ROBOTICS

Product specification

IRB 1410

Trace back information:
Workspace 23B version a8
Checked in 2023-06-13
Skribenta version 5.5.019

Product specification
IRB 1410

Document ID: 3HAC026366-001
Revision: H

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Original instructions.

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Overview of this product specification

About this product specification

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

- The structure and dimensions prints
- The fulfillment of standards, safety and operating requirements
- The load diagrams, mounting or 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

Reference	Document ID
Product specification - Controller IRC5 IRC5 with main computer DSQC1000.	*3HAC047400-001*
Product specification - Controller software IRC5 IRC5 with main computer DSQC1000 and RobotWare 5.6x.	*3HAC050945-001*
Product specification - Controller software IRC5 IRC5 with main computer DSQC1000 and RobotWare 6.	*3HAC050945-001*
Product manual - IRB 1410	*3HAC026320-001*
Product specification - Robot user documentation, IRC5 with RobotWare 6	*3HAC052355-001*

Revisions

Revision	Description
-	• Replaces 3HAC9112-1 (English), 3HAC10766-1 (French), 3HAC10393-1 (German), 3HAC10759-1 (Spanish) and 3HAC10780-1 (Italian) • Minor corrections/update
A	• Minor corrections/update
B	• Text for ISO test adjusted
C	• Minor corrections/update

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Revision	Description
D	Published in release R17.1. The following updates are done in this revision: • Restriction of load diagram added.
E	Published in release R17.2. The following updates are done in this revision: • Updated list of applicable standards.
F	Published in release R17.2. The following updates are done in this revision: • Removed the phased out options: option RPC S-400 [1029-15], option Bobin [1033-3] and option PSF315 [1069-1]
G	Published in release 21D. The following updates are done in this revision: • Text regarding fastener quality is updated. • Warranty section updated. • Removed Axis resolution.
H	Published in release 23B. The following updates are done in this revision: • Correction regarding WeldGuide options • Added RAL code in manipulator color

1 Description

1.1 Structure

1.1.1 Introduction to structure

Robot family

The IRB 1410 is a 6-axis industrial robot, designed specifically for manufacturing industries that use flexible robot-based automation. The robot has an open stucture that is specially adapted for flexible use, and can communicate extensively with external systems. It is ideal for Arc Welding and Material Handling applications.

Operating system

The robot is equipped with the IRC5 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.

Safety

Safety standards valid for complete robot, manipulator and controller.

Additional functionality

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

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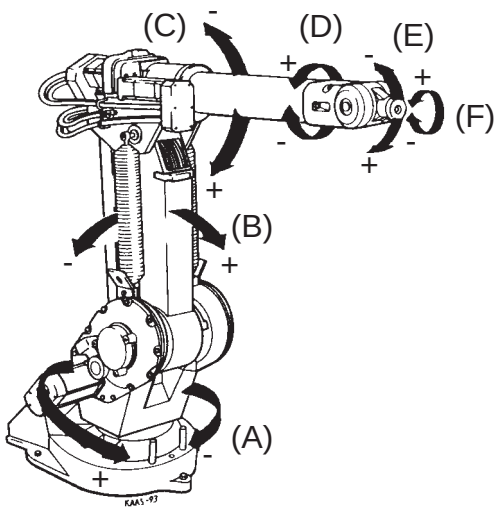
1.1.1 Introduction to structure
Continued

Manipulator axes



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Pos	Description	Pos	Description
A	Axis 1	B	Axis 2
C	Axis 3	D	Axis 4
E	Axis 5	F	Axis 6

1.1.2 Different robot versions

General

The IRB 1410 is available in one variant, designed for floor mounting (no tilting around X or Y axis allowed).

