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ROBOTICS

Product specification
IRB 2600
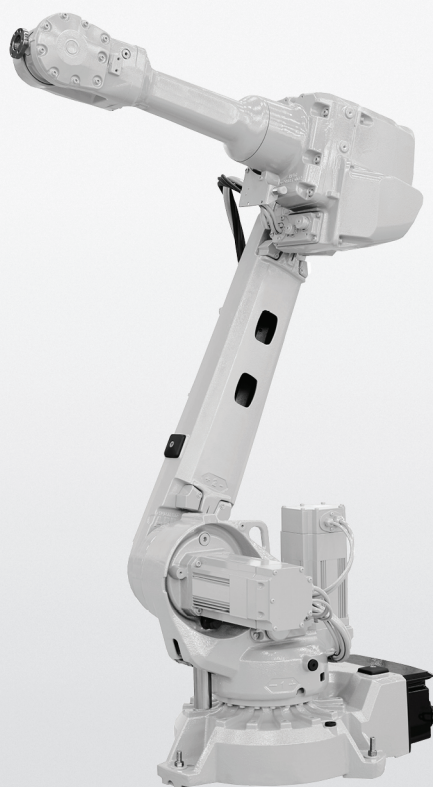
Product specification

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

Document ID: 3HAC035959-001

Revision: AB

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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

Reference	Document ID
Product specification - Controller IRC5 IRC5 with main computer DSQC1000.	*3HAC047400-001*
Product specification - Controller software IRC5 IRC5 with main computer DSQC1000 and RobotWare 5.6x.	*3HAC050945-001*
Product specification - Controller software IRC5 IRC5 with main computer DSQC1000 and RobotWare 6.	*3HAC050945-001*
Product manual - IRB 2600	*3HAC035504-001*
Product specification - Robot user documentation, IRC5 with RobotWare 6	*3HAC052355-001*

Revisions

Revision	Description
-	First edition
A	Foundry Plus 2
B	ID-versions added
C	Minor corrections
D	• Table for ambient temperature adjusted • Value added to drawing, Mounting surface and bushings • Minor corrections

Continues on next page

Overview of this specification

Continued

Revision	Description
E	• Machinery directive updated • Foundation forces updated
F	• General updates and minor corrections
G	• General updates and minor corrections
H	• Minor corrections and updates
J	• Text for ISO test adjusted • Robot stopping distances and times for category 0 and category 1 stops are moved to a separate document, *Product specification - Robot stopping distances according to ISO 10218-1*
K	• Text for Foundry Plus updated. • Minor corrections and updates
L	• Desciption option 908-1 added • Option Tool Sytem TS 2600ID added • Tilting around X-axis added
M	• Name changed for Option 991-1, from *Manifold TS 2600ID* to *Tool Attachment TS 2600ID*. See *Manipulator on page 76*. • Number of M16 threaded holes in base changed.
N	• Illustrations for Tool flange standard/LeanID changed, see *Mounting equipment on page 52*
P	• Product data for AbsAcc added and changed, see *Production data on page 36*
Q	Published in release R17.1. The following updates are done in this revision: • Restriction of load diagram added. • Added data for tilted mounting, *Mounting the manipulator on page 24*. • Updated drawing for tool flange, *Information about mounting equipment on page 52*.
R	Published in release R17.2. The following updates are done in this revision: • Tool flange drawings changed • Updated list of applicable standards. • TCP acceleration information added
S	Published in release R18.2. The following updates are done in this revision: • Manipulator axes rotation direction figure updated. • Removed the phased out options: option Tool System TS 2600ID [989-1], option Tool Changer TS 2600ID [990-1], option Tool Attachment TS 2600ID [991-1], welding torch package options [878-X], option AristoMig 5000i [1029-14], current/hose set options [1030-X], and feed kit options [1033-X]. • Added pin hole dimension to tool flange/wrist dimension for IRB 2600ID.
T	Published in release 19B. The following updates are done in this revision: • Added IRB 2600 Type C-20/1.65, IRB 2600 Type C-12/1.65 to the specification. • Modify the technical data of power consumption. • Change the designation of Air hose *Customer connections on page 69*. • Updated information about *Absolute Accuracy*.

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Revision	Description
U	Published in release 19B. The following updates are done in this revision: • Type C variants (IRB 2600 Type C-20/1.65, IRB 2600 Type C-12/1.65) are removed from the manual, due to later sales start.
V	Published in release 19C. The following updates are done in this revision: • Note added about need to calibrate if the robot is other than floor mounted. See *Calibration methods on page 30*.
W	Published in release 20A. The following updates are done in this revision: • Type C variants (IRB 2600 Type C-20/1.65, IRB 2600 Type C-12/1.65) are added.
X	Published in release 20C. The following updates are done in this revision: • Modified in Customer connections section.
Y	Published in release 20D. The following updates are done in this revision: • Warranty section updated.
Z	Published in release 21A. The following updates are done in this revision: • Added information in section *Information about mounting equipment on page 52*.
AA	Published in release 21C. The following updates are done in this revision: • Text regarding fastener quality is updated. • Remove Axis resolution. • Added the introduction to inverted mounting position. See *Expansion container for inverted mounting of the manipulator on page 28*. • Updated section of customer connection.
AB	Published in release 22B. The following updates are done in this revision: • Update descriptions in Mounting equipment chapter.

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1 Description

1.1 Structure

1.1.1 Introduction to Structure

Robot family

The IRB 2600 is ABB Robotics latest robot of the new sharp generation with enhanced and new capabilities. It is available in seven versions, in which IRB 2600ID-15/1.85 and IRB 2600ID-8/2.00 are with a process upper arm. The design has been optimized to make it superior for the targeted applications. The IRB 2600 will focus on further expansion in, Dispensing, Machining, Measuring, Assembly and Arc Welding applications.

Operating system

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

Safety

Safety standards valid for complete robot, manipulator and controller.

Additional functionality

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

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

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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 versions

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

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

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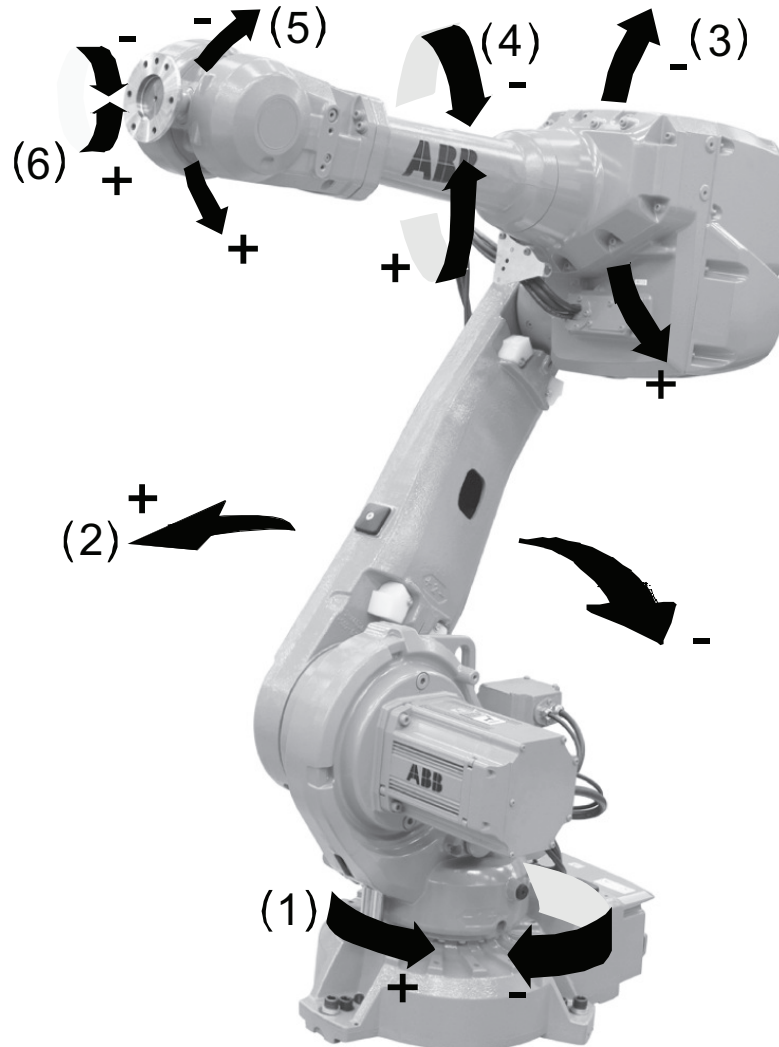
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Pos	Description	Pos	Description
A	Axis 1	B	Axis 2
C	Axis 3	D	Axis 4
E	Axis 5	F	Axis 6

1.1.2 Different robot versions

General

The IRB 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 type	Handling capacity (kg)	Reach (m)
IRB 2600	20	1.65
IRB 2600	12	1.65
IRB 2600	12	1.85
IRB 2600ID	15	1.85
IRB 2600ID	8	2.00

Manipulator weight

Robot type	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)	< 72 dB (A) Leq (acc. to Machinery directive 2006/42/EG)

Power consumption at max load

Type of Movement	IRB 2600				
	-20/1.65	-12/1.65	-12/1.85	ID-15/1.85	ID-8/2.00
ISO Cube Max. velocity	0.941 kW	0.953 kW	0.92 kW	0.86 kW	0.86 kW

Robot in calibration position	IRB 2600				
	-20/1.65	-12/1.65	-12/1.85	ID-15/1.85	ID-8/2.00
Brakes engaged	0.145 kW	0.146 kW	0.232 kW	0.206 kW	0.207 kW
Brakes disengaged	0.429 kW	0.366 kW	0.43 kW	0.40 kW	0. 39 kW
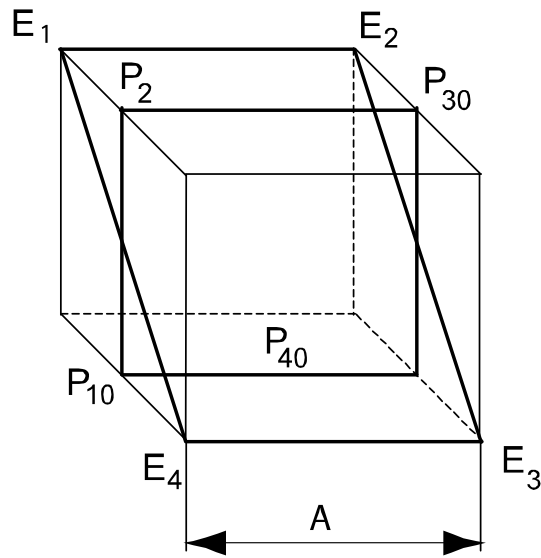
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Pos	Description
A	630 mm

Dimensions IRB 2600-20(12)/1.65
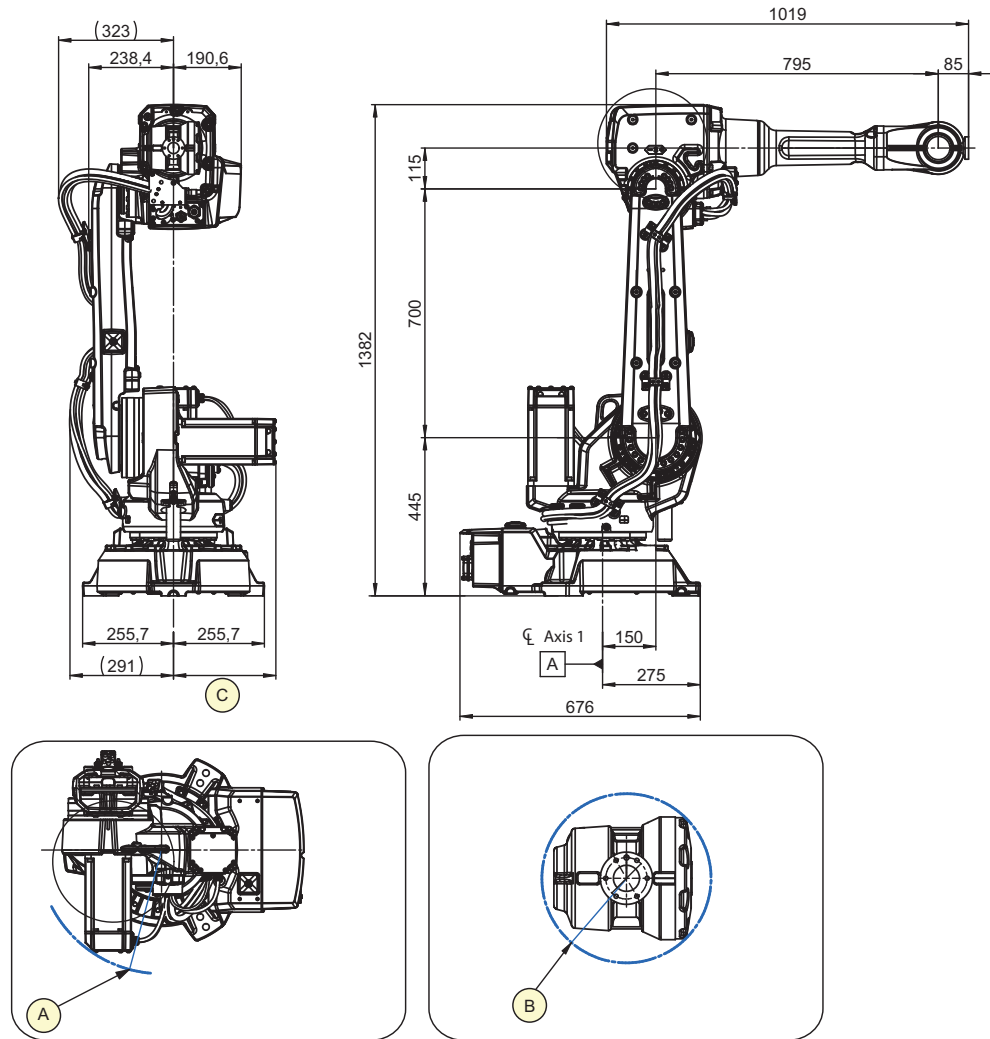
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Pos	Description
A	R 337 Minimum turning radius of axis 1
B	R 98 Minimum turning radius of axis 4
C	IRB 2600ID = 281 mm Other types than Type A (IRB 2600ID) = 276 mm

