ROBOTICS

Product specification

IRB 2600

Trace back information:
Workspace 24D version a4
Checked in 2024-12-09
Skribenta version 5.6.018

Product specification

IRB 2600-20/1.65
IRB 2600-12/1.65
IRB 2600-12/1.85
IRB 2600ID-15/1.85
IRB 2600ID-8/2.0

OmniCore

Document ID: 3HAC085909-001

Revision: F

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Original instructions.

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Overview of this specification

About this product specification

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

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

Usage

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

Users

It is intended for:

- Product managers and Product personnel
- Sales and Marketing personnel
- Order and Customer Service personnel

References

Tip

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

Reference	Document ID
Product manual - IRB 2600	*3HAC035504-001*
Product specification - OmniCore V line	*3HAC074671-001*
Product specification - Robot stopping distances according to ISO 10218-1	*3HAC048645-001*

Revisions

Revision	Description
A	First edition.
B	Published in release 23D. The following updates are done in this revision: • New option *Servo cable 1 axis - Length* [3206-x] added. • Removed options for cooling fan on axis 1-2 as these are not yet available. • Added support for OmniCore V400XT.
C	Published in release 24A. The following updates are done in this revision: • Added DressPack options for CC-Link.
D	Published in release 24B. The following updates are done in this revision: • Added DressPack options for EtherCAT.

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Revision	Description
E	Published in release 24C. The following updates are done in this revision: • Minor corrections.
F	Published in release 24D. The following updates are done in this revision: • Added options for cooling fans for axis 1 and 2. • Added 22 m process cables. • Updated the section *Technical data on page 20*.

1 Description

1.1 Structure

1.1.1 Introduction to IRB 2600

Robot family

The IRB 2600 is one of ABB Robotics sharp generation robots with enhanced and new capabilities. It is available in five variants, including the IRB 2600ID with a process upper arm. The design is optimized to make it superior for the targeted applications, such as dispensing, machining, measuring, assembly, and arc welding applications.

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 *Operating manual - OmniCore*.

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 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*.

Protection type Foundry Plus 2

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

Typical applications are spraying insertion and part extraction of die-casting machines, handling in sand casting and gravity casting, etc. (Please refer to Foundry Prime robots for washing applications or other similar applications). Special care must be taken in regard to operational and maintenance requirements for applications in foundry 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

Continues on next page

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 73* for robot versions and other options not selectable together with Foundry Plus 2.

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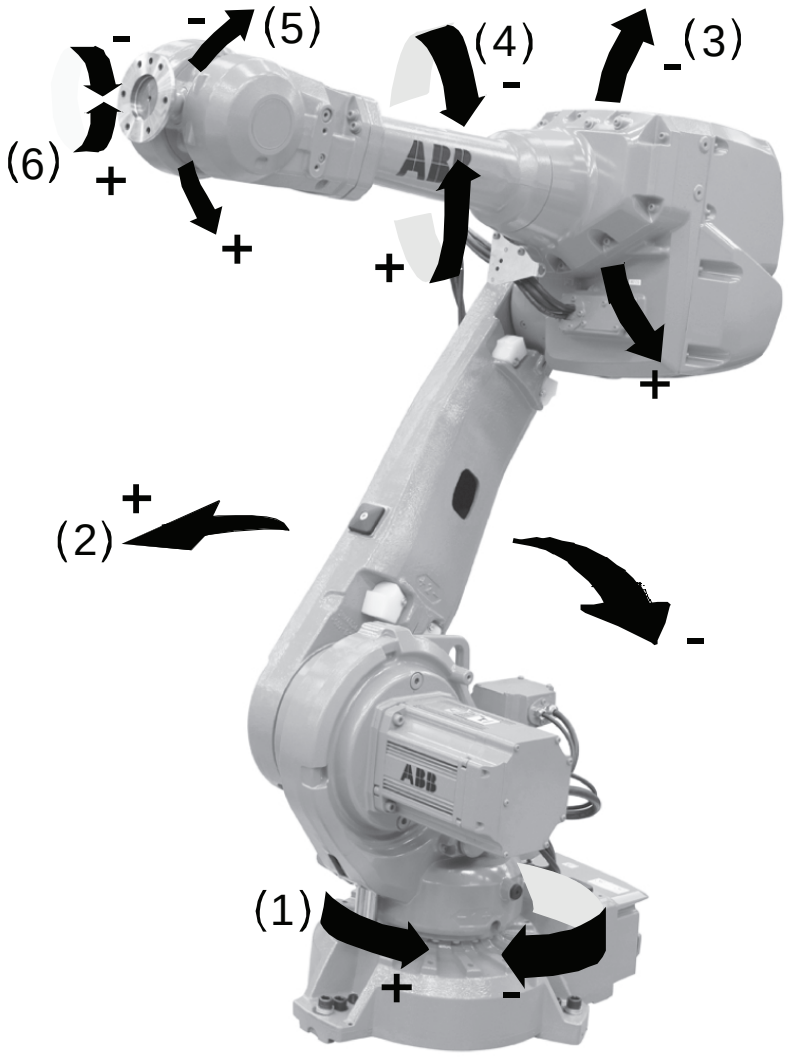
Manipulator axes



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1.1.2 Different robot variants

General

The IRB 2600 is available in five variants and they can be wall mounted, inverted or tilted (up to 45 degrees around the Y-axis or X-axis). See *Introduction to Robot load and load diagrams on page 37* for limitations.

Robot variant	Handling capacity (kg)	Reach (m)
IRB 2600-20/1.65	20	1.65
IRB 2600-12/1.65	12	1.65
IRB 2600-12/1.85	12	1.85
IRB 2600ID-15/1.85	15	1.85
IRB 2600ID-8/2.00	8	2.00

Manipulator weight

Robot variant	Weight
IRB 2600-20/1.65 IRB 2600-12/1.65	272 kg
IRB 2600-12/1.85	284 kg
IRB 2600ID-15/1.85	273 kg
IRB 2600ID-8/2.00	276 kg

Other technical data

Data	Description	Note
		IRB2600-12/1.85 **IRB2600ID-15/1.85** **IRB2600ID-8/20** **IRB2600-20/1.65** **IRB2600-12/1.65**
Airborn noise level	The sound pressure level outside the working space	< 69 dB (A) Leq (acc. to Machinery directive 2006/42/EG)

Power consumption at max speed (vmax)

Type of movement	IRB 2600 (all variants)
ISO Cube Max. velocity	1.4 kW

Robot in calibration position	IRB 2600 (all variants)
Brakes engaged	0.18 kW
Brakes disengaged	0.46 kW

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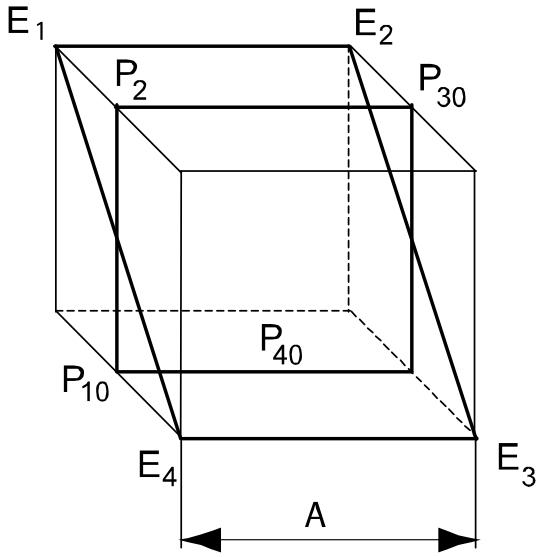

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Pos	Description
A	630 mm

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 2600 is connected to the OmniCore V line.

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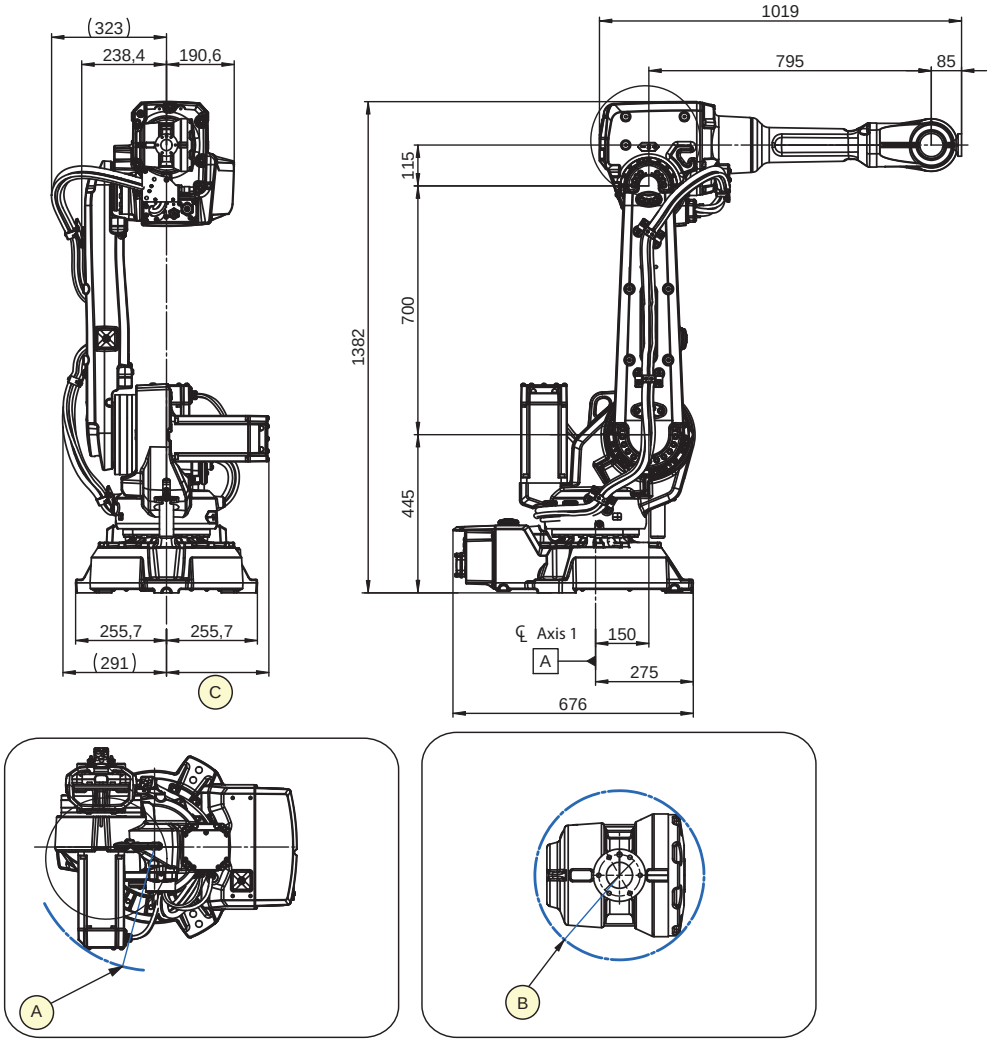
1.1.2 Different robot variants

Continued

Dimensions IRB 2600-20(12)/1.65



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Pos	Description
A	R 337 Minimum turning radius of axis 1
B	R 98 Minimum turning radius of axis 4
C	IRB 2600ID = 281 mm All Other variants = 276 mm

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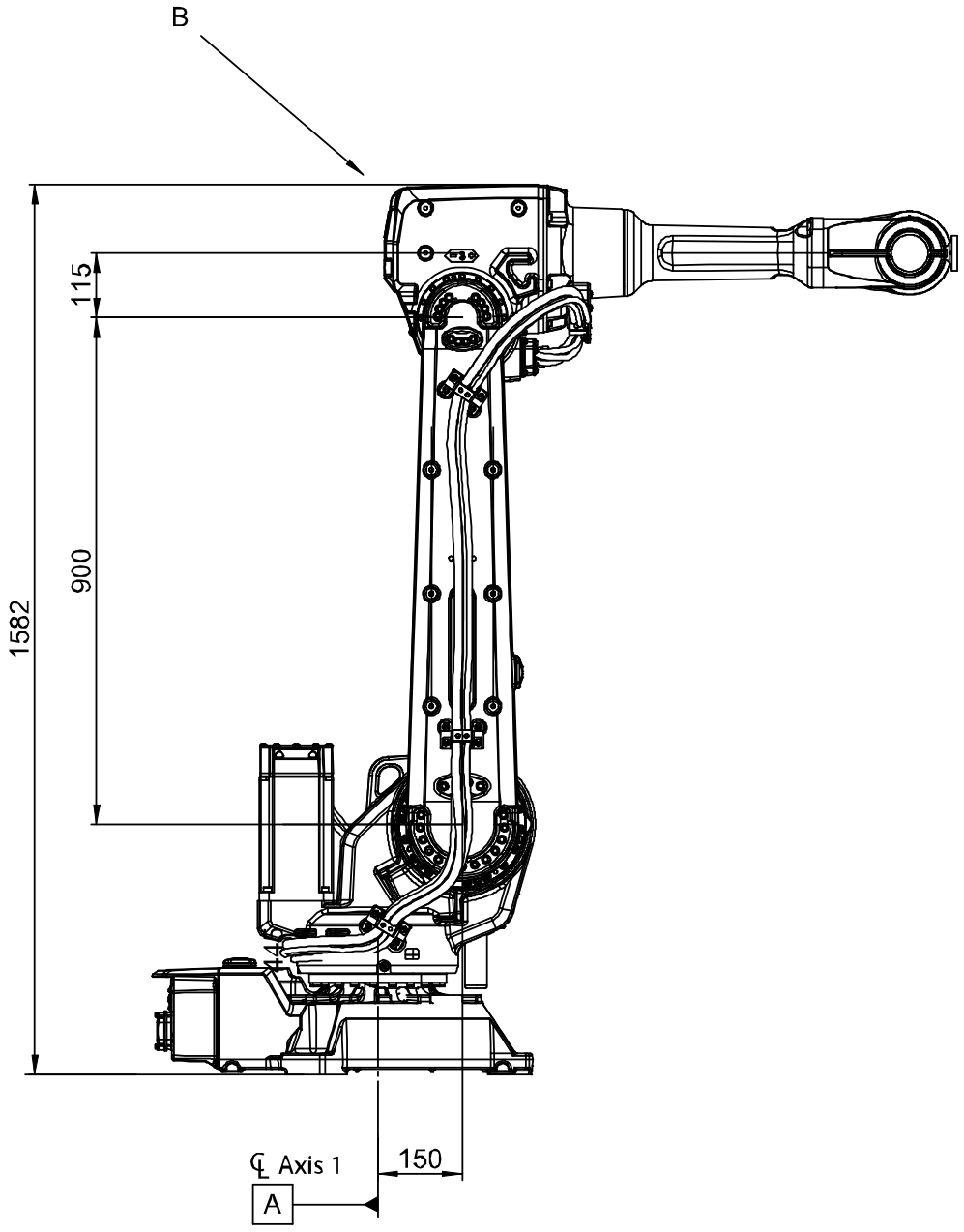
Dimensions IRB 2600-12/1.85



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Pos	Description
B	For all other dimensions see IRB 2600-20(12)/1.65

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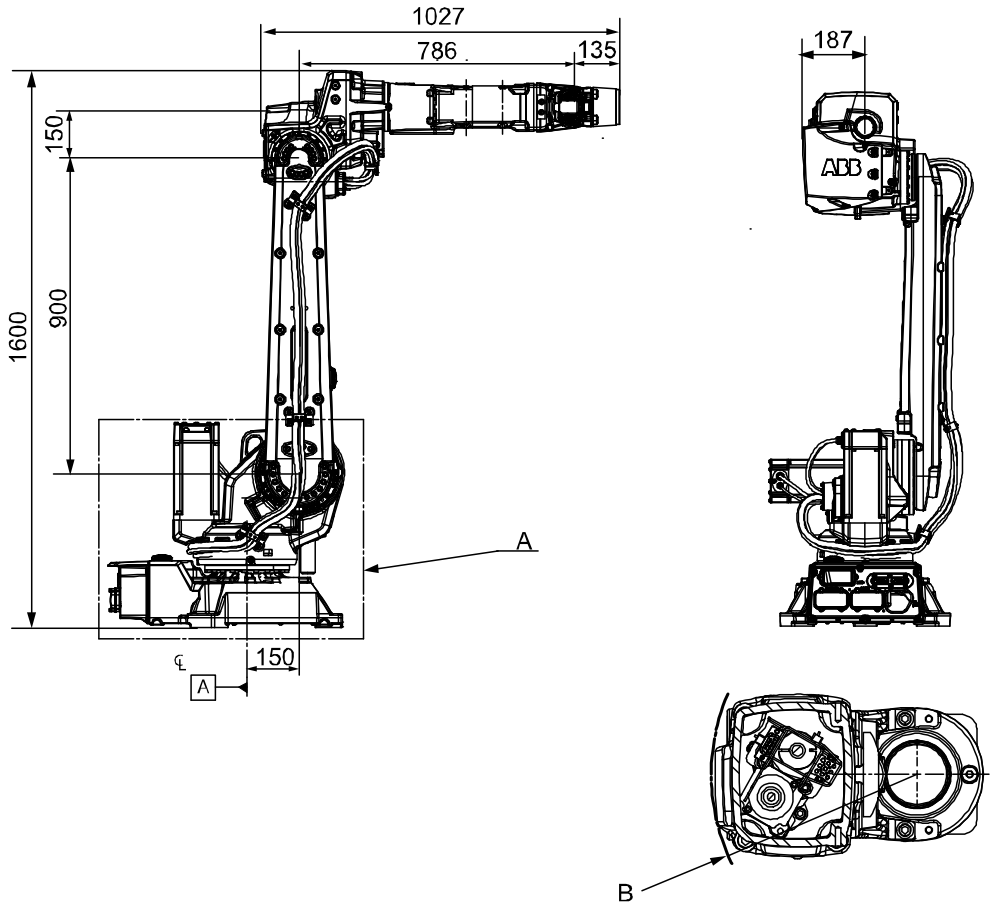
1.1.2 Different robot variants
Continued

Dimensions IRB 2600ID-15/1.85



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Pos	Description
A	For dimensions, see IRB 2600-X/1.85
B	R 172 Minimum turning radius for axis 4

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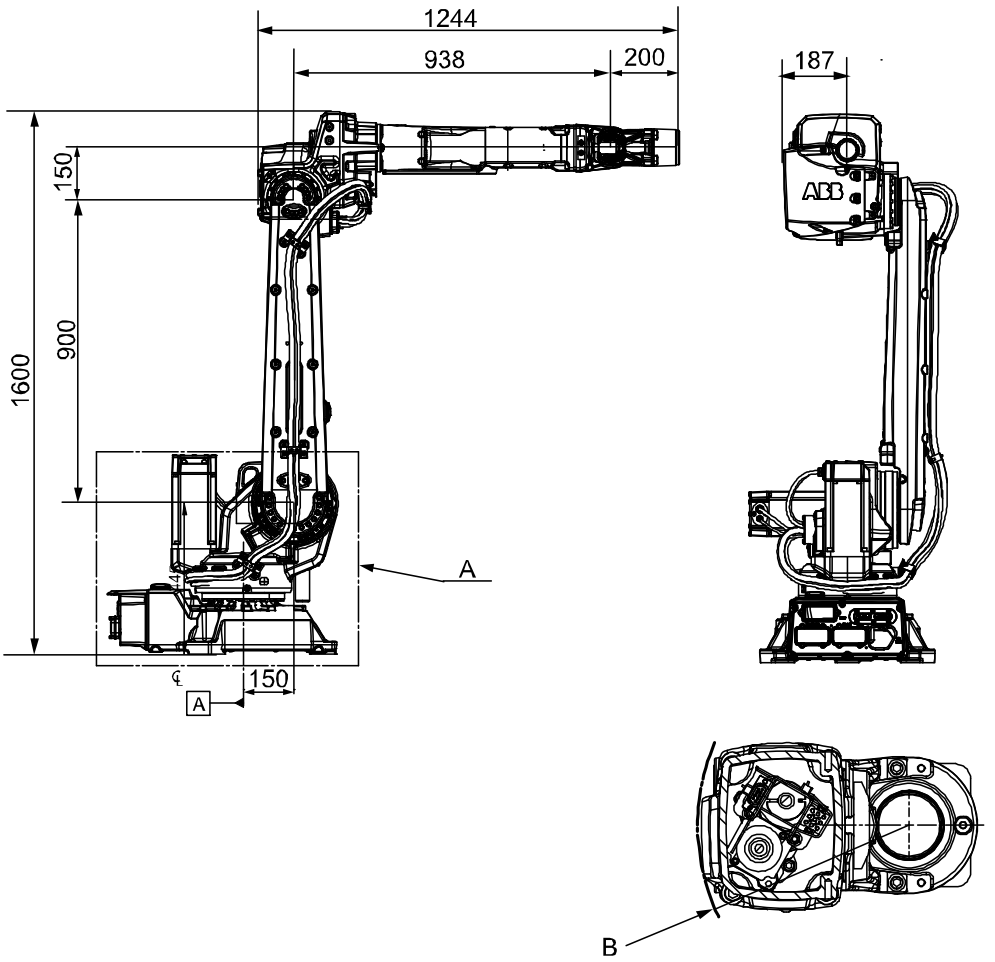
Dimensions IRB 2600ID-8/2.00



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Pos	Description
A	For dimensions, see IRB 2600-X/1.85
B	R 172 Minimum turning radius for axis 4

1.2 Standards

1.2.1 Applicable standards

General

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

Robot standards

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

Other standards used in design

Standard	Description
IEC 60204-1	Safety of machinery - Electrical equipment of machines - Part 1: General requirements, normative reference from ISO 10218-1
IEC 61000-6-2	Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity standard for industrial environments
IEC 61000-6-4	Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – Emission standard for industrial environments
ISO 13849-1:2006	Safety of machinery - Safety related parts of control systems - Part 1: General principles for design, normative reference from ISO 10218-1
UL 1740 (option) CSA Z434 (option)	Standards For Safety - Robots and Robotic Equipment Industrial robots and robot Systems - General safety requirements Valid for USA and Canada.