Robot type	Handling capacity (kg)	Reach (m)
IRB 1410	5	1.45

Manipulator weight

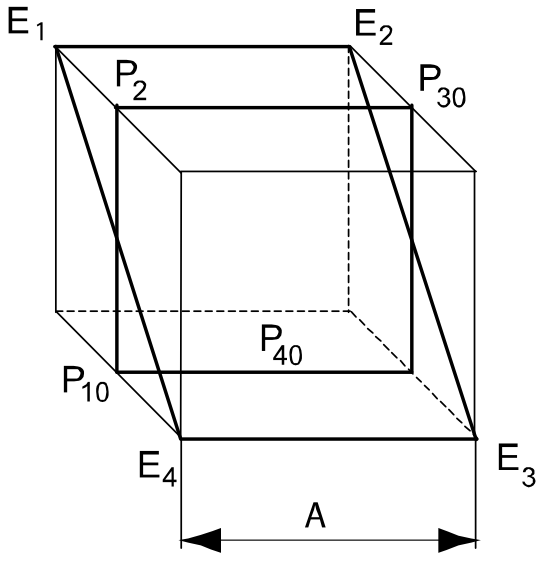
Robot	Weight
Manipulator	225 kg

Other technical data

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

Power consumption at max load

Type of Movement	IRB 1410
ISO Cube Max. velocity	0.44 kW



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Pos	Description
A	400 mm

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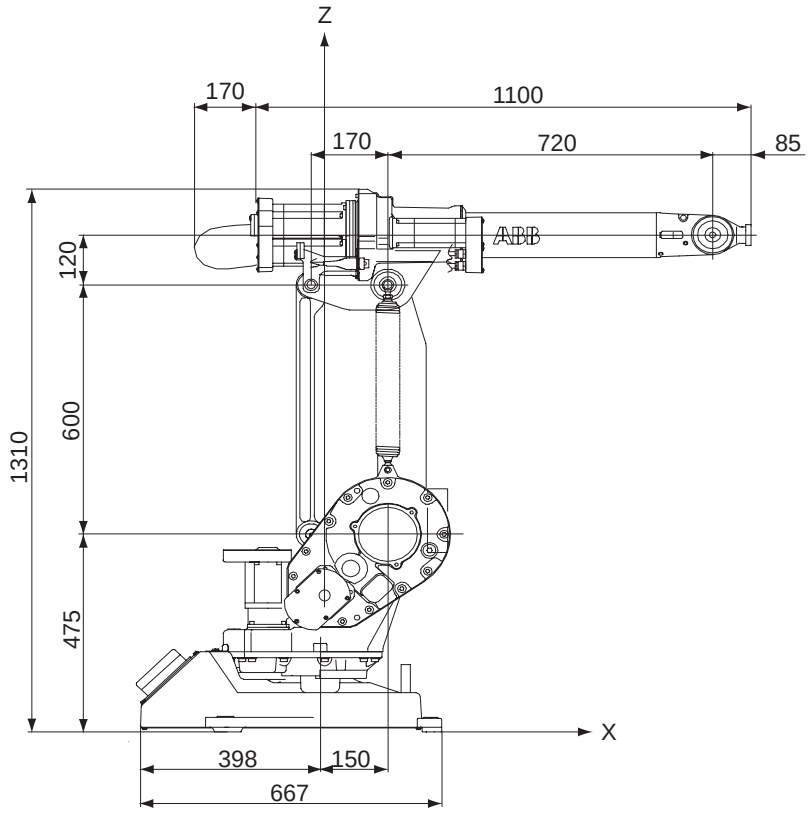
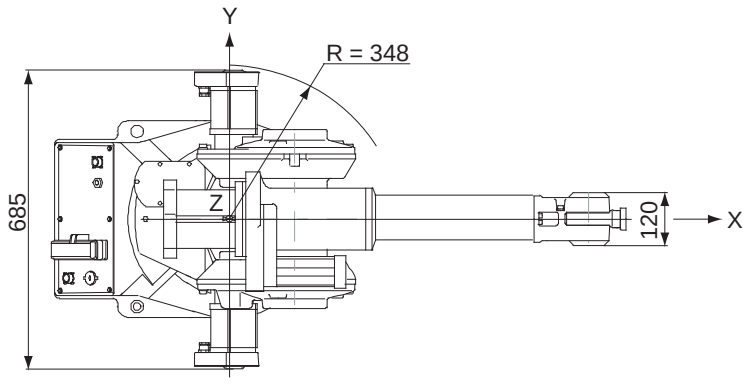
1.1.2 Different robot versions
Continued

Dimensions IRB 1410





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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.

General

The product is designed in accordance with ISO 10218-1:2011, Robots for industrial environments - Safety requirements -Part 1 Robots, and applicable parts in the normative references, as referred to from ISO 10218-1:2011. In case of deviations from ISO 10218-1:2011, these are listed in the declaration of incorporation which is part of the product delivery.

Normative standards as referred to from ISO 10218-1

Standard	Description
ISO 9283:1998	Manipulating industrial robots - Performance criteria and related test methods
ISO 10218-2	Robots and robotic devices - Safety requirements for industrial robots - Part 2: Robot systems and integration
ISO 12100	Safety of machinery - General principles for design - Risk assessment and risk reduction
ISO 13849-1:2006	Safety of machinery - Safety related parts of control systems - Part 1: General principles for design
ISO 13850	Safety of machinery - Emergency stop - Principles for design
IEC 60204-1	Safety of machinery - Electrical equipment of machines - Part 1: General requirements

Region specific standards and regulations

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 434-03	Industrial robots and robot Systems - General safety requirements

Other standards used in design

Standard	Description
ISO 9787:2013	Robots and robotic devices -- Coordinate systems and motion nomenclatures
IEC 61000-6-2	Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity standard for industrial environments
IEC 61000-6-4	Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – Emission standard for industrial environments

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1.2.1 Applicable standards

Continued

Standard	Description
ISO 13732-1:2006	Ergonomics of the thermal environment - Part 1
IEC 60974-1:2012[i]	Arc welding equipment - Part 1: Welding power sources
IEC 60974-10:2014[i]	Arc welding equipment - Part 10: EMC requirements
ISO 14644-1:2015[ii]	Classification of air cleanliness
IEC 60529:1989 + A2:2013	Degrees of protection provided by enclosures (IP code)

i Only valid for arc welding robots. Replaces IEC 61000-6-4 for arc welding robots.
ii Only robots with protection Clean Room.

