ROBOTICS

Product specification

IRB 6700

Trace back information:
Workspace 26-1 version a8
Checked in 2026-04-15
Skribenta version 5.6.019

Product specification

IRB 6700-235/2.65
IRB 6700-220/2.65 LID
IRB 6700-205/2.80
IRB 6700-200/2.80 LID
IRB 6700-175/3.05
IRB 6700-155/3.05 LID
IRB 6700-150/3.20
IRB 6700-145/3.20 LID
IRB 6700-200/2.60
IRB 6700-175/2.60 LID
IRB 6700-155/2.85
IRB 6700-140/2.85 LID
IRB 6700-300/2.70
IRB 6700-270/2.70 LID
IRB 6700-245/3.00
IRB 6700-220/3.00 LID

OmniCore

Document ID: 3HAC080365-001
Revision: L

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Original instructions.

Table of contents

Overview of this product specification

About this product specification

This product specification 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 equipment
- The load diagrams, mounting or extra equipment, the motion, and the robot reach
- The specification of available variants and options

The specification covers the manipulator using the OmniCore controller.

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.

The specification is intended for:

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

References

Reference	Document ID
Product specification - OmniCore V line RW 7	*3HAC074671-001*
Product manual - IRB 6700	*3HAC044266-001*

Revisions

Revision	Description
A	First edition.
B	Published in release 22A. The following updates are done in this revision: • Updated the DressPack section, especially in connector kits chapter.
C	Published in release 23B. The following updates are done in this revision: • Added RAL code in manipulator color introduction. • Added DressPack options for spotwelding.
D	Published in release 23C. The following updates are done in this revision: • Added more data for DressPack options. • Corrections done in the DressPack connector kits, see *Connector kits on page 128*. • Updated information regarding pose stabilization time.
E	Published in release 23D. The following updates are made in this revision: • Added support for OmniCore V400XT. • Corrections done in the DressPack connector kits, see *Connector kits on page 128*.

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Revision	Description
F	Published in release 24A. The following updates are done in this revision: • Added DressPack options for CC-Link.
G	Published in release 24B. The following updates are done in this revision: • Updated data in *Performance according to ISO 9283 on page 97* • Added options for motor cooling. • Added DressPack options for EtherCAT.
H	Published in release 24C. The following updates are made in this revision: • Added 22 m process cables.
J	Published in release 24D. The following updates are made in this revision: • Updated the section *Technical data on page 21*.
K	Published in release 24D. The following updates are done in this revision: • IRB 6700I is phased out.
L	Published in release 26.1. The following updates are done in this revision: • Added data that was accidentally removed in the previous revision. • Added section Impacting robot lifetime. • Company name updated to reflect current legal entities. • Updated portal name from myABB to ABB Robotics One.

1 Description

1.1 Structure

1.1.1 Introduction

General

The IRB 6700 series is ABB Robotics 7th generation of high payload, high performance industrial robots. Based on the famous IRB 6640 series, with large working range, the very high wrist torque, the service friendly modular built up and the availability, significant for ABB's robots, the IRB 6700 robot family goes even further. With focus on high production capacity, compact design and low weight, simple service and low maintenance cost. The IRB 6700 is ideal for process applications, regardless of industry.

Typical areas are for example Material Handling, Machine Tending, Spot Welding.

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.

Options

There are a large number of options for material handling and spot welding integrated in the robot. For a complete description of Material handling see *DressPack on page 103*.

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 RW 7*.

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 RW 7*.

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.

Continues on next page

1.1.1 Introduction
Continued

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 are 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 *Specification of variants and options on page 129* for robot versions and other options not selectable together with Foundry Plus 2.

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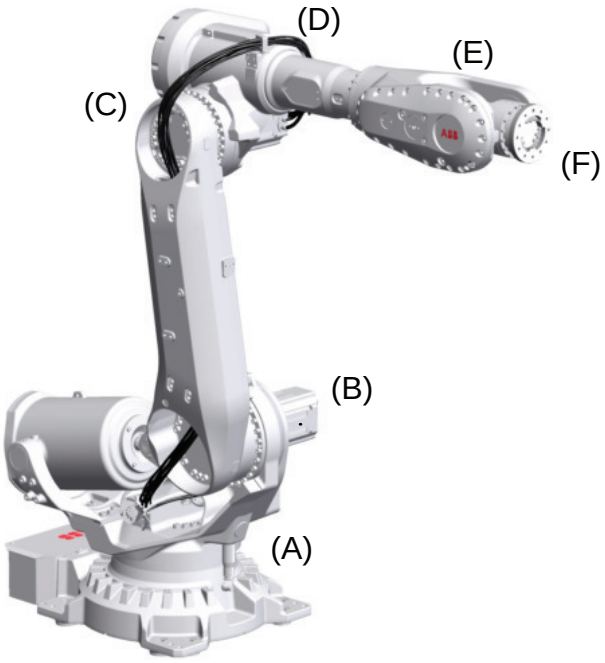
Robot axes



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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 variants

Robot variants

The following standard robot variants are available.

Robot variants	Handling capacity (kg)	Reach (m)
6700-300/2.70	300	2.70
6700-270/2.70 LID	270	2.70
6700-245/3.00	245	3.00
6700-220/3.00 LID	220	3.00
6700-235/2.65	235	2.65
6700-220/2.65 LID	220	2.65
6700-205/2.80	205	2.80
6700-200/2.80 LID	200	2.80
6700-200/2.60	200	2.60
6700-175/2.60 LID	175	2.60
6700-175/3.05	175	3.05
6700-155/3.05 LID	155	3.05
6700-155/2.85	155	2.85
6700-140/2.85 LID	140	2.85
6700-150/3.20	150	3.20
6700-145/3.20 LID	145	3.20

Note

If LeanID is selected, the payload will decrease as stated above, for detailed information see *Load diagrams on page 45*

1.2 Standards

1.2.1 Applicable standards

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
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
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
IEC 61326-3-1	Immunity requirements for safety-related systems and for equipment intended to perform safety-related functions (functional safety) – General industrial applications

Region specific standards

Standard	Description
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.

1.3 Impacting robot lifetime

Introduction

The expected lifetime of a robot is an important factor when planning an installation. This information is aiming to help you to maximize the lifetime of your robot and avoid unnecessary downtime or repair.

The lifetime of a robot is influenced by the following, but not limited to, factors:

- *Robot type selection on page 14*
- *Duty factor on page 14*
- *Environmental conditions on page 15*
- *Application and usage on page 15*
- *Design limitations on page 17*
- *Maintenance on page 17*
- *Individual lifetime variability on page 17*
- *Extreme usage on page 17*

Robot type selection

Selecting the right robot for the application is generally done based on payload and reach criteria, but other factors can influence the selection, such as the duty factor. Selecting the most suitable variant is crucial to achieve the expected high performance, uptime, and lifetime. Always select a robot in accordance with the intended use, see *Structure on page 9*.

ABB robots are capable of high accelerations and speeds. It is generally recommended to use RobotStudio to find out if a robot model is suitable for a specific application and duty factor. RobotStudio is an excellent tool to help with the assessment of the duty factor and the selection of the most suitable robot variant.

In the case of intense use of robots, optional cooling fans may be required, and the expected component life of gearboxes and motors may be affected.

This robot is not specifically designed for use in demanding applications with a very high duty factor. If used in such conditions, a significant reduction in lifetime is possible for all axes, depending on the cycle. See *Extreme usage on page 17*.

When selecting the robot variant, consider using application-specific robot, and suitable protection type.

Note

Use the Mechanical Analysis add-in in RobotStudio (see details below) for help with the assessment, or get technical support from ABB.

Duty factor

Duty factor is the percentage of time the robot is moving divided by the total time, including movement and wait time during the complete robot work cycle. It is a measurement of how much the robot is being used. Gearbox lifetime is reduced

Continues on next page

more rapidly by a higher duty cycle than by a lower one. See *Extreme usage on page 17*.

> **Note**
>
> The duty factor impact on lifetime can be analyzed in the add-in *Mechanical Analysis* in RobotStudio (see details below) and *Service Information System* (SIS) data in the controller. Contact ABB to analyze the SIS data.

Environmental conditions

Following factors within environmental conditions of the robot has an impact on the robot lifetime:

- Temperature:

  The robot usage at high temperatures can lead to gearbox and motor cooling problems. Observe operating temperature limits stated in manipulator product manual.

  The option to add a cooling fan to axis 1, 2, and sometimes axis 3, will allow the robot to run even with an extreme usage. See the description of the available options in section *Motor cooling on page 135*.

  > **Note**
  >
  > The add-in Mechanical Analysis in RobotStudio (see details below) or technical support from ABB can provide recommendation on using fans.

- High humidity can be caused by the environment or the application. A high humidity can cause water being accumulated in the gearbox oil, which leads to requiring more frequent oil change. See *Operating conditions, robot on page 24*, and *Storage conditions, robot on page 23*.
- Exposure to chemicals might impact sealings, which can cause oil leakage.
- Vibrations caused by not following the foundation requirements might cause reduction of lifetime, for example for bearings. See *Requirements, foundation on page 23*.
- Cleaning. Wrong cleaning can cause particles entering the sealings which can cause oil leakage. Proper cleaning is described in *Product manual - IRB 6700*.

Application and usage

Following factors within robot application and usage has an impact on the robot lifetime:

- Payload definition and overload:

  It is important to define the payload within specification and correctly defined tool data. See section *Diagrams on page 46*, and *Technical reference manual - RAPID Overview*.

  The service routine for load identification, *LoadIdentify*, is available to support tool data definition. See *Operating manual - OmniCore*.

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- Acceleration/deceleration:

  The gearbox lifetime is reduced more rapidly by high accelerations/decelerations than by lower ones.

  Note

  Smoother movements bring reduced energy consumption.

  Note

  Acceleration/deceleration can be modified with the instruction `AccSet`. See *Technical reference manual - RAPID Overview*.

  Acceleration/deceleration is optimized by using automatic path planning functionality, either offline, or in RobotStudio, or using the online software.

- Limited movements:

  If the range or the rotation angle for an axis is 10° or less, the expected life of the reduction gears may be reduced due to poor lubrication of internal parts or the internal parts being subject to a concentrated load. Add extra lubrication motion to the robot program or to maintenance schedule.

  Note

  Use RobotStudio *Signal Analyzer* or get technical support from ABB.

- High forces applied externally to the manipulator:

  Some applications or not correctly programmed paths apply external forces to the manipulator, which might reduce its lifetime. Example of external force: gripper under constraint when gripping a part or load sharing between multiple robots.

- Number of collisions:

  Collisions, especially at high speed and/or with high loads reduce the lifetime of the gearboxes. Avoid collisions and set collision detection sensitivity to the appropriate level.

  Note

  See the application manual for the controller software, section *Collision detection*, listed in *References on page 7*.

- Number of emergency stops:

  Emergency stops, especially at high speed and/or high loads reduce the lifetime of the gearboxes. Whenever permitted by risk assessment, set the robot stopping functions to stop category 1.

Continues on next page

> **Note**
>
> See the product manual for the robot controller, listed in *References on page 7*.

Design limitations

See the section *Expected component life* in *Product manual - IRB 6700*.

Maintenance

The maintenance and use of the robot will affect the performance and lifetime. For example:

- Preventive maintenance will optimize the lifetime of the robot. The recommended maintenance activities and intervals are described in *Product manual - IRB 6700*.
- Observance of lubricant types and maintenance periods recommended by ABB.
- Possible pollution of the lubricant by an external cause, for example, water in the oil caused by high humidity.
- Extreme usage, for example high duty factor or environmental factors, will affect the maintenance schedule, for example, shorter intervals for oil change.

Contact your local ABB office to get technical support from ABB.

Individual lifetime variability

The lifetime varies with individual robots. For example, a cycle with a lower duty factor may fail earlier than one with a higher duty factor. But a cycle with a higher duty factor is more likely to fail earlier than a cycle with lower duty factor.

Extreme usage

Examples of extreme usage in regard to movement: a stress index range that shows up as red (51) in the RobotStudio add-in *Mechanical Analysis*, press tending application, very severe palletizing applications, major use of axis 1, 2, or 3 movement.

The controller can issue a duty factor warning on the FlexPendant, if applicable. See the chapter *Troubleshooting* in *Product manual - IRB 6700*.

Extreme usage normally requires usage of cooling fans.

Extreme usage requires specific maintenance, for example, shorter interval for oil change. See *Maintenance schedule* in *Product manual - IRB 6700*.

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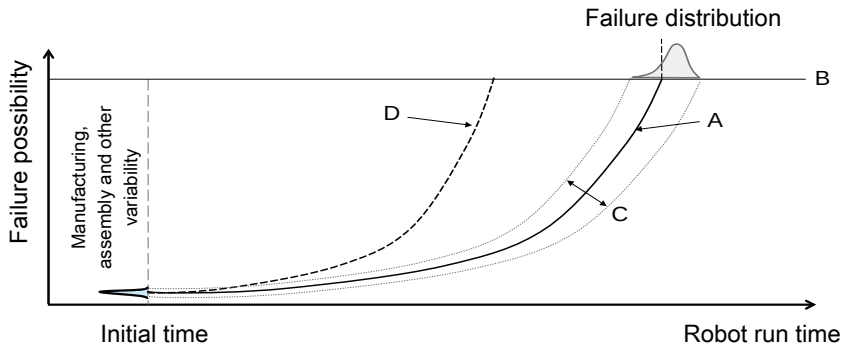
Summary

The diagram illustrates the relationship between robot run time and failure possibility.



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A	Design lifetime
B	Failure threshold
C	Individual variability
D	Negatively affected lifetime

The curve (A) represents the design lifetime, showing how failure probability increases over time following a normal distribution pattern. The failure threshold (B) indicates the point at which component failure becomes likely.

Individual variability between robots is shown by the dotted lines (C), representing the natural variation in component life due to manufacturing, assembly, and other factors. This variability means that while most robots will follow the design lifetime curve, some individual units may experience earlier or later failures within the normal distribution.

As highlighted with the curve (D) in the diagram, robot lifetime can be negatively affected by not following best practices in the key areas discussed in this chapter:

- *Robot type selection on page 14*
- *Duty factor on page 14*
- *Environmental conditions on page 15*
- *Application and usage on page 15*
- *Maintenance on page 17*

By adhering to the recommendations outlined in each of these sections, users can maximize their robot's operational lifetime and ensure performance stays within the design lifetime curve, avoiding premature failure and unnecessary downtime.

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Available tools

There are several tools available throughout the lifecycle of an ABB robot, from support with selecting the most suitable manipulator and optimizing its lifetime, to operation, maintenance, and repair:

ABB toolbox	Type	Product lifecycle		
		Sales, pre-study	Installation, commissioning	Operation, maintenance, repair
Product specification	Document	x	x	
Product manual	Document		x	x
Mechanical Analysis add-in	Add-in in RobotStudio	x	x	x
Service Information System (SIS) / Condition Based Maintenance (CBM)	RobotWare functionality / Customer service analysis		x	x
Connected Services	Hardware and Software		x	x
Automatic Path Planning	RobotStudio functionality and online software	x	x	(x)
Signal Analyzer / TuneMaster	RobotStudio functionality / Software	x	x	x
ABB support	Customer support	x	x	x

1.4 Installation

1.4.1 Introduction to installation

General

IRB 6700 are designed for floor mounting (no tilting allowed around X-axis or Y-axis).

Depending on the robot variant, an end effector with max. weight of 150 to 300 kg including payload, can be mounted on the tool flange (axis 6). See *Load diagrams on page 45*.

Extra loads

Extra load (valve packages, transformers, DressPack) of 50 kg, which is included in the load diagrams, can be mounted on the upper arm. An extra load of 250 kg can also be mounted on the frame of axis 1.

See *Fitting equipment to the robot on page 77*.

Working range limitation

The working range of axes 1 can be limited by mechanical stops as option. See *Limited working range on page 135*.

Explosive environments

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

1.4.2 Technical data

Weight, robot

The table shows the weight of the robot.

The weight does not include the weight of the DressPack.

Robot model	Weight
IRB 6700	1300 kg

Note

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

The weight does not include the weight of the DressPack.

Mounting positions

The table shows valid mounting options for the manipulator.

Mounting option	Installation angle	Note
Floor mounted	0°	

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.

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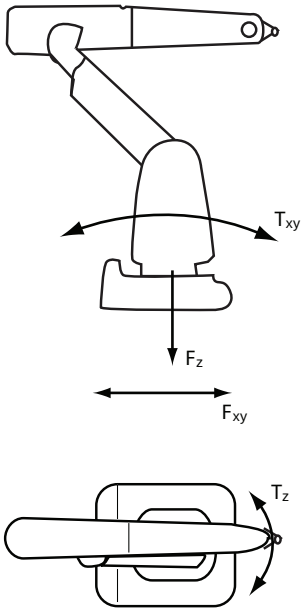
Loads on foundation, robot

The illustration shows the directions of the robots stress forces.

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



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

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

Note

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

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	±7.4 kN[i] / ±8.7 kN[ii]	±19.8 kN[i] / ±21.8 kN[ii]
Force z	14.6 ±4.5 kN[i] / 18.0 ±5.4 kN[ii]	14.6 ±15.7 kN[i] / 18.0 ±17.4 kN[ii]
Torque xy	±21.0 kNm[i] / ±24.9 kNm[ii]	±37.1 kNm[i] / ±45.3 kNm[ii]

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Force	Endurance load (in operation)	Max. load (emergency stop)
Torque z	±5.0 kNm [i] / ±6.5 kNm [ii]	±11.4 kNm [i] / ±15.5 kNm [ii]

i Valid for IRB 6700-200/2.60, IRB 6700-200/2.60 LID, IRB 6700-155/2.85, IRB 6700-140/2.85 LID, IRB 6700-235/2.65, IRB 6700-220/2.65 LID, IRB 6700-205/2.80, IRB 6700-200/2.80 LID, IRB 6700-175/3.05, IRB 6700-155/3.05 LID, IRB 6700-150/3.20, IRB 6700-145/3.20 LID.

ii Valid for IRB 6700-300/2.70, IRB 6700-270/2.70 LID, IRB 6700-245/3.00, IRB 6700-220/3.00 LID.

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 lifetime 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 *Motion Process Mode*.

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 possibly 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 (-13°F)
Maximum ambient temperature	+55°C (+131°F)
Maximum ambient temperature (less than 24 hrs)	+70°C (+158°F)
Maximum ambient humidity	Maximum 95% at constant temperature.

Continues on next page

1.4.2 Technical data
Continued

Operating conditions, robot

The table shows the allowed operating conditions for the robot:

Parameter	Value
Minimum ambient temperature	+5 °C [i] (41 °F)
Maximum ambient temperature	+50 °C (122 °F)
Maximum ambient humidity	Maximum 95% at constant temperature.

[i] At low environmental temperature (below 10° C) a warm-up phase is recommended to be run with the robot. Otherwise there is a risk that the robot stops or runs with lower performance due to temperature dependent oil and grease viscosity.

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	IP67
Manipulator, protection type Foundry Prime	
Manipulator, protection type Foundry Plus	IP67

[i] According to IEC 60529.

Airborne noise level

Data	Description	Note
Airborne noise level	The sound pressure level outside the working space.	< 71 dB (A) Leq (acc. to machinery directive 2006/42/EG)

Power consumption at max speed (vmax)

	235/2.65 205/2.80 200/2.60 175/3.05 155/2.85 150/3.20	300/2.70 245/3.00	I-300/2.60 I-300/2.60
ISO Cube Max. velocity (kW)	2.8	3.4	3.4

Robot in calibration position	235/2.65 205/2.80 200/2.60 175/3.05 155/2.85 150/3.20	300/2.70 245/3.00	I-300/2.60 I-300/2.60
Brakes engaged (kW)	0.24	0.24	0.24
Brakes disengaged (kW)	0.87	0.87	1.07

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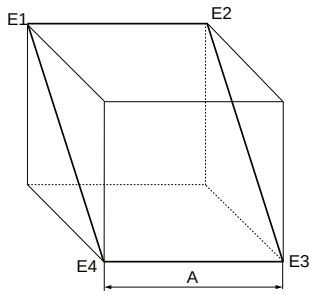

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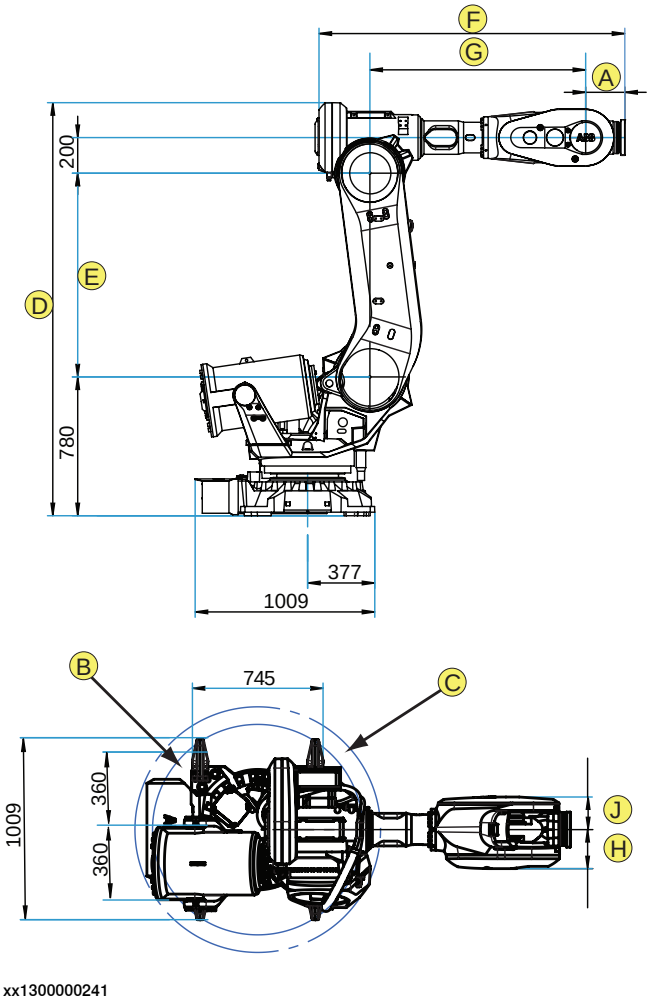
A	1,000 mm

Power factor (cos φ)

The power factor is above 0.95 at a steady state power consumption higher than 2.0 kW, when the IRB 6700 is connected to the OmniCore V line.

Main dimensions of IRB 6700



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1.4.2 Technical data
Continued

Pos	Description
A	200 mm (all standard variants); except 300/2.70 and 245/3.00 =220 mm 350 mm (all LeanID variants); except IRB 6700-270/2.70 LID and IRB 6700-220/3.00 LID = 380 mm
B	Radius ax1, front = 532 mm (IRB 6700-235/2.65, IRB 6700-220/2.65 LID, IRB 6700-205/2.80, IRB 6700-200/2.80 LID, IRB 6700-175/3.05, IRB 6700-155/3.05 LID, IRB 6700-150/3.20, IRB 6700-145/3.20 LID, IRB 6700-200/2.60, IRB 6700-200/2.60 LID, IRB 6700-155/2.85, IRB 6700-140/2.85 LID) Radius ax1, front = 600 mm (IRB 6700-300/2.70, IRB 6700-270/2.70 LID, IRB 6700-245/3.00, IRB 6700-220/3.00 LID)
C	Radius ax1, back = 633 mm (IRB 6700-235/2.65, IRB 6700-220/2.65 LID, IRB 6700-205/2.80, IRB 6700-200/2.80 LID, IRB 6700-175/3.05, IRB 6700-155/3.05 LID, IRB 6700-150/3.20, IRB 6700-145/3.20 LID, IRB 6700-200/2.60, IRB 6700-200/2.60 LID, IRB 6700-155/2.85, IRB 6700-140/2.85 LID) Radius ax1, back = 700 mm (IRB 6700-300/2.70, IRB 6700-270/2.70 LID, IRB 6700-245/3.00, IRB 6700-220/3.00 LID)

Robot variant	D	E	F	G	H	J
IRB 6700-235/2.65	2300	1135	1670	1,182.5	209	186
IRB 6700-205/2.80	2445	1280	1670	1,182.5	186	209
IRB 6700-200/2.60	2276	1125	1623	1,142.5	197.5	193
IRB 6700-175/3.05	2300	1135	2080	1,592.5	209	186
IRB 6700-150/3.20	2445	1280	2080	1,592.5	209	186
IRB 6700-155/2.85	2276	1125	1873	1,392.5	197.5	193
IRB 6700-300/2.70	2321	1145	1,718.5	1,212.5	222.5	187
IRB 6700-245/3.00	2321	1145	1,968.5	1,462.5	222.5	186
IRB 6700-220/2.65 LID	2300	1135	-	1,182.5	209	186
IRB 6700-200/2.80 LID	2445	1280	-	1,182.5	186	209
IRB 6700-155/3.05 LID	2300	1135	-	1,592.5	209	186
IRB 6700-145/3.20 LID	2445	1280	-	1,592.5	209	186
IRB 6700-200/2.60 LID	2276	1125	-	1,142.5	197.5	193
IRB 6700-140/2.85 LID	2276	1125	-	1,392.5	197.5	193
IRB 6700-270/2.70 LID	2321	1145	-	1,212.5	222.5	187
IRB 6700-220/3.00 LID	2321	1145	-	1,462.5	222.5	186

Note

For DressPack dimensions, see *Dimensions for robot with DressPack on page 115*

Continues on next page

1.4.3 Assembling the manipulator

Maximum load

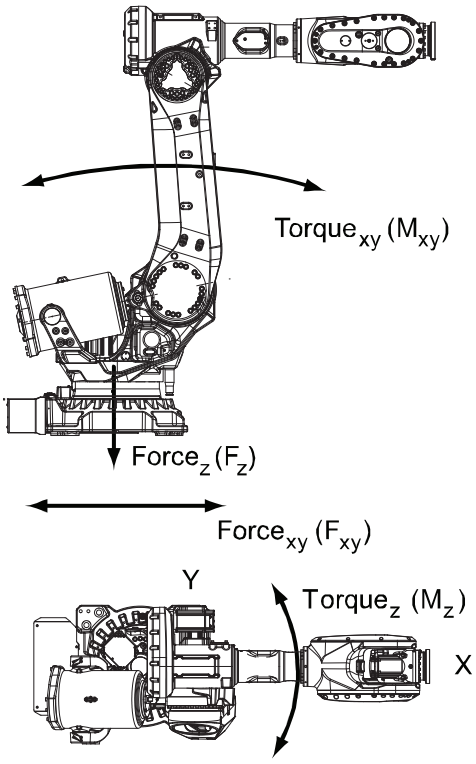
Maximum load in relation to the base coordinate system.

Floor mounted

Force	Endurance load (in operation)	Max. load (emergency stop)
Force xy	±7.4 kN[i] / ±8.7 kN[ii]	±19.8 kN[i] / ±21.8 kN[ii]
Force z	14.6 ±4.5 kN[i] / 18.0 ±5.4 kN[ii]	14.6 ±15.7 kN[i] / 18.0 ±17.4 kN[ii]
Torque xy	±21.0 kNm[i] / ±24.9 kNm[ii]	±37.1 kNm[i] / ±45.3 kNm[ii]
Torque z	±5.0 kNm[i] / ±6.5 kNm[ii]	±11.4 kNm[i] / ±15.5 kNm[ii]

i Valid for IRB 6700-200/2.60, IRB 6700-200/2.60 LID, IRB 6700-155/2.85, IRB 6700-140/2.85 LID, IRB 6700-235/2.65, IRB 6700-220/2.65 LID, IRB 6700-205/2.80, IRB 6700-200/2.80 LID, IRB 6700-175/3.05, IRB 6700-155/3.05 LID, IRB 6700-150/3.20, IRB 6700-145/3.20 LID.

ii Valid for IRB 6700-300/2.70, IRB 6700-270/2.70 LID, IRB 6700-245/3.00, IRB 6700-220/3.00 LID.



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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.

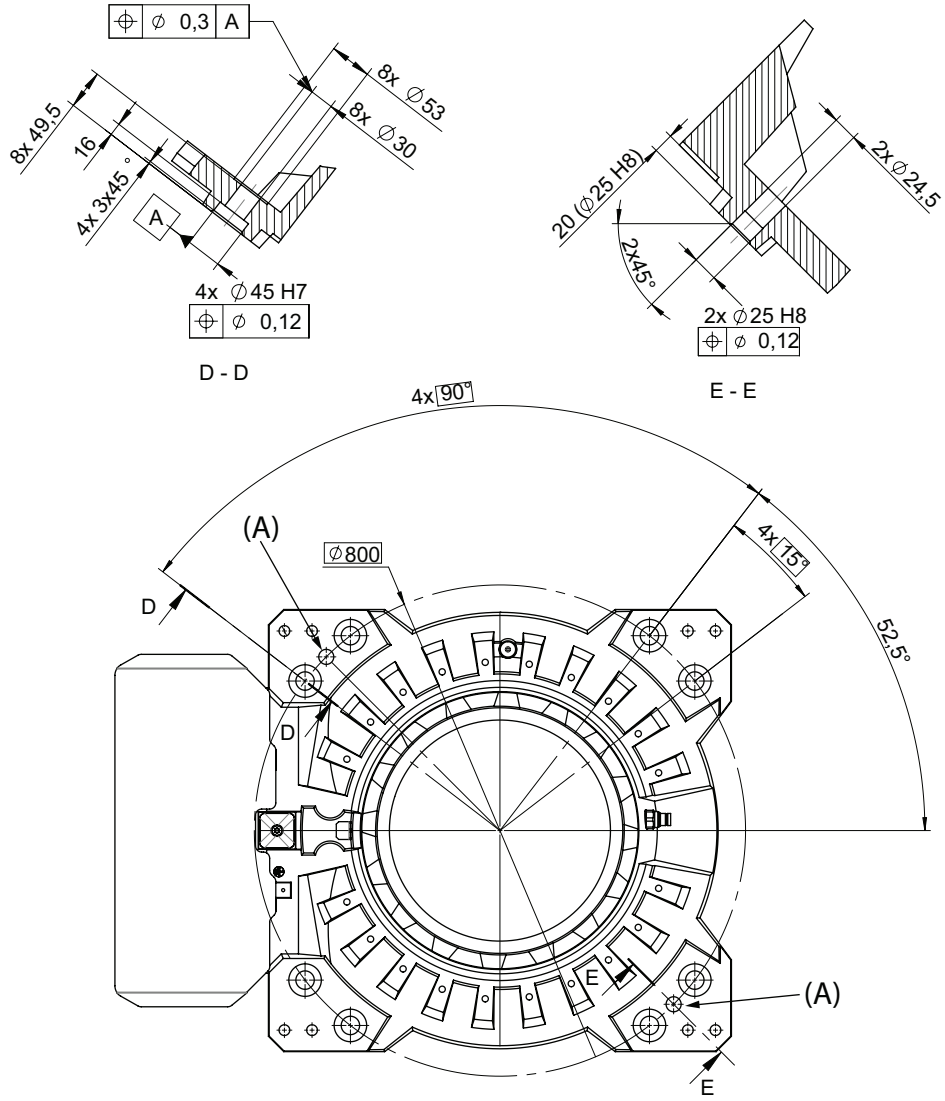
The same applies to the transverse force (F_{xy}).

Continues on next page

1.4.3 Assembling the manipulator

Continued

Fastening holes robot base - for all variants



xx1300000243

Pos	Description
A	Holes for guide pins (x2)

Note

Holes for guide pins (x2) Rear hole straight slot.

Fastener quality

Suitable screws:	M24 x 100 (installation on base plate/foundation)
Quality:	8.8
Screw tightening yield point utilization factor (v) (according to VDI2230):	90% (v=0.9)
Suitable washer:	4 mm flat washer

Continues on next page

Tightening torque:	550 Nm (screws lubricated with Molykote 1000) 600-725 Nm, typical 650 Nm (screws none or lightly lubricated)

Note

Only two guide pins shall be used.

AbsAcc performance

Regarding AbsAcc performance, the use of guide pins are mandatory.

