



ROBOTICS

Product specification

IRB 6660



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Product specification

IRB 6660-100/3.3

IRB 6660-130/3.1

IRB 6660-205/1.9

OmniCore

Document ID: 3HAC087212-001

Revision: E

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Table of contents

Overview of this product specification	7
1 Description	9
1.1 Structure	9
1.1.1 Introduction	9
1.1.2 Technical data	12
1.2 Standards	17
1.2.1 Applicable standards	17
1.3 Installation	18
1.3.1 Introduction	18
1.3.2 Technical data	19
1.3.3 Mounting the manipulator	23
1.4 Calibration and references	28
1.4.1 Calibration methods	28
1.4.2 Fine calibration with Calibration Pendulum	30
1.4.3 Absolute Accuracy calibration	31
1.4.4 Robot references	33
1.5 Load diagrams	35
1.5.1 Introduction to Load diagrams	35
1.5.2 Load diagrams	36
1.5.3 Maximum load and moment of inertia for full and limited axis 5 (center line down) movement	42
1.5.4 Wrist torque	44
1.6 Mounting of equipment	45
1.6.1 General	45
1.6.2 Mounting of hip load	47
1.7 Robot motion	51
1.7.1 Introduction	51
1.7.2 Performance according to ISO 9283	55
1.7.3 Velocity	56
1.7.4 Robot stopping distances and times	57
1.8 Customer connections	58
1.9 Maintenance and Troubleshooting	62
1.9.1 Introduction	62
2 Variants and options	63
2.1 Introduction to variants and options	63
2.2 Manipulator	64
2.3 Floor cables	69
2.4 Application manipulator	70
2.5 Connector kits manipulator	71
2.5.1 Base - Connector kits	72
2.5.2 Axis 3 - Connector kits	73
2.6 Application floor cables	74
2.7 Warranty	76
Index	77

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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 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 variant 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
<i>Product manual - IRB 6660</i>	<i>3HAC039842-001</i>
<i>Product manual - OmniCore V250XT Type B</i>	<i>3HAC087112-001</i>
<i>Product manual - OmniCore V400XT</i>	<i>3HAC081697-001</i>
<i>Product specification - OmniCore V line</i>	<i>3HAC074671-001</i>
<i>Product specification - Robot stopping distances according to ISO 10218-1</i>	<i>3HAC048645-001</i>

Revisions

Revision	Description
A	First edition.
B	Published in release 24A. The following updates are done in this revision: <ul style="list-style-type: none">• Added DressPack options for CC-Link.
C	Published in release 24B. The following updates are done in this revision: <ul style="list-style-type: none">• Added options for motor cooling.• Added DressPack options for EtherCAT.• Corrected what DressPack options are available for this robot.
D	Published in release 24C. The following updates are done in this revision: <ul style="list-style-type: none">• Minor corrections.• Added 22 m process cables.

Continues on next page

Continued

Revision	Description
E	Published in release 24D. The following updates are done in this revision: <ul style="list-style-type: none">Updated the section Technical data on page 19.

1 Description

1.1 Structure

1.1.1 Introduction

Robot family

The IRB 6660 is one of ABB Robotics generation of high payload, high performance industrial robots.

Based on the famous IRB 6600 robot family, the very high wrist torque, the service friendly modular built up and the very high availability, significant for ABB's robots, the IRB 6660 robot family goes even further, towards the excellence as a flexible tooling in automatic manufacturing.

With a focus on the very high robot performance, simple service and low maintenance cost, the IRB 6660-130/3.1 and IRB 6660-100/3.3 are the most profitable alternatives in automation of Press Tending applications and IRB 6660-205/1.9 is adapted for Pre-machining and cleaning of aluminium castings.

Software product range

We have added a range of software products - all falling under the umbrella designation of Active Safety - to protect not only personnel in the unlikely event of an accident, but also robot tools, peripheral equipment and the robot itself.

Operating system

The robot is equipped with the OmniCore 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 - OmniCore V line*.

The IRB 6660 manipulator can be connected to the following robot controllers:

- OmniCore V250XT
- OmniCore V400XT

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 multitasking, sensor control etc. For a complete description on optional software, see *Product specification - OmniCore V line*.

Continues on next page

1 Description

1.1.1 Introduction

Continued

Protection type Foundry Plus 2

Robots with the option Foundry Plus 2 are designed for harsh environments where the robot is exposed to sprays of coolants, lubricants and metal spits that are typical for die casting applications or other similar applications.

Typical applications are spraying insertion and part extraction of die-casting machines, handling in sand casting and gravity casting, etc. (Please refer to Foundry Prime robots for washing applications or other similar applications). Special care must be taken in regard to operational and maintenance requirements for applications in foundry as well as in other applications areas. Please contact ABB Robotics Sales organization if in doubt regarding specific application feasibility for the Foundry Plus 2 protected robot.

The robot is painted with two-component epoxy on top of a primer for corrosion protection. To further improve the corrosion protection additional rust preventive are applied to exposed and crucial areas, e.g. has the tool flange a special preventive coating. Although, continuous splashing of water or other similar rust formation fluids may cause rust attach on the robots unpainted areas, joints, or other unprotected surfaces. Under these circumstances it is recommended to add rust inhibitor to the fluid or take other measures to prevent potential rust formation on the mentioned.

The entire robot is IP67 compliant according to IEC 60529 - from base to wrist, which means that the electrical compartments are sealed against water and solid contaminants. Among other things all sensitive parts are better protected than the standard offer.

Selected Foundry Plus 2 features:

- Improved sealing to prevent penetration into cavities to secure IP67
- Additional protection of cabling and electronics
- Special covers that protect cavities
- Well-proven connectors
- Nickel coated tool flange
- Rust preventives on screws, washers and unpainted/machined surfaces
- Extended service and maintenance program

The Foundry Plus 2 robot can be cleaned with appropriate washing equipment according to the robot product manual. Appropriate cleaning and maintenance is required to maintain the protection, for example can rust preventive be washed off with wrong cleaning method.

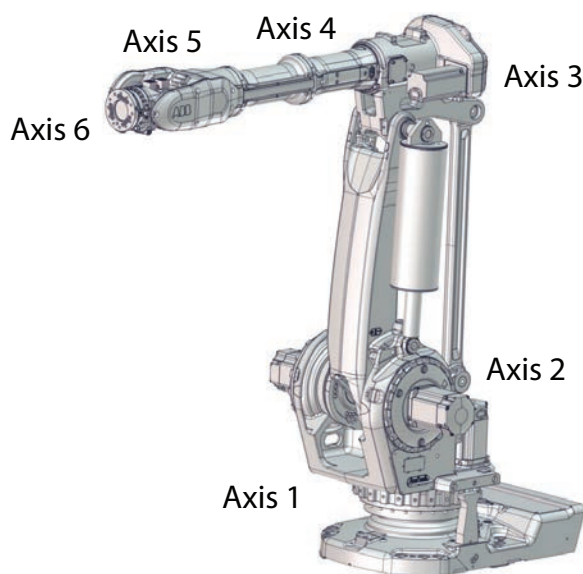
Available robot variants

The option Foundry Plus 2 might not be available for all robot variants.

See [Variants and options on page 63](#) for robot versions and other options not selectable together with Foundry Plus 2.

Continues on next page

Manipulator axes



xx100000633

1 Description

1.1.2 Technical data

1.1.2 Technical data

General

The IRB 6660 is available in three variants.

Robot	Handling capacity (kg)	Reach (m)
IRB 6660-130/3.1	130 kg	3.1 m
IRB 6660-100/3.3	100 kg	3.3 m
IRB 6660-205/1.9	205 kg	1.9 m

Manipulator weight

Robot variant	Weight
IRB 6660-130/3.1	1,910 kg
IRB 6660-100/3.3	1,950 kg
IRB 6660-205/1.9	1,730 kg

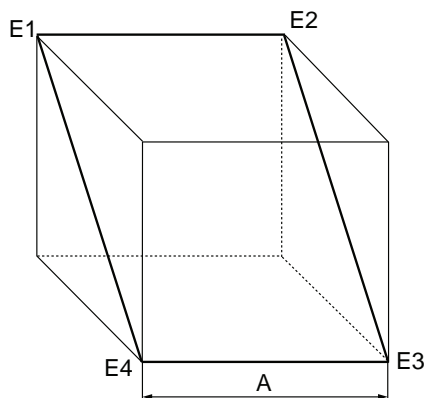
Airborne noise level

Data	Description	Note
Airborne noise level	The sound pressure level outside the working space.	< 69 dB(A) Leq (acc. to Machinery directive 2006/42/EG)

Power consumption at max load

Type of movement	IRB 6660 (all variants)
ISO cube 1000 m/s	1.22 kW
ISO cube max. velocity	1.28 kW

Robot in calibration position	All variants
Brakes engaged	0.24 kW
Brakes disengaged	0.72 kW



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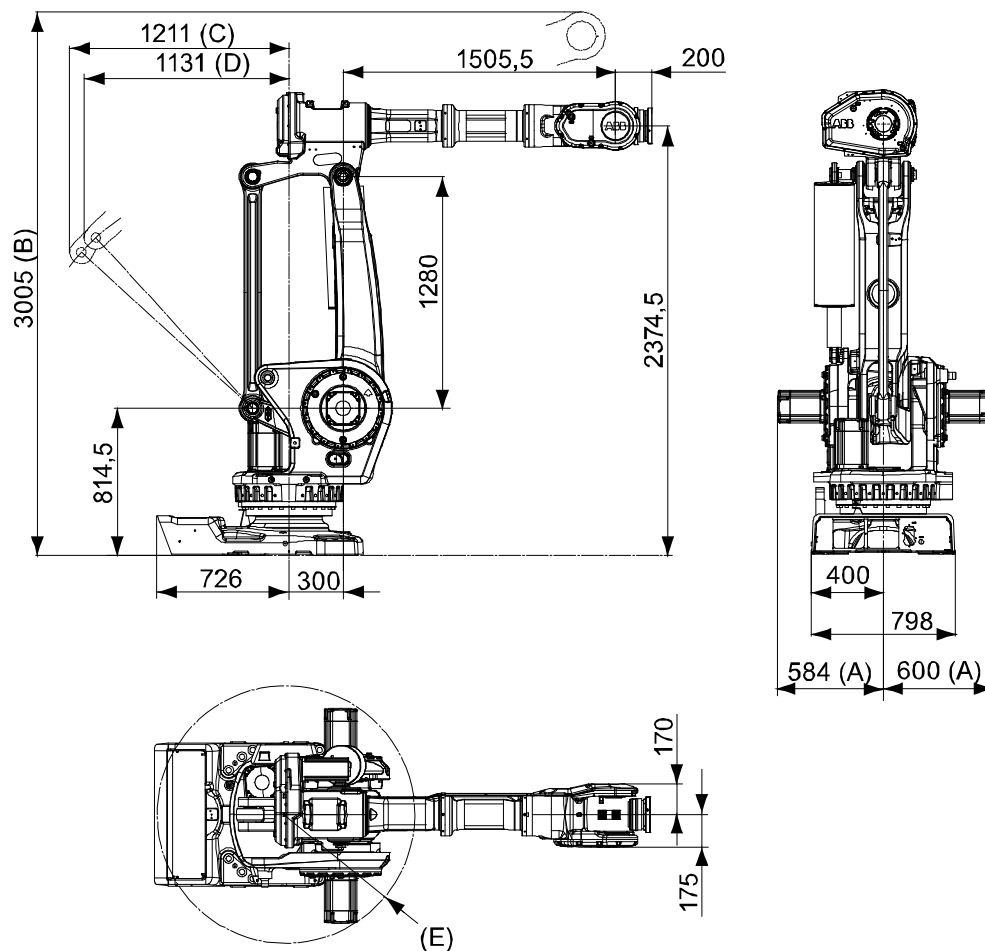
	IRB 6660-130/3.1 and -100/3.3	IRB 6660-205/1.9
A	1,000 mm	630 mm

Continues on next page

Power factor ($\cos \varphi$)

The power factor is above 0.95 at a steady state power consumption higher than 2.0 kW, when the IRB 6660 is connected to the OmniCore V line.

Dimensions IRB 6660-130/3.1



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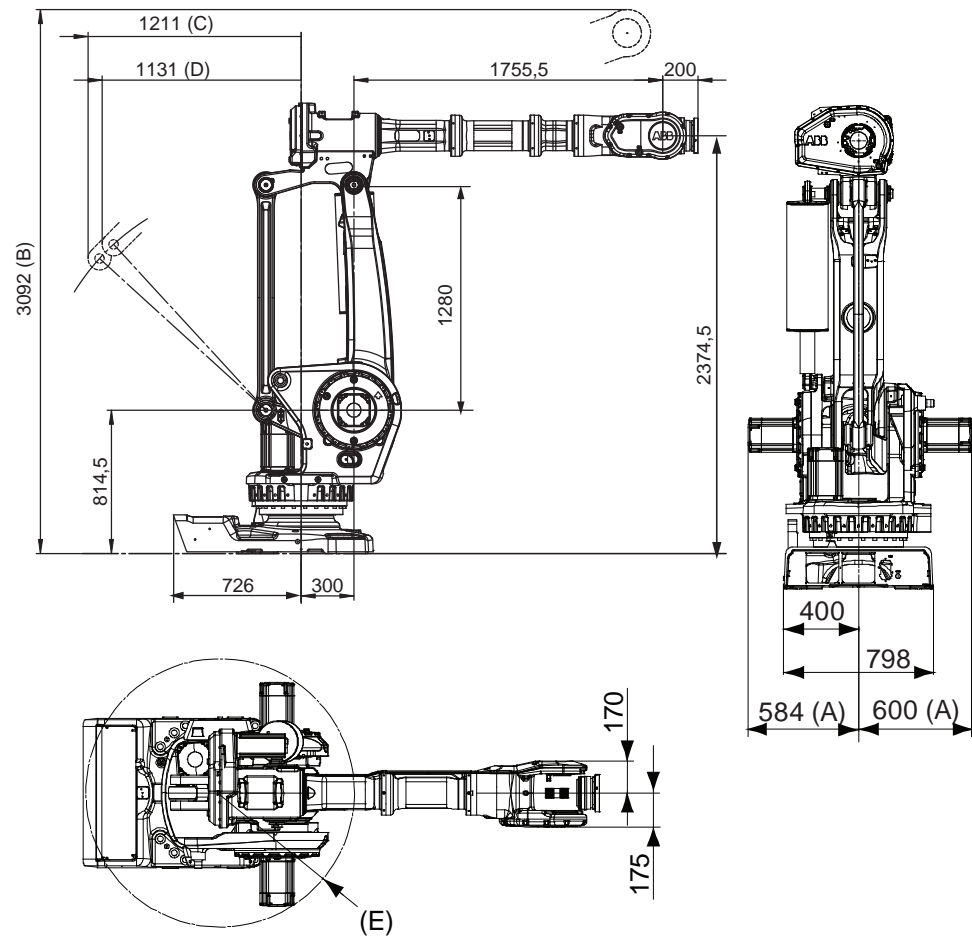
	Description
A	Forklift width 750 mm
B	Max working range
C	Mechanical stop
D	Max working range
E	R710, Radius for motor axis 3 R750, Right fork lift pocket

