

ROBOTICS

Product manual, spare parts

IRB 14000



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Product manual, spare parts

IRB 14000

IRC5

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Revision: J

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Original instructions.

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Overview of this manual

About this manual

This manual contains spare parts for:

- IRB 14000 and all its variants.

Usage

This manual shall be used as a complement to the product manual for IRB 14000 during:

- maintenance work
- repair work.

Who should read this manual?

This manual is intended for:

- maintenance personnel
- repair personnel.

Prerequisites

A maintenance/repair/installation craftsman working with an ABB Robot must:

- be trained by ABB and have the required knowledge of mechanical and electrical installation/repair/maintenance work.

Organization of chapters

The manual is organized in the following chapters:

Chapter	Contents
1 Spare parts and exploded view	Complete spare part list and complete list of robot components shown in exploded views.

References

Reference	Document ID
<i>Product manual - IRB 14000</i>	3HAC052983-001
<i>Circuit diagram - IRB 14000</i>	3HAC050778-003

Revisions

Revision	Description
-	First edition
A	The following updates are done in this revision: <ul style="list-style-type: none"> • Plastic parts are ESD coated so that their names and spare part numbers are modified throughout the manual. • Main power cable spare parts are added.
B	Published in release R16.2. The following updates are done in this revision: <ul style="list-style-type: none"> • Spare part items for the safety relay are added. See Safety relay (option) on page 31. • Spare parts for motors in axis 1 and axis 7 are removed. Contact ABB for more information.

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Overview of this manual

Continued

Revision	Description
C	Published in release R17.1. The following updates are done in this revision: <ul style="list-style-type: none">• DSQC1000 computer is changed to DSQC1018 computer.• Spare part list of hall sensors is corrected.
D	Published in release R17.2. The following updates are done in this revision: <ul style="list-style-type: none">• Battery pack RMU spare part is added.
E	Published in release R18.2. The following updates are done in this revision: <ul style="list-style-type: none">• Spare part hall sensors are removed.• Spare parts bulkhead push-in elbow and PTFE Film are added.• Spare part note to axis-5 and -6 motors is updated.
F	Published in release 19B. The following updates are made in this revision: <ul style="list-style-type: none">• Spare part hall sensor interface board is added.• Spare part local I/O devices and conveyor tracking module are added.
G	Published in release 20A. The following updates are made in this revision: <ul style="list-style-type: none">• Added information about Type A which has a reinforced design.
H	Published in release 20B. The following updates are made in this revision: <ul style="list-style-type: none">• Spare parts safety relay with 115VAC and 230VAC are replaced by safety relay, 85-265VAC.
J	Published in release 23A. The following updates are made in this revision: <ul style="list-style-type: none">• Removed certification from UL.

Product documentation

Categories for user documentation from ABB Robotics

The user documentation from ABB Robotics is divided into a number of categories. This listing is based on the type of information in the documents, regardless of whether the products are standard or optional.



Tip

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

Product manuals

Manipulators, controllers, DressPack/SpotPack, and most other hardware is delivered with a **Product manual** that generally contains:

- Safety information.
- Installation and commissioning (descriptions of mechanical installation or electrical connections).
- Maintenance (descriptions of all required preventive maintenance procedures including intervals and expected life time of parts).
- Repair (descriptions of all recommended repair procedures including spare parts).
- Calibration.
- Troubleshooting.
- Decommissioning.
- Reference information (safety standards, unit conversions, screw joints, lists of tools).
- Spare parts list with corresponding figures (or references to separate spare parts lists).
- References to circuit diagrams.

Technical reference manuals

The technical reference manuals describe reference information for robotics products, for example lubrication, the RAPID language, and system parameters.

Application manuals

Specific applications (for example software or hardware options) are described in **Application manuals**. An application manual can describe one or several applications.

An application manual generally contains information about:

- The purpose of the application (what it does and when it is useful).
- What is included (for example cables, I/O boards, RAPID instructions, system parameters, software).
- How to install included or required hardware.
- How to use the application.

Continues on next page

- Examples of how to use the application.

Operating manuals

The operating manuals describe hands-on handling of the products. The manuals are aimed at those having first-hand operational contact with the product, that is production cell operators, programmers, and troubleshooters.

1 Spare parts and exploded views

Spare part level

ABB spare parts are categorized into two levels, L1 and L2. Always check the part level before conducting a service work on a spare part.

- L1 spare parts

The L1 parts can be replaced in the field. The maintenance and replacement instructions given in the related product manuals must be strictly followed. If there are any problems, contact your local ABB for support.

- L2 spare parts

To replace the L2 parts require specialized training and might need special tools. Only ABB field service personnel or qualified personnel trained by ABB can replace L2 parts.

Continues on next page

1 Spare parts and exploded views

1.1.1 Spare parts - arm assembly

1.1 Arm

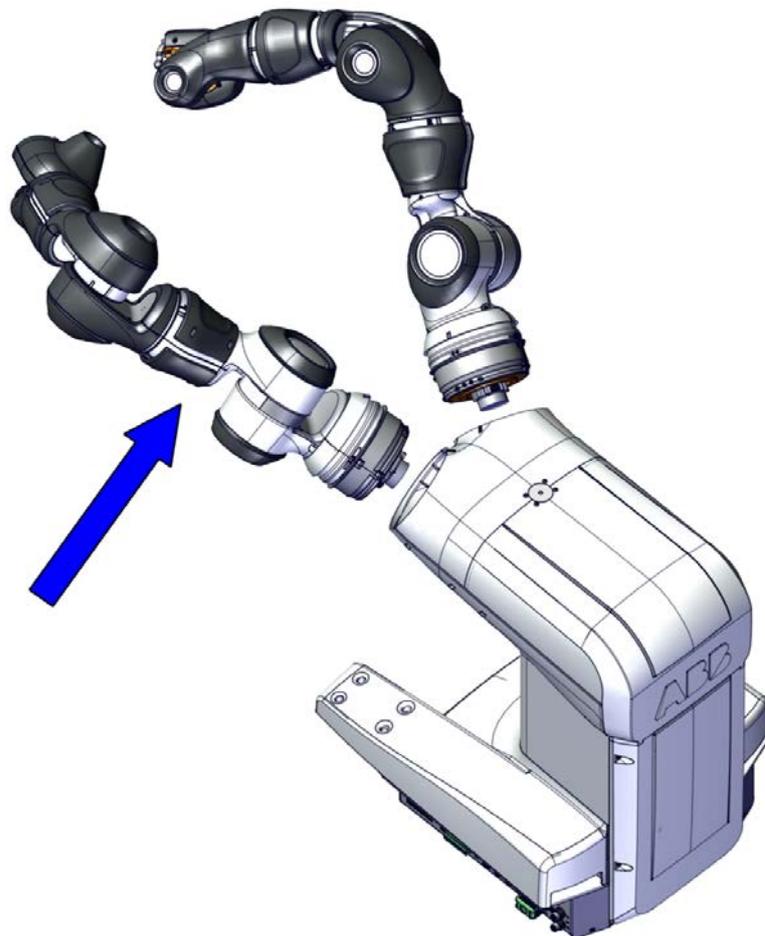
1.1.1 Spare parts - arm assembly

Arm assembly

Spare part list

	Spare part number	Description	Spare part level
-	3HAC074221-001	Arm, complete assembly	L2

Spare part illustration



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1.1.2 Spare parts - motors

1.1.2.1 Spare parts - axis-1 motor

Replacing the complete arm

It is recommended to exchange the complete arm in case of a broken axis-1 motor.
The axis-1 motor can be replaced by ABB, contact your local ABB for more information.