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Dimensions IRB 2600-12/1.85
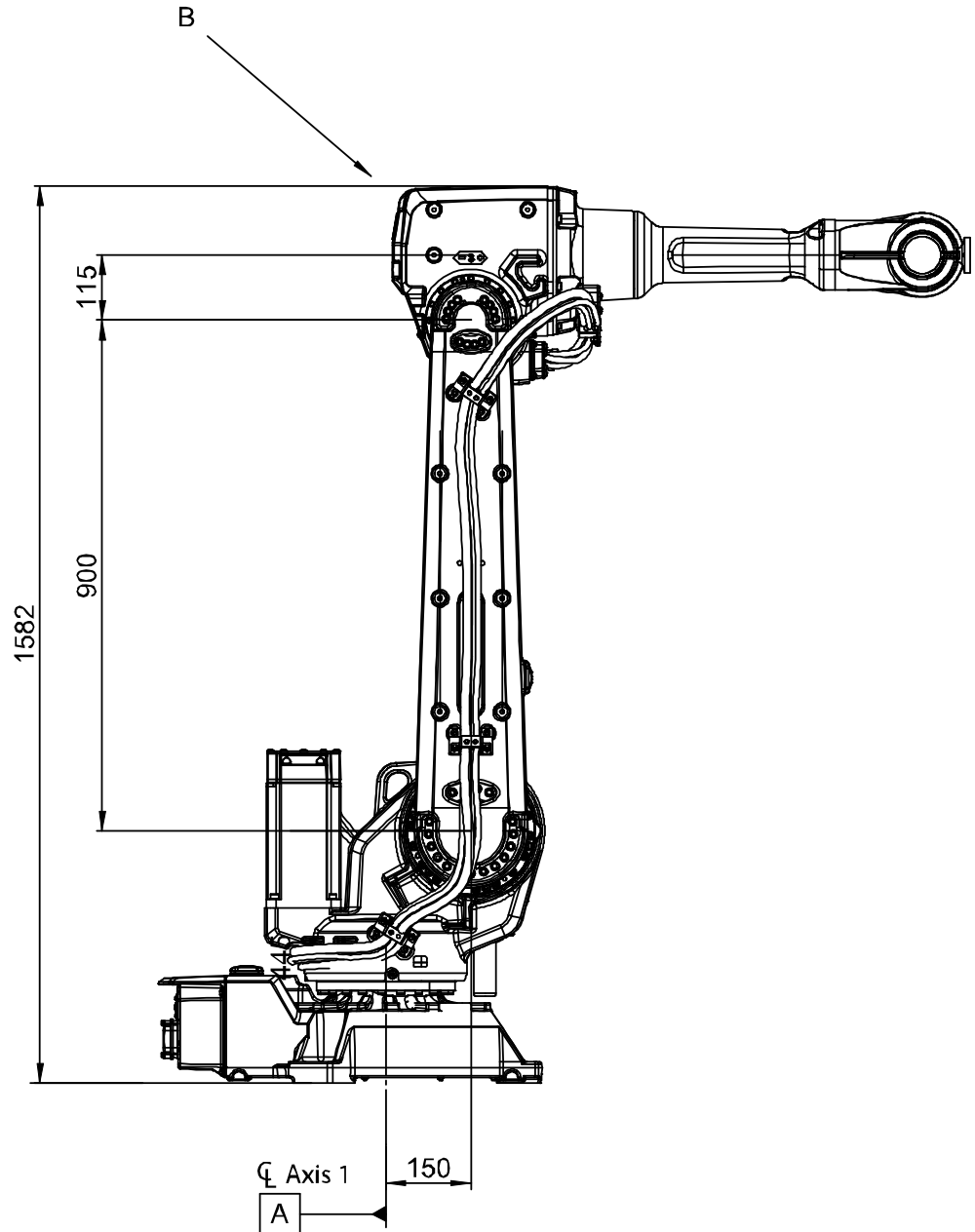
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Pos	Description
B	For all other dimensions see IRB 2600-20(12)/1.65

1 Description

Dimensions IRB 2600ID-15/1.85

xx1000000962

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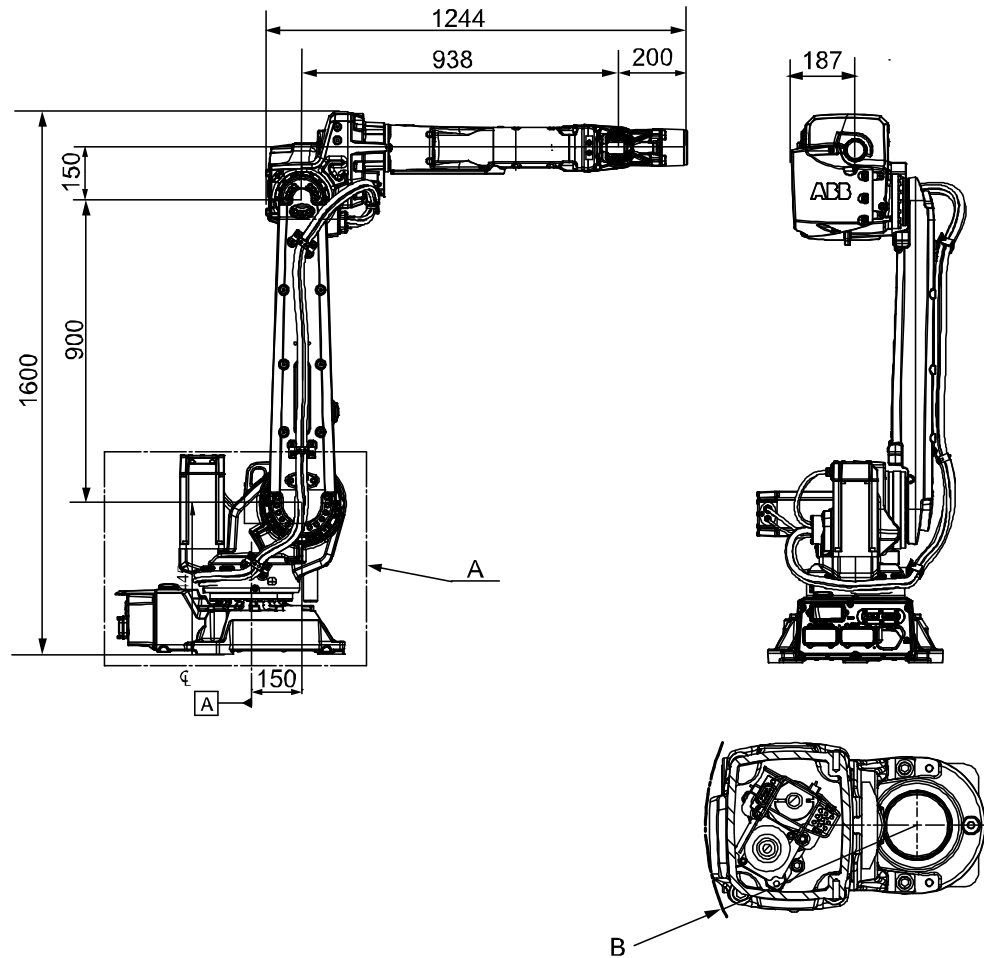
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Pos	Description
A	For dimensions, see IRB 2600-X/1.85
B	R 172 Minimum turning radius for axis 4

1 Description

1.2 Standards

1.2.1 Applicable standards

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

General

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

Normative standards as referred to from ISO 10218-1

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

Region specific standards and regulations

Standard	Description
ANSI/RIA R15.06	Safety requirements for industrial robots and robot systems
ANSI/UL 1740	Safety standard for robots and robotic equipment
CAN/CSA Z 434-03	Industrial robots and robot Systems - General safety requirements

Other standards used in design

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

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

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

1.3 Installation

1.3.1 Introduction to installation

General

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.

1.3.2 Operating requirements

Protection standards

Robot version		Protection Standard IEC60529
Standard manipulator		IP 67
Foundry Plus 2		IP 67
IRB 2600ID-15(8)/1.85(2.00)	Base + lower arm + wrist	IP 67
	Axis 4	IP 54

Explosive environments

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

Ambient temperature

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

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

Relative humidity

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

1.3.3 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.

> ℹ **Note**
>
> The suspended mounting required option [224-2] Inverted mounting.
>
> See *Expansion container for inverted mounting of the manipulator on page 28* for more details about the suspended mounting.

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.
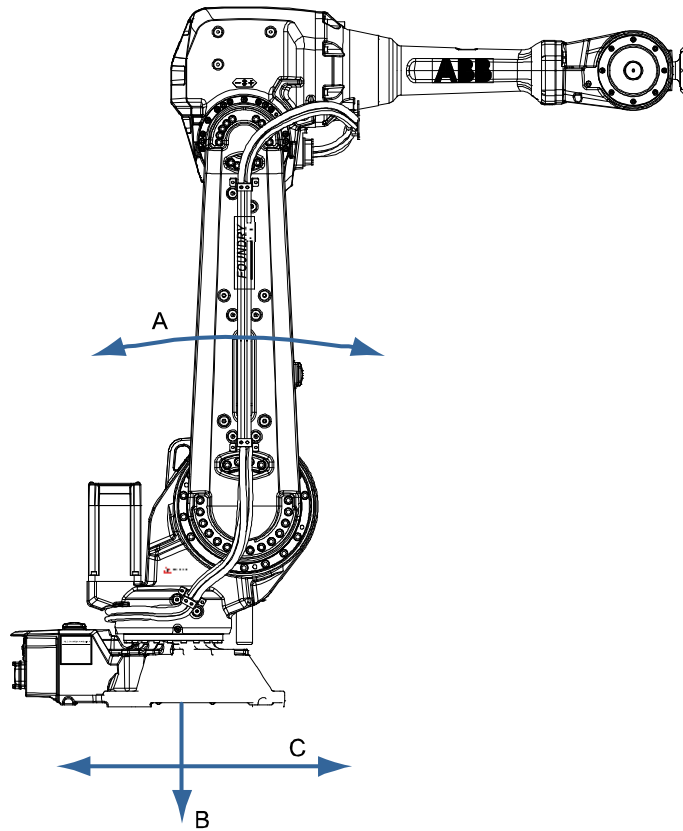
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A	Torque$_{xy}$ (T$_{xy}$)
B	Force $_z$ (F$_z$)
C	Force $_{xy}$ (F$_{xy}$)
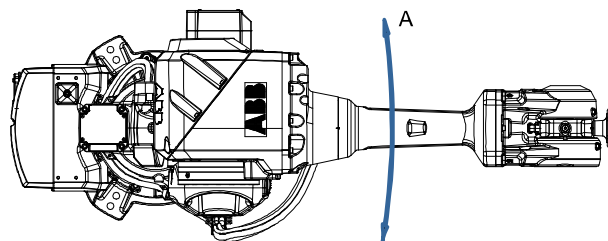
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A	Torque $_z$ (T$_z$)

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$_{xy}$).

Fastening holes robot base

Only 3 screws (Ø 500) are required for fastening the robot.
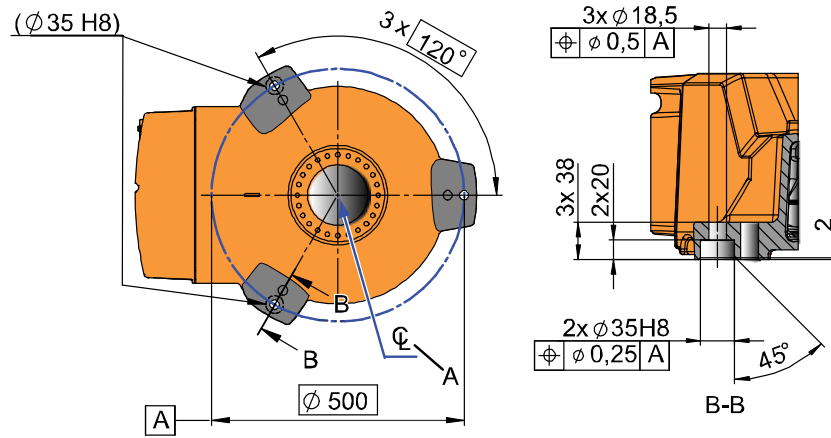
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Attachment bolts, specification

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

> ℹ️ **Note**
>
> For best AbsAcc performance, use the guide holes according to the preceeding figure.

Mounting surface and bushings

> ℹ️ **Note**
>
> Only the three outer holes are used to secure the robot!
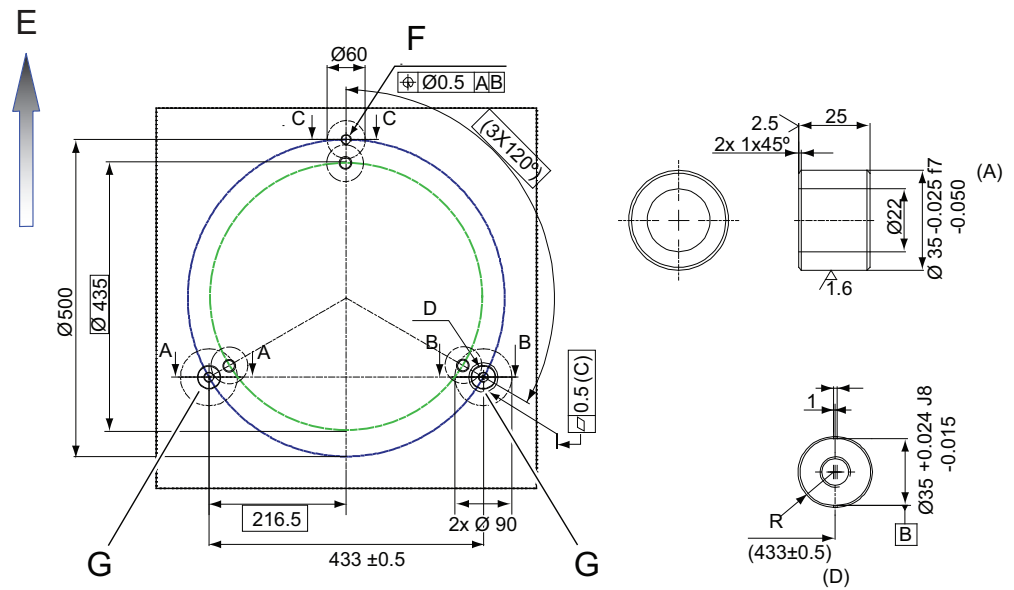
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Pos	Description
(C)	3x common zone
E	Position of the front of the robot
F	1xM16, depth 30 minimum
G	Guide sleeves (2 pcs)

1.3.4 Expansion container for inverted mounting of the manipulator

> ℹ️ **Note**
>
> If the robot is used suspended without expansion container, it will cause a reduced lifetime for the gearbox.
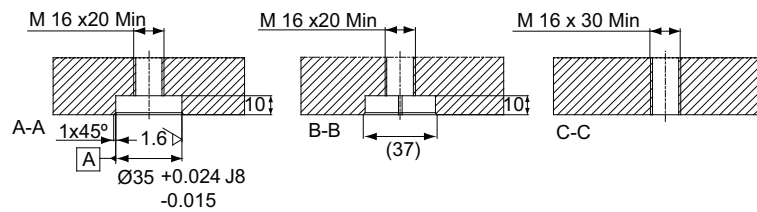
Validity of this section

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 [224-2] Inverted mounting of the manipulator.

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.
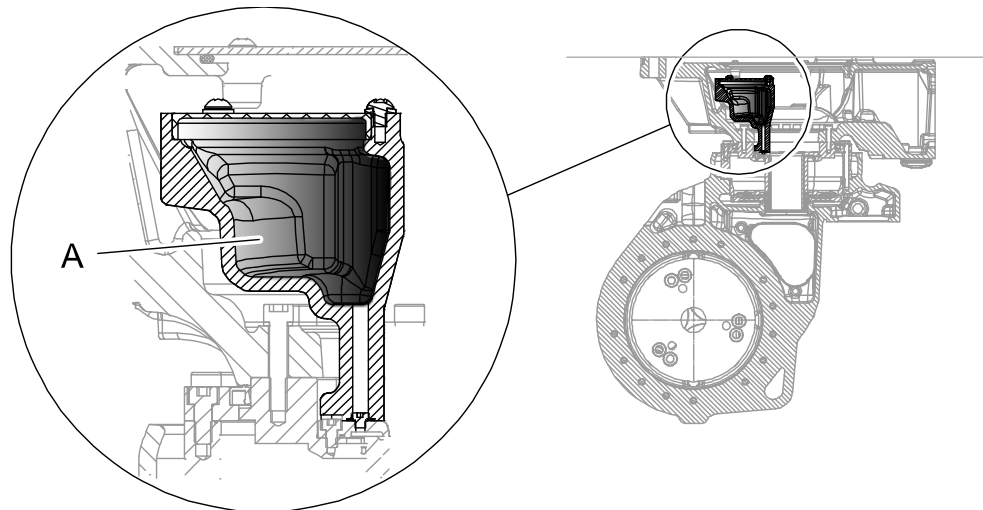
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A	Expansion container

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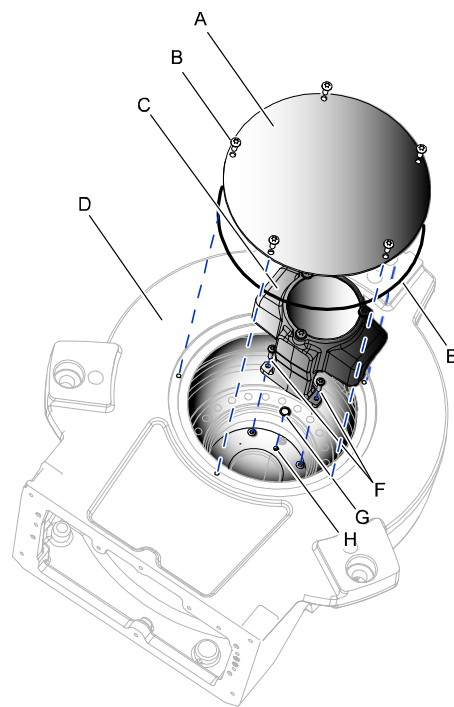
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A	Cover
B	Attachment screw M6x16, quality 8.8-A2F (5 pcs)
C	Oil expansion container with cover
D	Base
E	O-ring D220x5
F	Attachment screw M5x20, quality 8.8-A2F and washer (2+2 pcs)
G	O-ring D1=9.5 D2=1.6
H	Oil plug (to be removed)

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. For robots with RobotWare 5.04 or older, the calibration data is delivered in a file, calib.cfg, supplied with the robot at delivery. The file identifies the correct resolver/motor position corresponding to the robot home position.	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 SMB (serial measurement board) in the robot. For robots with RobotWare 5.05 or older, the absolute accuracy calibration data is delivered in a file, absacc.cfg, supplied with the robot at delivery. The file replaces the calib.cfg file and identifies motor positions as well as absolute accuracy compensation parameters. A robot calibrated with Absolute accuracy has a sticker next to the identification plate of the robot. To regain 100% Absolute accuracy performance, the robot must be recalibrated for absolute accuracy after repair or maintenance that affects the mechanical structure. xx0400001197	CalibWare

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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.	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 many of ABB robots (except IRB 6400R, IRB 640, IRB 1400H, and IRB 4400S).