1.3 Installation

1.3.1 Introduction to installation

General

The IRB 2600 is designed for floor, wall, tilted (up to 45 degrees, around the Y-axis or X-axis, for more details see *Product manual - IRB 2600*) or inverted mounting. Depending on the robot version, an end effector with max. weight of 12 or 20 kg including payload, can be mounted on the tool flange (axis 6). See *Load diagrams on page 39*, and *Introduction to Robot Motion on page 62* for limitations.

Extra loads

Extra loads, which are included in the load diagrams, can be mounted on the upper arm. An extra load of 35 kg can also be mounted on the frame of axis 1. See *Information about mounting equipment on page 52*.

Working range limitations

The working range of axis 1 can be limited by mechanical stops as option. The option Electronic Position Switches can also be used on all axes for position indication of the manipulator.

Explosive environments

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

1.3.2 Technical data

Weight, robot

The table shows the weight of the robot.

The weight does not include the weight of the DressPack.

Robot model	Weight
IRB 2600	280 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°	
Wall mounted	90°	
Suspended	180° [i]	
Tilted	0-15°	Contact ABB for further information about acceptable loads.

[i] IRB 2600 Type C-20/1.65, IRB 2600 Type C-12/1.65 is not available for suspended installation.

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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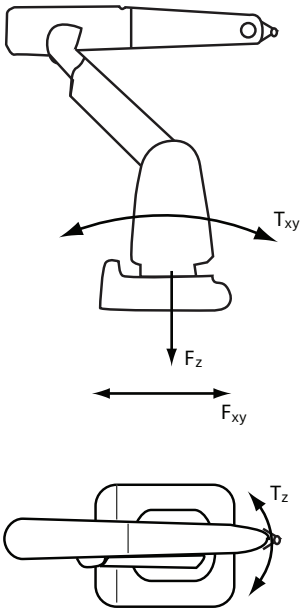
Loads on foundation, robot

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	±2330 N	±5450 N
Force z	2750 ±1420 N	2750 ±3970 N
Torque xy	±3360 Nm	±7690 Nm
Torque z	±1120 Nm	±3050 Nm

Continues on next page

1.3.2 Technical data
Continued

Wall mounted

Force	Endurance load (in operation)	Max. load (emergency stop)
Force xy	2750 ±880 N	2750 ±4600 N
Force z	±1780 N	±4560 N
Torque xy	1470 ±1990 Nm	1470 ±5620 Nm
Torque z	±1150 Nm	±3130 Nm

Suspended

Force	Endurance load (in operation)	Max. load (emergency stop)
Force xy	±2250 N i	±5380 N i
Force z	-2750 ±1420 N i	-2750 ±4280 N i
Torque xy	±3440 Nm i	±7800 Nm i
Torque z	±1110 Nm i	±3050 Nm i

i Only valid for IRB 2600-20/1.65, IRB 2600-12/1.65, IRB 2600-12/1.85, IRB 2600ID-15/1.85, IRB 2600ID-8/2.0.
IRB 2600 Type C-20/1.65, IRB 2600 Type C-12/1.65 is not available for suspended installation.

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	0.5 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	25 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.

Continues on next page

Storage conditions, robot

The table shows the allowed storage conditions for the robot:

Parameter	Value
Minimum ambient temperature	-25° C
Maximum ambient temperature	+55° C
Maximum ambient temperature (less than 24 hrs)	+70° C
Maximum ambient humidity	95% at constant temperature (gaseous only)

Operating conditions, robot

The table shows the allowed operating conditions for the robot:

Parameter	Value
Minimum ambient temperature	+5°C
Maximum ambient temperature	+45°C
Maximum ambient humidity	95% at constant temperature

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	IRB 2600: IP 67 IRB 2600ID upper arm: IP 54
Manipulator, protection type Foundry Plus	IP 67

[i] According to IEC 60529.

1.3.3 Mounting the manipulator

Maximum load

Maximum load in relation to the base coordinate system

Floor mounted

Force	Endurance load (in operation)	Max. load (emergency stop)
Force xy	±2330 N	±5450 N
Force z	2750 ±1420 N	2750 ±3970 N
Torque xy	±3360 Nm	±7690 Nm
Torque z	±1120 Nm	±3050 Nm

Wall mounted

Force	Endurance load (in operation)	Max. load (emergency stop)
Force xy	2750 ±880 N	2750 ±4600 N
Force z	±1780 N	±4560 N
Torque xy	1470 ±1990 Nm	1470 ±5620 Nm
Torque z	±1150 Nm	±3130 Nm

Suspended mounting

Force	Endurance load (in operation)	Max. load (emergency stop)
Force xy	±2250 N i	±5380 N *i*
Force z	-2750 ±1420 N *i*	-2750 ±4280 N *i*
Torque xy	±3440 Nm *i*	±7800 Nm *i*
Torque z	±1110 Nm *i*	±3050 Nm *i*

i Only valid for IRB 2600-20/1.65, IRB 2600-12/1.65, IRB 2600-12/1.85, IRB 2600ID-15/1.85, IRB 2600ID-8/2.0.
IRB 2600 Type C-20/1.65, IRB 2600 Type C-12/1.65 is not available for suspended installation.

Tilted mounting

Force	Endurance load (in operation)	Max. load (emergency stop)
Force xy	±2563 N	±5995 N
Force z	3025 ±4367 N	3025 ±4367 N
Torque xy	±3696 Nm	±8459 Nm
Torque z	±1232 Nm	±3355 Nm

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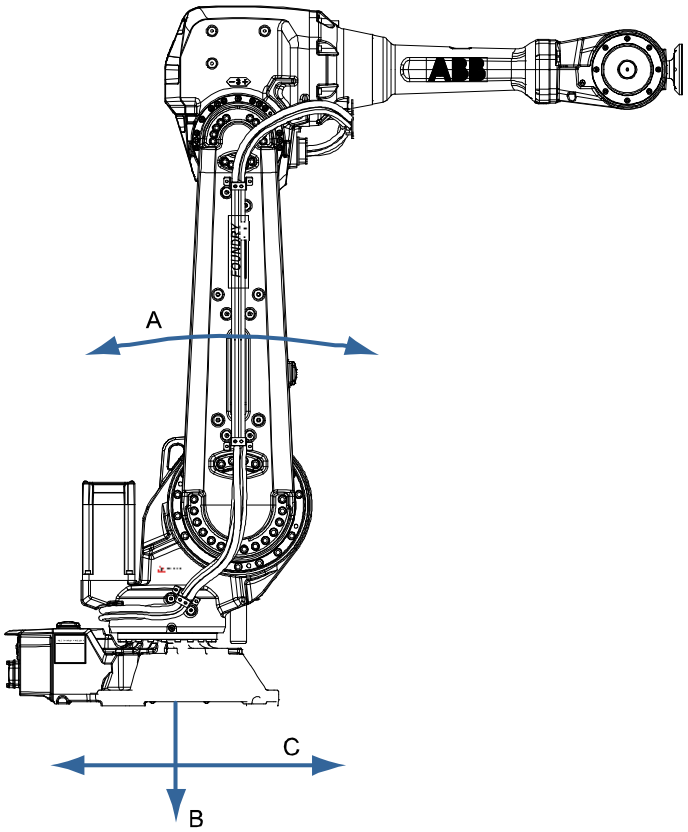
Illustration

The figures below shows IRB 2600 Standard but are also valid for IRB 2600ID.



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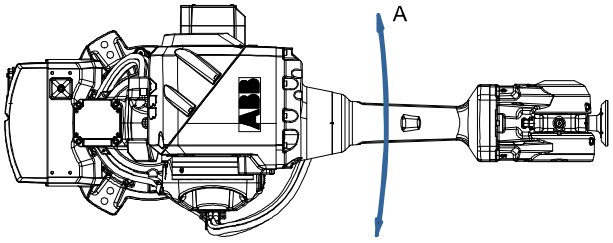
A	Torque$_{xy}$ (T_{xy})
B	Force $_{z}$ (F_{z})
C	Force $_{xy}$ (F_{xy})



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A	Torque $_{z}$ (T_{z})

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}).

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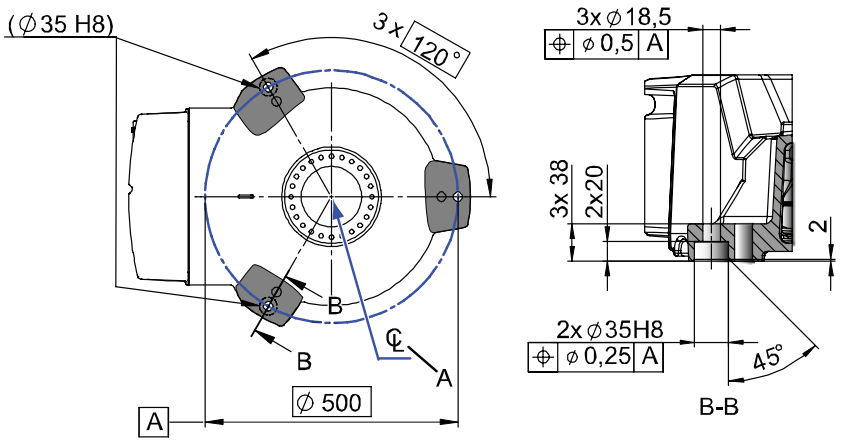
1.3.3 Mounting the manipulator
Continued

Fastening holes robot base

Only 3 screws (Ø 500) are required for fastening the robot.



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Attachment bolts, specification

The table below specifies required bolts and washers for securing the robot at installation site

Specification	Description
Attachment bolts, 3 pcs	M16 x 60 (installation directly on foundation) M16 x 70/80 (installation on foundation or base plate, using guiding sleeves)
Washers, 3 pcs	17 x 30 x 3
Quality	Quality 8.8
Tightening torque	200 Nm

Note

For best AbsAcc performance, use the guide holes according to the preceeding figure.

Mounting surface and bushings

Note

Only the three outer holes are used to secure the robot!

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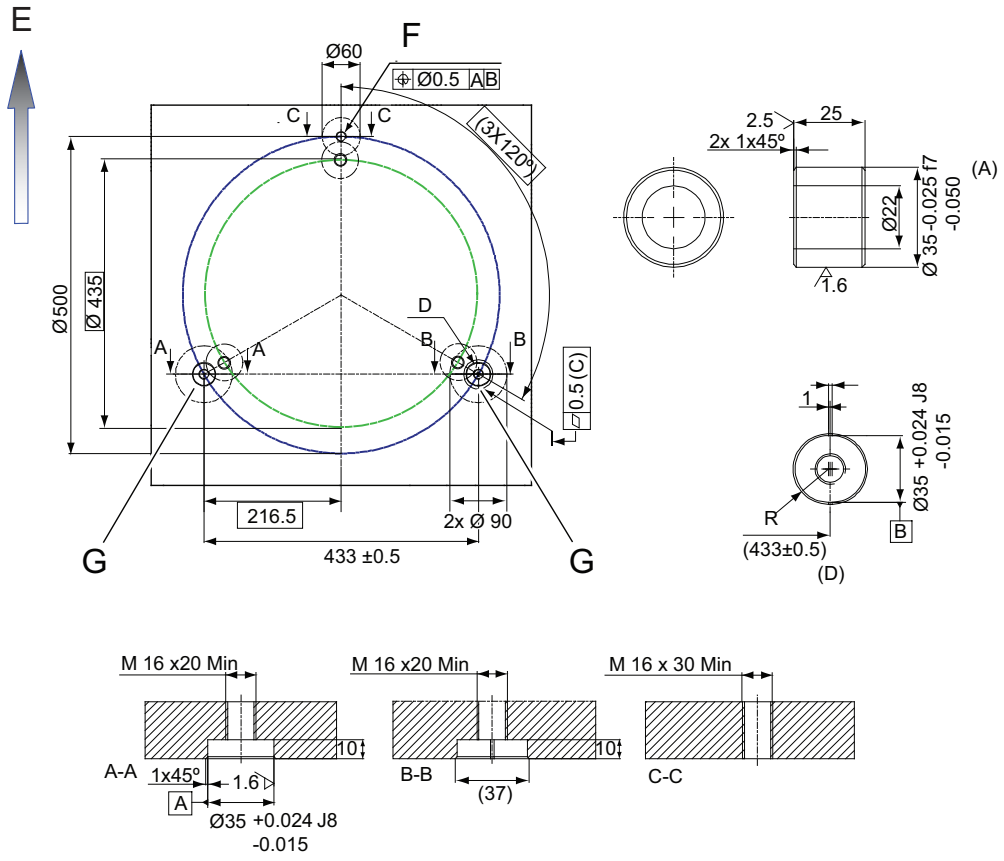

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Pos	Description
(C)	3x common zone
E	Position of the front of the robot
F	1xM16, depth 30 minimum
G	Guide sleeves (2 pcs)

1.3.4 Expansion container for inverted mounting of the manipulator

Note

If the robot is used suspended without expansion container, it will cause a reduced lifetime for the gearbox.

Validity of this section

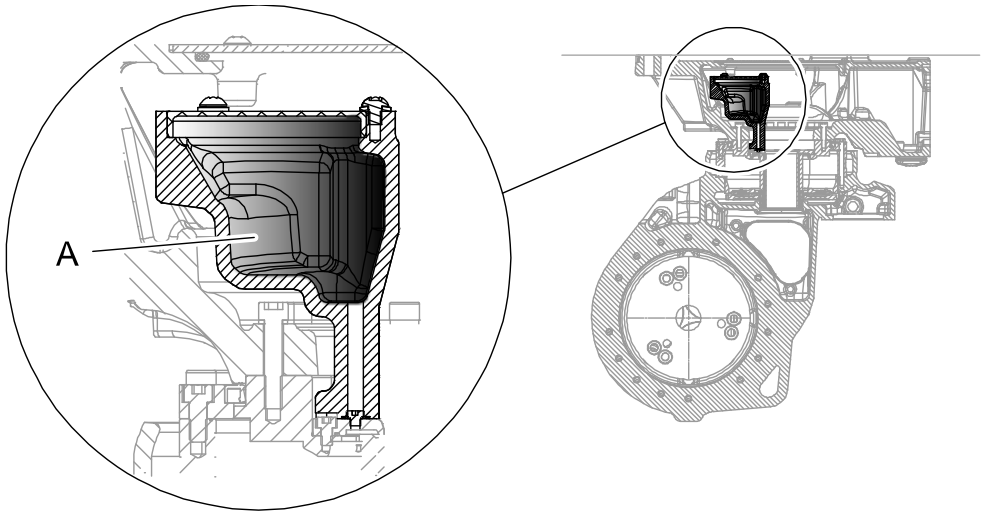
This section is only valid for IRB 2600-20/1.65, IRB 2600-12/1.65, IRB 2600-12/1.85, IRB 2600ID-15/1.85, IRB 2600ID-8/2.0, with option [3317-1] Inverted.

Introduction to the expansion container

The expansion container is needed on inverted robots (IRB 2600-20/1.65, IRB 2600-12/1.65, IRB 2600-12/1.85, IRB 2600ID-15/1.85, IRB 2600ID-8/2.0) to make sure that the amount of oil in gearbox axis 1 covers all important parts. Robots ordered as suspended robots have the expansion container installed on delivery.

Expansion container

When the robot is fitted in a inverted mounting position, an expansion container for oil must be fitted on gearbox axis 1.



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A	Expansion container

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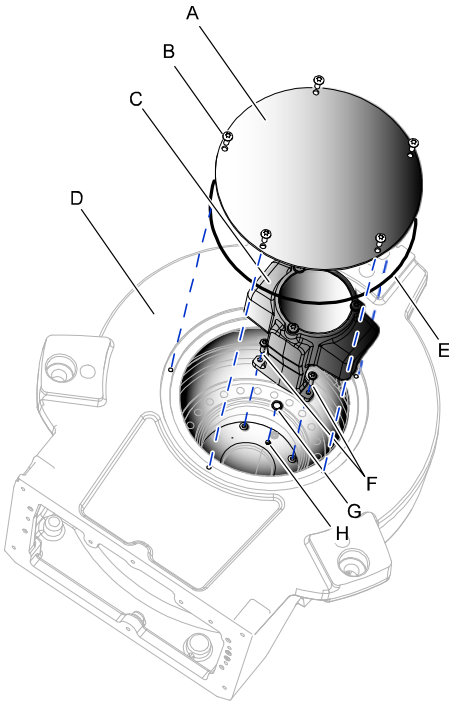
1.3.4 Expansion container for inverted mounting of the manipulator
Continued



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A	Cover
B	Attachment screw M6x16, quality 8.8-A2F (5 pcs)
C	Oil expansion container with cover
D	Base
E	O-ring D220x5
F	Attachment screw M5x20, quality 8.8-A2F and washer (2+2 pcs)
G	O-ring D1=9.5 D2=1.6
H	Oil plug (to be removed)

1.4 Calibration and references

1.4.1 Calibration methods

Overview

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

The original calibration data delivered with the robot is generated when the robot is floor mounted. If the robot is not floor mounted, then the robot accuracy could be affected. The robot needs to be calibrated after it is mounted.