1 Spare parts and exploded views

1.1.2.2 Spare parts - axis-2 motor

1.1.2.2 Spare parts - axis-2 motor

Axis-2 motor

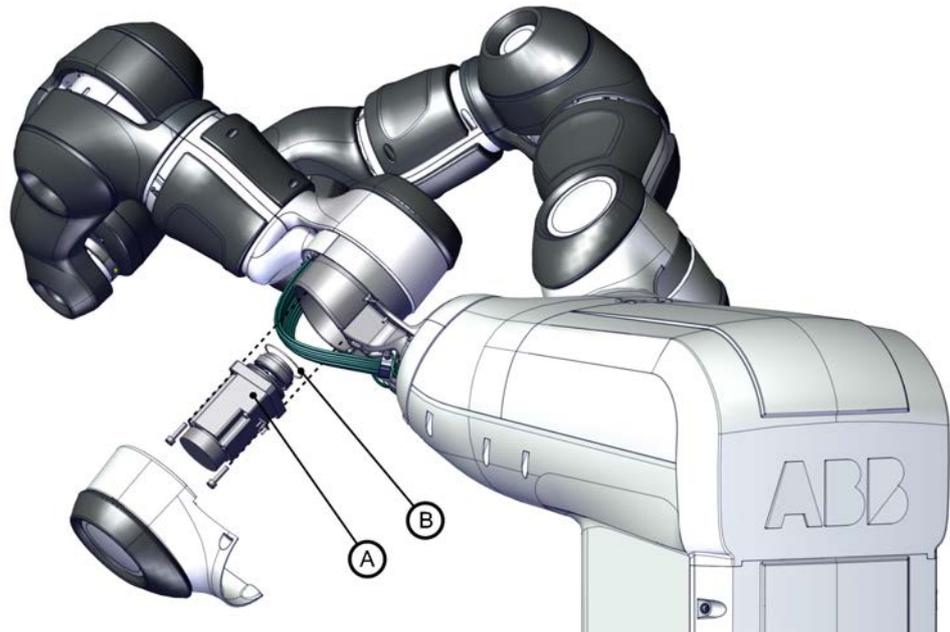
Spare part list - axis-2 motor

	Spare part number	Description	Spare part level
A	3HAC072394-001	Motor M93 Always use a new o-ring 3HAB3772-137. To be ordered separately.	L2

Spare part list - axis-2 motor parts

	Spare part number	Description	Spare part level
B	3HAB3772-137	O-ring	L2

Spare part illustration



xx1500000652

1.1.2.3 Spare parts - axis-7 motor

Replacing the complete arm

It is recommended to exchange the complete arm in case of a broken axis-7 motor.

The axis-7 motor can be replaced by ABB, contact your local ABB for more information.

1 Spare parts and exploded views

1.1.2.4 Spare parts - axis-3 motor

1.1.2.4 Spare parts - axis-3 motor

Axis-3 motor

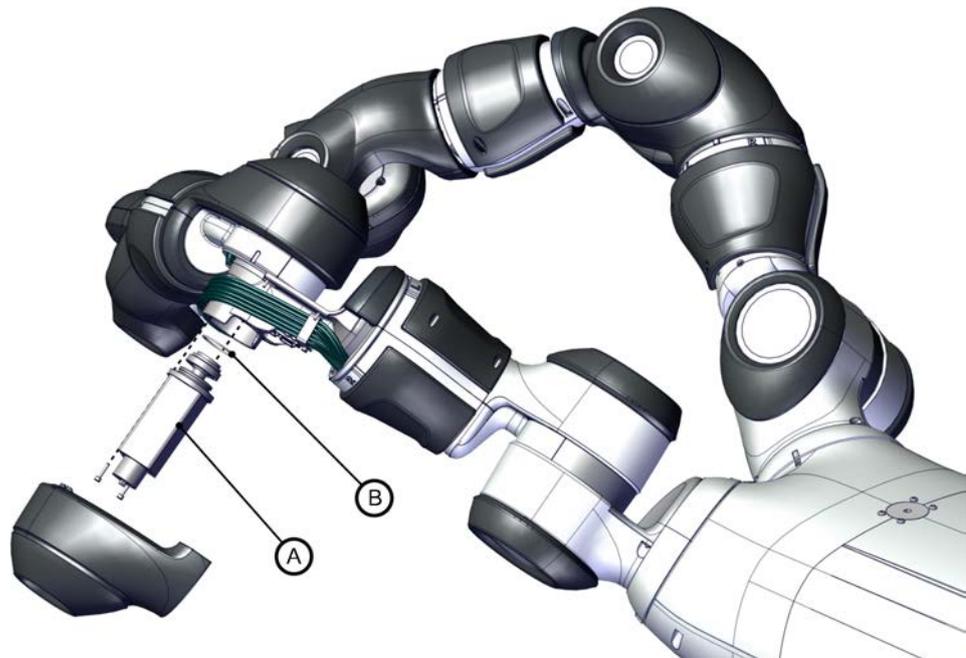
Spare part list - axis-3 motor

	Spare part number	Description	Spare part level
A	3HAC036900-001	Motor M92 Always use a new o-ring 3HAB3772-136. To be ordered separately.	L2

Spare part list - axis-3 motor parts

	Spare part number	Description	Spare part level
B	3HAB3772-136	O-ring	L2

Spare part illustration



xx150000654

1.1.2.5 Spare parts - axis-4 motor

Axis-4 motor

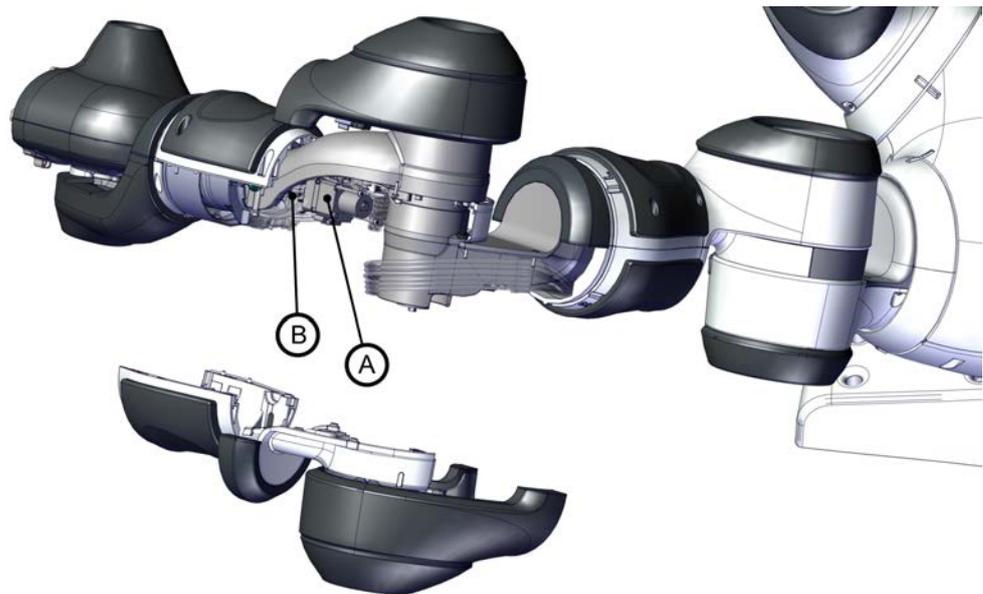
Spare part list - axis-4 motor

	Spare part number	Description	Spare part level
A	3HAC036950-001	Motor M91 Always use a new o-ring 3HAB3772-138. To be ordered separately.	L2

Spare part list - axis-4 motor parts

	Spare part number	Description	Spare part level
B	3HAB3772-138	O-ring	L2
C	3HAB3772-119	O-ring on flange	L2
D	3HAC072381-001	Flange	L2
E	3HAC073135-001	Washer	L2
F	3HAC072396-001	Small head screw	L2

Spare part illustration



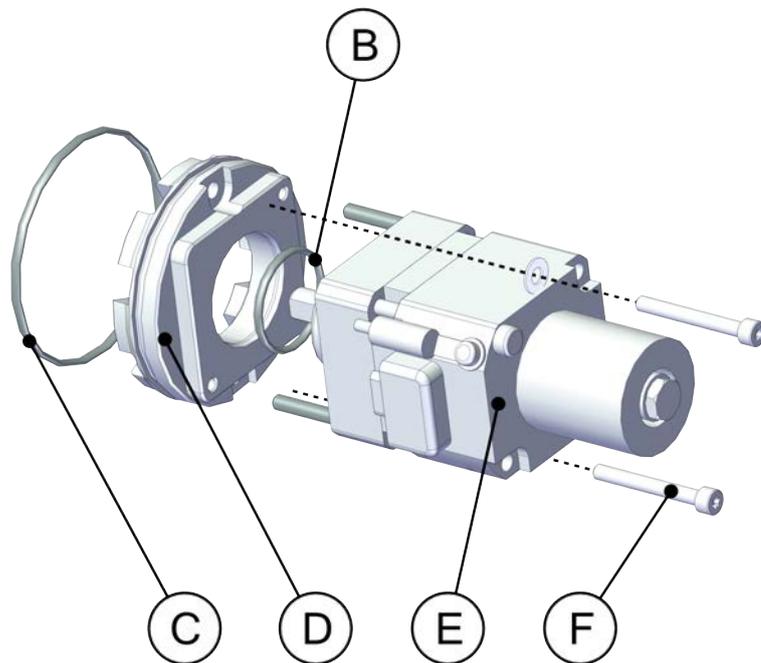
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1 Spare parts and exploded views

1.1.2.5 Spare parts - axis-4 motor

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1.1.2.6 Spare parts - axis-5 motor