Two different routines are available for the Calibration Pendulum method:

- Calibration Pendulum II
- Reference calibration

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

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.

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 following routines are available for the Wrist Optimization method:

- Wrist Optimization

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.

CalibWare - Absolute Accuracy calibration

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

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

1.4.2 Fine calibration

General

Fine calibration is made using the Calibration Pendulum, see *Operating manual - Calibration Pendulum*.
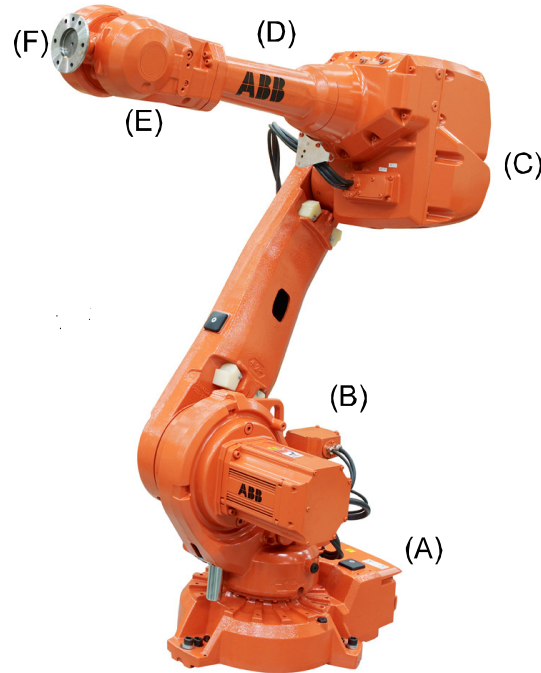
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Pos	Description	Pos	Description
A	Axis 1	B	Axis 2
C	Axis 3	D	Axis 4
E	Axis 5	F	Axis 6

Calibration

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

1.4.3 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.
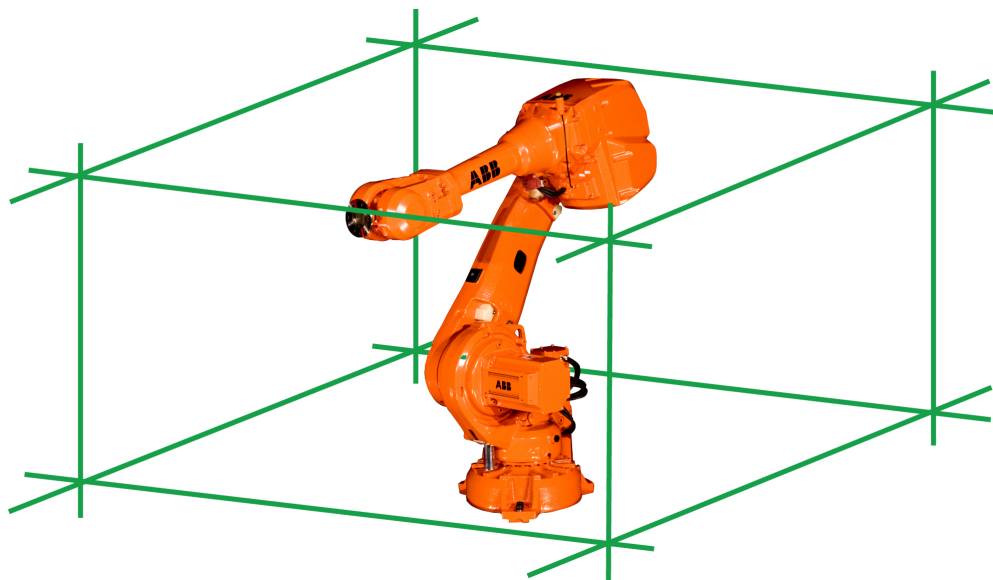
xx0900000073

What is included

Every *Absolute Accuracy* robot is delivered with:

- compensation parameters saved on the robot's serial measurement board
- a birth certificate representing the *Absolute Accuracy* measurement protocol for the calibration and verification sequence.

Continues on next page

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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. Compensation parameters saved in the robot's serial measurement board 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.

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

> **ℹ 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.

1 Description

Production data

Typical production data regarding calibration are:

Robot	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

1.5 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 - IRC5 with FlexPendant*, for detailed information.

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

General

The load 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	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

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
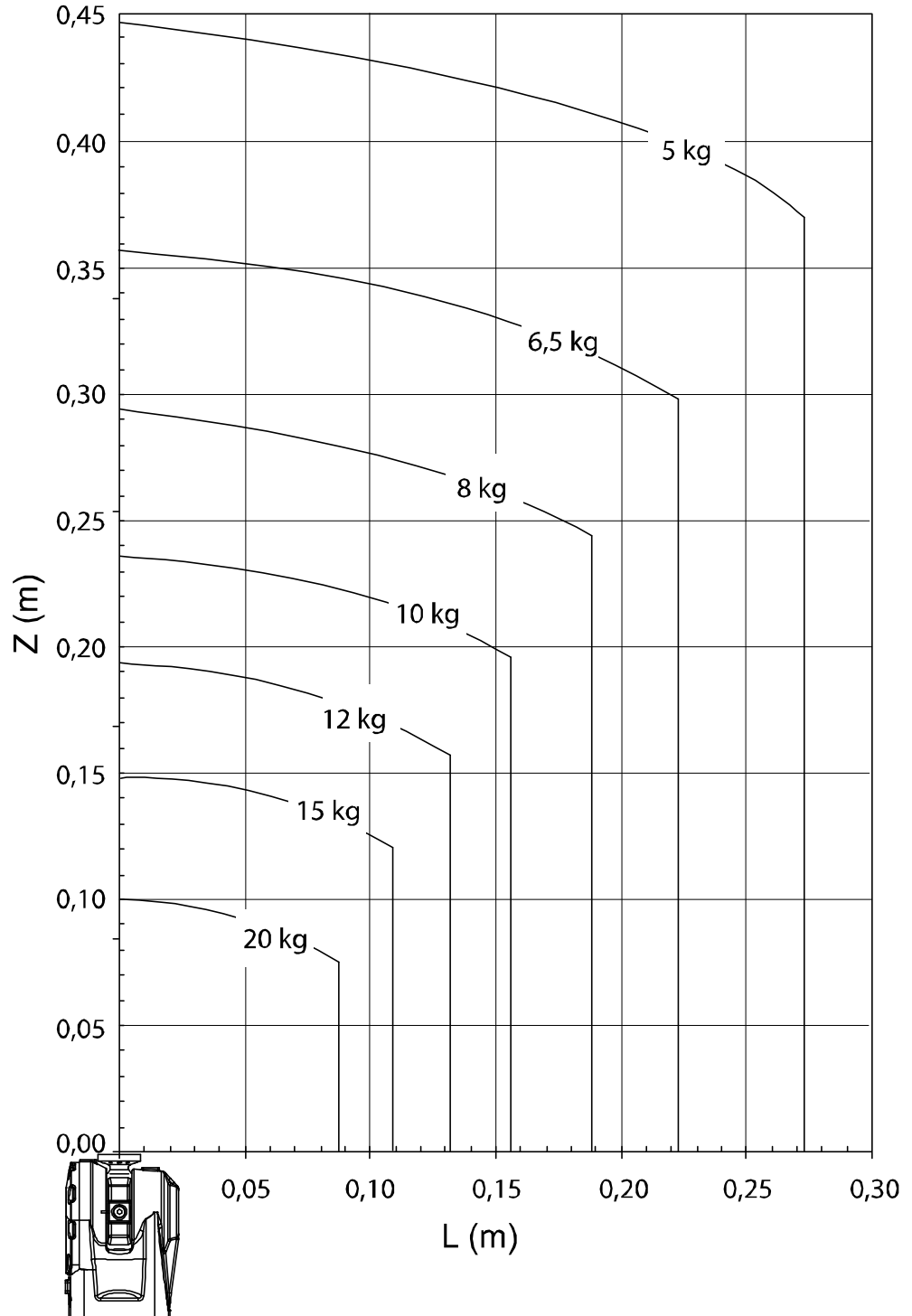
xx0900000701

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

1 Description

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

xx0900000725

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

Continues on next page

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IRB 2600 - 12/1.65

xx0900000726

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.