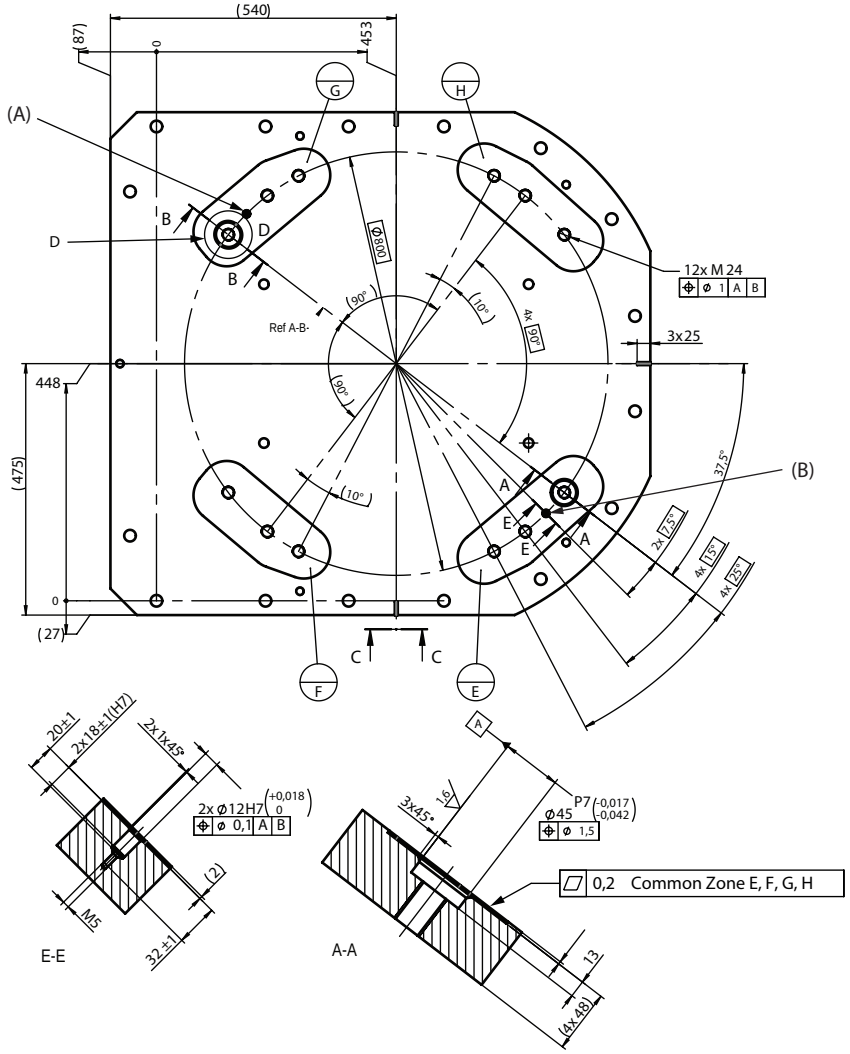
Continues on next page

1.4.3 Assembling the manipulator

Continued

Base plate drawing

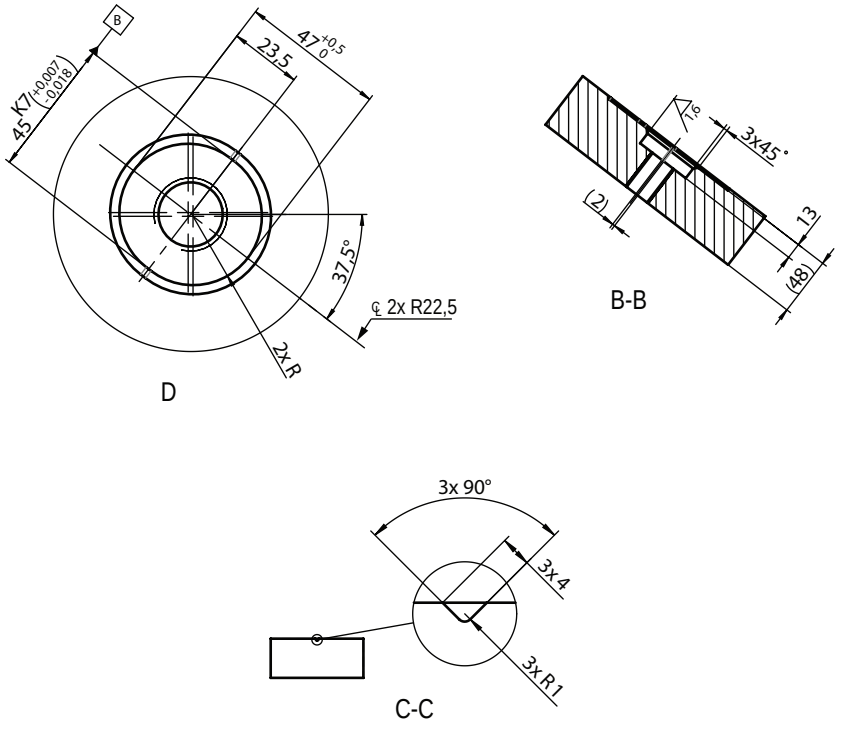
The following figure shows the option base plate (dimensions in mm).



xx1500000246

Pos	Description
A, B	Hole for guide pin, cylindrical, see *Guide pins on page 33*
E, F, G, H	Common tolerance zone (accuracy all over the base plate from one contact surface to the other)

Continues on next page



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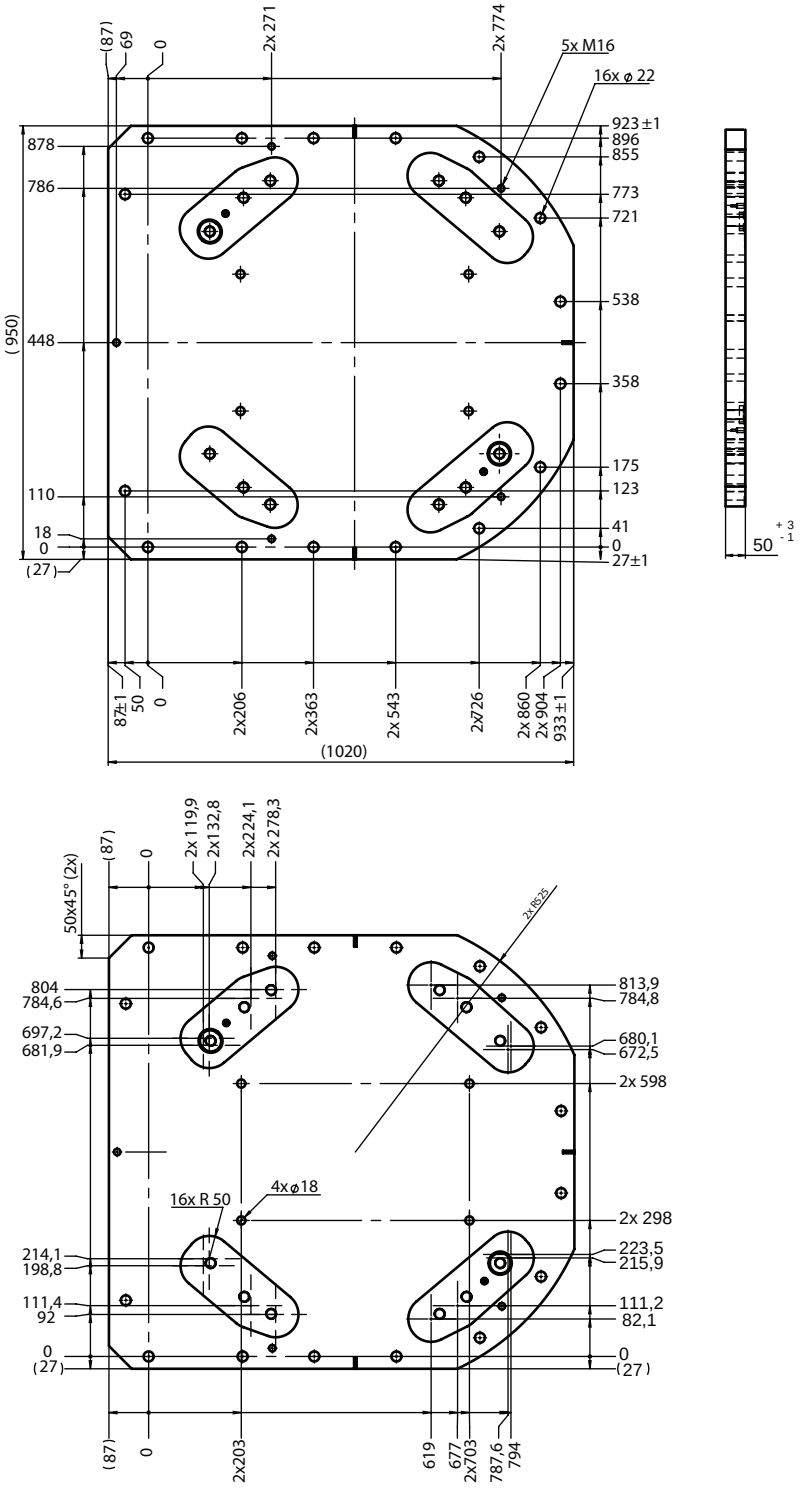
1.4.3 Assembling the manipulator

Continued



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A	Color: RAL 9005 Thickness: 80-100 µm Weight: 360 kg

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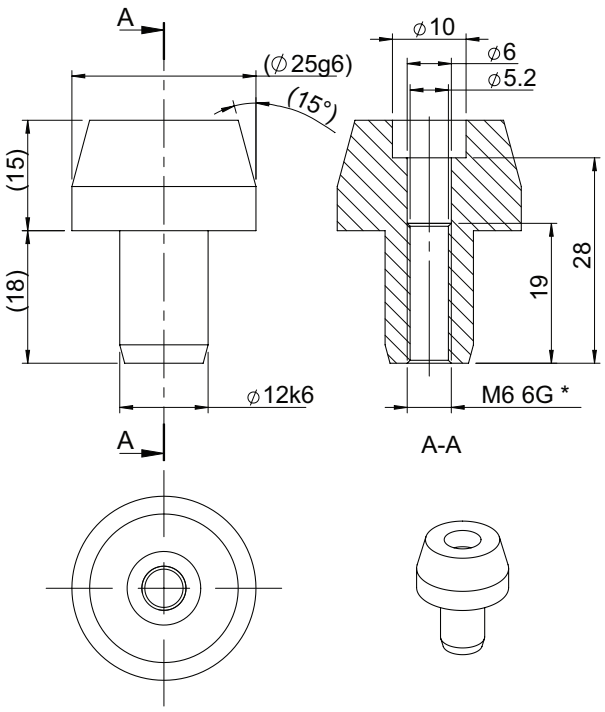
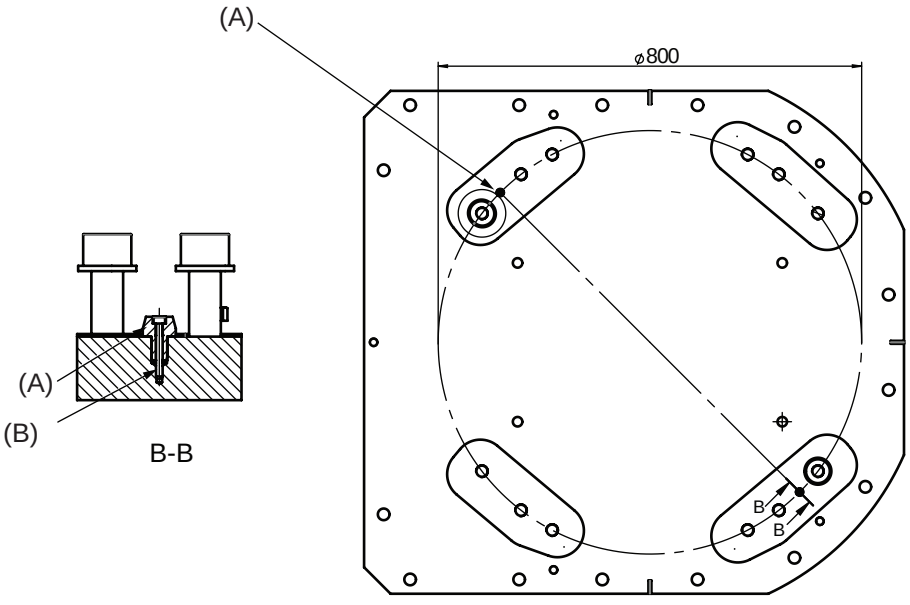
Guide pins



XX1500000248

Pos	Description
A	Cylindrical guide pin (x2)

Assembly of guide pins



Pos	Description
A	Cylindrical guide pin (x2)
B	M5 x 40. Tightening torque 6 Nm. (x2)

Continues on next page

1.4.3 Assembling the manipulator

Continued

Note

All screws and pins are delivered in a plastic bag together with the base plate.

1.4.4 Mechanically restricting the working range of axis 1

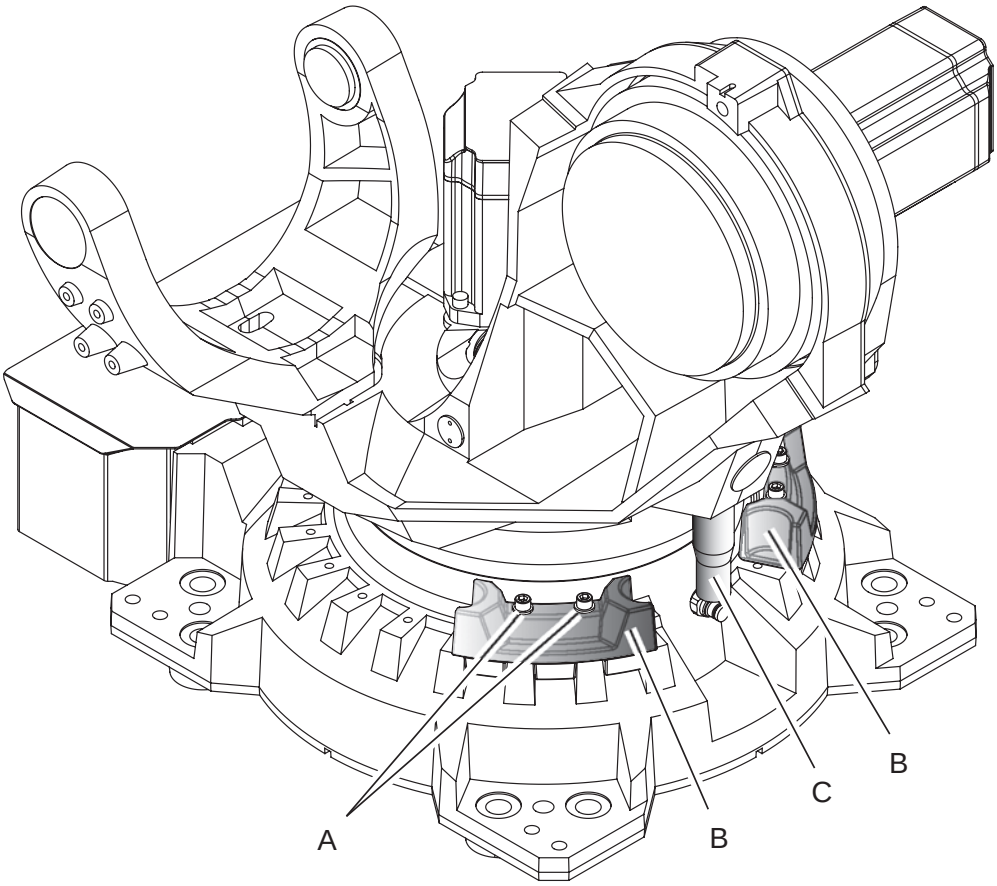
General

The working range of axis 1 is limited by fixed mechanical stops and adjustment of the system parameter configuration. The working range can be reduced by adding additional mechanical stops giving 15° graduation, between ±5° and ±125° in both directions.

Mechanical stops, axis 1

The illustration shows the mounting position of the stop pin and one of the additional mechanical stops available for axis 1.

IRB 6700



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A	Attachment screws M12x70 quality 12.9 Gleitmo 603 (2 pcs per additional mechanical stop) When the robot is used in a corrosive environment, the securing screws and washers must be of stainless steel.
B	Movable mechanical stop
C	Mechanical stop pin axis-1

1.5 Calibration and references

1.5.1 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
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. 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 do the wrist optimization using the RAPID instruction `WristOpt`, see *Technical reference manual - RAPID Instructions, Functions and Data types*. This instruction is only available for OmniCore robots.	Wrist Optimization

Continues on next page

Brief description of calibration methods

Axis Calibration method

Axis Calibration is a standard calibration method for calibration of IRB 6700. 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.

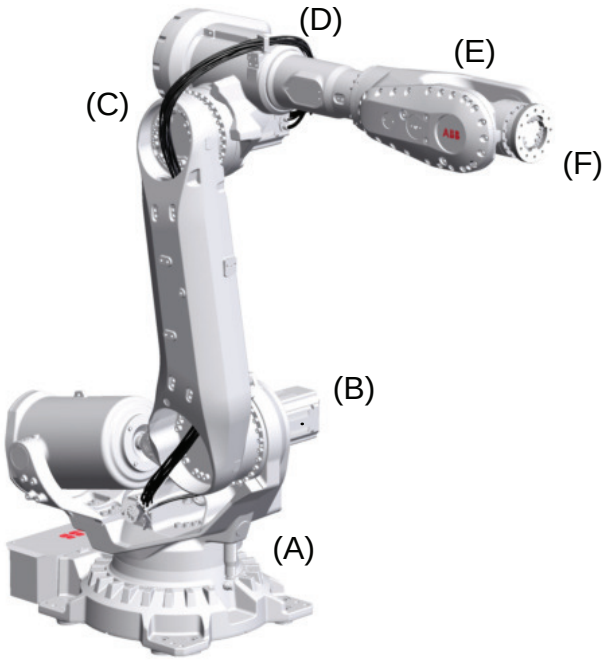
The Absolute Accuracy option varies according to the robot mounting position. This is printed on the robot name plate for each robot. The robot must be in the correct mounting position when it is recalibrated for absolute accuracy.

1.5.2 Fine calibration

General

Fine calibration is made using the Axis calibration method, see *Product manual - IRB 6700*

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

Calibration

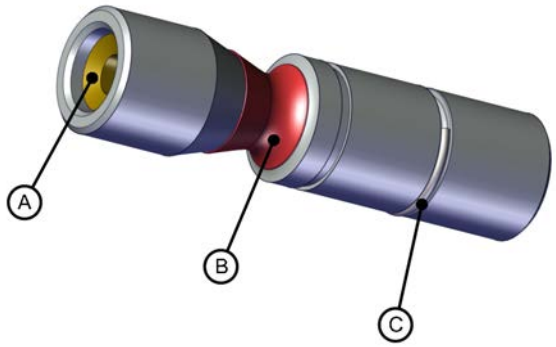
Calibration	Position
Calibration of all axes	All axes are in zero position
Calibration of axis 1 and 2	Axis 1 and 2 in zero position
	Axis 3 to 6 in any position
Calibration of axis 1	Axis 1 in zero position
	Axis 2 to 6 in any position

1.5.3 Calibration tools for Axis Calibration

Calibration tools

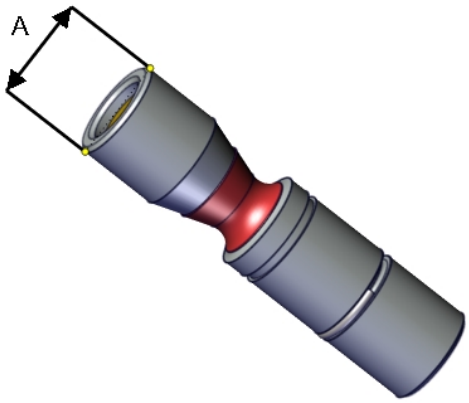
WARNING

If any part is missing or damaged, the tool must be replaced immediately.



xx1500001914

A	Tube insert
B	Plastic protection
C	Steel spring ring



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A	Outer diameter

If including the calibration tool in a local periodic check system, the following measures should be checked.

- Outer diameter within Ø12g4 mm, Ø8g4 mm or Ø6g5 mm (depending on calibration tool size).
- Straightness within 0.005 mm.

1.5.4 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, for example, vision systems 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.

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

Continues on next page

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 6700 (all variants except LID)	0.35	0.75	100
IRB 6700 LID (all variants)	0.40	0.85	100

1.5.5 Synchronization marks and axis movement directions

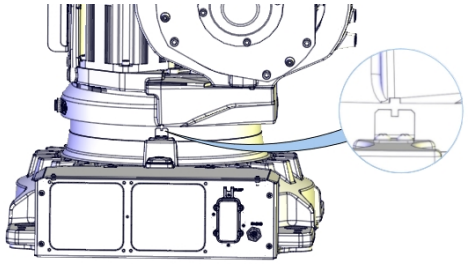
1.5.5.1 Synchronization marks and synchronization position for axes

Introduction

This section shows the position of the synchronization marks and the synchronization position for each axis.

Synchronization marks, IRB 6700

Axis 1



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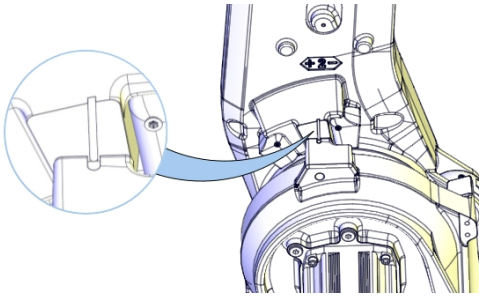
Axis 2



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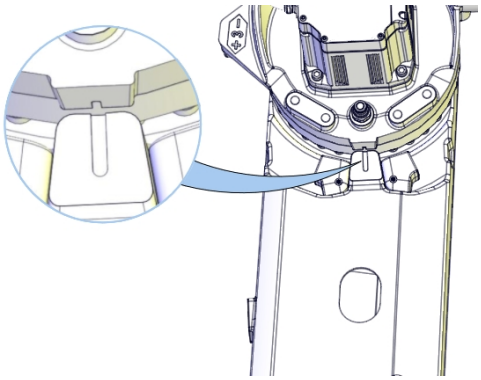
Axis 3



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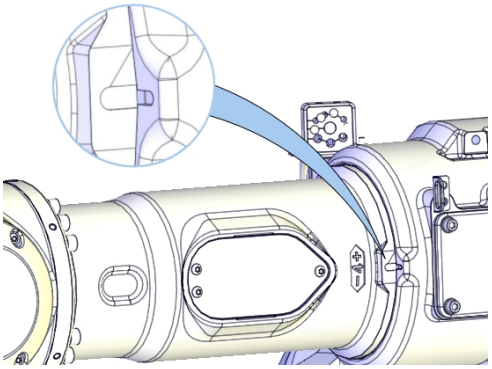
Axis 4



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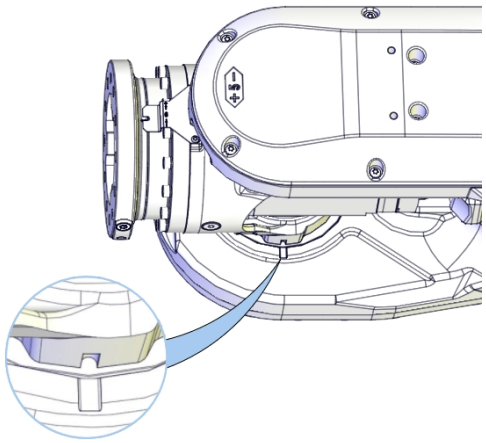
1.5.5.1 Synchronization marks and synchronization position for axes
Continued

Axis 5



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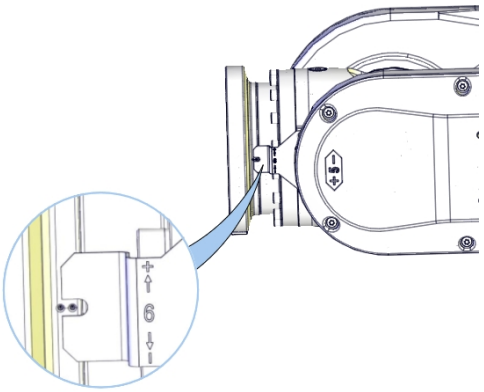
Axis 6
Two variants of synchronization mark plates.



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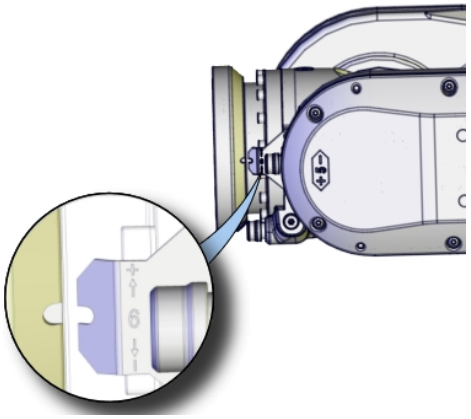

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1.5.5.2 Calibration movement directions for all axes

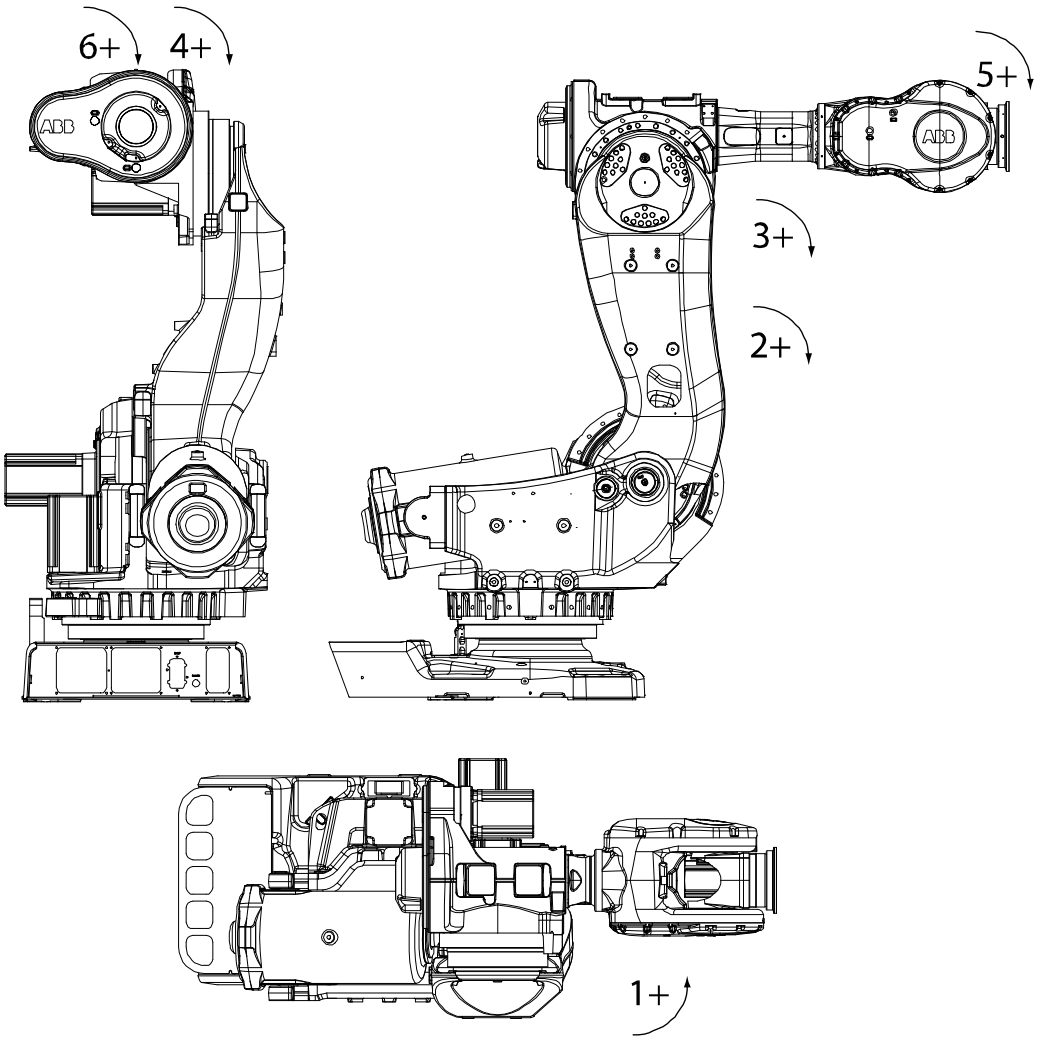
Overview

When calibrating, the axis must consistently be run towards the calibration position in the same direction in order to avoid position errors caused by backlash in gears and so on. Positive directions are shown in the graphic below.

Calibration service routines will handle the calibration movements automatically and these might be different from the positive directions shown below.

Manual movement directions, 6 axes

Note! The graphic shows an IRB 7600. The positive direction is the same for all 6-axis robots, except the positive direction of axis 3 for IRB 6400R, which is in the opposite direction!



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1.6 Load diagrams

1.6.1 Introduction

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 kgm^2, and an extra load of 50 kg 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.

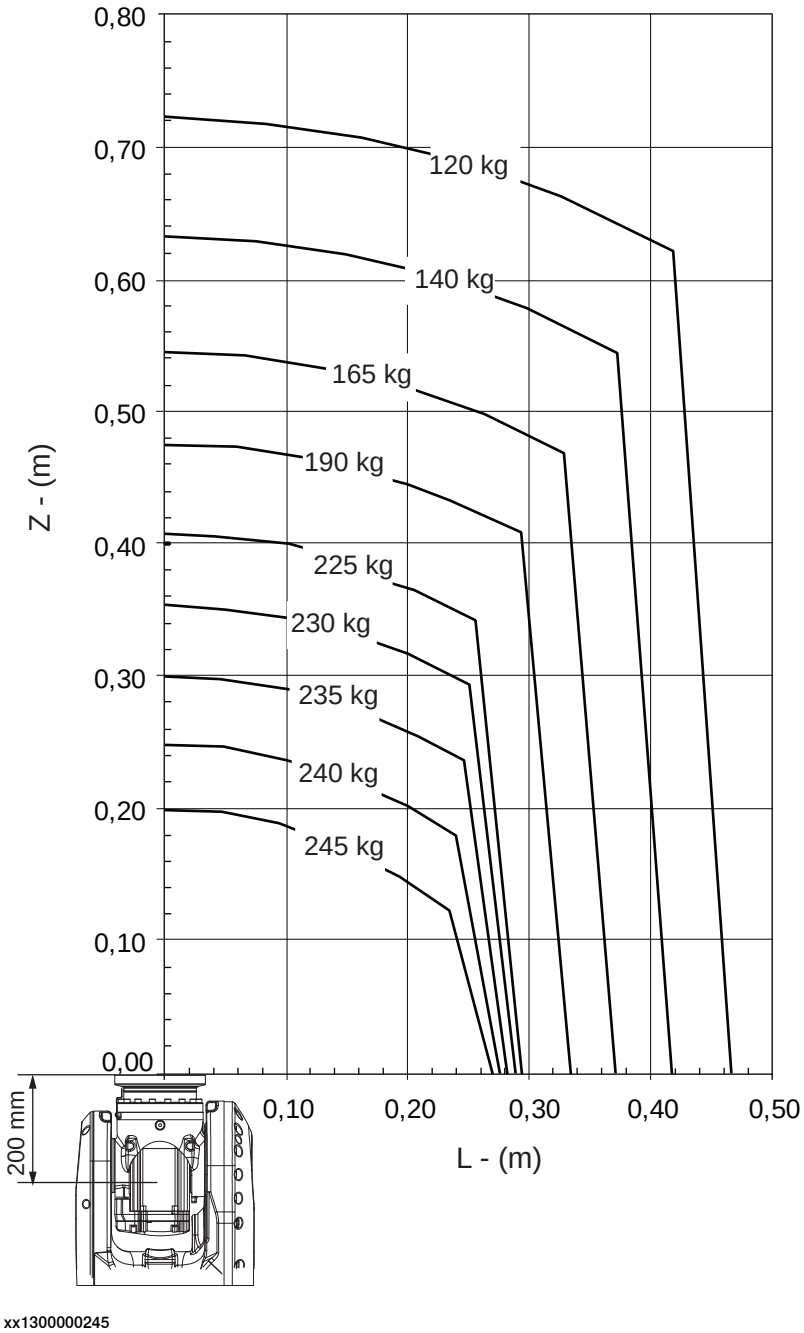
Control of load case by "RobotLoad"

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.

