



# Product manual, spare parts IRB 4600

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## **Product manual, spare parts**

**IRB 4600 - 60/2.05**

**IRB 4600 - 45/2.05**

**IRB 4600 - 40/2.55**

**IRB 4600 - 20/2.50**

**IRC5**

**Document ID: 3HAC049108-001**

**Revision: D**

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# Overview of this manual

## About this manual

This manual contains spare parts for:

- IRB 4600 and all its variants.

## Usage

This manual shall be used as a complement to the product manual for IRB 4600 during:

- maintenance work
- repair work.

## Who should read this manual?

This manual is intended for:

- maintenance personnel
- repair personnel.

## Prerequisites

Maintenance/repair/installation personnel 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 Rebuilding robot	Information of rebuilding parts, required when rebuilding the robot to another version.
2 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 4600</i>	<i>3HAC033453-001</i>
<i>Product manual - IRB 4600 Foundry Prime</i>	<i>3HAC040585-001</i>
<i>Circuit diagram - IRB 4600</i>	<i>3HAC029038-003</i>

## Revisions

Revision	Description
-	First edition

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Revision	Description
A	<p>The following updates have been made in this revision:</p> <ul style="list-style-type: none"><li>• Spare part number changed for the protection cover 3HAC13416-1, new number is 3HAC049770-001, see <a href="#">Spare parts, base cover assembly on page 11</a></li><li>• Motor Type D on axes 4, 5 and 6 added as new spare part. (Note that the motor is not compatible with other types. Also that Type D is not compatible with Foundry Prime)</li><li>• Spare parts with color Graphite White are added to the spare part lists</li></ul>
B	<p>The following updates have been made in this revision:</p> <ul style="list-style-type: none"><li>• Spare part number for Motor (Graphite White) axis 4, other design than type C and D deleted.</li><li>• New Spare part numbers for "Connection boxes FS130/FS180". See <a href="#">Other parts on page 29</a>.</li><li>• Spare part numbers added for motors axis 1 and axis 2 Foundry Prime.</li><li>• Spare part numbers added for gear boxes axis 1, axis 2 and axis 3 Foundry Prime.</li><li>• Spare part numbers added for gearboxes axis 2.</li><li>• Spare part number for Lower arm IRB 4600-40/2.55, -20/2.50 (Graphite White) changed to 3HAC042883-008.</li><li>• Spare parts for option Force sensor package is deleted from this manual. Information could be found in "Product manual - Integrated Force Control".</li><li>• Generally modified due to update of BOL.</li></ul>
C	<p>Published in release R16.2. The following updates are made in this revision:</p> <ul style="list-style-type: none"><li>• Corrections due to updates in SAP terminology.</li><li>• Updated spare parts due to new standard calibration method (Axis Calibration).<ul style="list-style-type: none"><li>- Base</li><li>- Frame</li><li>- Lower arm</li><li>- Arm housing</li><li>- Tubular shaft unit</li><li>- Wrist unit</li></ul></li></ul>
D	<p>Published in release R17.1. The following updates are made in this revision:</p> <ul style="list-style-type: none"><li>• Added spare part numbers for protective items for calibration bushings and holes (Axis Calibration)</li><li>• General updates about overpressure</li></ul>



# Product documentation, IRC5

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## 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.

All documents listed can be ordered from ABB on a DVD. The documents listed are valid for IRC5 robot systems.

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## 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.
- Decommissioning.
- Reference information (safety standards, unit conversions, screw joints, lists of tools).
- Spare parts list with exploded views (or references to separate spare parts lists).
- Circuit diagrams (or references to circuit diagrams).

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## Technical reference manuals

The technical reference manuals describe reference information for robotics products.

- *Technical reference manual - Lubrication in gearboxes*: Description of types and volumes of lubrication for the manipulator gearboxes.
- *Technical reference manual - RAPID overview*: An overview of the RAPID programming language.
- *Technical reference manual - RAPID Instructions, Functions and Data types*: Description and syntax for all RAPID instructions, functions, and data types.
- *Technical reference manual - RAPID kernel*: A formal description of the RAPID programming language.
- *Technical reference manual - System parameters*: Description of system parameters and configuration workflows.