Axis-5 motor

Spare part list - axis-5 motor

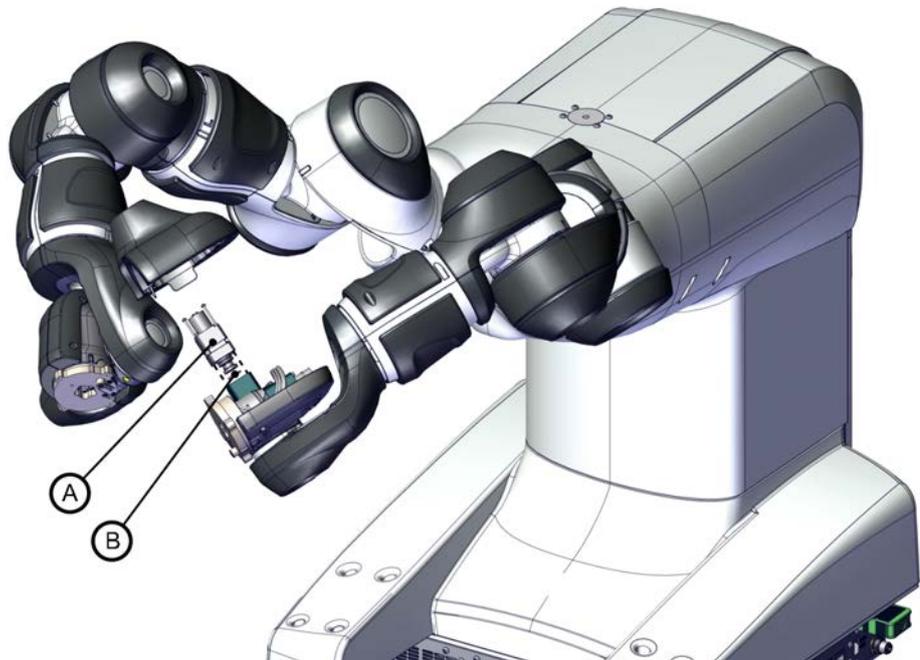
	Spare part number	Description	Spare part level
A	3HAC036950-001	Motor M91 Always use a new o-ring 3HAB3772-138. To be ordered separately.	L2

Spare part list - axis-5 motor parts

	Spare part number	Description	Spare part level
B	3HAB3772-138	O-ring	L2
C	3HAB3772-119	O-ring on flange	L2
D	3HAC072381-001	Flange	L2
E	3HAC073135-001	Washer	L2
F	3HAC072396-001	Small head screw	L2
-	3HAC051316-001	PTFE film on axis-5 and axis-6 motors ⁱ	L2

ⁱ Used only on axis-5 motor of IRB 14000 no-type-specified and axis-6 motor of both robot types. See [Robot description on page 39](#) for robot type.

Spare part illustration



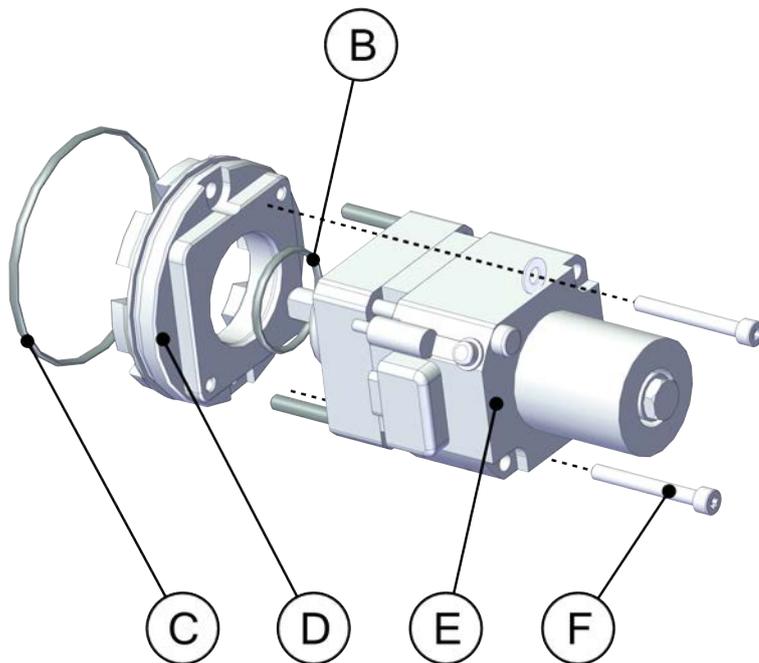
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1 Spare parts and exploded views

1.1.2.6 Spare parts - axis-5 motor

Continued



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1.1.2.7 Spare parts - axis-6 motor

Axis-6 motor

Spare part list - axis-6 motor

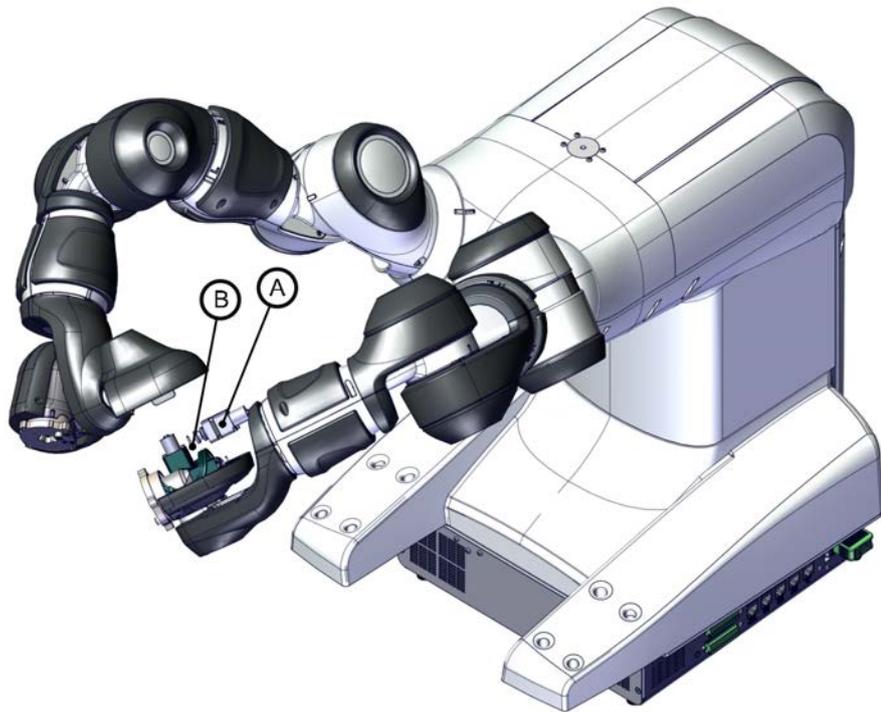
	Spare part number	Description	Spare part level
A	3HAC036950-001	Motor M91 Always use a new o-ring 3HAB3772-138. To be ordered separately.	L2

Spare part list - axis-6 motor parts

	Spare part number	Description	Spare part level
B	3HAB3772-138	O-ring	L2
-	3HAC051316-001	PTFE film on axis-5 and axis-6 motors ⁱ	L2

ⁱ Used only on axis-5 motor of IRB 14000 no-type-specified and axis-6 motor of both robot types. See [Robot description on page 39](#) for robot type.

Spare part illustration



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1 Spare parts and exploded views

1.1.3 Spare parts - hall sensor interface board

1.1.3 Spare parts - hall sensor interface board

Hall sensor interface board

Spare part list

	Spare part number	Description	Spare part level
-	3HAC050887-001	Hall sensor interface board	L2 ⁱ

ⁱ The spare part level is available only for robots without Absolute Accuracy option.