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1 Description

1.1.2 Technical data
Continued

Dimensions IRB 6660-100/3.3

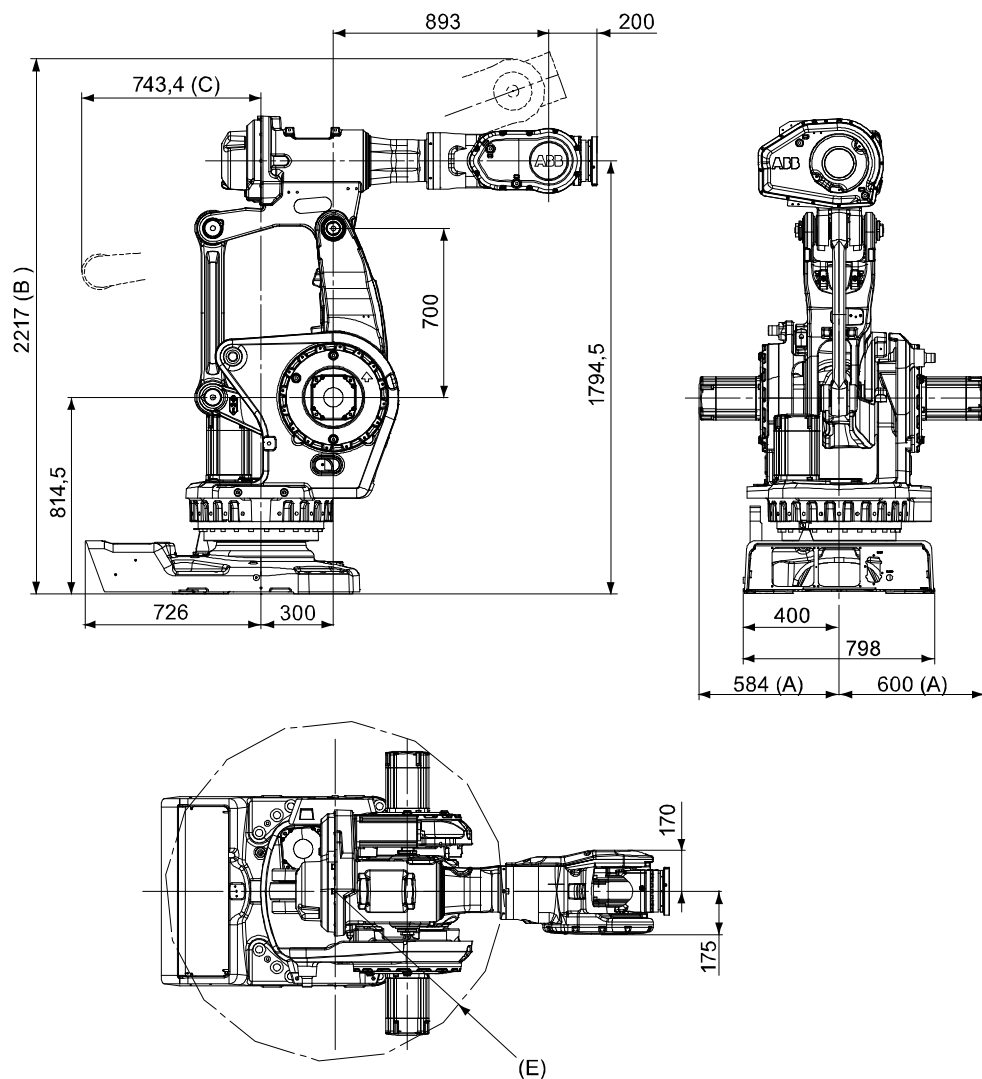


xx1200001277

	Description
A	Forklift width 750 mm
B	Max working range
C	Mechanical stop
D	Max working range
E	R710, Radius for motor axis 3 R750, Right fork lift pocket

Continues on next page

Dimensions IRB 6660-205/1.9



xx1000000635

	Description
A	Forklift width 750 mm
B	Max working range
C	Max working range
D	R710, Radius for motor axis 3 R750, Right fork lift pocket

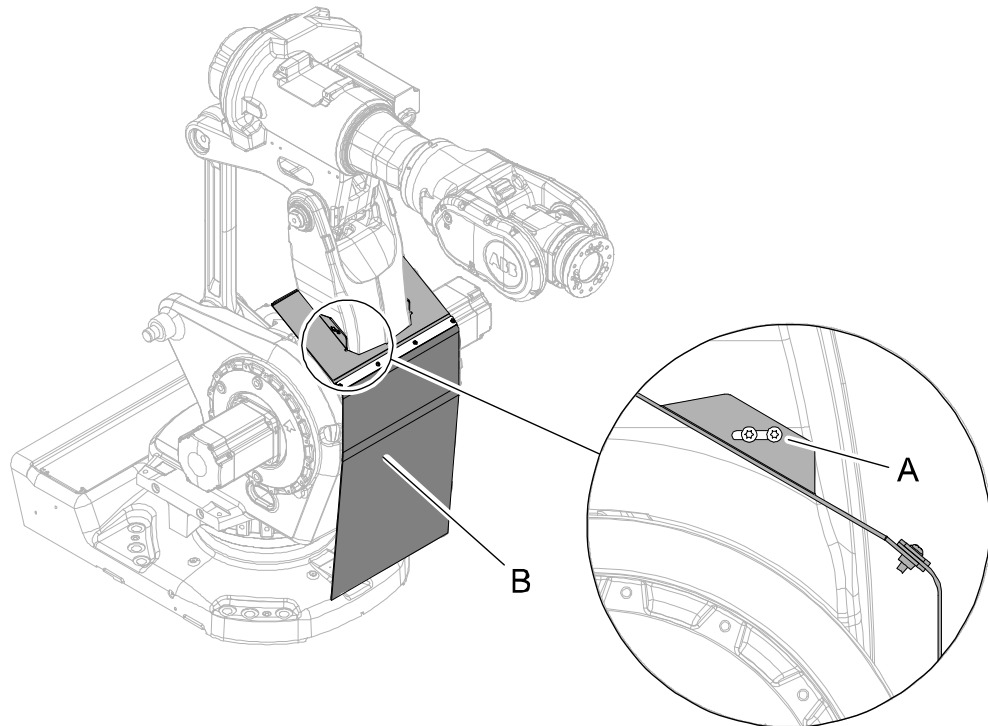
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1 Description

1.1.2 Technical data

Continued

Chip protection, IRB 6660-205/1.9



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Type	Description
Chip protection (B)	The protection prevents chips created at applications as for instance, deburring, sawing and milling to be accumulated on the robot and secure its movable functionality. Mandatory for IRB 6660-205/1.9. Not available for IRB 6660-130/3.1

1.2 Standards

1.2.1 Applicable standards

General

The product is compliant 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 deviation from ISO 10218-1:2011, these are listed in the declaration of incorporation. The declaration of incorporation is part of the delivery.

Robot standards

Standard	Description
ISO 9283	Manipulating industrial robots – Performance criteria and related test methods
ISO 9787	Robots and robotic devices – Coordinate systems and motion nomenclatures
ISO 9946	Manipulating industrial robots – Presentation of characteristics

Other standards used in design

Standard	Description
IEC 60204-1	Safety of machinery - Electrical equipment of machines - Part 1: General requirements, normative reference from ISO 10218-1
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
ISO 13849-1:2006	Safety of machinery - Safety related parts of control systems - Part 1: General principles for design, normative reference from ISO 10218-1
UL 1740 (option) CSA Z434 (option)	Standards For Safety - Robots and Robotic Equipment Industrial robots and robot Systems - General safety requirements Valid for USA and Canada.

1 Description

1.3.1 Introduction

1.3 Installation

1.3.1 Introduction

General

The IRB 6660 should be mounted on to the floor (no tilting allowed around X-axis or Y-axis). A tool or an end effector with max. weight of 100, 130 or 205 kg including payload, can be mounted on the robot tool flange (axis 6). See [Load diagrams on page 35](#).

Extra loads

For IRB 6660-130/3.1 and IRB 6660-100/3.3 can an extra load of 20 kg be mounted on to the upper arm, at a payload of maximum 130 or 100 kg, for IRB 6660-205/1.9 can an extra load of 15 kg be mounted on to the upper arm, at a payload of maximum 205 kg. An extra load of 500 kg can also be mounted on to the frame. See [Mounting of equipment on page 45](#).

Working range limitation

The working range of axis 1 can be limited by mechanical stops as options.

Explosive environments

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

1.3.2 Technical data

Weight, robot

The table shows the weight of the robot.

Robot model	Weight
IRB 6660	1950 kg



Note

The weight does not include tools and other equipment fitted on the robot.

Mounting positions

The table shows valid mounting options for the manipulator.

Mounting option	Installation angle	Note
Floor mounted	0° ⁱ	

ⁱ A tilt of up to 5° does not affect the payload or reach, but it can have a negative impact on performance and lifetime. The actual value must be set in the system parameters.



Note

The actual mounting angle must always be configured in the system parameters, otherwise the performance and lifetime is affected. See the product manual for details.

Continues on next page

1 Description

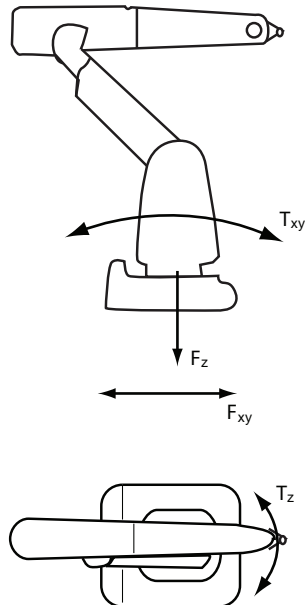
1.3.2 Technical data

Continued

Loads on foundation, robot

The illustration shows the directions of the robots stress forces.

The directions are valid for all floor mounted, suspended and inverted robots.



xx1100000521

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!



WARNING

The robot installation is restricted to the mounting options given in following load table(s).

Floor mounted


Force	Endurance load (in operation)	Max. load (emergency stop)
Force xy	± 7.6 kN (IRB 6660 - 100/3.3) ± 8.5 kN (IRB 6660 - 130/3.1) ± 7.9 kN (IRB 6660 - 205/1.9)	± 12.8 kN (IRB 6660 - 100/3.3) ± 16.1 kN (IRB 6660 - 130/3.1) ± 14.9 kN (IRB 6660 - 205/1.9)

Continues on next page

Force	Endurance load (in operation)	Max. load (emergency stop)
Force z	18.5 ± 3.7 kN (IRB 6660 - 100/3.3) 18.8 ± 8.4 kN (IRB 6660 - 130/3.1) 18.0 ± 4.4 kN (IRB 6660 - 205/1.9)	18.5 ± 7.4 kN (IRB 6660 - 100/3.3) 18.8 ± 12.8 kN (IRB 6660 - 130/3.1) 18.0 ± 7.7 kN (IRB 6660 - 205/1.9)
Torque xy	± 24.4 kNm (IRB 6660 - 100/3.3) ± 25.6 kNm (IRB 6660 - 130/3.1) ± 19.6 kNm (IRB 6660 - 205/1.9)	± 33.4 kNm (IRB 6660 - 100/3.3) ± 37.2 kNm (IRB 6660 - 130/3.1) ± 32.4 kNm (IRB 6660 - 205/1.9)
Torque z	± 7.6 kNm (IRB 6660 - 100/3.3) ± 10.3 kNm (IRB 6660 - 130/3.1) ± 7.1 kNm (IRB 6660 - 205/1.9)	± 14.5 kNm (IRB 6660 - 100/3.3) ± 19.3 kNm (IRB 6660 - 130/3.1) ± 14.7 kNm (IRB 6660 - 205/1.9)

Requirements, foundation

The table shows the requirements for the foundation where the weight of the installed robot is included:

Requirement	Value	Note
Flatness of foundation surface	0.3 mm	Flat foundations give better repeatability of the resolver calibration compared to original settings on delivery from ABB. The value for levelness aims at the circumstance of the anchoring points in the robot base. In order to compensate for an uneven surface, the robot can be recalibrated during installation. If resolver/encoder calibration is changed this will influence the absolute accuracy.
Minimum resonance frequency	22 Hz  Note It may affect the manipulator life-time to have a lower resonance frequency than recommended.	The value is recommended for optimal performance. Due to foundation stiffness, consider robot mass including equipment. ⁱ For information about compensating for foundation flexibility, see the application manual of the controller software, section <i>Motion Process Mode</i> .

ⁱ The minimum resonance frequency given should be interpreted as the frequency of the robot mass/inertia, robot assumed stiff, when a foundation translational/torsional elasticity is added, i.e., the stiffness of the pedestal where the robot is mounted. The minimum resonance frequency should not be interpreted as the resonance frequency of the building, floor etc. For example, if the equivalent mass of the floor is very high, it will not affect robot movement, even if the frequency is well below the stated frequency. The robot should be mounted as rigid as possible to the floor.

Disturbances from other machinery will affect the robot and the tool accuracy. The robot has resonance frequencies in the region 10 – 20 Hz and disturbances in this region will be amplified, although somewhat damped by the servo control. This might be a problem, depending on the requirements from the applications. If this is a problem, the robot needs to be isolated from the environment.

Storage conditions, robot

The table shows the allowed storage conditions for the robot:

Parameter	Value
Minimum ambient temperature	-25° C
Maximum ambient temperature	+55° C
Maximum ambient temperature (less than 24 hrs)	+70° C

Continues on next page

1 Description

1.3.2 Technical data

Continued

Parameter	Value
Maximum ambient humidity	95% at constant temperature (gaseous only)

Operating conditions, robot

The table shows the allowed operating conditions for the robot:

Parameter	Value
Minimum ambient temperature	+5° C
Maximum ambient temperature	+50° C ⁱ
Maximum ambient humidity	95% at constant temperature

ⁱ In a high speed prestending application, max ambient temperature is +40° C.

Protection classes, robot

The table shows the available protection types of the robot, with the corresponding protection class.

Protection type	Protection class ⁱ
Manipulator, protection type Standard	IP 67
Manipulator, protection type Foundry Plus	IP 67

ⁱ According to IEC 60529.

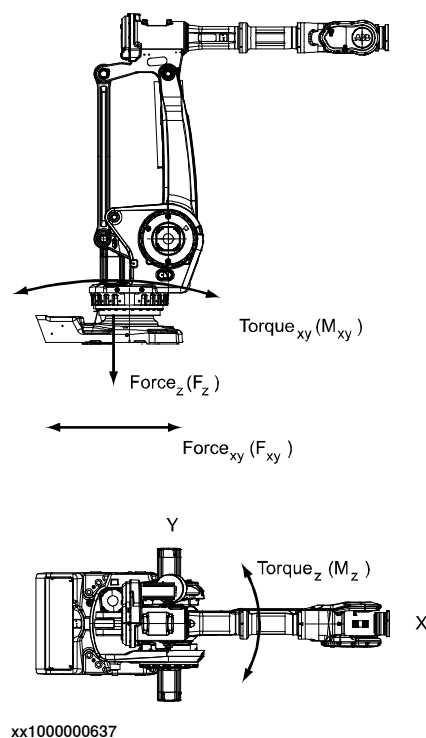
1.3.3 Mounting the manipulator

Maximum Load

Maximum load in relation to the base coordinate system.

Floor Mounted

Force	Endurance load (in operation)	Max. load (emergency stop)
Force xy	$\pm 7.6 \text{ kN}$ (IRB 6660 - 100/3.3) $\pm 8.5 \text{ kN}$ (IRB 6660 - 130/3.1) $\pm 7.9 \text{ kN}$ (IRB 6660 - 205/1.9)	$\pm 12.8 \text{ kN}$ (IRB 6660 - 100/3.3) $\pm 16.1 \text{ kN}$ (IRB 6660 - 130/3.1) $\pm 14.9 \text{ kN}$ (IRB 6660 - 205/1.9)
Force z	$18.5 \pm 3.7 \text{ kN}$ (IRB 6660 - 100/3.3) $18.8 \pm 8.4 \text{ kN}$ (IRB 6660 - 130/3.1) $18.0 \pm 4.4 \text{ kN}$ (IRB 6660 - 205/1.9)	$18.5 \pm 7.4 \text{ kN}$ (IRB 6660 - 100/3.3) $18.8 \pm 12.8 \text{ kN}$ (IRB 6660 - 130/3.1) $18.0 \pm 7.7 \text{ kN}$ (IRB 6660 - 205/1.9)
Torque xy	$\pm 24.4 \text{ kNm}$ (IRB 6660 - 100/3.3) $\pm 25.6 \text{ kNm}$ (IRB 6660 - 130/3.1) $\pm 19.6 \text{ kNm}$ (IRB 6660 - 205/1.9)	$\pm 33.4 \text{ kNm}$ (IRB 6660 - 100/3.3) $\pm 37.2 \text{ kNm}$ (IRB 6660 - 130/3.1) $\pm 32.4 \text{ kNm}$ (IRB 6660 - 205/1.9)
Torque z	$\pm 7.6 \text{ kNm}$ (IRB 6660 - 100/3.3) $\pm 10.3 \text{ kNm}$ (IRB 6660 - 130/3.1) $\pm 7.1 \text{ kNm}$ (IRB 6660 - 205/1.9)	$\pm 14.5 \text{ kNm}$ (IRB 6660 - 100/3.3) $\pm 19.3 \text{ kNm}$ (IRB 6660 - 130/3.1) $\pm 14.7 \text{ kNm}$ (IRB 6660 - 205/1.9)



Note regarding Mxy and Fxy

The bending torque (M_{xy}) can occur in any direction in the XY-plane of the base coordinate system.

