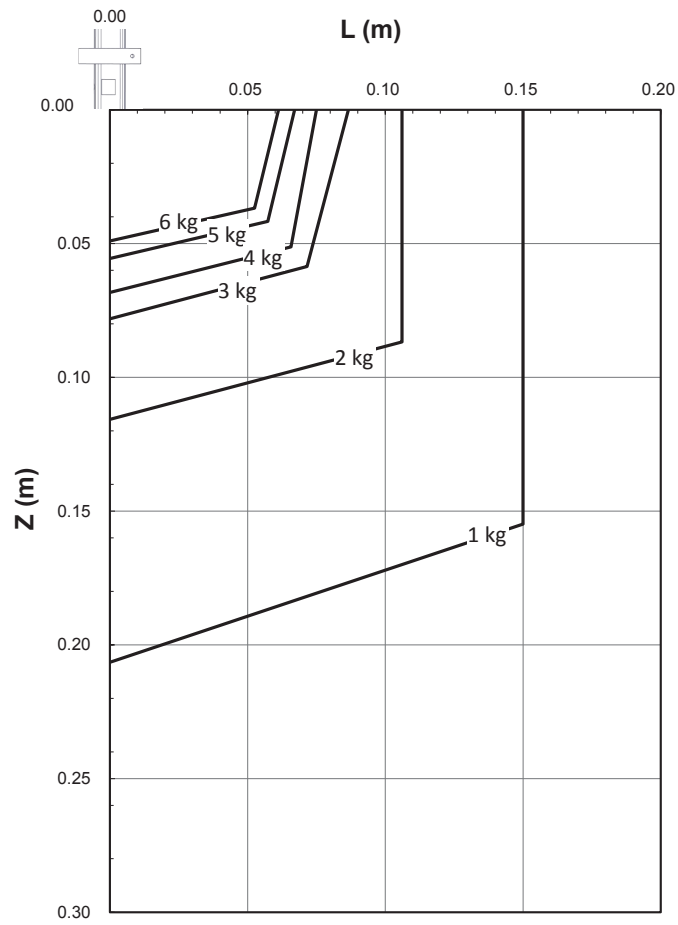
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# 1 Description