1 Description

1.5.2 Load diagrams
Continued

IRB 2600 - 12/1.85
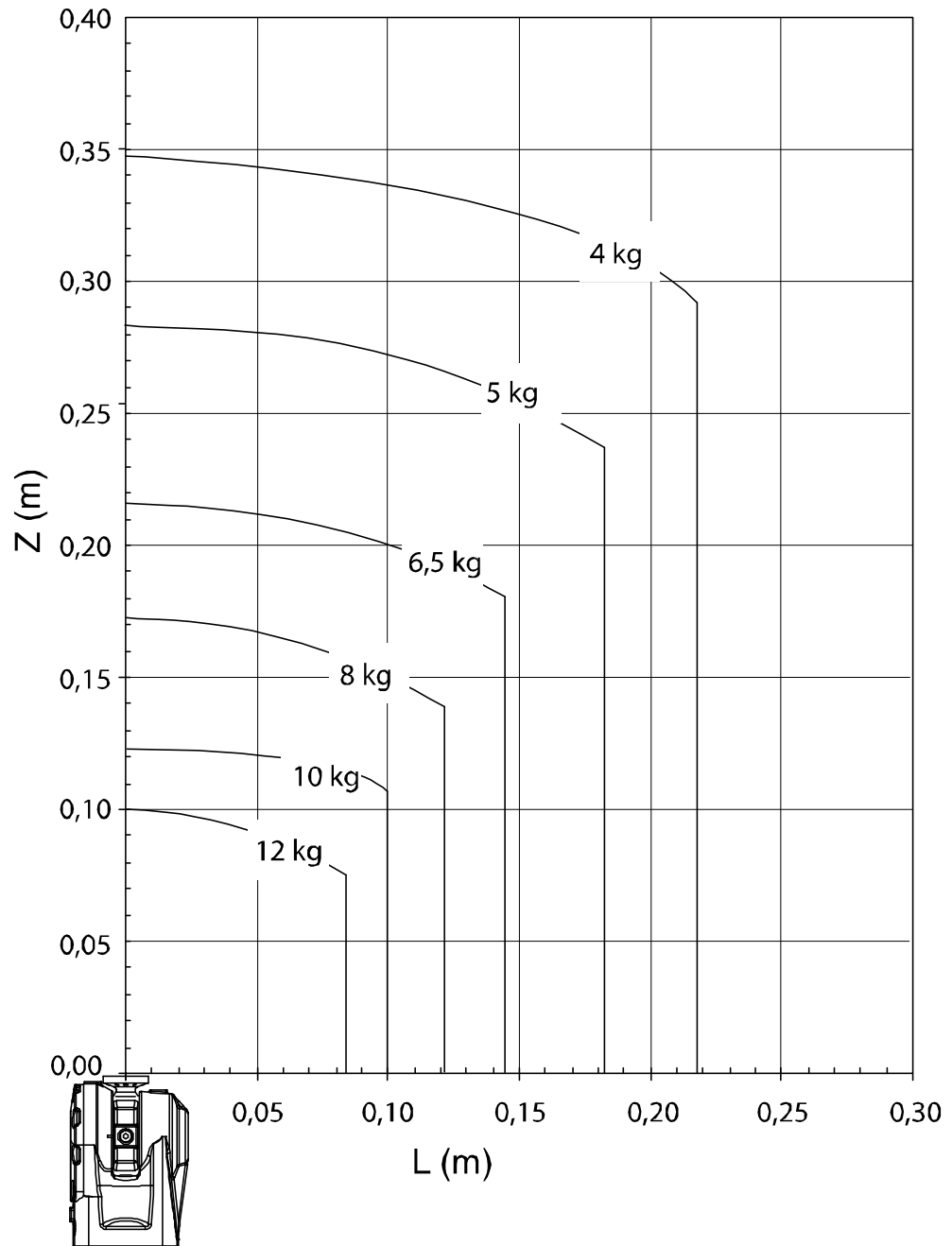
xx0900000708

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

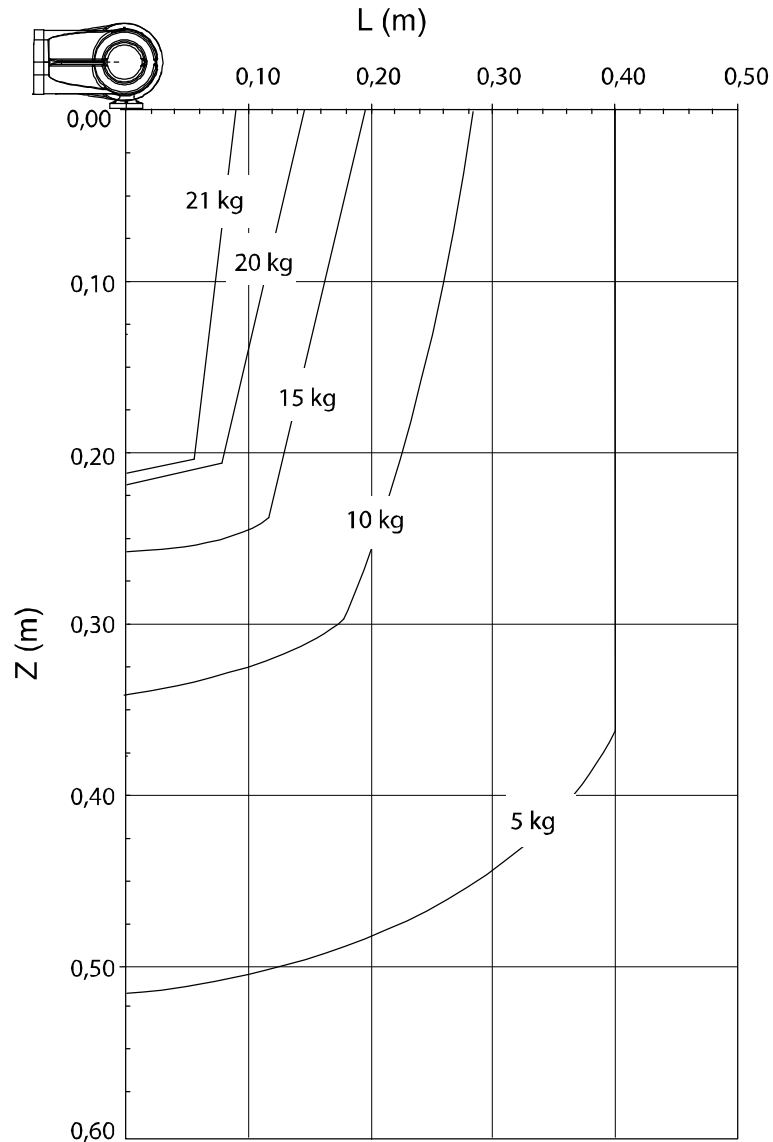**IRB 2600 - 12/1.85 "Vertical wrist" (±10°)**
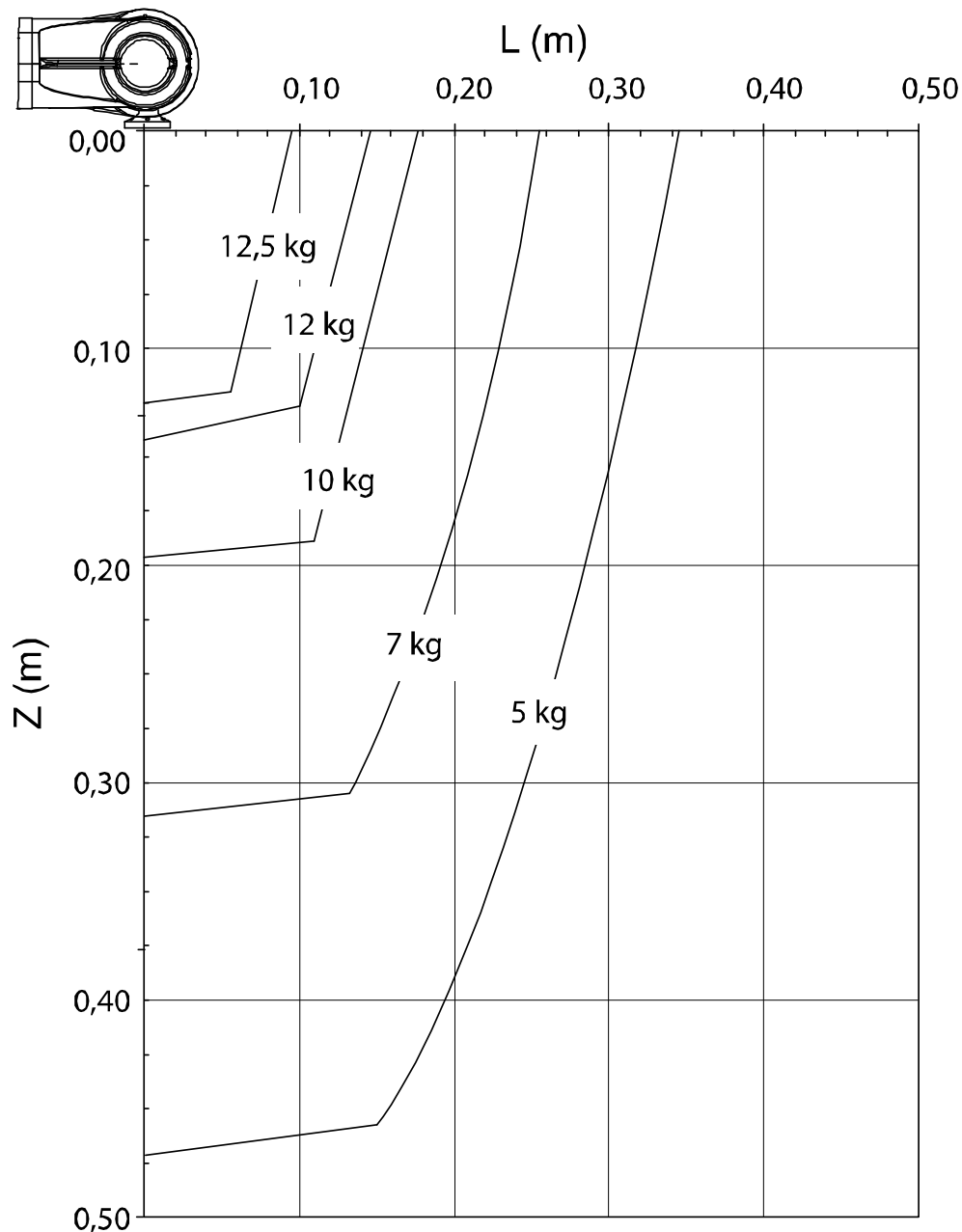
xx0900000709

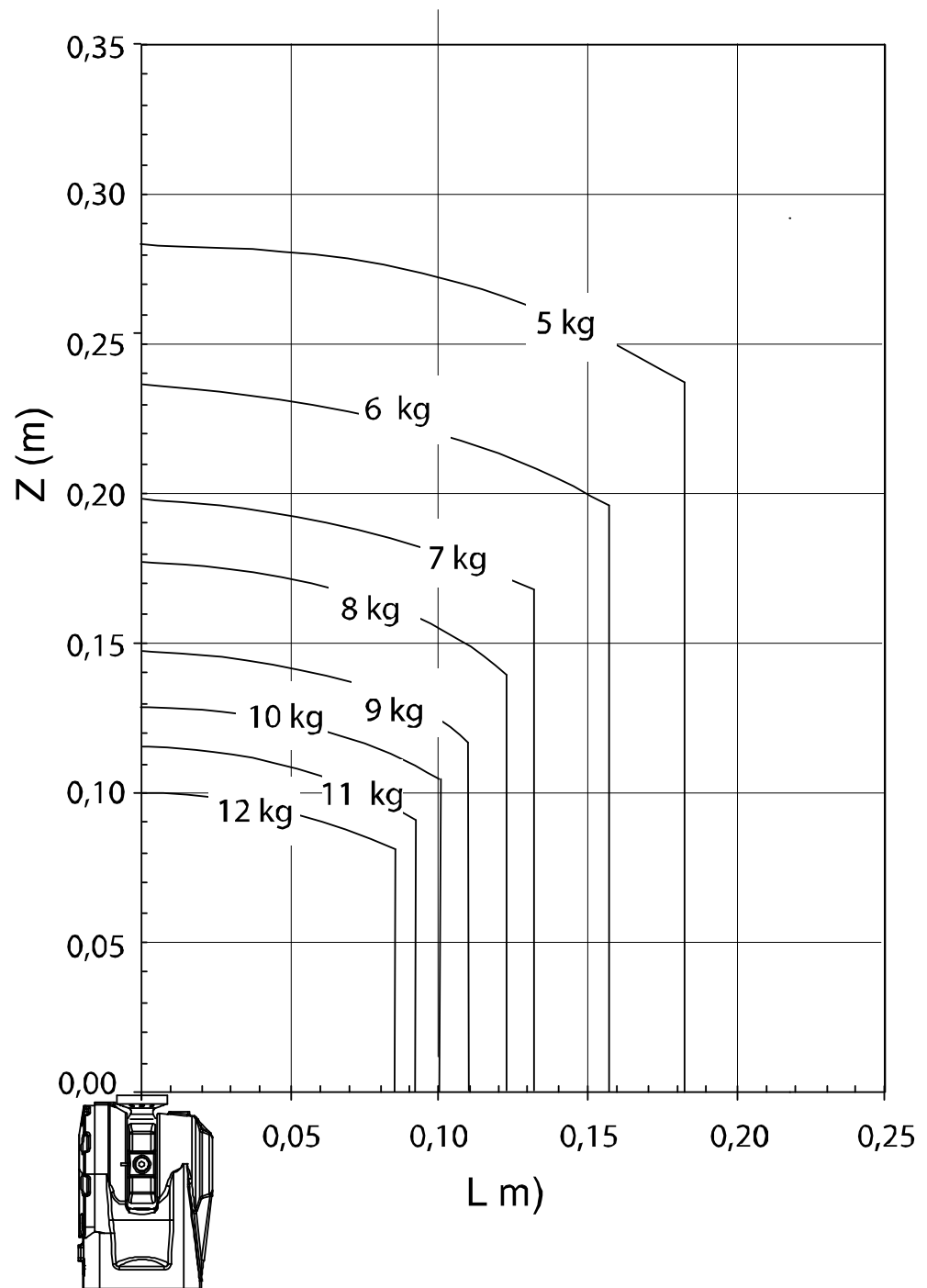**Extra load of 10 kg at the upper arm housing and 1 kg at wrist included in the load diagram.**

For wrist down ±0° deviation from vertical line.

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

1 Description

1.5.2 Load diagrams
Continued

IRB 2600ID - 15/1.85
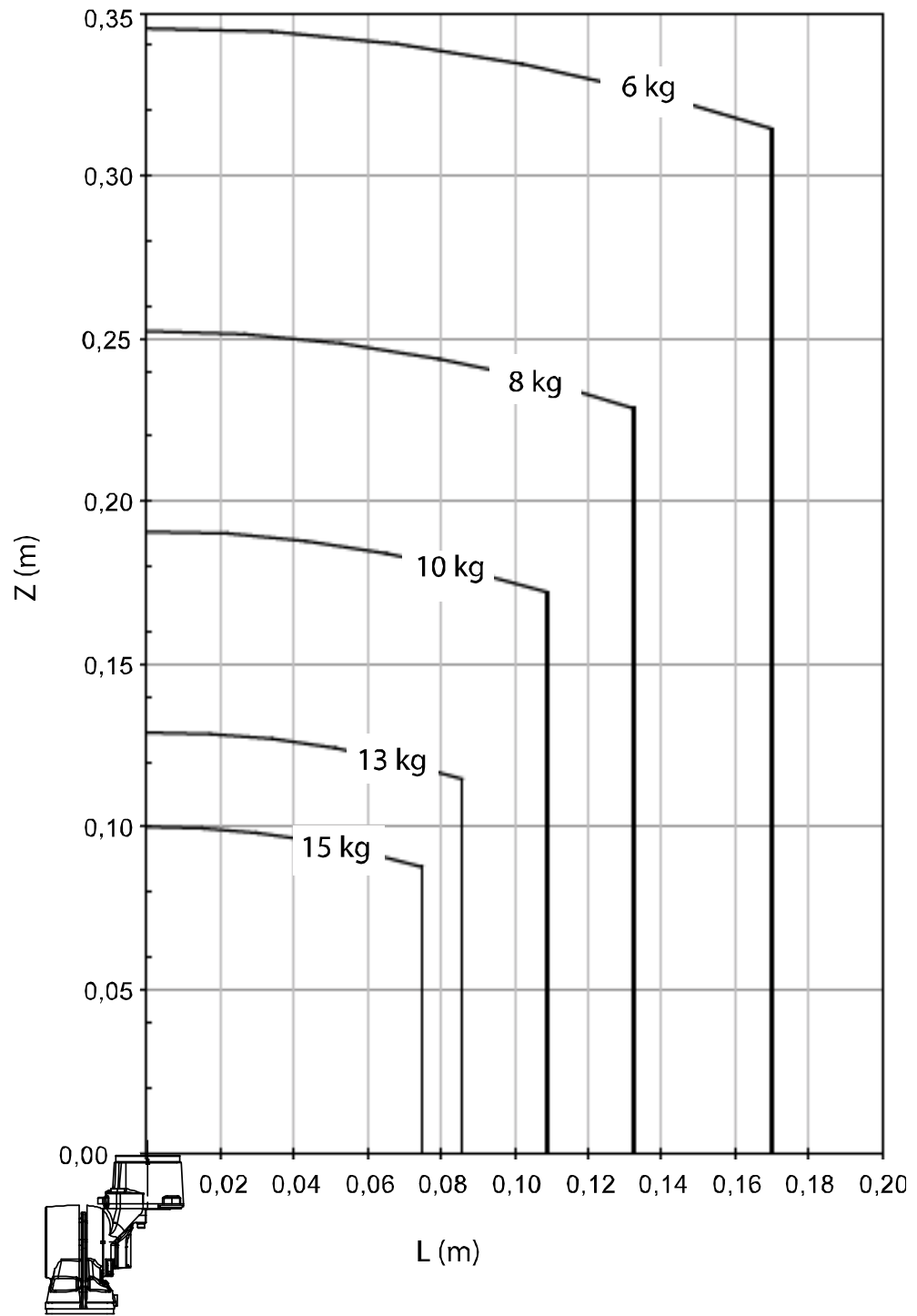
xx1000000966

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

Continues on next page

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IRB 2600ID-15/1.85 "Vertical wrist" (± 10°)
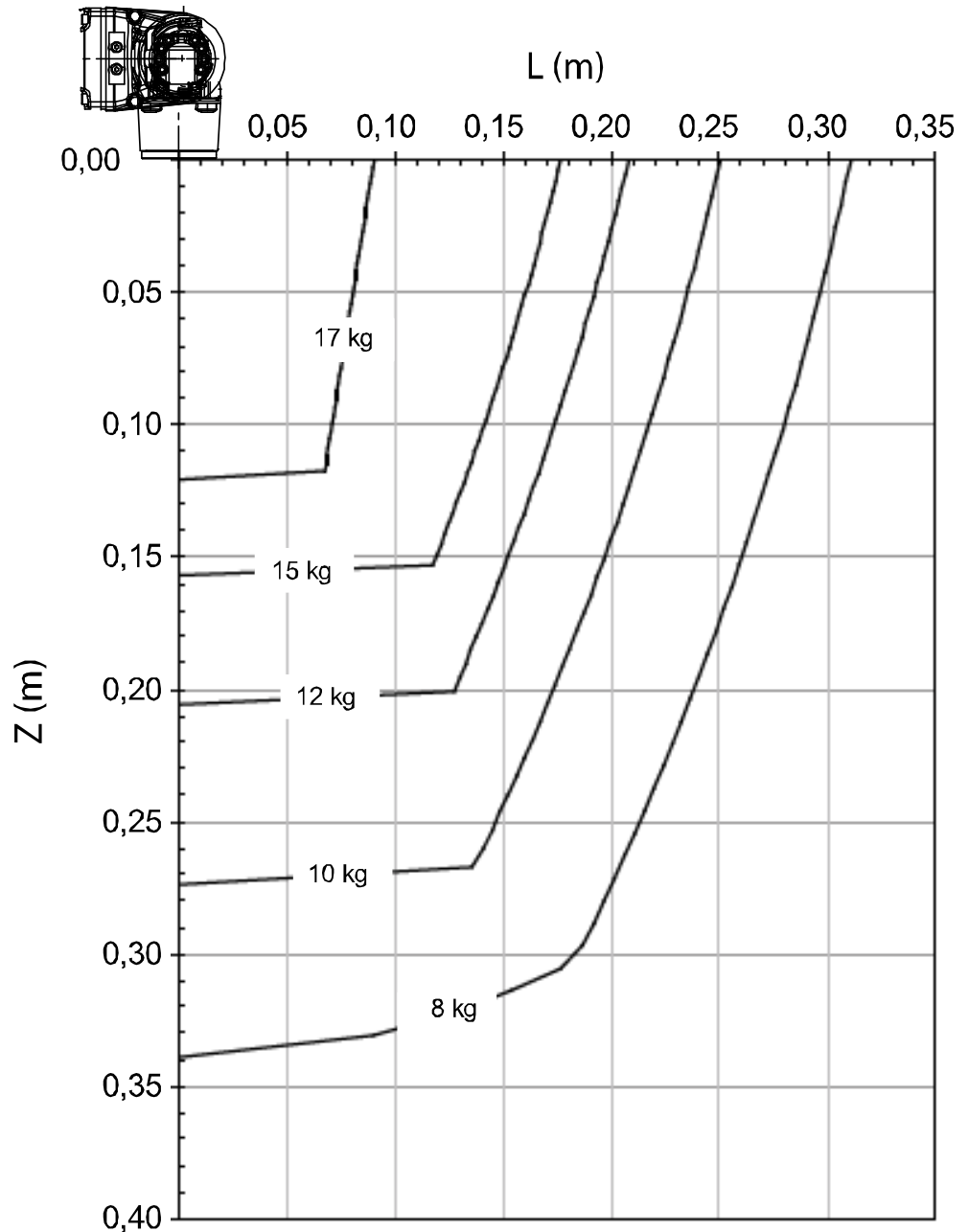
xx1000000976