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### 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, DVD with PC software).
- How to install included or required hardware.
- How to use the application.
- Examples of how to use the application.

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### 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 trouble shooters.

The group of manuals includes (among others):

- *Operating manual - Emergency safety information*
- *Operating manual - General safety information*
- *Operating manual - Getting started, IRC5 and RobotStudio*
- *Operating manual - IRC5 Integrator's guide*
- *Operating manual - IRC5 with FlexPendant*
- *Operating manual - RobotStudio*
- *Operating manual - Trouble shooting IRC5*

# 1 Base cover assembly

## Spare parts, base cover assembly

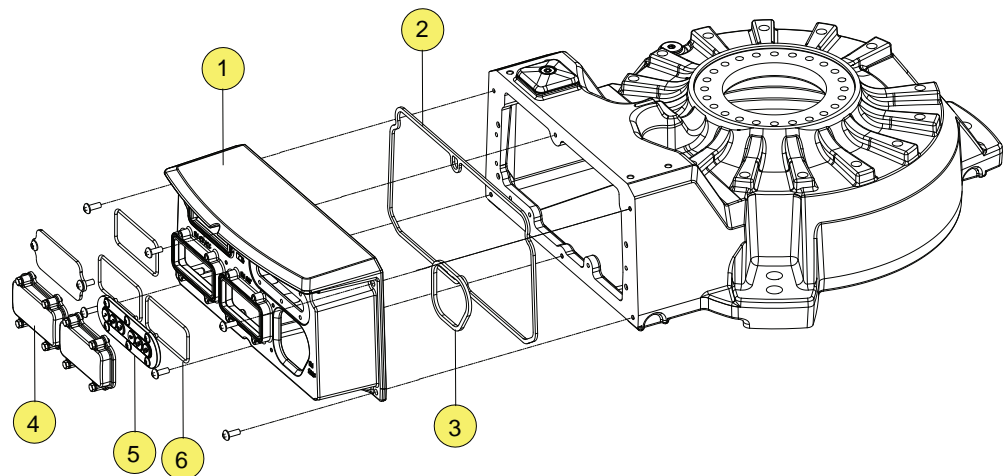
Link to [Illustration, base cover assembly on page 11](#)

Position	Base cover parts	Spare part number
1	Cover Protection type Standard	3HAC029250-002
1	Cover Protection type Foundry Prime	3HAC035053-003
2	Sealing	3HAC029188-001
3	Sealing	3HAC029187-001
4	Protection cover Protection type Standard/Foundry Prime	3HAC035537-001
5	Push-button guard	3HAC6499-1
6	Type C: O-ring (3 pcs)	3HAC038465-001
6	Other design than Type C: O-ring (3 pcs) Protection type Standard	21522012-428
6	O-ring (3 pcs) Protection type Foundry Prime	3HAC038465-001

## Illustration, base cover assembly

Link to [Spare parts, base cover assembly on page 11](#)

### Protection type Standard



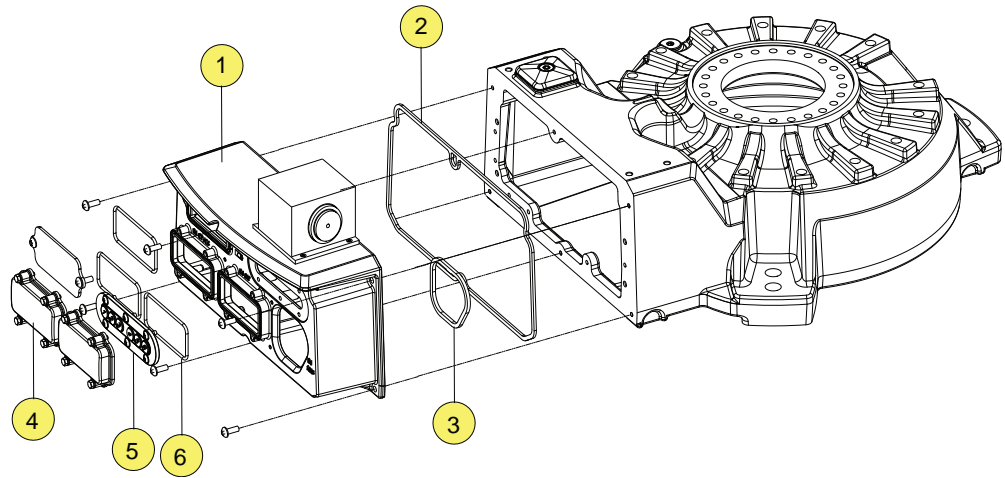
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## 1 Base cover assembly