## 1.4.2 Load diagram

Continued

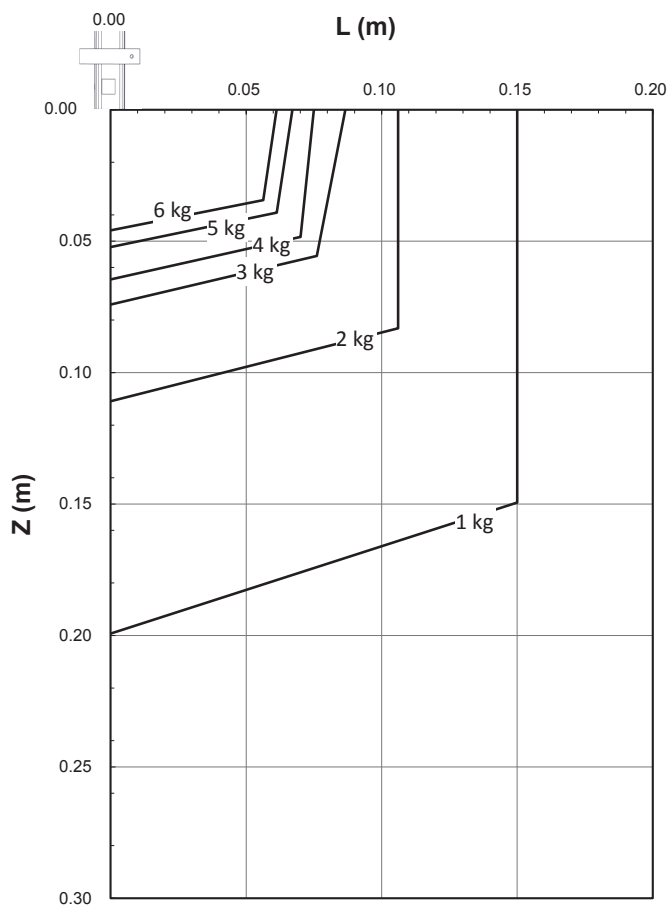
IRB 910SC-3/0.55



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IRB 910SC-3/0.65



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# 1 Description

## 1.4.3 Maximum load and moment of inertia

### 1.4.3 Maximum load and moment of inertia

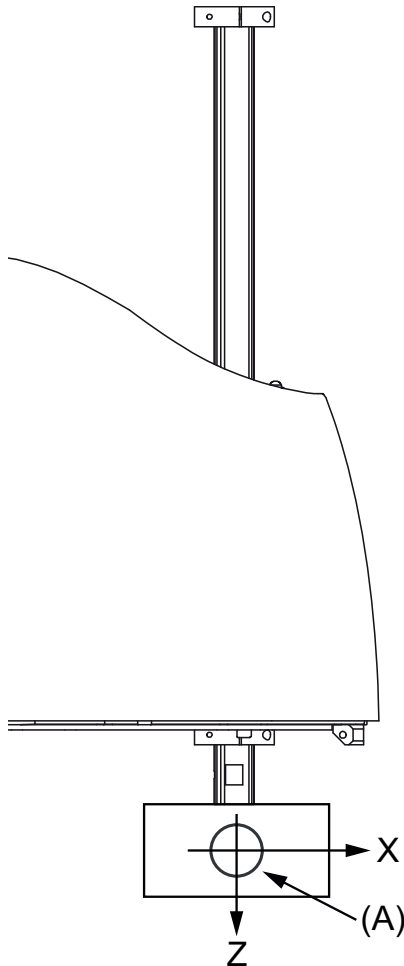
#### General

Total load given as: Mass in kg, center of gravity (Z and L) in m and moment of inertia ( $J_{ox}$ ,  $J_{oy}$ ,  $J_{oz}$ ) in  $\text{kgm}^2$ .  $L = \sqrt{X^2 + Y^2}$ .

For IRB 910SC, L is 0 mm at the default rating and its maximum value changes with the payload. See [Load diagram on page 21](#).

#### Full movement

Axis	Robot variant	Max. value
4	IRB 910SC-3/0.45	$J_4 = \text{Mass} \times L^2 + J_{0Z} \leq 0.1 \text{ kgm}^2$
	IRB 910SC-3/0.55	$J_4 = \text{Mass} \times L^2 + J_{0Z} \leq 0.1 \text{ kgm}^2$
	IRB 910SC-3/0.65	$J_4 = \text{Mass} \times L^2 + J_{0Z} \leq 0.1 \text{ kgm}^2$



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Position	Description
A	Center of gravity

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Position	Description
$J_{ox}, J_{oy}, J_{oz}$	Max. moment of inertia around the X, Y and Z axes at center of gravity.