1.3 Installation

1.3.1 Introduction to installation

General

On to the IRB 1410, designed for floor mounting (no tilting around X or Y axis allowed), an end effector 5 kg including payload can be mounted on to the robot tool flange (axis 6), see *Load diagrams on page 22*.

Extra loads

Other equipment of 18 kg can be mounted on to the rear of the upper arm. Holes for mounting extra equipment, see *Mounting equipment on page 24*

Working range limitations

The working range of axes 1 can be limited by mechanical stops.

1.3.2 Operating requirements

Explosive environments

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

Ambient temperature

Description	Standard/Option	Temperature
Manipulator during operation	Standard	+ 5°C [i] (41°F) to + 45°C (113°F)
For the controller	Standard/Option	See Product specification - Controller IRC5 with FlexPendant
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)

[i] 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 transportation and storage	Max. 95% at constant temperature
Complete robot during operation	Max. 95% at constant temperature

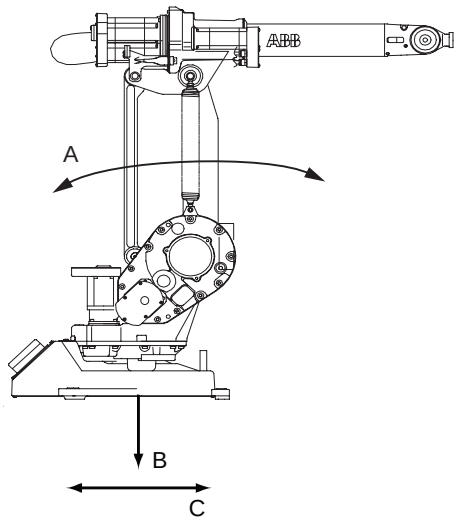
1.3.3 Mounting the manipulator

Maximum load in relation to the base coordinate system

IRB 1410

Floor Mounted

Force	Endurance load (in operation)	Max. load (emergency stop)
Force xy	±1500 N	±2000 N
Force z	+2800 ±500 N	+2800 ±700 N
Torque xy	±1800 N	±2000 N
Torque z	±400 N	±500 N



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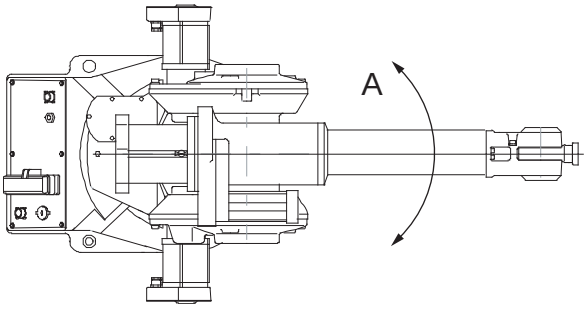
A	$Torque_{xy}$ (T_{xy})
B	Force $_z$ (F_z)
C	Force $_{xy}$ (F_{xy})



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A	Torque $_z$ (T_z)

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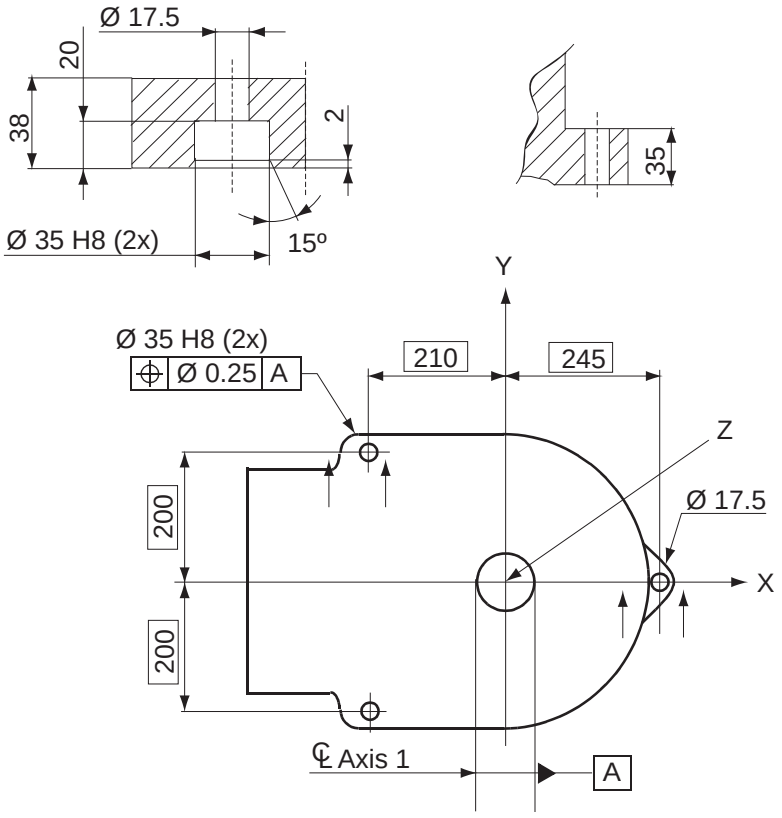
1.3.3 Mounting the manipulator
Continued

Note regarding M_{xy} and F_{xy}

The bending torque (M_{xy}) can occur in any direction in the XY-plane of the base coordinate system.The same applies to the transverse force (F_{xy}).