*Continued*

Protection type Foundry Prime



## 2 Base and frame unit

### Spare parts, base and frame unit

#### Type C

Link to [Illustration base and frame unit on page 15](#)

Position	Base and frame parts	Spare part number	Color
A	Cover plate	3HAC030041-001	
B	O-ring	3HAB3772-109	
C	Base	3HAC059452-001	ABB Orange
	Base	3HAC059452-002	Graphite White
	Base Foundry Prime	3HAC059431-003	Grey
D	Bracket, mechanical stop pin	3HAC035837-001	
E	Bracket	3HAC027499-005	
F	Stop pin	3HAC027588-005	
G	O-ring (for stop pin)	3HAB3772-104	
H	Frame	3HAC059456-001	ABB Orange
		3HAC059456-002	Graphite White
-	Radial sealing	3HAB3702-29	
-	Flange sealing (Loctite 574)	3HAC042581-001	
-	Cable protection (not shown in the figure)	3HAC027499-004	
-	Expansion container, set	3HAC033862-005	

#### Other design than Type C

Link to [Illustration base and frame unit on page 15](#)

Position	Base and frame parts	Spare part number	Protection type	Color
A	Cover plate	3HAC030041-001	Standard	
	Cover plate	3HAC030738-001	Foundry Prime	
B	O-ring (for cover plate)	3HAB3772-109		
C	Base	3HAC059431-001	Standard	ABB Orange
	Base	3HAC059431-002	Standard	Graphite White
	Base	3HAC059431-003	Foundry Prime	
D	Bracket, mechanical stop pin	3HAC035837-001		
E	Bracket	3HAC027499-005		
F	Stop pin	3HAC027588-005	Standard	
G	O-ring (for stop pin)	3HAB3772-104		