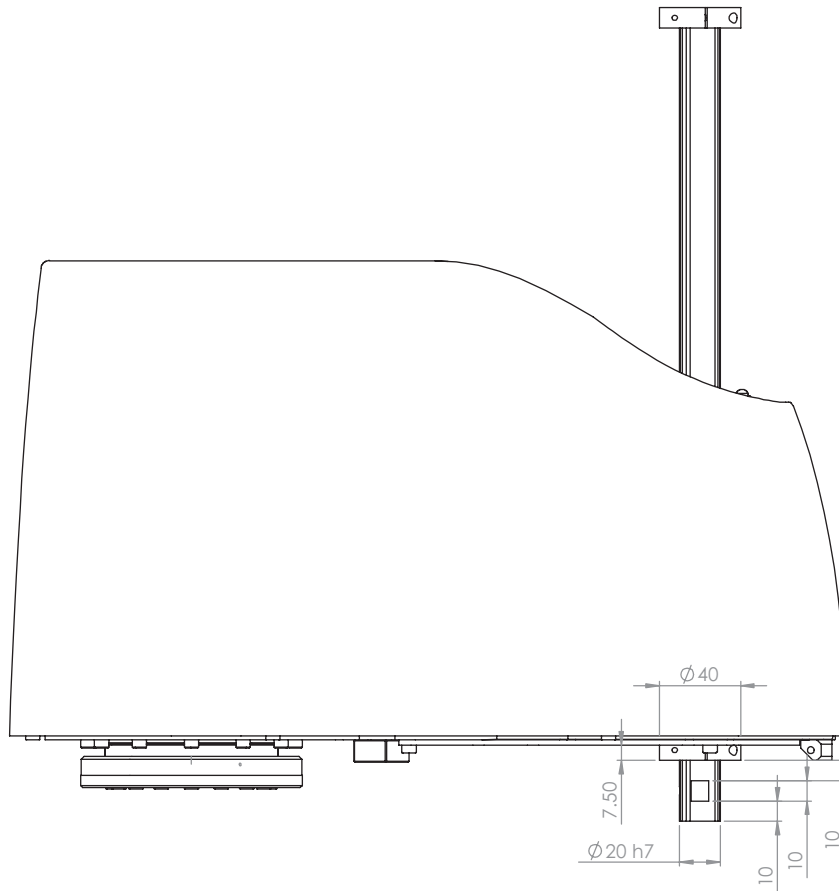
# 1 Description

## 1.5 Mounting of equipment

### 1.5 Mounting of equipment

#### Fitting of end effector to the ball screw spline shaft

An end effector can be attached to the lower end of the shaft of the ball screw spline unit. The dimensions for fitting the end effector is shown in the following figure.



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A	Flat cut
B	Conical hole
C	Stop block diameter
D	Through hole
E	Shaft diameter

# 1 Description

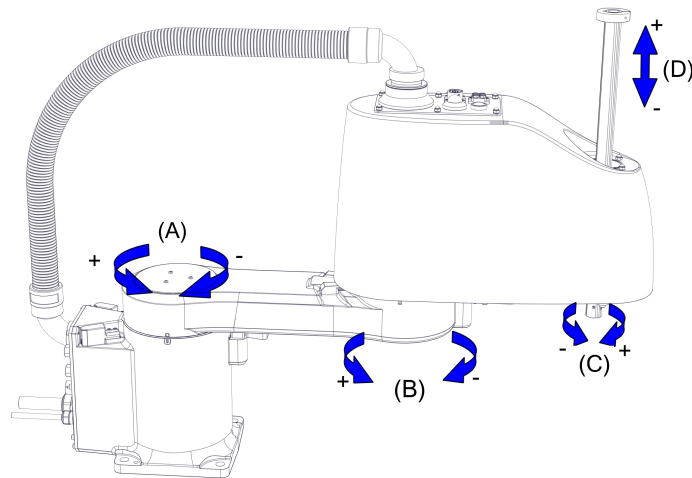
## 1.6.1 Fine calibration

## 1.6 Calibration

### 1.6.1 Fine calibration

#### General

Fine calibration is made by moving the axes so that the synchronization mark on each joint is aligned. For detailed information on calibration of the robot see *Product manual - IRB 910SC*.



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Position	Description	Position	Description
A	Axis 1	B	Axis 2
C	Axis 4	D	Axis 3

## 1.7 Maintenance and troubleshooting

### 1.7.1 Introduction to maintenance and trouble shooting

---

#### General

The robot requires only a minimum of maintenance during operation. It has been designed to make it as easy to service as possible:

- Maintenance-free AC motors are used.
- Grease used for all gearboxes.
- The cabling is routed for longevity, and in the unlikely event of a failure, its modular design makes it easy to change.