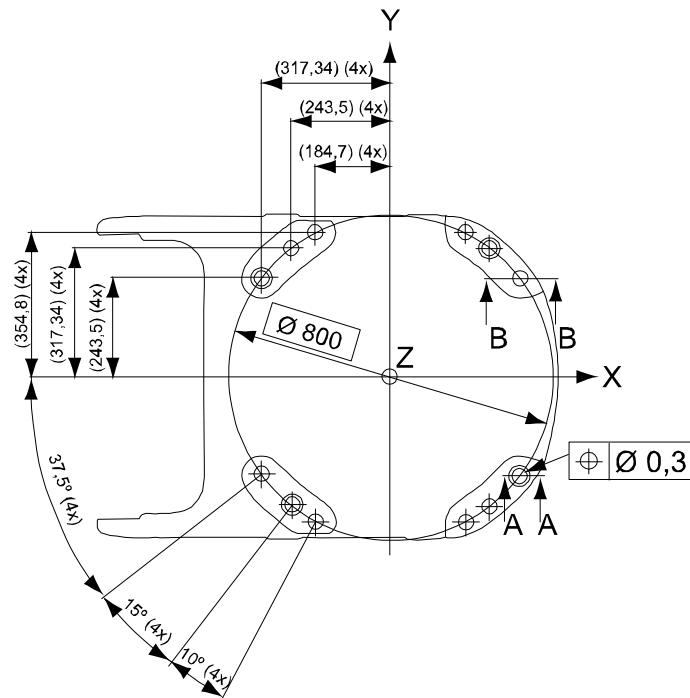
The same applies to the transverse force (F_{xy}).

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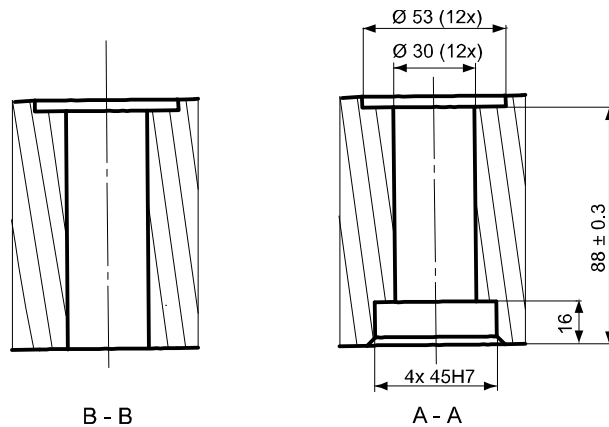
1 Description

1.3.3 Mounting the manipulator
Continued

Fastening holes robot base



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Recommended screws for fastening the manipulator to the base	M24 x 140 8.8 with 4 mm flat washer
Torque value	725 Nm



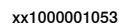
Note

Only two guiding sleeves shall be used. The corresponding holes in the base plate shall be circular and oval according to the next two Figures.

Regarding AbsAcc performance, the chosen guide holes according to Figure above and last Figure in this chapter are recommended.

Continues on next page

The following figure shows the option base plate (dimensions in mm).

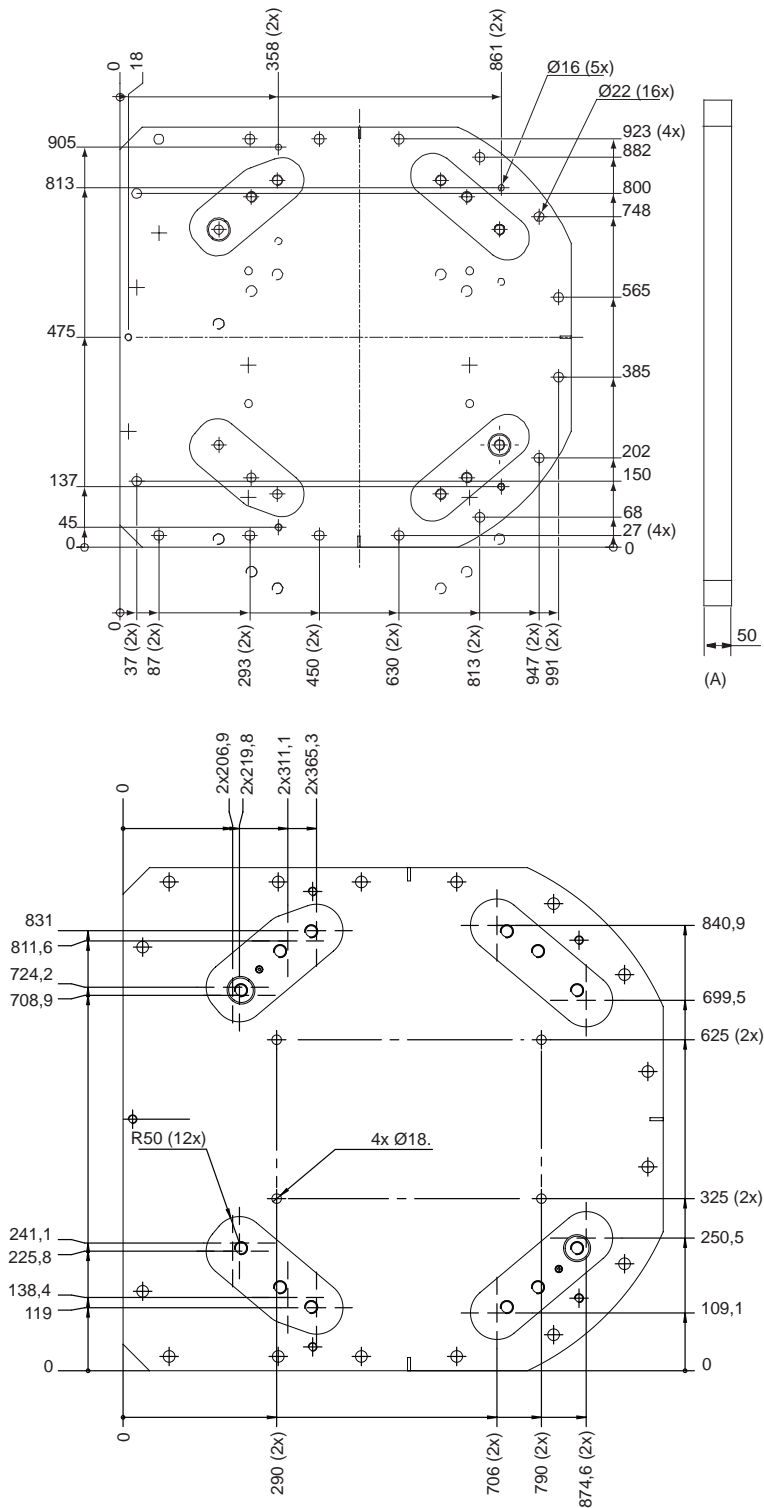


E, F, G, H	Common tolerance zone (accuracy all over the base plate from one contact surface to the other)
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Product specification - IRB 6660
3HAC087212-001 Revision: E

1 Description

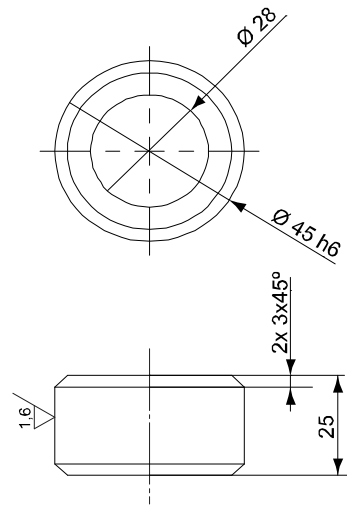
1.3.3 Mounting the manipulator
Continued



xx1000001054

Pos	Description
A	Color: RAL 9005 Thickness: 80-100 µm

Continues on next page



xx1000001055

Pos	Description
A	Guide sleeve protected from corrosion

1 Description

1.4.1 Calibration methods

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.	Axis Calibration or Calibration Pendulum ⁱ
Absolute accuracy calibration (optional)	Based on standard calibration, and besides positioning the robot at synchronization position, the Absolute accuracy calibration also compensates for: <ul style="list-style-type: none">Mechanical tolerances in the robot structureDeflection 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. A robot calibrated with Absolute accuracy has the option information printed on its name plate (OmniCore). To regain 100% Absolute accuracy performance, the robot must be recalibrated for absolute accuracy after repair or maintenance that affects the mechanical structure.	CalibWare
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.  Note For advanced users, it is also possible to use the do the wrist optimization using the RAPID instruction <code>WristOpt</code> , see <i>Technical reference manual - RAPID Instructions, Functions and Data types</i> . This instruction is only available for OmniCore robots.	Wrist Optimization

ⁱ The robot is calibrated by either Calibration Pendulum or Axis Calibration at factory. Always use the same calibration method as used at the factory.
Information about valid calibration method is found on the calibration label or in the calibration menu on the FlexPendant.

Continues on next page

If no data is found related to standard calibration, contact the local ABB Service.

Brief description of calibration methods

Calibration Pendulum method

Calibration Pendulum is a standard calibration method for calibration of some ABB robots. On OmniCore, this calibration method is only used on IRB 1510, IRB 1520, IRB 2400, and IRB 4400.

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.

Axis Calibration method

Axis Calibration is a standard calibration method for calibration of IRB 6660. It is the recommended method in order to achieve proper performance.

The following routines are available for the Axis Calibration method:

- Fine calibration
- Update revolution counters
- Reference calibration

The calibration equipment for Axis Calibration is delivered as a toolkit.

The actual instructions of how to perform the calibration procedure and what to do at each step is given on the FlexPendant. You will be guided through the calibration procedure, step by step.

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.

The Absolute Accuracy option varies according to the robot mounting position. This is printed on the robot name plate for each robot. The robot must be in the correct mounting position when it is recalibrated for absolute accuracy.

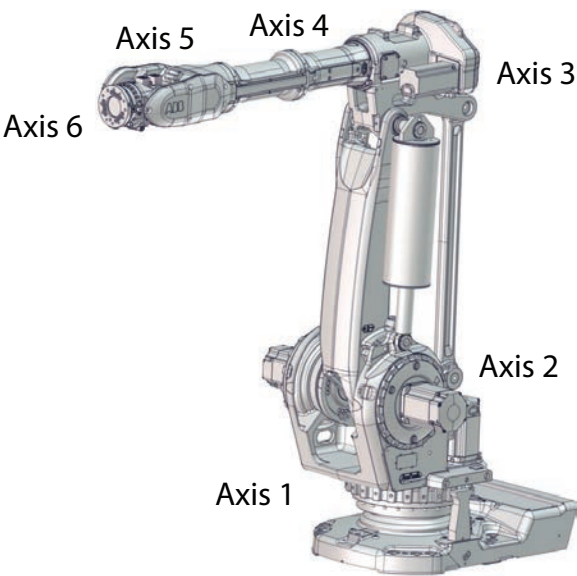
1 Description

1.4.2 Fine calibration with Calibration Pendulum

1.4.2 Fine calibration with Calibration Pendulum

General

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



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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

1.4.3 Absolute Accuracy calibration

Purpose

Absolute Accuracy is a calibration concept that improves TCP accuracy. The difference between an ideal robot and a real robot can be several millimeters, resulting from mechanical tolerances and deflection in the robot structure. *Absolute Accuracy* compensates for these differences.

Here are some examples of when this accuracy is important:

- Exchangeability of robots
- Offline programming with no or minimum touch-up
- Online programming with accurate movement and reorientation of tool
- Programming with accurate offset movement in relation to eg. vision system or offset programming
- Re-use of programs between applications

The option *Absolute Accuracy* is integrated in the controller algorithms and does not need external equipment or calculation.



Note

The performance data is applicable to the corresponding RobotWare version of the individual robot.



Note

Singularities might appear in slightly different positions on a real robot compared to RobotStudio, where *Absolute Accuracy* is off compared to the real controller.

What is included

Every *Absolute Accuracy* robot is delivered with:

- compensation parameters saved in the robot memory
- a birth certificate representing the *Absolute Accuracy* measurement protocol for the calibration and verification sequence.

A robot with *Absolute Accuracy* calibration has a label with this information on the manipulator.

Absolute Accuracy supports floor mounted, wall mounted, and ceiling mounted installations. The compensation parameters that are saved in the robot memory differ depending on which *Absolute Accuracy* option is selected.

When is *Absolute Accuracy* being used

Absolute Accuracy works on a robot target in Cartesian coordinates, not on the individual joints. Therefore, joint based movements (e.g. MoveAbsJ) will not be affected.

Continues on next page

1 Description

1.4.3 Absolute Accuracy calibration

Continued

If the robot is inverted, the Absolute Accuracy calibration must be performed when the robot is inverted.

Absolute Accuracy active

Absolute Accuracy will be active in the following cases:

- Any motion function based on robtargets (e.g. `MoveL`) and ModPos on robtargets
- Reorientation jogging
- Linear jogging
- Tool definition (4, 5, 6 point tool definition, room fixed TCP, stationary tool)
- Work object definition

Absolute Accuracy not active

The following are examples of when Absolute Accuracy is not active:

- Any motion function based on a jointtarget (`MoveAbsJ`)
- Independent joint
- Joint based jogging
- Additional axes
- Track motion



Note

In a robot system with, for example, an additional axis or track motion, the Absolute Accuracy is active for the manipulator but not for the additional axis or track motion.

RAPID instructions

There are no RAPID instructions included in this option.

Production data

Typical production data regarding calibration are:

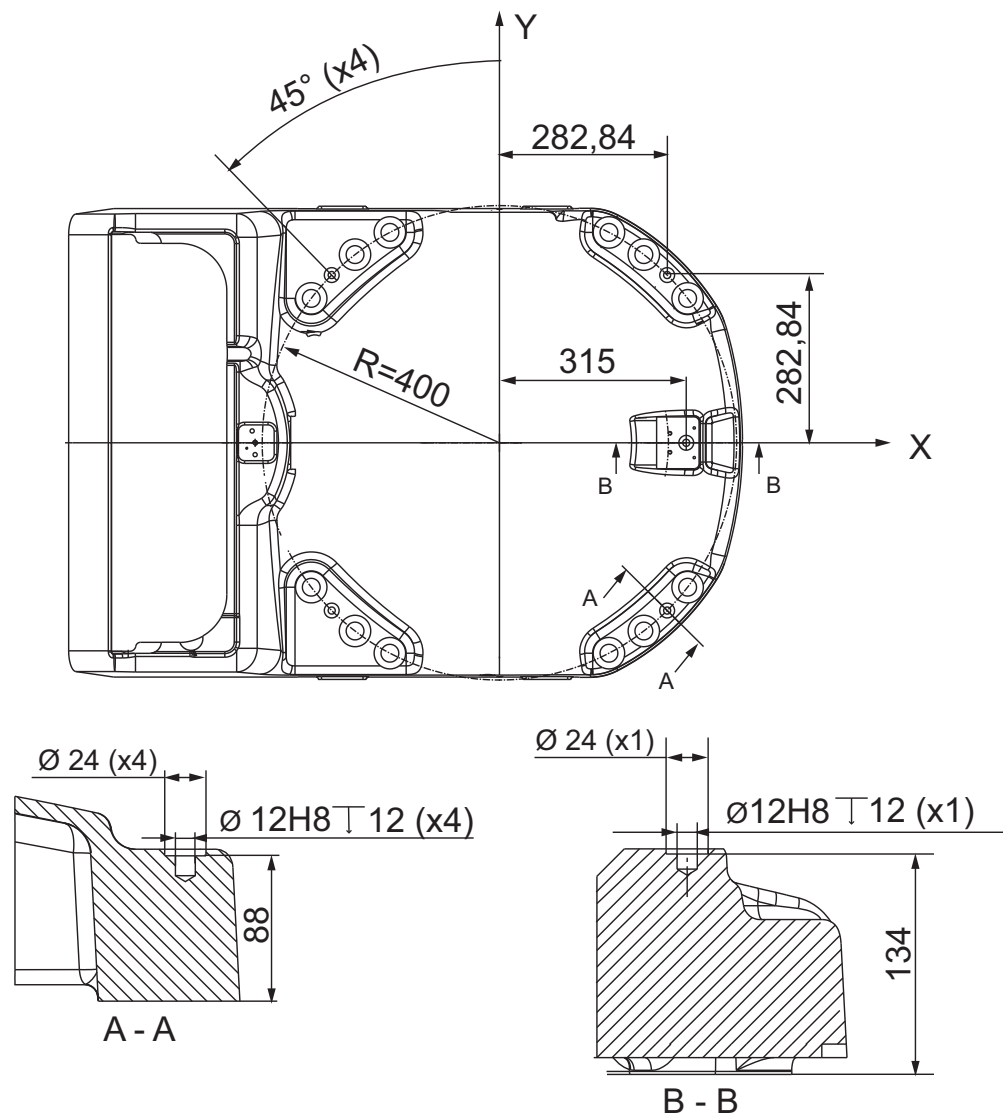
Robot	Positioning accuracy (mm)		
	Average	Max	% Within 1 mm
IRB 6660-130/3.1	0.5 mm	1.14 mm	98 %
IRB 6660-100/3.3			
IRB 6660-205/1.9			

1.4.4 Robot references

Base

The holes shown in figure below are used for measuring the robot position when integrated in a production cell.

The holes are not available for option Foundry Plus.