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## 2 Base and frame unit

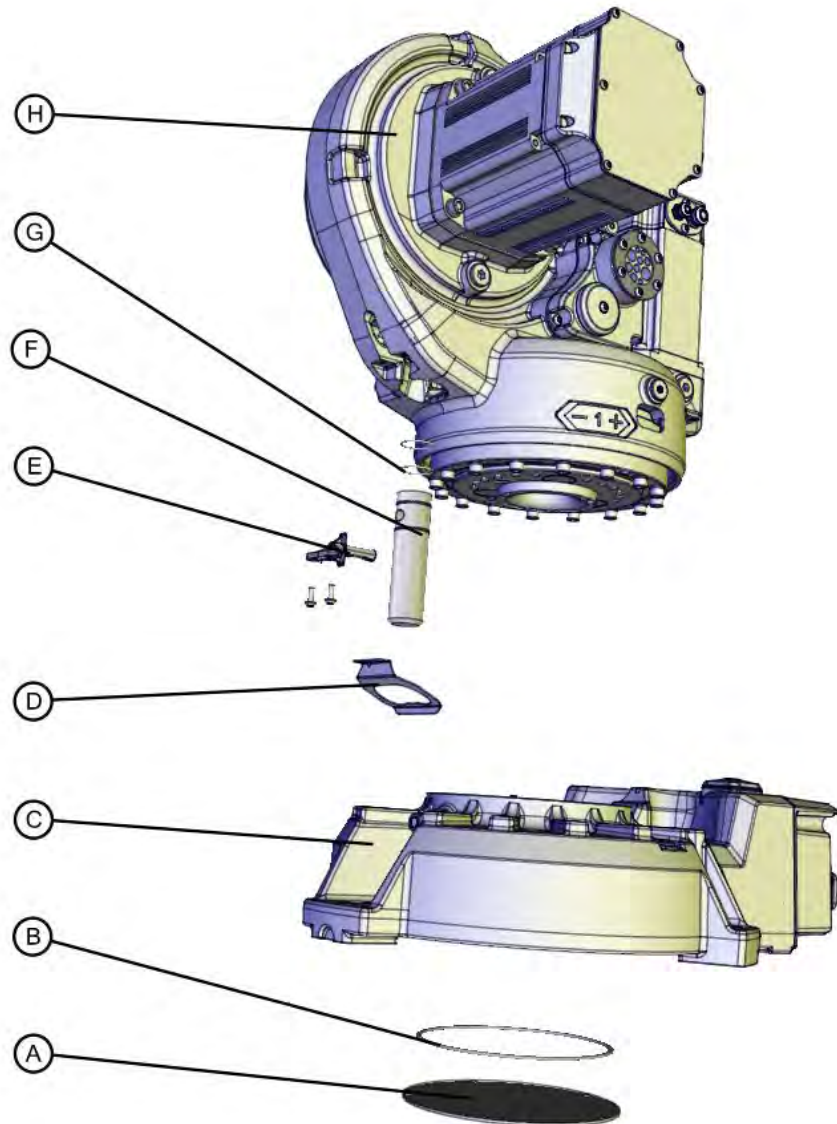
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Pos- i- tion	Base and frame parts	Spare part number	Protection type	Color
H	Frame	3HAC059453-001	Standard	ABB Orange
	Frame	3HAC059453-002	Standard	Graphite White
	Frame	3HAC059453-003	Foundry Prime	
-	Radial sealing (not shown in the figure)	3HAB3701-29	Standard	
-	Cover (not shown in the figure)	3HAC025310-002	Standard	
-	V-ring (not shown in the figure)	3HAB3732-23	Standard	
-	O-ring (not shown in the figure)	3HAB3772-35	Standard	
-	Flange sealing (Loctite 574)	3HAC042474-001		
-	Cable protection (not shown in the figure)	3HAC027499-004		

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### Illustration base and frame unit

Link to [Spare parts, base and frame unit on page 13](#)



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## 3 Lower arm and frame

### Spare parts list, lower arm and frame

Link to [Illustration, lower arm and frame on page 18](#)

#### Type C

Position	Parts lower arm & frame	Spare part number	Color
1	Lower arm (IRB 4600-60/2.05, -45/2.05)	3HAC059459-001	ABB Orange
	Lower arm (IRB 4600-60/2.05, -45/2.05)	3HAC059459-002	Graphite White
	Lower arm (IRB 4600-40/2.55, -20/2.50)	3HAC059458-001	ABB Orange
	Lower arm (IRB 4600-40/2.55, -20/2.50)	3HAC059458-002	Graphite White
112	Stop pin	3HAC027588-005	
113	Bracket	3HAC027499-005	
20	O-ring	3HAB3772-104	
111	Cover	3HAC025310-002	
109	V-ring	3HAB3732-23	
110	O-ring	3HAB3772-35	
108	Damper	3HAC029243-001	
107	Damper	3HAC12320-1	
24	Lubricating oil	Type of oil and amount is detailed in <i>Technical reference manual - Lubrication in gear-boxes</i> .	
24	Magnetic plug	3HAC16721-1	
23	Plug IF3820 S06-EXT	3HAC045715-001	
200	See <a href="#">Electrical connections on page 29</a> .		