More information is available in the product manual.

Types of calibration

Type of calibration	Description	Calibration method
Standard calibration	The calibrated robot is positioned at calibration position. Standard calibration data is found on the SMB (serial measurement board) or EIB in the robot.	Axis Calibration or Calibration Pendulum [i]
Absolute accuracy calibration (optional)	Based on standard calibration, and besides positioning the robot at synchronization position, the Absolute accuracy calibration also compensates for: • 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

Continues on next page

Type of calibration	Description	Calibration method
Optimization	Optimization of TCP reorientation performance. The purpose is to improve reorientation accuracy for continuous processes like welding and gluing. Wrist optimization will update standard calibration data for axes 4, 5 and 6. **Note** For advanced users, it is also possible to use the 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

i The robot is calibrated by either Calibration Pendulum or Axis Calibration at factory. Always use the same calibration method as used at the factory.
Information about valid calibration method is found on the calibration label or in the calibration menu on the FlexPendant.
If no data is found related to standard calibration, contact the local ABB Service.

Brief description of calibration methods

Calibration Pendulum method

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

Two different routines are available for the Calibration Pendulum method:

- Calibration Pendulum II
- Reference calibration

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

Axis Calibration method

Axis Calibration is a standard calibration method for calibration of IRB 2600. 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.

Continues on next page

1.4.1 Calibration methods
Continued

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*.

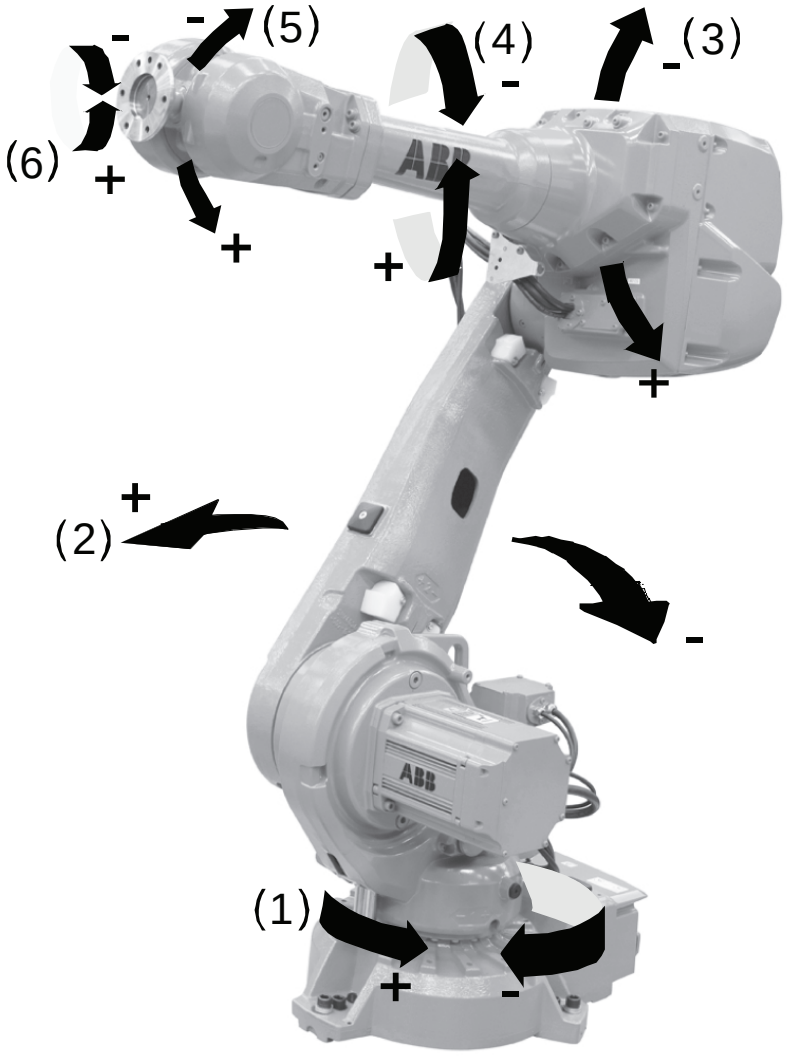
If a service operation is done to a robot with the option Absolute Accuracy, a new absolute accuracy calibration is required in order to establish full performance. For most cases after replacements that do not include taking apart the robot structure, standard calibration is sufficient.

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.

1.4.2 Fine calibration

General

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



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Calibration

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

1.4.3 Absolute Accuracy calibration

Purpose

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

Here are some examples of when this accuracy is important:

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

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

Note

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

Note

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

What is included

Every *Absolute Accuracy* robot is delivered with:

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

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

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

When is *Absolute Accuracy* being used

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

Continues on next page

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

Absolute Accuracy active

Absolute Accuracy will be active in the following cases:

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

Absolute Accuracy not active

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

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

Note

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

RAPID instructions

There are no RAPID instructions included in this option.

Production data

Typical production data regarding calibration are:

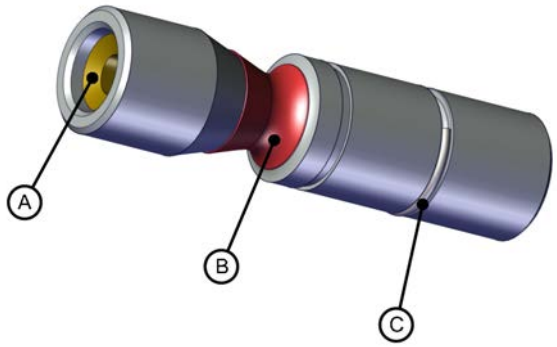
Robot variant	Positioning accuracy (mm)		
	Average	Max	% Within 1 mm
IRB 2600-20/1.65 IRB 2600-12/1.65 IRB 2600-12/1.85 IRB 2600ID-15/1.85	0.25	0.65	100
IRB 2600ID-8/2.00	0.35	0.85	100

1.4.4 Calibration tools for Axis calibration

Calibration tools

WARNING

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



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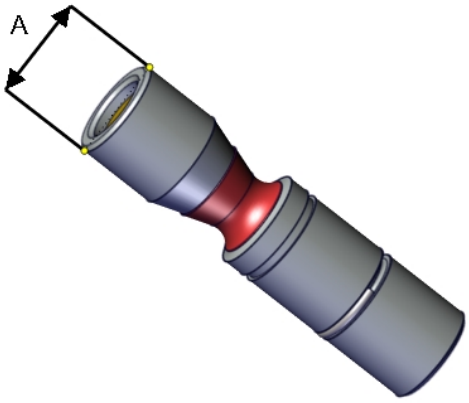
A	Tube insert
B	Plastic protection
C	Steel spring ring



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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 Robot load and load diagrams

1.5.1 Introduction to Robot load and load diagrams

Information

WARNING

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

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

- motors
- gearboxes
- mechanical structure

WARNING

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

See *Operating manual - OmniCore*, for detailed information.

WARNING

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

General

The load diagrams include a nominal payload inertia, J_0 of 0.2 kgm^2 for all variants, also extra load at the upper arm housing and wrist are included according to table below. 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.

Robot variant	Extra arm load	Load at wrist
IRB 2600-20/1.65 IRB 2600-12/1.85 IRB 2600ID-15/1.85	10 kg	1 kg
IRB 2600-12/1.65 IRB 2600ID-8/2.00	15 kg	1 kg

Continues on next page

1.5.1 Introduction to Robot load and load diagrams
Continued

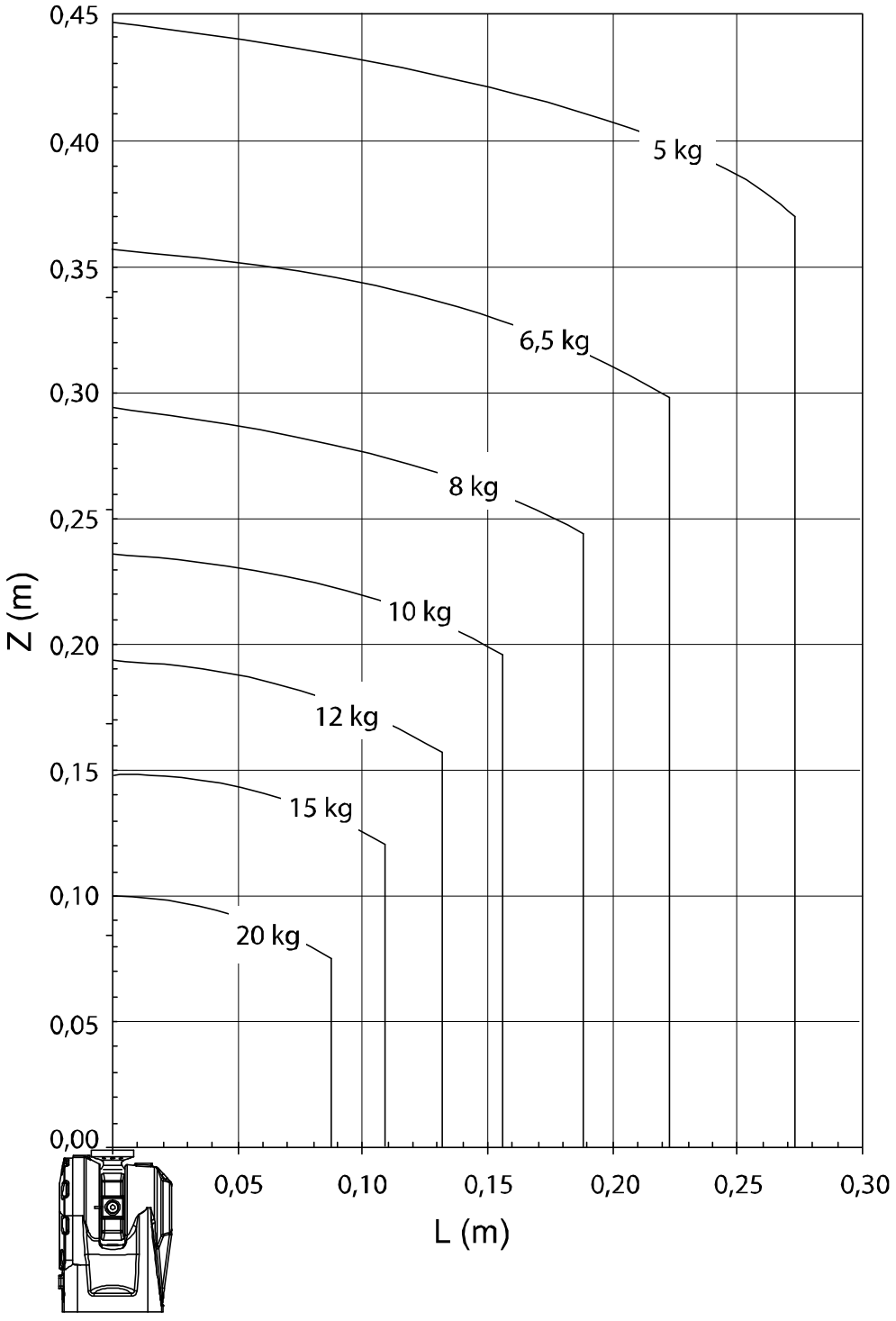
Control of load case with RobotLoad

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

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

1.5.2 Load diagrams

IRB 2600 - 20/1.65



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Extra load of 10 kg at the upper arm housing and 1 kg at wrist included in the load diagram.

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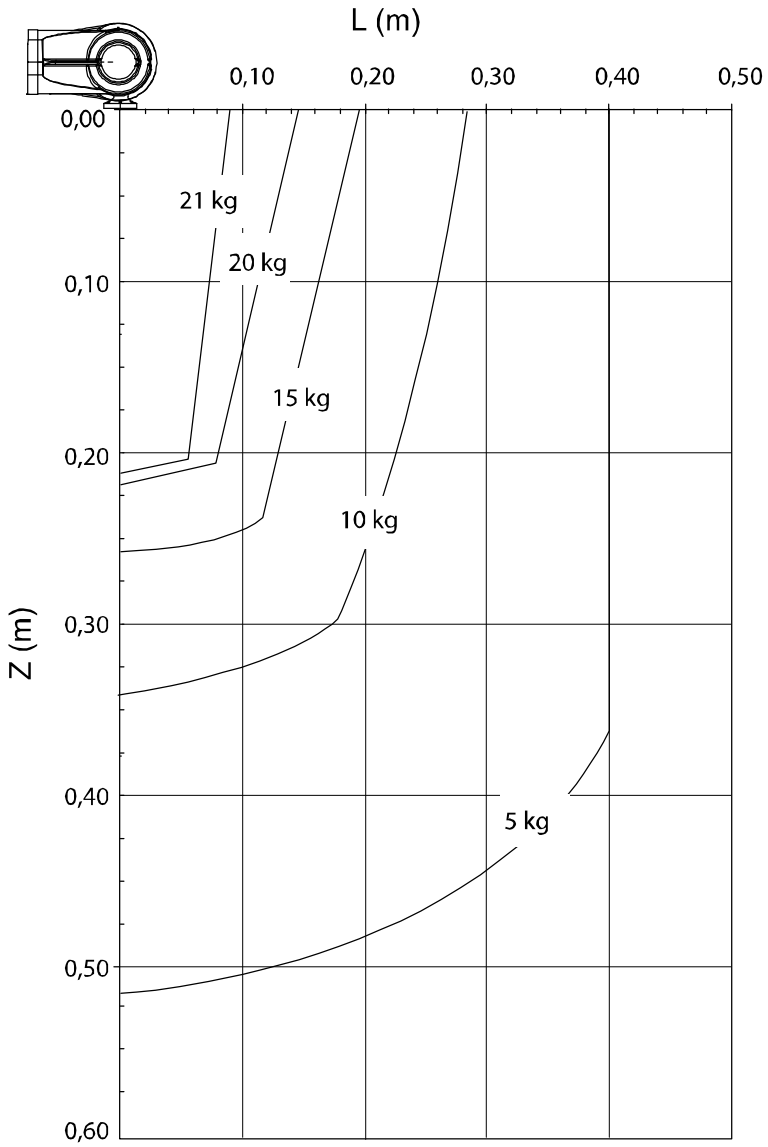
1.5.2 Load diagrams
Continued

IRB 2600 - 20/1.65 "Vertical wrist" (±10°)



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Extra load of 10 kg at the upper arm housing and 1 kg at wrist included in the load diagram.

For wrist down ±0° deviation from vertical line.

	Description
Max load	22 kg
Z_{max}	0.134 m
L_{max}	0.031 m

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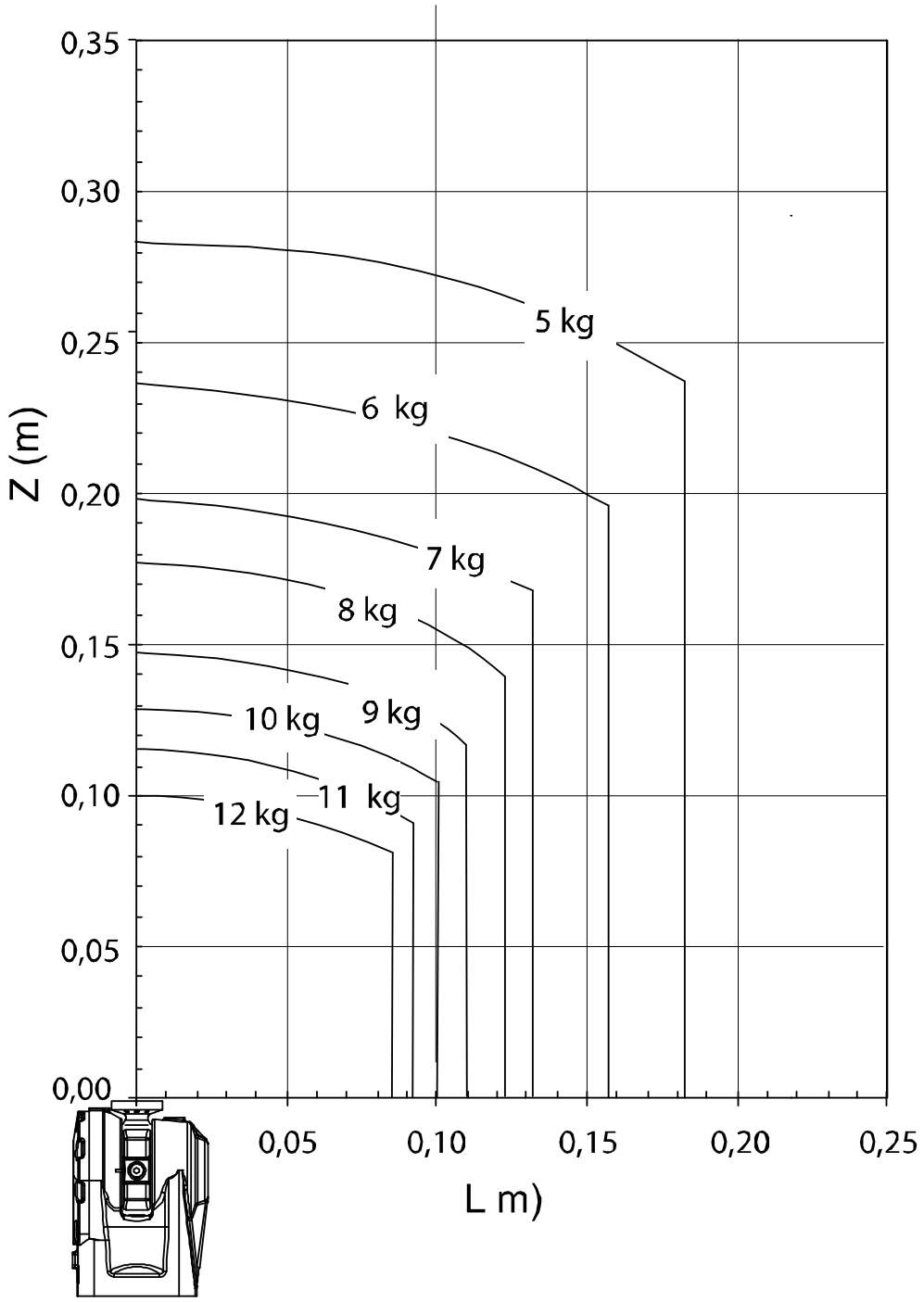
IRB 2600 - 12/1.65



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Extra load of 15 kg at the upper arm housing and 1 kg at wrist included in the load diagram.

Load diagram "Vertical wrist" is not available for IRB 2600-12/1.65.