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
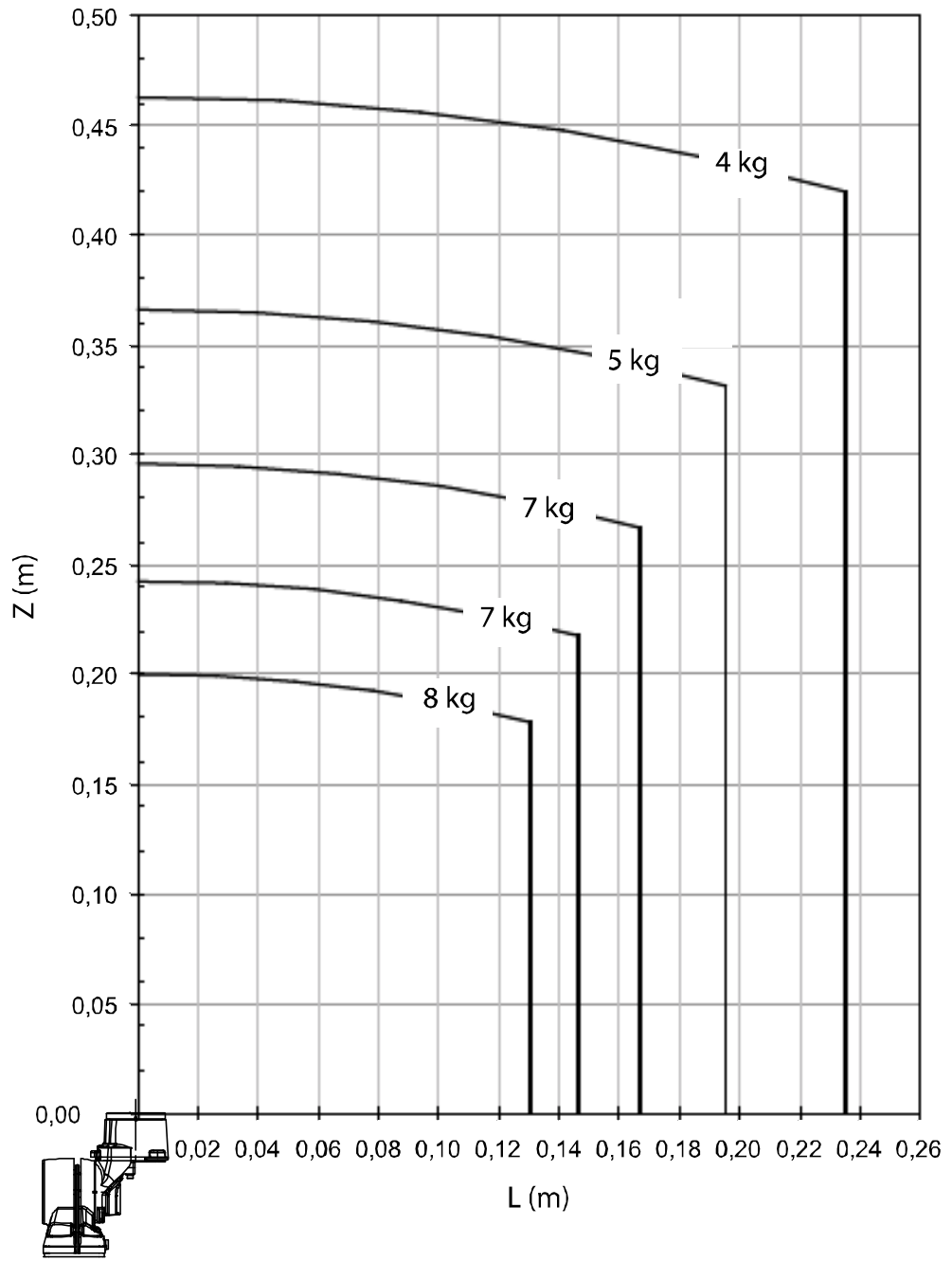
IRB 2600ID - 8/2.00

xx1000000967

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°)
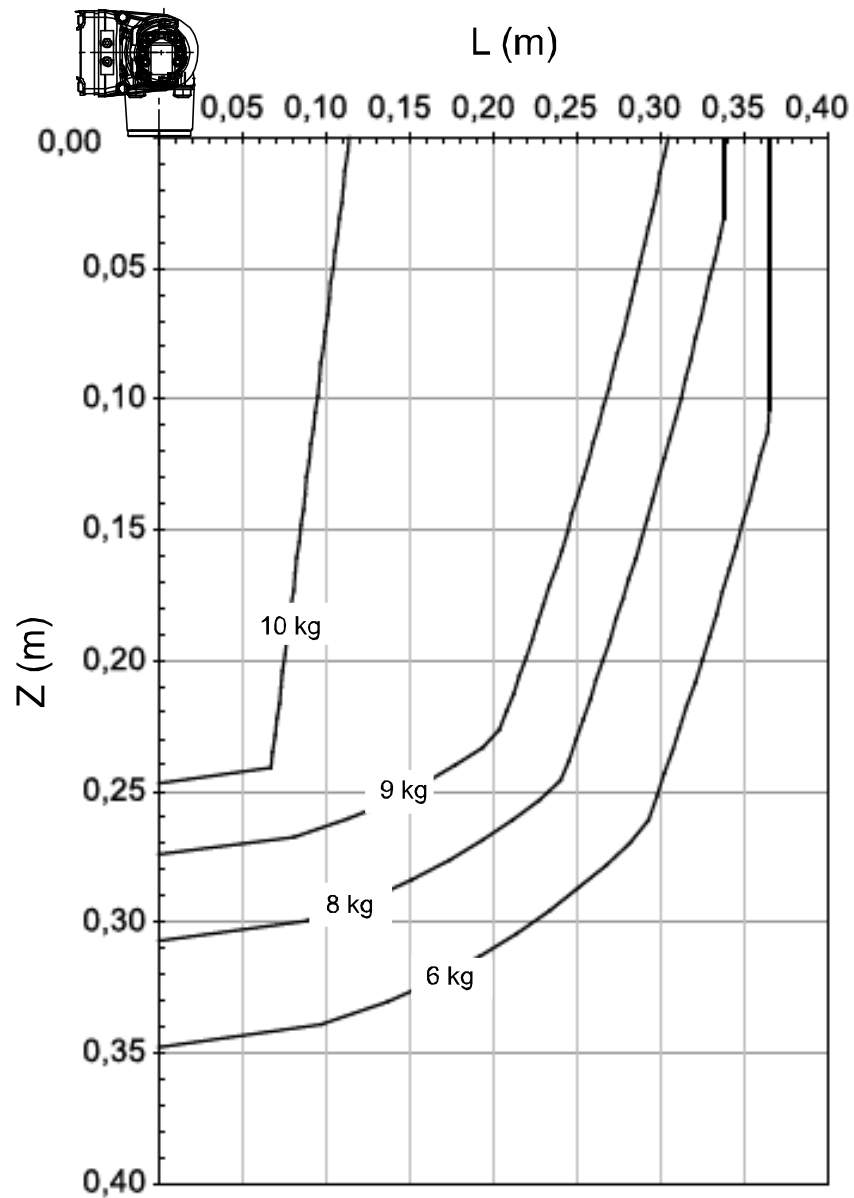
xx1000000977

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

xx0800000458

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

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

xx0800000459

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:

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

Robot type	Max wrist torque axis 4 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 then 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 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

> ℹ️ **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.
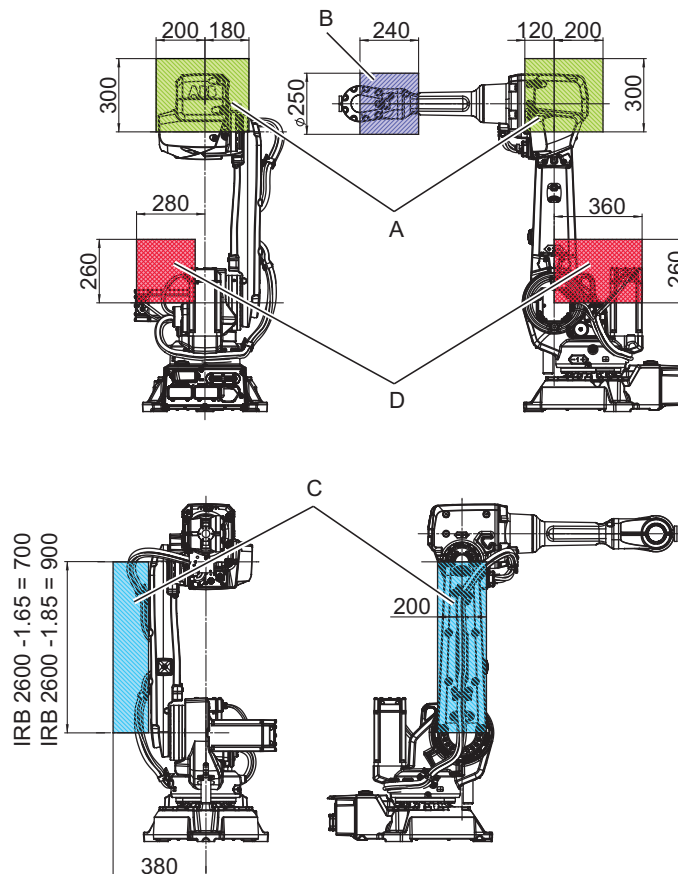
xx0900000189

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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xx1000000978

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

Holes for mounting of extra equipment

> **Note**
>
> If option 213-1 Safety lamp is not selected, there are two holes on the upper arm housing that could be used for other equipment.

1.6.1 Information about mounting equipment
Continued
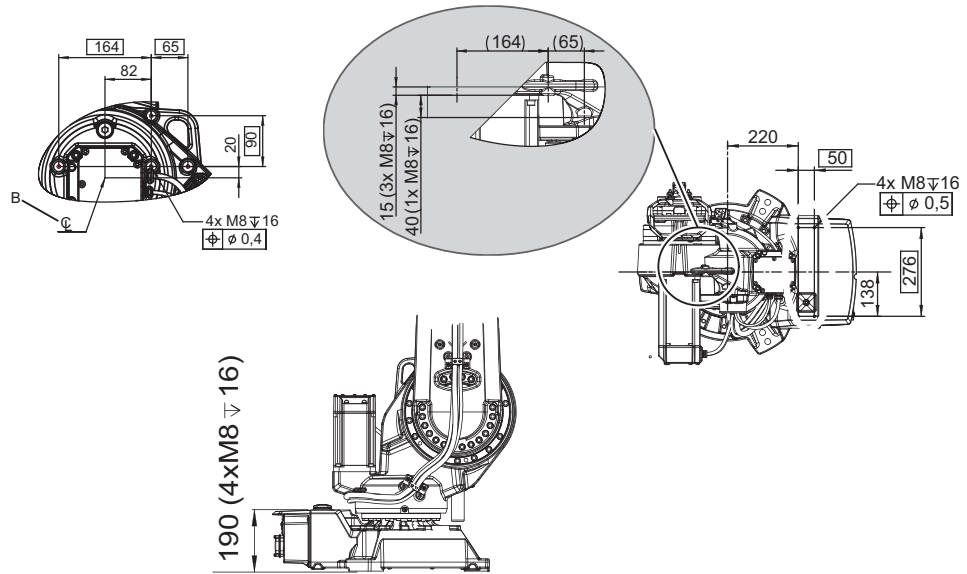
xx0900000484
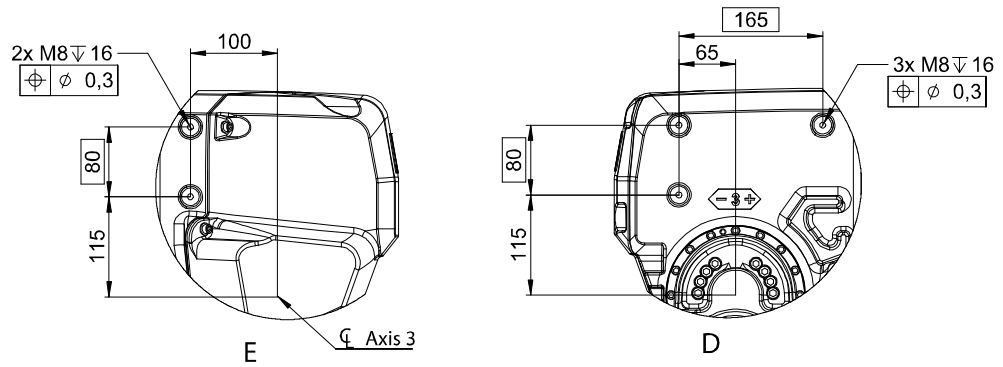
xx0900000485
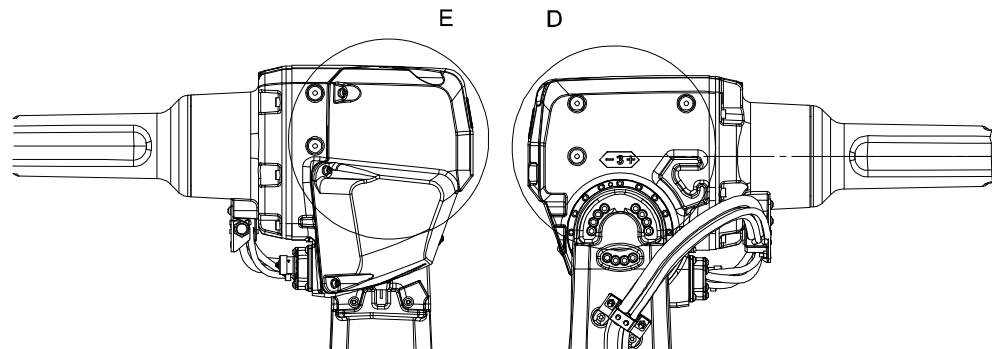
xx0900000486