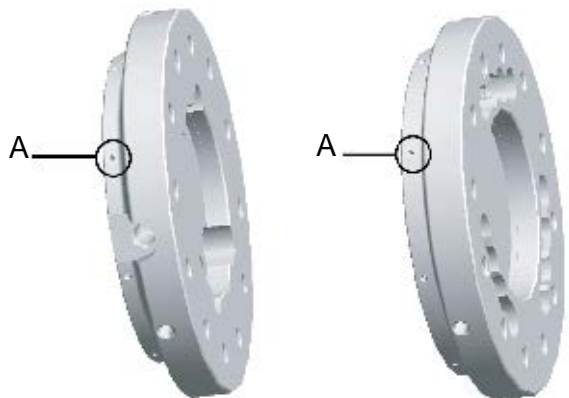
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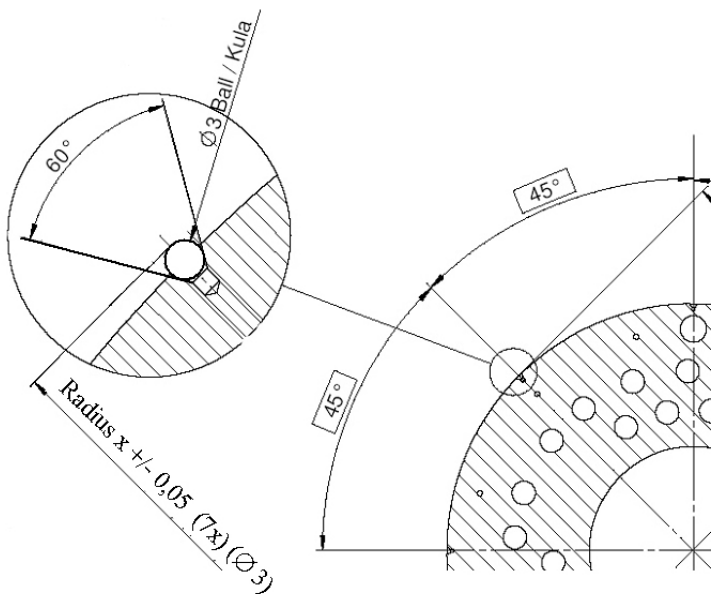
1 Description

1.4.4 Robot references
Continued

Tool flange



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Robot	Radius X (mm) for references on tool flange
IRB 6660-130/3.1	R=87,5
IRB 6660-100/3.3	R=87,5
IRB 6660-205/1.9	R=87,5

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 - OmniCore*, 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 diagrams include a nominal payload inertia, J_0 of 15 kgm², and an extra load of 20 kg (IRB 6660-130/3.1 and IRB 6660-100/3.3) and 15 kg (IRB 6660-205/1.9) at the upper arm housing.

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.

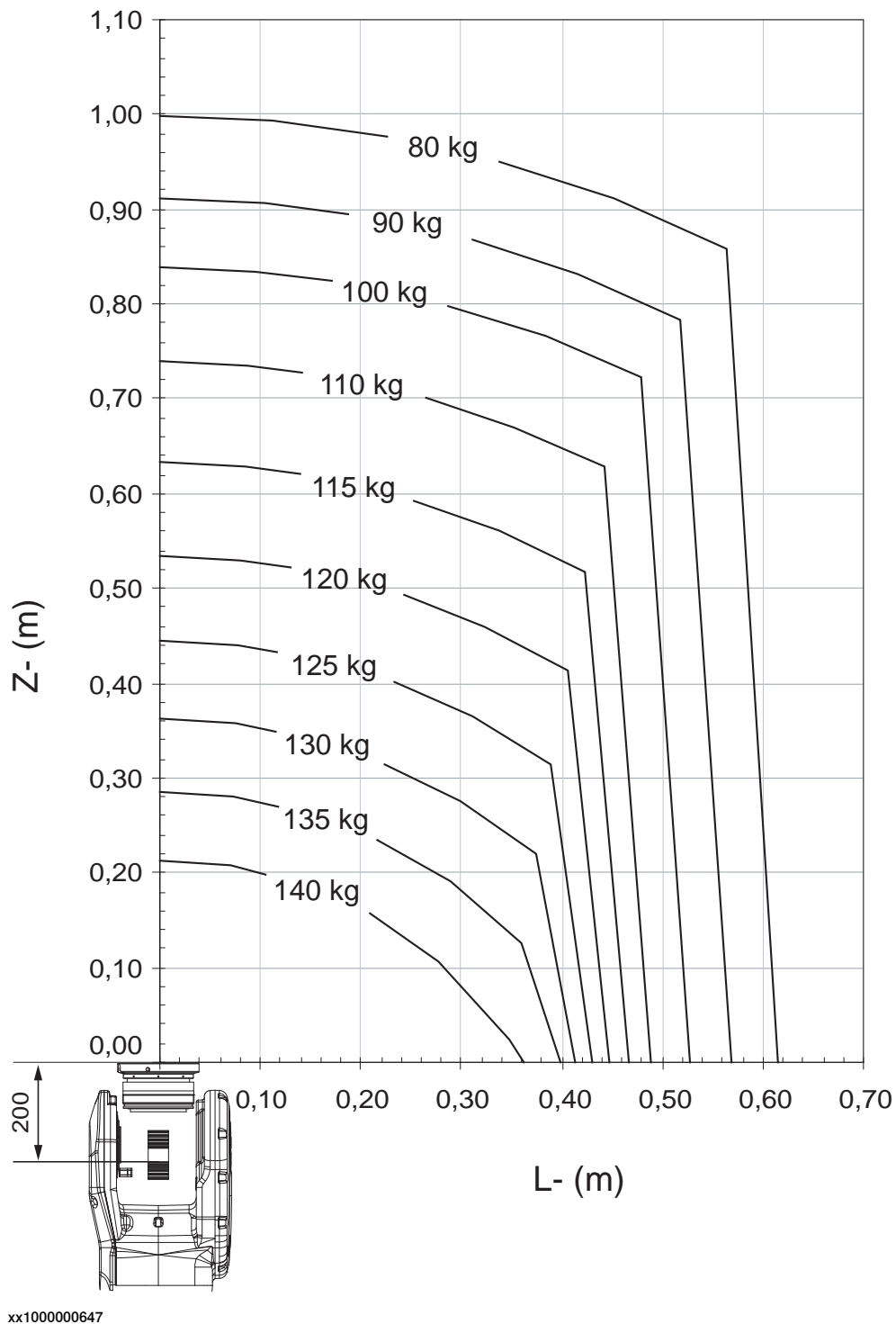
The result from RobotLoad is only valid within the maximum loads and tilt angles. There is no warning if the maximum permitted arm load is exceeded. For over-load cases and special applications, contact ABB for further analysis.

1 Description

1.5.2 Load diagrams

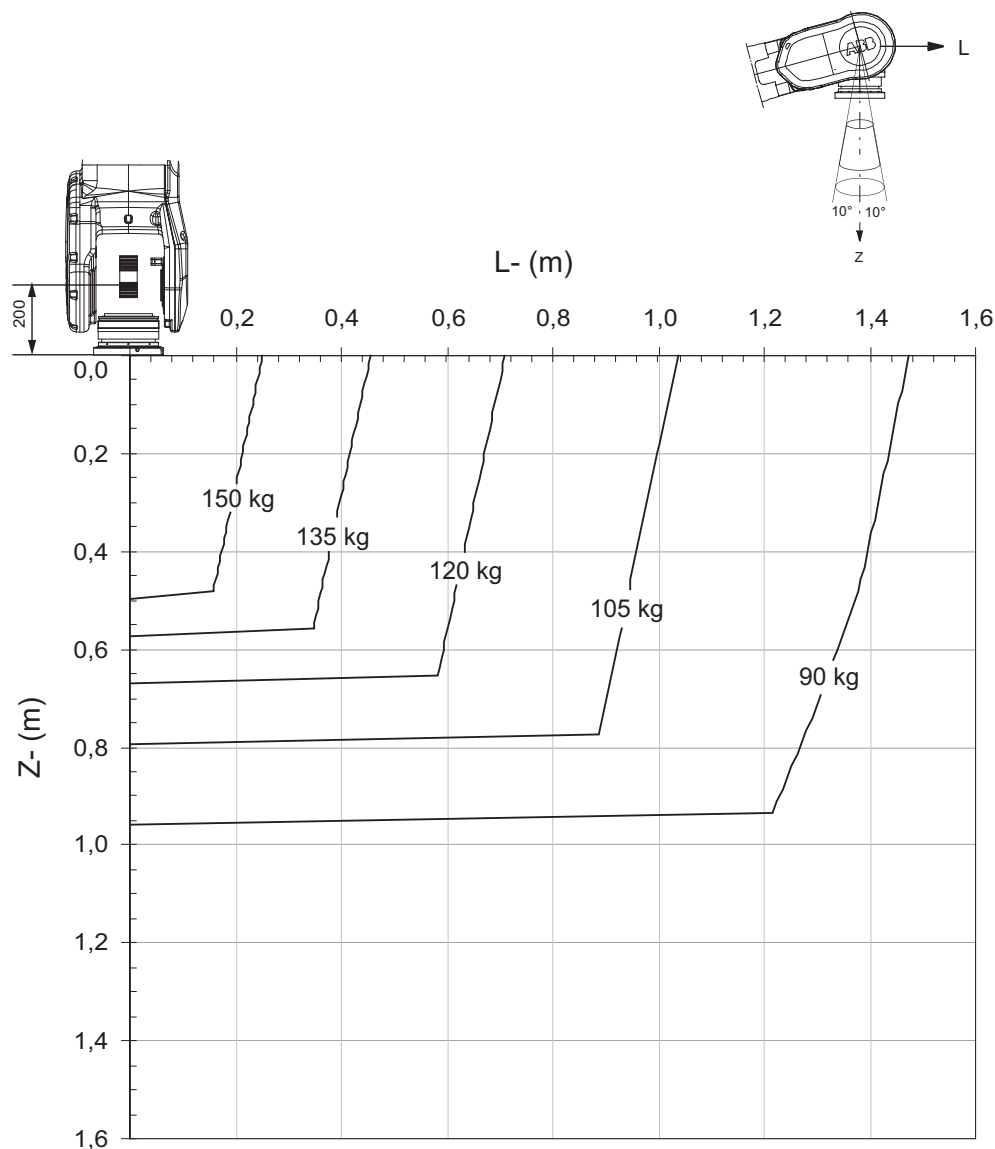
1.5.2 Load diagrams

IRB 6660-130/3.1



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IRB 6660-130/3.1“ Vertical Wrist” ($\pm 10^\circ$)



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For wrist down (0° deviation from the vertical line).

	Without extra arm load	With 20 kg arm load
Max load	170 kg	150 kg
Z _{max}	0.414 m	0.496 m
L _{max}	0.133 m	0.282 m

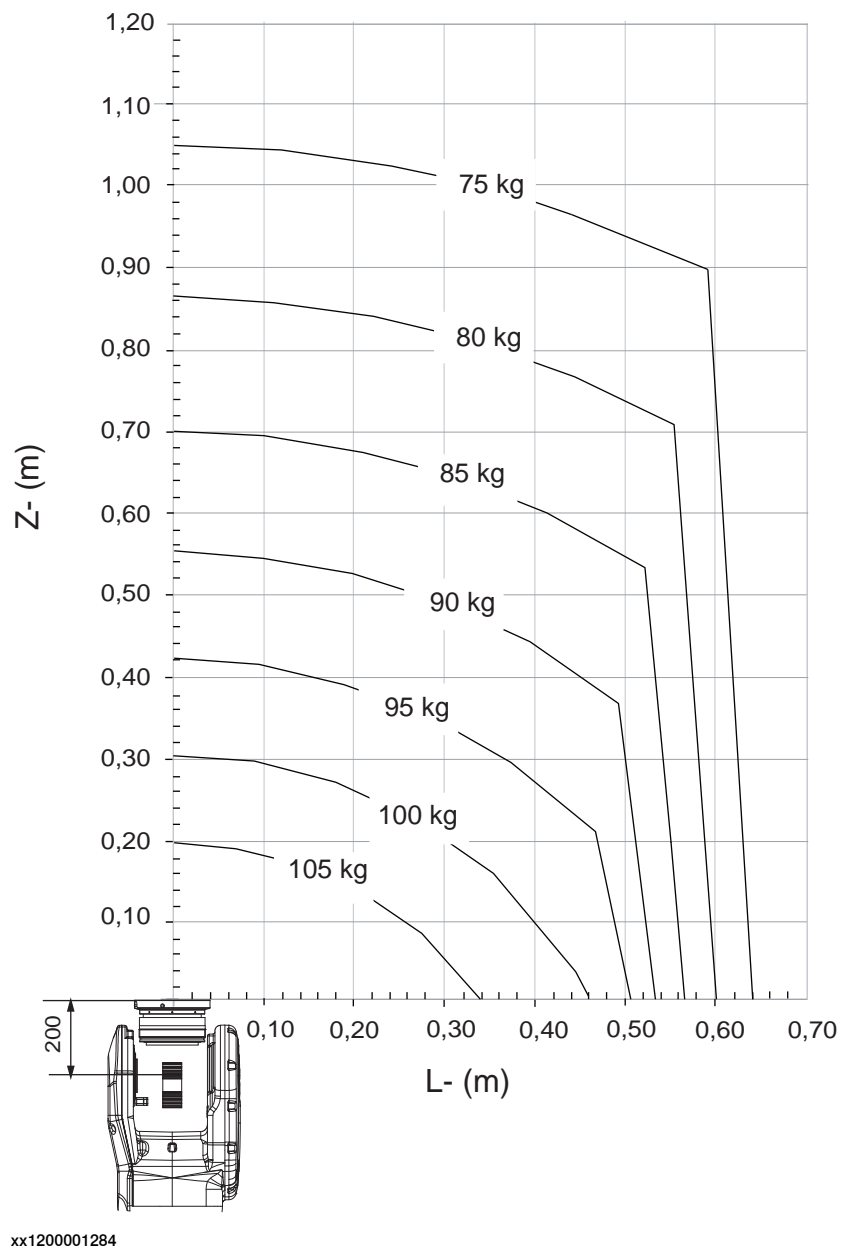
Continues on next page

1 Description

1.5.2 Load diagrams

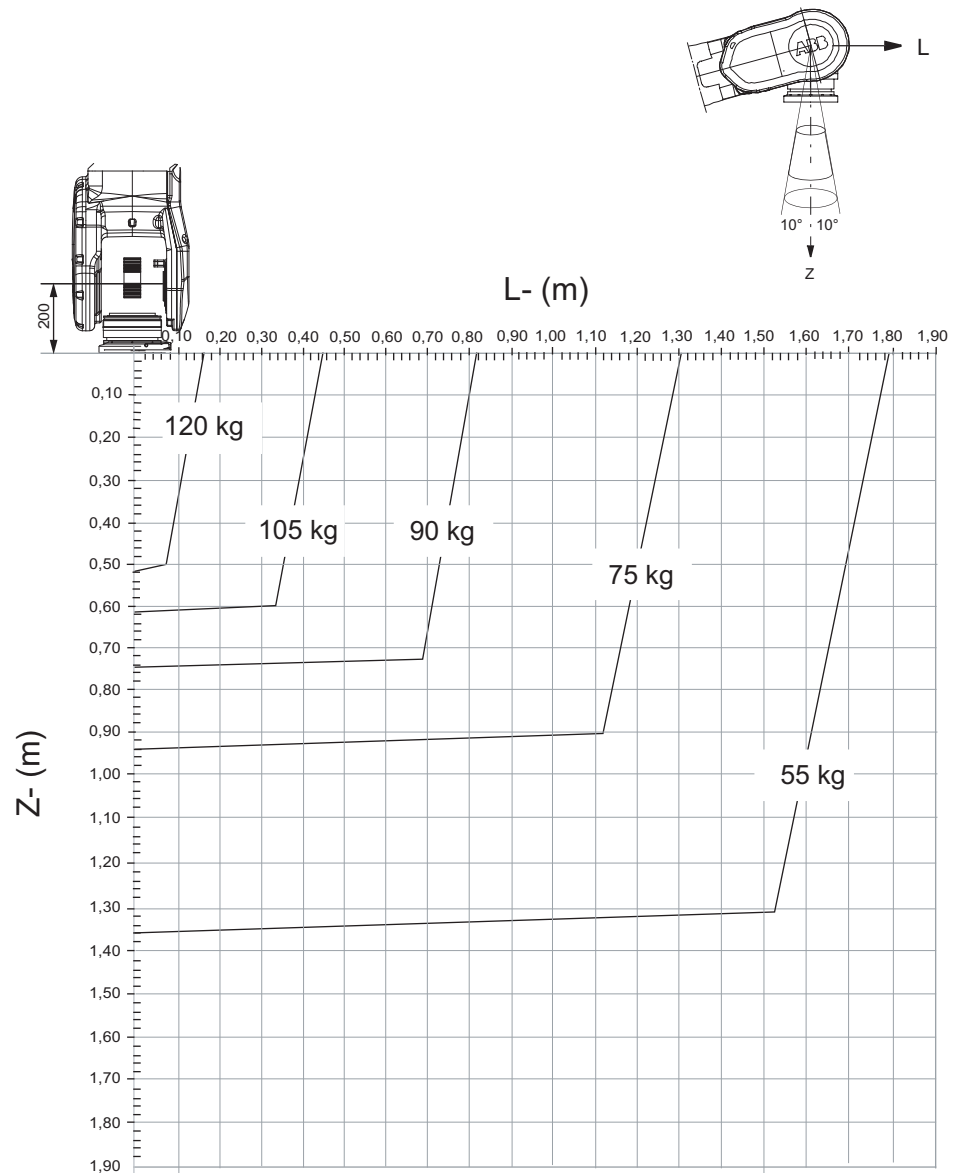
Continued

IRB 6660-100/3.3



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IRB 6660-100/3.3“ Vertical Wrist” ($\pm 10^\circ$)



xx1200001285

For wrist down (0° deviation from the vertical line).