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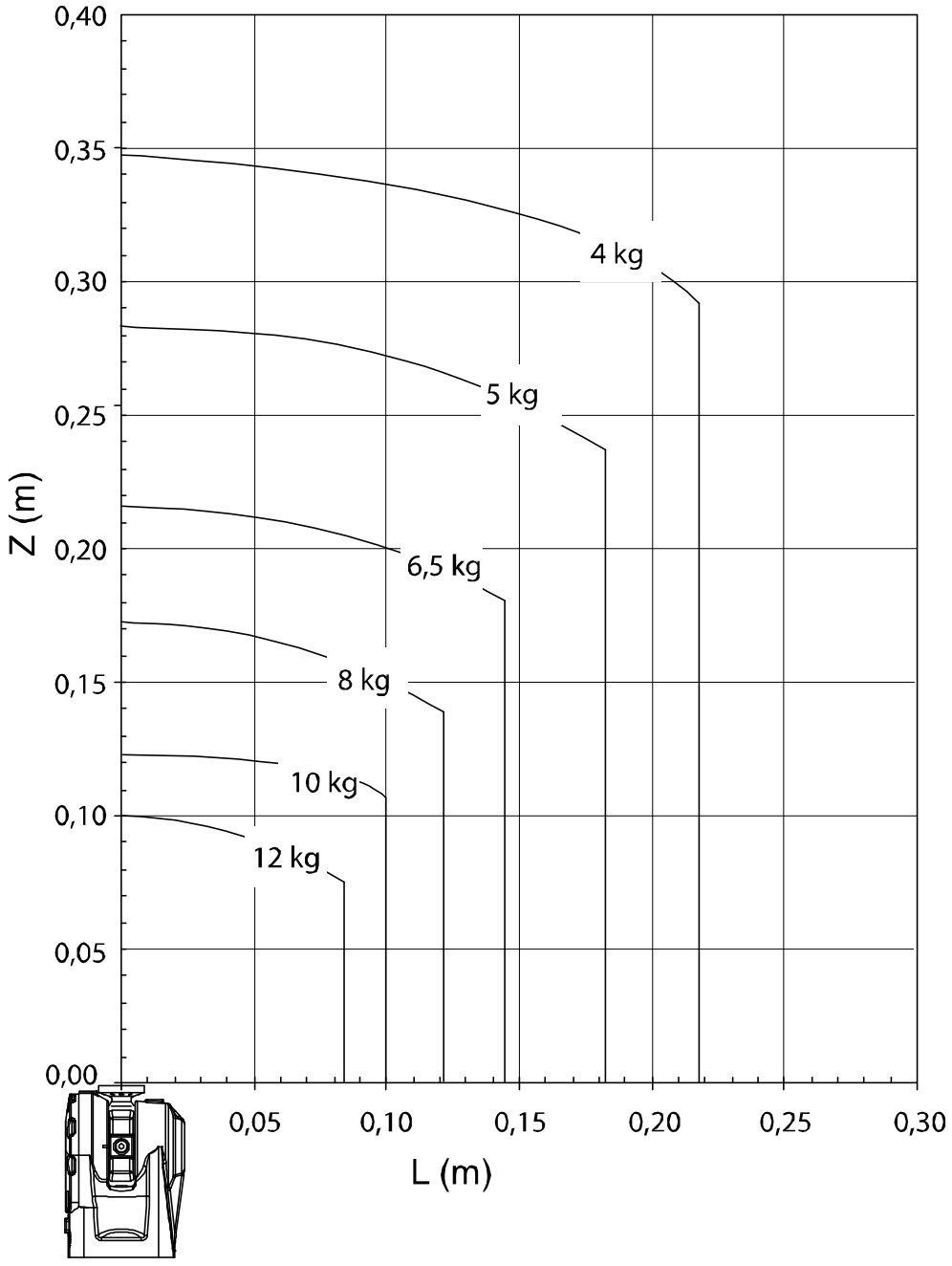
1.5.2 Load diagrams
Continued

IRB 2600 - 12/1.85



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Extra load of 10 kg at the upper arm housing and 1 kg at wrist included in the load diagram.

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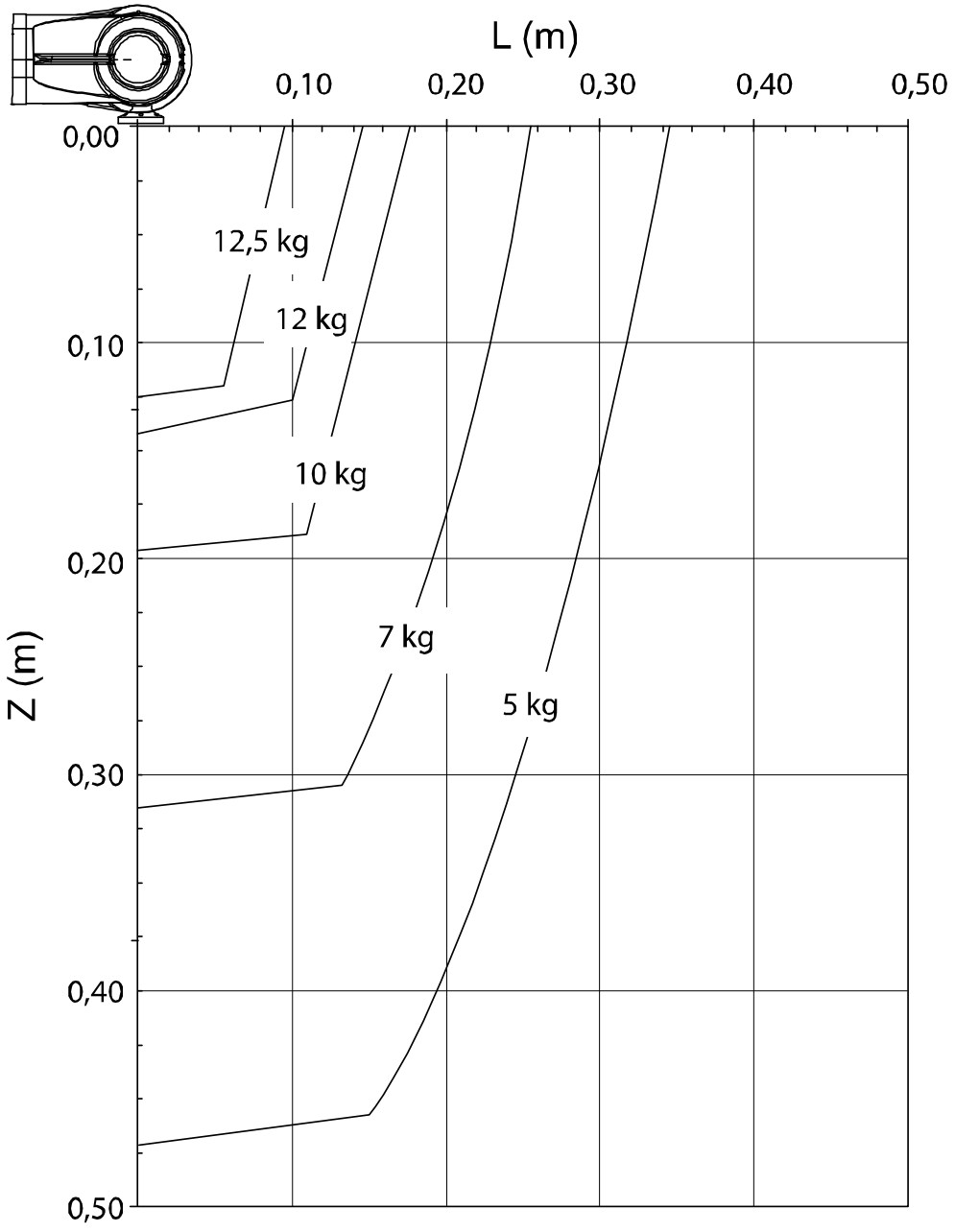
IRB 2600 - 12/1.85 "Vertical wrist" (±10°)



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Extra load of 10 kg at the upper arm housing and 1 kg at wrist included in the load diagram.

For wrist down ±0° deviation from vertical line.

	Description
Max load	13 kg
Z_{max}	0.131 m
L_{max}	0.040 m

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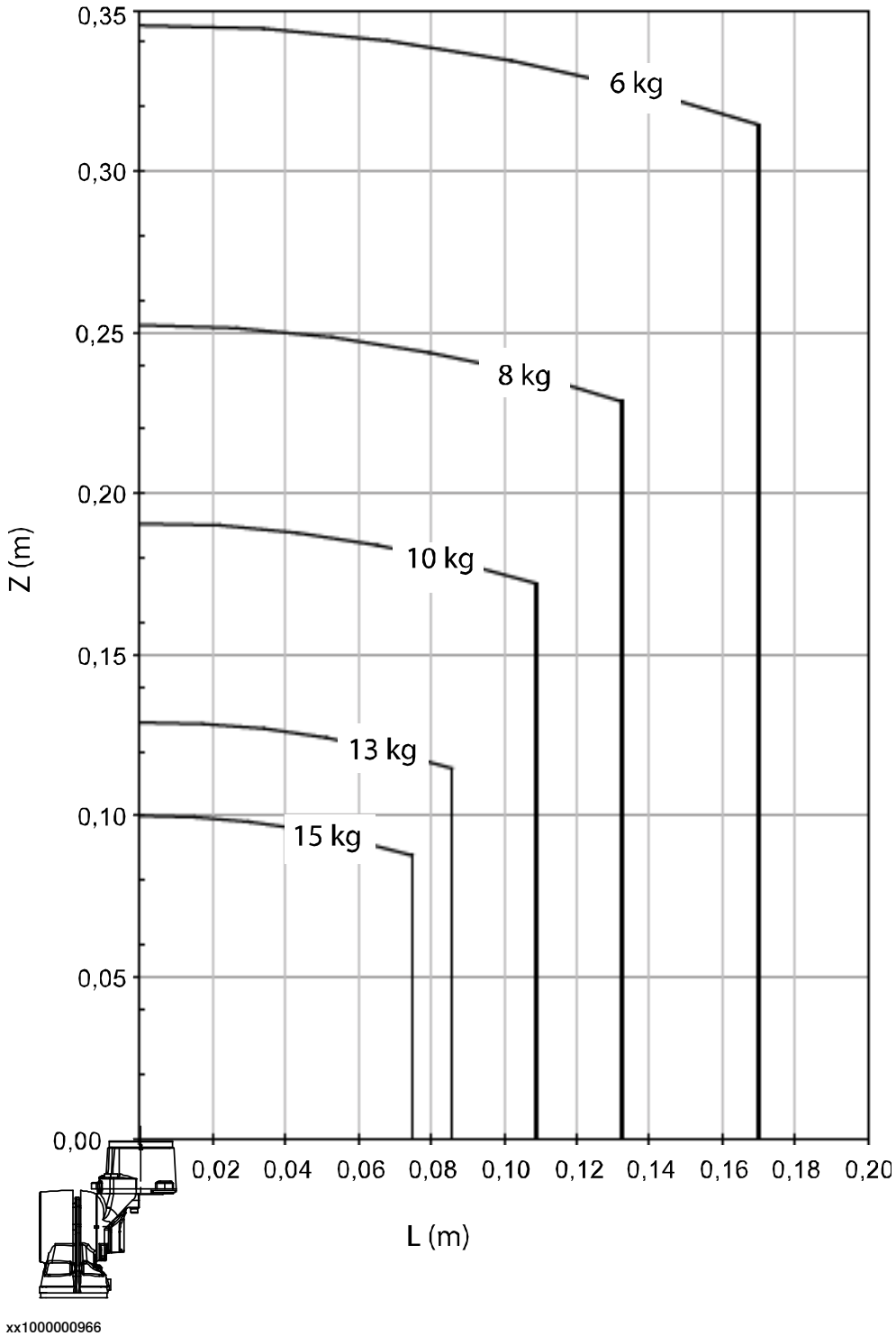
1.5.2 Load diagrams
Continued

IRB 2600ID - 15/1.85



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Extra load of 10 kg at upper arm and 1 kg at wrist included in the load diagram.

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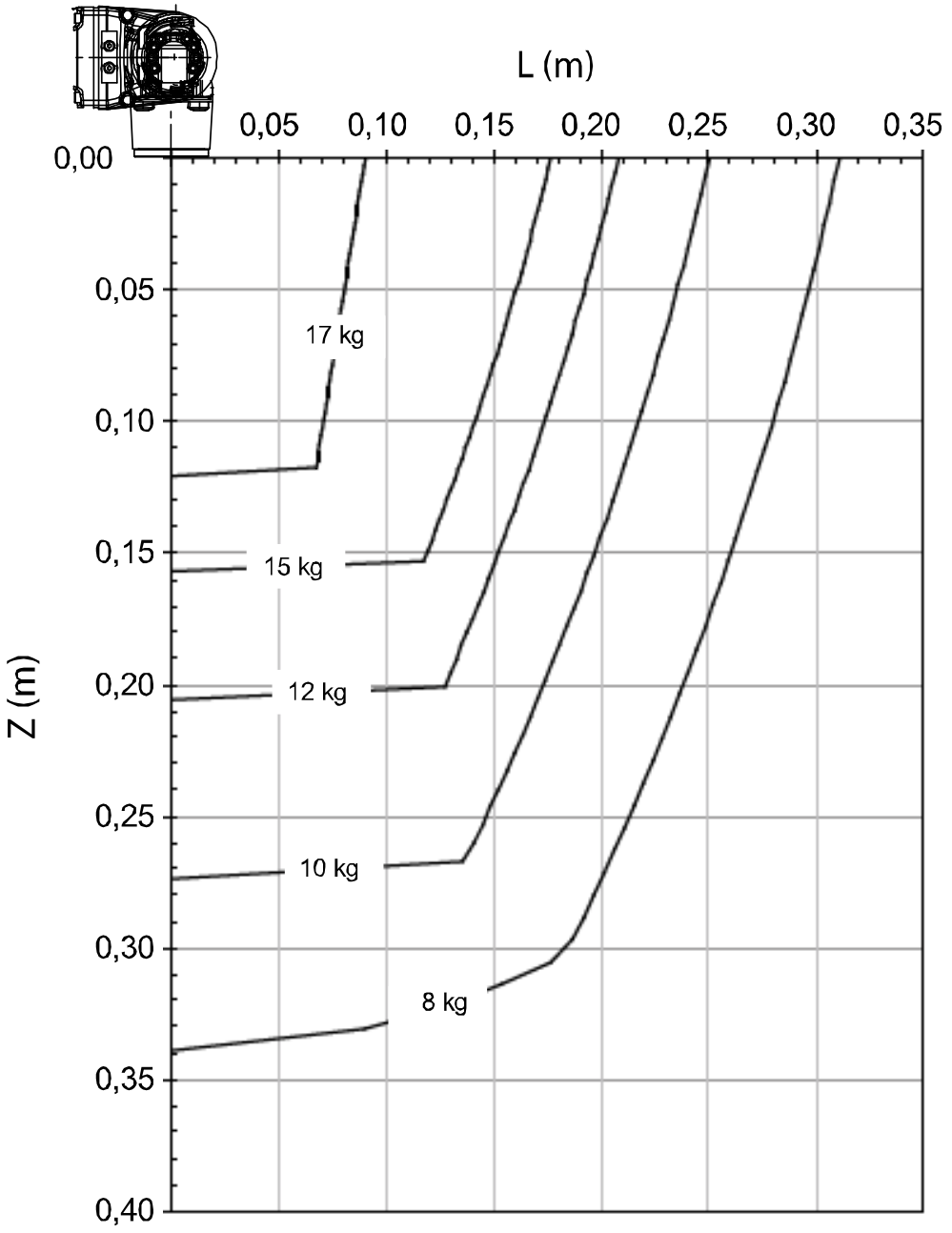
IRB 2600ID-15/1.85 "Vertical wrist" (± 10°)



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Extra load of 10 kg at the upper arm housing and 1 kg at wrist included in the load diagram.

For wrist down ±0° deviation from the vertical line.

	Description
Max load	16.5 kg
Z_{max}	0.113 m
L_{max}	0.057 m

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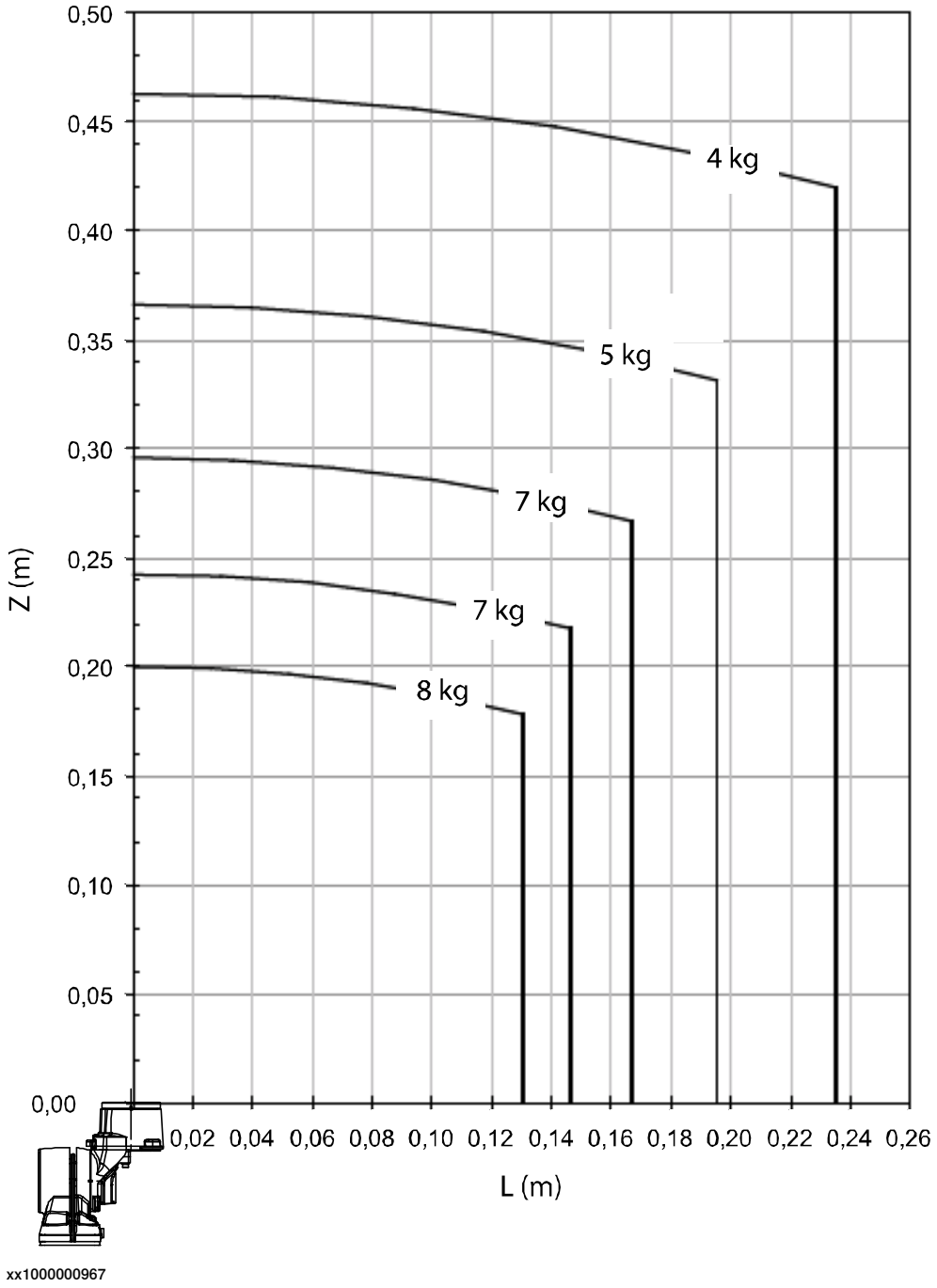
1.5.2 Load diagrams
Continued

IRB 2600ID - 8/2.00



Extra load of 15 kg at the upper arm housing and 1 kg at wrist included in the load diagram.