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118 (2x M8 ▽ 16)   98 (3x M8 ▽ 16)

xx0900000487

J   J

110

12,5

25 ±0,2

2x M6 ▽ 12

F

xx0900000488

2x M5 ▽ 8

22

42

J-J

79 (2x M6 ▽ 12)

xx0900000489

F

xx0900000490

110

55

4x M8 Through
⊕ ∅ 0,3

200

210

445

150

235 (4x M8)
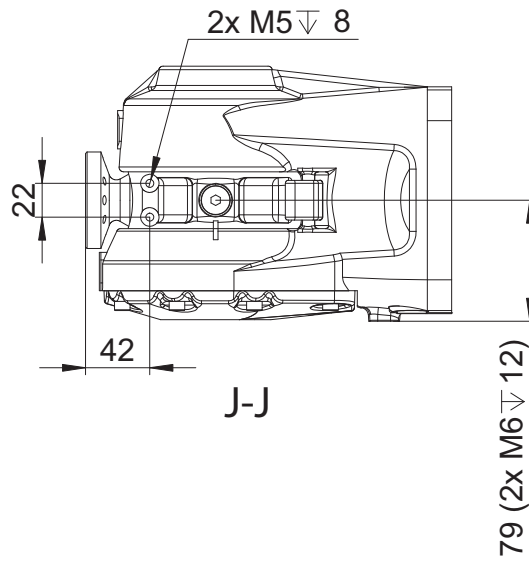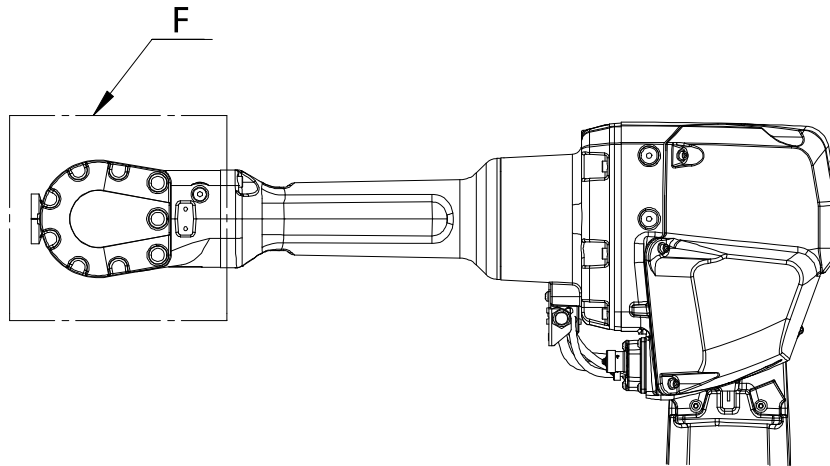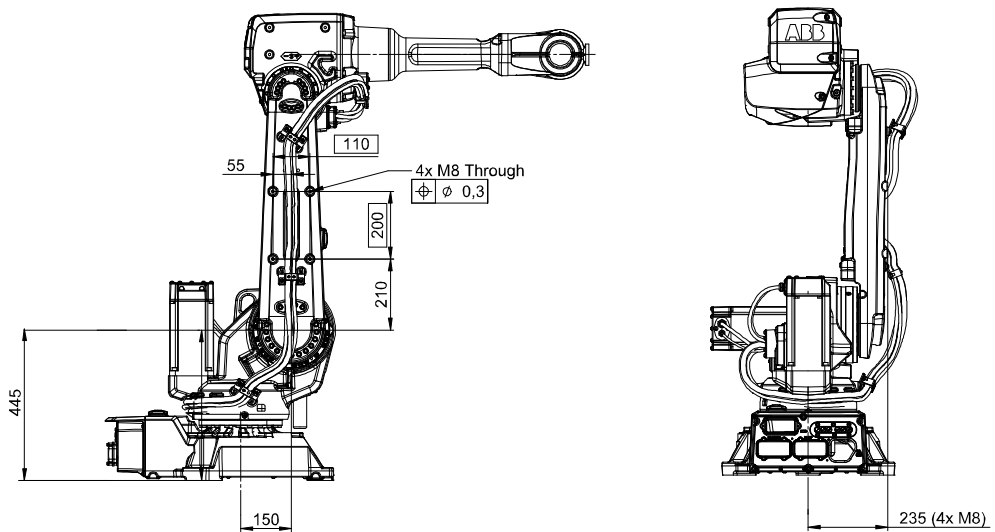
xx0900000491

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xx0900000492

Holes for mounting of extra equipment for IRB 2600ID
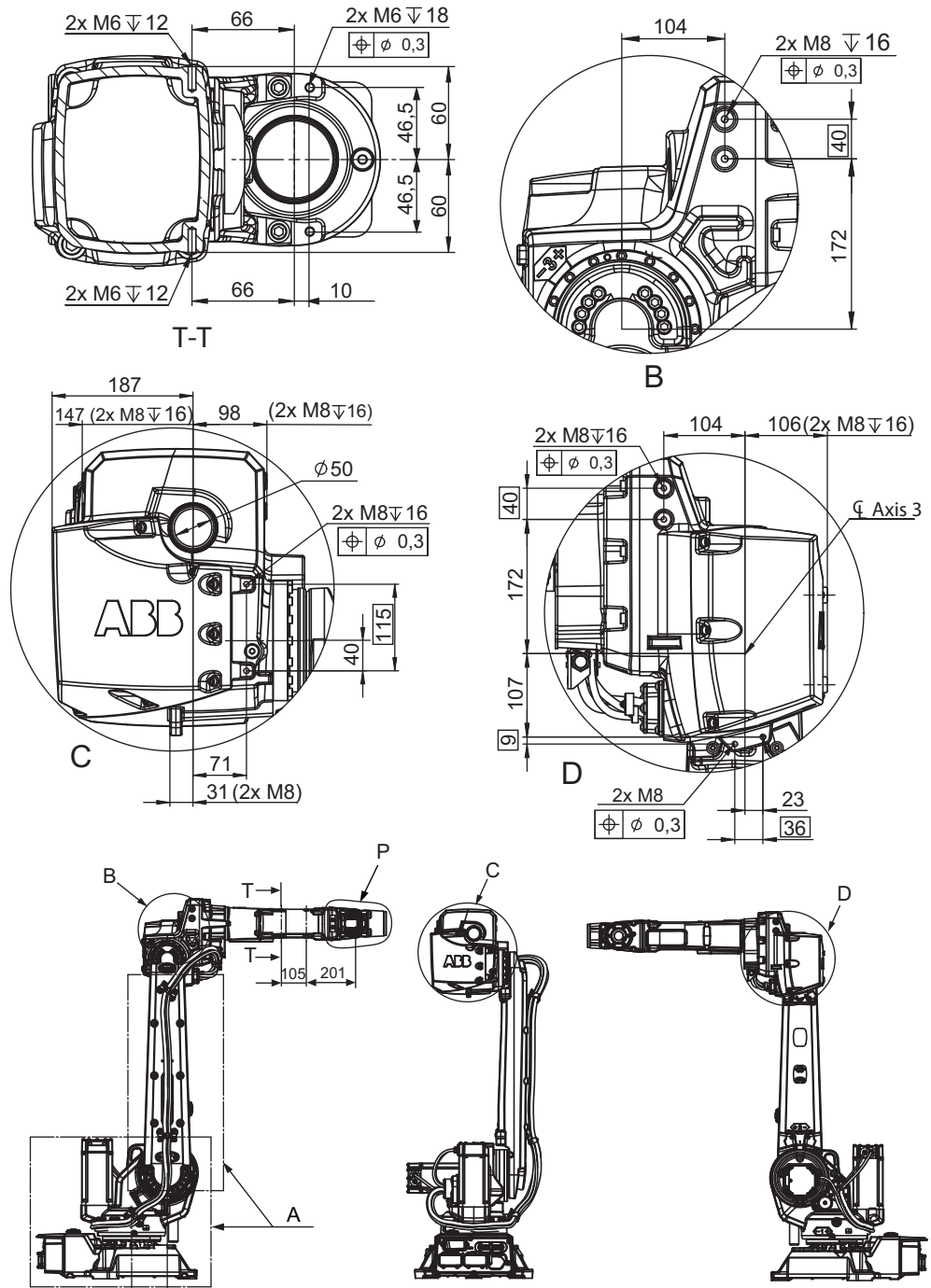
xx1000000968

Pos	Description
A	See IRB 2600 standard robot for details.

Tool flange IRB 2600
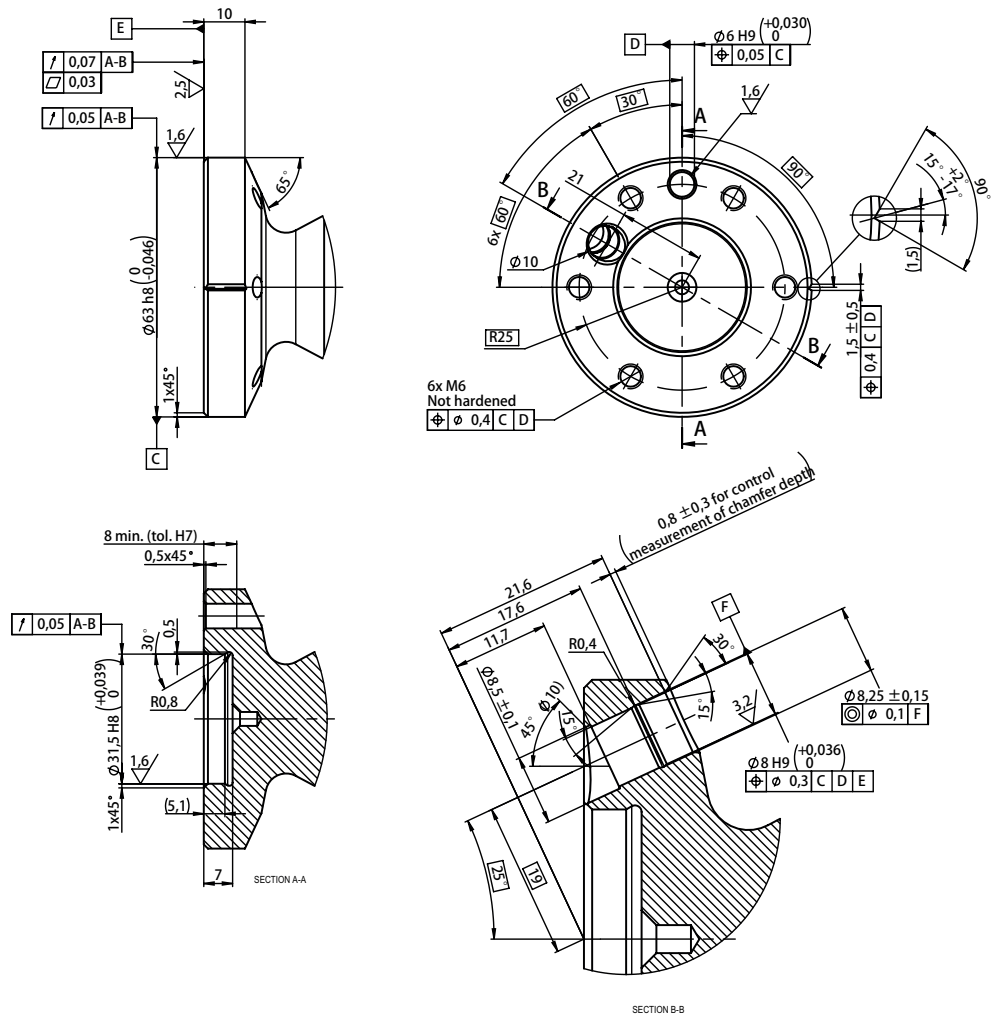
xx0800000449

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.

Tool flange/wrist for IRB 2600ID
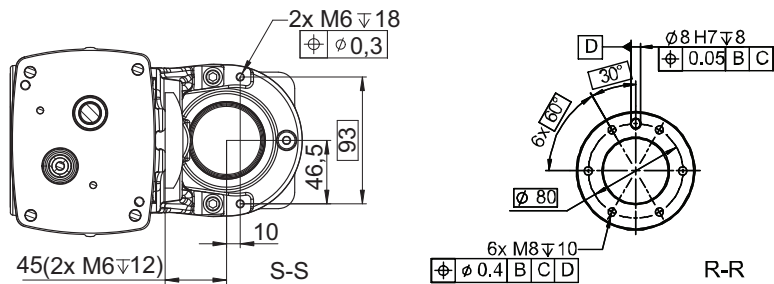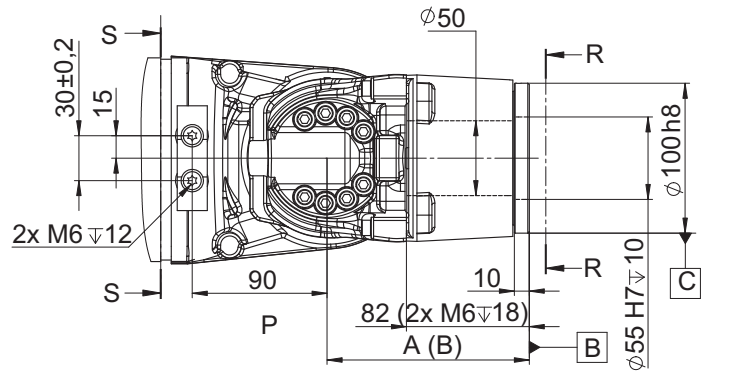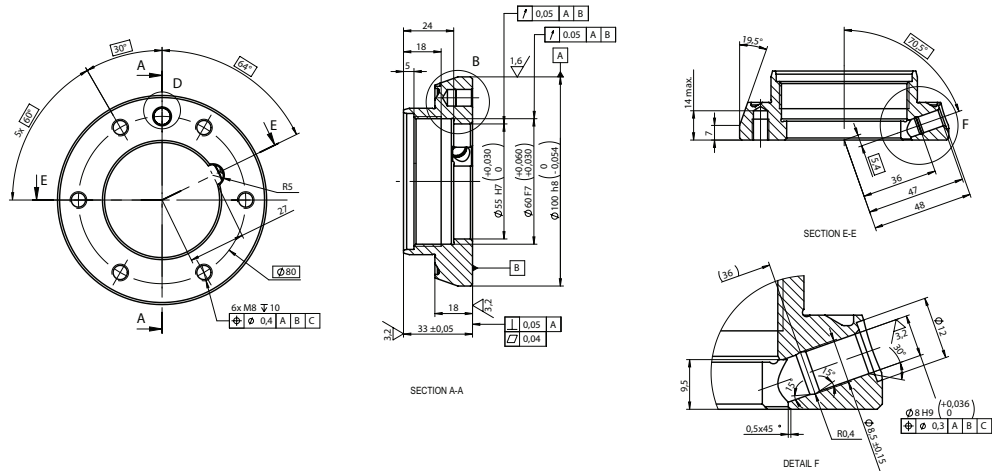
xx1000000969

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 *610 - 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 pay-load (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
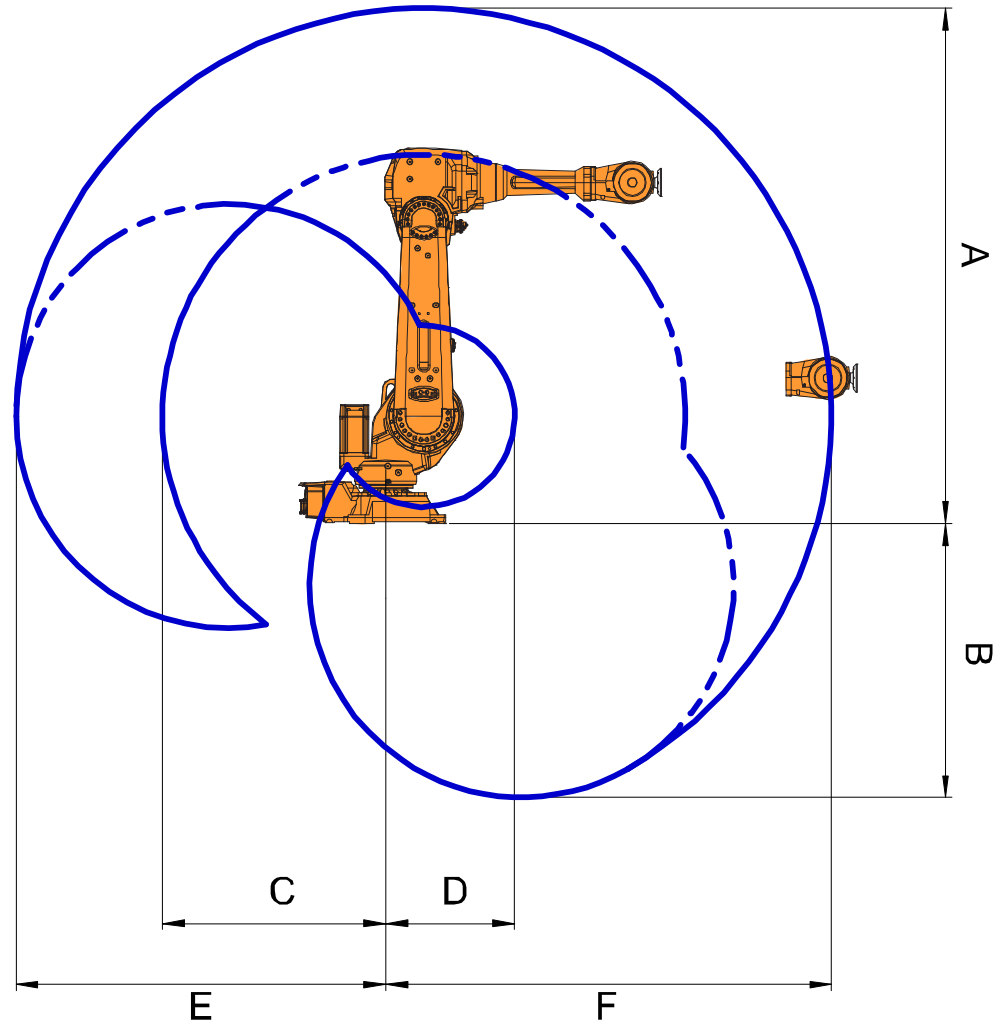
xx0800000267