1.6.2 Diagrams

IRB 6700-235/2.65



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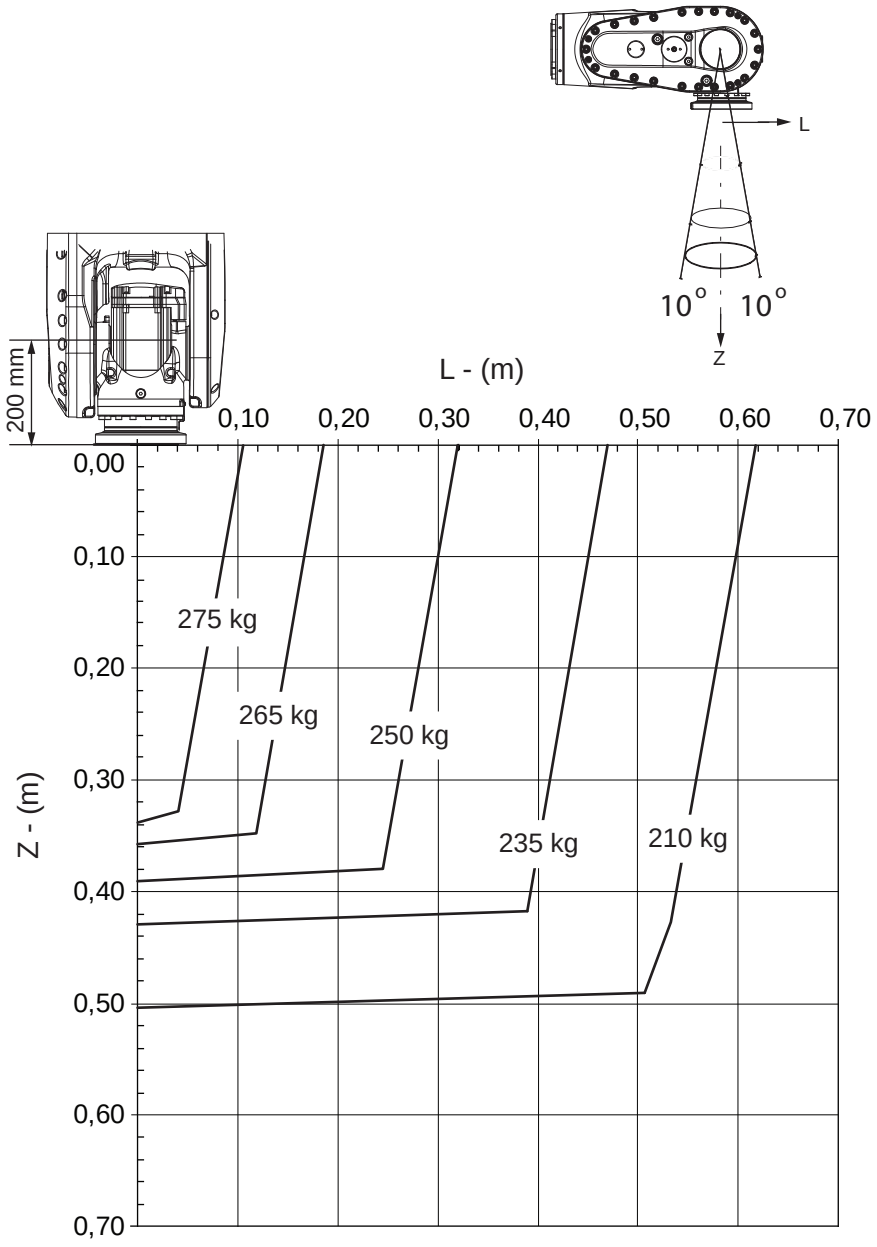
IRB 6700-235/2.65 "Vertical Wrist" (±10°)



xx1300000246

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

	Description
Max load	280 kg
Z_{max}	0.327 m
L_{max}	0.100 m

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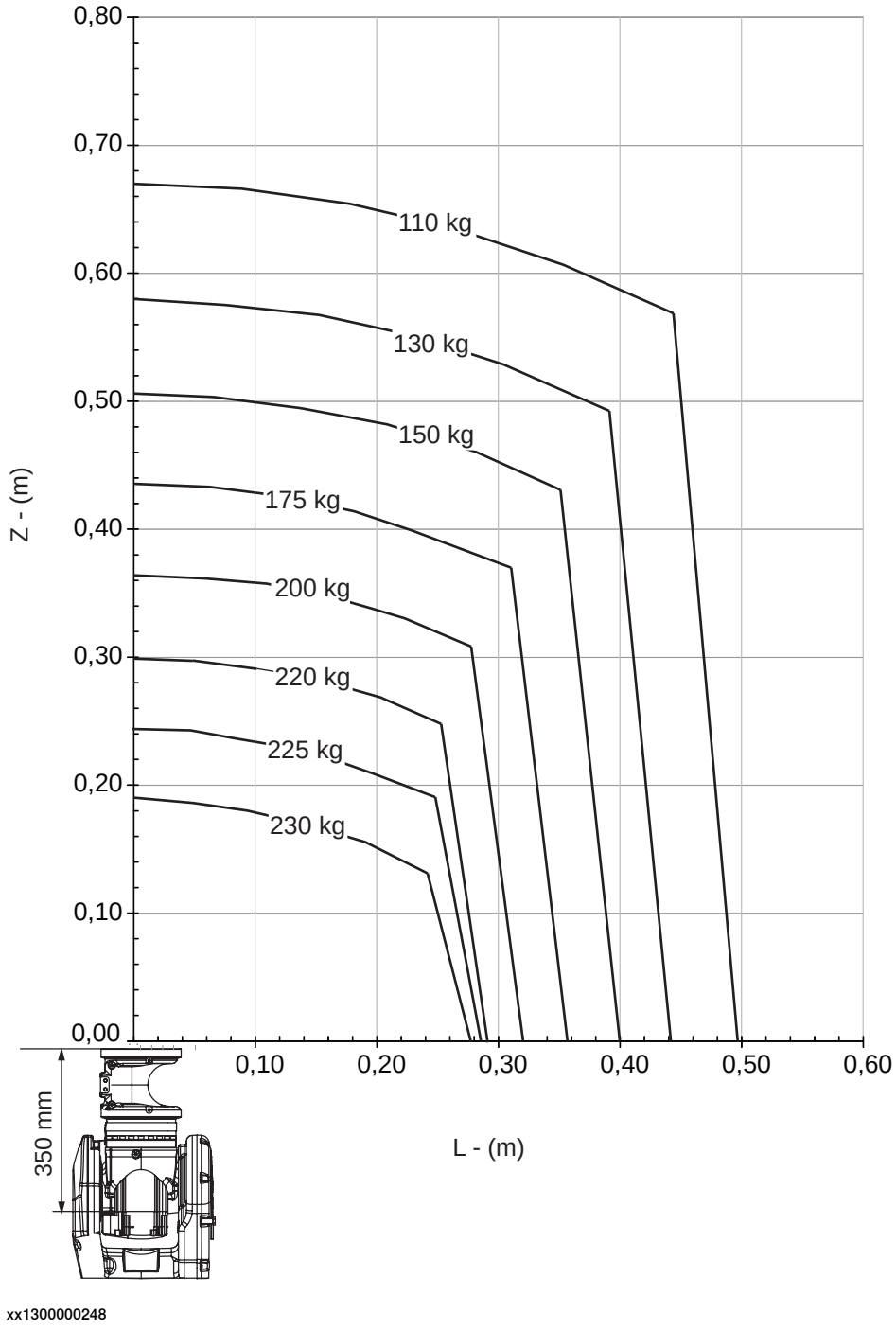
1.6.2 Diagrams
Continued

IRB 6700-220/2.65 LID



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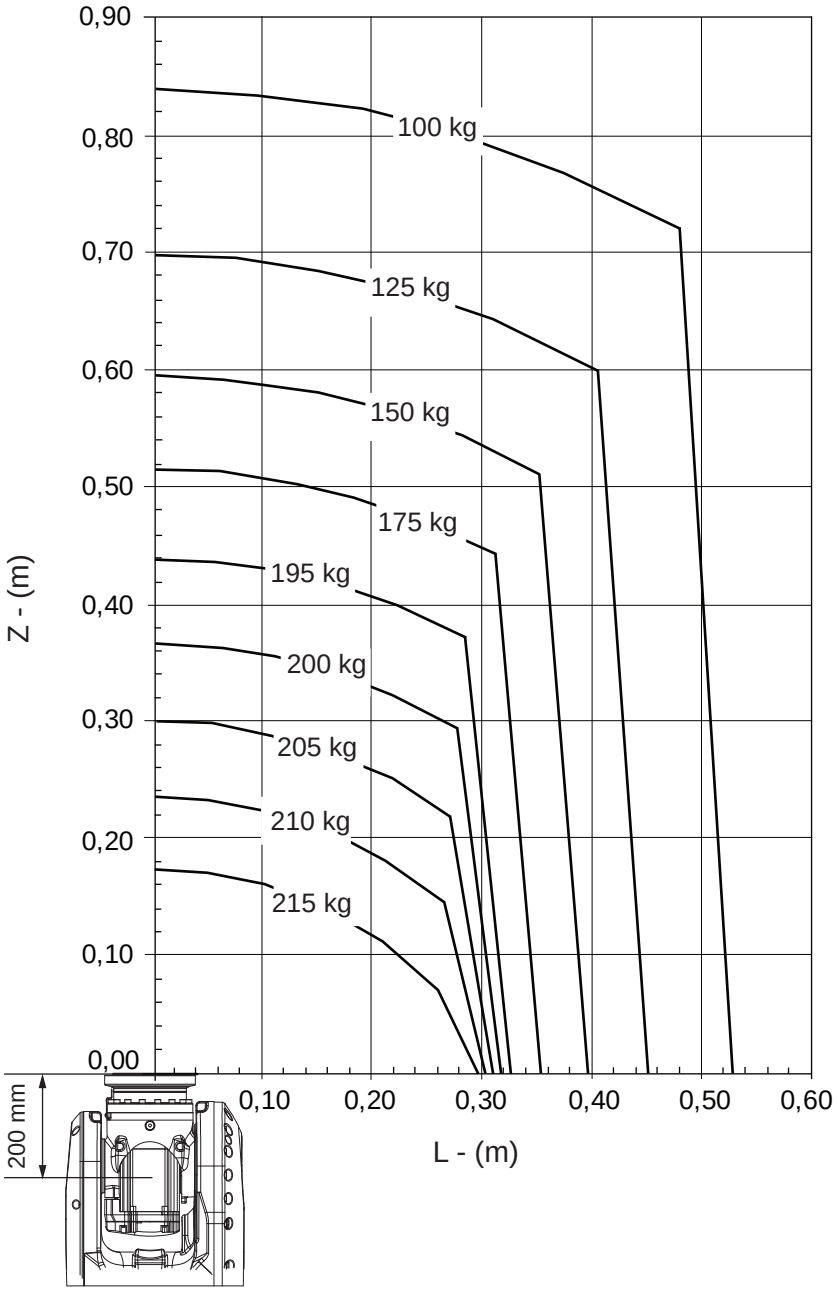
IRB 6700-205/2.80



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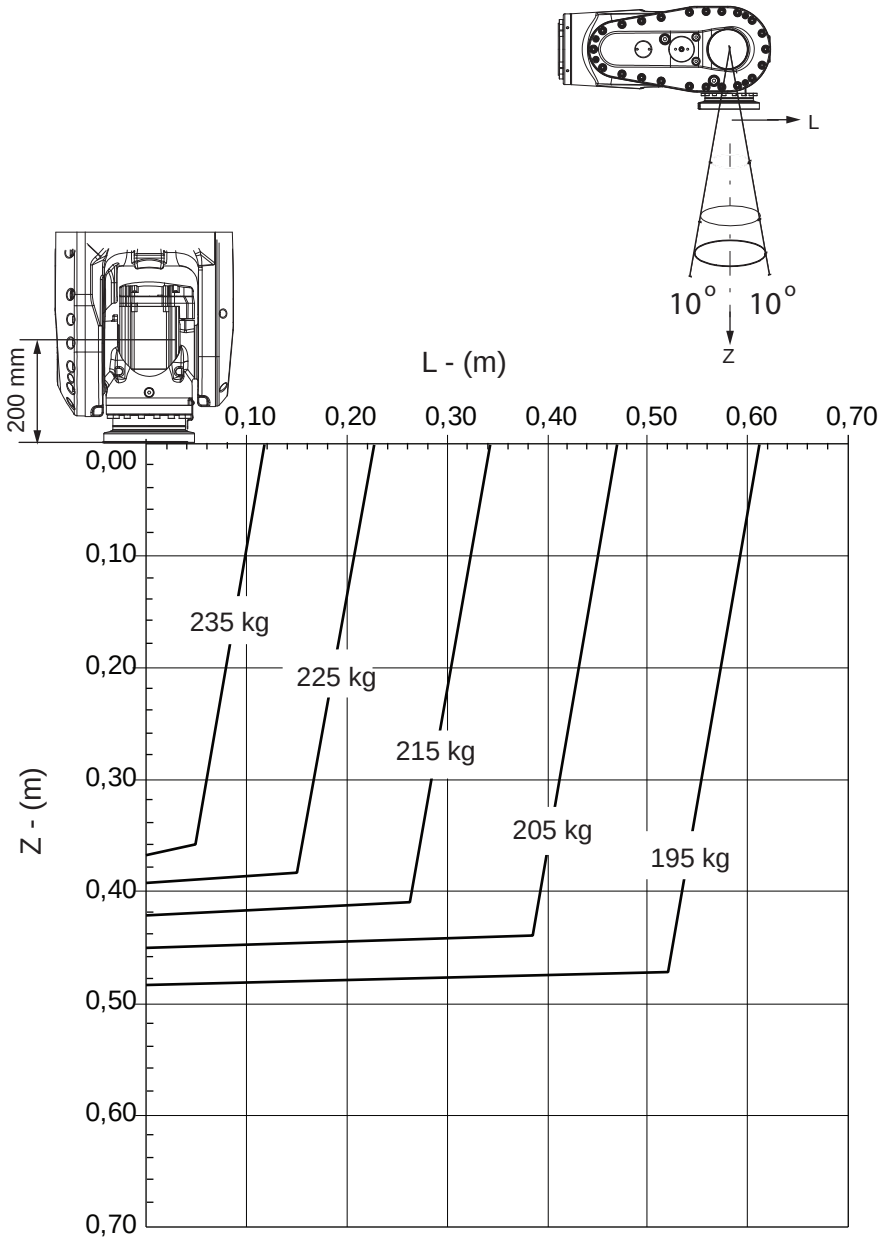
1.6.2 Diagrams
Continued

IRB 6700-205/2.80 "Vertical Wrist" (±10°)



xx1300000250

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

	Description
Max load	240 kg
Z_{max}	0.355 m
L_{max}	0.103 m

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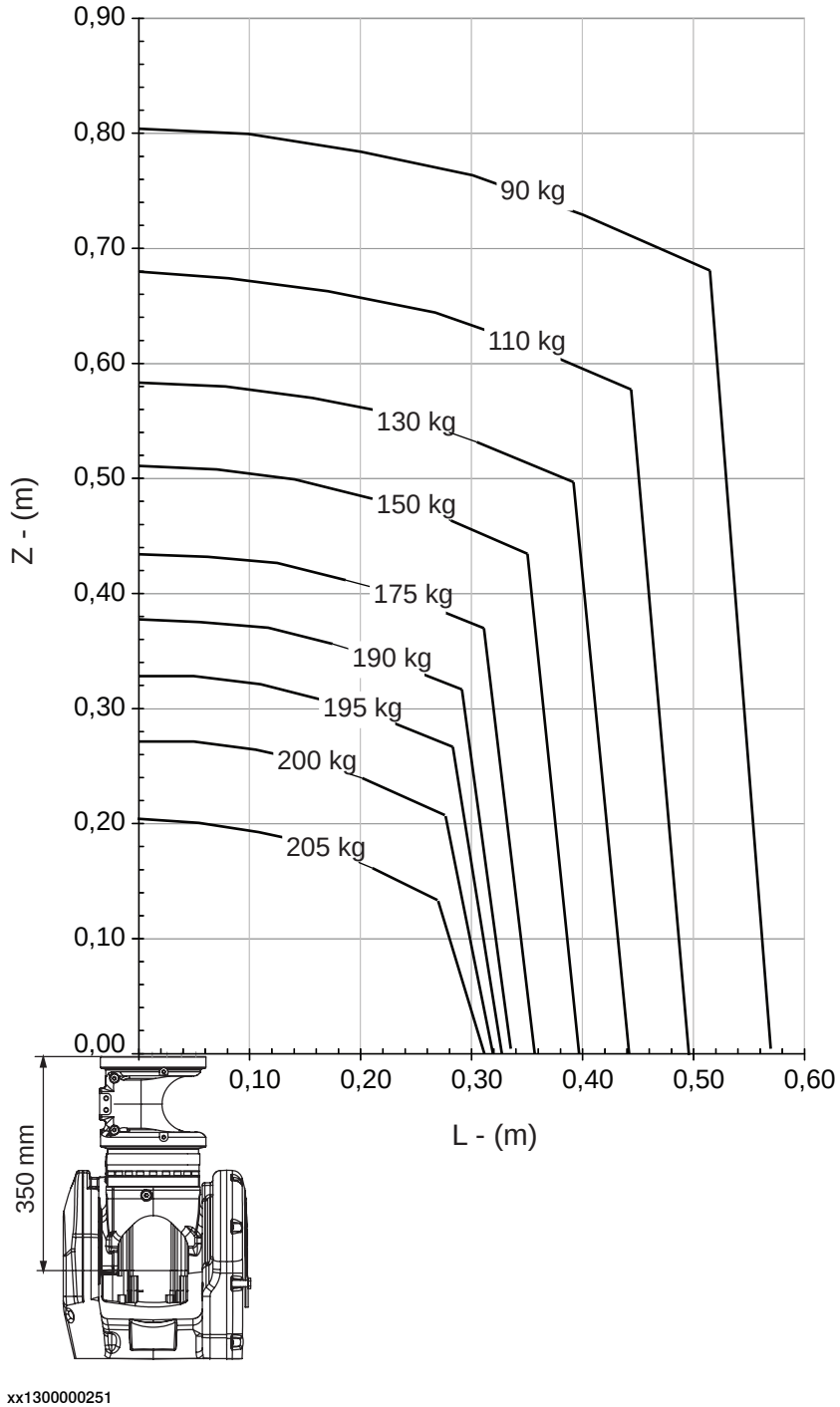
IRB 6700-200/2.80 LID



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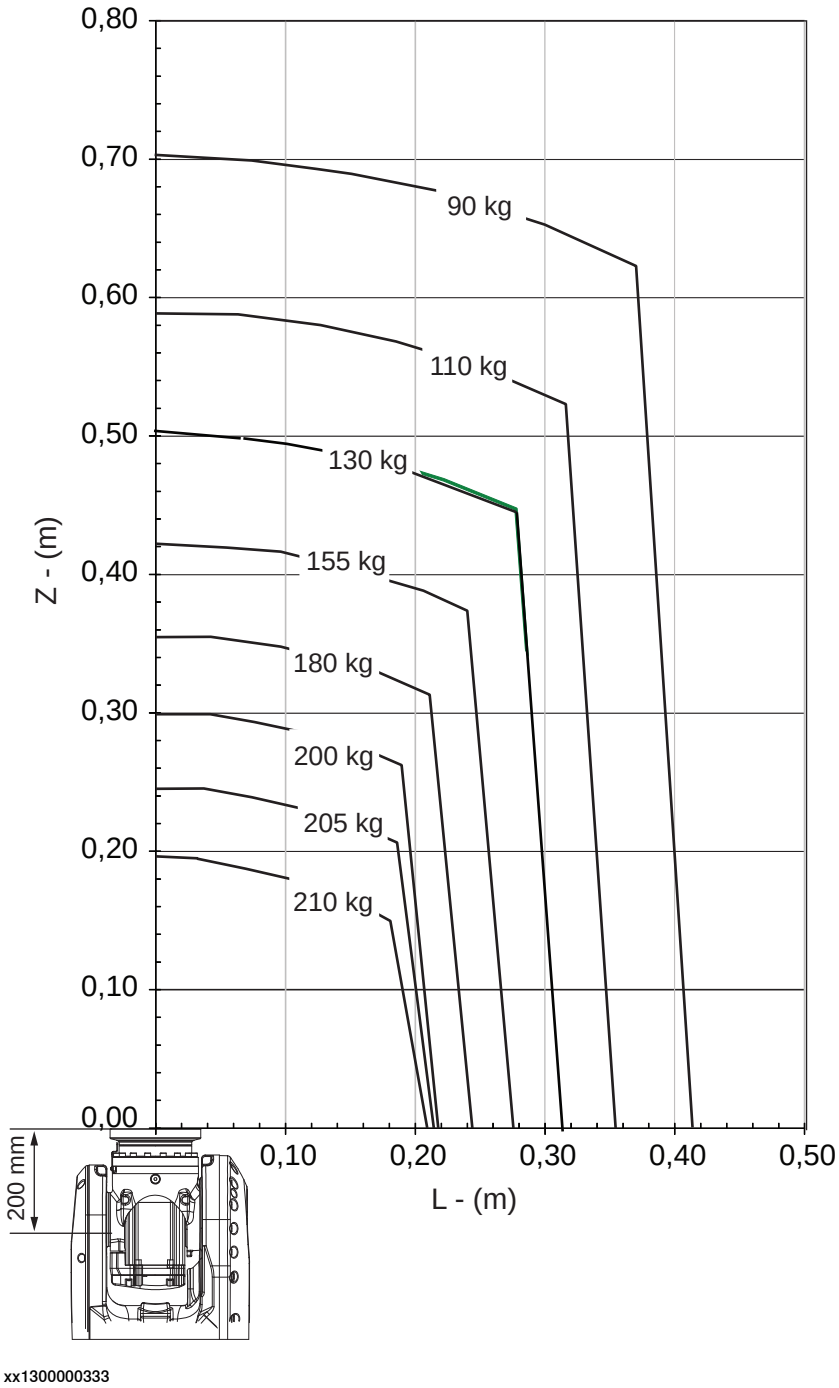
1.6.2 Diagrams
Continued

IRB 6700-200/2.60



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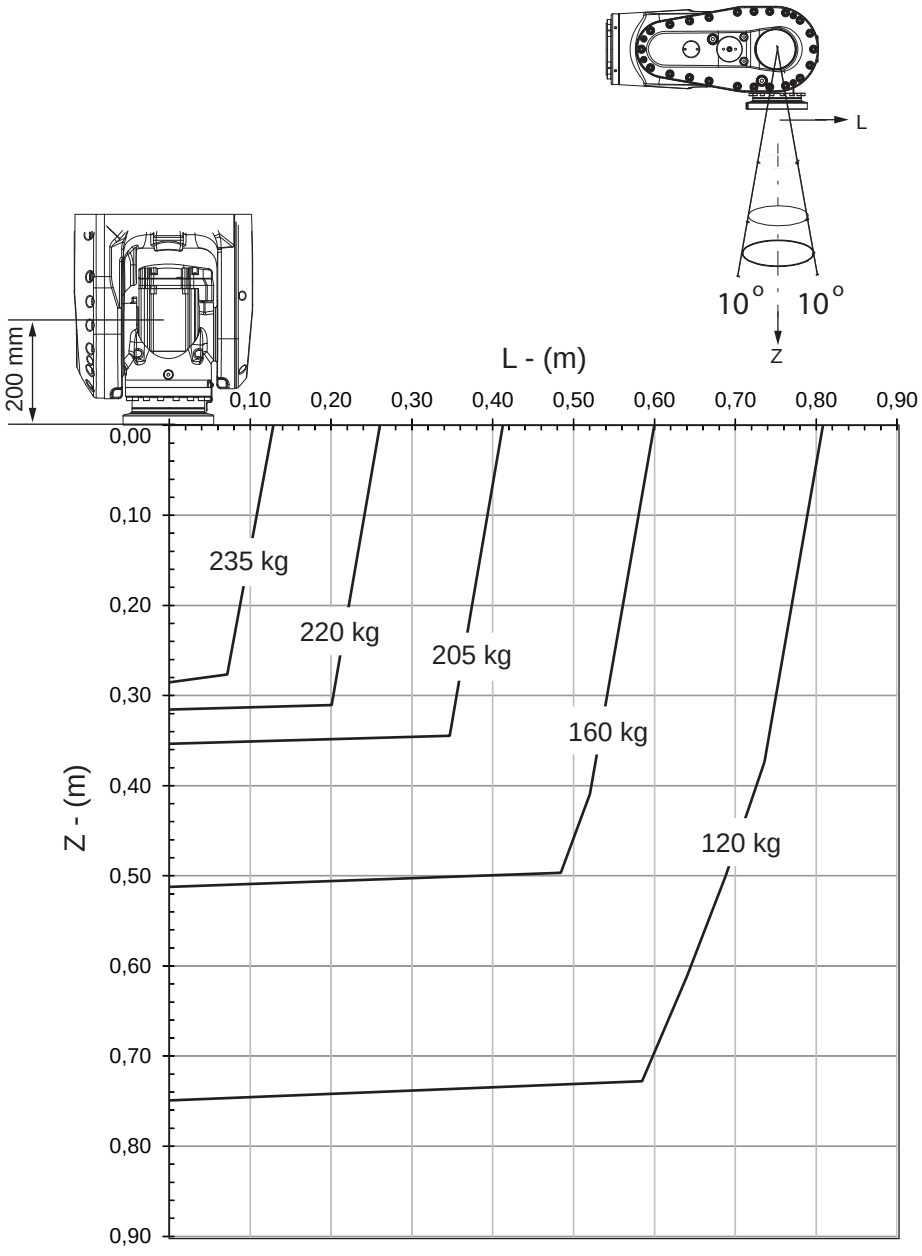
IRB 6700-200/2.60 "Vertical Wrist" (±10°)



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

	Description
Max load	242 kg
Z_{max}	0.27 m
L_{max}	0.104 m

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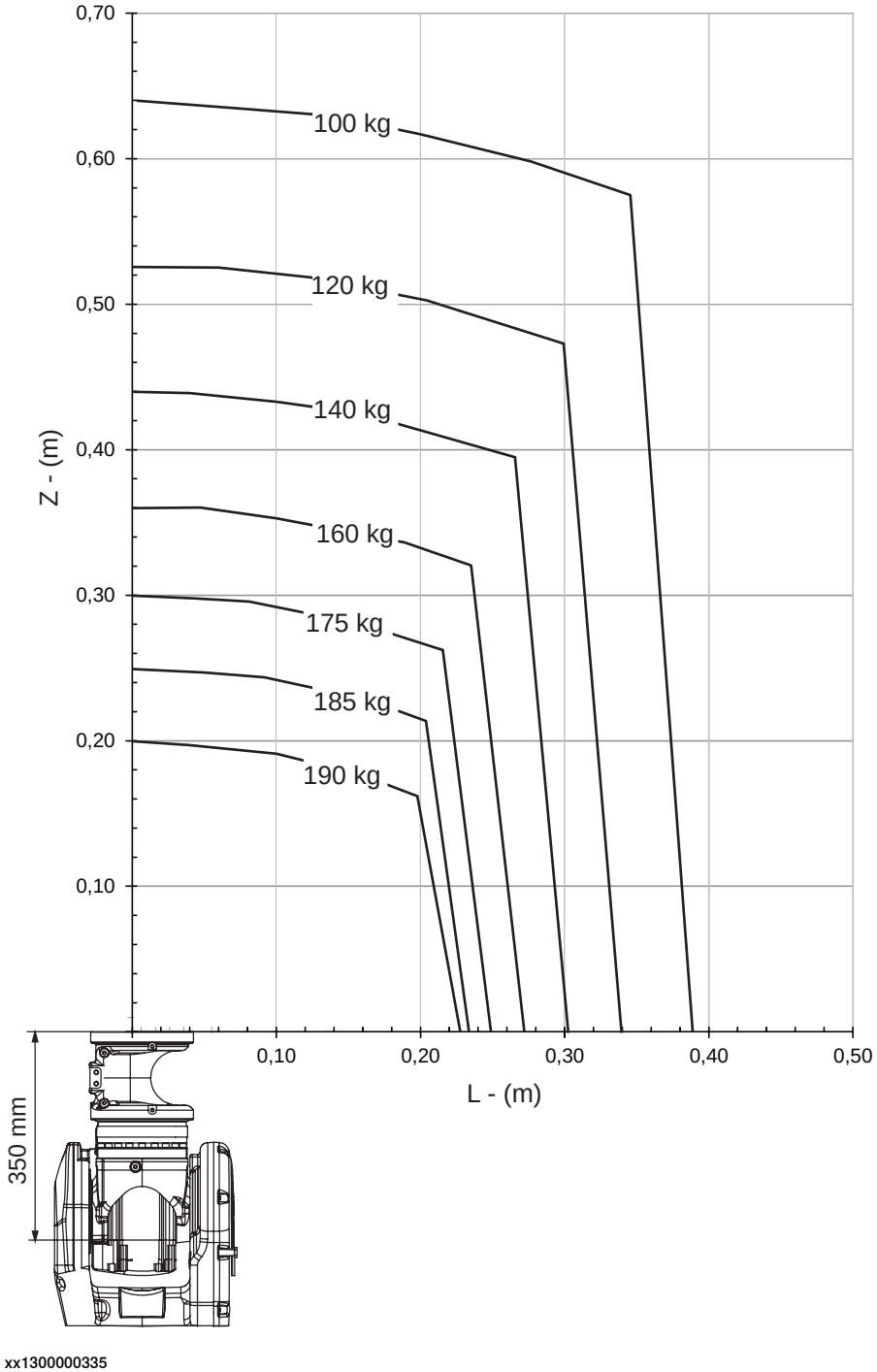
1.6.2 Diagrams
Continued

IRB 6700-175/2.60 LID



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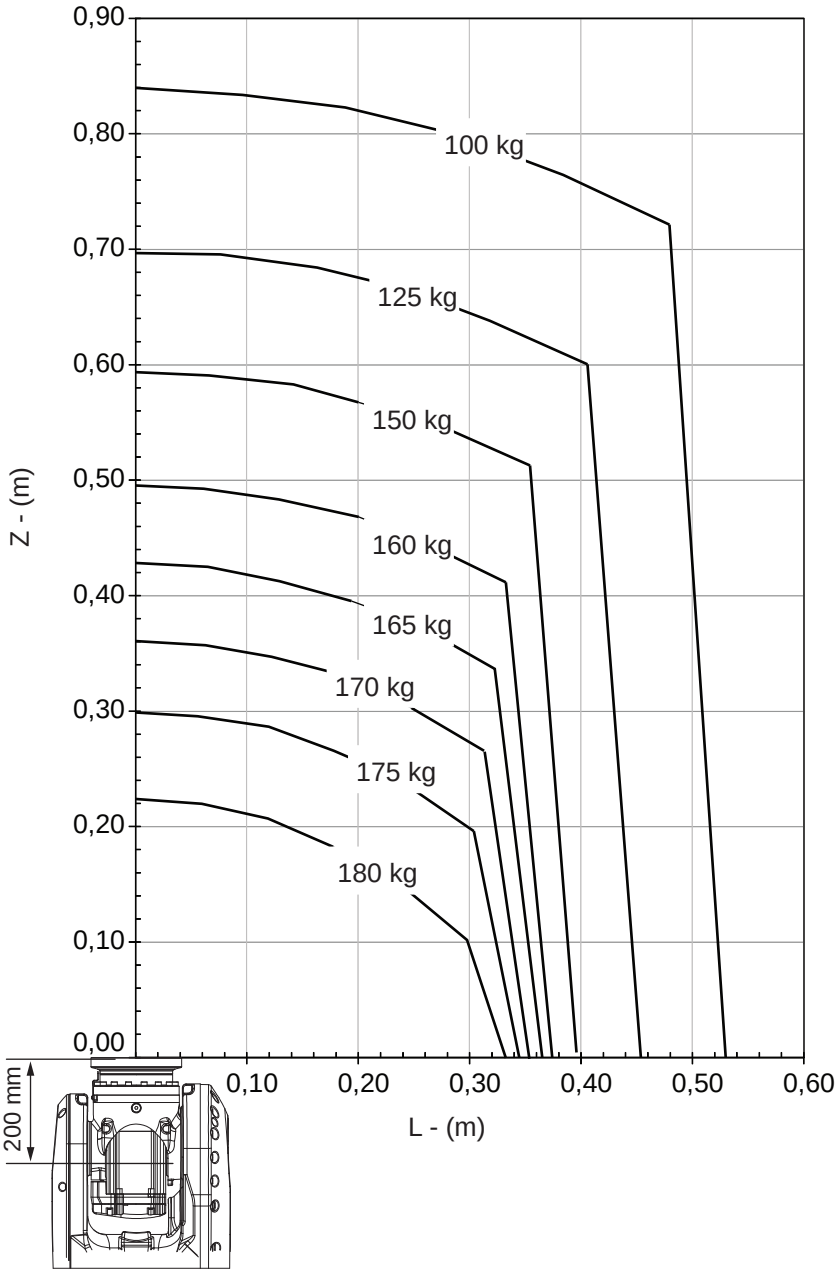
IRB 6700-175/3.05



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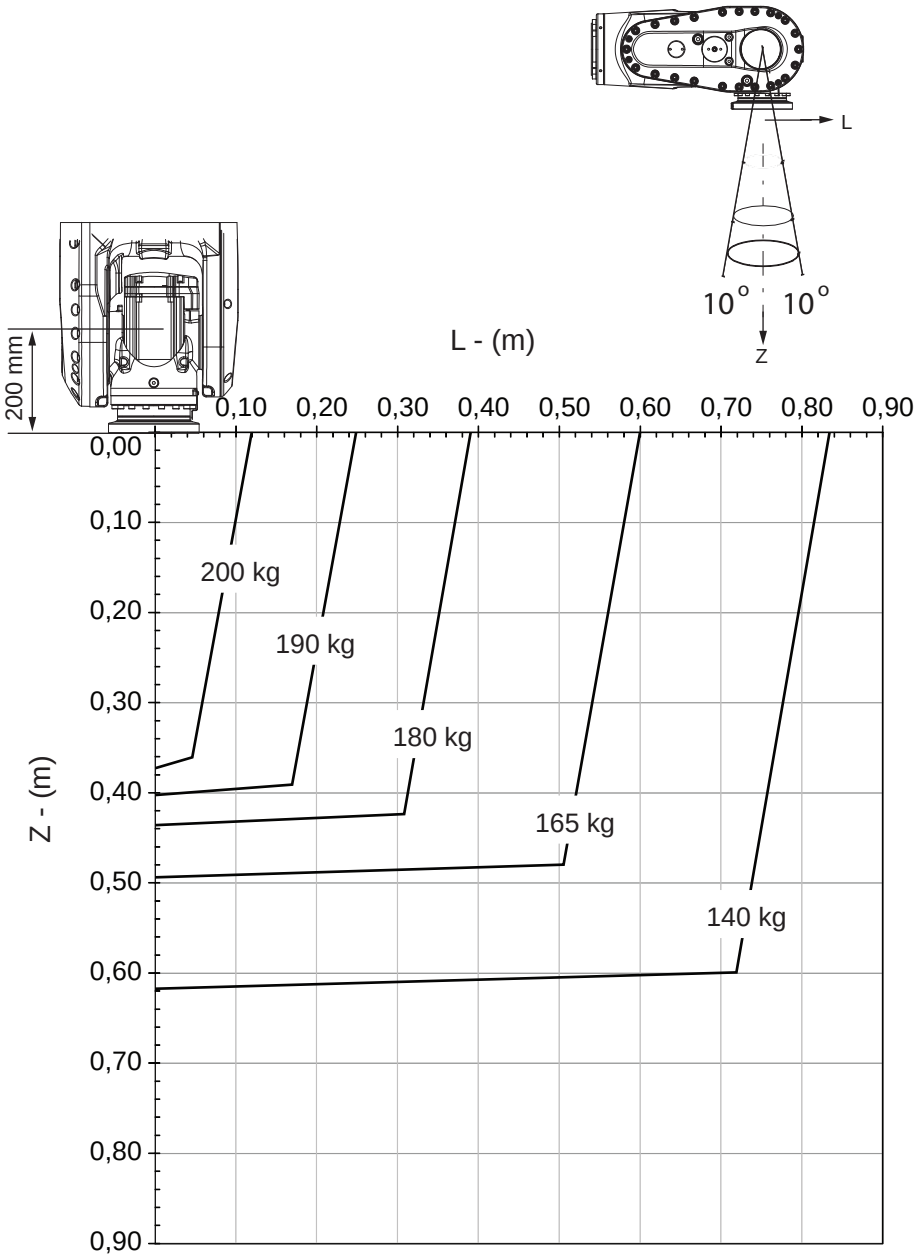
1.6.2 Diagrams
Continued

IRB 6700-175/3.05 "Vertical Wrist" (±10°)



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	Description
Max load	204 kg
Z_{max}	0.360 m
L_{max}	0.101 m

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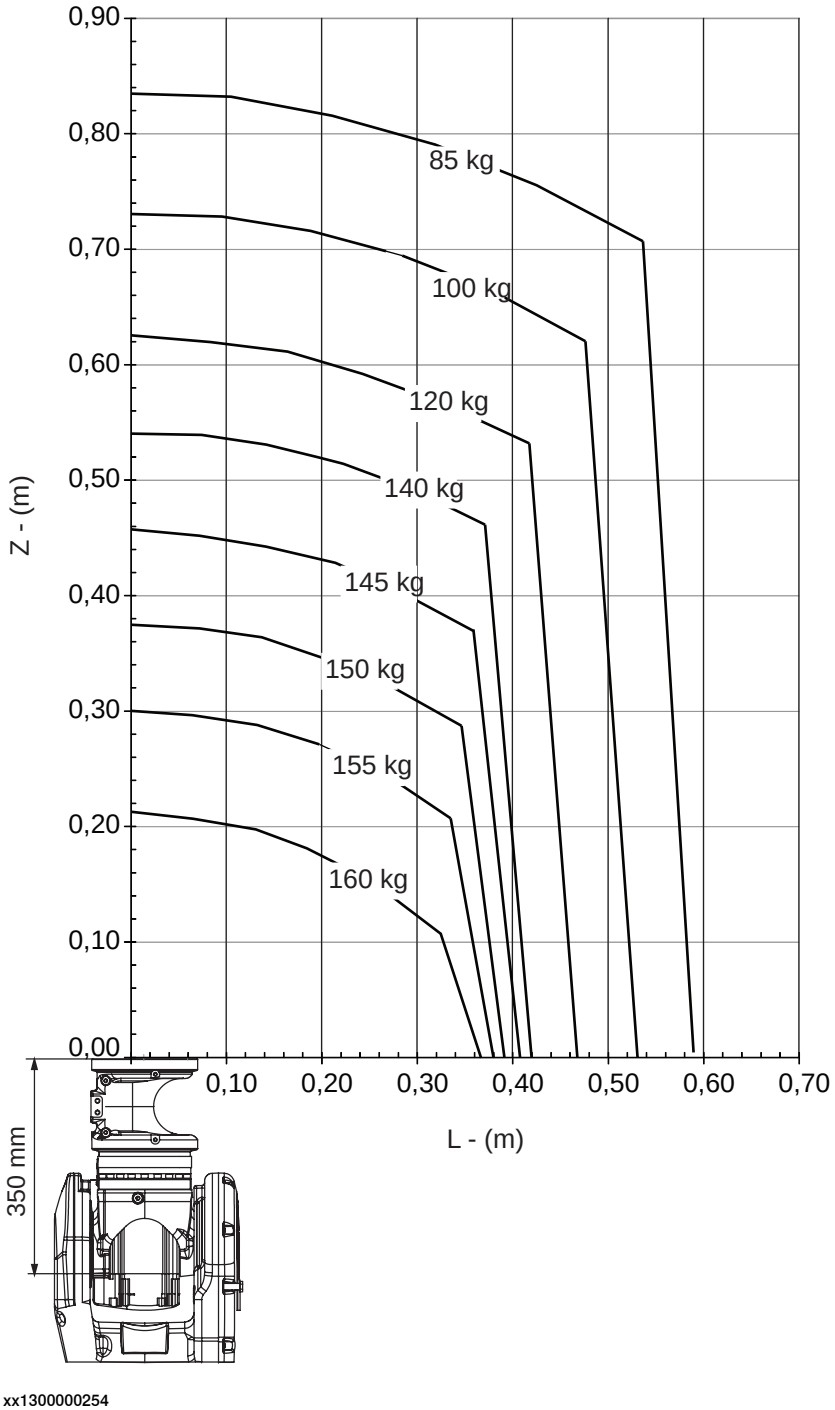
IRB 6700-155/3.05 LID