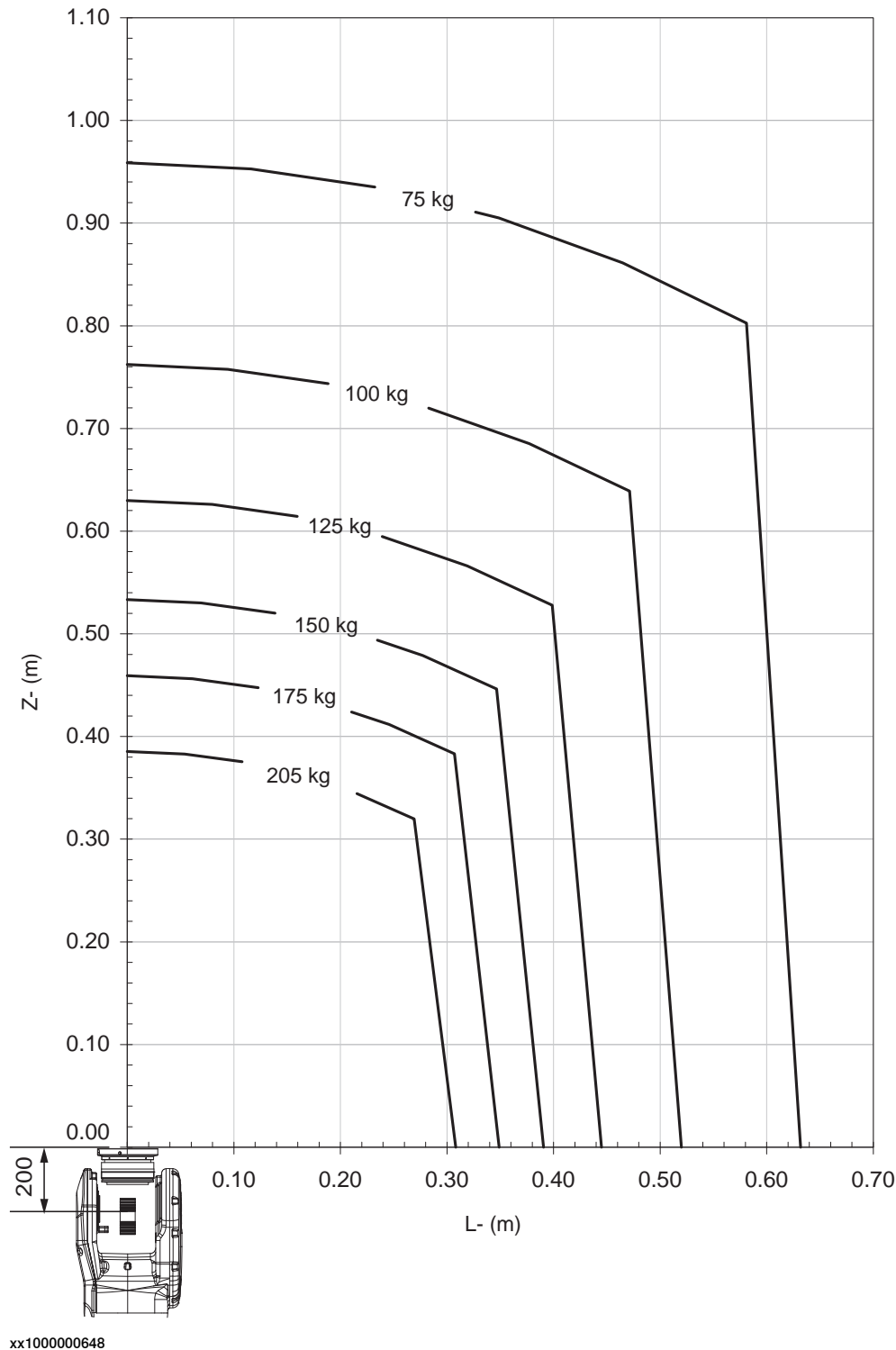
	Without extra arm load	With 20 kg arm load
Max load	132 kg	125 kg
Z_{\max}	0.448 m	0.484 m
L_{\max}	0.103 m	0.119 m

Continues on next page

1 Description

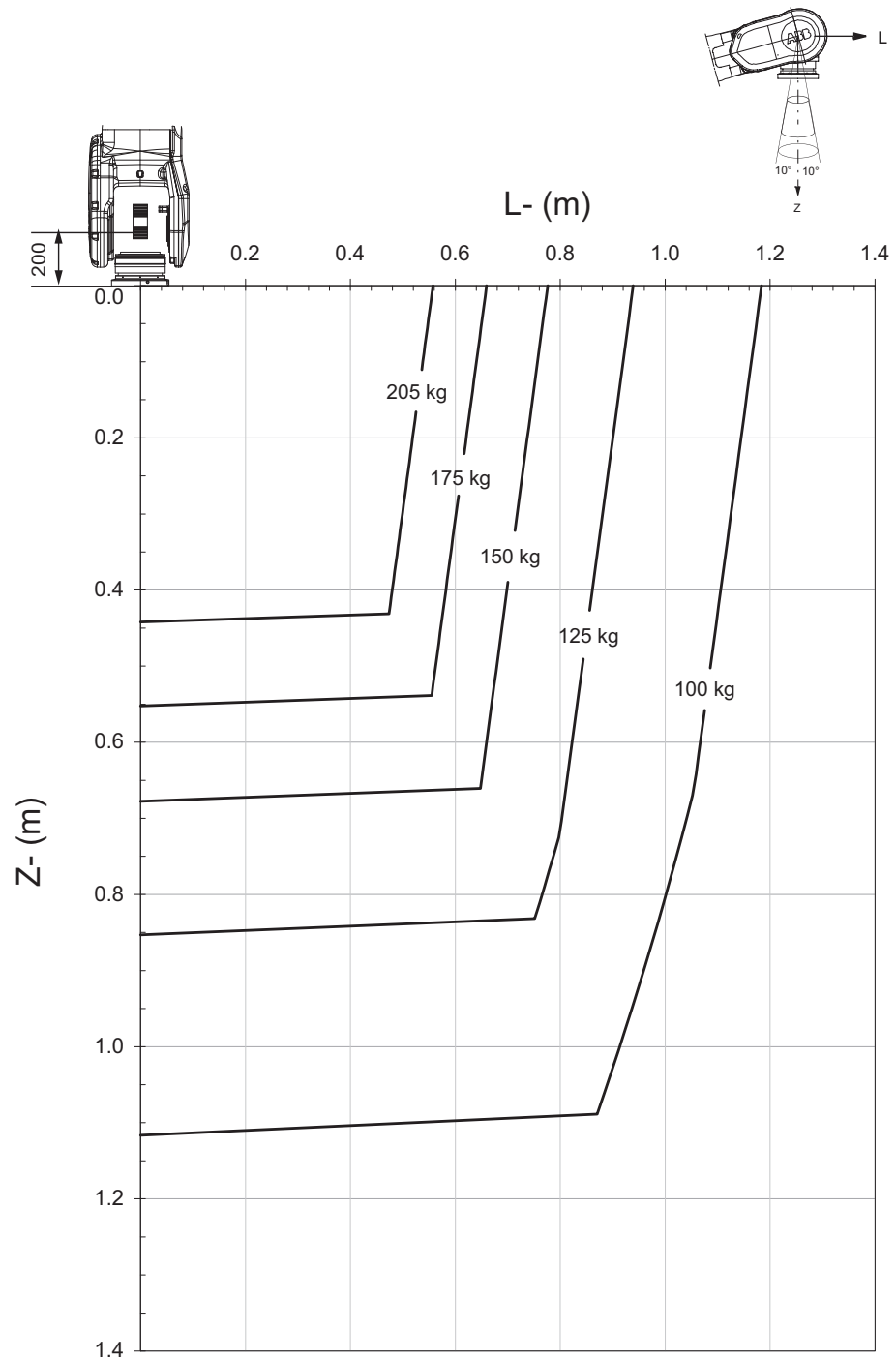
1.5.2 Load diagrams
Continued

IRB 6660-205/1.9



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IRB 6660-205/1.9“ Vertical Wrist” ($\pm 10^\circ$)



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For wrist down (0° deviation from the vertical line).

	Without extra arm load	With 15 kg arm load
Max load	220 kg	205 kg
Z _{max}	0.442 m	0.442 m
L _{max}	0.582 m	0.574 m

1 Description

1.5.3 Maximum load and moment of inertia for full and limited axis 5 (center line down) movement

1.5.3 Maximum load and moment of inertia for full and limited axis 5 (center line down) movement

Information

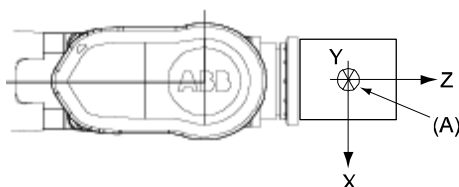


Note

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

Full movement of axis 5

Axis	Robot Type	Maximum moment of inertia
5	IRB 6660-130/3.1	$Ja5 = \text{Load} \times ((Z + 0,200)^2 + L^2) + \max(J_{ox}, J_{oy}) \leq 250 \text{ kgm}^2$
	IRB 6660-205/1.9	$Ja5 = \text{Load} \times ((Z + 0,200)^2 + L^2) + \max(J_{ox}, J_{oy}) \leq 250 \text{ kgm}^2$
	IRB 6660-100/3.3	$Ja5 = \text{Load} \times ((Z + 0,200)^2 + L^2) + \max(J_{ox}, J_{oy}) \leq 250 \text{ kgm}^2$
6	IRB 6660-130/3.1	$Ja6 = \text{Load} \times L^2 + J_{oz} \leq 185 \text{ kgm}^2$
	IRB 6660-205/1.9	$Ja6 = \text{Load} \times L^2 + J_{oz} \leq 185 \text{ kgm}^2$
	IRB 6660-100/3.3	$Ja6 = \text{Load} \times L^2 + J_{oz} \leq 185 \text{ kgm}^2$



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Pos	Description
A	Center of gravity.

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

Limited axis 5, center line down

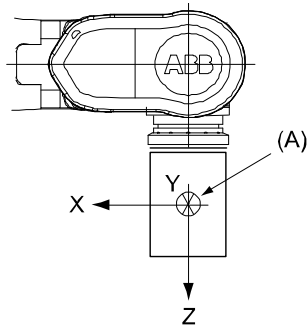
Axis	Robot Type	Maximum moment of inertia
5	IRB 6660-130/3.1	$Ja5 = \text{Load} \times ((Z + 0,200)^2 + L^2) + \max(J_{ox}, J_{oy}) \leq 275 \text{ kgm}^2$
	IRB 6660-205/1.9	$Ja5 = \text{Load} \times ((Z + 0,200)^2 + L^2) + \max(J_{ox}, J_{oy}) \leq 275 \text{ kgm}^2$
	IRB 6660-100/3.3	$Ja5 = \text{Load} \times ((Z + 0,200)^2 + L^2) + \max(J_{ox}, J_{oy}) \leq 275 \text{ kgm}^2$

Continues on next page

1.5.3 Maximum load and moment of inertia for full and limited axis 5 (center line down) movement

Continued

Axis	Robot Type	Maximum moment of inertia
6	IRB 6660-130/3.1	$Ja_6 = \text{Load} \times L_2 + J_{oz} \leq 250 \text{ kgm}^2$
	IRB 6660-205/1.9	$Ja_6 = \text{Load} \times L_2 + J_{oz} \leq 250 \text{ kgm}^2$
	IRB 6660-100/3.3	$Ja_6 = \text{Load} \times L_2 + J_{oz} \leq 250 \text{ kgm}^2$



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

1 Description

1.5.4 Wrist torque

1.5.4 Wrist torque

General

The table below shows the maximum permissible torque due to payload



Note

The wrist torque values are for reference only, and should not be used for calculating permitted load offset (position of center of gravity) within the load diagram, since those also are limited by main axes torques as well as dynamic loads. Furthermore, arm loads will influence the permitted load diagram. To find the absolute limits of the load diagram, use the RobotStudio add-in RobotLoad.

Robot type	Max wrist torque axis 4 & 5	Max wrist torque axis 6	Max torque valid at load
IRB 6660-130/3.1	1037 Nm	526 Nm	105 kg
IRB 6660-100/3.3	918 Nm	472 Nm	75 kg
IRB 6660-205/1.9	1177 Nm	620 Nm	200 kg

1.6 Mounting of equipment

1.6.1 General

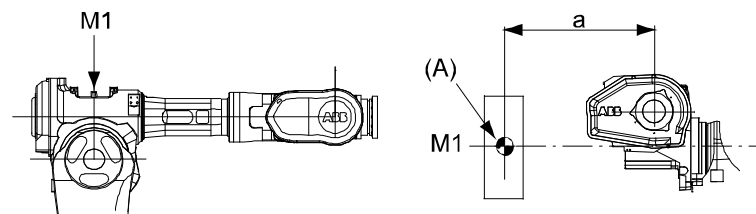
Information

Extra loads can be mounted on the upper arm housing and on the frame. Definitions of distances and mass are shown in Figure below. The robot is supplied with holes for mounting extra equipment (see Figures in next chapter).

Upper arm

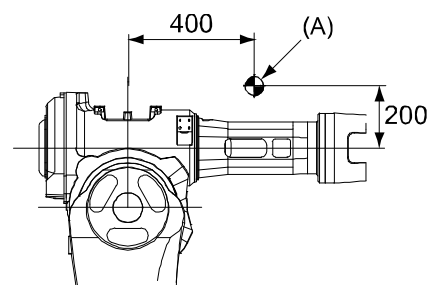
Allowed extra load on upper arm housing plus the maximum handling weight (see Figure below):

$M1 \leq 20$ or 15 kg with distance $a \leq 500$ mm, center of gravity in axis 3 extension.