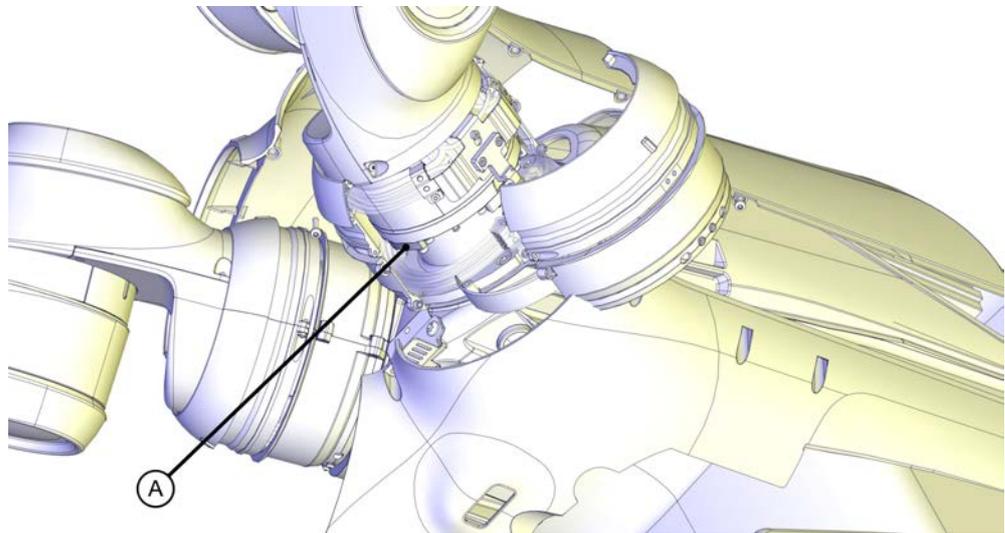
1.1.4 Spare parts - mechanical stops

Mechanical stops

Spare part list

	Spare part number	Description	Spare part level
A	3HAC047602-001	Mechanical stop for axis 1	L2
B	3HAC047602-001	Mechanical stop for axis 2	L2
C	3HAC047603-001	Mechanical stop for axis 7	L2
D	3HAC047603-001	Mechanical stop for axis 3	L2

Spare part illustration



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1 Spare parts and exploded views

1.2.1 Spare parts - base covers

1.2 Encapsulation and covers

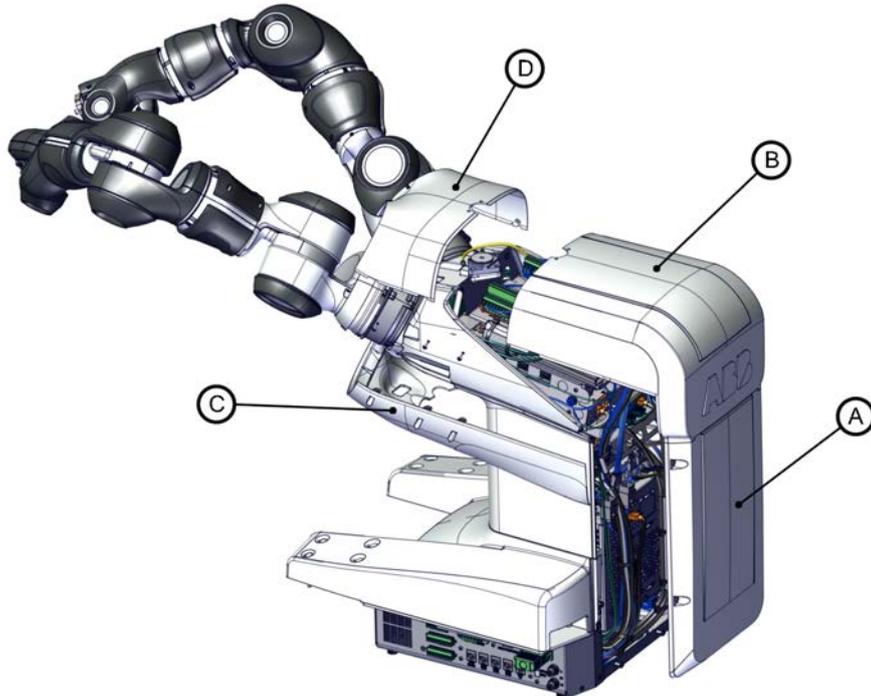
1.2.1 Spare parts - base covers

Base covers

Spare part list

	Spare part number	Description	Spare part level
A	3HAC047639-001	Body cover	L1
B	3HAC057715-001	Rear cover for body, ESD coated	L1
C	3HAC057716-001	Body cover, lower, ESD coated	L1
D	3HAC057717-001	Body cover, upper, ESD coated	L1

Spare part illustration



xx150000698

1.2.2 Spare parts - arm covers

Arm covers and encapsulation

Spare part list - encapsulation

	Spare part number	Description	Spare part level
A	3HAC057718-001	Upper axis-1 cover, ESD coated	L1
B	3HAC057719-001	Upper axis-1 cover, brake, ESD coated	L1
C	3HAC050559-001	Lower axis-2 cover, ESD coated	L1
D	3HAC057721-001	Axis-2 cable collar, ESD coated	L1
E	3HAC057722-001	Axis-2 cable cover, ESD coated	L1
F	3HAC050558-001	Axis-2 padding	L1
G	3HAC050529-002	Axis-7 cover, ESD coated	L1
H	3HAC050529-001	Axis-7 cover, ESD coated	L1
J	3HAC050532-001	Lower axis-3 cover, ESD coated	L1
K	3HAC050538-001	Upper axis-3 cover, ESD coated	L1
L	3HAC050542-001	Lower axis-4 cover, ESD coated	L1
M	3HAC050535-001	Axis-3 body cover, ESD coated	L1
N	3HAC049878-001	Axis-4 cable protection	L1
O	3HAC057727-001	Axis-3 cable collar, ESD coated	L1
P	3HAC050548-001	Upper axis-4 cover, ESD coated	L1
Q	3HAC050545-001	Axis-4 body cover, ESD coated	L1
R	3HAC050553-001/3HAC074222-001 ⁱ	Axis-6 cover, ESD coated	L1
S	3HAC050526-001	Axis-7 body padding	L1
T	3HAC041286-001	Cooling flange with padding	L1

ⁱ Axis-6 cover 3HAC050553-001 is used with robot no-type-specified while axis-6 cover 3HAC074222-001 is used with robot Type A. See [Robot description on page 39](#) for robot type.

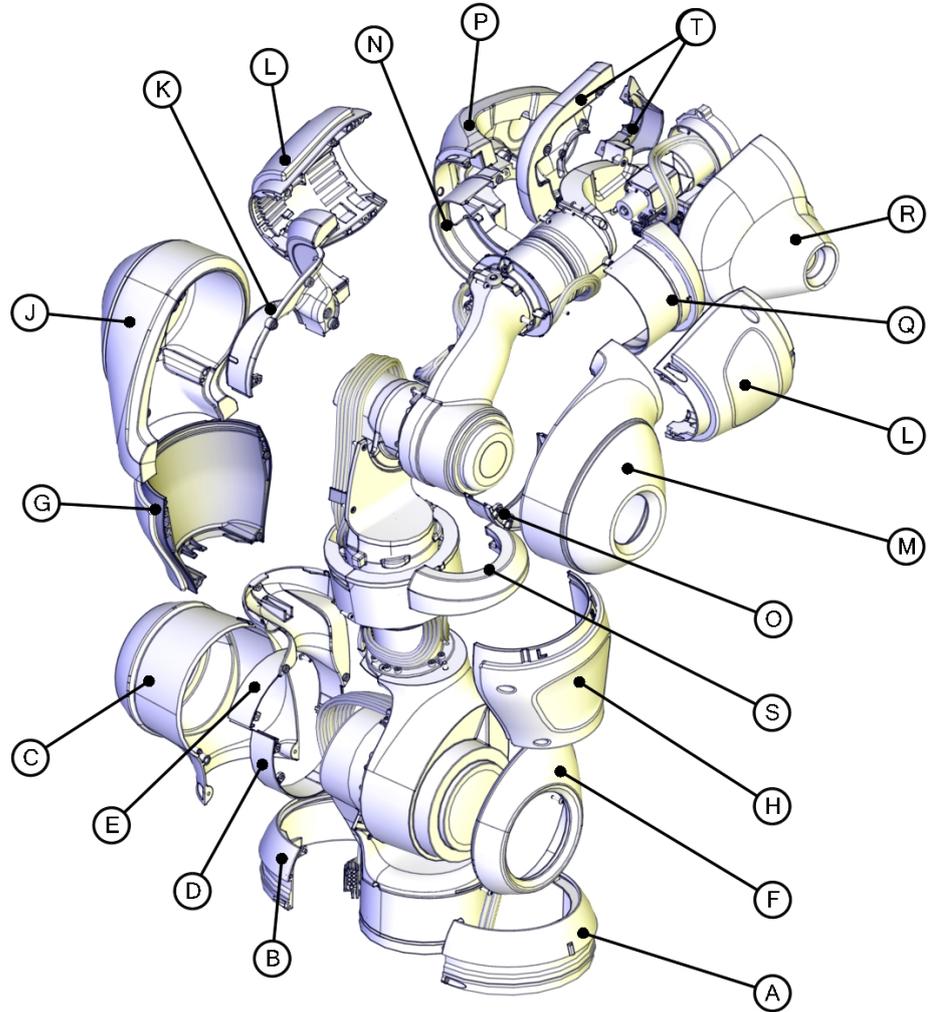
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1 Spare parts and exploded views