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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Working range IRB 2600ID
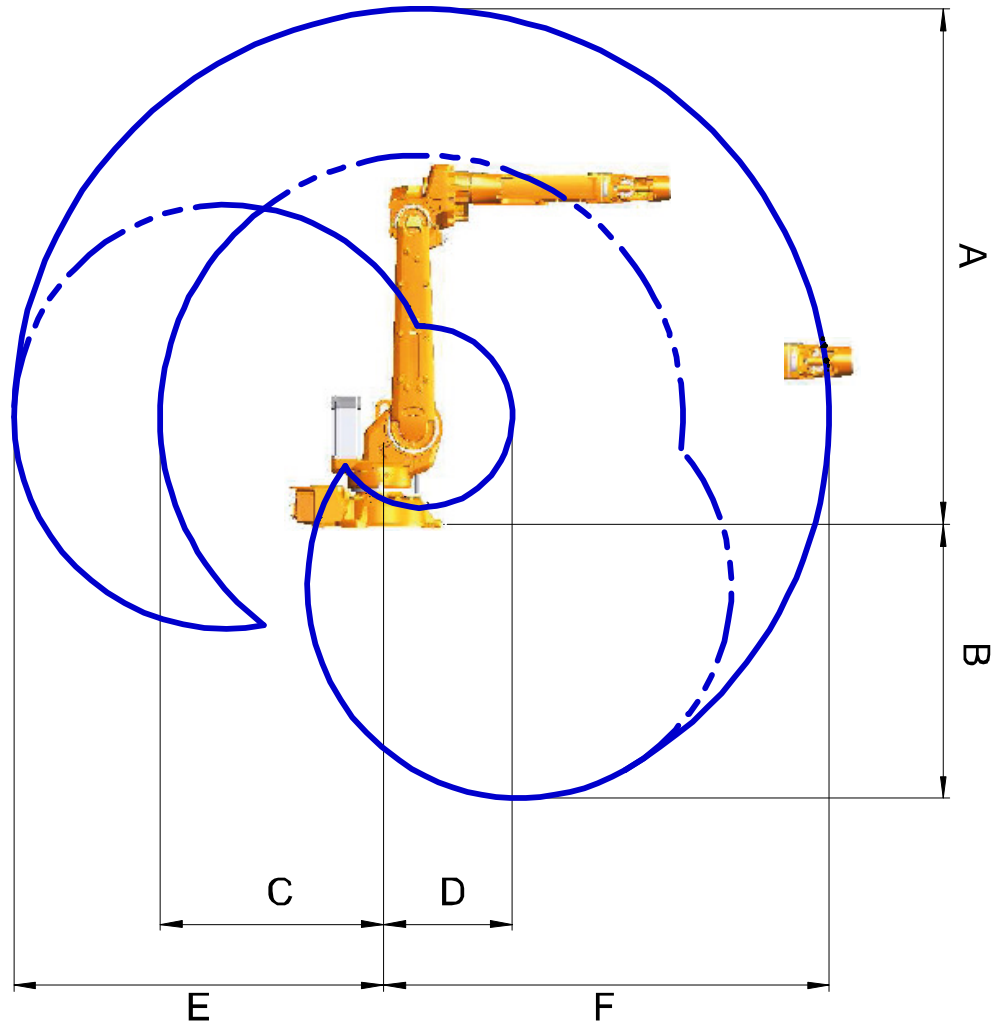
xx1000000970

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.
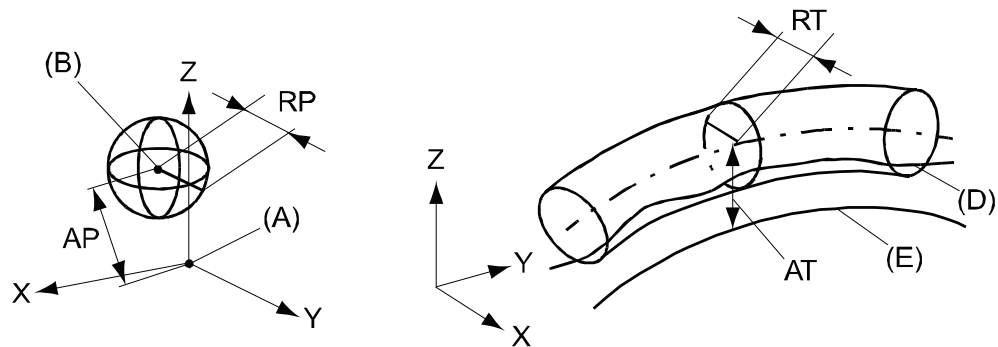
xx0800000424

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 type	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 1-2 motor

Option 87-1, 88-1

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 and/or axis 2.

Valid protection for cooling fan is IP54. Fan failure stops the robot.

To determine the use of cooling fans for axis 1 and/or axis 2 motor use the "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. Please contact your local ABB organization.

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.

ℹ️	**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
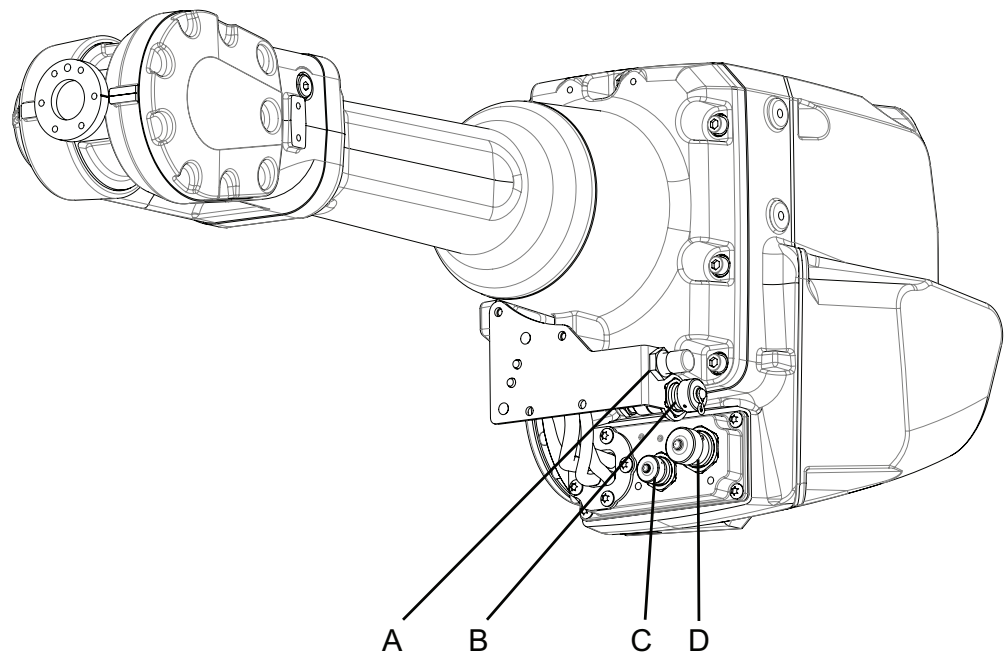
xx2000001657

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

Customer connections on upper arm with signal lamp

The figure shows the customer connections on the upper arm, including the optional signal lamp that can be fitted to the arm house.
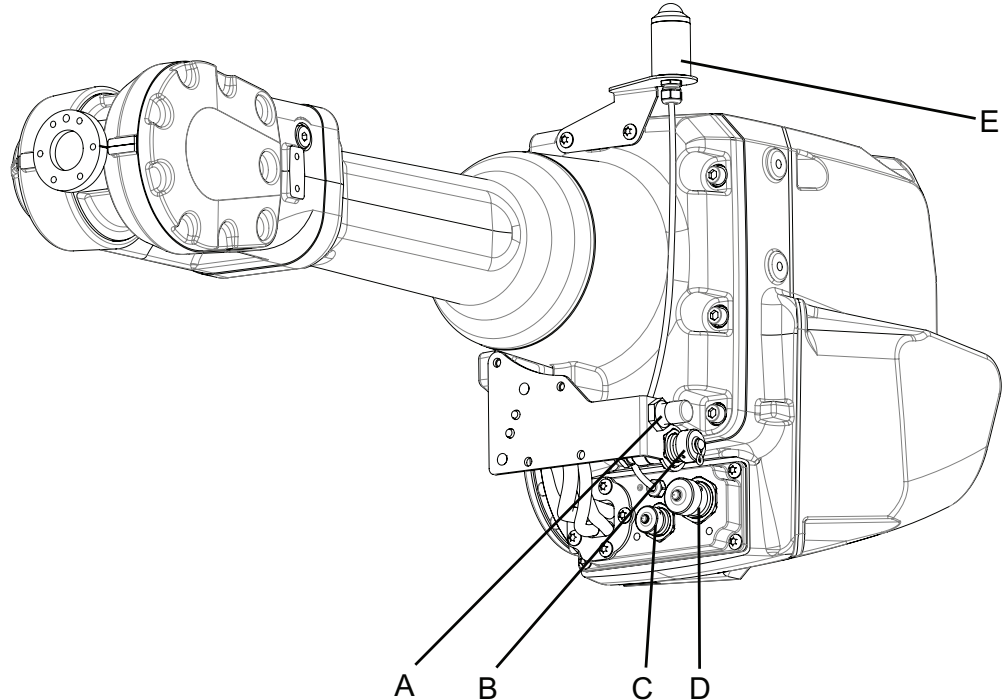
xx2000001658

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
E	Signal lamp
-	R3.H1 +, R3.H2 - (inside the arm house, not shown in figure)

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Customer connections base
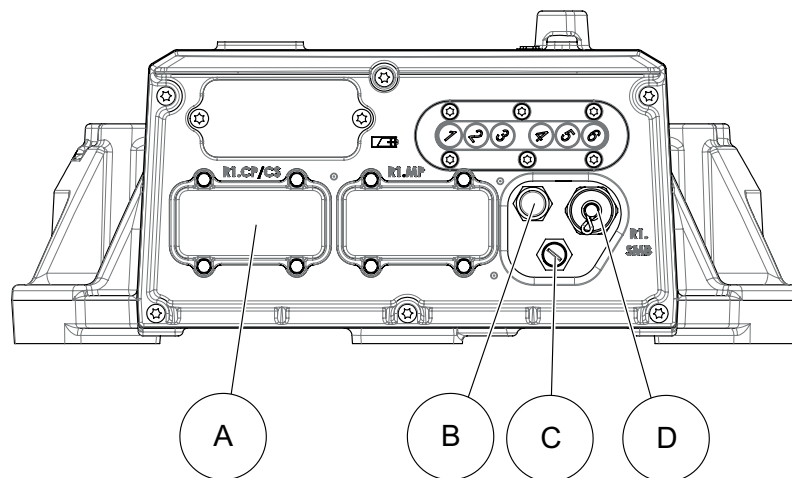
xx2000001636

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

Customer connections base with 7th axis
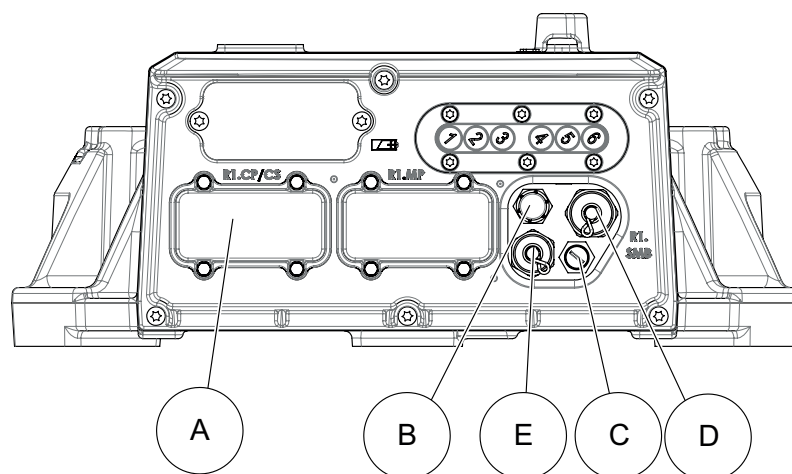
xx2000001637

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

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 (803-1):

- 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 (803-2) and DeviceNet, Parallel&Air (803-3):

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

Number of signals, customer connections option Profibus, Parallel&Air (803-4):

- 8 (50V, 0.5A)
- 2 (300V, 2A)
- 2 Profibus
- 1 protective ground

Connection sets

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

Connection set	Connector	Art. no.	Content
PROC1 on base	R1.CP/CS	3HAC16667-1	• Sockets for cable area of 0.14-2.5 mm^2 • Hood foundry • Hinged frame, hood • Multicontact-module, female
Connector set on base	R1.ETHER-NET	3HAC033181-001	• Hose coupling • M12 connector, male
R2.CP/R2.CS	R2.CP/R2.CS	3HAC025396-001	• Pins for cable area 0.21 - 0.93 mm^2 • Bottle shaped shrinking hose • Angle shaped shrinking hose • Hose coupling
Connector set upper arm	R2.ETHER-NET	3HAC070439-001	• Pins for cable area 0.21 - 0.93 mm^2 • Bottle shaped shrinking hose • Angle shaped shrinking hose

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
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

Signal name	Customer Terminal Controller	Customer Contact on Upper arm, R2	Customer Contact on robot base (cable between robot and controller not supplied)
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	IRB Type	Handling capacity (kg) / Reach (m)
435-95	IRB 2600	20/1.65
435-96	IRB 2600	12/1.65
435-97	IRB 2600	12/1.85
435-103	IRB 2600ID	15/1.85
435-104	IRB 2600ID	8/2.00

Manipulator color

Option	Description	Note
209-1	ABB Orange standard	
209-2	ABB White standard	
209-202	ABB Graphite White standard	Standard color
209-4 -192	The manipulator is painted with the chosen RAL-color.	

> **ℹ Note**
>
> Notice that delivery time for painted spare parts will increase for none standard colors.

Protection types

Option	Protection type	Note
287-4	Standard	IRB 2600: IP 67 IRB 2600ID upper arm: IP 54
287-3	Foundry Plus 2	See *Protection type Foundry Plus 2 on page 11* for a complete description of protection type Foundry Plus 2. Not valid for IRB 2600ID versions.

Mounting position

Option	Description
224-2	Inverted mounting of the manipulator Not together with option 603-1 Absolute Accuracy.

> **ℹ Note**
>
> Manipulators delivered for floor mounting must have the option added before changing mounting position to inverted.
>
> IRB2600-20/1.65 type C and IRB2600-12/1.65 type C are not valid for inverted mounting.

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Media & Communication

Air supply and signals for extra equipment upper arm, see 1.9 Customer connections.