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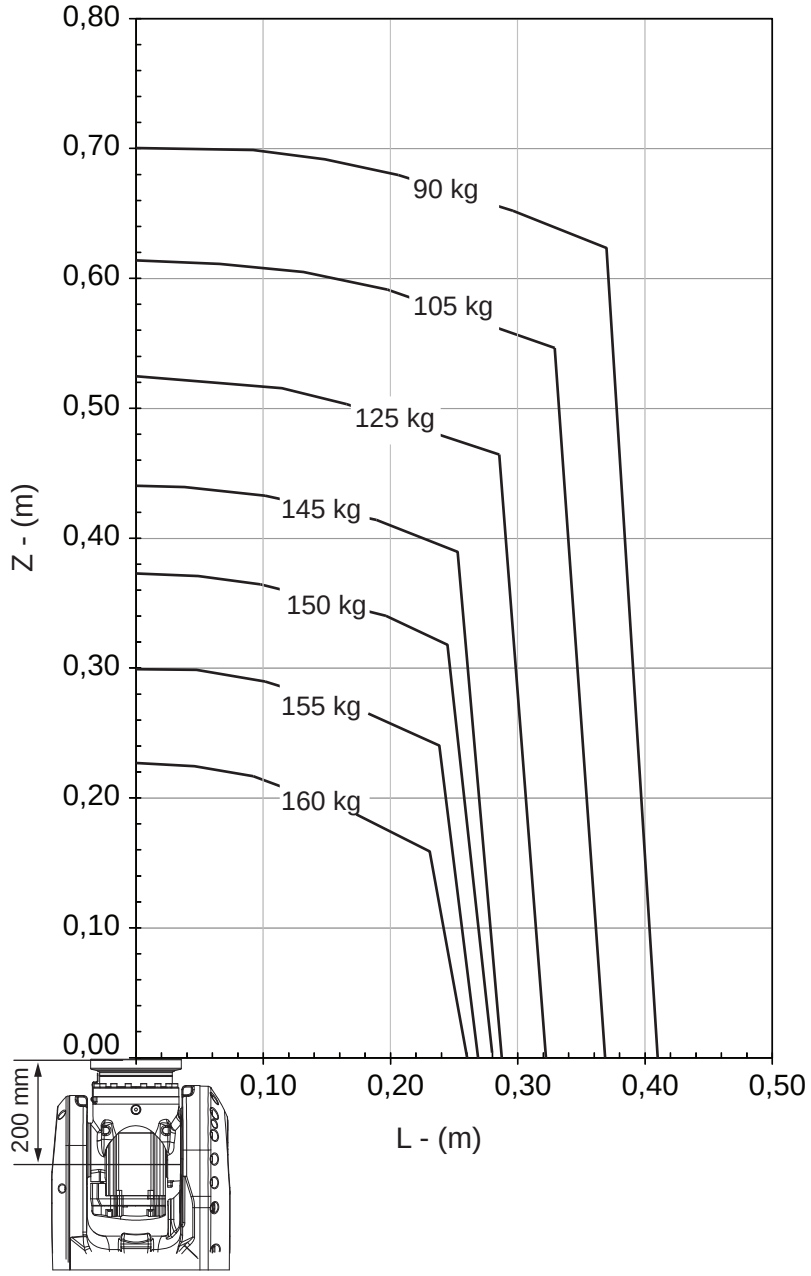
1.6.2 Diagrams
Continued

IRB 6700-155/2.85



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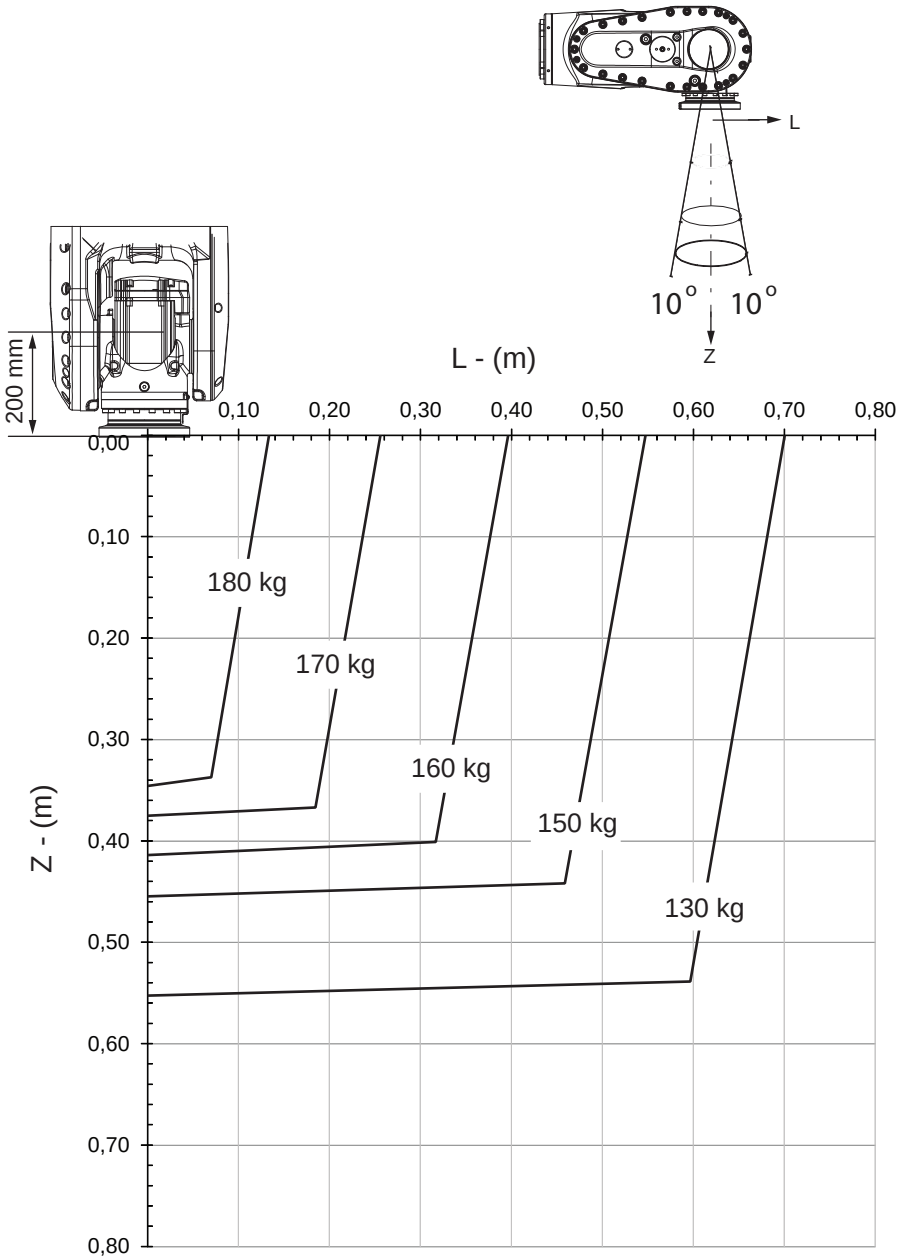
IRB 6700-155/2.85 "Vertical Wrist" (±10°)



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	Description
Max load	186 kg
Z_{max}	0.327 m
L_{max}	0.101 m

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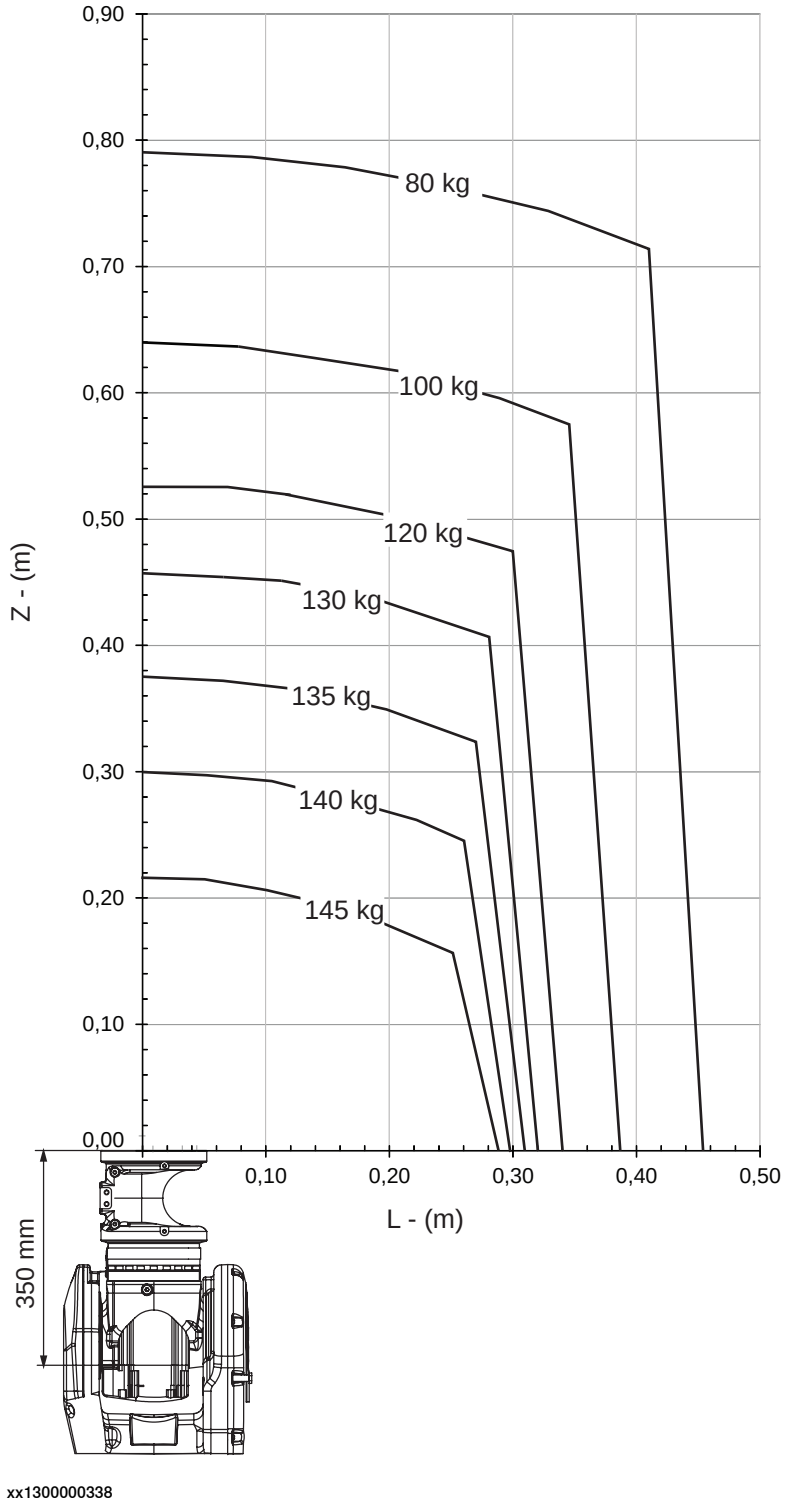
1.6.2 Diagrams
Continued

IRB 6700-140/2.85 LID



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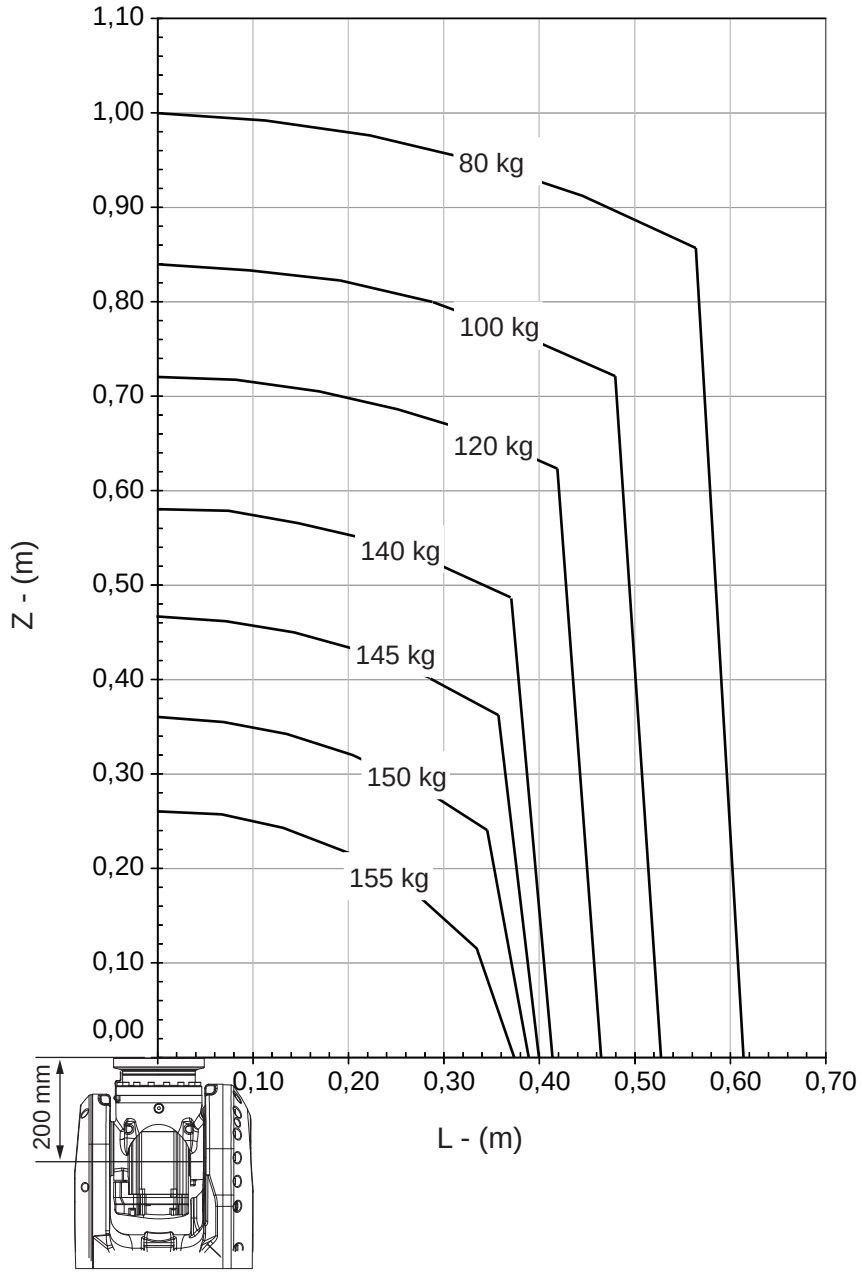
IRB 6700-150/3.20



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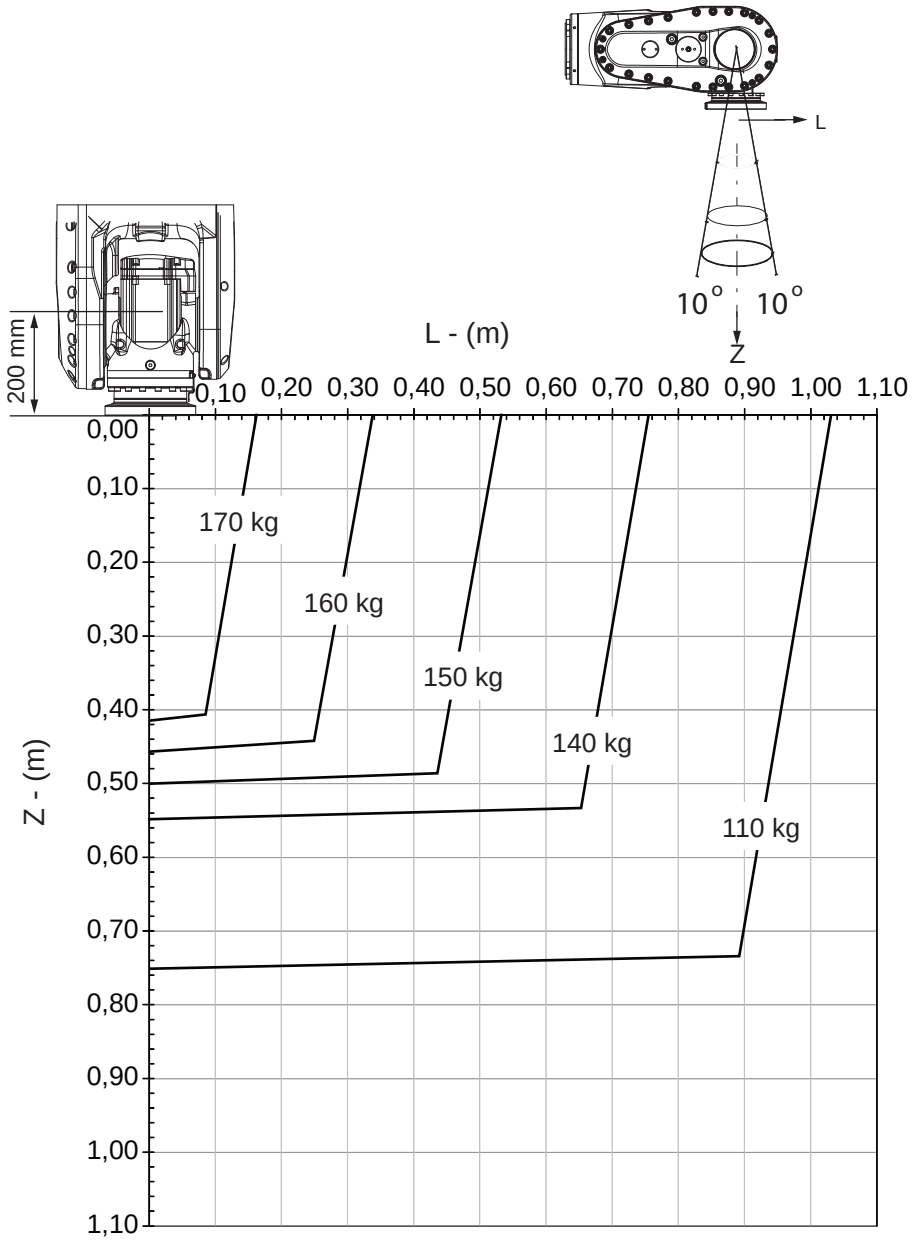
1.6.2 Diagrams
Continued

IRB 6700-150/3.20 "Vertical Wrist" (±10°)



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

	Description
Max load	177 kg
Z_{max}	0.394 m
L_{max}	0.106 m

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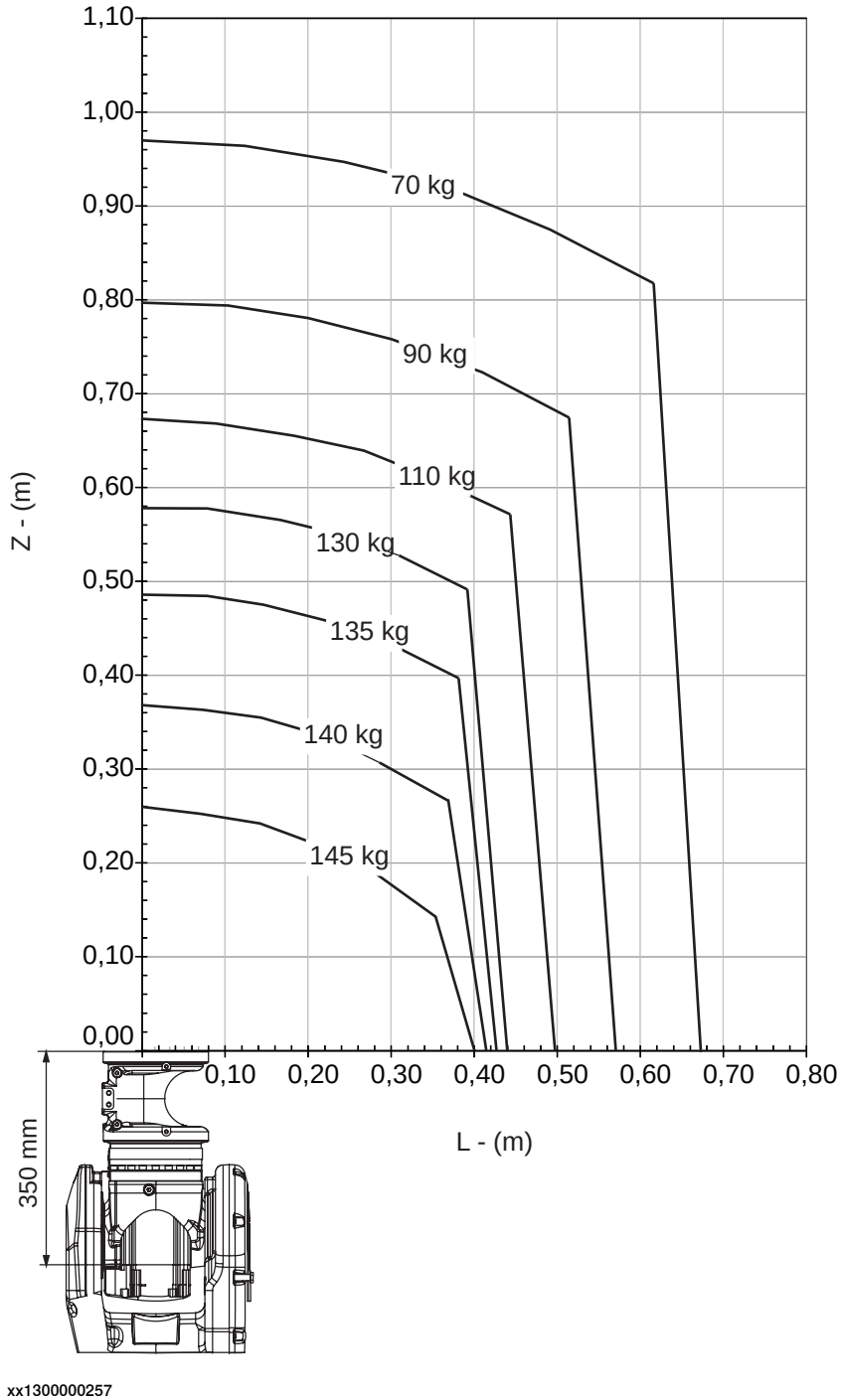
IRB 6700-145/3.20 LID



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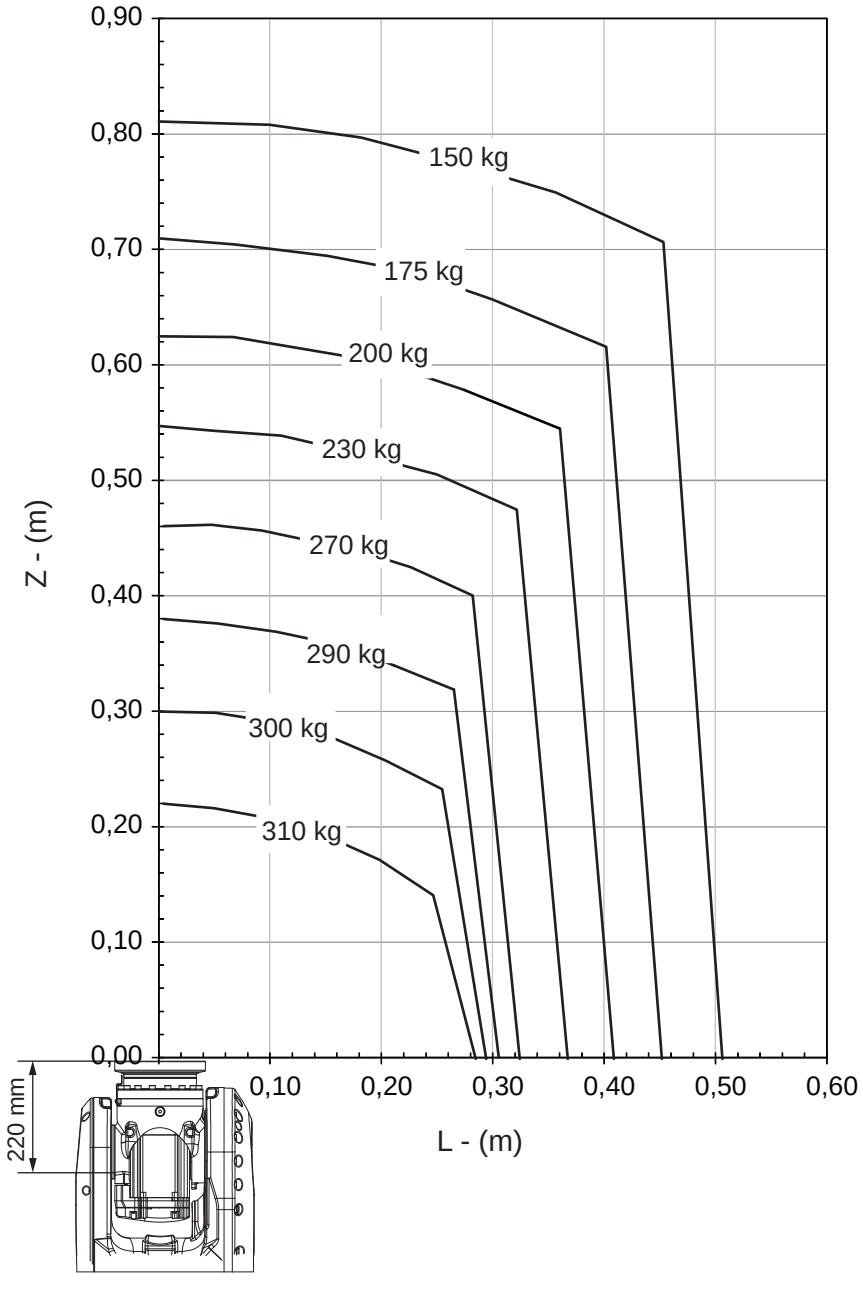
1.6.2 Diagrams
Continued

IRB 6700-300/2.70



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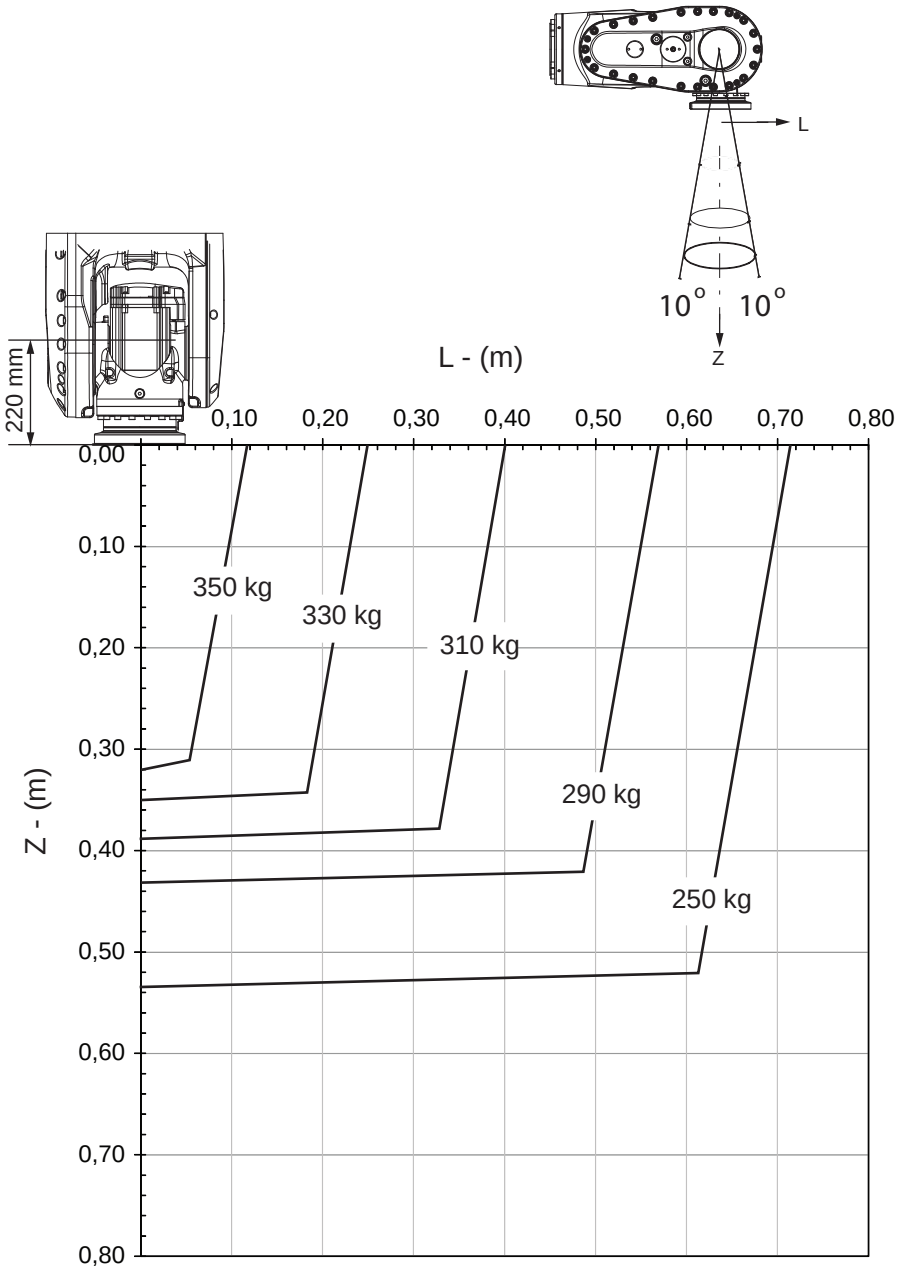
IRB 6700-300/2.70 "Vertical Wrist" (±10°)



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

	Description
Max load	357 kg
Z_{max}	0.308 m
L_{max}	0.102 m

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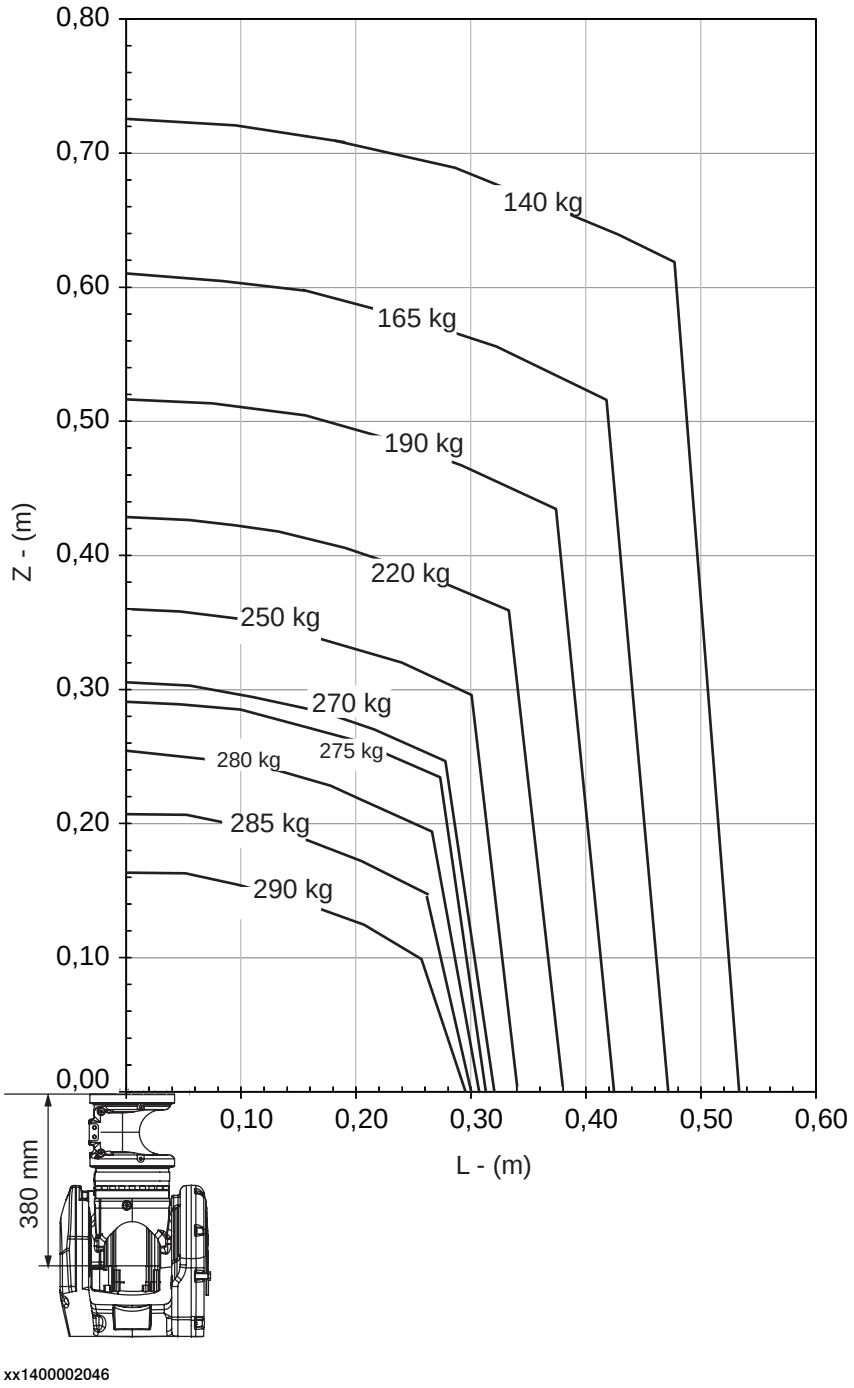
1.6.2 Diagrams
Continued