1.2.2 Spare parts - arm covers

Continued

Spare part illustration



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1.3 Controller

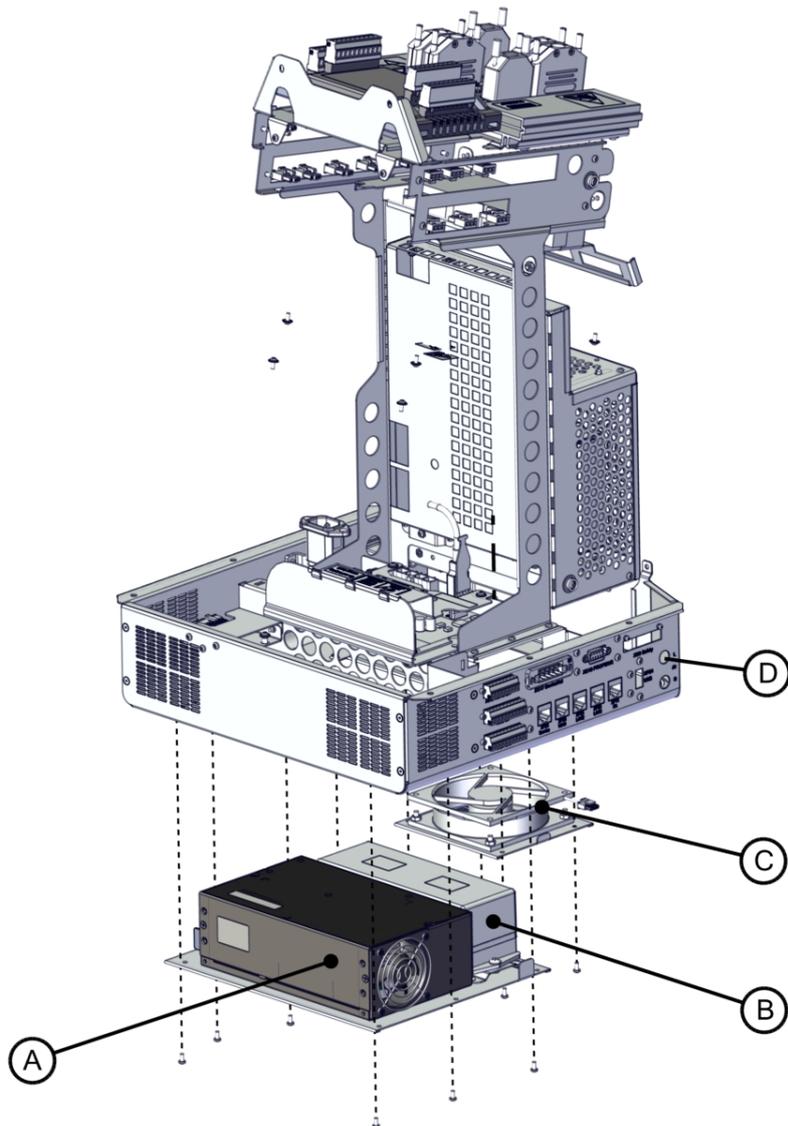
1.3.1 Spare parts - electrical parts

Bottom controller

Spare part list

	Spare part number	Description
A	3HAC047966-001	Power supply
B	3HAC025562-001	Capacitor bank
C	3HAC026525-001	Fan with receptacle
D	3HAC037616-001	Bulkhead push-in elbow

Spare part illustration



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1 Spare parts and exploded views

1.3.1 Spare parts - electrical parts

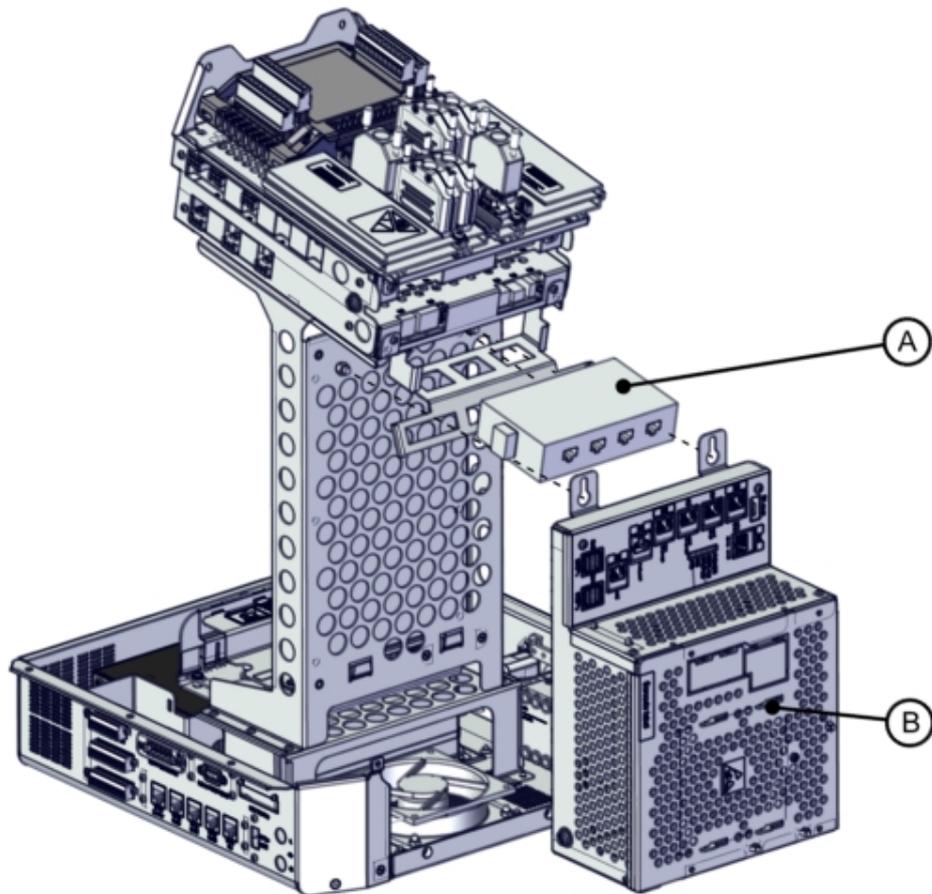
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Back controller

Spare part list

	Spare part number	Description
A	3HAC034884-001	Ethernet switch 5p
B	3HAC050363-001	DSQC1018 Computer

Spare part illustration



xx150000589

Front controller

Spare part list

	Spare part number	Description
A	3HAC049969-001	DSQC1013 Axis computer
B	3HAC026254-001	DSQC 662 Power distribution board

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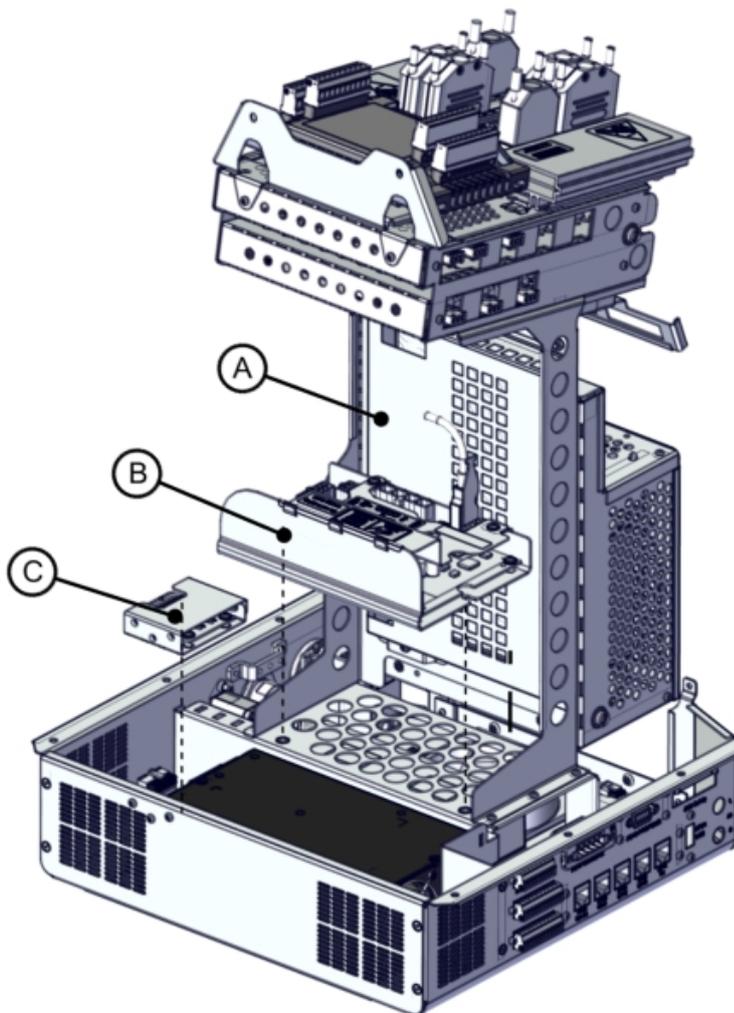
1 Spare parts and exploded views