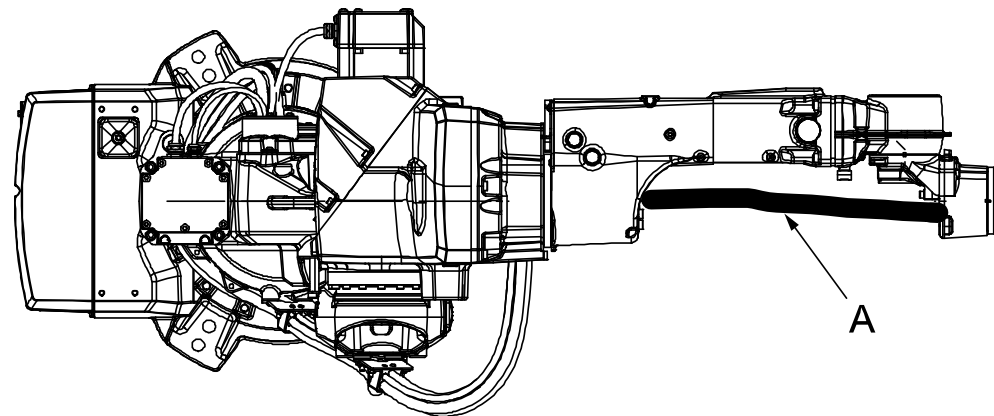| Option	Type	Description
803-1	Parallel communication and air	Includes customer power CP and customer signals CS + air.
803-2	Ethernet, parallel communication and air	Includes CP, CS and PROFINET or Ethernet/IP + air.
803-3	DeviceNet, parallel communication and air	Includes CP, CS and DeviceNet + air
803-4	PROFIBUS	Includes CP, CS and PROFIBUS + air

Connector kit

The kit consists of connectors, pins and sockets:

Option	Description
431-1	For the connectors on the upper arm.
239-1	For the connectors on the foot if connection to manipulator.

Flexible conduit

Protection hose for customer signals, power and hoses. Only valid for IRB 2600ID.

xx1000000982

Pos	Description
A	Flexible conduit, option 943-1.

Safety lamp

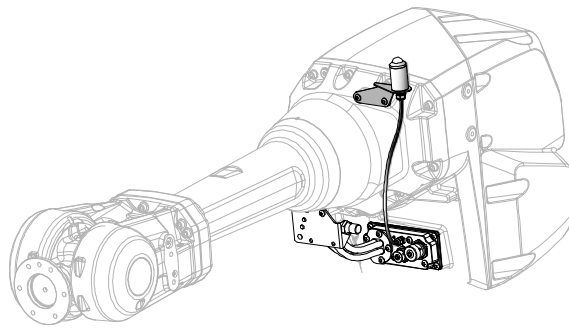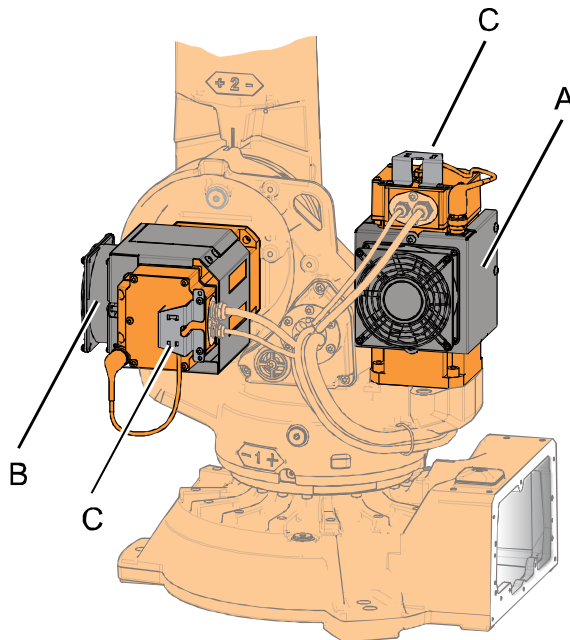| Option	Description
213-1	Safety lamp safety lamp with an orange fixed light can be mounted on the manipulator. The lamp is active in MOTORS ON mode. The safety lamp is required on a UL/UR approved robot.

Continues on next page

xx0800000427

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.

xx0900000232

Option	Description
A	Cooling fan for axis 1 motor, option 87-1.
B	Cooling fan for axis 2 motor, option 88-1.
C	Protection cover

Resolver connection, axis 7

A connector for resolver signals for axis 7 located on the base

Option	Description	Remark
864-1	On base	Used together with first additional drive, option 907-1.

Continues on next page

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Foundry Plus 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
908-1	Foundry Plus Cable Guard	For extra protection of cables. Requires option 287-3 Foundry Plus.

Electronic Position Switches (EPS)

Electronic Position Switches (EPS) is an additional safety computer in the controller, with the purpose of providing safe output signals representing the position of robot axes. The output signals are typically connected to cell safety circuitry and/or a safety PLC which takes care of interlocking the robot cell, for example in order to prevent robot and operator to enter a common area simultaneously. See *Application manual - Electronic Position Switches*.

Working range limit-Axis 1

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 variant	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°
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°

> **ℹ 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*.
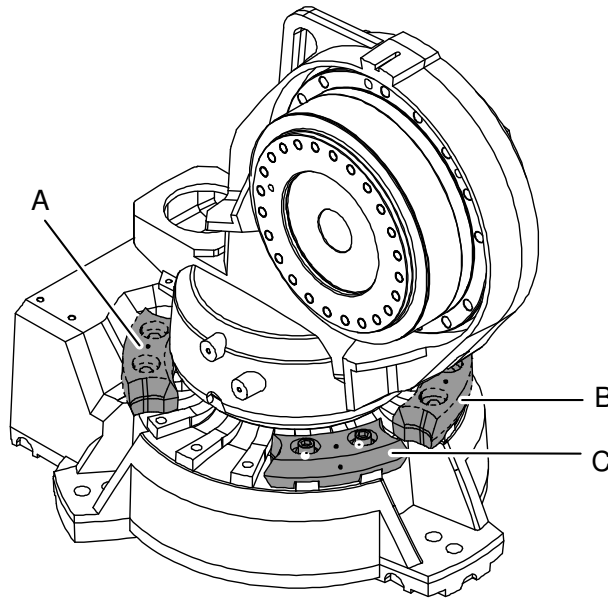
Option	Description
28-1 Axis 1	Two stops for restricting the working range. The stops can be mounted according to example in.

2.2 Manipulator
Continued

xx0800000410

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)

Warranty

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

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

Continues on next page

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Option	Type	Description
438-1	Standard warranty	Standard warranty is 12 months from *Customer Delivery Date* or latest 18 months after *Factory Shipment Date*, whichever occurs first. Warranty terms and conditions apply.
438-2	Standard warranty + 12 months	Standard warranty extended with 12 months from end date of the standard warranty. Warranty terms and conditions apply. Contact Customer Service in case of other requirements.
438-4	Standard warranty + 18 months	Standard warranty extended with 18 months from end date of the standard warranty. Warranty terms and conditions apply. Contact Customer Service in case of other requirements.
438-5	Standard warranty + 24 months	Standard warranty extended with 24 months from end date of the standard warranty. Warranty terms and conditions apply. Contact Customer Service in case of other requirements.
438-6	Standard warranty + 6 months	Standard warranty extended with 6 months from end date of the standard warranty. Warranty terms and conditions apply.
438-7	Standard warranty + 30 months	Standard warranty extended with 30 months from end date of the standard warranty. Warranty terms and conditions apply.
438-8	Stock warranty	Maximum 6 months postponed start of standard warranty, starting from factory shipment date. Note that no claims will be accepted for warranties that occurred before the end of stock warranty. Standard warranty commences automatically after 6 months from *Factory Shipment Date* or from activation date of standard warranty in WebConfig. **Note** Special conditions are applicable, see *Robotics Warranty Directives*.

2.3 Positioners

General

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

2.4 Floor cables

Manipulator cable length

Option	Lenghts (m)
210-2	7
210-3	15
210-4	22
210-5	30

Application interface connection

Option	Name	Description
16-1	Cabinet	The signals are connected to 12-pole screw terminals, Phoenix MSTB 2.5/12-ST-5.08, to the Control Module.

Connection of Parallel/CAN DeviceNet communication

Following information specifies the cable length for Parallel/CAN DeviceNet/Ethernet + PROFIBUS floor cables for connections between cabinets and manipulator.

Option	Lenghts (m)
94-1/90-2/859-1/92-2	7
94-2/90-3/859-2/92-3	15
90-4/859-3/92-4	22
94-4/90-5/859-4/92-5	30

2.5 DressPack

Process module

Option	Type	Description
768-1	Empty cabinet small	See *Product specification - Controller IRC5 with FlexPendant*, list of variants
768-2	Empty cabinet large	See *Product specification - Controller IRC5 with FlexPendant*, list of variants

WeldGuide III

Option	Type	Description
958-1	Basic	Only together with ArsitoMig 4000i/5000i, MigRob and TPS power sources. Digital I/O or AD Combi I/O is needed for WeldGuide functions. Requires option WeldGuide MultiPass [815-2].
958-2	Advanced	Only together with ArsitoMig 4000i/5000i, MigRob and TPS power sources. Digital I/O or AD Combi I/O is needed for WeldGuide functions. Requires option WeldGuide MultiPass [815-2].

Installation kit

Option	Type	Description
715-1	Installation kit	See *Product specification - Controller IRC5 with FlexPendant*, list of variants

2.6 Process equipment

Torch service

Option	Type	Description
1037-1	ABB TSC	ABB Torch Service Center
1037-2	ABB TC96	ABB Torch Cleaner
1037-5	BullsEye	BullsEye stand alone

Torch service options

Option	Type	Description
1038-1	Extension pedestal	Extension pedestal for TSC/TC/BullsEye

2.7 User documentation

User documentation

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

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

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3 Robot description

3.1 Robot types

Robot types

There are different variants of the IRB 2600, Type A and Type B, and they may have different motor types; i.e. a Type A robot may use Type B motors. 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 88*.

	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, gearbox option 1564-1).
- Version 2 for IRB 2600 Type C-20/1.65, IRB 2600 Type C-12/1.65 (supplier Nabtesco, gearbox option 1564-2).

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 variant of the robot, informing that the robot is a Type C variant.
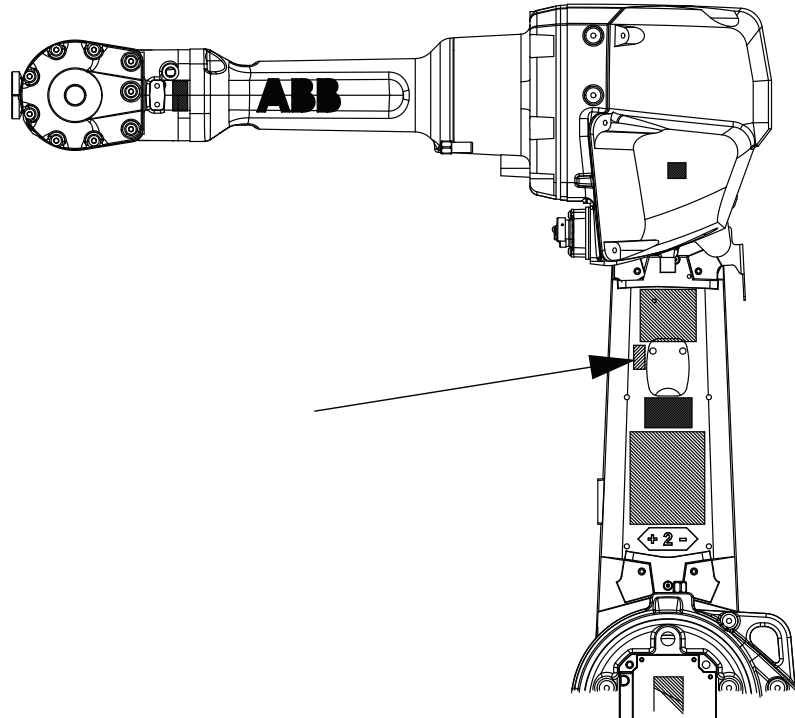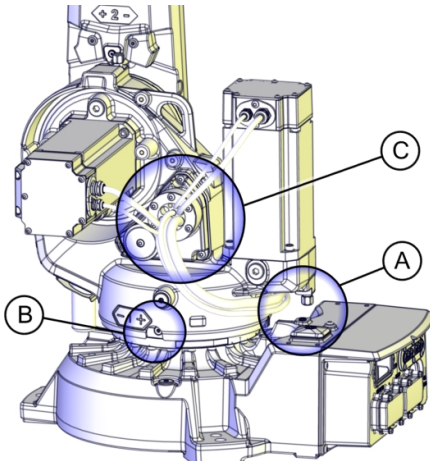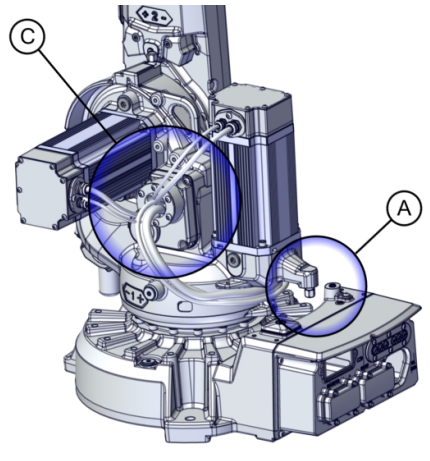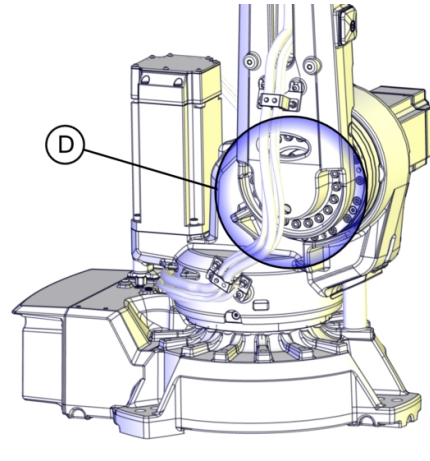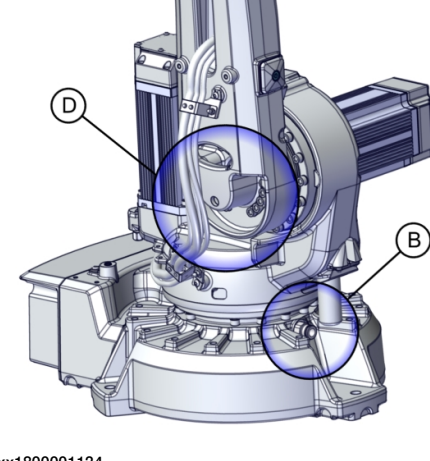
xx1800002211

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.

Continues on next page

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. The article numbers specified are found in WebConfig.

Contact ABB Service for further assistance regarding which gearbox versions are installed on the robot, if needed.

Robot variant	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 gearbox version on the FlexPendant

The robot type is found on the **System Info** view on the FlexPendant.

Expand **System properties**, **Drive modules** and **Robot1**, and then tap **Options**.
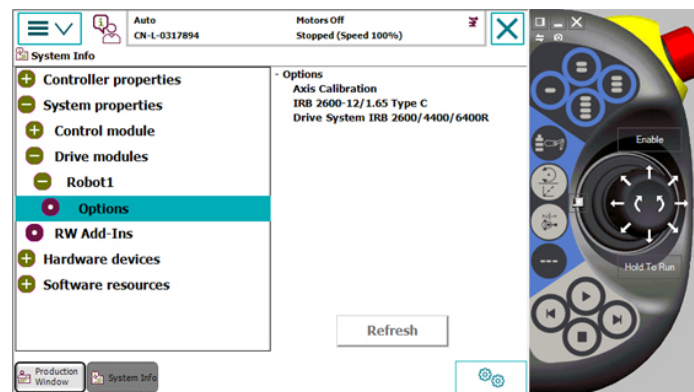
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4 Accessories

4.1 Introduction to accessories

General

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

Basic software and software options for robot and PC

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

Robot peripherals

- Track Motion
- Motor Units
- Positioners

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