IRB 6700-270/2.70 LID



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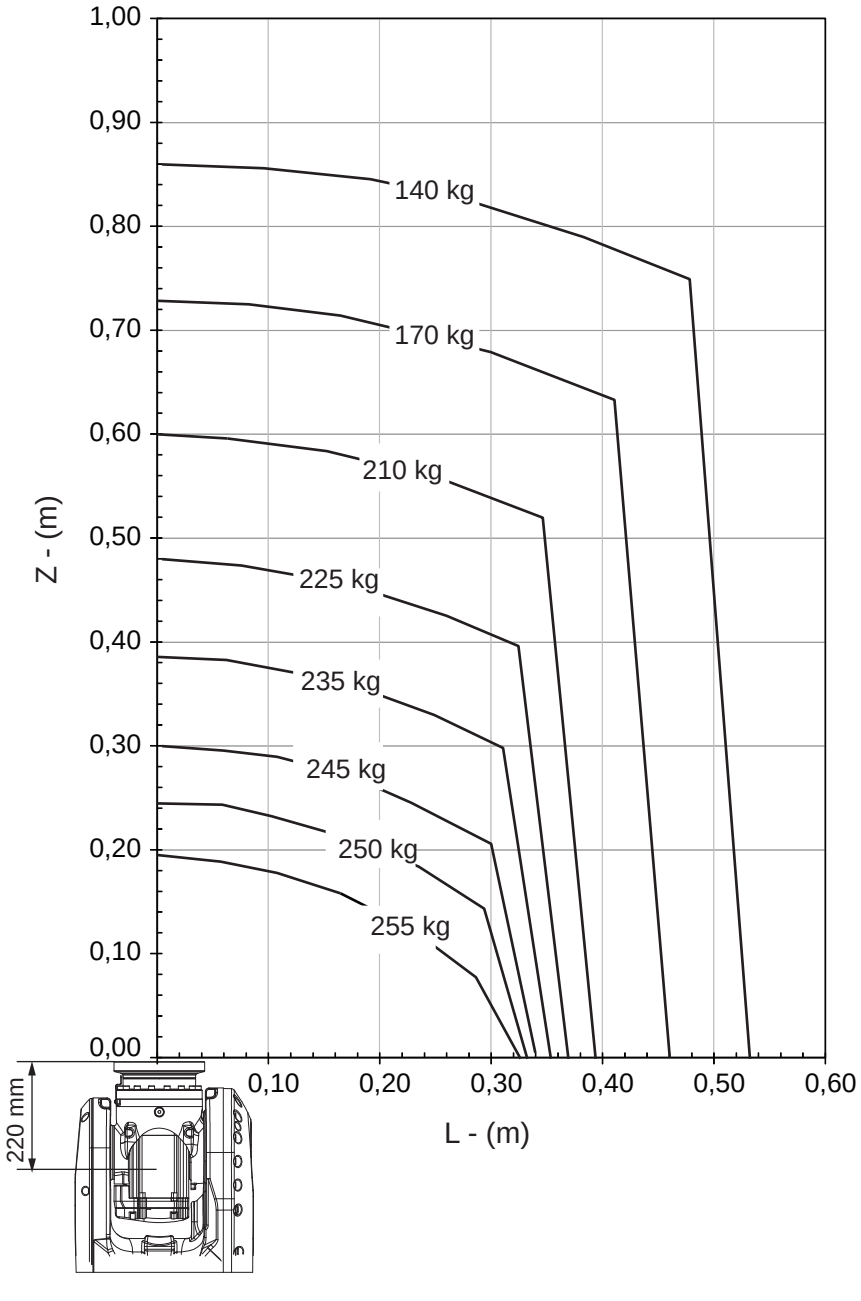
IRB 6700-245/3.00



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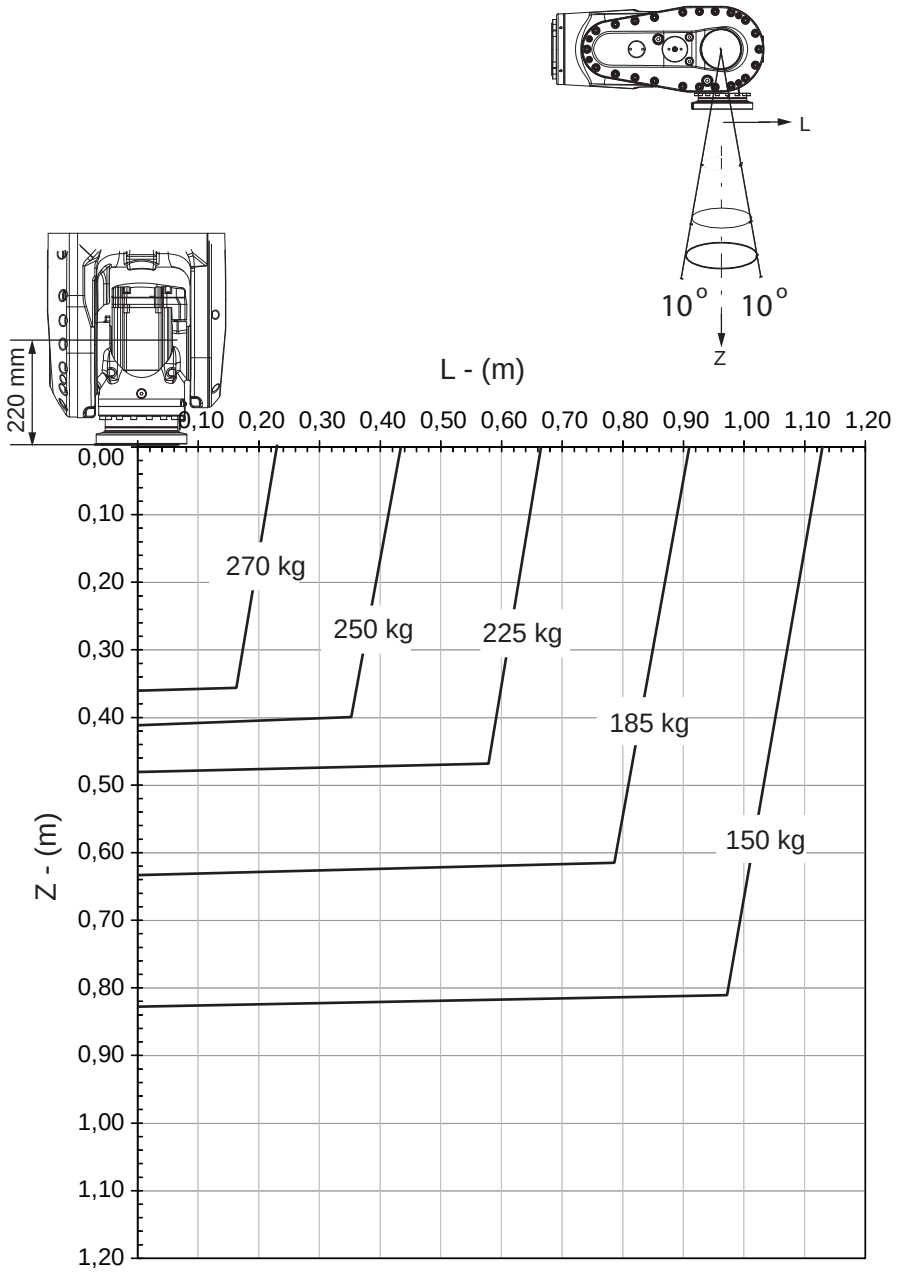
1.6.2 Diagrams
Continued

IRB 6700-245/3.00 "Vertical Wrist" (±10°)



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

	Description
Max load	315 kg
Z_{max}	0.280 m
L_{max}	0.102 m

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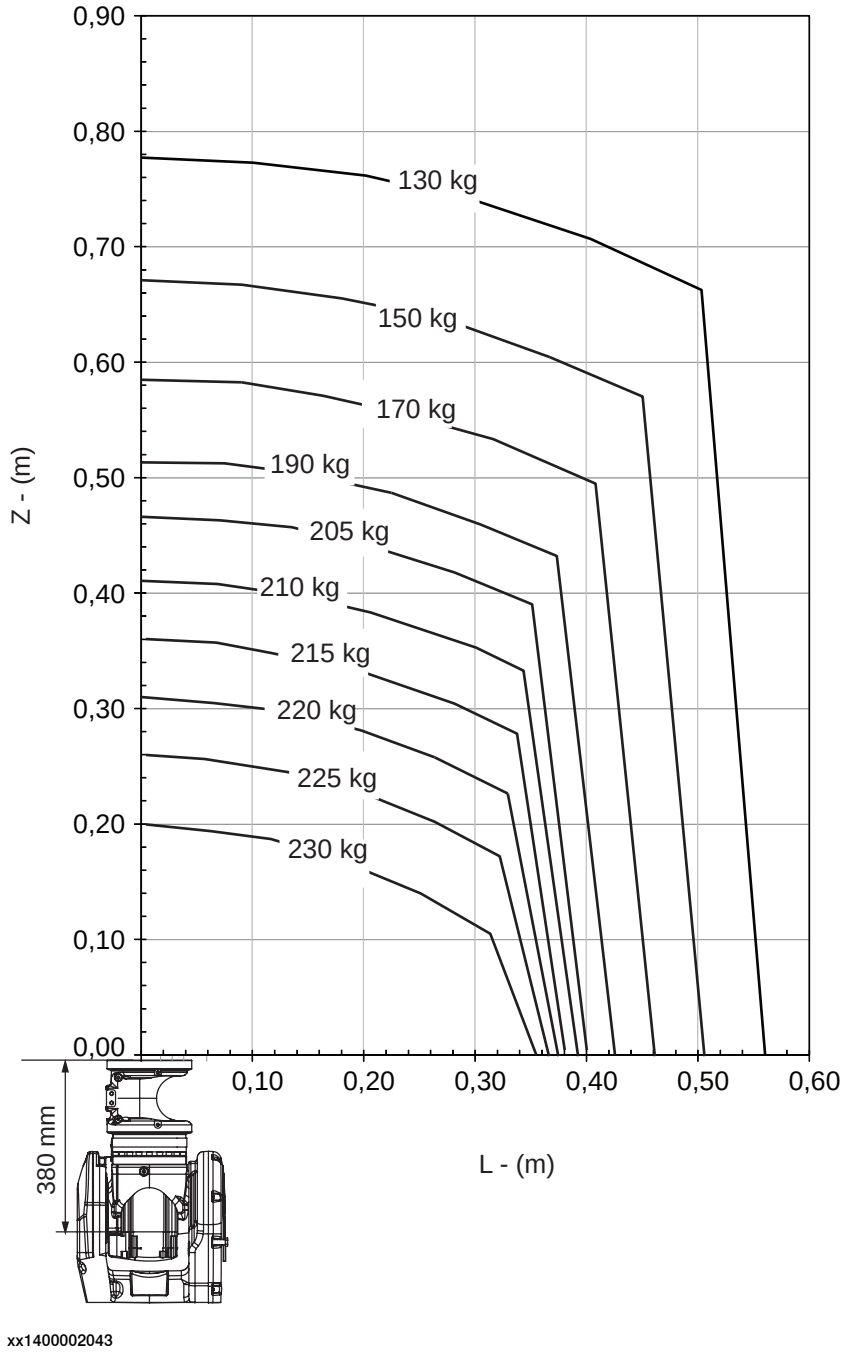
IRB 6700-220/3.00 LID



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

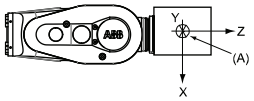
Note

Total load given as: mass in kg, center of gravity (Z and L) in meters and moment of inertia (J_{ox}, J_{oy}, J_{oz}) in kgm^2. L= sqr (X^2 + Y^2), see the following figure.

Full movement of axis 5 (±130°)

Axis	Robot type	Maximum moment of inertia
5	IRB 6700-235/2.65 IRB 6700-205/2.80 IRB 6700-175/3.05 IRB 6700-150/3.20	Ja_5 = Load x $((Z + 0.200^{i})^2 + L^2)$ + max (J_{0x}, J_{0y}) ≤ 250 kgm^2
	IRB 6700-200/2.60 IRB 6700-155/2.85	Ja_5 = Load x $((Z + 0.200^{i})^2 + L^2)$ + max (J_{0x}, J_{0y}) ≤ 195 kgm^2
	IRB 6700-300/2.70 IRB 6700-245/3.00	Ja_5 = Load x $((Z + 0.220^{ii})^2 + L^2)$ + max (J_{0x}, J_{0y}) ≤ 325 kgm^2
6	IRB 6700-235/2.65 IRB 6700-205/2.80 IRB 6700-175/3.05 IRB 6700-150/3.20	Ja_6 = Load x L^2 + J_{0Z} ≤ 185 kgm^2
	IRB 6700-200/2.60 IRB 6700-155/2.85	Ja_6 = Load x L^2 + J_{0Z} ≤ 145 kgm^2
	IRB 6700-300/2.70 IRB 6700-245/3.00	Ja_6 = Load x L^2 + J_{0Z} ≤ 225 kgm^2

i For option 780-4, LeanID = 0.350 m
ii For option 780-4, LeanID = 0.380 m



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Pos	Description
A	Center of gravity

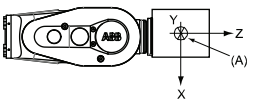
	Description
J_{ox}, J_{oy}, J_{oz}	Max. moment of inertia around the X, Y and Z axes at center of gravity.

Continues on next page

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

Full movement of axis 5 (±130°)

Axis	Robot type	Maximum moment of inertia
5	IRB 6700-235/2.65 IRB 6700-205/2.80 IRB 6700-175/3.05 IRB 6700-150/3.20	$Ja_5 = Load \times ((Z + 0.200)^2 + L^2) + max (J_{0x}, J_{0y}) \leq 250\ kgm^2$
	IRB 6700-220/2.65 LID IRB 6700-200/2.80 LID IRB 6700-155/3.05 LID IRB 6700-145/3.20 LID	$Ja_5 = Load \times ((Z + 0.350)^2 + L^2) + max (J_{0x}, J_{0y}) \leq 250\ kgm^2$
	IRB 6700-200/2.60 IRB 6700-155/2.85	$Ja_5 = Load \times ((Z + 0.200)^2 + L^2) + max (J_{0x}, J_{0y}) \leq 195\ kgm^2$
	IRB 6700-175/2.60 LID IRB 6700-140/2.85 LID	$Ja_5 = Load \times ((Z + 0.350)^2 + L^2) + max (J_{0x}, J_{0y}) \leq 195\ kgm^2$
	IRB 6700-300/2.70 IRB 6700-245/3.00	$Ja_5 = Load \times ((Z + 0.220)^2 + L^2) + max (J_{0x}, J_{0y}) \leq 325\ kgm^2$
	IRB 6700-270/2.70 LID IRB 6700-220/3.00 LID	$Ja_5 = Load \times ((Z + 0.380)^2 + L^2) + max (J_{0x}, J_{0y}) \leq 325\ kgm^2$
6	IRB 6700-235/2.65 IRB 6700-220/2.65 LID IRB 6700-205/2.80 IRB 6700-200/2.80 LID IRB 6700-175/3.05 IRB 6700-155/3.05 LID IRB 6700-150/3.20 IRB 6700-145/3.20 LID	$Ja_6 = Load \times L^2 + J_{0Z} \leq 185\ kgm^2$
	IRB 6700-200/2.60 IRB 6700-175/2.60 LID IRB 6700-155/2.85 IRB 6700-140/2.85 LID	$Ja_6 = Load \times L^2 + J_{0Z} \leq 145\ kgm^2$
	IRB 6700-300/2.70 IRB 6700-270/2.70 LID IRB 6700-245/3.00 IRB 6700-220/3.00 LID	$Ja_6 = Load \times L^2 + J_{0Z} \leq 225\ kgm^2$



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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.

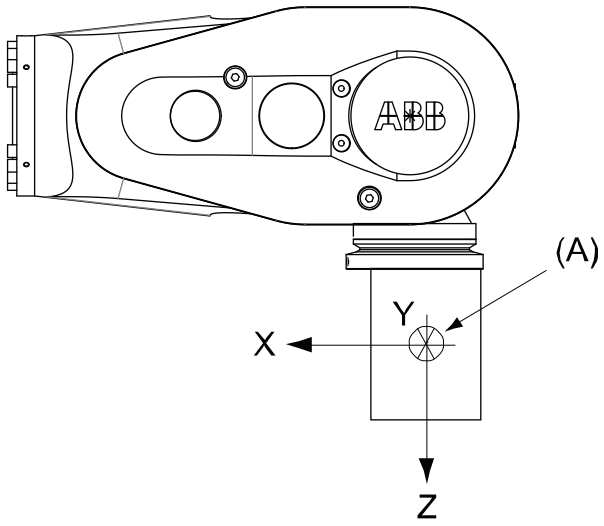
Continues on next page

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

Limited axis 5, center line down

Axis	Robot type	Maximum moment of inertia
5	IRB 6700-235/2.65 IRB 6700-205/2.80 IRB 6700-175/3.05 IRB 6700-150/3.20	$Ja_5 = Load \times ((Z + 0.200^{i})^2 + L^2) + max (J_{0x}, J_{0y}) \leq 275\ kgm^2$
	IRB 6700-200/2.60 IRB 6700-155/2.85	$Ja_5 = Load \times ((Z + 0.200^{i})^2 + L^2) + max (J_{0x}, J_{0y}) \leq 215\ kgm^2$
	IRB 6700-300/2.70 IRB 6700-245/3.00	$Ja_5 = Load \times ((Z + 0.220^{ii})^2 + L^2) + max (J_{0x}, J_{0y}) \leq 360\ kgm^2$
6	IRB 6700-235/2.65 IRB 6700-205/2.80 IRB 6700-175/3.05 IRB 6700-150/3.20	$Ja_6 = Load \times L^2 + J_{0Z} \leq 250\ kgm^2$
	IRB 6700-200/2.60 IRB 6700-155/2.85	$Ja_6 = Load \times L^2 + J_{0Z} \leq 195\ kgm^2$
	IRB 6700-300/2.70 IRB 6700-245/3.00	$Ja_6 = Load \times L^2 + J_{0Z} \leq 320\ kgm^2$

i For option 780-4, LeanID = 0,350 m
ii For option 780-4, LeanID = 0,380 m



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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.

Continues on next page

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

Limited axis 5, center line down

Axis	Robot type	Maximum moment of inertia
5	IRB 6700-235/2.65 IRB 6700-205/2.80 IRB 6700-175/3.05 IRB 6700-150/3.20	$Ja_5 = Load \times ((Z + 0.200)^2 + L^2) + max (J_{0x}, J_{0y}) \leq 275\ kgm^2$
	IRB 6700-220/2.65 LID IRB 6700-200/2.80 LID IRB 6700-155/3.05 LID IRB 6700-145/3.20 LID	$Ja_5 = Load \times ((Z + 0.350)^2 + L^2) + max (J_{0x}, J_{0y}) \leq 275\ kgm^2$
	IRB 6700-200/2.60 IRB 6700-155/2.85	$Ja_5 = Load \times ((Z + 0.200)^2 + L^2) + max (J_{0x}, J_{0y}) \leq 215\ kgm^2$
	IRB 6700-175/2.60 LID IRB 6700-140/2.85 LID	$Ja_5 = Load \times ((Z + 0.350)^2 + L^2) + max (J_{0x}, J_{0y}) \leq 215\ kgm^2$
	IRB 6700-300/2.70 IRB 6700-245/3.00	$Ja_5 = Load \times ((Z + 0.220)^2 + L^2) + max (J_{0x}, J_{0y}) \leq 360\ kgm^2$
	IRB 6700-270/2.70 LID IRB 6700-220/3.00 LID	$Ja_5 = Load \times ((Z + 0.380)^2 + L^2) + max (J_{0x}, J_{0y}) \leq 360\ kgm^2$
6	IRB 6700-235/2.65 IRB 6700-220/2.65 LID IRB 6700-205/2.80 IRB 6700-200/2.80 LID IRB 6700-175/3.05 IRB 6700-155/3.05 LID IRB 6700-150/3.20 IRB 6700-145/3.20 LID	$Ja_6 = Load \times L^2 + J_{0Z} \leq 250\ kgm^2$
	IRB 6700-200/2.60 IRB 6700-175/2.60 LID IRB 6700-155/2.85 IRB 6700-140/2.85 LID	$Ja_6 = Load \times L^2 + J_{0Z} \leq 195\ kgm^2$
	IRB 6700-300/2.70 IRB 6700-270/2.70 LID IRB 6700-245/3.00 IRB 6700-220/3.00 LID	$Ja_6 = Load \times L^2 + J_{0Z} \leq 320\ kgm$

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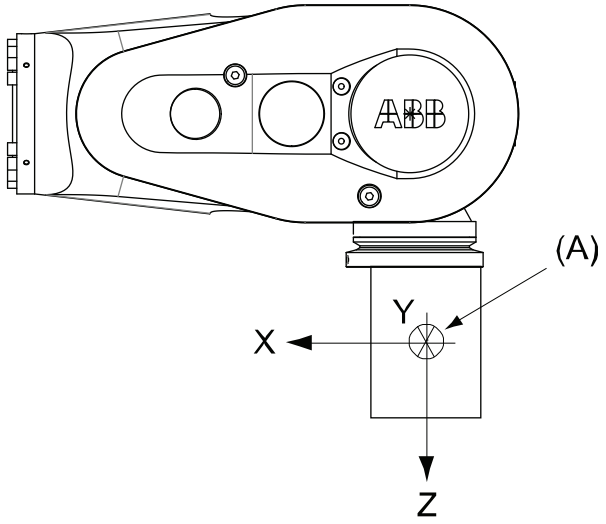
1.6.3 Maximum load and moment of inertia for full and limited axis 5 (center line down) movement
Continued



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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.

1.6.4 Wrist torque

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.

Torque

The table below shows the maximum permissible torque due to payload.

Robot type	Max wrist torque axis 4 and 5	Max wrist torque axis 6	Max torque valid at load
IRB 6700 - 235/2.65	1,324 Nm	650 Nm	225 kg
IRB 6700 - 205/2.80	1,263 Nm	625 Nm	192 kg
IRB 6700 - 200/2.60	981 Nm	429 Nm	175 kg
IRB 6700 - 175/3.05	1,179 Nm	589 Nm	154 kg
IRB 6700 - 155/2.85	927 Nm	410 Nm	144 kg
IRB 6700 - 150/3.20	1,135 Nm	570 Nm	137 kg
IRB 6700 - 300/2.70	1,825 Nm	865 Nm	280 kg
IRB 6700 - 245/3.00	1,693 Nm	815 Nm	214 kg
	1,825 Nm	865 Nm	280 kg

Torque for LeanID variants

The table below shows the maximum permissible torque due to payload.

Robot type	Max wrist torque axis 4 and 5	Max wrist torque axis 6	Max torque valid at load
IRB 6700 - 270/2.70 LID	1,825 Nm	865 Nm	280 kg
IRB 6700 - 220/3.00 LID	1,693 Nm	815 Nm	214 kg
IRB 6700 - 220/2.65 LID	1,324 Nm	650 Nm	225 kg
IRB 6700 - 200/2.80 LID	1,263 Nm	625 Nm	192 kg
IRB 6700 - 175/2.60 LID	981 Nm	429 Nm	175 kg
IRB 6700 - 155/3.05 LID	1,179 Nm	589 Nm	154 kg
IRB 6700 - 140/2.85 LID	927 Nm	410 Nm	144 kg
IRB 6700 - 145/3.20 LID	1,135 Nm	570 Nm	137 kg

1.6.5 Maximum TCP acceleration

General

Higher values can be reached with lower loads than the nominal because of our dynamical motion control QuickMove2. For specific values in the unique customer cycle, or for robots not listed in the table below, we recommend to use RobotStudio.

Maximum Cartesian design acceleration for nominal loads

Robot type	E-stop Max acceleration at nominal load COG [m/s^2]	Controlled Motion Max acceleration at nominal load COG [m/s^2]
IRB 6700 - 235/2.65	41	22
IRB 6700 - 205/2.8	45	24
IRB 6700 - 175/3.05	42	25
IRB 6700 - 150/3.2	47	24
IRB 6700 - 200/2.6	51	23
IRB 6700 - 155/2.85	47	29
IRB 6700 - 300/2.7	39	21
IRB 6700 - 245/3.0	44	27

Note

Acceleration levels for emergency stop and controlled motion includes acceleration due to gravitational forces. Nominal load is defined with nominal mass and cog with max offset in Z and L (see the load diagram).

1.7 Fitting equipment to the robot

General

Extra loads can be fitted on the upper arm housing, the lower arm, and on the frame. Definitions of distances and masses are shown in the following figures. The robot is supplied with holes for fitting extra equipment (see figure in *Holes for fitting extra equipment on page 80*). Maximum allowed arm load depends on center of gravity of arm load and robot payload.

Note

All equipment and cables used on the robot, must be designed and fitted not to damage the robot and/or its parts.

Frame (hip load)

Extra load can be fitted on the frame.

	Description
Permitted extra load on frame	$J_H = 100\ kgm^2$
Recommended position (see the following figure)	$J_H = J_{H0} + M4 \times R^2$ 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 (≤ 250 kg)

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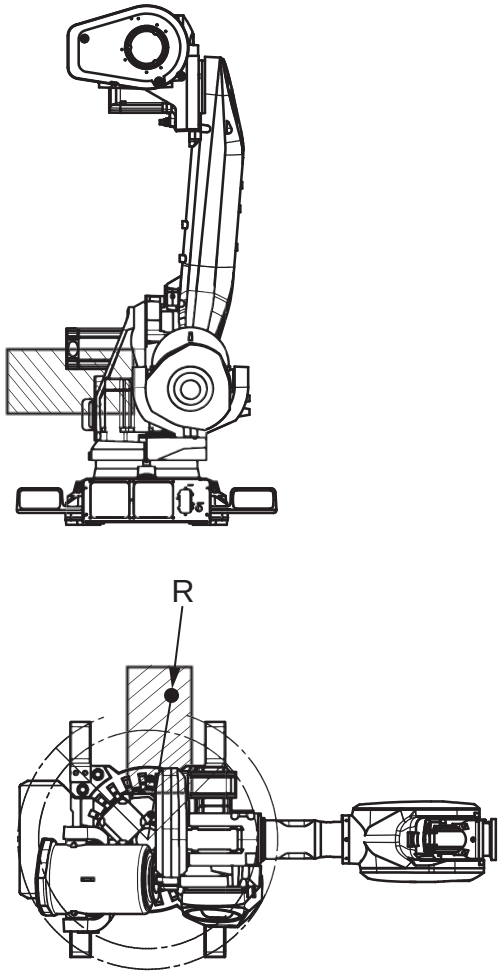
1.7 Fitting equipment to the robot
Continued



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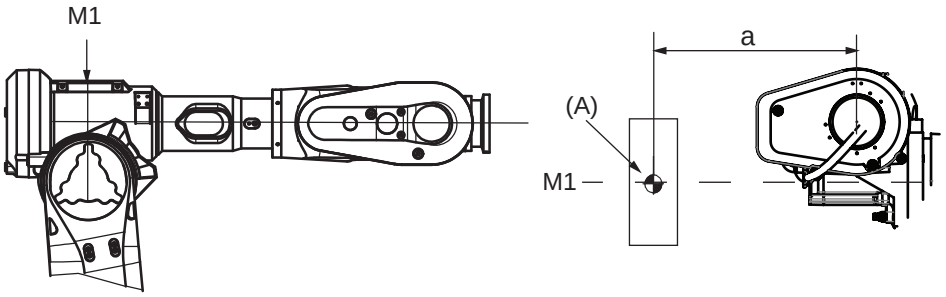
Upper arm

Allowed extra load on the upper arm housing, in addition to the maximum handling weight, is M1 ≤ 50 kg with a distance (a) ≤ 500 mm from the center of gravity in the axis-3 extension.



xx1400002019

A	Mass center

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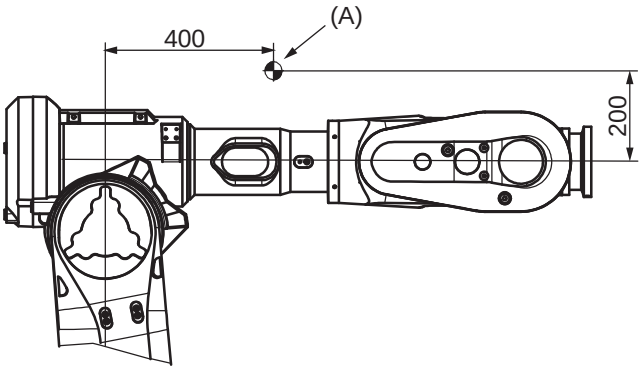

xx1300000866

A	Center of gravity 50 kg

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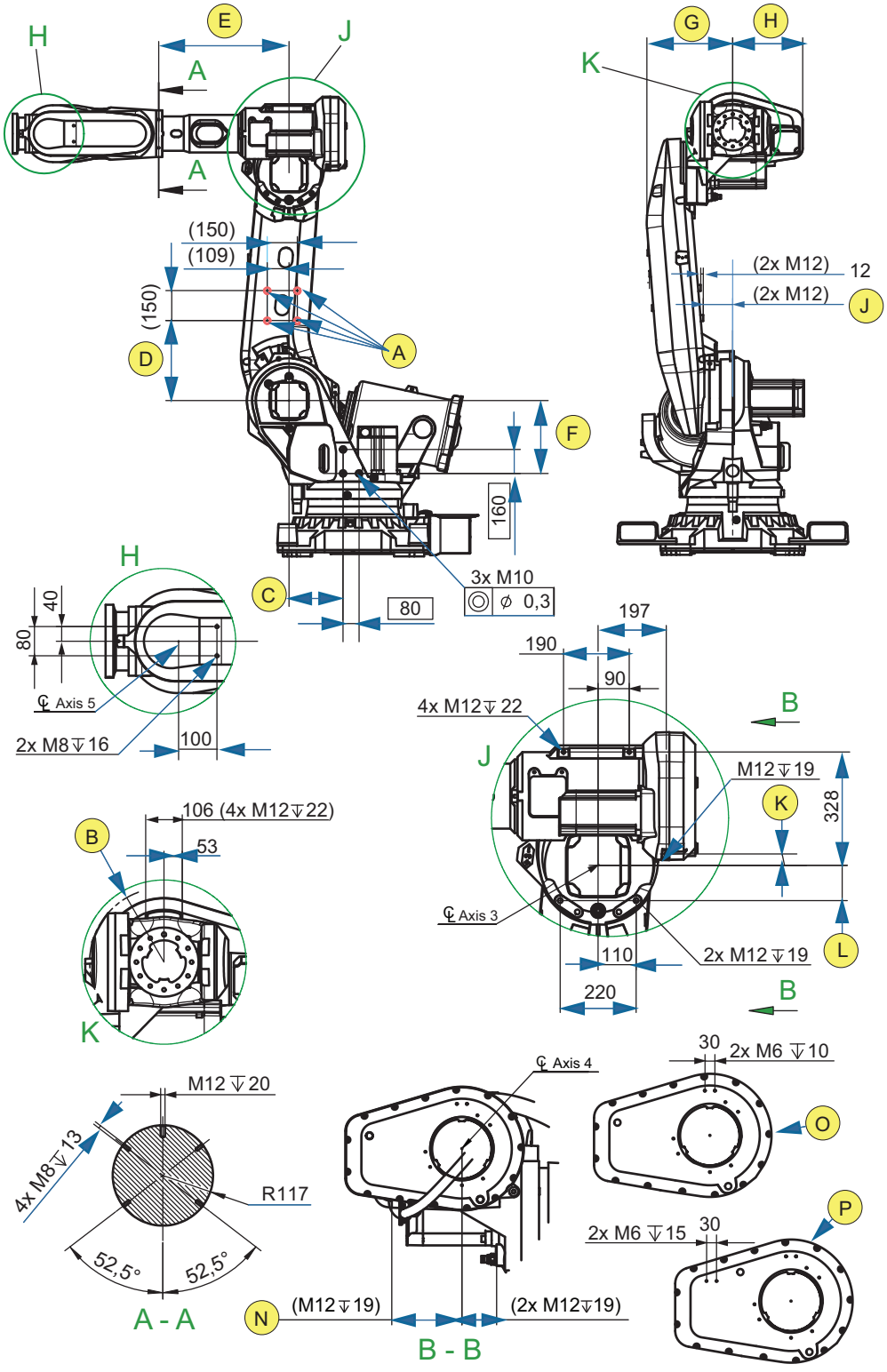
1.7 Fitting equipment to the robot
Continued

Holes for fitting extra equipment

Position of attachment holes - drawing 1



xx1300000263

A	Allowed position for attachment holes, M12 through. Be careful not to touch the cables when drilling.

Continues on next page

O	Attachment holes on arm house cover for extra equipment IRB 6700-235/2.65, IRB 6700-220/2.65 LID, IRB 6700-205/2.80, IRB 6700-200/2.80 LID, IRB 6700-175/3.05, IRB 6700-155/3.05 LID, IRB 6700-150/3.20, IRB 6700-145/3.20 LID IRB 6700-200/2.60, IRB 6700-200/2.60 LID, IRB 6700-155/2.85, IRB 6700-140/2.85 LID
P	Attachment holes on arm house cover for extra equipment IRB 6700-300/2.70, IRB 6700-270/2.70 LID, IRB 6700-245/3.00, IRB 6700-220/3.00 LID

Variant	B[i]	C	D	E	F	G	H	J	K	L	M	N
IRB 6700-235/2.65 IRB 6700-220/2.65 LID	R=216	270	400	652.5	365	437	349	147	33	102	104	210
IRB 6700-205/2.80 IRB 6700-200/2.80 LID	R=216	270	500	652.5	365	437	349	147	33	102	104	210
IRB 6700-175/3.05 IRB 6700-155/3.05 LID	R=216	270	400	652.5	365	437	349	147	33	102	104	210
IRB 6700-150/3.20 IRB 6700-145/3.20 LID	R=216	270	500	652.5	365	437	349	147	33	102	104	210
IRB 6700-200/2.60 IRB 6700-200/2.60 LID	R=204.5	270	400	650.5	365	437	315	143	43	102	95	210
IRB 6700-155/2.85 IRB 6700-140/2.85 LID	R=204.5	270	400	650.5	365	437	315	143	43	102	95	210
IRB 6700-300/2.70 IRB 6700-270/2.70 LID	R=230	310	450	652.5	376	467	405	152	12	117	98.5	215.5
IRB 6700-245/3.00 IRB 6700-220/3.00 LID	R=230	310	450	652.5	376	467	405	152	12	117	98.5	215.5

i Smallest circumscribed radius axis-4.