1.3.1 Spare parts - electrical parts

Continued

	Spare part number	Description
C	3HAC049570-001	DSQC 461 PDB ext unit

Spare part illustration



xx150000598

Top controller

Spare part list

	Spare part number	Description
A	3HAC047960-001	DSQC 462 Drive board
B	3HAC025917-001	Digital 24V I/O DSQC 652
C	3HAC048550-001	DSQC633D measurement board
D	3HAC044075-001	Battery pack RMU

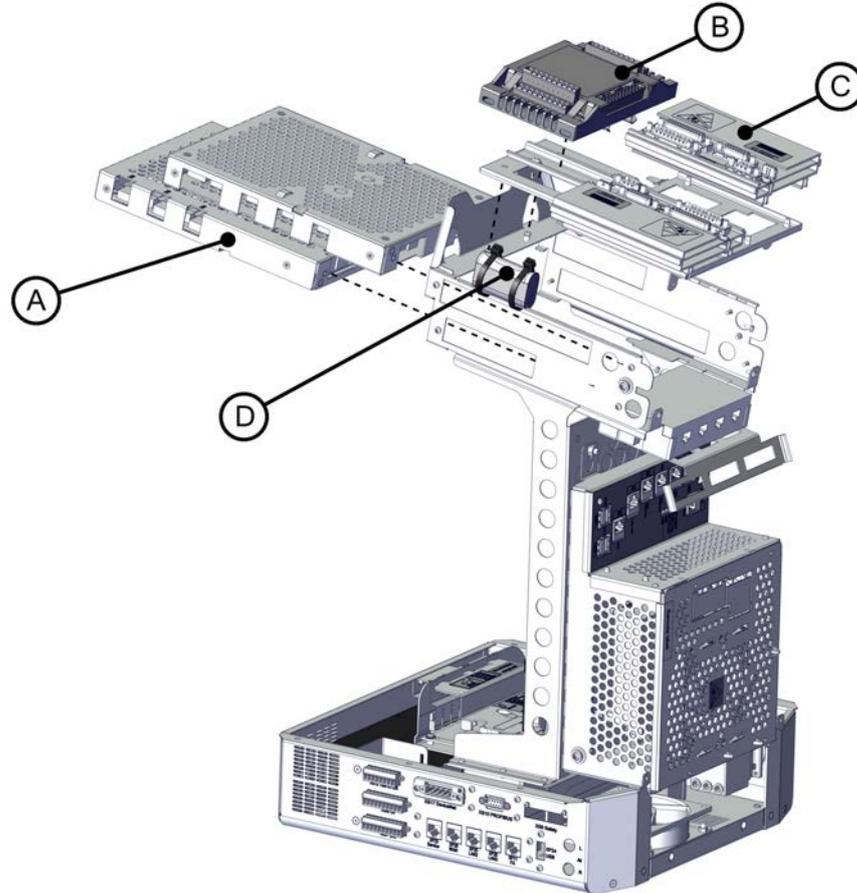
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1 Spare parts and exploded views

1.3.1 Spare parts - electrical parts

Continued

Spare part illustration



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Computer unit

Spare part list

	Spare part number	Description
A	3HAC050363-001	DSQC1018 Computer
B	3HAC047184-003	Mass memory with boot loader
C	3HAC046408-001	DSQC1003 Expansion board complete
D	3HAC026840-001	DSQC667 Profibus Fieldbus adapter
	3HAC031670-001	DSQC688 PROFINET FA
	3HAC027652-001	DSQC669 Ethernet Slave AnyBus adapter
E	3HAC043383-001	DSQC1006 DeviceNet Master PCI-E
F	3HAC026525-001	Fan with receptacle

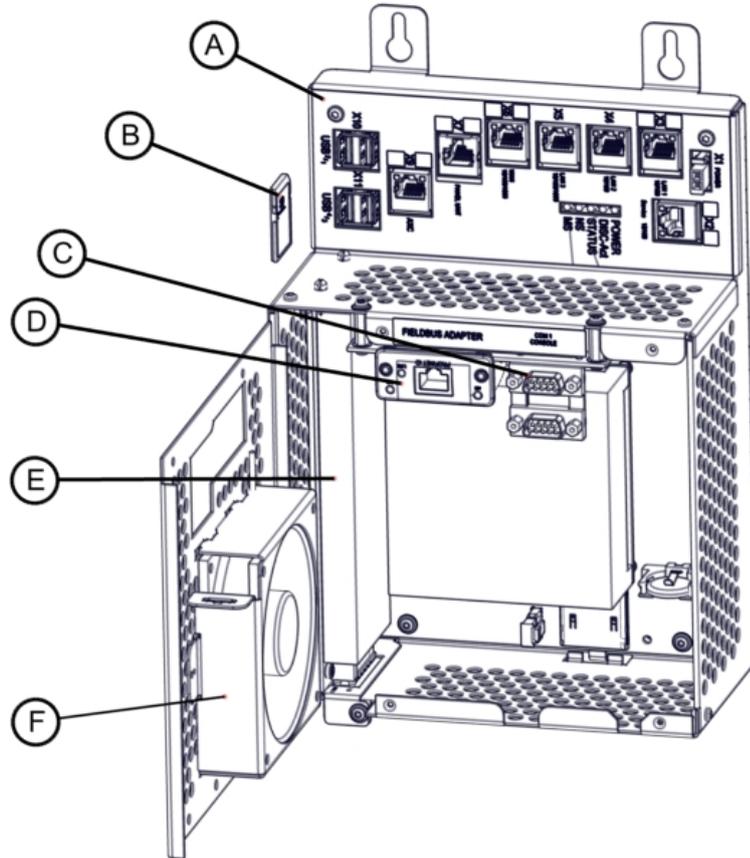
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1 Spare parts and exploded views

1.3.1 Spare parts - electrical parts

Continued

Spare part illustration



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Main power cable (option)

Spare part list

	Spare part number	Description
-	3HAC056583-001	Mains cable with locking system, EU 2m
	3HAC056583-002	Mains cable with locking system, UK 2m
	3HAC056583-003	Mains cable with locking system, US 6ft
	3HAC056583-004	Mains cable with locking system, JP 2m
	3HAC056583-005	Mains cable with locking system, CN 2m
	3HAC056583-006	Mains cable with locking system, AU 2m

Safety relay (option)

Spare part list

	Spare part number	Description
-	3HAC075063-001	Safety relay, 85-265VAC

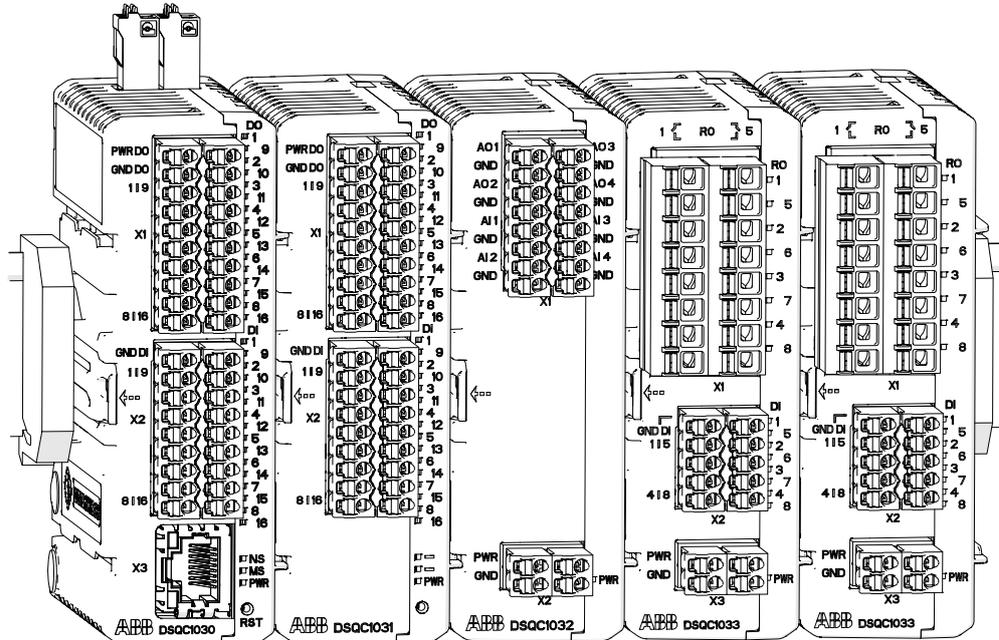
1 Spare parts and exploded views

1.3.2 Spare parts - add-ons

1.3.2 Spare parts - add-ons

Scalable I/O devices

The illustration below shows the base device and connected add-on devices.