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#### Maintenance

The maintenance intervals depend on the use of the robot, the required maintenance activities also depends on selected options. For detailed information on maintenance procedures, see *Maintenance* section in the *Product Manual - IRB 910SC*.

# 1 Description

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## 1.8 Robot motion

## 1.8 Robot motion

---

### General



#### Note

Robot moves faster when axis 3 is at a higher position. If the axis 3 is at a relatively low position, the acceleration and deceleration of axes 1, 2 and 4 may be reduced based on the actual position and speed of the axes, and the stabilization time for final positioning may also be longer when moving the robot horizontally.

*Continues on next page*

1.8.1 Working range and type of motion

Robot motion

Axis	Type of motion	Working range
Axis 1	Rotation motion	-140° to +140°
Axis 2	Rotation motion	-150° to +150° <sup>i</sup>
Axis 3	Linear motion	-180 mm to 0 mm
Axis 4	Rotation motion	Default: -400° to +400° Maximum revolutions: -864 to +864 <sup>ii</sup>

- <sup>i</sup> The axis 2 can be restricted to a smaller working range by fitting one more axis-2 mechanical stop block to the upper arm. For how to fit the block, see *Product manual - IRB 910SC*.  
The additional mechanical stop block and related screws are provided in accessory package.
- <sup>ii</sup> The default working range for axis 4 can be extended by changing parameter values in the software. Option 610-1 Independent axis can be used for resetting the revolution counter after the axis has been rotated (no need for "rewinding" the axis).

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# 1 Description

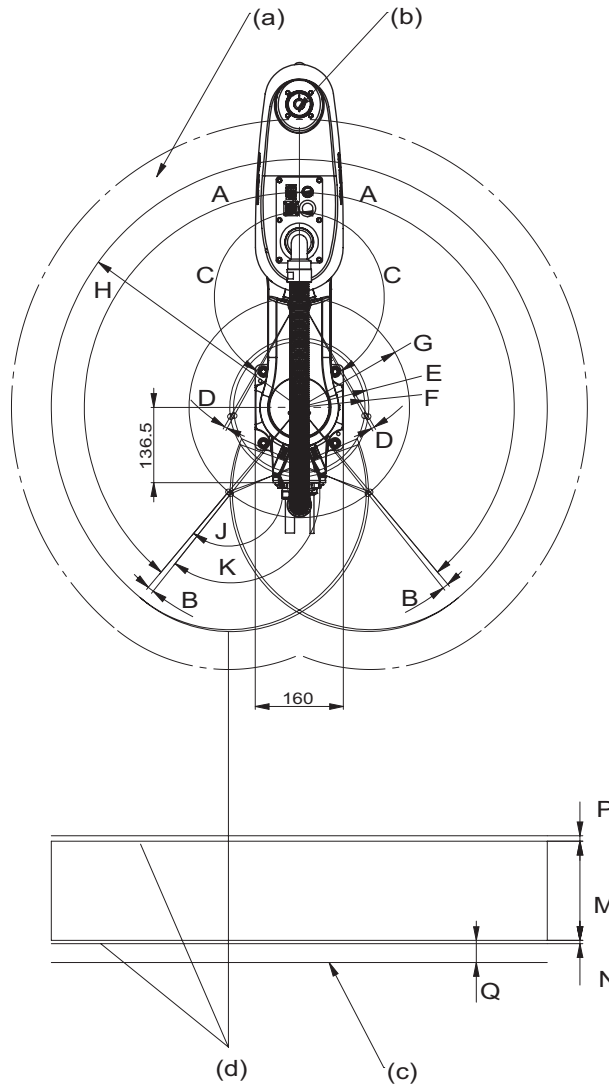
## 1.8.1 Working range and type of motion

*Continued*

### Working range

Illustration, working range and turning radius IRB 910SC-3/0.45

This illustration shows the unrestricted working range and turning radius of IRB 910SC-3/0.45.