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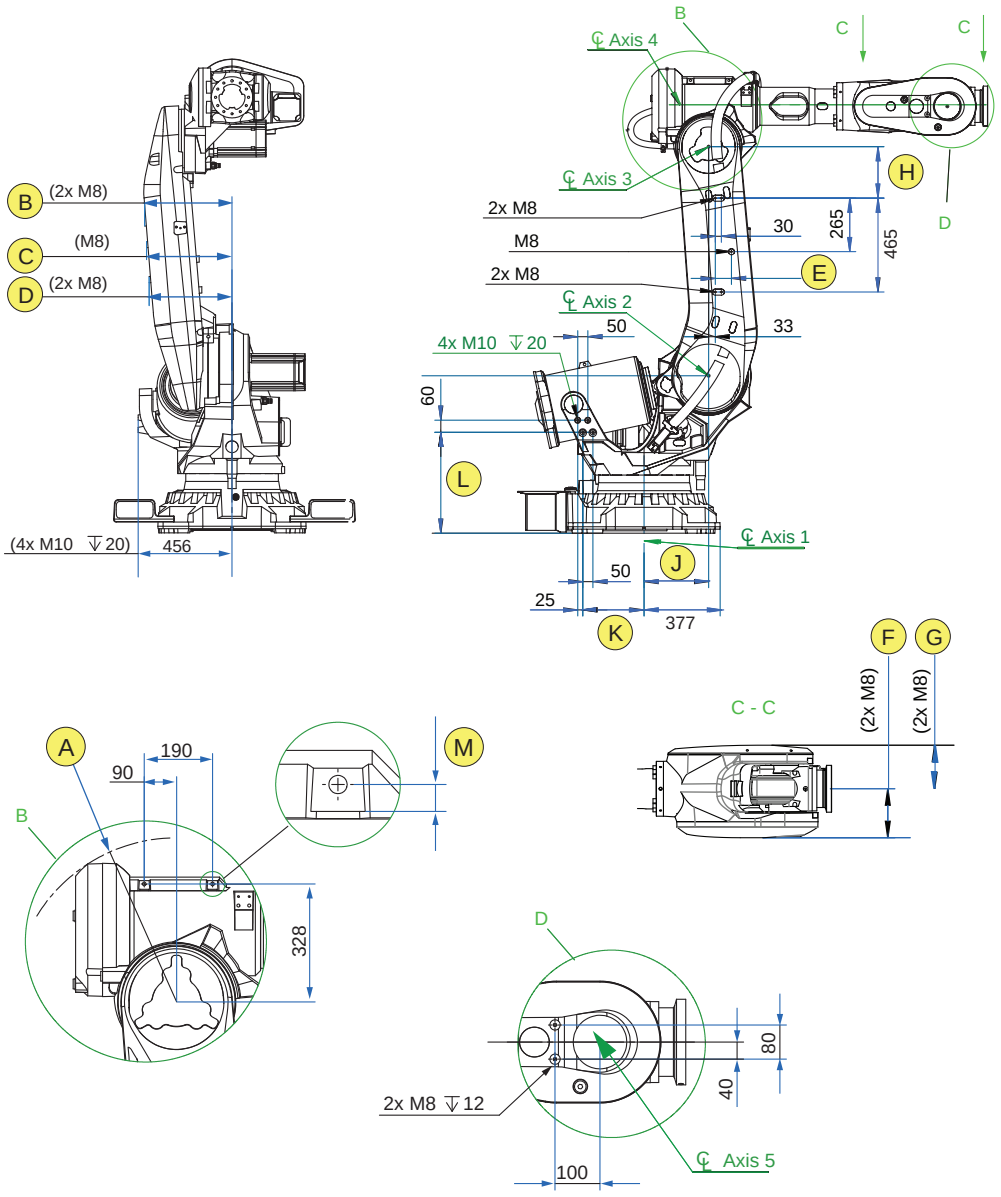
1.7 Fitting equipment to the robot

Continued

Position of attachment holes - drawing 2



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Variant	A[i]	B	C	D	E	F	G	H	J	K	L	M
IRB 6700-235/2.65 IRB 6700-220/2.65 LID	R=456 R=477	433	418	403	80	208.5	186	255	320	303.5	500	13.8
IRB 6700-205/2.80 IRB 6700-200/2.80 LID	R=456 R=477	438	423	408	80	208.5	186	255	320	303.5	500	13.8
IRB 6700-175/3.05 IRB 6700-155/3.05 LID	R=465 R=477	433	418	403	80	208.5	186	255	320	303.5	500	13.8
IRB 6700-150/3.20 IRB 6700-145/3.20 LID	R=456 R=477	438	423	408	80	208.5	186	255	320	303.5	500	13.8
IRB 6700-200/2.60 IRB 6700-200/2.60 LID	R=440 R=472	425	410	395	113	197	193	255	320	303.5	500	13.8

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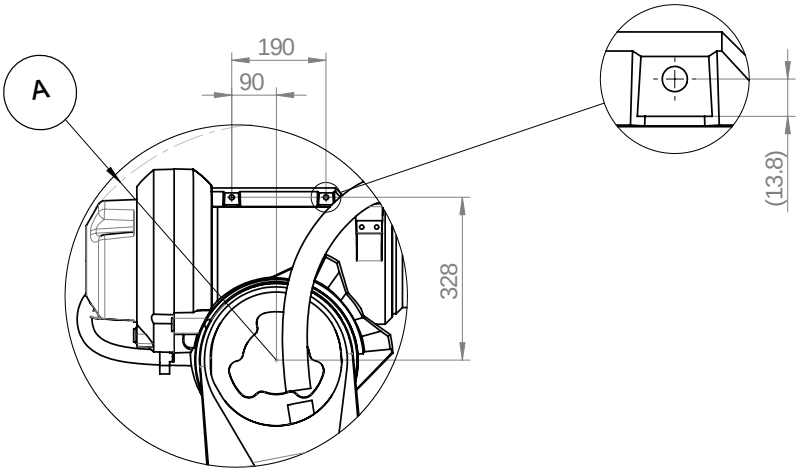
Variant	A[i]	B	C	D	E	F	G	H	J	K	L	M
IRB 6700-155/2.85 IRB 6700-140/2.85 LID	R=440 R=472	425	410	395	113	197	193	255	320	303.5	500	13.8
IRB 6700-300/2.70 IRB 6700-270/2.70 LID	R=468 R=481	453	438	423	80	222.5	187	265	350	273.5	523.5	15
IRB 6700-245/3.00 IRB 6700-220/3.00 LID	R=468 R=481	453	438	423	80	222.5	187	265	350	273.5	523.5	15

i Smallest circumscribed radius axis-3.

Extra cover

There is an extra upper arm cover for LID (LeanID) variants, which causes the value A to be different for the LID variants.



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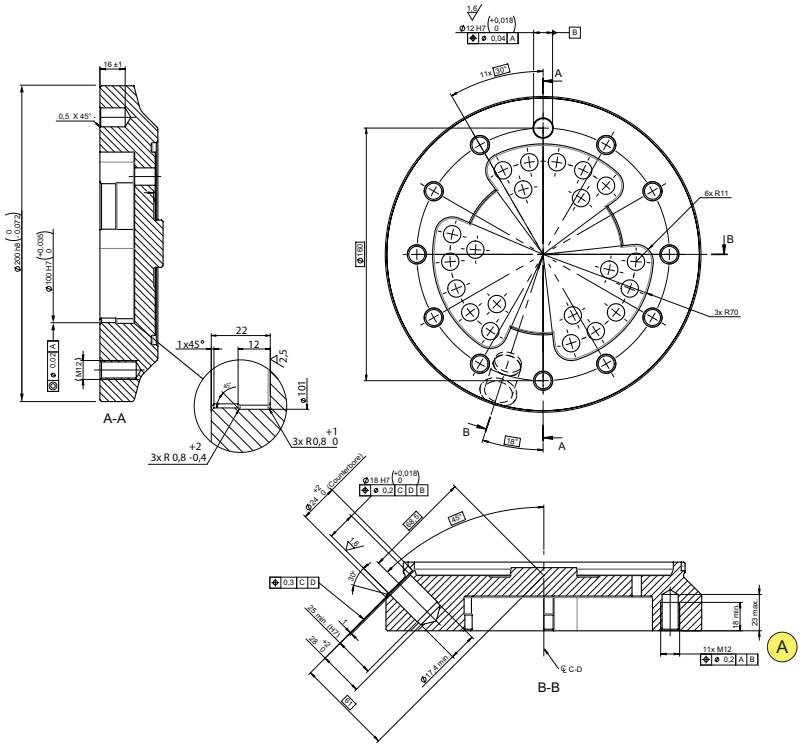
1.7 Fitting equipment to the robot
Continued

Tool flange, standard

Below is the standard tool flange. The guide pin hole is, in calibration position, pointing upwards in Z-direction.



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A	Thread length: 18 mm.

The turning disc for robot variants IRB 6700-200/2.60 and IRB 6700-155/2.85 was redesigned when Axis Calibration was introduced for IRB 6700. Prior to Axis Calibration the holes on the disc were through. On the current turning disc the holes are not through.

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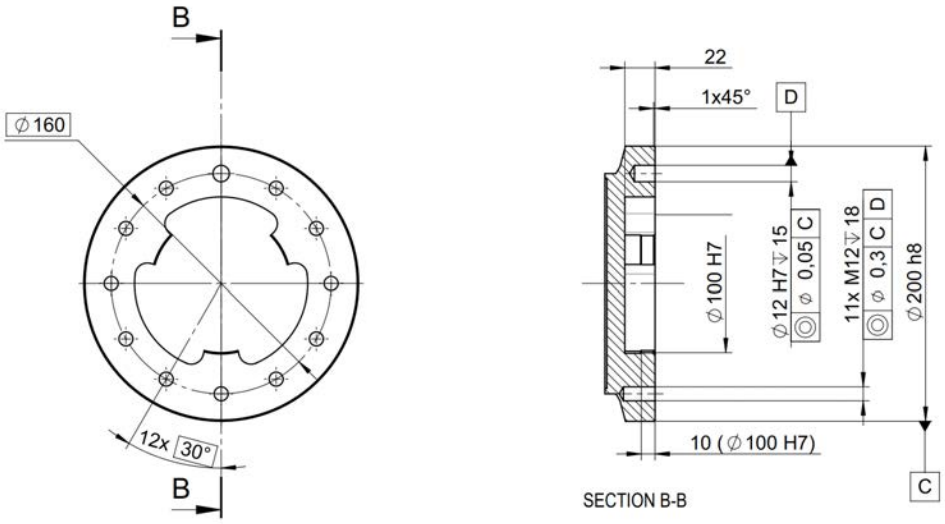

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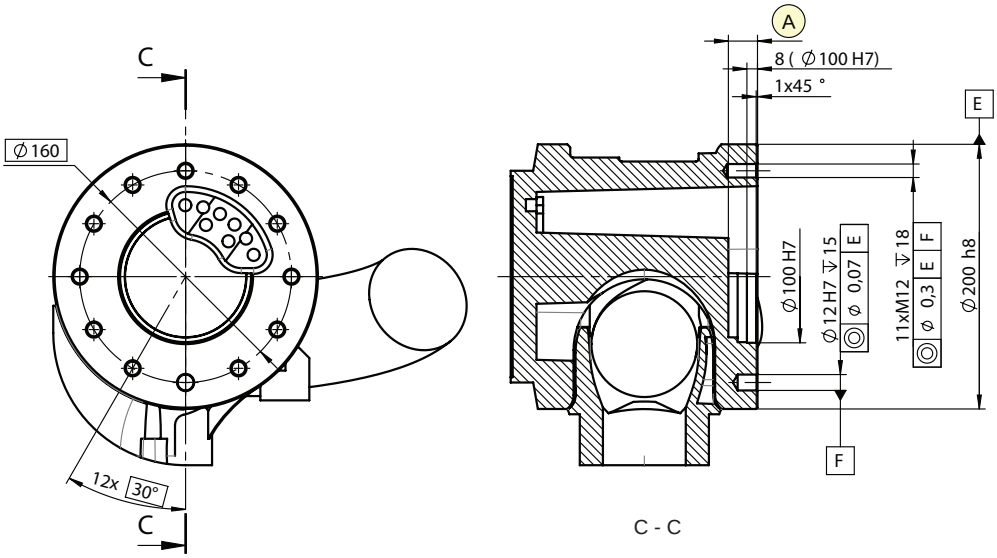
Tool flange, LID variants

Below is the tool flange for LID variants. The guide pin hole is, in calibration position, pointing upwards in Z-direction.



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A	Thread length: 18 mm.

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.

1.8 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 gearboxes.
- 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 depend on the selected options. For detailed information on maintenance procedures, see the maintenance section in the product manuals.

1.9 Robot motion

1.9.1 Robot motion

Type of motion

Axis	Type of motion	Range of movement - IRB 6700	Note
Axis 1	Rotation motion	±170° or ±220° (option)	
Axis 2	Arm motion	-65°/+85° [i]	
Axis 3	Arm motion	-180°/+70°	
Axis 4	Wrist motion	±300°	
Axis 5	Bend motion	±130° [ii]	
Axis 6	Turn motion	±360° [iii]	
		±93.7 revolutions	Maximum value. 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).

i Working range for variants IRB 6700-300/2.70, IRB 6700-270/2.70 LID, IRB 6700-245/3.00, IRB 6700-220/3.00 LID:
+85° to -65° when axis 3 is within +70° to -45°
+85° to -58° when axis 3 is within +70° to -180°

ii Working range +120° to -120° for robots with LID variants.

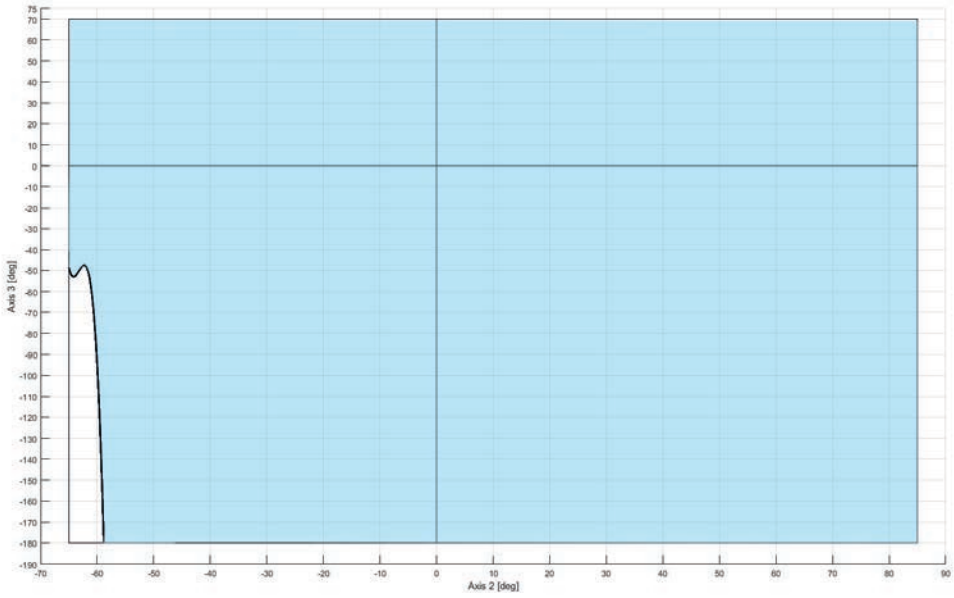
iii Working range +220° to -220° for robots with LID variants.

Continues on next page

1.9.1 Robot motion
Continued

Working range axis 2 and axis 3 for IRB 6700-300/2.70, IRB 6700-270/2.70 LID, IRB 6700-245/3.00 and IRB 6700-220/3.00 LID

Limited in some areas to avoid collision with balancing.



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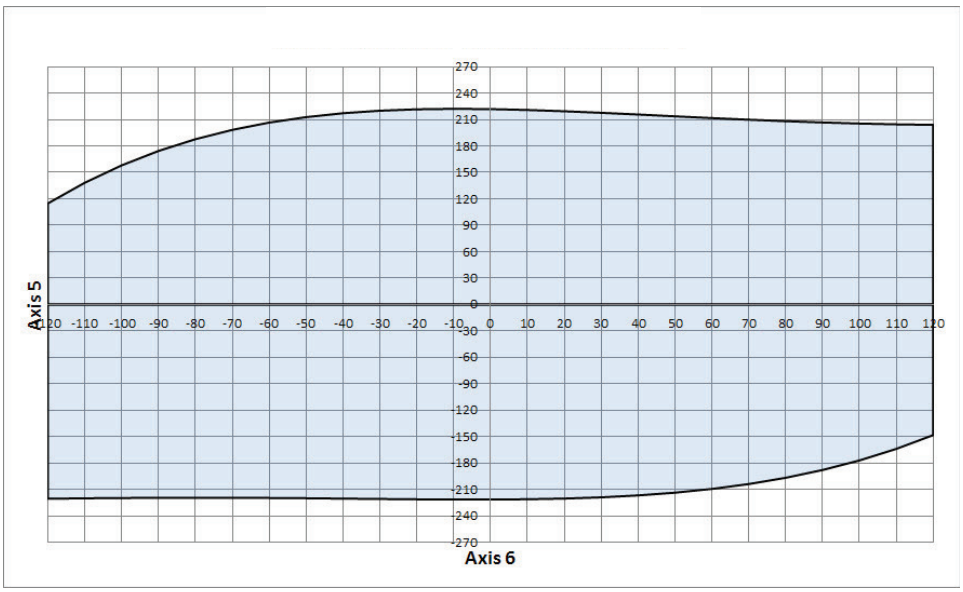
Working range axis 5 and axis 6 for LID variants

Allowed working area for axis 6 related to axis 5 position is shown in the figure below.



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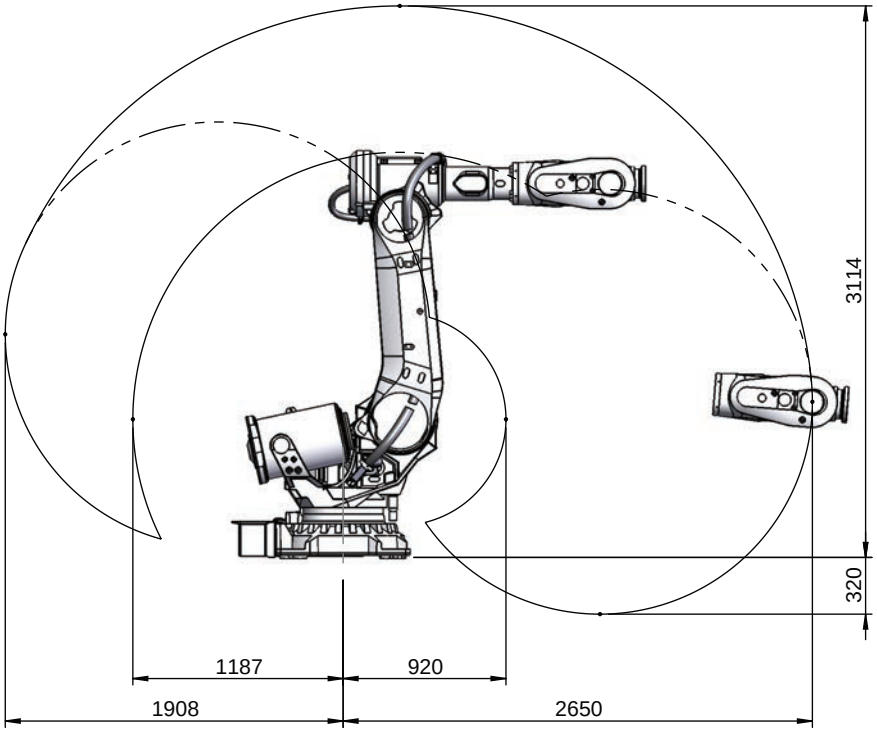
Working range

Robot	Handling capacity (kg)	Reach (m)
IRB 6700	235	2.65
IRB 6700 (LID variant)	220	2.65



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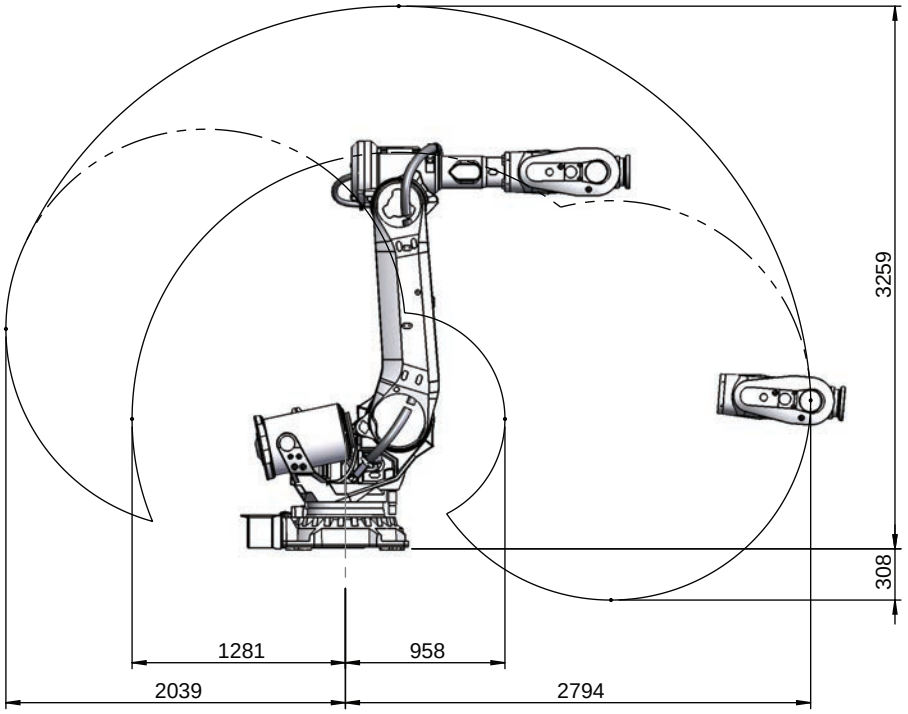
1.9.1 Robot motion

Continued

Robot	Handling capacity (kg)	Reach (m)
IRB 6700	205	2.80
IRB 6700 (LID variant)	200	2.80



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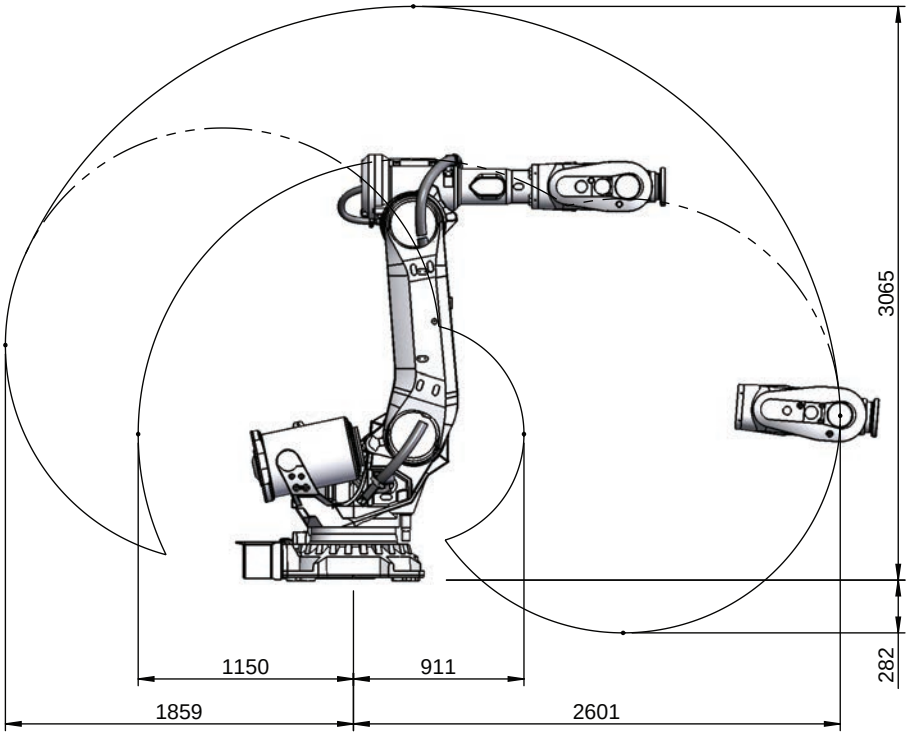
Robot	Handling capacity (kg)	Reach (m)
IRB 6700	200	2.60
IRB 6700 (LID variant)	175	2.60



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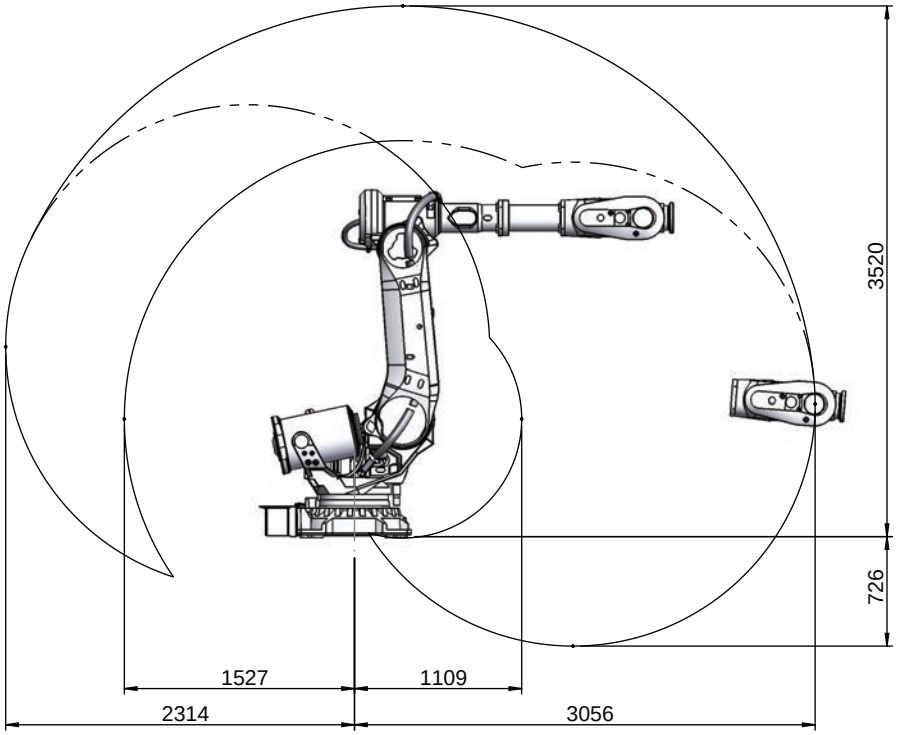
1.9.1 Robot motion

Continued

Robot	Handling capacity (kg)	Reach (m)
IRB 6700	175	3.05
IRB 6700 (LID variant)	155	3.05



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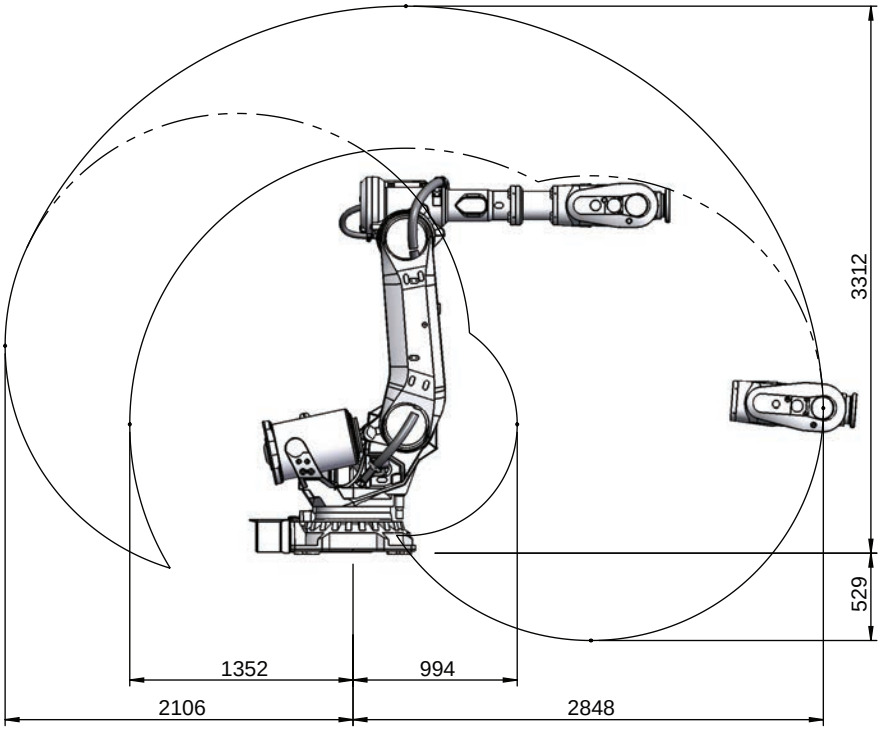
Robot	Handling capacity (kg)	Reach (m)
IRB 6700	155	2.85
IRB 6700 (LID variant)	140	2.85



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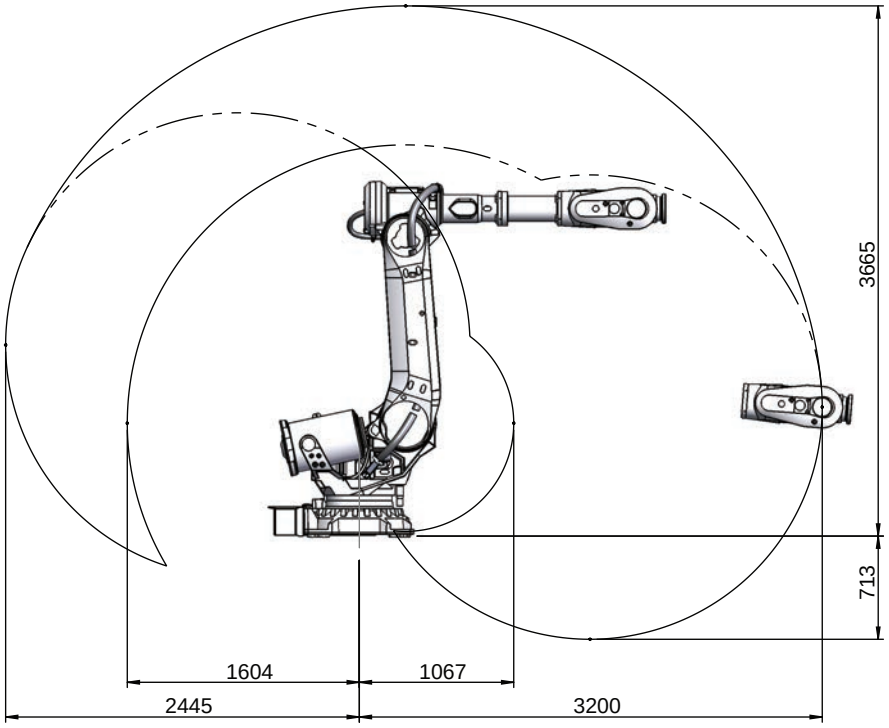
1.9.1 Robot motion

Continued

Robot	Handling capacity (kg)	Reach (m)
IRB 6700	150	3.20
IRB 6700 (LID variant)	145	3.20



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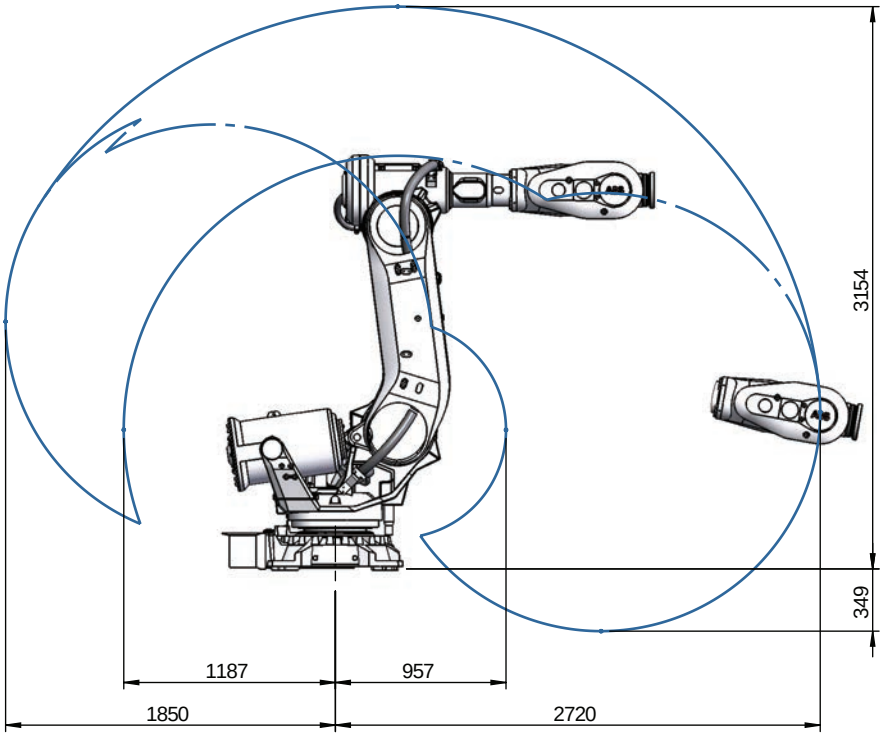
Robot	Handling capacity (kg)	Reach (m)
IRB 6700	300	2.70
IRB 6700 (LID variant)	270	2.70



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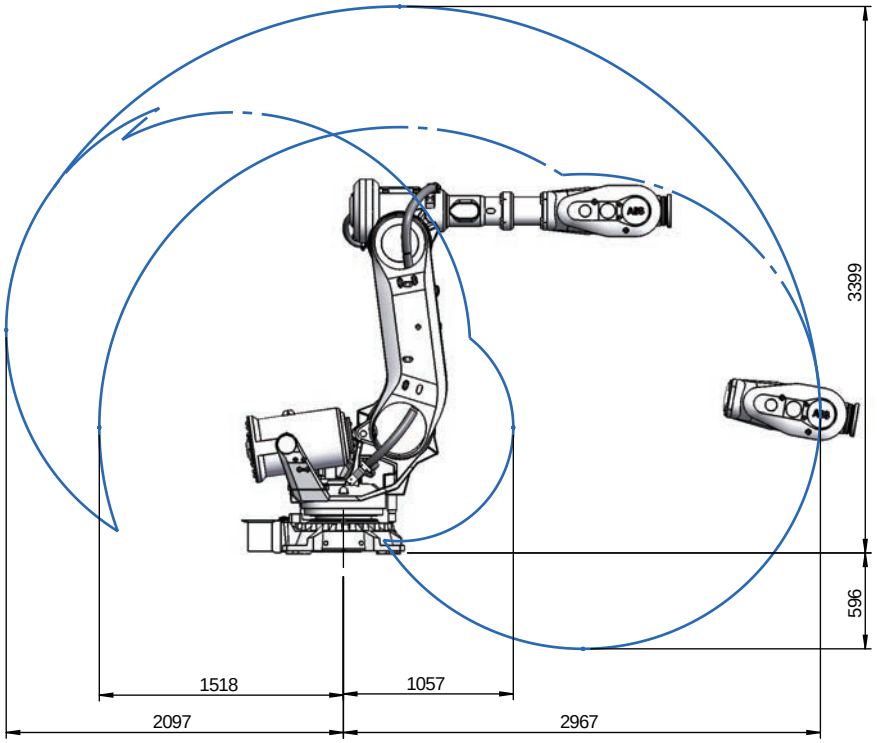
1.9.1 Robot motion