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Spare part no.	Description	Type
3HAC058663-001	Digital base, 16 digital inputs, 16 digital outputs	DSQC1030
3HAC058664-001	Digital add-on, 16 digital inputs, 16 digital outputs	DSQC1031
3HAC058665-001	Analog add-on, 4 analog inputs, 4 analog outputs	DSQC1032
3HAC058666-001	Relay add-on, 8 digital inputs, 8 relay outputs	DSQC1033

The main dimensions for the I/O devices are 75x36x101 (Length x Width x Height).

Additional parts

Spare part no.	Description
3HAC060919-001	Connectors digital base/add-on
3HAC060925-001	Connectors analog add-on
3HAC060926-001	Connectors relay add-on
3HAC062073-001	DIN bracket

Conveyor tracking module

Spare part no.	Description	Type
3HNE 01586-1	Conveyor Tracking Unit	DSQC 377B
3HNA027579-001	CTM-01 Conveyor Tracking Module	DSQC2000

1.4 Brake release

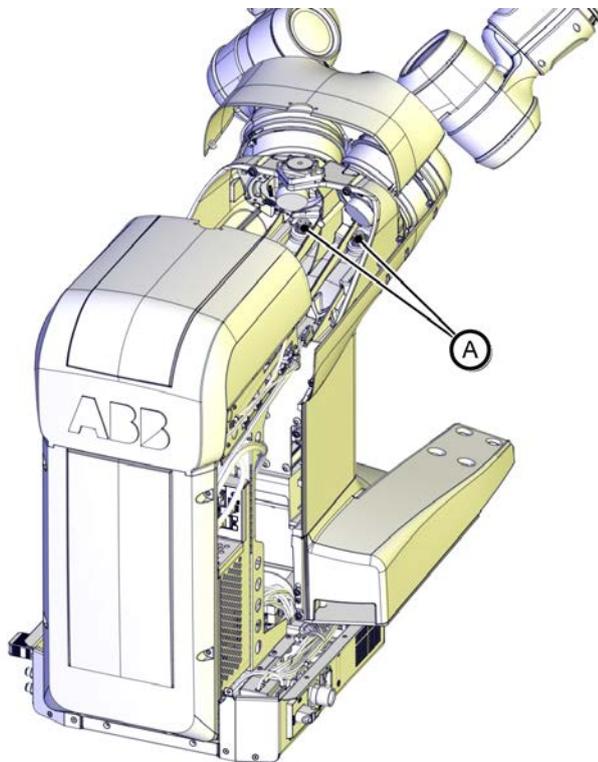
1.4.1 Spare part - brake release harness

Brake release harness

Spare part list

	Spare part number	Description
A	3HAC038361-001	Brake release harness Includes brake release button and harness.

Spare part illustration



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1 Spare parts and exploded views

1.5.1 Spare part - signal lamp

1.5 Signal lamp

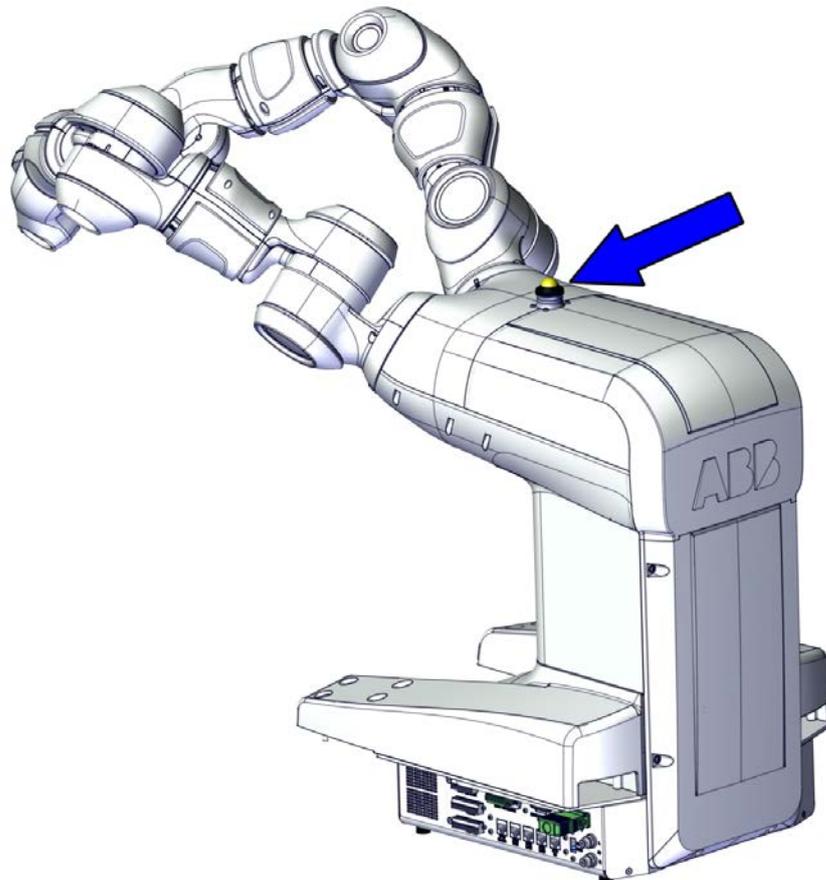
1.5.1 Spare part - signal lamp

Signal lamp

Spare part list

	Spare part number	Description
A	3HAC053350-001	Signal lamp

Spare part illustration



xx150000051

1.6 Labels

1.6.1 Spare parts - labels and instruction plates

Labels

Spare part list

	Spare part number	Description
A	3HAC053898-001	Instruction plate , Brake release
B	3HAB9549-1	Rating label
C	3HAC053978-001	Lifting label
D	3HAC053895-001	Caution label, Risk of tipping
E	3HAC053979-001	Read manual label
F	3HAC13488-1	Calibration label
H	3HAC1589-1	Instruction plate, Brake release
J	29454254-1	ESD Warning
K	3HAC055245-001	Warning label, Disconnect power before servicing controller

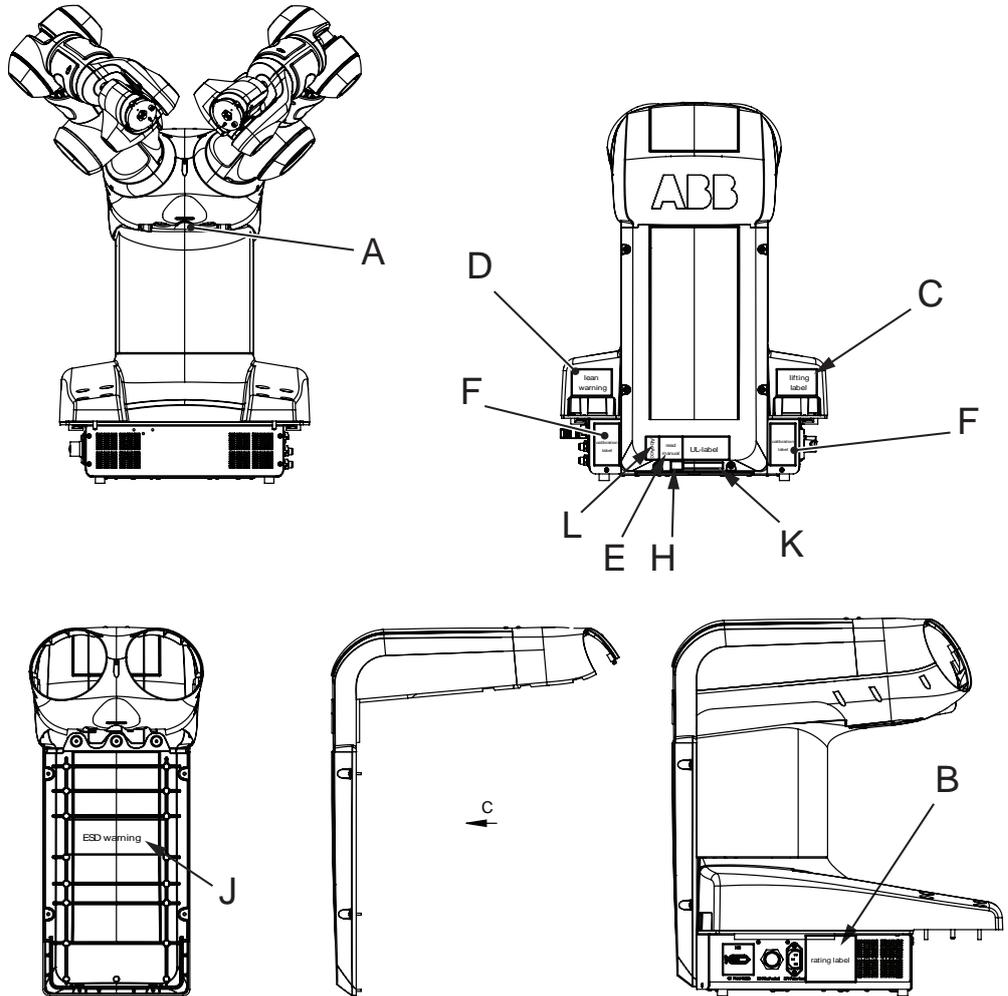
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1 Spare parts and exploded views