Fastening holes robot base



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1.4 Calibration and references

1.4.1 Calibration methods

Overview

This section specifies the different types of calibration and the calibration methods that are supplied by ABB.

More information is available in the product manual.

Types of calibration

Type of calibration	Description	Calibration method
Standard calibration	The calibrated robot is positioned at calibration position. Standard calibration data is found on the SMB (serial measurement board) or EIB in the robot. For robots with RobotWare 5.04 or older, the calibration data is delivered in a file, calib.cfg, supplied with the robot at delivery. The file identifies the correct resolver/motor position corresponding to the robot home position.	Calibration Pendulum
Absolute accuracy calibration (optional)	Based on standard calibration, and besides positioning the robot at synchronization position, the Absolute accuracy calibration also compensates for: • Mechanical tolerances in the robot structure • Deflection due to load Absolute accuracy calibration focuses on positioning accuracy in the Cartesian coordinate system for the robot. Absolute accuracy calibration data is found on the serial measurement board (SMB) or other robot memory. For robots with RobotWare 5.05 or older, the absolute accuracy calibration data is delivered in a file, absacc.cfg, supplied with the robot at delivery. The file replaces the calib.cfg file and identifies motor positions as well as absolute accuracy compensation parameters. A robot calibrated with Absolute accuracy has a sticker next to the identification plate of the robot (IRC5). To regain 100% Absolute accuracy performance, the robot must be recalibrated for absolute accuracy after repair or maintenance that affects the mechanical structure.  xx0400001197	CalibWare

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1.4.1 Calibration methods
Continued

Type of calibration	Description	Calibration method
Optimization	Optimization of TCP reorientation performance. The purpose is to improve reorientation accuracy for continuous processes like welding and gluing. Wrist optimization will update standard calibration data for axes 4 and 5.	Wrist Optimization

Brief description of calibration methods

Calibration Pendulum method

Calibration Pendulum is a standard calibration method for calibration of many of ABB robots (except IRB 6400R, IRB 640, IRB 1400H, and IRB 4400S).

Two different routines are available for the Calibration Pendulum method:

- Calibration Pendulum II
- Reference calibration

The calibration equipment for Calibration Pendulum is delivered as a complete toolkit, including the *Operating manual - Calibration Pendulum*, which describes the method and the different routines further.

Wrist Optimization method

Wrist Optimization is a method for improving reorientation accuracy for continuous processes like welding and gluing and is a complement to the standard calibration method.

The actual instructions of how to perform the wrist optimization procedure is given on the FlexPendant.

CalibWare - Absolute Accuracy calibration

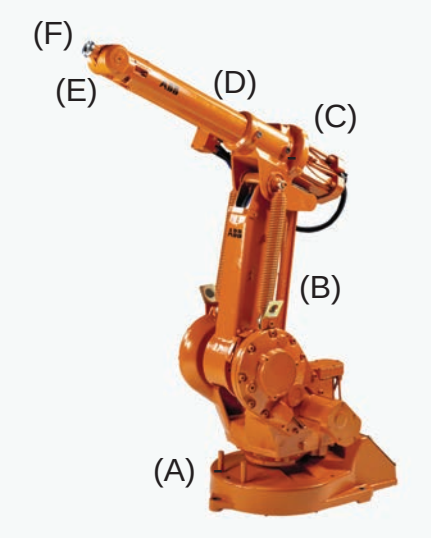
The CalibWare tool guides through the calibration process and calculates new compensation parameters. This is further detailed in the *Application manual - CalibWare Field*.

If a service operation is done to a robot with the option Absolute Accuracy, a new absolute accuracy calibration is required in order to establish full performance. For most cases after replacements that do not include taking apart the robot structure, standard calibration is sufficient.

1.4.2 Fine calibration

General

Fine calibration is made using the Calibration Pendulum, see *Operating manual - Calibration Pendulum*.



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Pos	Description	Pos	Description
A	Axis 1	B	Axis 2
C	Axis 3	D	Axis 4
E	Axis 5	F	Axis 6

Calibration

Calibration	Position
Calibration of all axes	All axes are in zero position
Calibration of axis 1 and 2	Axis 1 and 2 in zero position
	Axis 3 to 6 in any position
Calibration of axis 1	Axis 1 in zero position
	Axis 2 to 6 in any position

1.5 Load diagrams

1.5.1 Introduction to load diagrams

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

- motors
- gearboxes
- mechanical structure

WARNING

In RobotWare, the service routine LoadIdentify can be used to determine correct load parameters. The routine automatically defines the tool and the load.

See *Operating manual - IRC5 with FlexPendant*, for detailed information.

WARNING

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

General

The load diagram include a nominal payload inertia, J_0 of 0.012 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.

Control of load case with RobotLoad

To verify a specific load case, use the RobotStudio add-in RobotLoad.