Continued

Robot	Handling capacity (kg)	Reach (m)
IRB 6700	245	3.00
IRB 6700 (LID variant)	220	3.00



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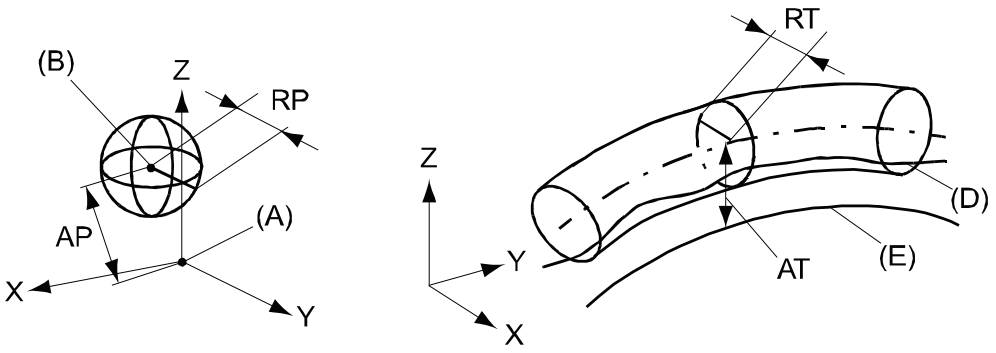
1.9.2 Performance according to ISO 9283

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 6700	235/2.65 and 220/2.65 LID	205/2.80 and 200/2.80 LID	175/3.05 and 155/3.05 LID	150/3.20 and 145/3.20 LID
Pose accuracy, AP (mm)[i]	0.03	0.06	0.04	0.05
Pose repeatability, RP (mm)	0.05	0.05	0.05	0.06
Pose stabilization time, PSt (s) within 0.5 mm of the position	0.16	0.17	0.28	0.34
Path accuracy, AT (mm)	1.7	1.5	1.9	1.6
Path repeatability, RT (mm)	0.08	0.08	0.12	0.14

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

Continues on next page

1.9.2 Performance according to ISO 9283
Continued

IRB 6700	200/2.60 and 175/2.60 LID	155/2.85 and 140/2.85 LID	300/2.70 and 270/2.70 LID	245/3.00 and 220/3.00 LID
Pose accuracy, AP (mm)[i]	0.03	0.05	0.07	0.02
Pose repeatability, RP (mm)	0.05	0.05	0.06	0.05
Pose stabilization time, PSt (s) within 0.5 mm of the position	0.07	0.17	0.11	0.14
Path accuracy, AT (mm)	1.8	1.7	1.4	1.5
Path repeatability, RT (mm)	0.06	0.12	0.07	0.12

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

1.9.3 Velocity

Maximum axis speed

Robot type	Axis 1	Axis 2	Axis 3	Axis 4	Axis 5	Axis 6
IRB 6700-235/2.65	100 °/s	90 °/s	90 °/s	170 °/s	120 °/s	190 °/s
IRB 6700-220/2.65 LID	100 °/s	90 °/s	90 °/s	170 °/s	120 °/s	190 °/s
IRB 6700-205/2.80	100 °/s	90 °/s	90 °/s	170 °/s	120 °/s	190 °/s
IRB 6700-200/2.80 LID	100 °/s	90 °/s	90 °/s	170 °/s	120 °/s	190 °/s
IRB 6700-200/2.60	110 °/s	110 °/s	110 °/s	190 °/s	150 °/s	210 °/s
IRB 6700-175/2.60 LID	110 °/s	110 °/s	110 °/s	190 °/s	150 °/s	210 °/s
IRB 6700-175/3.05	100 °/s	90 °/s	90 °/s	170 °/s	120 °/s	190 °/s
IRB 6700-155/3.05 LID	100 °/s	90 °/s	90 °/s	170 °/s	120 °/s	190 °/s
IRB 6700-155/2.85	110 °/s	110 °/s	110 °/s	190 °/s	150 °/s	210 °/s
IRB 6700-140/2.85 LID	110 °/s	110 °/s	110 °/s	190 °/s	150 °/s	210 °/s
IRB 6700-150/3.20	100 °/s	90 °/s	90 °/s	170 °/s	120 °/s	190 °/s
IRB 6700-145/3.20 LID	100 °/s	90 °/s	90 °/s	170 °/s	120 °/s	190 °/s
IRB 6700-300/2.70	100 °/s	88 °/s	90 °/s	140 °/s	110 °/s	180 °/s
IRB 6700-270/2.70 LID	100 °/s	88 °/s	90 °/s	140 °/s	110 °/s	180 °/s
IRB 6700-245/3.00	100 °/s	88 °/s	90 °/s	140 °/s	110 °/s	180 °/s
IRB 6700-220/3.00 LID	100 °/s	88 °/s	90 °/s	140 °/s	110 °/s	180 °/s
	100 °/s	88 °/s	90 °/s	140 °/s	110 °/s	180 °/s
	100 °/s	88 °/s	90 °/s	140 °/s	110 °/s	180 °/s
	100 °/s	88 °/s	90 °/s	140 °/s	110 °/s	180 °/s
IRB 6700-210/2.90 LID	100 °/s	88 °/s	90 °/s	140 °/s	110 °/s	180 °/s

There is a supervision function to prevent overheating in applications with intensive and frequent movements (high duty cycle).

1.9.4 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*).

1.10 Cooling fan for axis 1 motor

Introduction

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 axis 1.

Valid protection for cooling fan is IP54. Fan failure stops the robot. The option is not allowed to select when the robot is placed on a track motion, IRBT.

To determine the use of cooling fan for axis 1 motor use the function **Gearbox Heat Prediction Tool** in RobotStudio. Reliable facts for the decision of need for fan or not will be achieved by entering the ambient temperature for a specific cycle. Contact your local ABB organization.

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2 DressPack

2.1 Introduction

2.1.1 Included options

DressPack

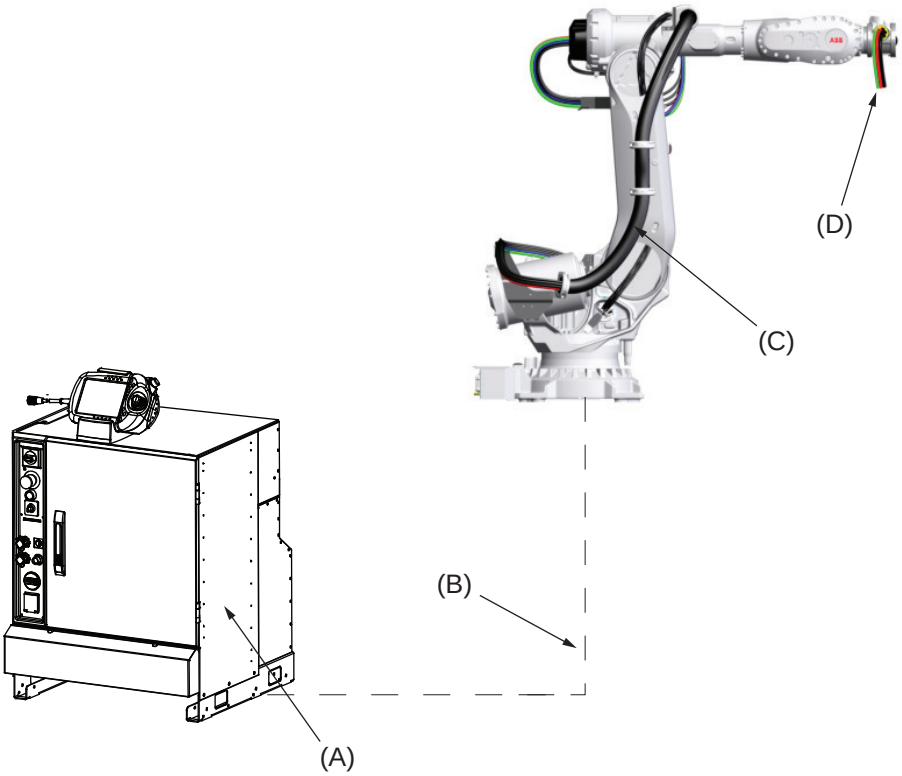
Includes options for upper arm, lower arm and floor pos B, C and D, see the following figure. These are described separately below but are designed as a complete package for various applications.

The DressPack for the floor contains customer signals.

The DressPack for upper and lower arm contains process cable packages including signals, for customer use.

Necessary supports and brackets are also included.

The routing of the process cable package on the robot is available in different configurations.



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Pos	Description
A	Robot controller, (including 7th axis drive for servo gun)
B	DressPack, floor
C	DressPack, lower arm
D	DressPack, upper arm

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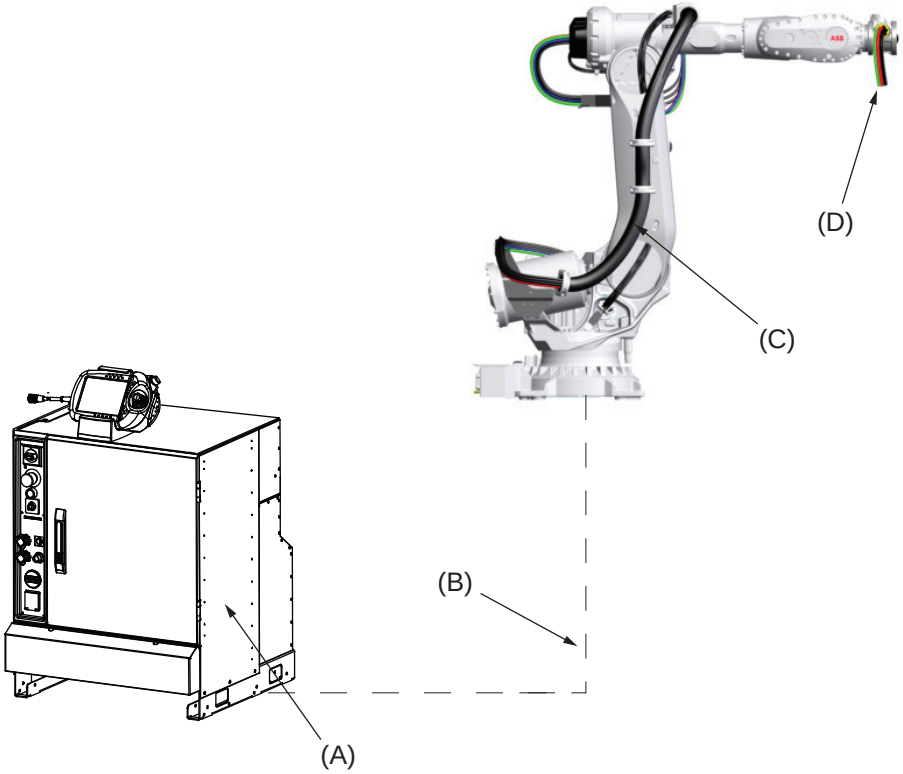
2.1.1 Included options
Continued

Spotwelding

The package supplies above described DressPack, transformer gun/gripper with necessary media and software, see the following figure.



xx1300001588

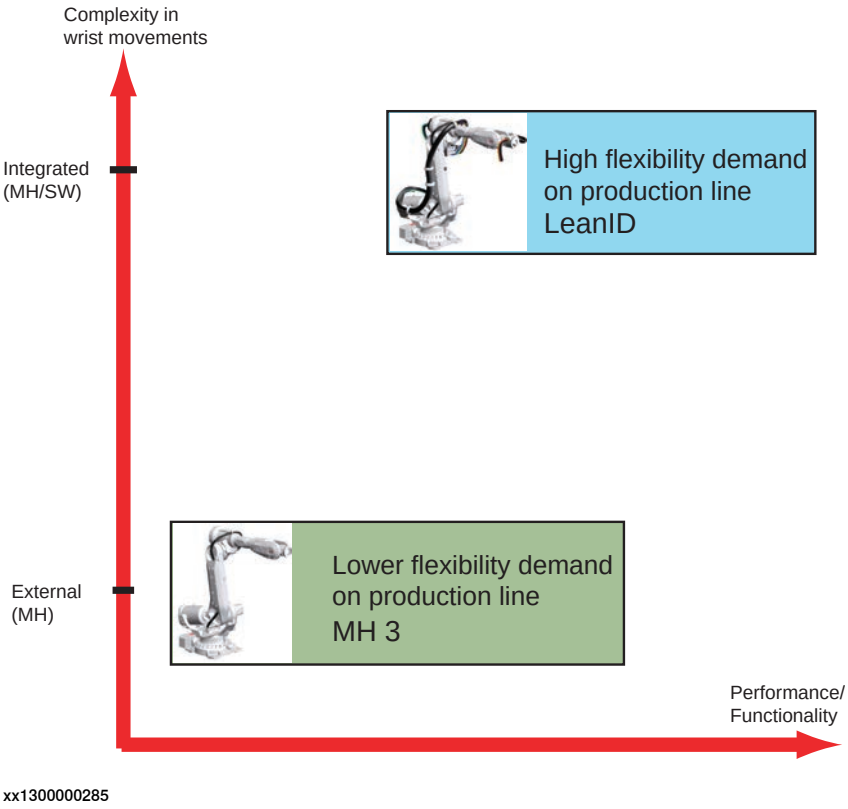
Pos	Description
A	Robot controller, (including 7th axis drive for servo gun)
B	DressPack, floor
C	DressPack, lower arm
D	DressPack, upper arm

2.1.2 Product range

DressPack solutions for different users needs

The different robot types can be equipped with the well integrated cable and hose packages in the DressPack options. The DressPack is designed in close conjunction with the development of the manipulator and is therefore well synchronized with the robot.

As there is a big span between different users need of flexibility, depending of the complexity of the operation/wrist movements, there are two major levels of dress pack solutions available, see Figure below.



Integrated

This type of dress pack is intended for a production where there are many complex wrist movements and the need for flexibility in changing products is high.

Available options are 3325-11/12/13/14/15 and 3326-31/32/33/34/35 for material handling, the LeanID concept.

External

This type of dress pack is recommended where there are less complexity in wrist movements. This normally occurs when there are not many different products running in the production cell. This package requires more individual adjustment to optimize towards robot program at set up.

Available options are 3325-11/12/13/14/15 and 3326-11/12/13/14/15 for material handling.

2.1.3 Limitations of robot movements

General

When using DressPack options on the upper arm the robot movements will be limited.

- In bending backwards positions there are limitations due to interference with manipulator.
- Might restrict working range, see *Working range axis 5 and axis 6 for LID variants on page 88*.

Note

For more details, contact your local ABB office.

Restrictions for all LID variants

Limitation for axis 5 and 6 depends on how the dress pack is assembled at the tool and how adjustment has been done.

Axis	Working range
Axis 5	120° to -120°
Axis 6	220° to -220°

2.1.4 Impact on MH3 DressPack lifetime

General

There are some robot movements/positions that shall be avoided in the robot production program. This will improve the lifetime significantly of external upper arm MH3 DressPack and wear parts e.g. protection hose, hose reinforcement and protective sleeves.

- The axis 5 movement is not allowed to press the DressPack against the robot upper arm.
- Combined rotation of the wrist axes must be limited so that the DressPack is not wrapped hard against the upper arm.

See the Product Manual for more detailed information and recommended set-up adjustments.

2.2 DressPack

2.2.1 Introduction

Available DressPack configurations for Material Handling

The table below shows the different DressPack configurations available for Material Handling.

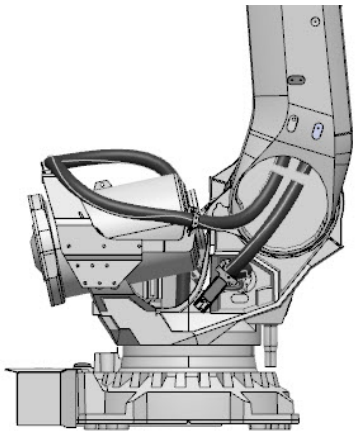
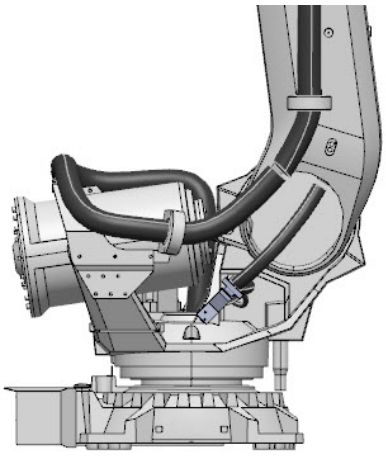
	Lower arm	Upper arm
Material Handling	Option 3325-5x, Base to axis 3 Internal routing in lower arm	Option 3326-1x, Axis 3 to axis 6 External routing
		Option 3326-3x, Axis 3 to axis 6 (LID) Internal routing

Available DressPack configurations for Spot Welding

The table below shows the different DressPack configurations available for Spot Welding.

	Lower arm	Upper arm
Spot Welding	Option 3325-5x/6x Base to axis 3	Option 3326-5x/6x Int. Axis 3 to 6 (LeanID) Internal routing

Lower arm

	
Internal routing in lower arm Option 3325-1x, Base to axis 3	External routing Option 3325-1x, Base to axis 3

2.2.2 Built-in features for upper arm DressPack

External

Material handling (option 3326-1x, Axis 3 to axis 6)

- Internal routing through the rear part of the upper arm.
- Protection hose can easily be replaced if damaged.
- One version for all IRB 6700 variants.
- Adjustment for optimal hose/cable lengths.
- Easy exchange of DressPack

Internal

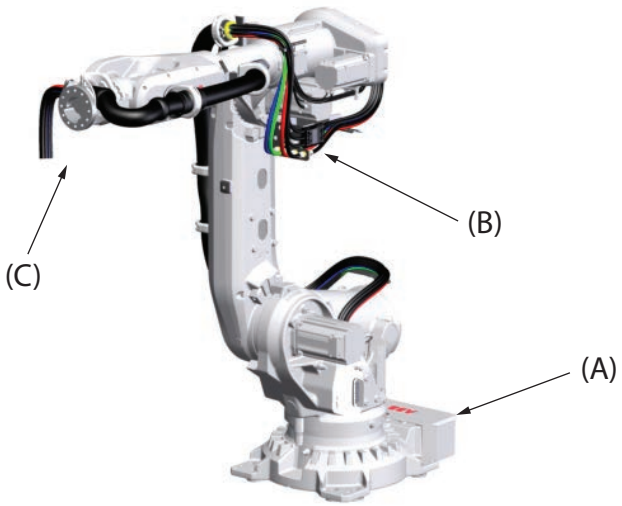
Material handling (option 3326-3x, Axis 3 to axis 6 (LID)), or spot welding (option 3326-5x/6x, Axis 3 to axis 6 (LID))

- Partly internal routing through the upper arm.
- Suitable for complex movements.
- High demands for flexibility and accessibility.
- Longer life time
- Predictable movements
- Easy exchange of DressPack

2.2.3 Interface descriptions for DressPack

General

Below is an overview showing the different DressPack options connection points, and their locations. For detailed information see the circuit diagram, and product manual for the manipulator.



xx1300000224

Pos	Location	Description	Options
A	Base	FB7, CP/CS/CBUS/Ethernet	3325-1x
B	Axis 3	CP/CS/CBUS/Ethernet	3325-1x
C	Axis 6	CP/CS/CBUS/Ethernet, WELD	3326-1x, 3326-3x

Base

Material handling (option 3325-11/12), see figure below:

- Included are: A, one D (Proc 1).

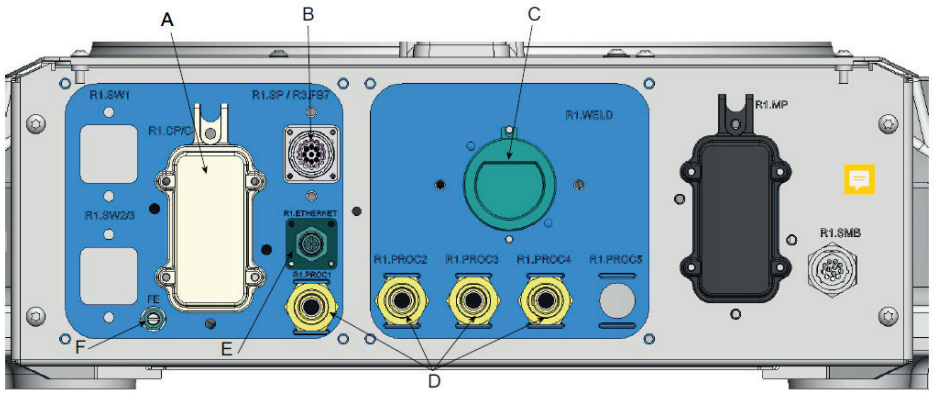
Material handling (option 3325-13/14/15), see figure below:

- Included are: A, E, F and one D.

Spot welding (option 3325-5x/6x), see figure below:

- Included are: A, B (if applicable), C, D (Proc 1-4) and E, F (if applicable).

Continues on next page



xx1900001501

For corresponding parts of the tool, see *Connector kits on page 128*.

Pos	Description
A	R1.CP/CS
B	R1.SP (spot welding servo gun) or FB7 (resolver connection)
C	R1.WELD 3x35mm^2 (spot welding)
D	R1.PROC 1 (material handling/spot welding 1/2", M22x1.5, 24 degree seal) R1.PROC 2 - 4 (spot welding 1/2", M22x1.5, 24 degree seal)
E	R1.ETHERNET (M12 connector, when EtherNet communication is selected)
F	FE (functional earth, when EtherNet communication is selected)

Axis 3

Material handling (option 3325-11), see figure below:

- Included are: A and one C (Proc 1).

Material handling (option 3325-12), see figure below:

- Included are: A, G and one C (Proc 1).

Material handling (option 3325-13/14/15), see figure below:

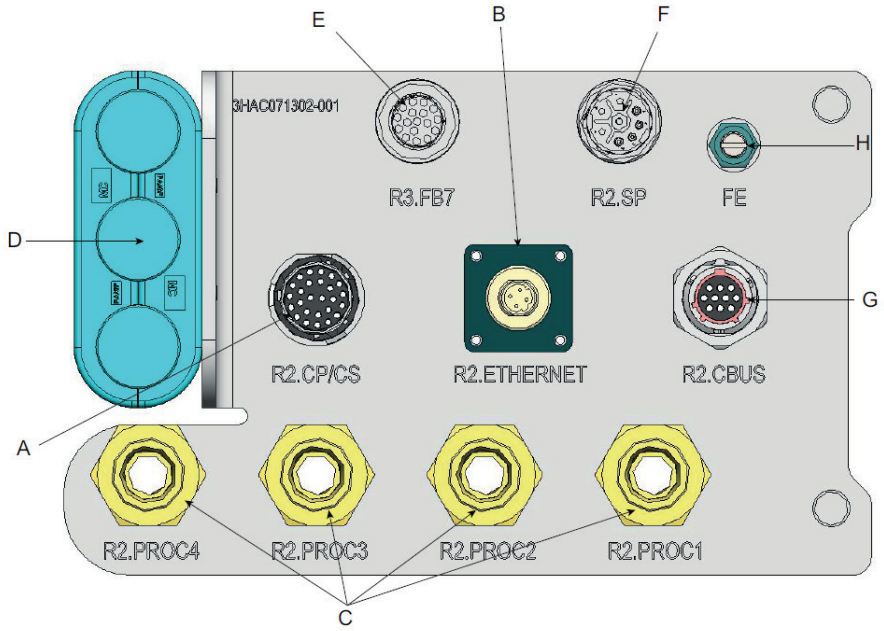
- Included are: A, G, B, H and one C (Proc 1).

Spot welding (option 3325-5x/6x), see figure below:

- Included are: A, D, B/E/F/G/H (if applicable) and C (Proc 1-4).

Continues on next page

2.2.3 Interface descriptions for DressPack
Continued



xx1900001511

For corresponding parts of the tool, see *Connector kits on page 128*.

Pos	Description
A	R2.CP/CS
B	R2.ETHERNET (M12 connector, when EtherNet communication is selected)
C	R2.PROC 1 (material handling 1/2", M22x1.5, 24 degree seal) R2.PROC 2-4 (spot welding 1/2", M22x1.5, 24 degree seal)
D	R2.WELD 3x35mm^2 (spot welding)
E	R2.FB7
F	R2.SP (spot welding servo gun)
G	R2.CBUS (UTOW connector when DeviceNet communication is selected)
H	FE (functional earth, when EtherNet communication is selected)

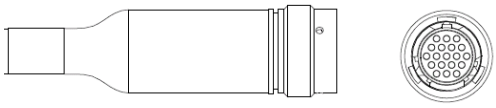
Axis 6

External

Material handling (option 3326-1x), see figure below:

- Hose and cable free length, min. 1,000 mm
- Air hose ends with free end.

The cable ends with a connector, the main parts are described in the list below (for corresponding parts of the tool, see *Connector kits on page 128*):



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Material handling connector

Material handling (option 3326-1x), see figure below:

- Cable free length, min. 1,000 mm
- Signals are connected with an M12 connector.

The connectors are the same as for option 3326-3x/5x. The difference is the free length of the cables.

Name	Harting article
PIN connector, R3.ETHERNET	21 03 881 1405
PIN	61 03 000 0094

xx1100000956

Material handling connector (LeanID)

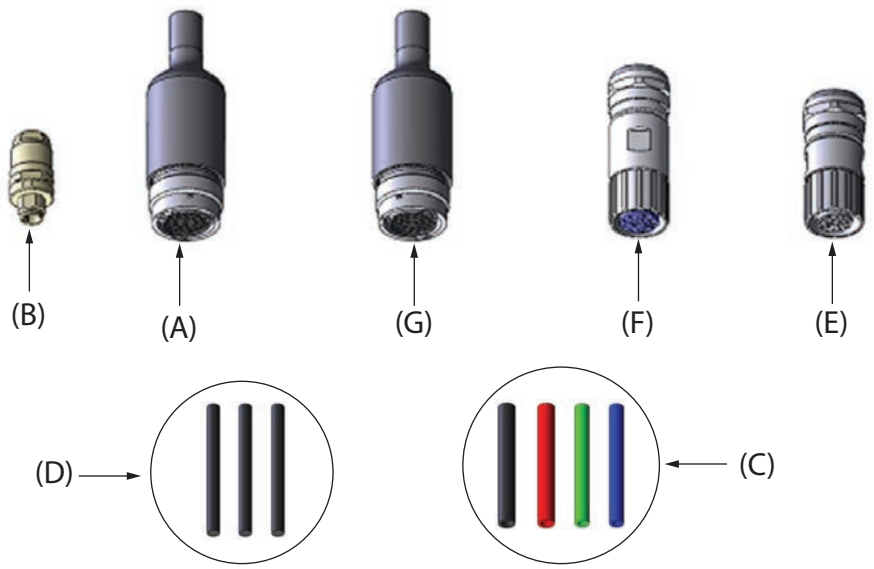
Material handling option 3326-3x/54/55 (LeanID), see figure below:

- Hose and cable free length, min. 1,160 mm
- Hoses with free end.

The cable ends with connectors, for corresponding parts of the tool, see *Connector kits on page 128* and within the UTOW product offer.

Continues on next page

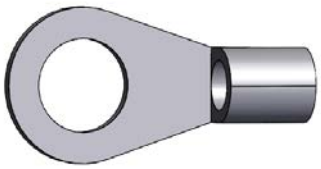
2.2.3 Interface descriptions for DressPack
Continued



xx1200000117

Pos	Description
A	R3.CP/CS (UTOW connector 26p) Customer signals and power
B	R3.ETHERNET (M12 connector) EtherNet signals (when EtherNet communication is selected)
C	R3.PROC 1-2 (1/2", free end) R3.PROC 2-4 (3/8", free end) Media hoses
D	R3.WELD 3x25mm^2 (free end) Spot Welding power
E	R3.FB7 (M23 connector 17p) Servo motor feedback (when Spot Welding Servo gun is selected)
F	R3.SP (M23 connector 8p) Servo motor power (when Spot Welding Servo gun is selected)
G	R3.CBUS (UTOW connector 10p) BUS signals (when DeviceNet communication is selected)

- FE (M8 cable lug), when Ethernet option 3326-13/33/34/35/54/55 is selected



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2.2.4 Dimensions

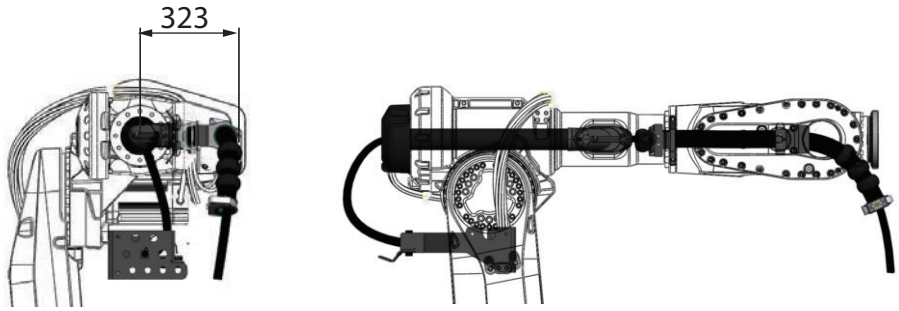
Dimensions for robot with DressPack

Note

Dimensions for specific variant can be measured in 3D-Cad models.

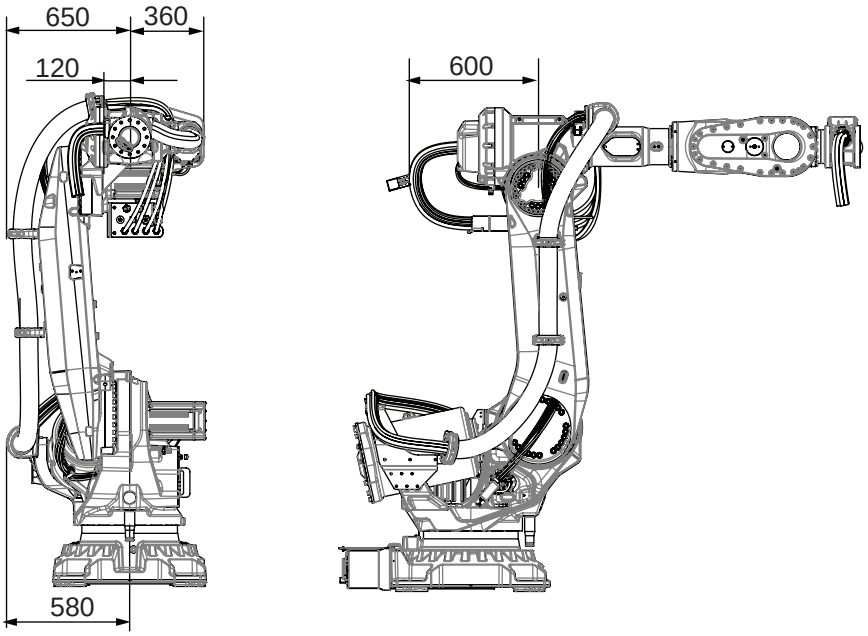
Dimensions are shown in figures below.

Material handling, axis 3 to axis 6 (option 3326-1x)



xx2200000418

Spotwelding option 3325-5x/6x (Base to axis 3) + Option 3326-5x/6x (Axis 3 to axis 6)



xx1300000287

Material handling option 3325-1x (Base to axis 3) + Option 3326-3x (Axis 3 to axis 6)

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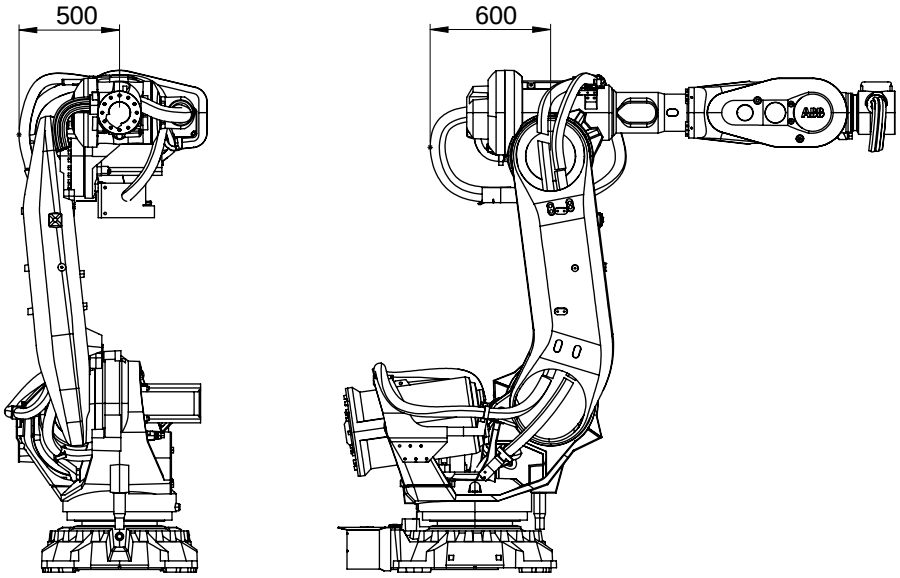
2.2.4 Dimensions
Continued



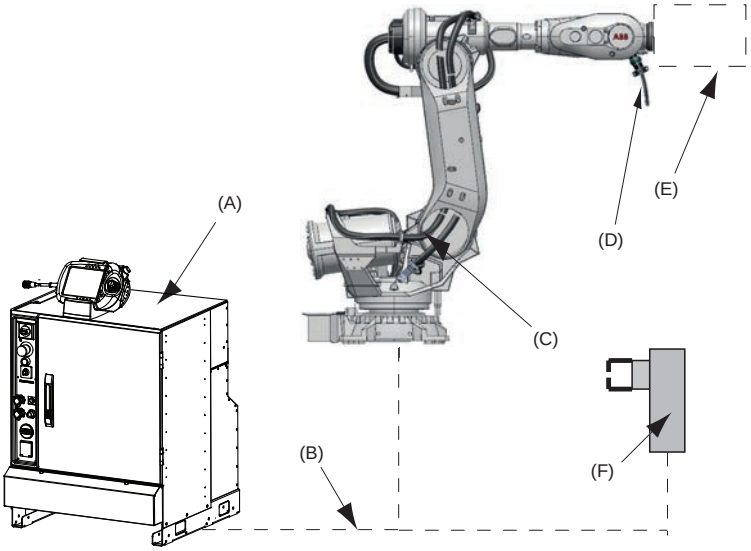
xx2000001776

2.3 Type H/HSe

2.3.1 Introduction

General

Variant Type H is designed for Material Handling (MH) application and Hse to handling parts against a stationary Spot Welding gun (pneumatic or servo controlled). Included modules are shown in Figure below.