#### Other design than Type C

Position	Parts lower arm & frame	Spare part number	Protection type	Color
A	Magnetic plug	3HAC16721-1		
B	Damper	3HAC12320-1		
C	Lower arm (IRB 4600-60/2.05, -45/2.05)	3HAC059460-001	Standard	ABB Orange
	Lower arm (IRB 4600-60/2.05, -45/2.05)	3HAC059460-002	Standard	Graphite White
	Lower arm (IRB 4600-60/2.05)	3HAC059460-003	Foundry Prime	
	Lower arm (IRB 4600-40/2.55, -20/2.50)	3HAC031002-005	Standard	
D	Damper	3HAC029243-001		
-	Plug IF3820 S06-EXT	3HAC033192-001		

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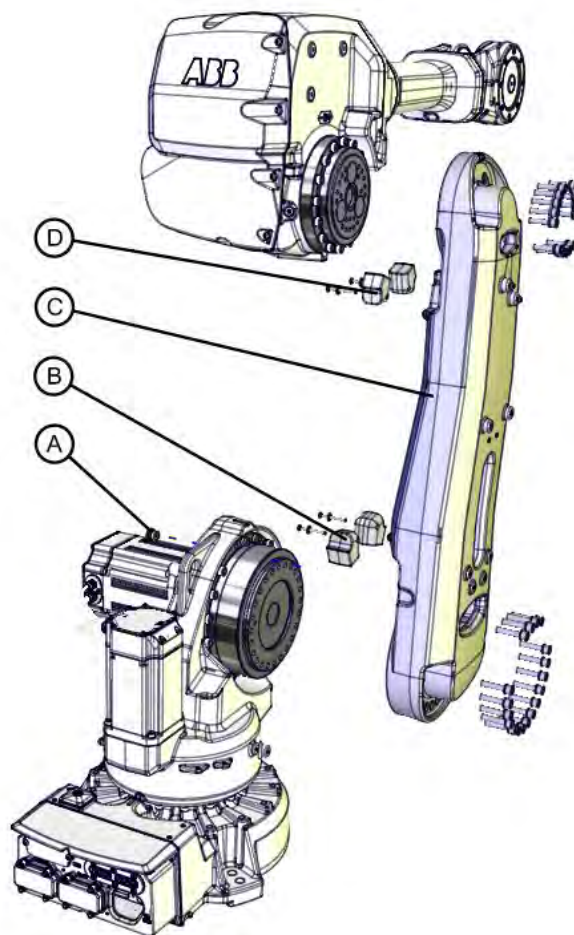
### 3 Lower arm and frame

Continued

Position	Parts lower arm & frame	Spare part number	Protection type	Color
-	Lubricating oil	Type of oil and amount is detailed in <i>Technical reference manual - Lubrication in gearboxes.</i>		

#### Illustration, lower arm and frame

Link to [Spare parts list, lower arm and frame on page 17](#)



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## 4 Upper arm IRB 4600-60/2.05, -40/2.05-40/2.50, -20/2.55

### Spare parts, upper arm -60/2.05, -45/2.05

Link to [Illustration upper arm -60/2.05, -45/2.05 on page 21](#)

Pos	Upper arm parts	Spare parts no.	Protection type	Color
1	Arm housing, type C	3HAC059461-001	Standard	ABB Orange
		3HAC059461-002	Standard	Graphite White
	Arm housing, other than type C	3HAC028633-004	Standard	ABB Orange
	Arm housing, type A	3HAC034549-005	Standard	ABB Orange
	Arm housing	3HAC059475-001	Foundry Prime	
2	Parallel pin, hardened (2 pcs)	3HAC3785-2		
3	Tubular shaft unit	3HAC059467-001	Standard	ABB Orange
		3HAC059467-002	Standard	Graphite White
		3HAC059470-001	Foundry Prime	
6	Gasket	3HAC029284-001		
7	Wrist complete	3HAC059479-001	Standard	ABB Orange
	Wrist complete	3HAC059479-002	Standard	Graphite White
	Wrist complete	3HAC059480-001	Foundry Prime	
18	Magnetic plug	3HAC037925-001		
23	Sealing washer	3HAC029646-001		

### Spare parts, upper arm -40/2.55

Link to [Illustration upper arm -40/2.55 on page 23](#)