xx1500002474

a	Maximum space	F	119 mm
b	Center joint of axis 3	G	200 mm
c	Base mounting face	H	450 mm
d	Area limited by mechanical stop	J	150°
A	140°	K	151.2°
B	1.5°	M	180 mm
C	150°	N	5 mm
D	1.2°	P	2 mm

*Continues on next page*



# 1 Description

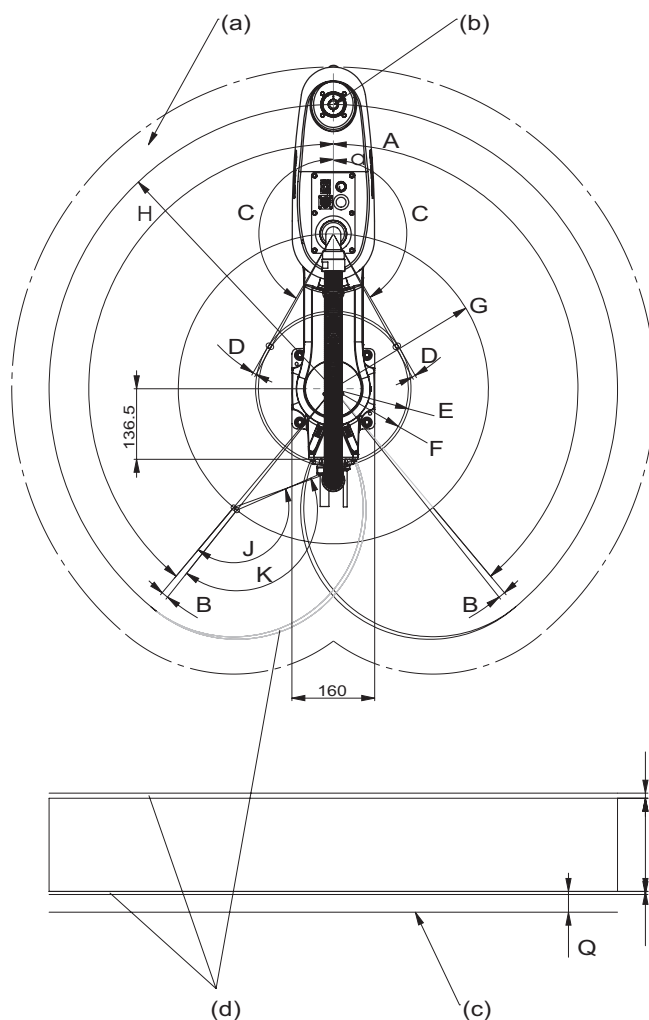
## 1.8.1 Working range and type of motion

*Continued*

E	126 mm	Q	40.2 mm
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### Illustration, working range and turning radius IRB 910SC-3/0.55

This illustration shows the unrestricted working range and turning radius of IRB 910SC-3/0.55.



xx1500002475

a	Maximum space	F	145 mm
b	Center joint of axis 3	G	300 mm
c	Base mounting face	H	550 mm
d	Area limited by mechanical stop	J	150°
A	140°	K	151.2°
B	1.5°	M	180 mm
C	150°	N	5 mm
D	1.2°	P	2 mm
E	150 mm	Q	40.2 mm