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

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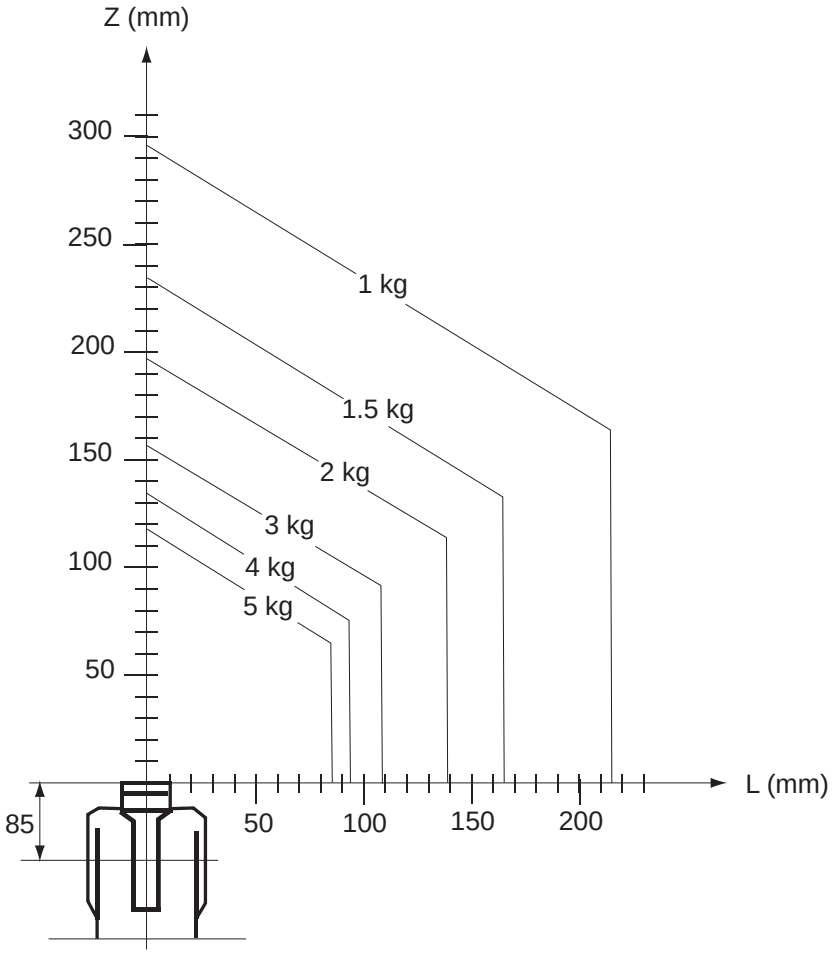
Diagram

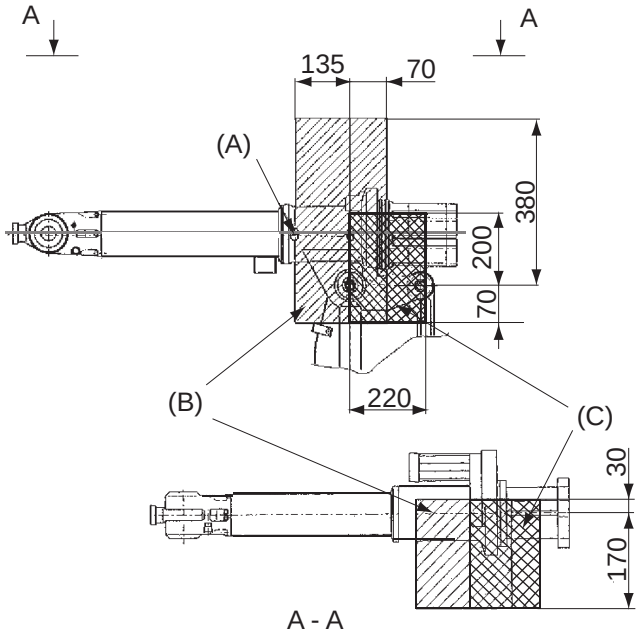


1.6 Mounting equipment

1.6.1 Information about mounting equipment

Mounting equipment

The robot is supplied with tapped holes on the upper arm and on the base for mounting extra equipment.



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Pos	Description
A	Mounting holes for equipment, M8 (2x) depth 16 mm
B	Max. 10 kg total
C	Max. 18 kg total

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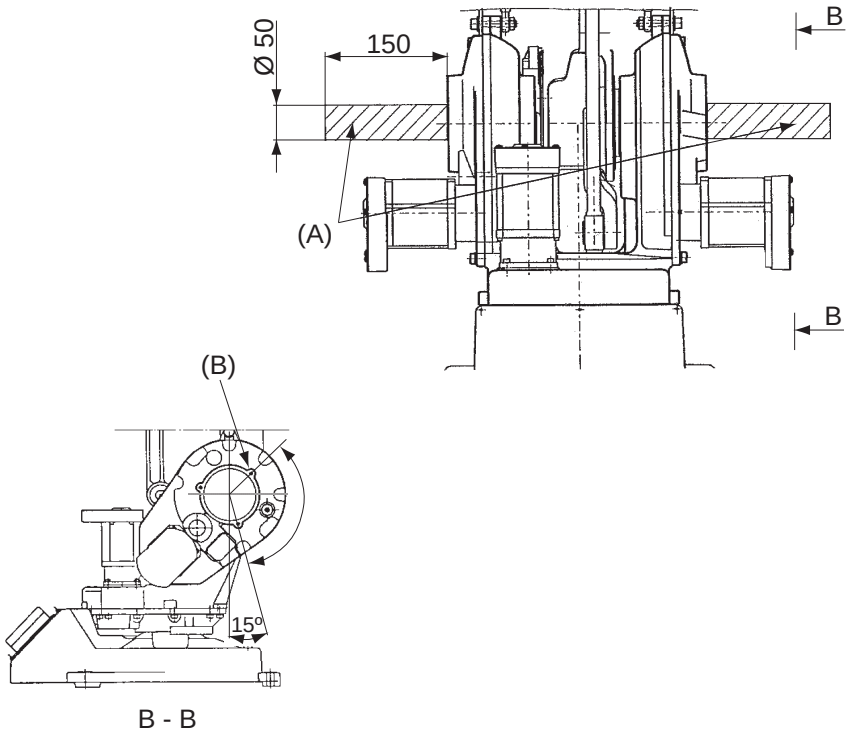