1.6.1 Spare parts - labels and instruction plates

Continued

Spare part illustration



VIEW C

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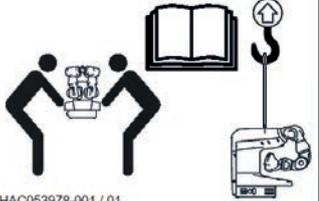
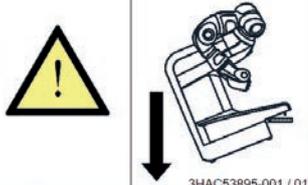
	Description	Illustration
A	Instruction plate, Brake release	 <p data-bbox="1034 1704 1142 1727">xx1500000723</p>

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1 Spare parts and exploded views

1.6.1 Spare parts - labels and instruction plates

Continued

B	Rating label	<div data-bbox="1066 264 1436 645" style="border: 1px solid black; padding: 5px;"> <p>14000-500003 14000-500003</p> <p>ABB Engineering(shanghai) Ltd. Made in China</p> <hr/> <p>Type : IRB14000 Robot variant : IRB 14000-0.5/0.5 Power : 100-240VAC, 2.4-1A, 50-60Hz Short circuit current : <7.5 A Protection : + IP30 Circuit diagram : See user documentation</p> <p>Serial number : 14000-500003</p> <p>Date of manufacturing : 2015-02-31 Max load : See Load Diagram Net weight : 38 Kg Max air pressure : 0.5 MPa</p> </div> <p>xx1500000724</p>
C	Lifting label	<div data-bbox="1070 719 1417 936" style="border: 1px solid black; padding: 5px;">  <p>3HAC053978-001 / 01</p> </div> <p>xx1500000725</p>
D	Caution label, Risk of tipping	<div data-bbox="1082 1041 1417 1258" style="border: 1px solid black; padding: 5px;">  <p>3HAC53895-001 / 01</p> </div> <p>xx1500000726</p>
E	Read manual label	<div data-bbox="1066 1346 1433 1704" style="border: 1px solid black; padding: 5px;">  <p>3HAC053894-001 / 00</p> </div> <p>xx1500000727</p>
F	Calibration label	
H	Warning sign, Electrical shock	<div data-bbox="1070 1825 1214 1951" style="border: 1px solid black; padding: 5px;">  </div> <p>xx0200000024</p>

Continues on next page

1 Spare parts and exploded views

1.6.1 Spare parts - labels and instruction plates

Continued

J	ESD Warning (inside of cover)	 xx0200000023
K	Warning label, Disconnect power before servicing controller	 xx1500000790
L	AbsAcc label	 xx1500001643

2 Robot description

2.1 Robot type description

Type A of IRB 14000

The difference between IRB 14000 and IRB 14000 Type A is that the Type A has a reinforced design on the arm.

As a result of this, the following parts differ between types:

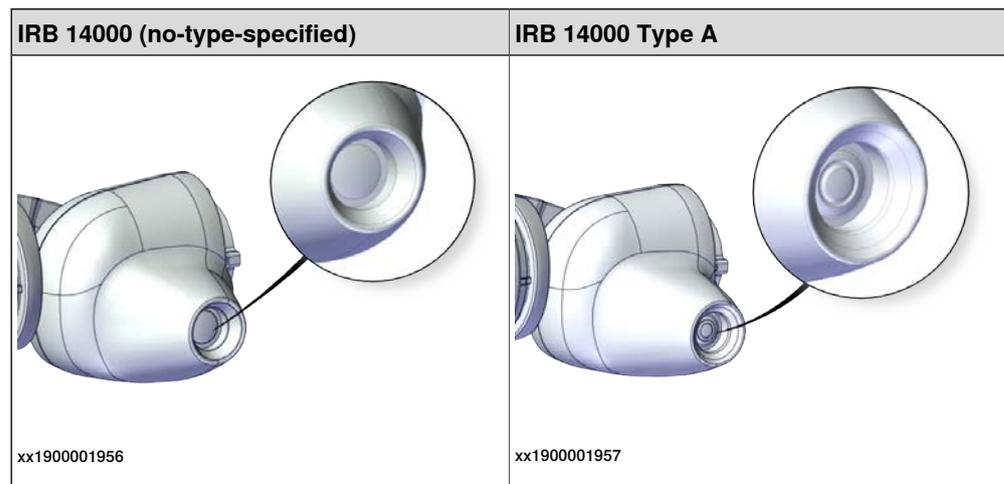
- Motor brake, axis 1 and axis 2
- Gearbox, axis 4 and axis 5
- Mechanical design, axis 4 and axis 5
- Cable harness design

Those robots in original design are simply named IRB 14000 (no-type-specified).

How to know which type the robot is?

The following characteristics can be used to figure out the robot type.

Axis 5 appearance



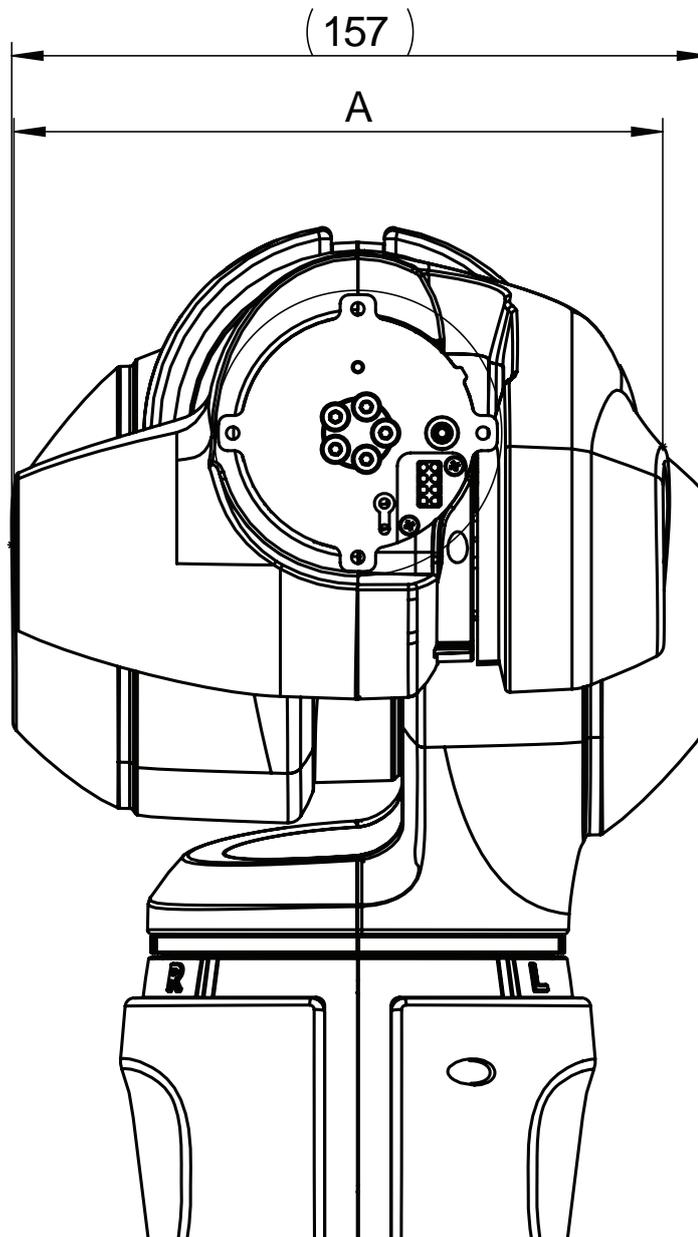
Continues on next page

2 Robot description

2.1 Robot type description

Continued

Robot dimension



xx1900001958

	IRB 14000 (no-type-specified)	IRB 14000 Type A
A	137 mm	146 mm

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Arm configuration during system installation

The robot type must be correctly selected when setting the arm configuration during system installation, otherwise, unexpected motion error or performance issues may occur.

Type A is available for selection as below only in RobotStudio 2019.5.3 or later and RobotWare 6.10.2 or later.

- ▲ IRB 14000 (Dual arm YuMi)
 - ▲ IRB 14000-0.5/0.5
 - ▲ Left Arm configuration
 - IRB 14000-0.5/0.5
 - IRB 14000-0.5/0.5 Type A
 - ▲ Right Arm configuration
 - IRB 14000-0.5/0.5
 - IRB 14000-0.5/0.5 Type A

xx2000002171



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