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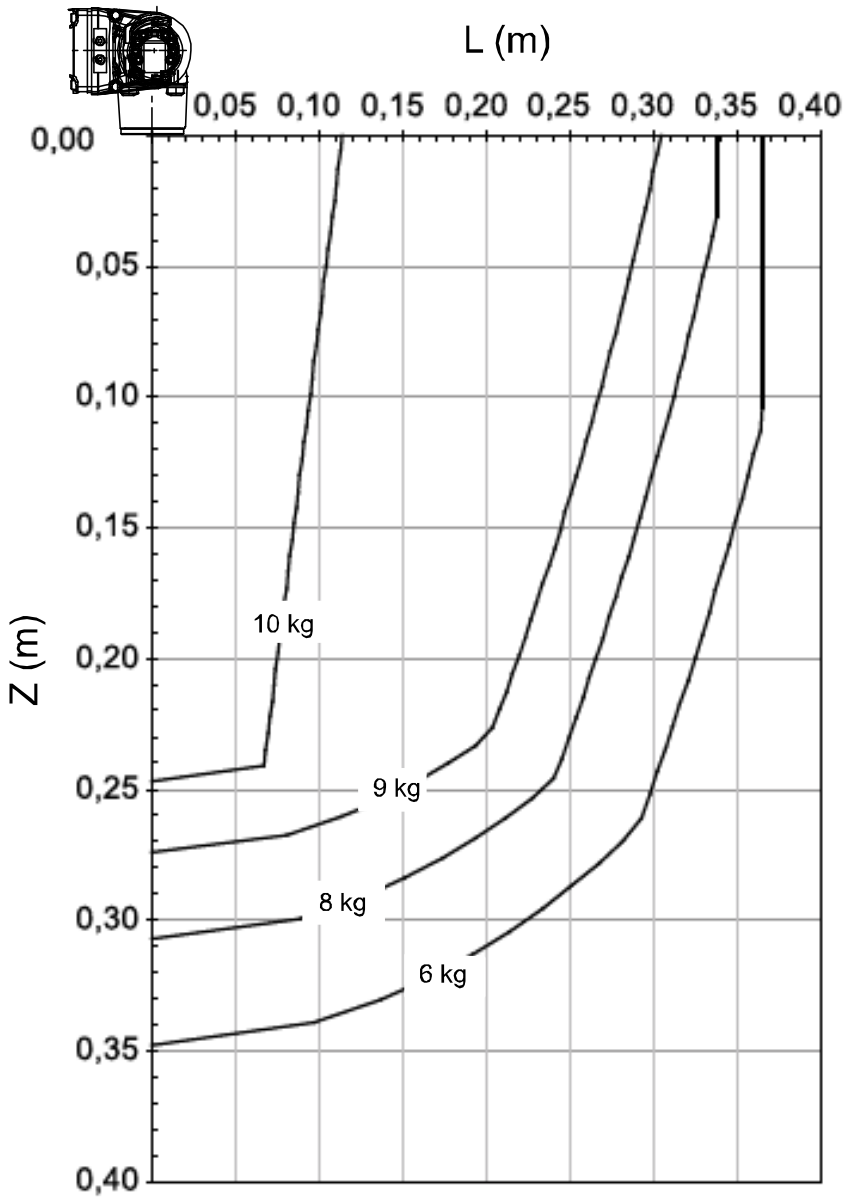
IRB 2600ID-8/2.00 "Vertical Wrist" (± 10°)



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Extra load of 15 kg at upper arm and 1 kg at wrist included in the load diagram.

For wrist down ±0° deviation from the vertical line.

	Description
Max load	9.5 kg
Z_{max}	0.235 m
L_{max}	0.041 m

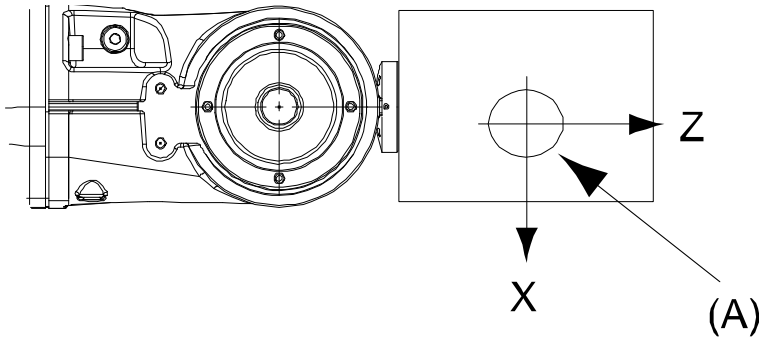
1.5.3 Maximum load and moment of inertia for full and limited axis 5 (center line down) movement

Note

Total load given as: Mass in kg, center of gravity (Z and L) in meter and moment of inertia (J_{ox} J_{oy} J_{oz}) in kgm^2. L=sqr(x^2 + y^2).

Full movement of axis 5 (± 120°)

Axis	Robot variant	Maximum moment of interia
5	-20/1.65 -12/1.65 -12/1.85	Ja5 = Load x (($Z + 0{,}085^2 + L^2$) + max (J_{0x}, J_{0y}) ≤ 2.0 kgm^2
	ID-15/1.85	Ja5 = Load x (($Z + 0{,}135)^2 + L^2$) + max (J_{0x}, J_{0y}) ≤ 2.0 kgm^2
	ID-8/2.00	Ja5 = Load x (($Z + 0{,}2)^2 + L^2$) + max (J_{0x}, J_{0y}) ≤ 2.0 kgm^2
6	-20/1.65 -12/1.65 -12/1.85 ID-8/2.00 ID-15/1.85	Ja6 = Load x L^2 + J_{0Z} ≤ 1.0 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.

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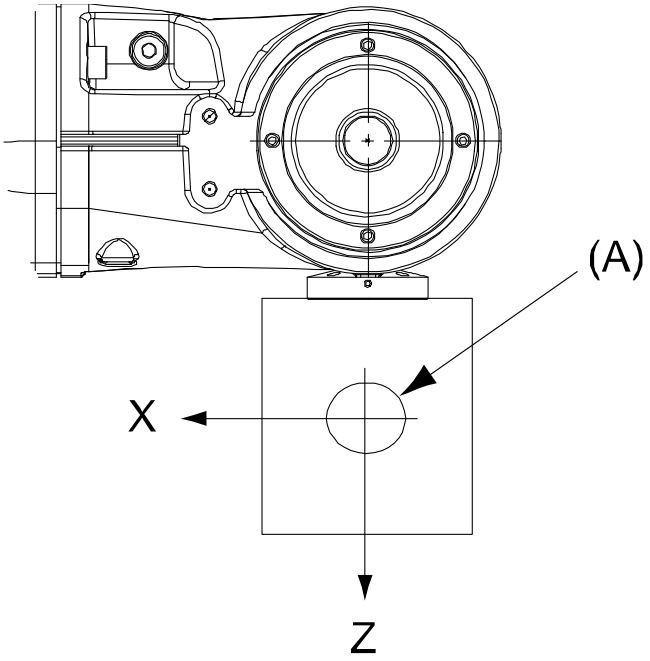
1.5.3 Maximum load and moment of inertia for full and limited axis 5 (center line down) movement
Continued

Limited axis 5, center line down

Axis	Robot variant	Maximum moment of interia
5	-20/1.65 -12/1.65 -12/1.85	Ja5 = Load x $((Z + 0{,}085^2 + L2) + \max(J_{0x}, J_{0y}) \leq 2.0$ kgm^2
	ID-15/1.85	Ja5 = Load x $((Z + 0{,}135)^2 + L^2) + \max(J_{0x}, J_{0y}) \leq 2.0$ kgm^2
	ID-8/2.00	Ja5 = Load x $((Z + 0{,}2)^2 + L^2) + \max(J_{0x}, J_{0y}) \leq 2.0$ kgm^2
6	-20/1.65 -12/1.65 -12/1.85 ID-8/2.00 ID-15/1.85	Ja6 = Load x $L^2 + J_{0Z} \leq 1.0$ kgm^2



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Pos	Description
A	Center of gravity

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

1.5.4 Wrist torque

Maximum torque due to payload

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

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

Robot variant	Max wrist torque axis 4 and 5	Max wrist torque axis 6	Max torque valid at load
IRB 2600-20/1.65	36.3 Nm	16.7 Nm	20 kg
IRB 2600-12/1.65 IRB 2600-12/1.85	21.8 Nm	10.0 Nm	12 kg
IRB 2600ID-15/1.85	34.6 Nm	11 Nm	15 kg
IRB 2600ID-8/2.00	31.4 Nm	10.2 Nm	8 kg

1.5.5 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 variant	E-stop Max acceleration at nominal load COG [m/s^2]	Controlled Motion Max acceleration at nominal load COG [m/s^2]
IRB 2600-20/1.65	94	51
IRB 2600-12/1.85	105	68
IRB 2600ID-15/1.85	104	59
IRB 2600ID-8/2.0	134	89

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).

1.6 Mounting equipment

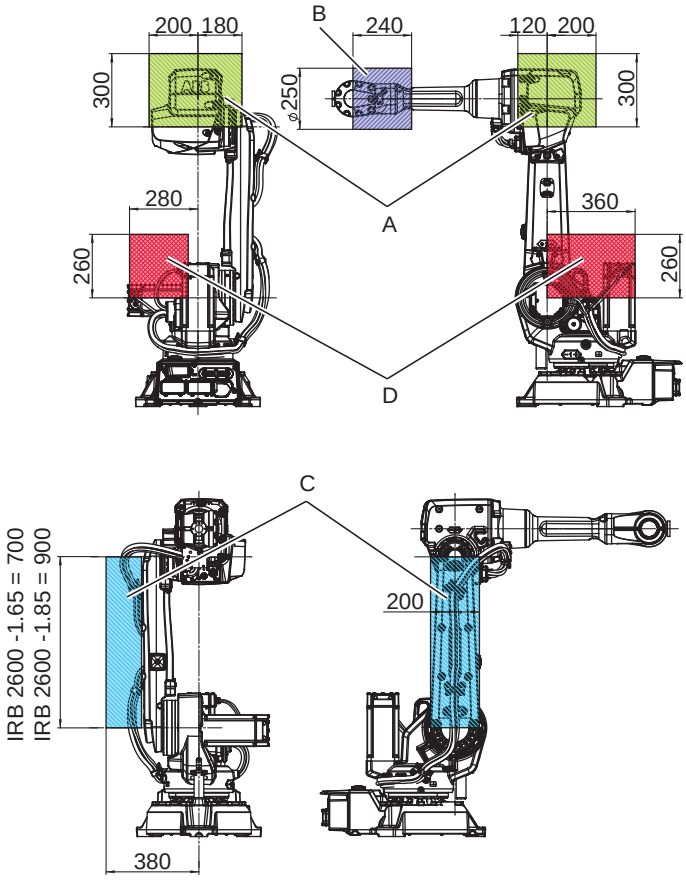
1.6.1 Information about mounting equipment

General

Extra loads can be mounted on the wrist, the upper arm housing and on the frame. The center of gravity of the extra load shall be within the marked load areas. The robot is supplied with holes for mounting of extra equipment. (See figures in Holes for mounting of extra equipment.)

Maximum allowed arm load depends on center of gravity of arm load and robot tool-and payload. Use RobotLoad in RobotStudio to verify individual cases.

> **Note**
>
> Maximum load on the frame (area D) must not be exceeded.



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Load area robot	Max load				
	A	B	C	A+C	D
IRB 2600-20/1.65 IRB 2600 - 12/1.85	10 kg	1 kg	10 kg	10 kg	35 kg
IRB 2600-12/1.65	15 kg	1 kg	15 kg	15 kg	35 kg

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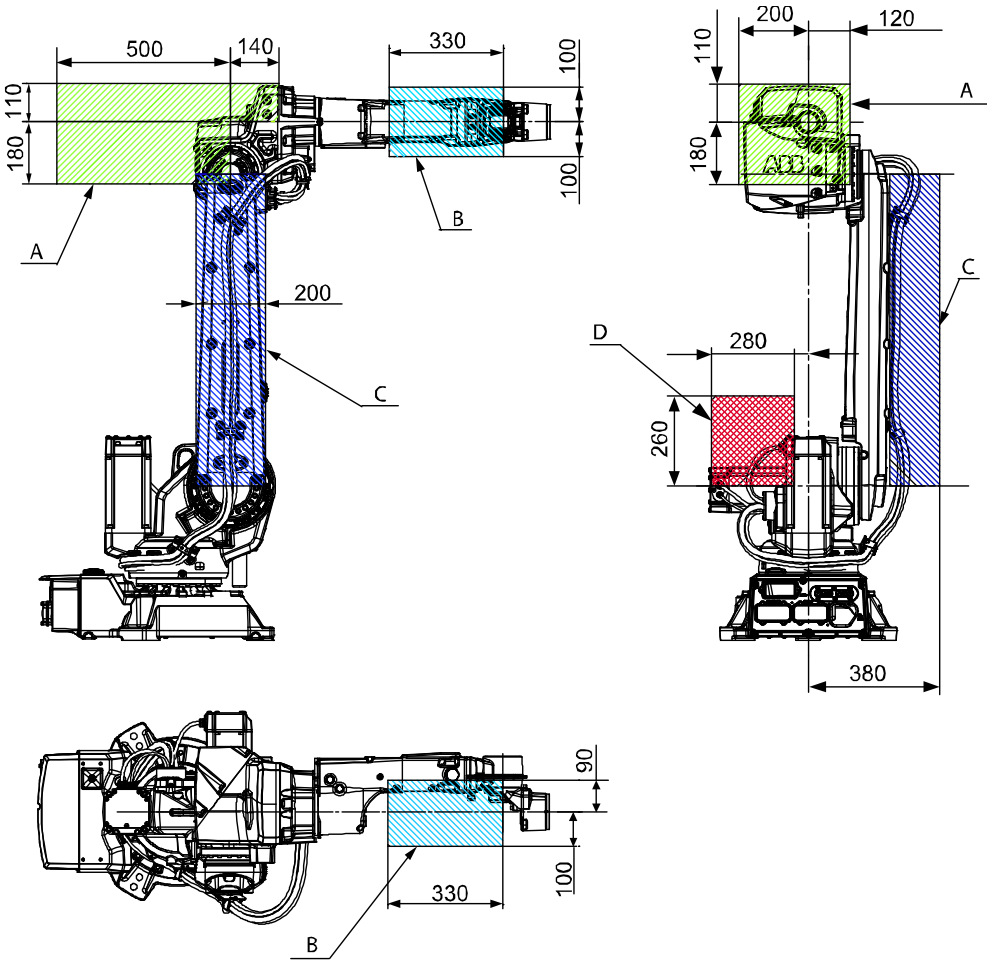

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Load area robot	Max load				
	A	B	C	A+C	D
IRB 2600ID-15/1.85	10 kg	1 kg	10 kg	10 kg	35 kg
IRB 2600ID-8/2.00	15 kg	1 kg	15 kg	15 kg	35 kg

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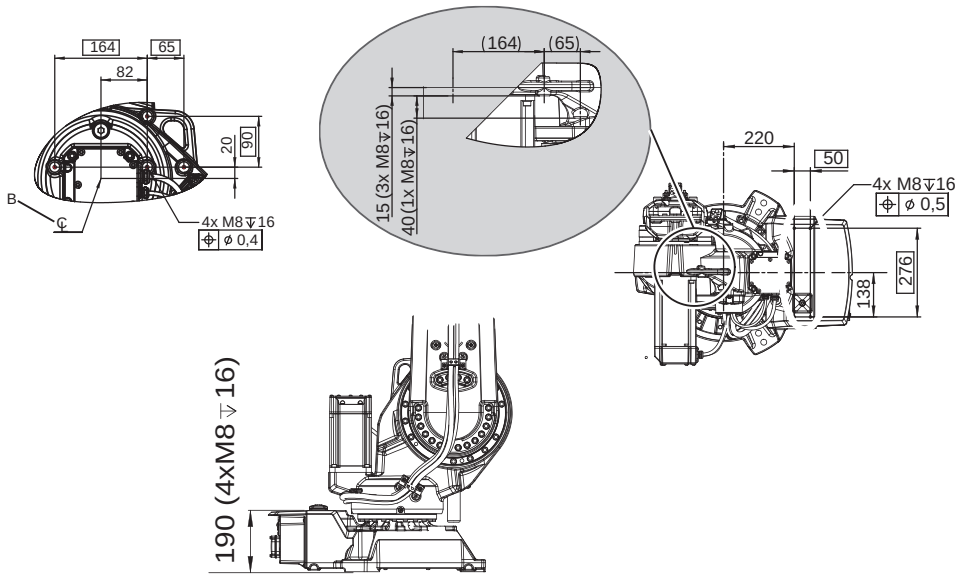
1.6.1 Information about mounting equipment
Continued

Holes for mounting of extra equipment



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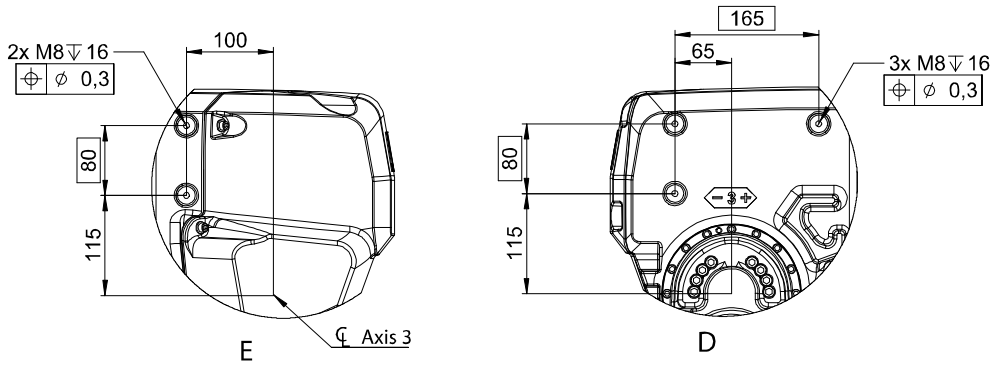

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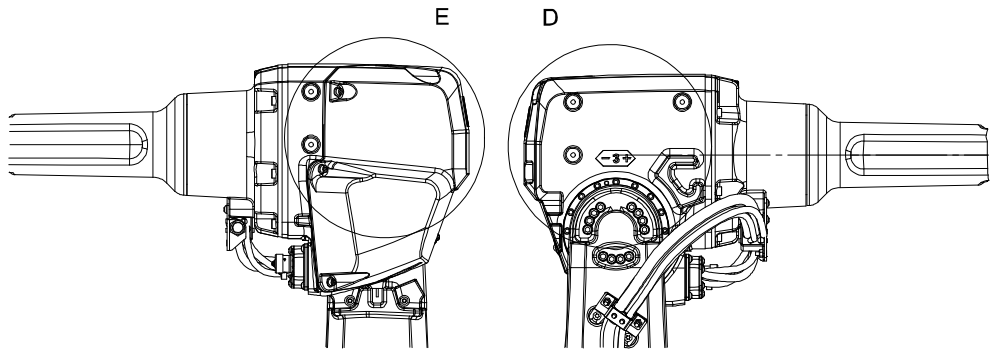