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Pos	Name	
A	Robot controller	Incl. 7:th axis drive for servo gun, HSe
B	DressPack, Floor	
C	DressPack, Lower arm	
D	DressPack, Upper arm	For type H and HSe
E	Robot Gripper	
F	Stationary gun	Pneumatic or servo controlled and HSe

2.3.2 Configuration result for Type H HSe

General

Depending on the choice of options above the DressPack will have different content. The choice of routing will not affect the content. See tables for signal content below.

DressPack Type H/HSe. Parallel communication

The table below shows the available type of wires/media.

Type	At terminals in cabinet	At connection point. Base, Axis 3 or axis 6	Cable/part area	Allowed capacity
Customer Power (CP)				
Utility Power	2+2	2+2	0.75 mm^2	250 VAC, 5 A rms
Protective earth		1	0.75 mm^2	250 VAC
Customer Signals (CS)				
Signals	13	13	0.2 mm^2	50 V DC, 1 A rms
Signals separate shielded	8	8 (4x2)	0.2 mm^2	50 V DC, 1 A rms
Media				
Air (PROC 1)		1	12.5 mm inner diameter	Max. air pressure 16 bar/230 PSI

Continues on next page

DressPack Type H/HSe. Parallel and field bus communication, Can/DeviceNet

The table below shows the available type of wires/media.

Type	At terminals in cabinet	At Connection point. Base, Axis 3 or axis 6	Cable/part area	Allowed capacity
Customer Power (CP)				
Utility Power	2+2	2+2	0.75 mm^2	250 VAC, 5 A rms
Protective earth		1	0.75 mm^2	250 VAC
Customer Signals (CS)				
Signals	13	13	0.2 mm^2	50 V DC, 1 A rms
Signals separate shielded	8	8 (4x2)	0.2 mm^2	50 V DC, 1 A rms
Customer bus (CBus)				
Bus signals	At bus board	2	0.14 mm^2	Can/DeviceNet spec
Bus signals	At bus board	2	0.2 mm^2	50 V DC, 1 A rms
Media				
Air (PROC 1)		1	12.5 mm inner diameter	Max. air pressure 16 bar/230 PSI

Continues on next page

2.3.2 Configuration result for Type H HSe
Continued

DressPack Type H/HSe. Parallel and field bus communication, Ethernet

The table below shows the available type of wires/media.

Type	At terminals in cabinet	At connection point. Base, Axis 3 or axis 6	Cable/part area	Allowed capacity
Customer Power (CP)				
Utility Power	2+2	2+2	0.75 mm^2	250 VAC, 5 A rms
Protective earth		1	0.75 mm^2	250 VAC
Customer Signals (CS)				
Signals	13	13	0.2 mm^2	50 V DC, 1 A rms
Signals separate shielded	8	8 (4x2)	0.2 mm^2	50 V DC, 1 A rms
Customer bus (Ethernet)				
Bus signals	4	4	0.4 mm^2	Ethernet CAT 5e, 100 Mbit [i]
Media				
Air (PROC 1)		1	12.5 mm inner diameter	Max. air pressure 16 bar/230 PSI

[i] Ethernet with wire colors according to PROFINET standard, M12-connectors.

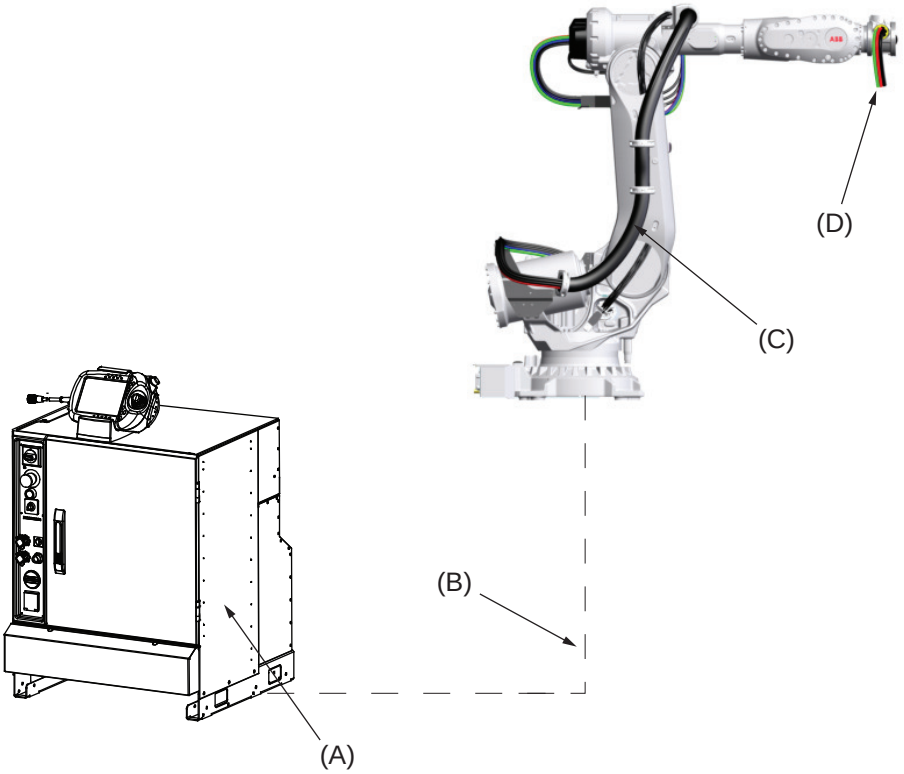
Continues on next page

2.4 Type Se

2.4.1 Introduction

General

Variant Type Se is designed for robot handled servo-controlled tool (electrical gun). Included modules are shown in Figure below. Available configurations with linked option numbers are described below.



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Position	Name
A	Robot controller (including 7th axis drive), Se
B	DressPack, Floor
C	DressPack, Lower arm
D	DressPack, Upper arm

2.4.2 Configuration result for Type Se

DressPack Type Se. Parallel communication

The table below shows the available type of wires/media for type S.

Type S	At terminals in cabinet	At connection point. Base, axis 3 or axis 6	Cable/part area	Allowed capacity
Customer Power (CP)				
Utility Power	2+2	2+2	0.75 mm^2	250 VAC, 5 A rms
Protective earth		1	0.75 mm^2	250 VAC
Customer Signals (CS)				
Signals	13	13	0.2 mm^2	50 V DC, 1 A rms
Signals separate shielded	8	8 (4x2)	0.2 mm^2	50 V DC, 1 A rms
Media				
Water/Air (PROC 1-4)		4	12.5 mm inner diameter [i]	Max. air pressure 16 bar/ 230 PSI Max. water pressure 10 bar/ 145 PSI
Welding power (WELD)				
Lower and Upper arm		2	35 mm^2 [ii]	600 VAC, 150 A rms at 20 °C (68 °F)
Protective earth (Lower and Upper arm)		1		

[i] For LeanID 2x1/2" + 2x3/8", only upper arm
[ii] For LeanID upper arm 25 mm^2, only upper arm, 135 A rms

Continues on next page

The table below shows the available type of wires/media for type Se.

Type Se	At terminals in cabinet	At connection point. Base, axis 2/3 or axis 6	Cable/part area	Allowed capacity
Customer Power (CP)				
Utility Power	2+2	2+2	0.75 mm^2	250 VAC, 5 A rms
Protective earth		1	0.75 mm^2	250 VAC
Customer Signals (CS)				
Signals	13	13	0.2 mm^2	50 V DC, 1 A rms
Signals separate shielded	8	8 (4x2)	0.2 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 resolver	-	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 1-4)		4	12.5 mm inner diameter [i]	Max. air pressure 16 bar/ 230 PSI. Max. water pressure 10 bar/ 145 PSI
Welding power (WELD)				
Lower and Upper arm		2	35 mm^2 [ii]	600 VAC, 150 A rms at 20°C (68°F)
Protective earth (Lower and Upper arm)		1		

i For LeanID 2x1/2" + 2x3/8", only upper arm
ii For LeanID upper arm 25 mm^2, only upper arm, 135 A rms

Continues on next page

2.4.2 Configuration result for Type Se
Continued

DressPack Type Se. Parallel and field bus communication, Can/DeviceNet

The table below shows the available type of wires/media for type S.

Type S	At terminals in cabinet	At connection point. Base, axis 3 or axis 6	Cable/part area	Allowed capacity
Customer Power (CP)				
Utility Power	2+2	2+2	0.75 mm^2	250 VAC, 5 A rms
Protective earth		1	0.75 mm^2	250 VAC
Customer signals (CS)				
Signals	13	13	0.2 mm^2	50 V DC, 1 A rms
Signals separate shielded	8	8 (4x2)	0.2 mm^2	50 V DC, 1 A rms
Customer bus (CBus)				
Bus signals	At bus board	2	0.14 mm^2	Can/DeviceNet spec
Bus signals	At bus board	2	0.23 mm^2	50 V DC, 1 A rms
Media				
Water/Air (PROC 1-4)		4	12.5 mm inner diameter [i]	Max. air pressure 16 bar/230 PSI Max. water pressure 10 bar/145 PSI.
Welding power (WELD)				
Lower and Upper arm		2	35 mm^2 [ii]	600 VAC, 150 A rms at 20°C (68°F)
Protective earth (Lower and Upper arm)		1		

i For LeanID 2x1/2" + 2x3/8", only upper arm
ii For LeanID upper arm 25 mm^2, only upper arm, 135 A rms

Continues on next page

The table below shows the available type of wires/media for type Se.

Type Se	At terminals in cabinet	At connection point. Base, axis 3 or axis 6	Cable/part area	Allowed capacity
Customer Power (CP)				
Utility Power	2+2	2+2	0.75 mm^2	250 VAC, 5 A rms
Protective earth		1	0.75 mm^2	250 VAC
Customer signals (CS)				
Signals	13	13	0.2 mm^2	50 V DC, 1 A rms
Signals separate shielded	8	8 (4x2)	0.2 mm^2	50 V DC, 1 A rms
Customer bus (CBus)				
Bus signals	At bus board	2	0.14 mm^2	Can/DeviceNet spec
Bus signals	At bus board	2	0.23 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 resolver	-	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 1-4)		4	12.5 mm inner diameter [i]	Max. air pressure 16 bar/230 PSI. Max. water pressure 10 bar/145 PSI.
Welding power (WELD)				
Lower and Upper arm		2	35 mm^2 [ii]	600 VAC, 150 A rms at 20°C (68°F)
Protective earth (Lower and Upper arm)		1		

i For LeanID 2x1/2" + 2x3/8", only upper arm
ii For LeanID upper arm 25 mm^2, only upper arm, 135 A rms

Continues on next page

2.4.2 Configuration result for Type Se
Continued

DressPack Type Se. Parallel and field bus communication, Ethernet

The table below shows the available type of wires/media for type S.

Type S	At terminals in cabinet	At connection point. Base, axis 3 or axis 6	Cable/part area	Allowed capacity
Customer Power (CP)				
Utility Power	2+2	2+2	0.75 mm^2	250 VAC, 5 A rms
Protective earth		1	0.75 mm^2	250 VAC
Customer signals (CS)				
Signals	13	13	0.2 mm^2	50 V DC, 1 A rms
Signals separate shielded	8	8 (4x2)	0.2 mm^2	50 V DC, 1 A rms
Customer bus (Ethernet)				
Bus signals	4	4	0.4 mm^2	Ethernet CAT 5e, 100 Mbit [i]
Media				
Water/Air (PROC 1-4)		4	12.5 mm inner diameter [ii]	Max. air pressure 16 bar/230 PSI Max. water pressure 10 bar/145 PSI.
Welding power (WELD)				
Lower and Upper arm		2	35 mm^2 [iii]	600 VAC, 150 A rms at 20°C (68°F)
Protective earth (Lower and Upper arm)		1		

i Ethernet with wire colors according to PROFINET standard, M12-connectors.
ii For LeanID 2x1/2" + 2x3/8"
iii For LeanID upper arm 25 mm^2, 135 A rms

Continues on next page

The table below shows the available type of wires/media for type Se.

Type Se	At terminals in cabinet	At connection point. Base, axis 2/3 or axis 6	Cable/part area	Allowed capacity
Customer Power (CP)				
Utility Power	2+2	2+2	0.75 mm^2	250 VAC, 5 A rms
Protective earth		1	0.75 mm^2	250 VAC
Customer signals (CS)				
Signals	13	13	0.2 mm^2	50 V DC, 1 A rms
Signals separate shielded	8	8 (4x2)	0.2 mm^2	50 V DC, 1 A rms
Customer bus (Ethernet)				
Bus signals	4	4	0.4 mm^2	Ethernet CAT 5e, 100 Mbit [i]
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 resolver	-	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 1-4)		4	12.5 mm inner diameter [ii]	Max. air pressure 16 bar/230 PSI. Max. water pressure 10 bar/145 PSI.
Welding power (WELD)				
Lower and Upper arm		2	35 mm^2 [iii]	600 VAC, 150 A rms at 20°C (68°F)
Protective earth (Lower and Upper arm)		1		

[i] Ethernet with wire colors according to PROFINET standard, M12-connectors.
[ii] For LeanID 2x1/2" + 2x3/8"
[iii] For LeanID upper arm 25 mm^2, 135 A rms

Continues on next page

2.5 Connector kits

General

The connector kits are described in section *Connector kits manipulator on page 140*.

3 Specification of variants and options

3.1 Introduction to variants and options

General

The different variants and options for the IRB 6700 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.

3.2 Manipulator

Variants

Option	IRB Variants	Handling capacity (kg)	Reach (m)
3300-34	6700 - 300/2.70	300	2.70
3300-35	6700 - 270/2.70 LID	270	2.70
3300-36	6700 - 245/3.00	245	3.00
3300-37	6700 - 220/3.00 LID	220	3.00
3300-38	6700 - 235/2.65	235	2.65
3300-39	6700 - 220/2.65 LID	220	2.65
3300-40	6700 - 205/2.80	205	2.80
3300-41	6700 - 200/2.80 LID	200	2.80
3300-42	6700 - 200/2.60	200	2.60
3300-43	6700 - 175/2.60 LID	175	2.60
3300-44	6700 - 175/3.05	175	3.05
3300-45	6700 - 155/3.05 LID	155	3.05
3300-46	6700 - 155/2.85	155	2.85
3300-47	6700 - 140/2.85 LID	140	2.85
3300-48	6700 - 150/3.20	150	3.20
3300-49	6700 - 145/3.20 LID	145	3.20

Manipulator color

Option	Color	RAL code[i]
209-1	ABB orange standard Standard color with protection option 3352-10 Foundry Plus2 67	NCS 2070-Y60R
209-202	ABB Graphite White std Standard color with protection option 3350-670 Base 67	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

Continues on next page

Requirements

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

Note

It is strongly recommended, if Foundry Plus robots in another color than ABB orange is required, that only colors in a yellow nuance are selected, if not the robot can look discolored after a while in the foundry environment. The protection is still preserved in any color.

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.

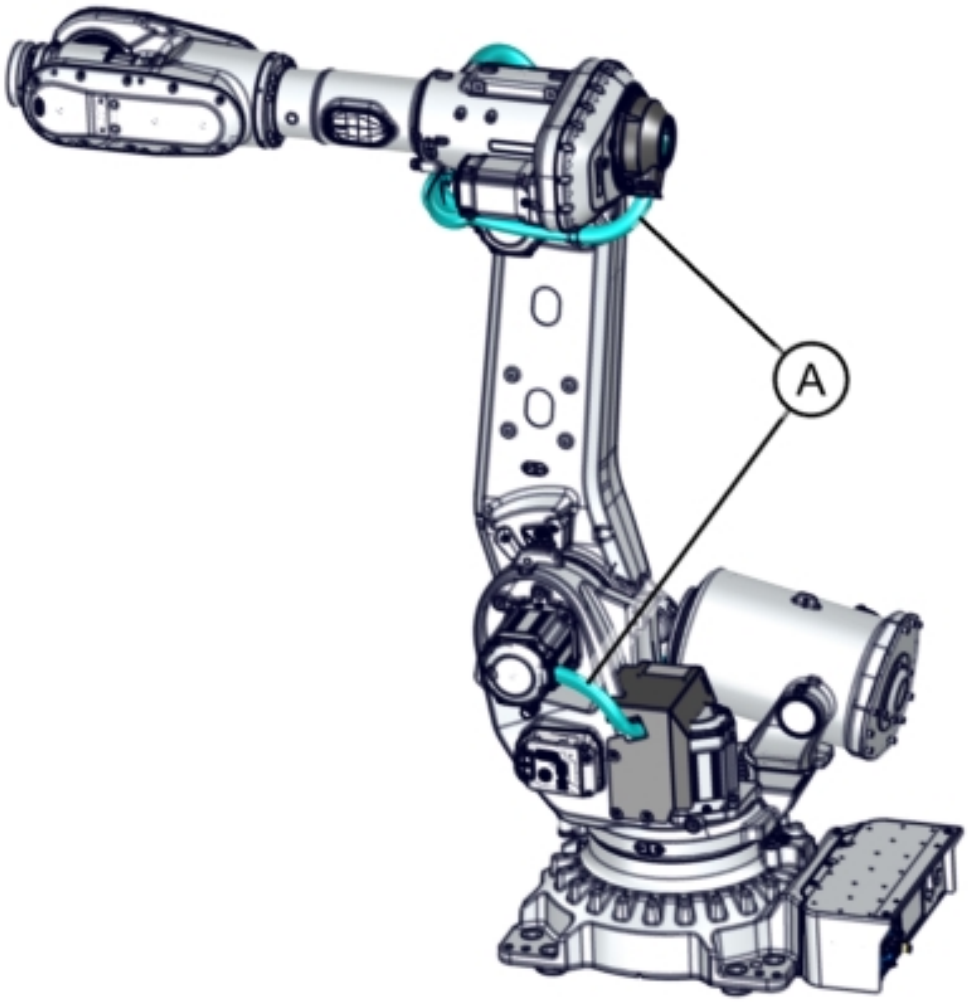
The option *Foundry Cable Guard* is recommended for *Foundry Plus2*.

Requirements

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

Continues on next page

Foundry cable guards for manipulator cable harness



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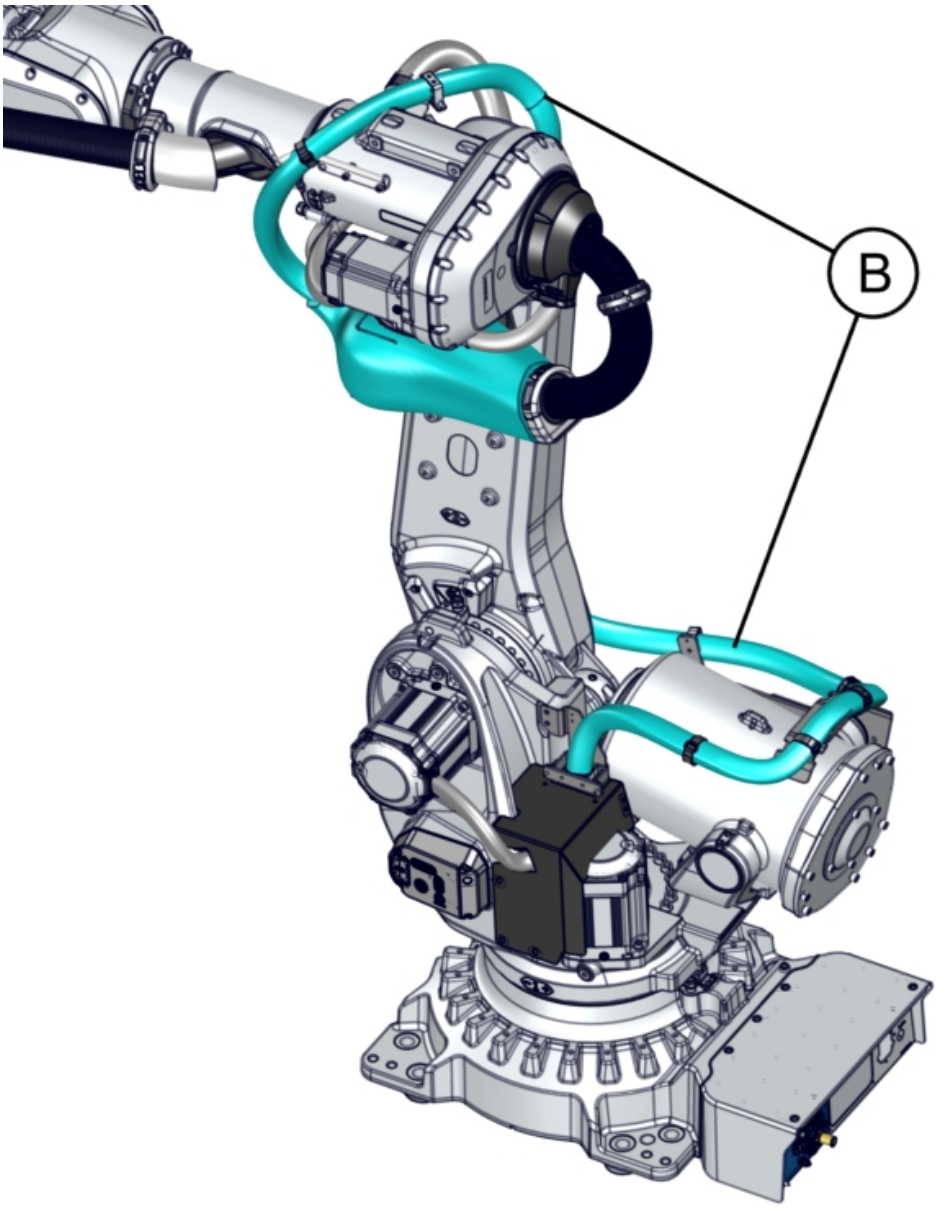
Schematic illustration

A	Foundry cable guard for manipulator cable harness

Continues on next page

Foundry cable guard for DressPack



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Schematic illustration

B	Foundry cable guard for DressPack

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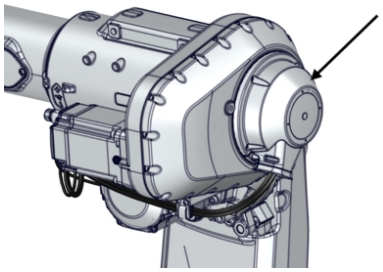
Upper arm cover

Option	Description	Image
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.	 xx2500000237

Requirements

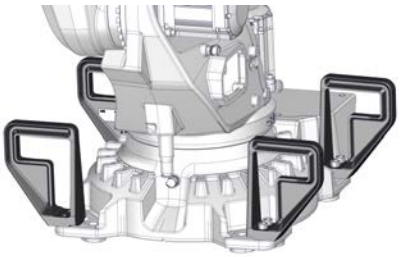
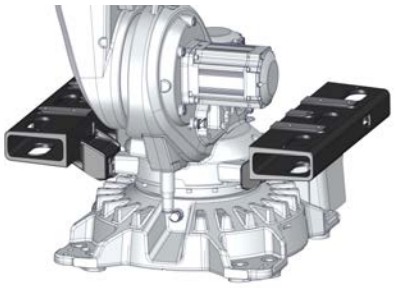
This option is mandatory to order with the option *Foundry Plus2 [3352-10]*.

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

This option is mandatory to order with the option *DressPack axis 3-6* [3326-x].

Forklift device

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

Option	Description	
3318-1	Forklift device on base Forklift pockets placed on the base gives a low lifting point.	 xx2300001244
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.	 xx2300001243

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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

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.

Resolver connection 7th axis

Option	Description
3322-1	On base
3322-2	In servo DressPack This option is required for the option 3325-x DressPack base-axis 3 including servo.

Option 3222-2 In servo DressPack adds a connection point for the 7th axis servo feedback on the frame of the robot to be used in servo DressPack.

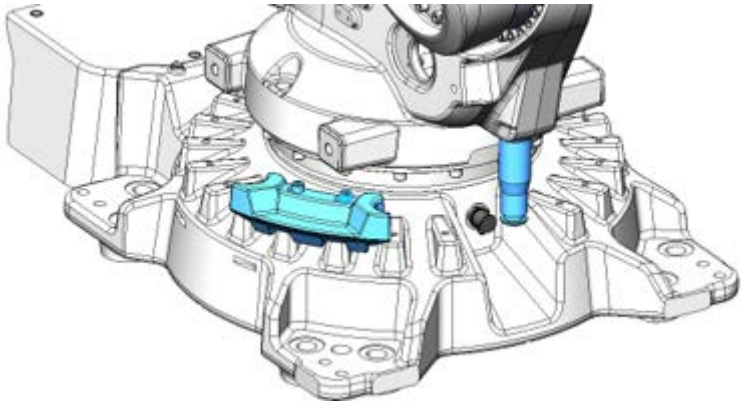
Limited working range

Option	Description
3323-1	Axis 1 adjustable 15°
3323-3	Axis 1 adjustable 7.5°

The manipulator can be equipped with adjustable mechanical stops. This is to mechanically limit the working range on axis 1. The mechanical stops are delivered alongside the robot (not installed). The stops can be placed in steps according to the option.

For detailed information see *Mechanically restricting the working range of axis 1 on page 35*.

Continues on next page



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Tip

An alternative to mechanical stops is to use safe supervision of the working range limitations. This requires the option *SafeMove Standard+*. See the product specification for the respective robot controller.

Extended working range

Option	Description	
3324-1	Axis 1 to ±220°	The option extends the working range on axis 1 from ±170° to ±220°.

CAUTION

The option *Extended work range* enables an extension of the working range for axis 1, through a software configuration. With this option installed, the working range can exceed the range limited by the mechanical stop on axis 1. The working range shall be limited through the option SafeMove.

A risk analysis must be done to ensure that no risks remain when using option *Extended work range*, to limit the working range, and before removing the mechanical stops.

For information about the option SafeMove, see *Application manual - Functional safety and SafeMove*.

If the mechanical stop is removed, then the manipulator should have a marking for this, for example, a label. If the robot is delivered with the option *Extended work range*, then such a label is included on delivery.

Requirements

This option requires the option *SafeMove* [3043-x].

3.3 Floor cables

Note

To comply with the EMC directive, the total cable length (including cables for the motor connection box) must not exceed 30 m between:

Controller and robot (IRB)

Controller and motor & gear units (MU/GU) or track motion (IRT)

Controller and positioner (IRP)

Manipulator cable length

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

3.4 Application manipulator

DressPack base-axis 3

Option	Description	Additional information
3325-11	MH Parallel	
3325-12	MH DeviceNet	Includes parallel signals
3325-13	MH EtherNet	Includes parallel signals. Supports ProfiNet, EtherNetIP
3325-14	MH CC Link	Includes parallel signals
3325-15	MH EtherCat	Includes parallel signals
3325-51	SW Parallel	
3325-52	SW DeviceNet	Includes parallel signals
3325-53	SW EtherNet	Includes parallel signals. Supports ProfiNet, EtherNetIP
3325-54	SW CC Link	Includes parallel signals
3325-55	SW EtherCat	Includes parallel signals
3325-61	SW Parallel-Servo	
3325-62	SW DeviceNet-Servo	Includes parallel signals
3325-63	SW EtherNet-Servo	Includes parallel signals. Supports ProfiNet, EtherNetIP
3325-64	SW CC Link-Servo	Includes parallel signals
3325-65	SW EtherCat-Servo	Includes parallel signals

DressPack axis 3-6

Option	Description	Additional information
3326-11	MH3 Parallel	
3326-12	MH3 DeviceNet	Includes parallel signals
3326-13	MH3 EtherNet	Includes parallel signals. Supports ProfiNet, EtherNetIP
3326-14	MH3 CC Link	Includes parallel signals
3326-15	MH3 EtherCat	Includes parallel signals
3326-31	MH LID Parallel	
3326-32	MH LID DeviceNet	Includes parallel signals
3326-33	MH LID EtherNet	Includes parallel signals. Supports ProfiNet, EtherNetIP
3326-34	MH LID CC Link	Includes parallel signals
3326-35	MH LID EtherCat	Includes parallel signals
3326-51	SW LID Parallel	
3326-52	SW LID DeviceNet	Includes parallel signals
3326-53	SW LID EtherNet	Includes parallel signals. Supports ProfiNet, EtherNetIP

Continues on next page

Option	Description	Additional information
3326-54	SW LID CC Link	Includes parallel signals
3326-55	SW LID EtherCat	Includes parallel signals
3326-61	SW LID Parallel-Servo	
3326-62	SW LID DeviceNet-Servo	Includes parallel signals
3326-63	SW LID EtherNet-Servo	Includes parallel signals. Supports ProfiNet, EtherNetIP
3326-64	SW LID CC Link-Servo	Includes parallel signals
3326-65	SW LID EtherCat-Servo	Includes parallel signals

3.5 Connector kits manipulator

General

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

xx1300000223

Note

Some connector kits listed in the overview tables are not available for all manipulators. See the available options in the specification forms.

Continues on next page

3.5.1 Base - Connector kits

Available options

		DressPack options		
Option	Name	3325-1x	3325-5x	3325-6x
3330-2	CP/CS, Proc 1 base	X	X	X
3331-1	Weld Proc 2-4 base		X	X
3332-1	FB7 on base			

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, (½", 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	

Option Weld Proc 2-4 base - 3331-1

This option offers a kit with connectors. This must be assembled by the customer. The kit contains the following components.

WELD

Amount	Description	Size, material, etc.	Brand
1	Welding connector socket	TSB150/L-UR	Stäubli
3	Socket	For 35 mm^2	

Continues on next page

3.5.1 Base - Connector kits
Continued

Amount	Description	Size, material, etc.	Brand
1	Form shroud welding conn.	202K174-3/42-0, for cable diameter 15.7-35 mm	Raychem

Media

Amount	Description	Size, material, etc.	Brand
4	Hose coupling	1/2", M22 x 1.5 Brass	

Option FB7 on base - 3332-1

R3. FB 7 on base

This option offers a kit with a connector. This must be assembled by the customer. The kit contains:

- Connector with:

1 pcs Multiple connector (pin)	UTOW
1 pcs Adapter	8 pin
8 pcs Pin	For 0.13 - 0.25 mm^2
Assembly Accessories to complete connector	
Assembly instruction	

3.5.2 Axis 3 - Connector kits

Available options

		DressPack options		Description
Option	Name	3325-1x	3325-6x	
3333-2	CP/CS bus, Proc 1 axis 3	X	X	UTOW
3334-3	CP/CS Proc1, Servo & FB		X	

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

Option CP/CS Proc1, Servo & FB - 3334-3

SP (Servo Power)	
1 pc Straight connector M23 8p	
4 pcs Crimp pin 1 mm	AWG 24-17
4 pcs Crimp pin 2 mm	AWG 18-14
SS (Servo Signal)	
1 pcs Straight connector M23 17p	
17 pcs Pin	AWG 28-20
Assembly Accessories to complete connector	
Assembly instruction	

3.5.3 Axis 6 - Connector kits

Available options

		DressPack options			Description
Option	Name	3326-1x	3326-3x	3325-6x	
3334-2	CP/CS bus axis 6	X	X	X	UTOW
3334-3	CP/CS Proc1, Servo & FB			X	
3335-1	Weld Proc 2-4 axis 6			X	

Option CP/CS/CBus, Proc 1 axis 6 - 3334-2

CP/CS/CBus/SP/SS, Proc 1 axis 6 on tool side for option 3326-1x and 3326-3x.

This kit offers a kit with connectors to be mounted at toolside of axis 6.

This must be assembled by the customer.

The kit contains:

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

CP/CS	
1 pcs UTOW Pin connector 26p, bulkhead	UTOW71626PH05, Shell size 16
26 pcs Pin	RM18W3K, 0.5-0.82 mm^2
CBUS	
1 pcs UTOW Pin connector 10p, bulkhead	UTOW71210PH05, Shell size 12
10 pcs Pin	RM18W3K, 0.5-0.82 mm^2
Ethernet	
1 pcs Socket connector M12	Harting 21 03 881 2425
4 pcs Socket	Harting 09670005476, 0.13-0.33 mm^2

Option CP/CS Proc1, Servo & FB - 3334-3

SP (Servo Power)	
1 pcs Bulkhead contact M23	
4 pcs Crimp pin 1 mm	AWG 24-17
4 pcs Crimp pin 2 mm	AWG 18-14
SS (Servo Signal)	
1 pcs Bulkhead contact M23	
17 pcs Pin	AWG 28-20
Assembly Accessories to complete connector	
Assembly instruction	

Continues on next page

Option Weld Proc 2-4 axis 6 - 3335-1

Weld and Proc 2-4 axis 6 on manipulator side for option 3335-1

The process cable package from axis 6 ends with free end for media and for weld power cable. The option offers a kit for connectors. This must be assembled by the customer when hoses and power cable has been cut to required length.

The kit contains:

- 4 Hose fittings (Swivel Nut adapter, (2 x ½", M22x1.5) and (2x 3/8", M16x1.5))
- 1 Multi contact connector (Female) type including:
-

1 pc Welding connector	3x25 mm^2
1 pc Cable gland	Diameter 24-28 mm
1 pc End housing	0.21-0.93 mm^2
1 pcs Reducing coupling	PG36/PG29
Assembly Accessories to complete connector	
Assembly instruction	

3.6 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

DeviceNet cable - Length

Option	Description	Note
3204-2	7 m	Includes Parallel cable
3204-3	15 m	Includes Parallel cable
3204-4	22 m	Includes Parallel cable
3204-5	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	

Continues on next page

EtherCat cable - Length

Note

Occupies 1 Ethernet port.

Option	Description	Note
3210-2	7 m	Includes Parallel cable
3210-3	15 m	Includes Parallel cable
3210-4	22 m	Includes Parallel cable
3210-5	30 m	Includes Parallel cable

MCB Servo cable 1 axis

Option	Description	Note
3212-2	7 m	

Requirements

This option requires options DressPack base-axis 3 and Motor Connection Kit [3069-x].

3.7 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 *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*.

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Warranty for DressPack

Note

Option 3326-11/13 upper arm DressPack MH3 is not covered by the warranty.

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Index

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3HAC080365-001, Rev L, en