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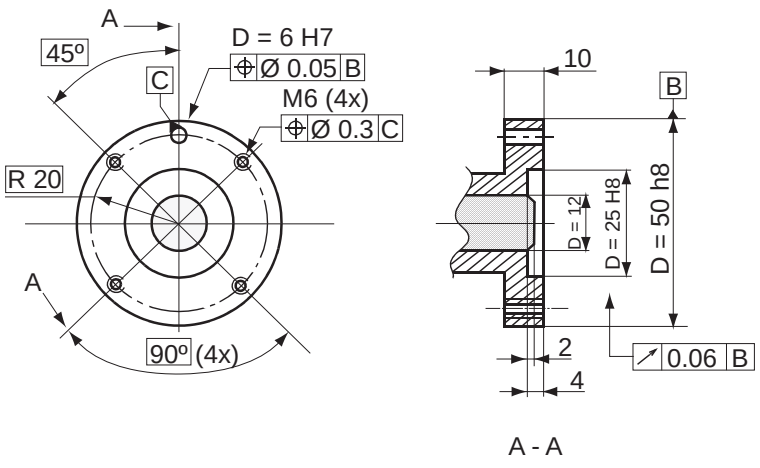
Pos	Max load
A	Max 19 kg total
B	Mounting holes for equipment, both sides, M8 (3x) R= 75 mm, depth 16 mm

Note

Maximum loads must never be exceeded!

Tool flange



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1.6.1 Information about mounting equipment
Continued

For fastening of gripper tool flange to Robot tool flange every one of the screw holes for 6 screws, quality class 12.9 shall be used. Min. 10 mm used thread length.

Fastener quality

When fitting tools on the tool flange, only use screws with quality 12.9. For other equipment use suitable screws and tightening torque for your application.

1.7 Maintenance and troubleshooting

General

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

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

Maintenance

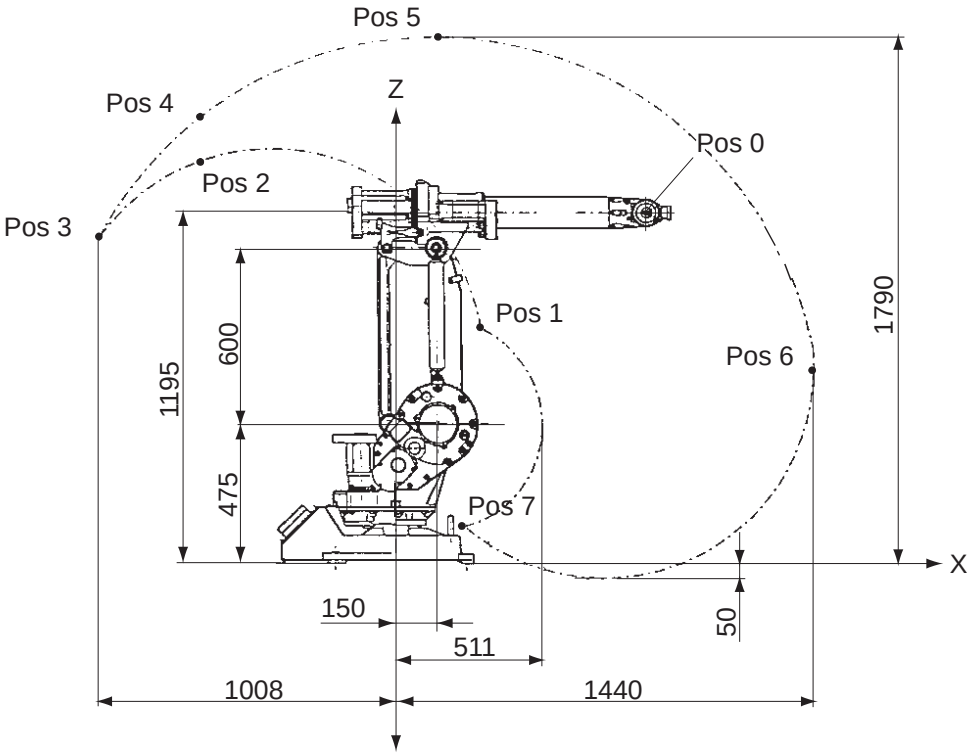
The maintenance intervals depend on the use of the robot, the required maintenance activities also depends on selected options. For detailed information on maintenance procedures, see the maintenance section in *Product manual - IRB 1410*.