Pos	Upper arm parts	Spare parts no.	Color
1	Arm housing, type C (Foundry)	3HAC042870-006	ABB Orange
		3HAC042870-007	Graphite White
	Arm housing, other design than type C	3HAC028633-004	ABB Orange
		3HAC028633-006	Graphite White
	Arm housing, type A	3HAC034549-005	ABB Orange
2	Parallel pin, hardened (2 pcs)	3HAC3785-2	
3	Tubular shaft unit	3HAC059468-001	ABB Orange
		3HAC059468-002	Graphite White
6	O-ring	3HAB3772-12	
7	Wrist complete (including o-ring pos 6) <sup>i</sup>	3HAC059445-001	ABB Orange
		3HAC059445-002	Graphite White

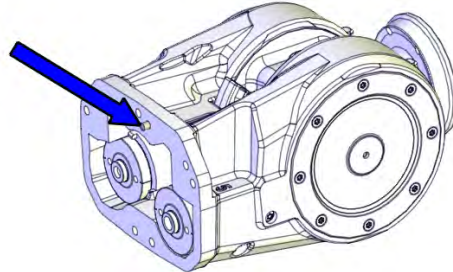
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## 4 Upper arm IRB 4600-60/2.05, -40/2.05-40/2.50, -20/2.55

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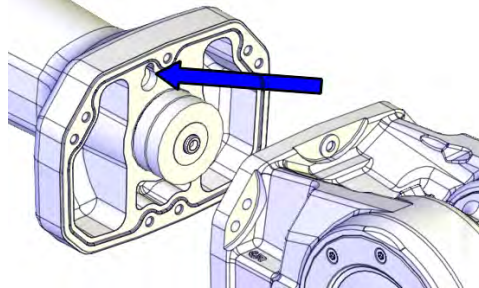
Pos	Upper arm parts	Spare parts no.	Color
18	Magnetic plug	3HAC037925-001	
23	Washer	3HAC029646-001	

- i A guide pin is enclosed separately with the wrist. It is to be installed in the new wrist spare part if there is a guide pin hole available in the upper arm tube.



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The hole is available on robots introduced with Axis Calibration.



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If the guide pin is not installed on a robot calibrated with Axis Calibration, the calibration result will be affected negatively.

### Spare parts, upper arm -20/2.50

Link to [Illustration upper arm -20/2.50 on page 22](#)

Pos	Upper arm parts	Spare parts no.	Color
1	Arm housing, type C	3HAC042870-006	ABB Orange
		3HAC042870-007	Graphite White
	Arm housing, other design than type C	3HAC028633-004	ABB Orange
	Arm housing, type A	3HAC034549-005	ABB Orange
2	Parallel pin, hardened (2 pcs)	3HAC3785-2	
3	Tubular shaft unit	3HAC059469-001	ABB Orange
		3HAC059469-002	Graphite White
6	Gasket	3HAC029284-001	
7	Wrist complete	3HAC059479-001	ABB Orange
		3HAC059479-002	Graphite White
18	Magnetic plug	3HAC037925-001	
23	Washer	3HAC029646-001	

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## Spare parts, cover arm housing

Link to [Illustration cover arm housing on page 24](#)