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Pos	Description
A	Center of gravity for permitted extra load ≤ 20 kg for IRB 6660-130/3.1
	Center of gravity for permitted extra load ≤ 15 kg for IRB 6660-205/1.9
	Center of gravity for permitted extra load ≤ 20 kg for IRB 6660-100/3.3



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Pos	Description
A	Center of gravity 20 kg or 15 kg

Frame (Hip Load)

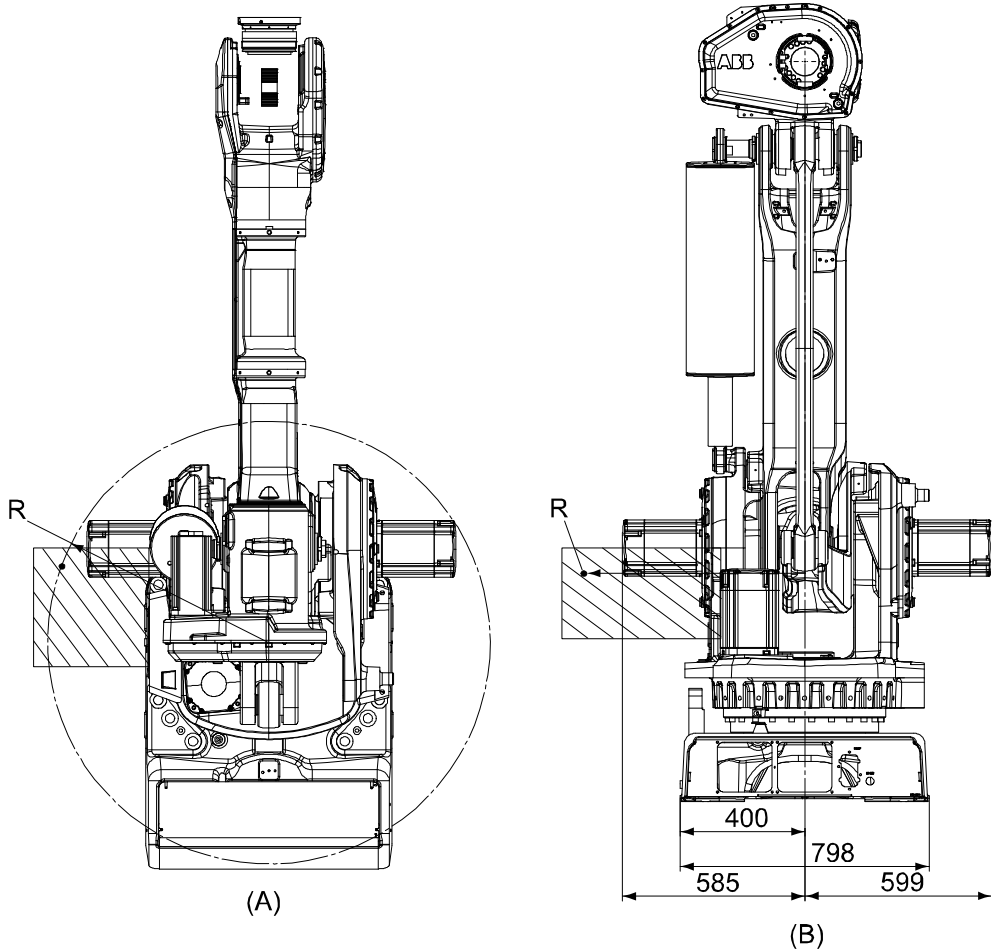
	Description
Permitted extra load on frame	$J_H = 200 \text{ kgm}^2$

Continues on next page

1 Description

1.6.1 General
Continued

	Description
Recommended position (see Figure below)	$J_H = J_{H0} + M4 \times R^2$ where: J_{H0} is the moment of inertia of the equipment R is the radius (m) from the center of axis 1 $M4$ is the total mass (kg) of the equipment including bracket and harness (≤ 500 kg)



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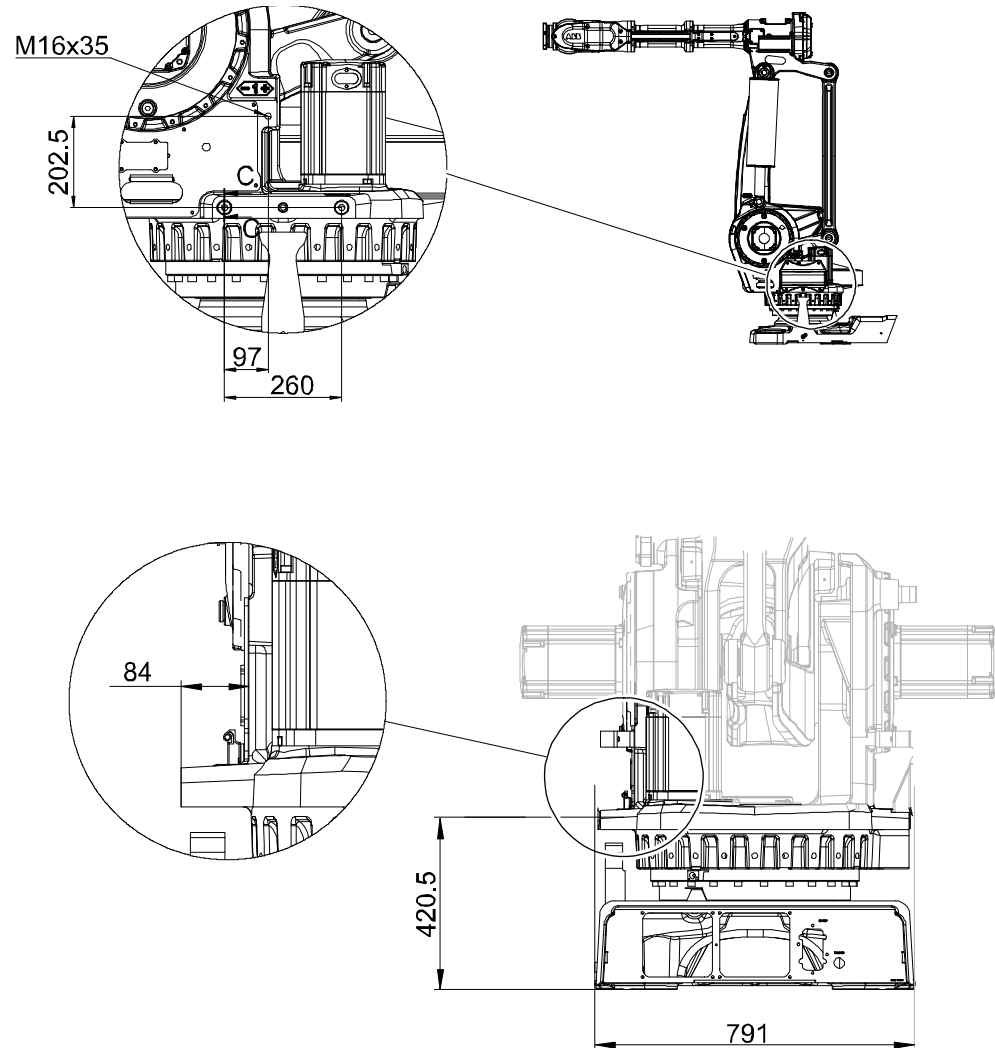
Pos	Description
A	View from above
B	View from the rear
R	710 mm

1.6.2 Mounting of hip load

General

The extra load can be mounted on the frame. Holes for mounting see Figure below. When mounting on the frame all the three holes (2x2, Ø16) on one side must be used.

Holes for mounting hip load on frame



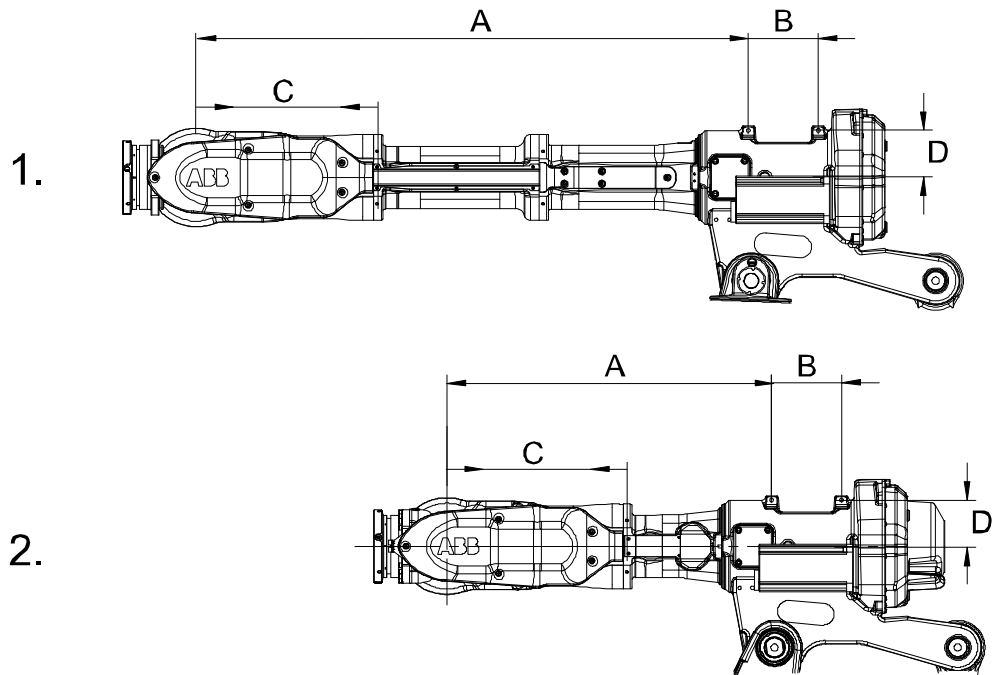
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1 Description

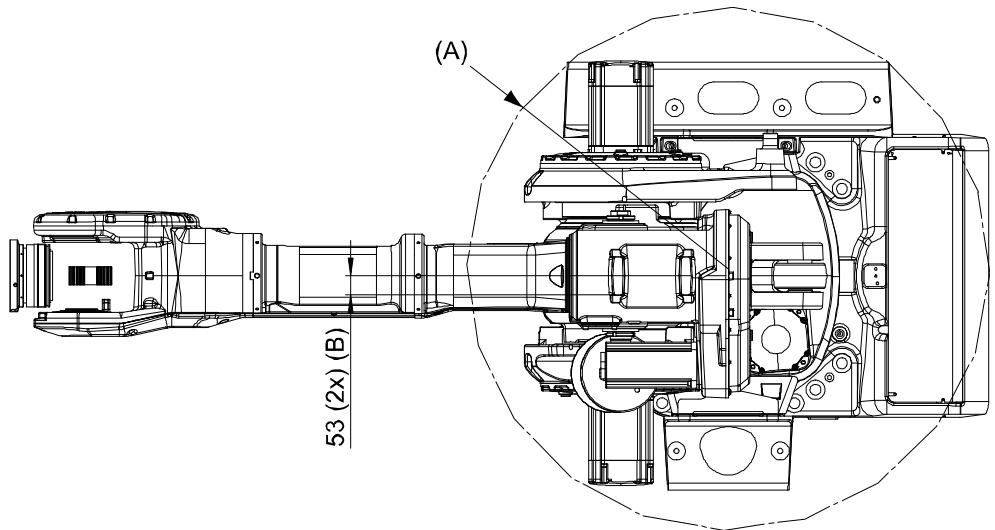
1.6.2 Mounting of hip load
Continued

Holes for mounting extra equipment on upper arm



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Robot variant	A	B	C	D
1. IRB 6660-130/3.1	1497.5 mm	190 mm	490 mm	128 mm
1. IRB 6660-100/3.3	1497.5 mm	190 mm	490 mm	128 mm
2. IRB 6660-205/1.9	885 mm	190 mm	490 mm	128 mm



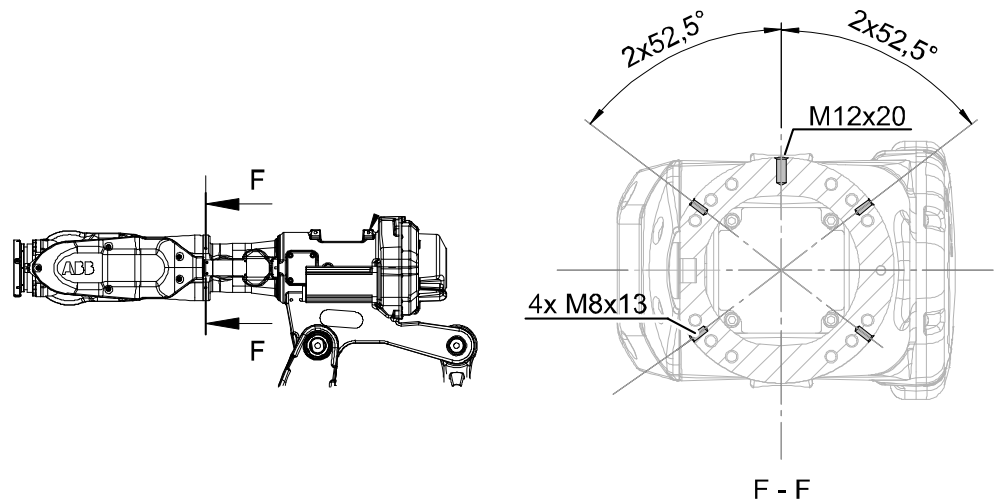
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Pos	Description
A	R750 Right fork lift pocket
B	Mounting hole, upper arm M12 depth 20 (4x)

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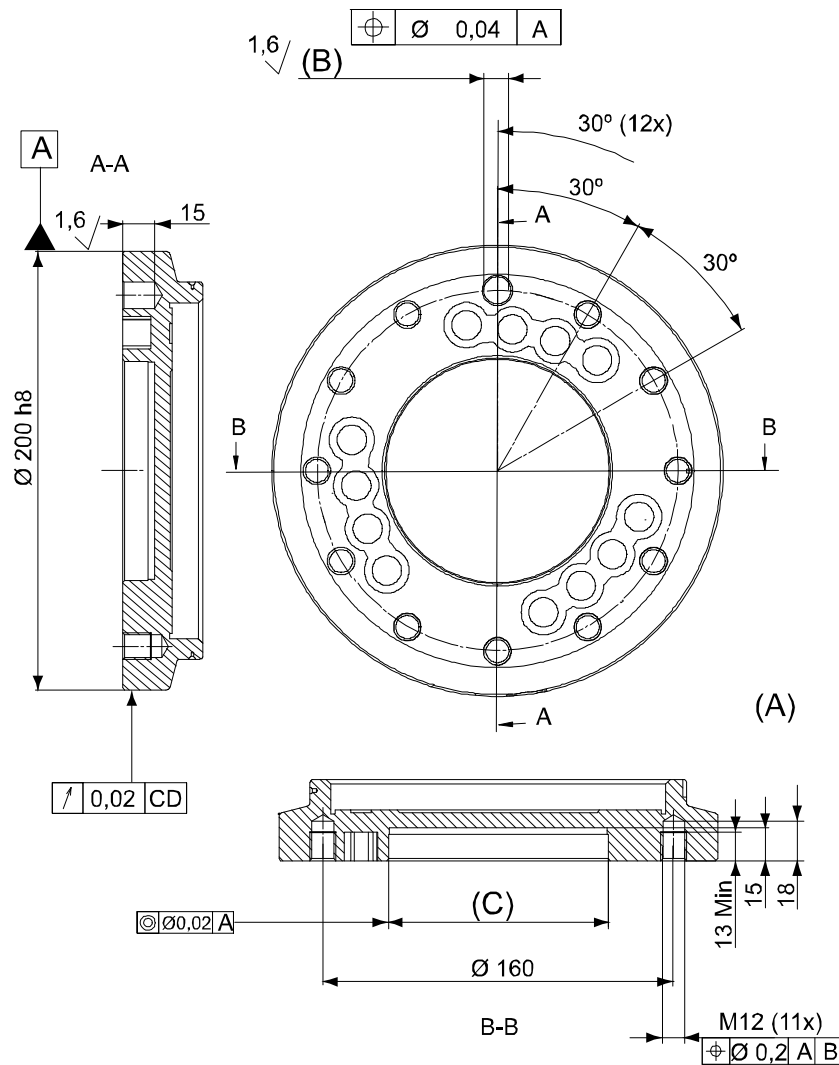
1 Description

1.6.2 Mounting of hip load Continued



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Robot Tool Flange



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Continues on next page

1 Description

1.6.2 Mounting of hip load

Continued

Pos	Description
A	Minimum thread length for screws in M12-hole is 9 mm.
B	Ø 12 H7 Depth 15
C	Ø 100 H7 Depth 8 min

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 Robot motion

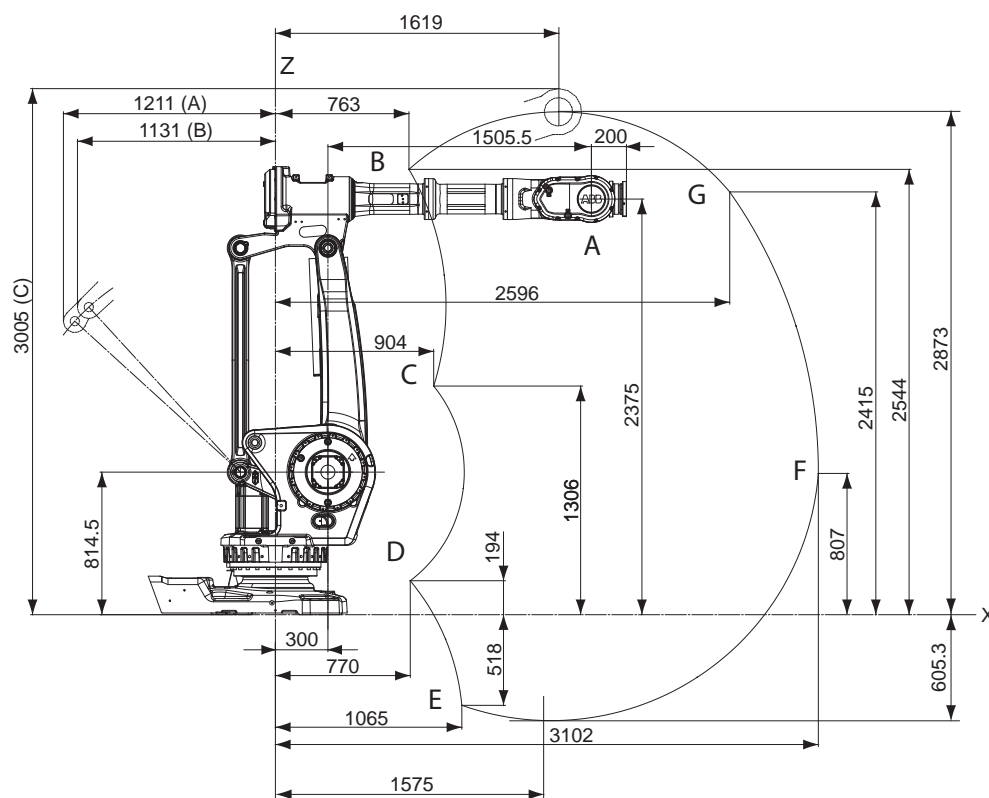
1.7.1 Introduction

Type of Motion

Axis	Type of motion	Range of movement	
		IRB 6660-130/3.1 and IRB 6660-100/3.3	IRB 6660-205/1.9
1	Rotation motion	+ 180° to - 180°	+ 180° to - 180°
2	Arm motion	+ 85° to - 42°	+ 85° to - 42°
3	Arm motion	+ 120° to -20°	+ 120° to -20°
4	Wrist motion	+ 300° to - 300°	+ 300° to - 300°
5	Bend motion	+ 120° to - 120°	+ 120° to - 120°
6	Turn motion	+ 360° to - 360° default Max. ± 150 Revolutions ^a	+ 360° to - 360° default Max. ± 96 Revolutions ^a

a. The default working range for axis 6 can be extended by changing parameter values in the software. Option 3111-1 "Independent axis" can be used for resetting the revolution counter after the axis has been rotated (no need for "rewinding" the axis).