1.8 Robot motion

Introduction to robot motion

The working area.

Axis	Type of motion	Range of movement
1	Rotation motion	+ 170° to - 170°
2	Arm motion	+ 70° to - 70°
3	Arm motion	+ 70° to - 65°
4	Rotation motion	+ 150° to - 150°
5	Bend motion	+ 115° to - 115°
6	Turn motion	+ 300° to - 300°



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Positions at wrist center (mm) and angle (degrees):

Position no (see figure above)	Position (mm) X	Position (mm) Z	Angle (degrees) Axis 2	Angle (degrees) Axis 3
0	870	1195	0	0
1	306	800	-70	70
2	-716	1345	-70	-35
3	-1008	1104	-70	-65
4	-596	1561	-43	-65
5	208	1792	-6	-65
6	1442	737	70	-65

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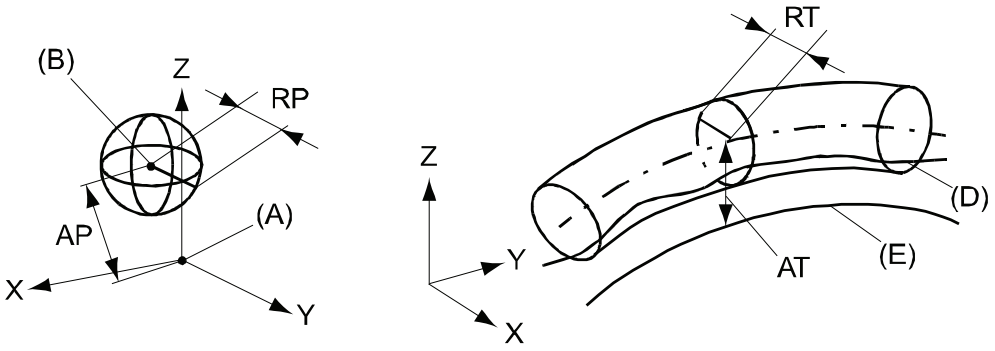
Position no (see figure above)	Position (mm) X	Position (mm) Z	Angle (degrees) Axis 2	Angle (degrees) Axis 3
7	239	125	70	70

Performance according to ISO 9283

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	IRB 1410
Pose repeatability, RP (mm)	0.025
Pose accuracy, AP[i] (mm)	0.037
Linear path repeatability, RT (mm)	0.12
Linear path accuracy, AT (mm)	0.60
Pose stabilization time, PSt (s)	0.23

[i] AP according to the ISO teset above, is the difference between the reached position (position manually modified in the cell) and the average potition obtained during program execution

The above values are the range of average test results from a number of robots.

Continues on next page

Velocity

3-phase power supply

Robot Type	Axis 1	Axis 2	Axis 3	Axis 4	Axis 5	Axis 6
IRB 1410	120 °/s	120 °/s	120 °/s	280 °/s	280 °/s	280 °/s

1-phase power supply

When the robot uses single phase power supply, like with Compact controller, the performance regarding max axis speed is reduced, see table below. The reduced top speed can be increased if the power supply minimum volyage is higher than the default setting 187 V (220x0.85). See the system parameter *Mains tolerance min*, in *Technical reference manual - System parameters*.

Note that the robot acceleration is not affected by the single phase power supply. Thus the cycle time may not be affected at all. RobotStudio can be used to test the cycle, and to modify the system parameter (*Main tolerance min*).

Robot type	Axis 1	Axis 2	Axis 3	Axis 4	Axis 5	Axis 6
IRB 1410	105 °/s	105 °/s	105 °/s	280 °/s	280 °/s	280 °/s

Continues on next page

1.8.1 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*).

1.9 Signals

General

Customer connection in terma of Integrated wire feed cabling for signals and power is integrated in the manipulator and the connections starts at the base and ends on the upper arm housing.

For the Specification of the customer connections, see chapter 2 Specification of Variants and Options, Application interface Connection type.

2 Specification of variants and options

2.1 Introduction to variants and options

General

The different variants and options for the IRB 1410 are described in the following sections. The same option numbers are used here as in the specification form.

The variants and options related to the robot controller are described in the product specification for the controller.

2.2 Manipulator

Variants

Option	IRB Type	Handling capacity (kg) / Reach (m)
435-70	IRB 1410	5/1.45

Manipulator color

Option	Color	RAL code[i]
209-1	ABB orange standard	RAL 7032
209-202	ABB Graphite White std Standard color	RAL 7035

[i] The colors can differ depending on supplier and the material on which the paint is applied.

Protection

Option	Description
287-4	Standard

Mounting position

Option	Description
224-1	Floor mounted

Application interface

Air supply and signals for extra equipment to upper arm.

For connection of extra equipment on the manipulator, there are cables integrated into the manipulator's cabling, one FCI UT0014-12PHT connector and one FCI UT0014-12SHT connector on the rear part of the upper arm.