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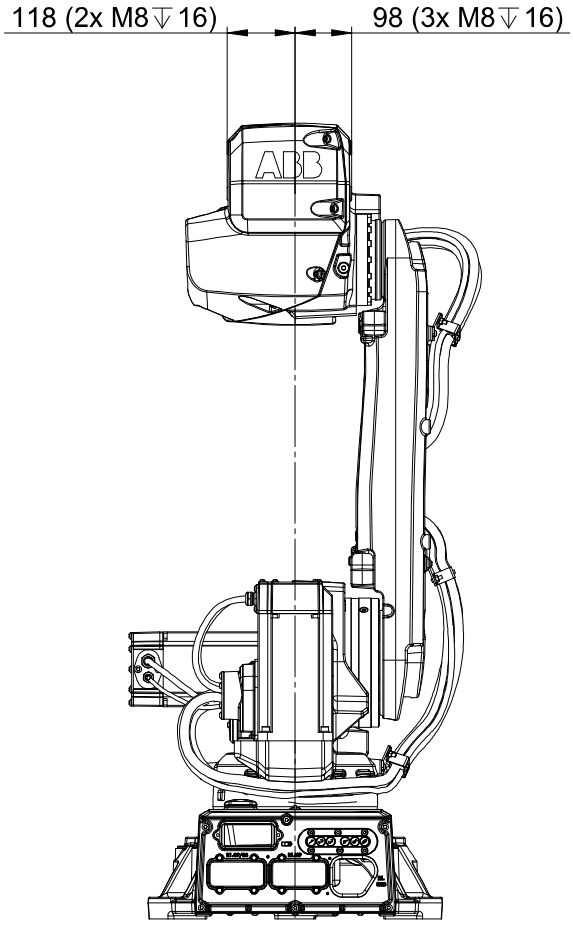

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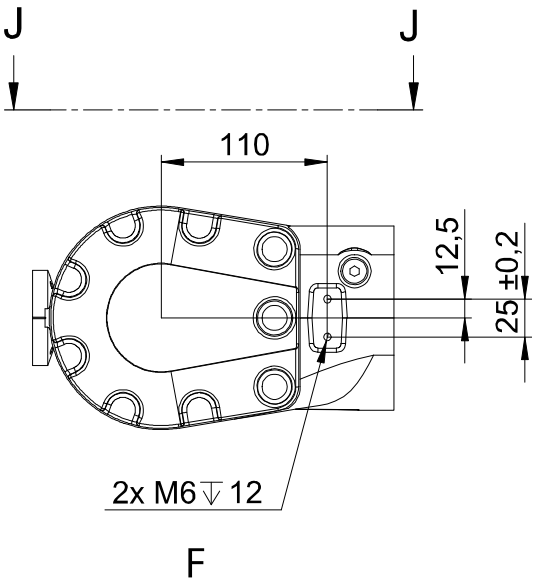

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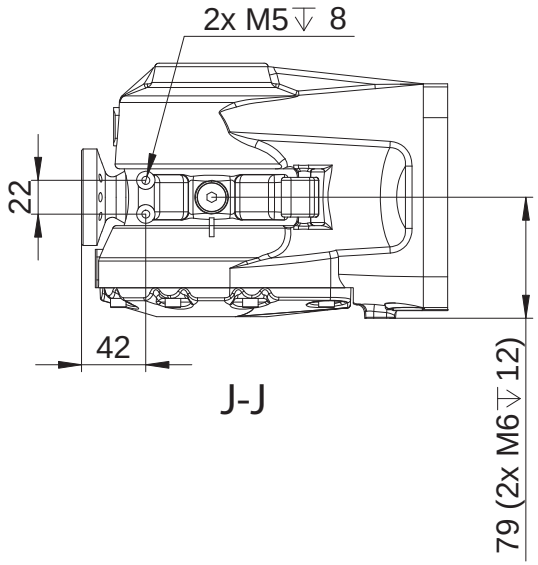
1.6.1 Information about mounting equipment
Continued



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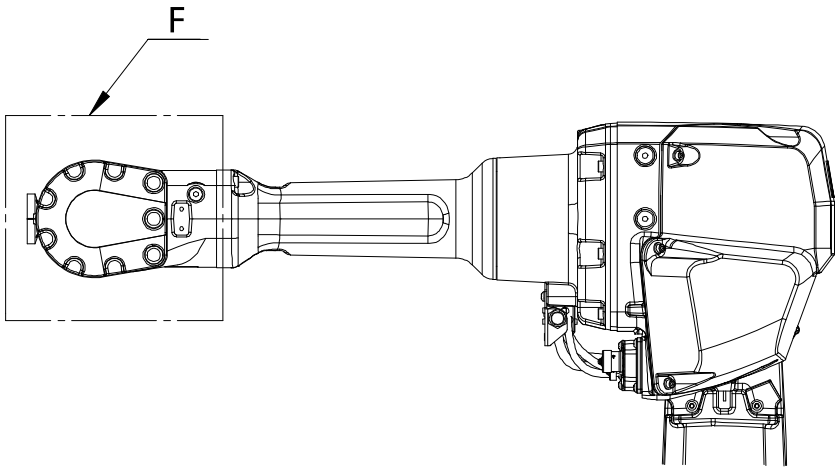

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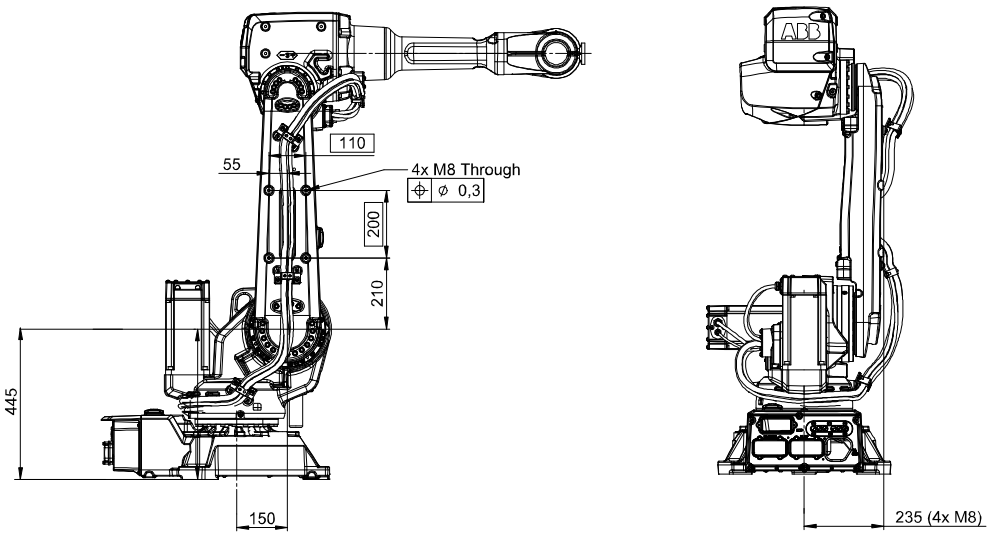

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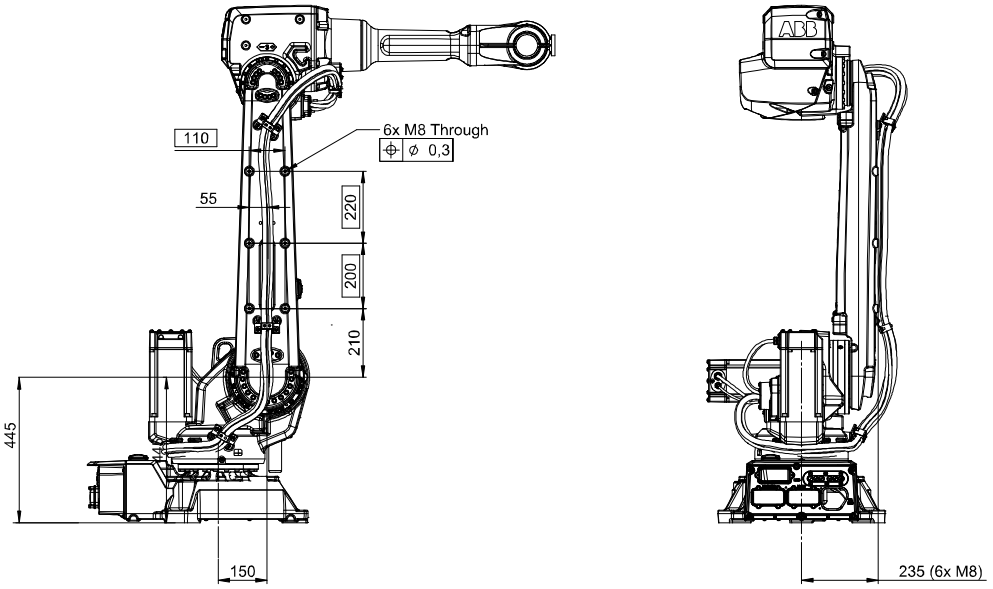

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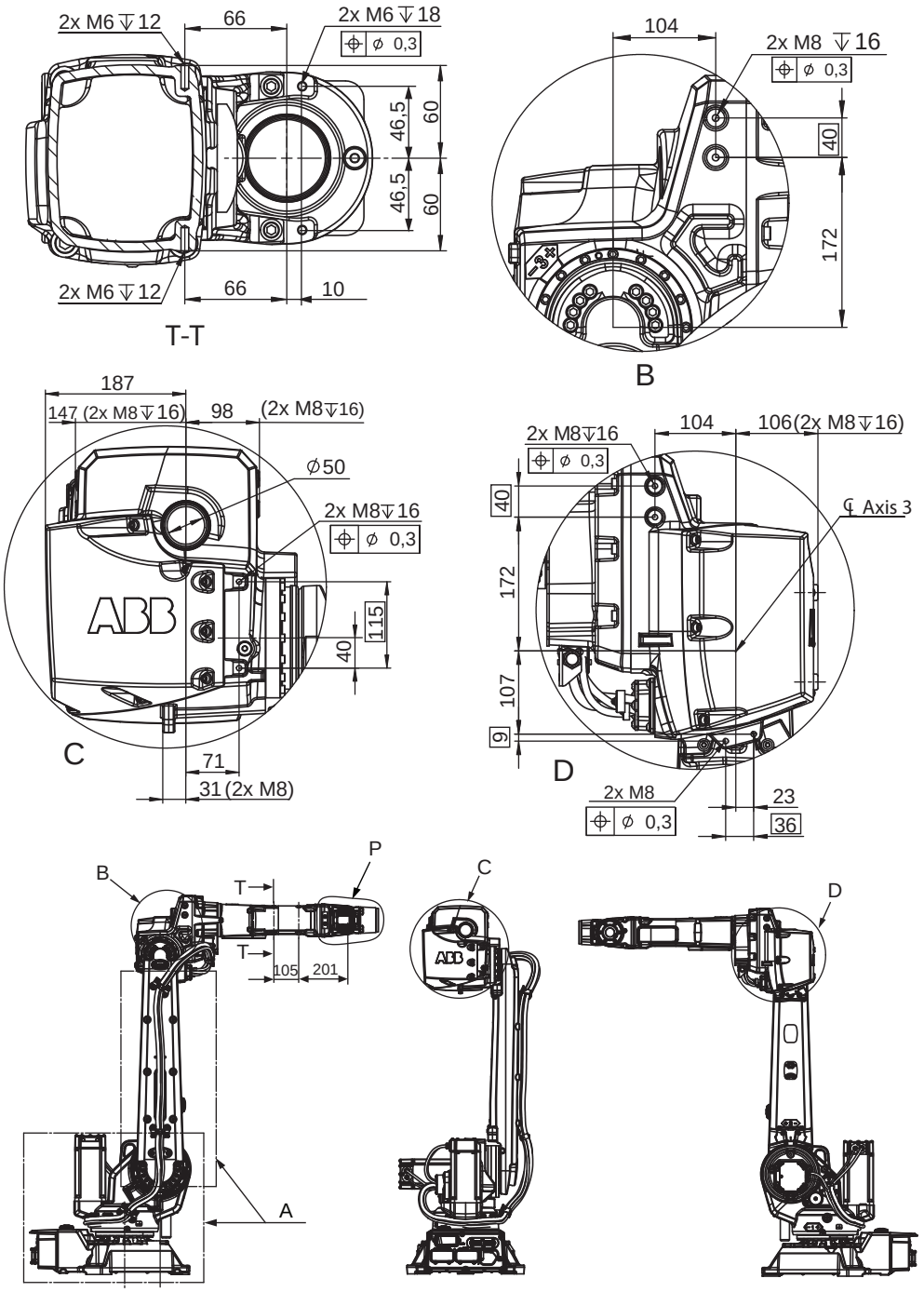
1.6.1 Information about mounting equipment

Continued

Holes for mounting of extra equipment for IRB 2600ID



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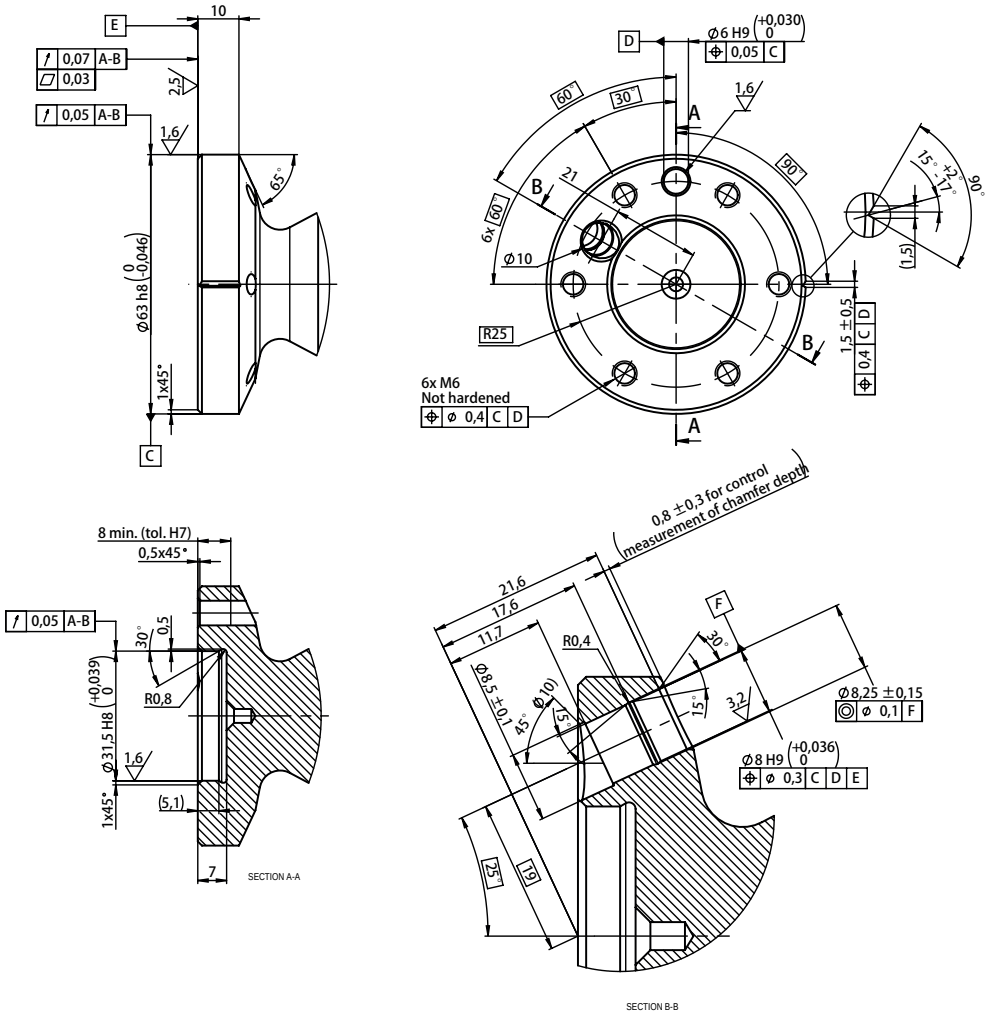
Pos	Description
A	See IRB 2600 standard robot for details.

Continues on next page

Tool flange IRB 2600



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

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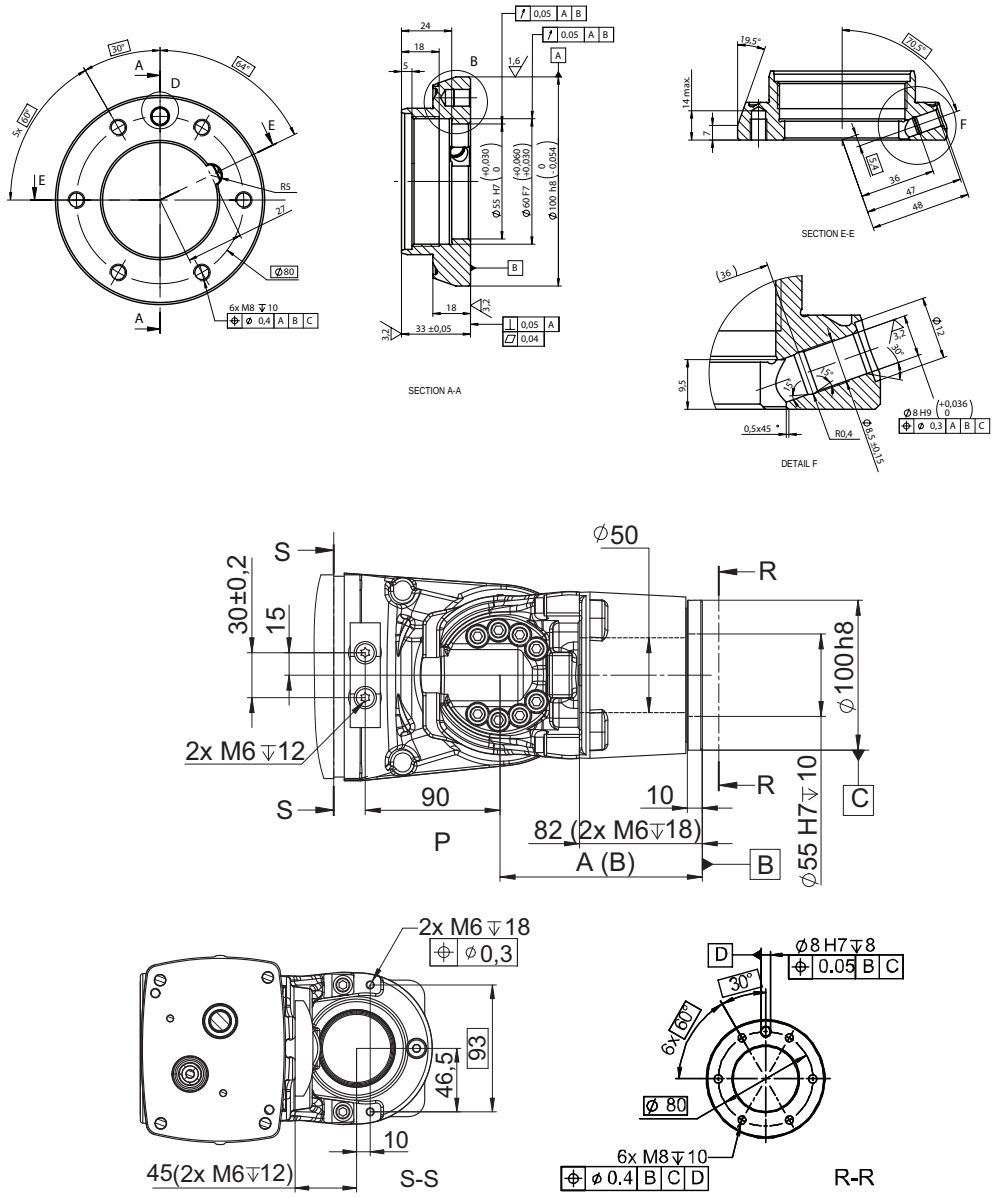
1.6.1 Information about mounting equipment
Continued

Tool flange/wrist for IRB 2600ID



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Pos	Description
A	135 mm for IRB 2600ID-15/1.85
B	200 mm for IRB 2600ID-8/2.00

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

Fastener quality

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

1.7 Maintenance and Troubleshooting

1.7.1 Introduction to Maintenance and Troubleshooting

General

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

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

Maintenance

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

1.8 Robot Motion

1.8.1 Introduction to Robot Motion

IRB 2600

Axis	Type of motion	Range of movement
1	Rotation motion	+ 180° to - 180° [i]
2	Arm motion	+ 155° to - 95°
3	Arm motion	+ 75° to - 180°
4	Rotation motion	+ 400° to - 400° + 251 rev. to - 251 rev. Max.
5	Bend motion	+ 120° to - 120°
6	Turn motion	+ 400° to - 400° + 274 rev. to - 274 rev. Max.