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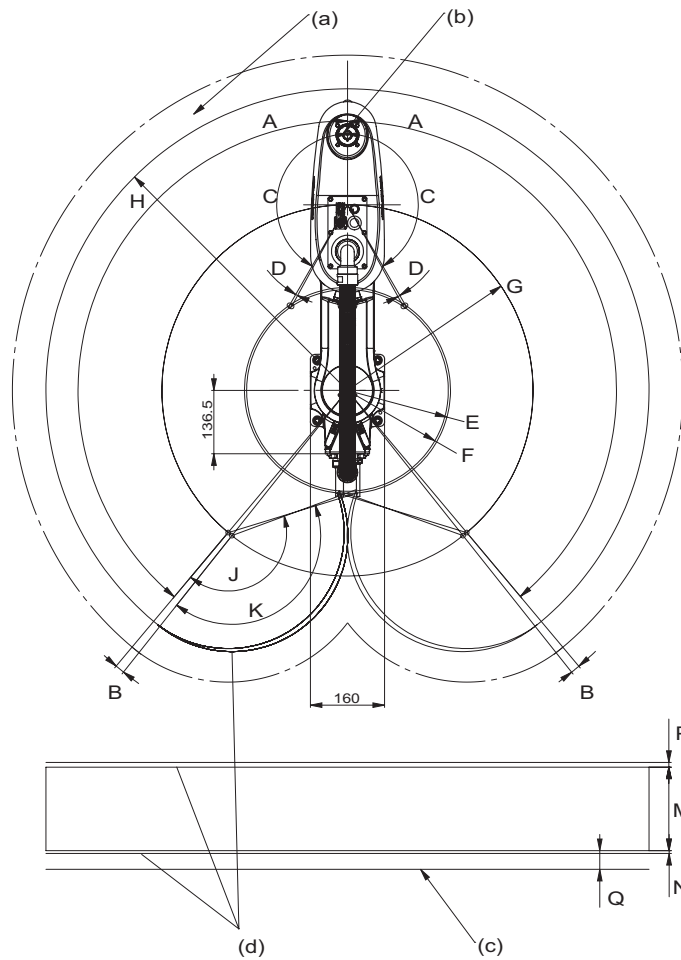
# 1 Description

## 1.8.1 Working range and type of motion

Continued

### Illustration, working range and turning radius IRB 910SC-3/0.65

This illustration shows the unrestricted working range and turning radius of IRB 910SC-3/0.65.



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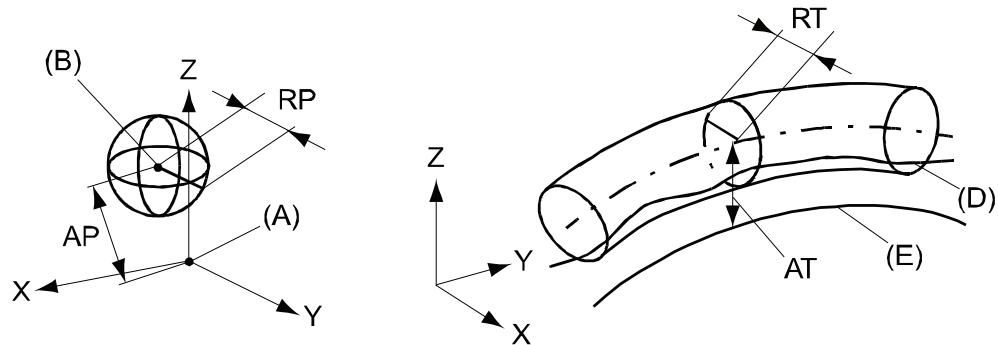
a	Maximum space	F	217 mm
b	Center joint of axis 3	G	400 mm
c	Base mounting face	H	650 mm
d	Area limited by mechanical stop	J	150°
A	140°	K	151.2°
B	1.5°	M	180 mm
C	150°	N	5 mm
D	1.2°	P	2 mm
E	222 mm	Q	40.2 mm

1.8.2 Performance according to ISO 9283

General

At rated maximum load, maximum offset and 1.6 m/s velocity on the inclined ISO test plane, with all six axes in motion. Values in the table below are the average result of measurements on a small number of robots. The result may differ depending on where in the working range the robot is positioning, velocity, arm configuration, from which direction the position is approached, the load direction of the arm system. Backlashes in gearboxes also affect the result.

The figures for AP, RP, AT and RT are measured according to figure below.