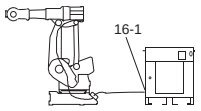
A hose for compressed air is also integrated into the manipulator. There is an inlet (R1/4") at the base and an outlet (R1/4") on the upper arm.

Type		Description
Signals	12	49 V, 500mA
Power	10	250 V, 2 A
Air	1	Max. 8 bar, inner hose diameter 6.5 mm

Option	Description
218-8	Integrated hose and cables for connection of extra equipment on the manipulator to the rear part of the upper arm.

Continues on next page

Application interface connection to

Option	Description	
16-1 Cabinet [i]	The signals are connected to 12-pole screw terminals, Phoenix MSTB 2.5/12-ST-5.08, to the the controller. Not together with option 218-8.	

[i] Note! In a IRC5 MultiMove application additional robots have no Control Module. The screw terminals with internal cabling are then delivered separately to be mounted in the main robot Control Module or in another encapsulation, for example a PLC cabinet.

Connector kit

The kit consists of connectors, pins and sockets.

Option	Description
431-1	For the connectors on the upper arm if application interface, option 218-8.

Safety lamp

Option	Description
213-1	A safety lamp with an orange fixed light can be mounted on the manipulator. The lamp is active in MOTORS ON mode. The safety lamp is required on a UL/UR approved robot.

Working range limit - axis 1

To increase the safety of the robot, the working range of axis 1 can be restriced.

Option	Description
28-1	Axis 1 Two extra stops for restricting the working range. The working range can be limited from ±150° to the smallest working range which is ±50°. The restriction between 50° and 150° can be performed at any position by drilling M10 holes and mounting the stops. The kit contain stops, screws and instruction.

Warranty

For the selected period of time, ABB will provide spare parts and labour to repair or replace the non-conforming portion of the equipment without additional charges. During that period, it is required to have a yearly Preventative Maintenance according to ABB manuals to be performed by ABB. If due to customer restrains no data can be analyzed in the ABB Ability service *Condition Monitoring & Diagnostics* for robots with OmniCore controllers, and ABB has to travel to site, travel expenses are not covered. The Extended Warranty period always starts on the day of warranty expiration. Warranty Conditions apply as defined in the Terms & Conditions.

Note

This description above is not applicable for option *Stock warranty* [438-8]

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Option	Type	Description
438-1	Standard warranty	Standard warranty is 12 months from *Customer Delivery Date* or latest 18 months after *Factory Shipment Date*, 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.
438-8	Stock warranty	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 *Factory Shipment Date* or from activation date of standard warranty in WebConfig.  **Note** Special conditions are applicable, see *Robotics Warranty Directives*.

2.3 Positioners

General

Regarding positioners, see *Product specification - IRBP /D2009*, *3HAC038208-001*.

2.4 Floor cables

2.4.1 Manipulator

Manipulator cable length

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

Connection of Parallel communication

Option	Lengths
94-1	7 m
94-2	15 m

2.5 Process

2.5.1 Process

Process module

Option	Type	Description
768-1	Empty cabinet small	See *Product specification - Controller IRC5 with FlexPendant*, see chapter 2.2.1

Installation kit

Option	Type	Description
715-1	Installation kit	See *Product specification - Controller IRC5 with FlexPendant*, chapter 2.2.1

WeldGuide IV

Weldguide IV provides tracking functionality by reading the true impedance values close to the arc at 25 kHz then guides the robot to the correct path. Weldguide IV is designed to track difficult welding joint variations resulting from cast components or other pre-process problems.

Option	Type	Description
992-1	Basic	Occupies one slot and one Ethernet port. Digital I/O or AD Combi I/O is needed for WeldGuide functions. Requires options WG Sensor [994-1] or [995-1], and WeldGuide Multipass [815-2]. Not together with option UL/CSA [429-1].
992-2	Advanced	Includes all *Basic* functionality and adaptive fill. This feature allows the robot to adjust to the changes in joint width, the weave stroke will increase or decrease, and the travel speed will be adjusted accordingly. Occupies one slot and one Ethernet port. Digital I/O or AD Combi I/O is needed for WeldGuide functions. Requires options WG Sensor [994-1] or [995-1], and WeldGuide Multipass [815-2]. Not together with option UL/CSA [429-1].
994-1	WG Solid core sensor	
995-1	WG Split core sensor	

2.5.2 Process equipment

Torch service

Option	Type	Description
1037-1	ABB TSC 2013	ABB Torch Service Center. Including: Cleaner, cutter and BullsEye. Occupies I/O signals Dig. 5In/2Out. Requires option Base Dig. 16in/16Out [1541-1].
1037-5	BullsEye	BullsEye stand alone. Requires options RW Arc [633-4], and BullsEye [652-1] or RW Cutting [951-1].

2.6 User documentation

User documentation

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

Tip

All documents can be found via myABB Business Portal, *www.abb.com/myABB*.

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3 Accessories

3.1 Introduction to accessories

General

There is a range of tools and equipment available, especially designed for the manipulator.

Basic software and software options for robot and PC

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

Robot peripherals

- Track Motion
- Motor Units
- Positioners

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3HAC026366-001, Rev H, en