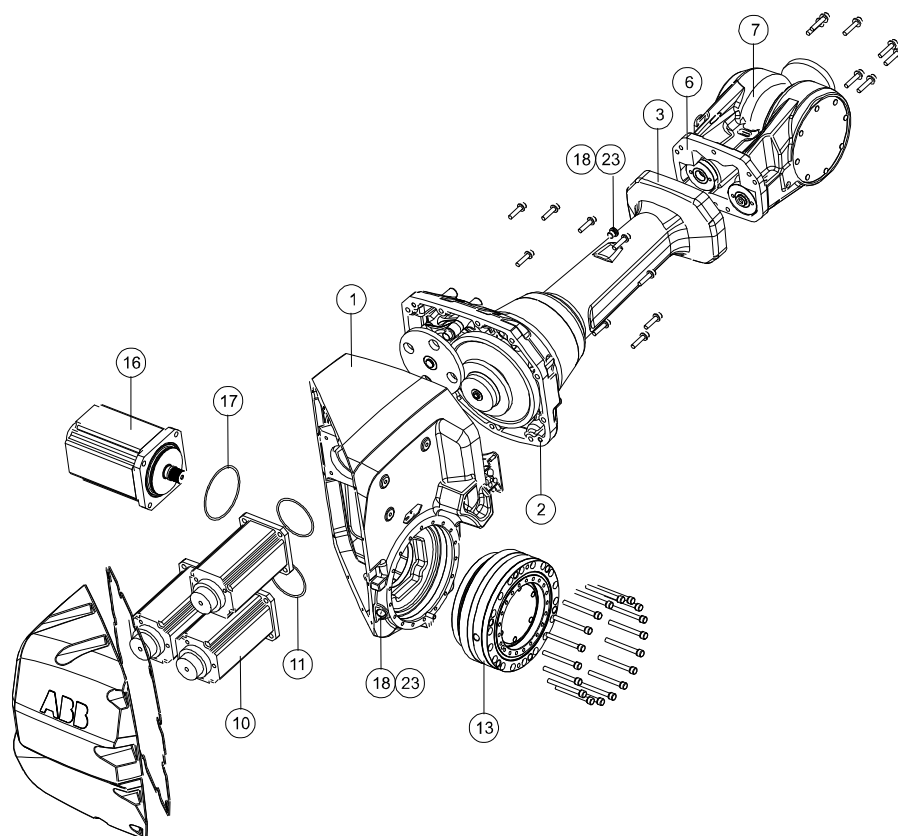
Pos	Cover arm housing parts	Spare parts no.	Protection type	Color
1	Cover, arm housing	3HAC028763-003	Standard	ABB Orange
1	Cover, arm housing	3HAC028763-005	Standard	Graphite White
1	Cover, arm housing	3HAC037540-003	Foundry Prime	
2	Gasket	3HAC029312-001		

## Spare parts, upper arm (gearbox oil in vessel)

Type and amount of oil is detailed in a separate manual, *Technical reference manual - Lubrication in gearboxes*.

## Illustration upper arm -60/2.05, -45/2.05

Link to [Spare parts, upper arm -60/2.05, -45/2.05 on page 19](#)

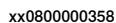


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Link to [Spare parts, upper arm -20/2.50 on page 20](#)