Robot Type	Handling capacity (kg)	Reach (m)
IRB 6660-130/3.1	130	3.1



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1 Description

1.7.1 Introduction

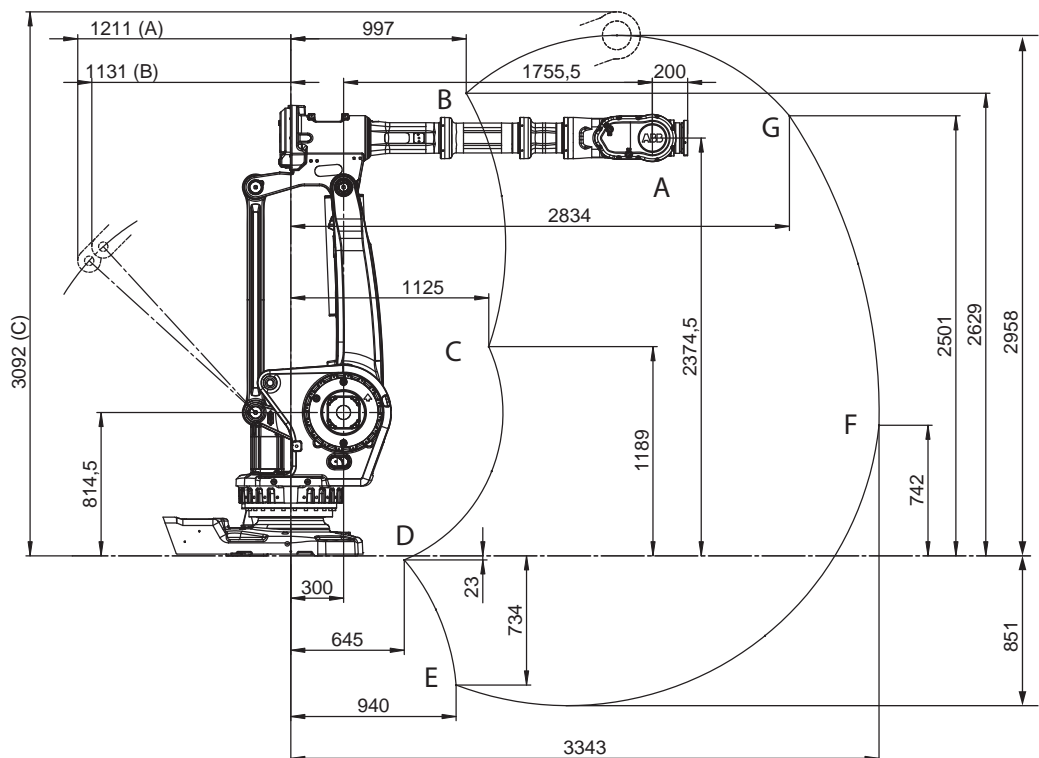
Continued

Note	Description
(A)	Max. working range
(B)	Mechanical stop
(C)	Max. working range

Positions at wrist center

Pos No. see Figure above	X Position (mm)	Z Position (mm)	Axis 2 Angle (degrees)	Axis 3 Angle (degrees)
A	1805,5	2374,5	0	0
B	763	2544	-42	-20
C	904	1306	-42	28
D	770	194	50	120
E	1065	-518	85	120
F	3102	807	85	15
G	2596	2415	50	-20

Robot Type	Handling capacity (kg)	Reach (m)
IRB 6660-100/3.3	100	3.3



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Note	Description
(A)	Max. working range
(B)	Mechanical stop
(C)	Max. working range

Continues on next page

1 Description

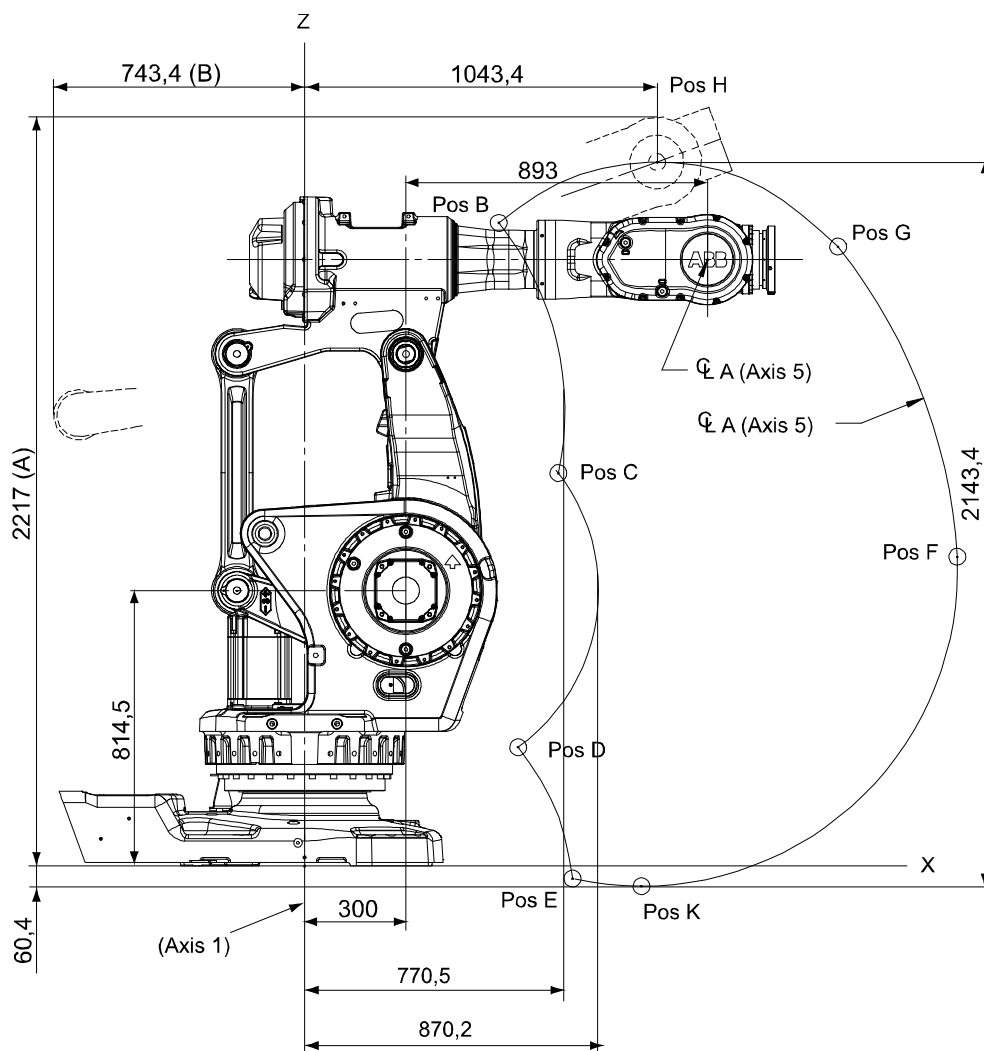
1.7.1 Introduction

Continued

Positions at wrist center

Pos No. see Figure above	X Position (mm)	Z Position (mm)	Axis 2 Angle (degrees)	Axis 3 Angle (degrees)
A	2055,5	2374,5	0	0
B	997	2629	-42	-20
C	1125	1189	-42	28
D	645	-23	50	120
E	940	-734	85	120
F	3343	742	85	15
G	2834	2501	50	-20

Robot Type	Handling capacity (kg)	Reach (m)
IRB 6660-205/1.9	205	1.9



xx1000000663

Note	Description
(A)	Max. working range

Continues on next page

1 Description

1.7.1 Introduction

Continued

Note	Description
(B)	Max. working range

Positions at wrist center

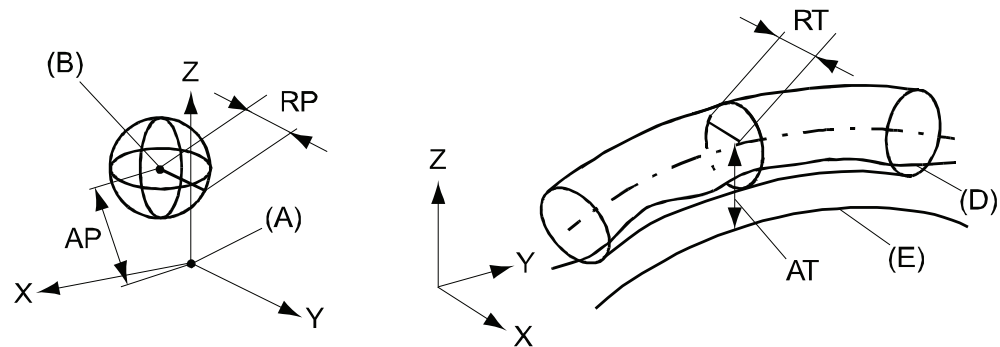
Pos No. see Figure above	X Position (mm)	Z Position (mm)	Axis 2 Angle (degrees)	Axis 3 Angle (degrees)
A	1193	1794,5	0	0
B	575	1903,2	-42	-20
C	751,5	1162,7	-42	28
D	632,2	351,1	50	120
E	793,3	-37,9	85	120
F	1932,4	914,8	85	15
G	1579,6	1833	50	-20
H	1043,4	2083,2	0	-20
K	997,3	-60,4	85	107,4

1.7.2 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

IRB 6660	130/3.1	100/3.3	205/1.9
Pose accuracy, AP ^a (mm)	0.05	0.05	0.18
Pose repeatability, RP (mm)	0.11	0.10	0.07
Pose stabilization time, PSt (s)	0.69	1.41	0.18
Path accuracy, AT (mm)	1.88	2.07	2.47
Path repeatability, RT(mm)	0.88	1.08	0.61

a. 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.

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

1 Description

1.7.3 Velocity

1.7.3 Velocity

Maximum axis speeds

Robot Type	Axis 1	Axis 2	Axis 3	Axis 4	Axis 5	Axis 6
IRB 6660-130/3.1	110 °/s	130 °/s	130 °/s	150 °/s	120 °/s	240 °/s
IRB 6660-100/3.3	110 °/s	130 °/s	123 °/s	150 °/s	120 °/s	240 °/s
IRB 6660-205/1.9	130 °/s	130 °/s	130 °/s	150 °/s	120 °/s	190 °/s

There is a supervision function to prevent overheating in applications with intensive and frequent movements.

1.7.4 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

1.8 Customer connections

1.8 Customer connections

General

Customer connection in terms of Customer Power (CP), Customer Signals (CS) and Air is an option. The cables and hoses are integrated in the robot and starts at the robot base and ends on the upper arm housing, see Figure below.

Parallel and Ethernet communication (only IRB 6660-130/3.1 and -100/3.3)

The table shows the available type of wire/media for parallel and ethernet communication connection to manipulator

Type	At terminals in cabinet	At Connection point. Base or axis 4	Cable/part area	Allowed capacity
Customer Power (CP)				
Utility Power	2+2	2+2	0,5 mm ²	250 VAC, 5 A rms
Protective earth		1	0,5 mm ²	250 VAC
Customer Signals (CS)				
Singnals twisted pair	14	14 (7x2)	0,24 mm ²	50 V DC, 1 A rms
Signals twisted pair and separate shielded	4	4 (2x2)	0,24 mm ²	50 V DC, 1 A rms
Functional Earth (FE)				
Functional earth			10 mm ²	
Customer bus (Ethernet)				
Ethernet/IP, PROFINET		4	0,4 mm ²	
Servo motor signals				
Servo motor power	At drive	3	1,5 mm ²	600 VAC, 12 A rms 600 VAC
Protective earth	At drive	1	1,5 mm ²	50 V DC, 1 A rms
Signals twisted pair for re-solver	-	6	0,23 mm ²	50 V DC, 1 A rms
Brake	-	2	0,23 mm ²	50 V DC, 1 A rms
Temperature control/PTC	-	2	0,23 mm ²	
Media				
Water, Air (PROC 1)		1	12,5 mm inner dia-meter	Max. air pressure 16 bar/230 PSI. Max. water pressure 10 bar/145 PSI.

Continues on next page

Parallel and field bus communication, Profibus (only IRB 6660-130/3.1 and -100/3.3)

The table shows the available type of wire/media with Profibus connection to manipulator

Type	At terminals in cabinet	At Connection point. Base or axis 4	Cable/part area	Allowed capacity
Customer Power (CP)				
Utility Power	2+2	2+2	0,5 mm ²	250 VAC, 5 A rms
Protective earth		1	0,5 mm ²	250 VAC
Customer Signals (CS)				
Signals twisted pair	16	16 (8x2)	0,24 mm ²	50 V DC, 1 A rms
Signals twisted pair and separate shielded	4	4 (2x2)	0,24 mm ²	50 V DC, 1 A rms
Customer bus (CBus)				
Bus signals	At bus board	2	0,14 mm ²	Profibus 12Mbit/s spec
Signals twisted pair	6	6 (3x2)	0,14 mm ²	50 V DC, 1 A rms
Servo motor signals				
Servo motor power	At drive	3	1,5 mm ²	600 VAC, 12 A rms
Protective earth	At drive	1	1,5 mm ²	600 VAC
Signals twisted pair for re-solver	-	6	0,23 mm ²	50 V DC, 1 A rms
Brake	-	2	0,23 mm ²	50 V DC, 1 A rms
Temperature control/PTC	-	2	0,23 mm ²	50 V DC, 1 A rms
Media				
Water, Air (PROC 1)		1	12,5 mm inner diameter	Max. air pressure 16 bar/230 PSI. Max. water pressure 10 bar/145 PSI.

Continues on next page

1 Description

1.8 Customer connections

Continued

Parallel and Ethernet communication (only IRB 6660-205/1.9)

The table shows the available type of wire/media for parallel communication and ethernet connection to manipulator

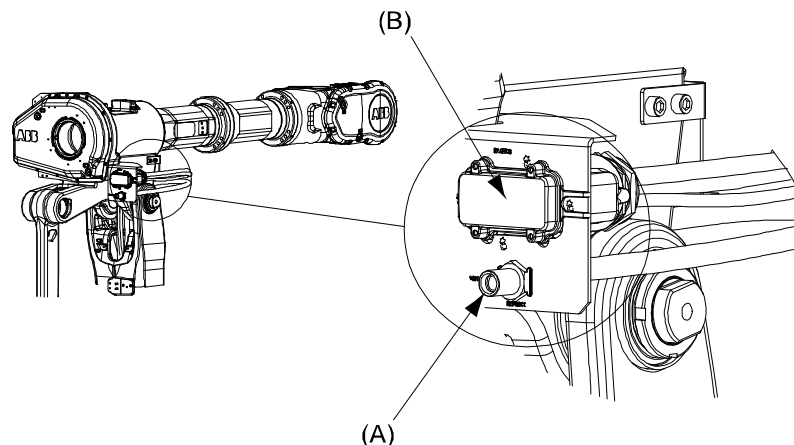
Type	Connection point at terminals in cabinet	Connection point at base and upper arm house	Cable/part area	Allowed capacity
Customer Power (CP)				
Utility Power		2	0,75 mm ²	250 VAC, 5 A rms
Servo motor power		6	2,5 mm ²	600 VAC, 16 A rms
Protective earth		1	0,75 mm ²	250 VAC600 VAC
Protective earth		2	2,5 mm ²	
Customer Signals (CS)				
Signals twisted pair		16 (8x2)	0,24 mm ²	50 V DC, 1 A rms
Signals twisted pair and separate shielded		4 (2x2)	0,24 mm ²	50 V DC, 1 A rms
Customer bus (Ethernet)				
Ethernet/IP, PROFINET		4	0,4 mm ²	
Functional Earth (FE)				
Functional earth			10 mm ²	
Media				
Water, Air (Proc 1)		1	12,5 mm inner diameter	Max. air pressure 16 bar/230 PSI. Max. water pressure 10 bar/145 PSI.