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Pos	Description	Pos	Description
A	Programmed position	E	Programmed path
B	Mean position at program execution	D	Actual path at program execution
AP	Mean distance from programmed position	AT	Max deviation from E to average path
RP	Tolerance of position B at repeated positioning	RT	Tolerance of the path at repeated program execution

Description	Values <sup>i</sup>		
	IRB 910SC-3/0.45	IRB 910SC-3/0.55	IRB 910SC-3/0.65
Pose repeatability, RP (mm)	0.01	0.01	0.01
Pose accuracy, AP (mm) <sup>ii</sup>	0.01	0.01	0.01
Linear path repeatability, RT (mm)	0.09	0.06	0.06
Linear path accuracy, AT (mm)	0.91	0.70	0.65
Pose stabilization time, PSt (s) within 0.1 mm of the position	0.08	0.19	1.01

<sup>i</sup> The values are based on the zero position of axis 3.

<sup>ii</sup> AP according to the ISO test above, is the difference between the taught position (position manually modified in the cell) and the average position obtained during program execution.

# 1 Description

---

## 1.8.3 Velocity

### 1.8.3 Velocity

---

#### General

Robot variant	Axis 1	Axis 2	Axis 3	Axis 4
IRB 910SC-3/0.45	415 °/s	659 °/s	1 m/s	2,400 °/s
IRB 910SC-3/0.55	415 °/s	659 °/s	1 m/s	2,400 °/s
IRB 910SC-3/0.65	415 °/s	659 °/s	1 m/s	2,400 °/s

The velocities of axes 1, 2, and 4 are measured with rated payload and axis 3 at position of 0 mm.

Supervision is required to prevent overheating in applications with intensive and frequent movements.

---

#### Resolution

Approximately 0.01° on each axis.

### 1.8.4 Robot stopping distances and times

---

#### Introduction

The stopping distances and times for category 0 and category 1 stops, as required by EN ISO 10218-1 Annex B, are listed in *Product specification - Robot stopping distances according to ISO 10218-1 (3HAC048645-001)*.

# 1 Description

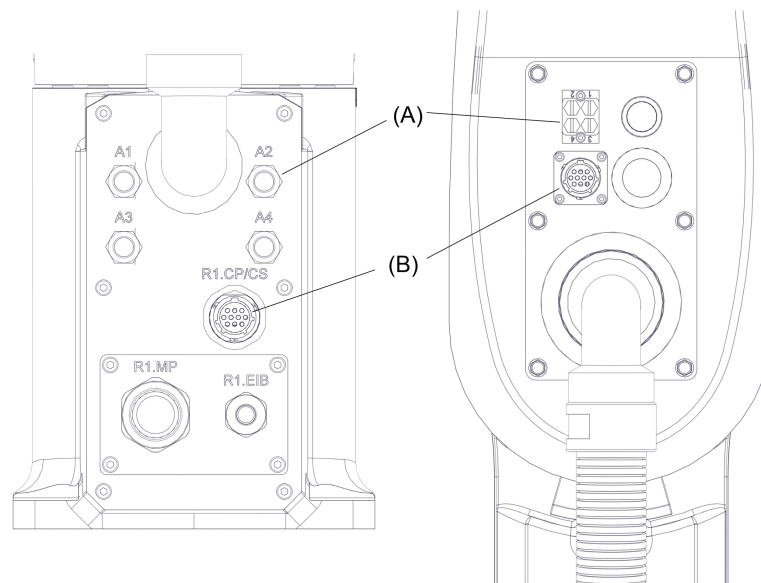
## 1.9 Customer connections

### 1.9 Customer connections

#### Introduction to customer connections

The cables for customer connection are integrated in the robot and the connectors are placed at the upper arm and base. There is one connector R4.CP/CS at the upper arm. Corresponding connector R1.CP/CS is located at the base.

Hose for compressed air is also integrated into the manipulator. There are 4 inlets at the base (R1/8") and 4 outlets (M5) on the upper arm.



xx1500002751

Position	Connection	Description	Number	Value
A	Air	Max. 5 bar	4	Inner hose diameter 4 mm
B	(R1)R4.CP/CS	Customer power/signal	10	49 V, 500 mA

#### Connectors

The tables describes the connectors on base and upper arm.