[i] See *Limitations for wall mounted robots on page 62*

For verifying each load case, please contact your local ABB organization.

The default working range for axis 4 and axis 6 can be extended by changing system 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).

Limitations for wall mounted robots

The axis 1 working range has the following limitations for wall mounted robots:

Robot variant	Max payload (kg)	Max arm-load (kg)	Working range axis 1, with max payload + max arm load	Max combined pay/arm-load (kg) for ±180° working range axis 1
IRB 2600-20/1.65	20	11	±45°	8
IRB 2600-12/1.65	12	16	±45°	8
IRB 2600-12/1.85	12	11	±40°	-

IRB 2600ID

Axis	Type of motion	Range of movements
1	Rotation motion	+ 180° to - 180° [i]
2	Arm motion	+ 155° to - 95°
3	Arm motion	+ 75° to - 180°
4	Rotation motion	+ 175° to - 175°
5	Bend motion	+ 120° to - 120°
6	Turn motion	+ 400° to - 400° + 191 rev. to - 191 rev. Max.

[i] See *Limitations for tilt and wall mounted robots on page 63*

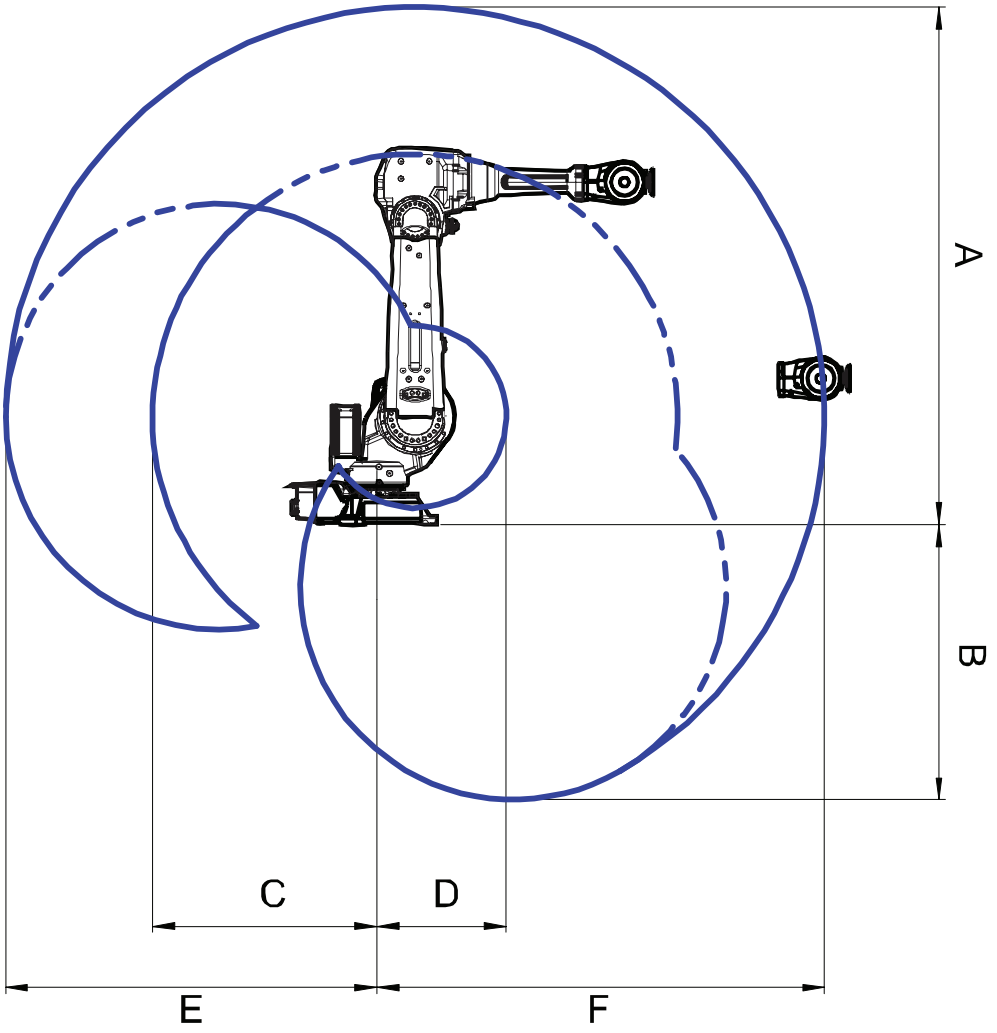
Continues on next page

Limitations for tilt and wall mounted robots

The axis 1 working range has the following limitation for tilt and wall mounting.

Mounting position	Description
Max tilting angle for full axis 1 working range	40 degrees
Max working range for axis 1 at wall mounting	± 40 degrees

Working range



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Variant	Pos. A	Pos. B	Pos. C	Pos. D	Pos. E	Pos. F
IRB 2600-20/1.65 IRB 2600-12/1.65	1948 mm	993 mm	837 mm	469 mm	1353 mm	1653 mm
IRB 2600-12/1.85	2148 mm	1174 mm	967 mm	506 mm	1553 mm	1853 mm

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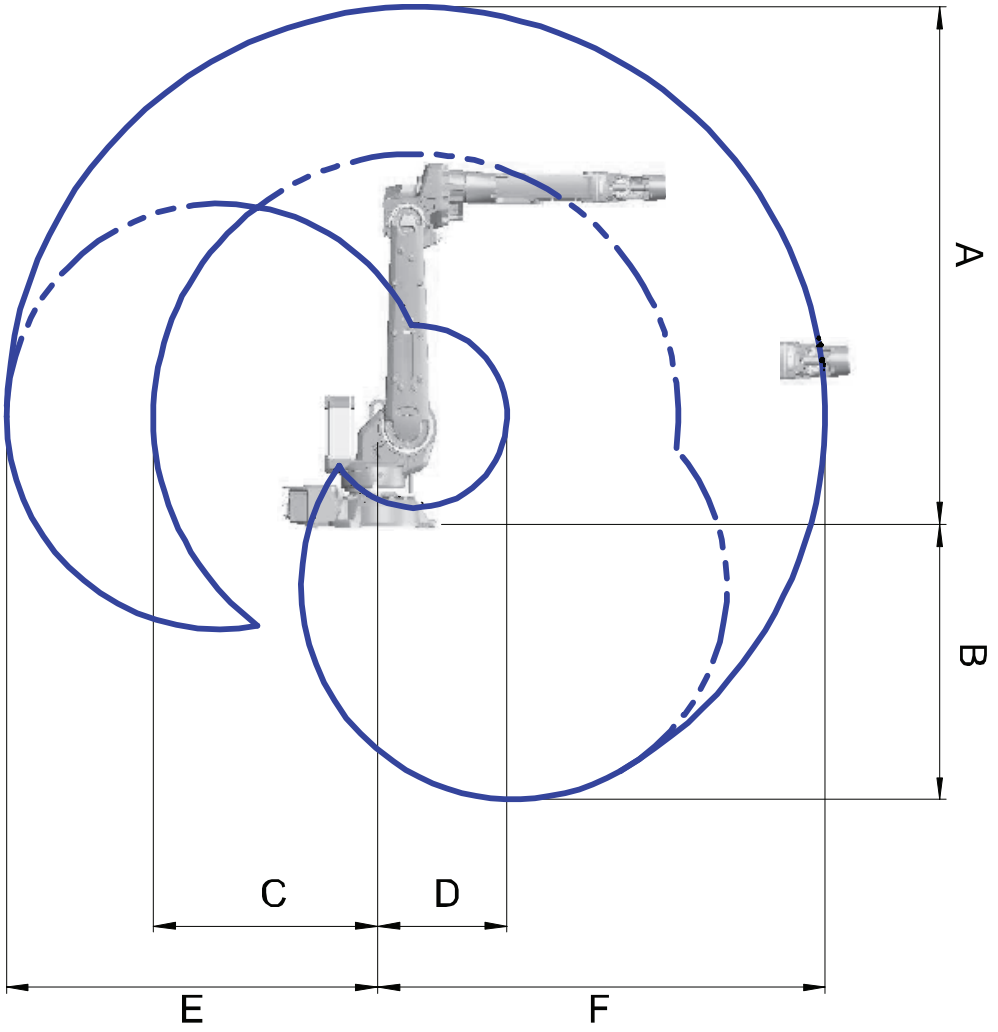
1.8.1 Introduction to Robot Motion
Continued

Working range IRB 2600ID



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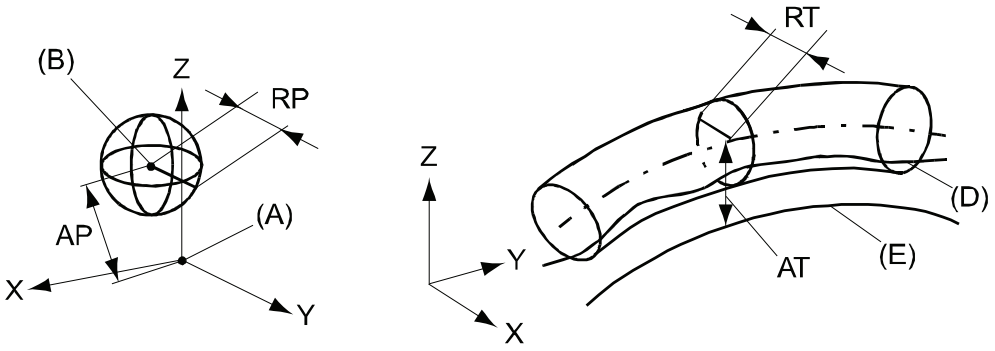
Variant	Pos. A	Pos. B	Pos. C	Pos. D	Pos. E	Pos. F
IRB 2600ID-15/1.85	2145 mm	1171 mm	936 mm	542 mm	1550 mm	1850 mm
IRB 2600ID-8/2.00	2295 mm	1321 mm	1051 mm	539 mm	1700 mm	2000 mm

1.8.2 Performance according to ISO 9283

General

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

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



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

Description	IRB 2600			IRB 2600ID	
	-20/1.65 -20/1.65	-12/1.65 -12/1.65	-12/1.85	-15/1.85	-8/2.00
Pose repeatability, RP (mm)	0.04	0.04	0.04	0.026	0.023
Pose accuracy, AP[i] (mm)	0.03	0.03	0.03	0.014	0.033
Linear path repeatability, RT (mm)	0,13	0.14	0,16	0.30	0.27
Linear path accuracy, AT (mm)	0.55	0.60	0.68	0.80	0.70
Pose stabilization time, (PSt) to within 0.2 mm of the position (s)	0.00	0.02	0.03	0.05	0.063

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

1.8.3 Velocity

Maximum axis speed

Robot variant	Axis 1	Axis 2	Axis 3	Axis 4	Axis 5	Axis 6
IRB 2600-20/1.65	175 °/s	175 °/s	175 °/s	360 °/s	360 °/s	500 °/s
IRB 2600-12/1.65	175 °/s	175 °/s	175 °/s	360 °/s	360 °/s	500 °/s
IRB 2600-12/1.85	175 °/s	175 °/s	175 °/s	360 °/s	360 °/s	500 °/s
IRB 2600ID-15/1.85	175 °/s	175 °/s	175 °/s	360 °/s	360 °/s	500 °/s
IRB 2600ID-8/2.00	175 °/s	175 °/s	175 °/s	360 °/s	360 °/s	500 °/s

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

1.8.4 Robot stopping distances and times

Introduction

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

1.9 Cooling fan for axis 1 and 2 motor

Description

A cooling fan can 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 and/or axis 2.

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

To determine the use of cooling fans for axis 1 and/or axis 2 motor use the **Gearbox Heat Prediction Tool** in RobotStudio. Contact your local ABB organization for more information.

1.10 Customer connections

1.10.1 Customer connection on robot

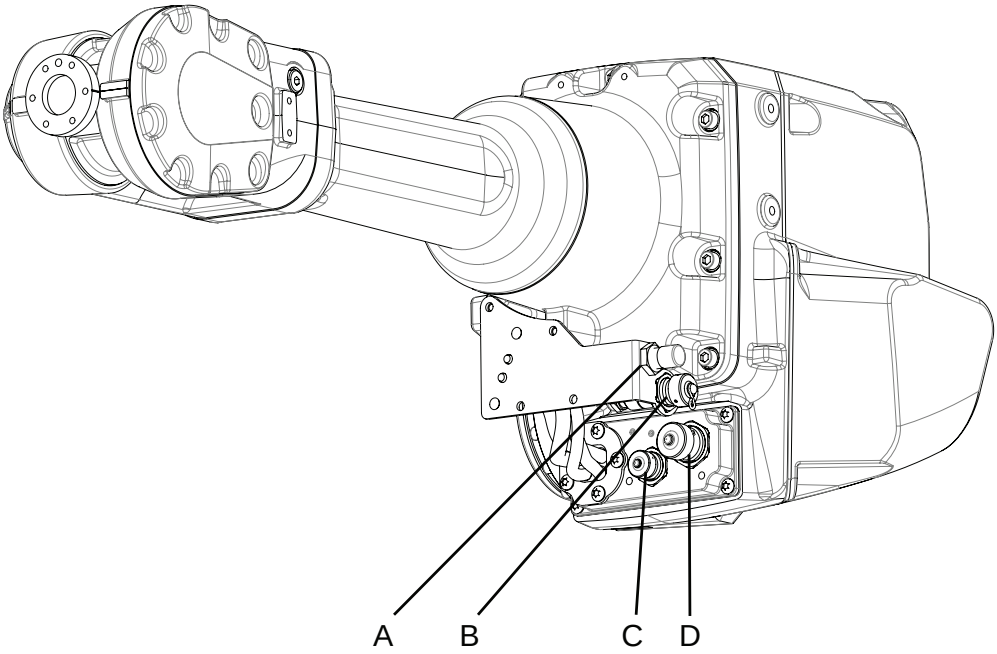
Location of customer connection

For the connection of extra equipment to the robot, cables and air hose are integrated into the robot´s cabling, and there can be two UTOW71210SH06 and one UTOW71626SH06 connector on the front part of the upper arm.

> **Note**
>
> The maximum leakage current for attached equipment must not exceed 10mA.

The customer connections are located on the robot as shown in the figure.

Customer connections on upper arm



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A	R2.PROC1 Air M16x1.5 (24° cone sealing)
B	R2.ETHERNET
C	R2.CP or R2.CBUS
D	R2.CS or R2.CP/CS

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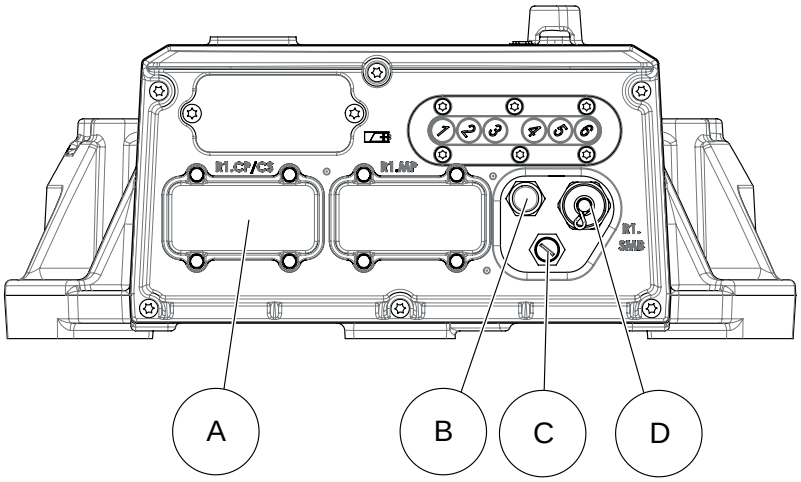
1.10.1 Customer connection on robot
Continued

Customer connections base



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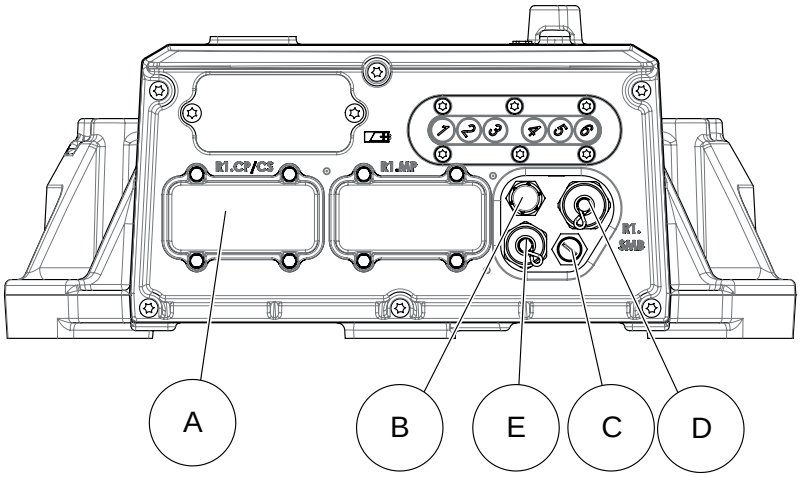
A	R1.CP/CS
B	R1.PROC1 (Air M16x1.5)
C	R1.ETHERNET
D	R1.SMB

Customer connections base with 7th axis



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A	R1.CP/CS
B	R1.PROC1 (Air M16x1.5)
C	R1.ETHERNET
D	R1.SMB
E	R2.FB7

Continues on next page

Extra equipment connections

Connections to the:

- air hose (3/8") is located on the front part of the upper arm and at the base. Max. 8 bar. Inner diameter of the air hose: 9.5 mm.

Number of signals, customer connections option Parallel&Air (3325-11):

- 23 (50V, 0.5A)
- 9 (300V, 2A). 8 are double crimped in R1.CP/CS and 1 is only accessible in the robot base.
- 1 protective ground

Number of signals, customer connections option Ethernet, Parallel&Air (3325-13) and DeviceNet, Parallel&Air (3325-12):

- 8 (50V, 0.5A)
- 3 (300V, 2A)
- 2 DeviceNet
- 4 EtherNet
- 1 protective ground

Connection sets

To connect power and signal conductors to the robot base/upper arm connectors, the following parts are recommended.