Continues on next page

Parallel communication (only IRB 6660-205/1.9)

The table shows the available type of wire/media for parallel communication connection to manipulator

Type	Connection point at terminals in cabinet	Connection point at base and upper arm house	Cable/part area	Allowed capacity
Customer Power (CP)				
Utility Power		2	0,75 mm ²	250 VAC, 5 A rms
Servo motor power		6	2,5 mm ²	600 VAC, 16 A rms
Protective earth		1	0,75 mm ²	250 VAC/600 VAC
Protective earth		2	2,5 mm ²	
Customer Signals (CS)				
Signals twisted pair		16 (8x2)	0,24 mm ²	50 V DC, 1 A rms
Signals twisted pair and separate shielded		4 (2x2)	0,24 mm ²	50 V DC, 1 A rms
Media				
Water, Air (Proc 1)		1	12,5 mm inner diameter	Max. air pressure 16 bar/230 PSI. Max. water pressure 10 bar/145 PSI.



xx100000664

Pos	Description
A	R2.CAIR M22x1.5, 24° seal
B	IRB 6660-130/3.1 and -100/3.3: R2.CP/CS/CBUS/Servo motor signals IRB 6660-205/1.9: R2.CP/CS

Option 3333-2 Connector kit upper arm, offers a kit with customer connectors. This must be assembled by the customer.

1 Description

1.9.1 Introduction

1.9 Maintenance and Troubleshooting

1.9.1 Introduction

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 Maintenance section in the Product Manual.

2 Variants and options

2.1 Introduction to variants and options

General

The different variants and options for the IRB 6660 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 Variants and options

2.2 Manipulator

2.2 Manipulator

Manipulator variant

Option	Robot variant	Handling capacity (kg)	Reach (m)
3300-101	6660-205/1.9	205	1.9
3300-102	6660-130/3.1	130	3.1
3300-103	6660-100/3.3	100	3.3

Manipulator color

Option	Color	RAL code ⁱ
209-1	ABB orange standard	RAL 7032
209-202	ABB Graphite White std	RAL 7035
209	RAL code should be specified (ABB non-standard colors)	

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



Note

The delivery time for painted spare parts is longer for non-standard colors.

Manipulator protection

Option	Description
3350-670	Base 67, IP67
3352-10	Foundry Plus2 67, IP67

Requirements

The option *Foundry Plus2 67* [3352-10] requires option *Upper arm cover* [3316-1].



Note

Base 67 includes IP67, according to standard IEC 60529.

Foundry cable guard

Option	Description
3315-1	Foundry cable guard

The manipulator can be equipped with additional cable guards for extra tough environmental conditions, for example, metals spits or frequent weld spatter. These additional covers will prolong cable lifetime and simplify service/maintenance as the robot is kept more clean under the covers.

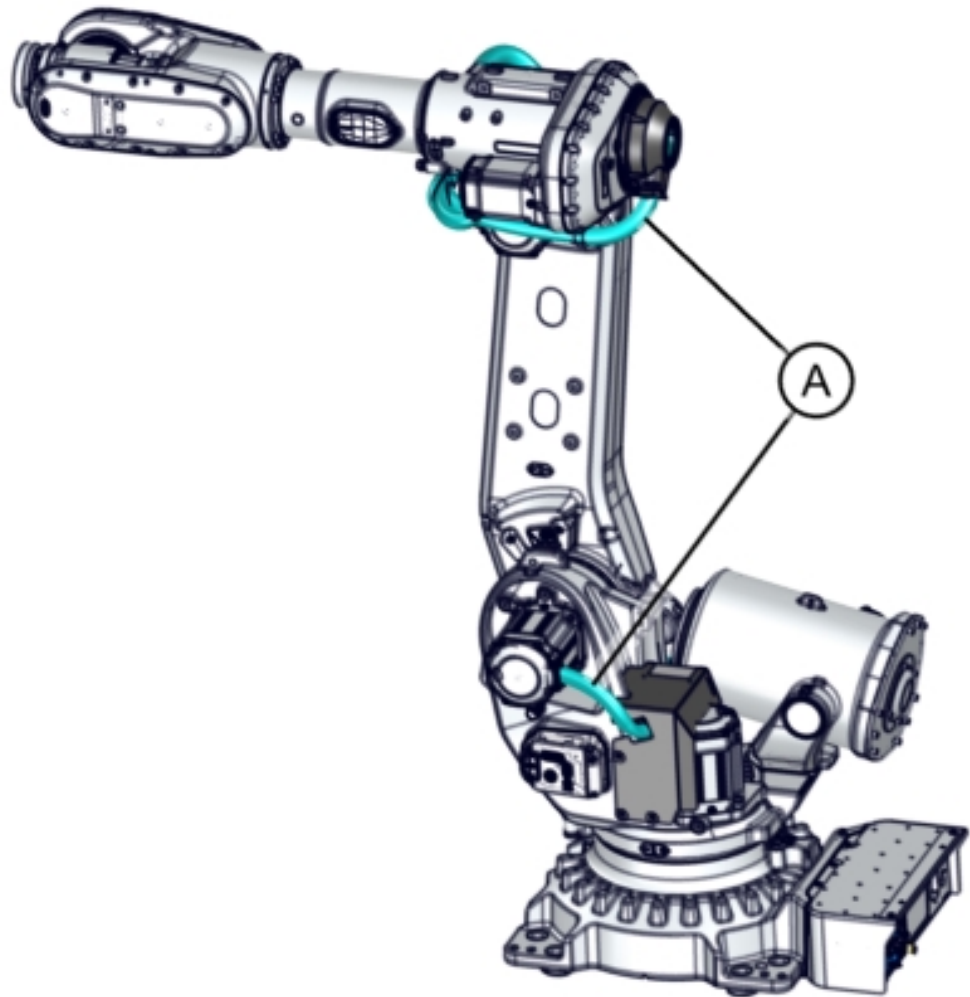
The option *Foundry Cable Guard* is recommended for *Foundry Plus2*.

Requirements

The option *Foundry Cable Guard* requires option *Upper arm cover* [3316-1].

Continues on next page

Foundry cable guards for manipulator cable harness



xx2300001724

Schematic illustration

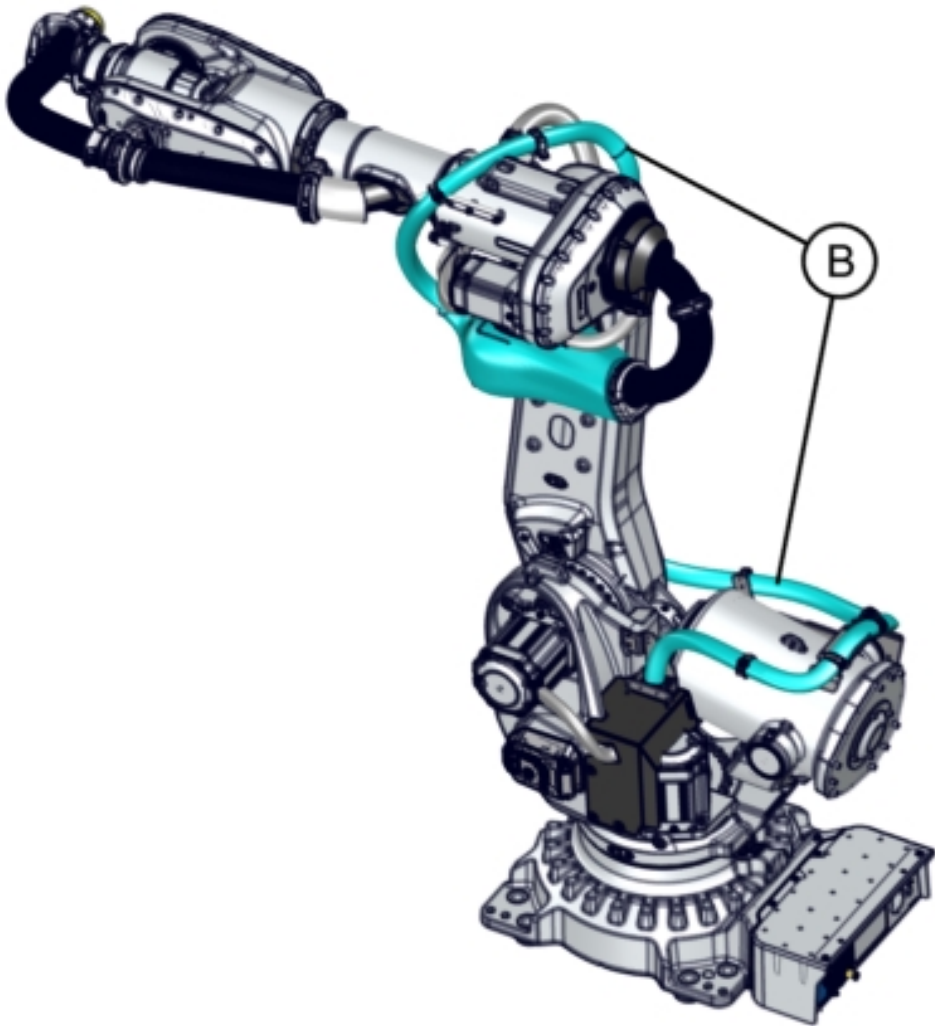
A	Foundry cable guard for manipulator cable harness
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Continues on next page

2 Variants and options

2.2 Manipulator
Continued

Foundry cable guard for DressPack



xx2300001725

Schematic illustration

B	Foundry cable guard for DressPack
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Upper arm cover

Option	Description
3316-1	Upper arm cover

The manipulator can be equipped with additional upper arm covers for environmental conditions, where you want to further seal off the upper arm in wet or dirty conditions. These additional covers will prolong the lifetime of the cables, and simplify service/maintenance as the robot is kept more clean under the covers.



xx2100002592

Requirements

This option is mandatory to order with the option *Foundry Plus2* [3352-10].

This option is mandatory to order with the option *Foundry Cable Guard* [3315-1].

Forklift device

The manipulator can be delivered with forklift devices, allowing a forklift to be used when moving the manipulator.

Option	Description	
3318-2	Forklift device on frame Fork lift pockets placed on the frame gives a more balanced lifting point. This can be used together with special tool to invert a robot.	<p>xx2300001243</p>

Continues on next page

2 Variants and options

2.2 Manipulator

Continued

Motor cooling

To be used to avoid overheating of motors and gears in applications with intensive motion (high average speed and/or high average torque and/or short wait time) of the axes on the lower arm.

Option	Description
3320-1	Cooling fan axis 1
3321-1	Cooling fan axis 2

The cooling fan has protection class IP54.

To determine the need of cooling fans on the motors, use the add-in **Mechanical Analysis** in RobotStudio. For more information, contact your local ABB office.

Limitations

Cannot be combined with track motion.

Cannot be combined with variant IRB 6660-205/1.9.

Cannot be combined with protection type Foundry.

Resolver connection 7th axis

Option	Description
3322-1	On base

2.3 Floor cables

Manipulator cable length

Option	Lengths
3200-2	7 m
3200-3	15 m
3200-4	22 m
3200-5	30 m

2 Variants and options

2.4 Application manipulator

2.4 Application manipulator

DressPack base-axis 3

Option	Description	Additional information
3325-11	MH Parallel	
3325-13	MH EtherNet	Includes parallel signals. Supports ProfiNet, EtherNet/IP
3325-14	MH CC Link	Includes parallel signals
3325-15	MH EtherCat	Includes parallel signals

2.5 Connector kits manipulator

General

Below is an example of how a connector kit and its parts can look like.



xx1300000223

Continues on next page

2 Variants and options

2.5.1 Base - Connector kits

2.5.1 Base - Connector kits

Available options

		DressPack options		
Option	Name	3325-1x	3325-5x	3325-6x
3330-2	CP/CS, Proc 1 base	X	X	



Note

Servo power connection kits are not available.

Option CP/CS, Proc 1 on base - 3330-2

R1. CP/CS and Proc 1 on base

This option offers a kit with connectors. This must be assembled by the customer.

The kit contains:

- 1 Hose fittings (swivel nut adapter, (1/2", M22x1.5 Brass, 24 degree seal))
- Connector with:

1 pcs Hood Foundry (Harting)	HAN EMC / M 40
1 pcs Hinged frame (Harting)	Shell size 16
2 pcs Multicontact, female (Harting)	Type HD (25 pin)
1 pcs Multicontact, female (Harting)	Type DD (12 pin)
1 pcs Multicontact, female (Harting)	Type EE (8 pin)
10 pcs Female crimp contacts	For 1.5 mm ²
10 pcs Female crimp contacts	For 0.5 mm ²
10 pcs Female crimp contacts	For 1.0 mm ²
10 pcs Female crimp contacts	For 2.5 mm ²
12 pcs Female crimp contacts	For 0.14 - 0.37 mm ²
45 sockets	For 0.2 - 0.56 mm ²
Assembly Accessories to complete connector	
Assembly instruction	

2.5.2 Axis 3 - Connector kits

Available options

		DressPack options	Description
Option	Name	3325-1x	
3333-2	CP/CS bus, Proc 1 axis 3	X	UTOW

Option CP/CS/CBus, Proc 1 axis 3 - 3333-2

CP/CS/CBus, Proc 1 axis 3 on tool side for option 3326-1x and 3326-3x.

This kit offers a kit with connectors to be mounted at toolside of axis 3.

This must be assembled by the customer.

The kit contains:

- 1 Hose fitting (Parker Push lock (1/2", M22x1.5 Brass, 24 degree seal))
- Connector with:

CP/CS	
1 pcs UTOW Pin connector 26p, bayonet	UTOW61626PH, Shell size 16
26 pcs Pin	RM18W3K, 0.5-0.82 mm ²
CBUS	
1 pcs UTOW Pin connector 10p, bayonet	UTOW61210PH, Shell size 12
10 pcs Pin	RM18W3K, 0.5-0.82 mm ²
Ethernet	
1 pcs Pin connector M12	Harting 21 03 881 1405
4 pcs Pin	Harting 09670005576, 0.13-0.33 mm ²

2 Variants and options

2.6 Application floor cables

RobotWare - OS

2.6 Application floor cables

Parallel cable - Length

Option	Description	Note
3201-2	7 m	
3201-3	15 m	
3201-4	22 m	
3201-5	30 m	

Ethernet cable - Length



Note

Occupies 1 Ethernet port.

Option	Description	Note
3202-2	7 m	Includes Parallel cable
3202-3	15 m	Includes Parallel cable
3202-4	22 m	Includes Parallel cable
3202-5	30 m	Includes Parallel cable

CC-Link cable - Length

Option	Description	Note
3205-2	7 m	Includes Parallel cable
3205-3	15 m	Includes Parallel cable
3205-4	22 m	Includes Parallel cable
3205-5	30 m	Includes Parallel cable

Servo cable 1 axis - Length

Option	Description	Note
3206-2	7 m	
3206-3	15 m	
3206-4	22 m	
3206-5	30 m	

EtherCat cable - Length



Note

Occupies 1 Ethernet port.

Option	Description	Note
3210-2	7 m	Includes Parallel cable

Continues on next page

2 Variants and options

2.6 Application floor cables

RobotWare - OS

Continued

Option	Description	Note
3210-3	15 m	Includes Parallel cable
3210-4	22 m	Includes Parallel cable
3210-5	30 m	Includes Parallel cable

2 Variants and options

2.7 Warranty

2.7 Warranty


Warranty

For the selected period of time, ABB will provide spare parts and labor 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 with ABB Connected Services 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]

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.
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> <div>Note<p>Special conditions are applicable, see <i>Robotics Warranty Directives</i>.</p></div>

Index

A

Absolute Accuracy, 31
Absolute Accuracy, calibration, 29
ambient humidity
 operation, 22
 storage, 21
ambient temperature
 operation, 22
 storage, 21

C

calibration
 Absolute Accuracy type, 28
 standard type, 28
calibration, Absolute Accuracy, 29
Calibration Pendulum, 30
CalibWare, 28
category 0 stop, 57
category 1 stop, 57
compensation parameters, 31

F

fine calibration, 30
foundation
 requirements, 21

H

humidity
 operation, 22
 storage, 21

L

loads on foundation, 20

O

operating conditions, 22
options, 63

P

product standards, 17
protection classes, 22
protection type, 22

R

requirements on foundation, 21
robot
 protection class, 22
 protection types, 22

S

safety standards, 17
standards, 17
standard warranty, 76
stock warranty, 76
stopping distances, 57
stopping times, 57
storage conditions, 21

T

temperatures
 operation, 22
 storage, 21
torques on foundation, 20

V

variants, 63

W

warranty, 76
weight, 19

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