##### Connectors, base

Position	Description	Art. no.
Robot	Pin connector 10p, bulkhead	3HAC022117-002
Customer connector	Connector set R1.CP/CS	3HAC037038-001

##### Connectors, upper arm

Position	Description	Art. no.
Robot	Socket connector 10p, flange mounted	3HAC023624-002
Customer connector	Connector set R3.CP/CS	3HAC037070-001

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Air, connector

Position	Description	Art. no.
Robot	4xM5	
Customer cable	Air connector	3HAC032049-001

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## 2 Specification of variants and options

### 2.1 Introduction to variants and options

---

#### General

The different variants and options for the IRB 910SC are described in the following sections. The same option numbers are used here as in the specification form.

---

#### Related information

For the controller see *Product specification - Controller IRC5*.

For the software options see *Product specification - Controller software IRC5*.

## 2 Specification of variants and options

### 2.2 Manipulator

### 2.2 Manipulator

#### Variants

Option	IRB Type	Rated handling capacity (kg)	Reach (m)
435-135	IRB 910SC	3	0.45
435-136	IRB 910SC	3	0.55
435-137	IRB 910SC	3	0.65

#### Protection

Option	Description
287-4	Standard


#### Connection kit

Option	Description
431-1	For the connectors on the upper arm, customer connection.
239-1	For the connectors on the foot.

#### Warranty

Option	Type	Description
438-1	Standard warranty	Standard warranty is 12 months from <i>Customer Delivery Date</i> or latest 18 months after <i>Factory Shipment Date</i> , whichever occurs first. Warranty terms and conditions apply.
438-2	Standard warranty + 12 months	Standard warranty extended with 12 months from end date of the standard warranty. Warranty terms and conditions apply. Contact Customer Service in case of other requirements.
438-4	Standard warranty + 18 months	Standard warranty extended with 18 months from end date of the standard warranty. Warranty terms and conditions apply. Contact Customer Service in case of other requirements.
438-5	Standard warranty + 24 months	Standard warranty extended with 24 months from end date of the standard warranty. Warranty terms and conditions apply. Contact Customer Service in case of other requirements.
438-6	Standard warranty + 6 months	Standard warranty extended with 6 months from end date of the standard warranty. Warranty terms and conditions apply.
438-7	Standard warranty + 30 months	Standard warranty extended with 30 months from end date of the standard warranty. Warranty terms and conditions apply.

Continues on next page

Option	Type	Description
438-8	Stock warranty	<p>Maximum 6 months postponed start of standard warranty, starting from factory shipment date. Note that no claims will be accepted for warranties that occurred before the end of stock warranty. Standard warranty commences automatically after 6 months from <i>Factory Shipment Date</i> or from activation date of standard warranty in WebConfig.</p> <p> <b>Note</b></p> <p>Special conditions are applicable, see <i>Robotics Warranty Directives</i>.</p>

## 2 Specification of variants and options

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### 2.3 Floor cables

### 2.3 Floor cables

---

#### Manipulator cable length

Option	Lengths
210-1	3 m
210-2	7 m
210-3	15 m

---

#### Application interface connection to

Option	Description
16-1	Cabinet

---

#### Connection of parallel communication

Option	Lengths
94-6	3 m
94-1	7 m REQUIRES: 16-1 Cabinet.
94-2	15 m REQUIRES: 16-1 Cabinet.

## 2.4 User documentation

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### User documentation

The user documentation describes the robot in detail, including service and safety instructions.

All documents can be found via myABB Business Portal, [www.myportal.abb.com](http://www.myportal.abb.com).

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## 3 Accessories

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### General

There is a range of tools and equipment available.

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### Basic software and software options for robot and PC

For more information, see *Product specification - Controller IRC5* and *Product specification - Controller software IRC5*.

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