Power supply connections on the robot

Signal name	Customer Terminal Controller	Customer Contact on Upper arm, R2	Customer Contact on robot base (cable between robot and controller not supplied)
CPA	XP6.1	R2.CP.A	R1.CP/CS.d1
CPB	XP6.2	R2.CP.B	R1.CP/CS.d6
CPC	XP6.3	R2.CP.C	R1.CP/CS.d3
CPD	XP6.4	R2.CP.D	R1.CP/CS.d4
CPE	XP6.1	R2.CP.E	R1.CP/CS.d1
CPF	XP6.2	R2.CP.F	R1.CP/CS.d6
CPG	-	R2.CP.G (Earth)	-
CPH	-	R2.CP.H	R1.CP/CS.d7
CPJ	XP6.3	R2.CP.J	R1.CP/CS.d3
CPK	XP6.4	R2.CP.K	R1.CP/CS.d4

Signal connection on the robot

Signal name	Customer Terminal Controller	Customer Contact on Upper arm, R2	Customer Contact on robot base (cable between robot and controller not supplied)
CSA	XP5.1.1	R2.CS.A	R1.CP/CS.b1
CSB	XP5.1.2	R2.CS.B	R1.CP/CS.b2

Continues on next page

1.10.1 Customer connection on robot

Continued

Signal name	Customer Terminal Controller	Customer Contact on Upper arm, R2	Customer Contact on robot base (cable between robot and controller not supplied)
CSC	XP5.2.1	R2.CS.C	R1.CP/CS.b3
CSD	XP5.2.2	R2.CS.D	R1.CP/CS.b4
CSE	XP5.2.3	R2.CS.E	R1.CP/CS.b5
CSF	XP5.2.4	R2.CS.F	R1.CP/CS.b6
CSG	XP5.1.9	R2.CS.G	R1.CP/CS.b7
CSH	XP5.1.10	R2.CS.H	R1.CP/CS.b8
CSJ	XP5.1.11	R2.CS.J	R1.CP/CS.b9
CSK	XP5.1.12	R2.CS.K	R1.CP/CS.b10
CSL	XP5.1.3	R2.CS.L	R1.CP/CS.b11
CSM	XP5.1.4	R2.CS.M	R1.CP/CS.b12
CSN	XP5.1.5	R2.CS.N	R1.CP/CS.b13
CSP	XP5.1.6	R2.CS.P	R1.CP/CS.b14
CSR	XP5.3.1	R2.CS.R	R1.CP/CS.b15
CSS	XP5.3.2	R2.CS.S	R1.CP/CS.b16
CST	XP5.3.3	R2.CS.T	R1.CP/CS.b18
CSU	XP5.3.4	R2.CS.U	R1.CP/CS.b19
CSV	XP5.3.5	R2.CS.V	R1.CP/CS.b20
CSW	XP5.3.6	R2.CS.W	R1.CP/CS.b21
CSX	XP5.2.9	R2.CS.X	R1.CP/CS.b22
CSY	XP5.2.10	R2.CS.Y	R1.CP/CS.b23
CSZ	XP5.2.11	R2.CS.Z	R1.CP/CS.b24

2 Specification of variants and options

2.1 Introduction to variants and options

General

The different variants and options for the IRB 2600 are described in the following sections. The same option numbers are used here as in the specification form.

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

2.2 Manipulator

Variants

Option	Robot variant	Handling capacity (kg) / Reach (m)
3300-84	IRB 2600-20/1.65	20/1.65
3300-85	IRB 2600-12/1.65	12/1.65
3300-86	IRB 2600-12/1.85	12/1.85
3300-87	IRB 2600ID-15/1.85	15/1.85
3300-88	IRB 2600ID-8/2.00	8/2.00

Manipulator color

Option	Color	RAL code [i]
209-1	ABB orange standard Standard color with protection option 3351-4 Cleanroom 4	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

Notice that delivery time for painted spare parts will increase for ABB none standard colors.

Manipulator protection

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

Foundry cable guard

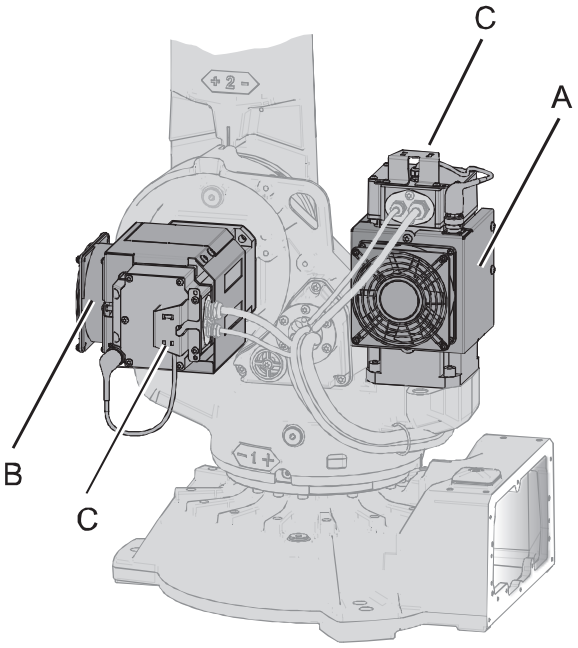
The manipulator cables are equipped with an additional protection of aluminized leather against e.g. aluminium spitz and flashes and chips from machining.

Option	Type	Description
3315-1	Foundry cable guard	For extra protection of cables.

Continues on next page

Cooling fans for axis 1 and 2 motor

To be used to avoid overheating of motors and gears in application with intensive motion (high average speed and/or high average torque and/or short wait time) of axis 1 and axis 2. IP54 valid for cooling fan.



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	Option	Description
A	3320-1	Cooling fan for axis 1 motor
B	3321-1	Cooling fan for axis 2 motor
C	-	Protection cover

Resolver connection 7th axis

A connector for resolver signals for 7th axis is located on the base.

Option	Description	Remark
3322-1	On base	

Limited working range

The working range of axis 1 is limited by fixed mechanical stops. The working range can be reduced further by adding movable mechanical stops.

The mechanical turning range can be limited in steps of 22.5° from the synchronization position, between values defined in the table. The values differ depending on which design of the gearbox (and base) the robot is equipped with.

Robot type	Limitation in mechanical turning range, calculated from synchronization position
IRB 2600 Type C-20/1.65, IRB 2600 Type C-12/1.65	±126° to ±13.5° in steps of 22.5°

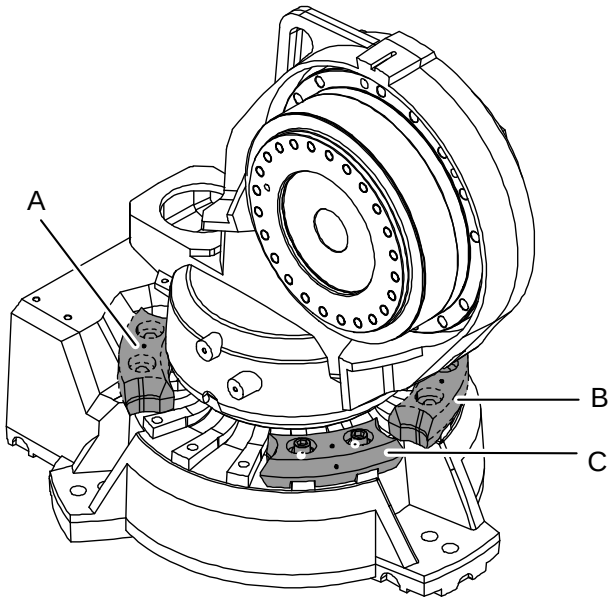
Continues on next page

Robot type	Limitation in mechanical turning range, calculated from synchronization position
IRB 2600-20/1.65, IRB 2600-12/1.65, IRB 2600-12/1.85, IRB 2600ID-15/1.85, IRB 2600ID-8/2.0	±129° to ±16.5° in steps of 22.5°

Note

The software working range limitations must be adjusted to correspond to the changes in the mechanical limitations of the working range. The system parameters that must be changed (*Upper joint bound* and *Lower joint bound*) are described in *Technical reference manual - System parameters*.

Option	Description
3323-2 Axis 1 adjustable 22,5°	Two stops for restricting the working range. The stops can be mounted according to example in.



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Pos	Description
A	Movable mechanical stop. Limited to: • -126° (IRB 2600 Type C-20/1.65, IRB 2600 Type C-12/1.65) • -129° (IRB 2600-20/1.65, IRB 2600-12/1.65, IRB 2600-12/1.85, IRB 2600ID-15/1.85, IRB 2600ID-8/2.0)
B	Movable mechanical stop. Limited to: • +13.5° (IRB 2600 Type C-20/1.65, IRB 2600 Type C-12/1.65) • +16.5° (IRB 2600-20/1.65, IRB 2600-12/1.65, IRB 2600-12/1.85, IRB 2600ID-15/1.85, IRB 2600ID-8/2.0)
C	Movable mechanical stop. Limited to: • -13.5° (IRB 2600 Type C-20/1.65, IRB 2600 Type C-12/1.65) • -16.5° (IRB 2600-20/1.65, IRB 2600-12/1.65, IRB 2600-12/1.85, IRB 2600ID-15/1.85, IRB 2600ID-8/2.0)

2.3 Floor cables

Manipulator cable length

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

2.4 Application manipulator

DressPack base-axis 3

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

2.5 Connector kits manipulator

Connector kit base

Option	Description
3330-2	CP/CS bus, Proc 1 base

Connector kit axis 3

Option	Description
3333-2	CP/CS bus, Proc 1 axis3

2.6 Application floor cables

Parallel cable - Length

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

Ethernet cable - Length

Note

Occupies 1 Ethernet port.

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

CC-Link cable - Length

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

Servo cable 1 axis - Length

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

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].

2.7 Warranty

Warranty

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

Note

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

Option	Type	Description
438-1	Standard warranty	Standard warranty is 12 months from *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*.

Continues on next page

Warranty for DressPack

Note

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

3 Robot description

3.1 Robot types

Robot types

There are different versions of the IRB 2600, the initial version, Type A, and Type B. The following table explains the differences.

There is also a Type C of IRB 2600, but it only affects two variants of the robot, see the table and see *Non-compatible versions of axis-1 and axis-2 gearboxes on page 84*.

	IRB 2600 (standard variants)	IRB 2600ID
Initial version	motor type A	motor type A
IRB 2600 Type A	Axis 2 changes gearbox	Axis 1-5 change to motor type B Axis 6 keeps motor type A
IRB 2600 Type B	Axis 1-6 change to motor type B	
IRB 2600 Type C - only IRB 2600 Type C-20/1.65, IRB 2600 Type C-12/1.65.	Axis 1 and 2 changes gearbox and motor pinion Axis 3, 4, 5 and 6 has motor type B	

3.2 Non-compatible versions of axis-1 and axis-2 gearboxes

Gearboxes from different suppliers are not compatible

There are two different versions of the axis-1 and axis-2 gearboxes for robot variants IRB 2600-20/1.65 and IRB 2600-12/1.65.

- Version 1 for IRB 2600-20/1.65, IRB 2600-12/1.65, IRB 2600-12/1.85, IRB 2600ID-15/1.85, IRB 2600ID-8/2.0 (supplier Spinea).
- Version 2 for IRB 2600 Type C-20/1.65, IRB 2600 Type C-12/1.65 (supplier Nabtesco).

The different versions affect the surrounding mechanical structure of the robot. Following parts are unique for each version of the gearbox.

- Axis-1 gearbox
- Axis-2 gearbox
- Frame
- Base
- Lower arm
- Axis-1 motor pinion
- Axis-2 motor pinion
- Cable harness

The listed parts are not interchangeable.

The gearbox oils are not interchangeable.

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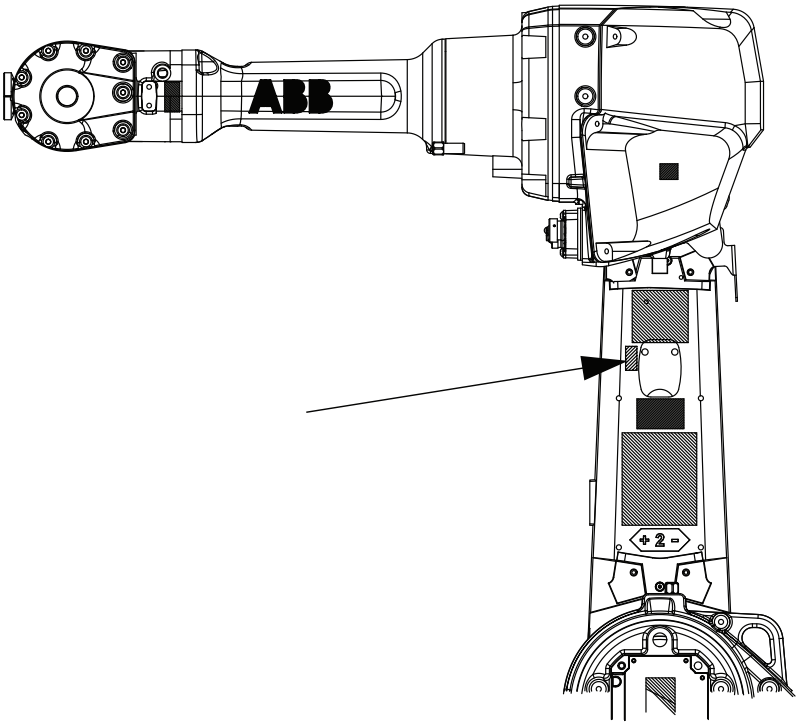
Designation label on lower arm

At delivery there is a designation label fitted to the lower arm of the Type C version of the robot, informing that the robot is a Type C version.



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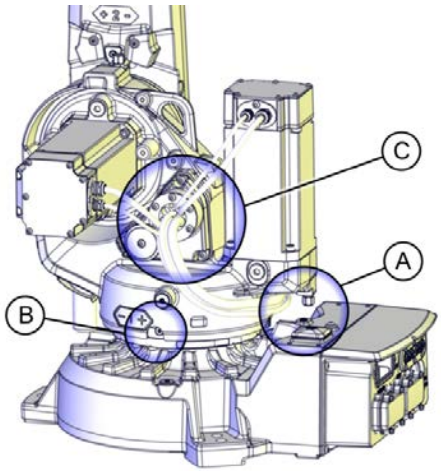
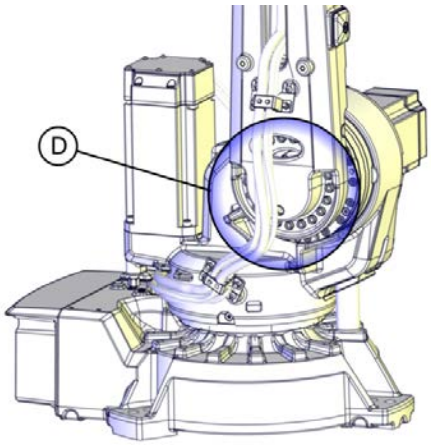
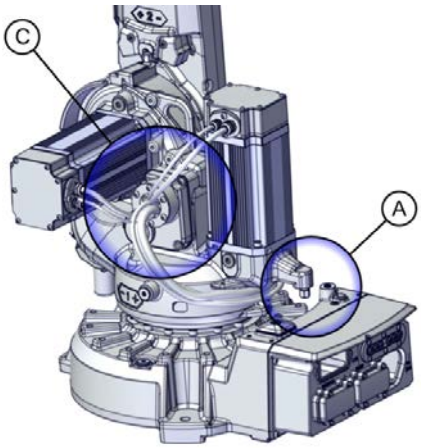
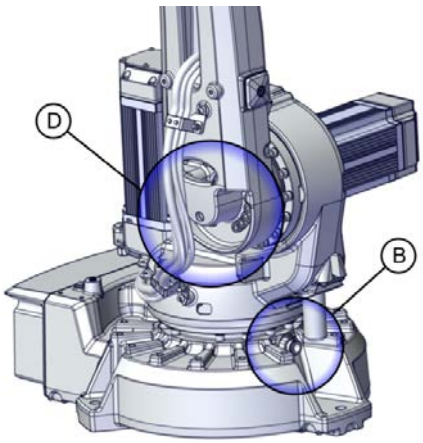
3.2 Non-compatible versions of axis-1 and axis-2 gearboxes
Continued

Identifying the gearbox version visually

The mechanical structure of the robot differs depending on which axis-1 and axis-2 gearbox the robot is equipped with. Some of the differences are visible, as shown in the table.

	Identification of gearbox - mechanical structure IRB 2600-20/1.65, IRB 2600-12/1.65, IRB 2600-12/1.85, IRB 2600ID-15/1.85, IRB 2600ID-8/2.0	Identification of gearbox - mechanical structure IRB 2600 Type C-20/1.65, IRB 2600 Type C-12/1.65
	 xx1800000551  xx1800000554	 xx1800001133  xx1800001134
A	The fixed calibration pin for Axis Calibration is located straight below the motor flange. The bushing for the calibration tool is centered on the base.	The fixed calibration pin for Axis Calibration is located on a casted arm on the motor flange. The bushing for the calibration tool is located to the right on the base.
B	The oil plug for drainage is located on the left side of the gearbox and visible through an opening in the frame (when robot is standing in synchronization position).	The oil plug for drainage is located in front of the gearbox (when robot is standing in synchronization position).
C	The cable cover shape is triangular.	The cable cover shape is rectangular.
D	Hole pattern for 17 screws that fasten the lower arm to the gearbox.	Hole pattern for 16 screws that fasten the lower arm to the gearbox.

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Identifying the gearbox version by article number

Only robot variants IRB 2600-20/1.65 and IRB 2600-12/1.65 are affected by different gearbox suppliers.

Use the table to identify which gearbox versions are installed on the robot, by article number. If needed, contact your local ABB for further assistance regarding the robot type.

Robot type	Article number, axis-1 gearbox	Article number, axis-2 gearbox
IRB 2600-20/1.65	3HAC028837-001	3HAC039109-001
IRB 2600 Type C-20/1.65	3HAC043130-001	3HAC043134-001
IRB 2600 - 12/1.65	3HAC028837-001	3HAC039109-001
IRB 2600 Type C-12/1.65	3HAC043130-001	3HAC043134-001

Identifying the robot type on the FlexPendant

For an OmniCore robot, the robot type is shown in the **System Info** view, available from the QuickSet menu **Info**.

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ABB AB
Robotics & Discrete Automation
S-721 68 VÄSTERÅS, Sweden
Telephone +46 10-732 50 00

ABB AS
Robotics & Discrete Automation
Nordlysvegen 7, N-4340 BRYNE, Norway
Box 265, N-4349 BRYNE, Norway
Telephone: +47 22 87 2000

ABB Engineering (Shanghai) Ltd.
Robotics & Discrete Automation
No. 4528 Kangxin Highway
PuDong New District
SHANGHAI 201319, China
Telephone: +86 21 6105 6666

ABB Inc.
Robotics & Discrete Automation
1250 Brown Road
Auburn Hills, MI 48326
USA
Telephone: +1 248 391 9000

abb.com/robotics

3HAC085909-001, Rev F, en