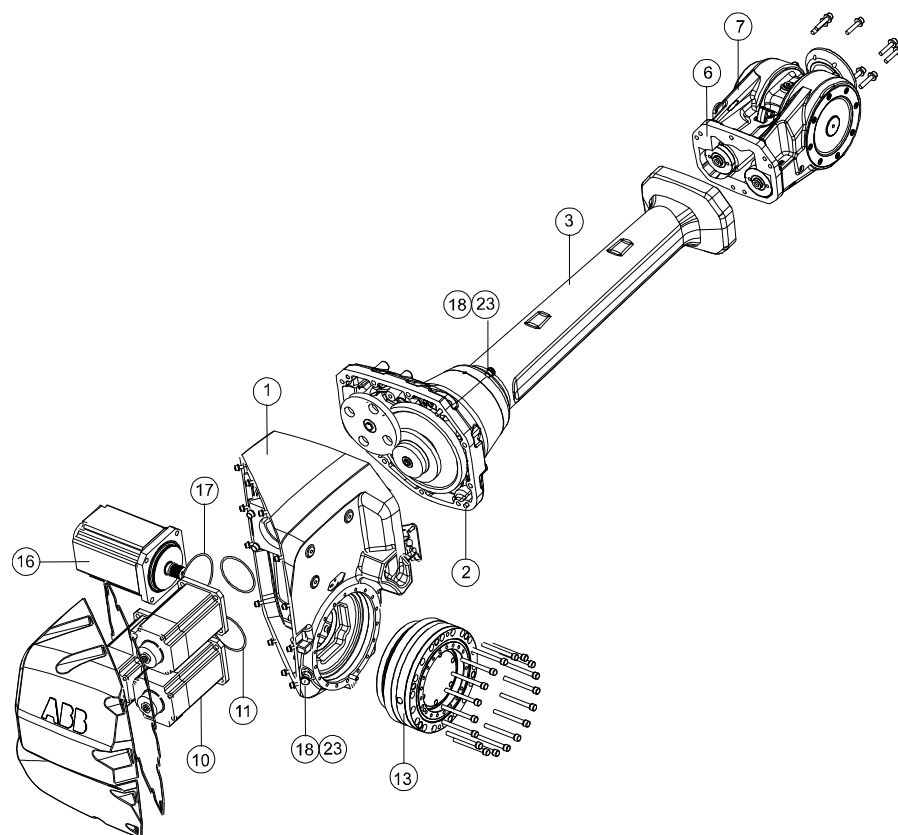


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### Illustration upper arm -40/2.55

Link to [Spare parts, upper arm -40/2.55 on page 19](#)



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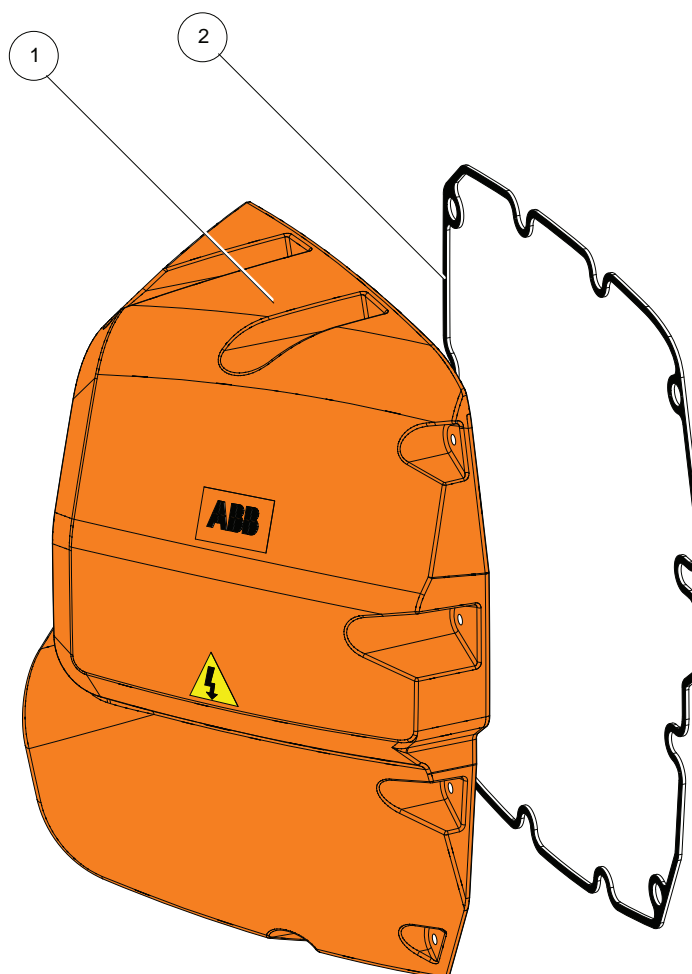
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### Illustration cover arm housing

Link to [Spare parts, cover arm housing on page 21](#)



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## 5 Wrist unit (60 kg/45 kg/20 kg)

### Introduction

The spare parts in this section covers wrists 20 kg and 45/60 kg.

### Spare parts wrist 45/60 kg

Link to [Illustration wrist unit, 60 kg on page 26](#)

Pos	Wrist parts	Spare parts no.	Color
1	Wrist, complete	3HAC059479-001	ABB Orange
		3HAC059479-002	Graphite White
	<i>Pos. 2-7 are included in "Wrist complete"</i>		
2	Gasket	3HAC029284-001	
4	Magnetic plug	3HAC037925-001	
5	Washer	3HAC029646-001	
6	VK-Cover	3HAA2166-21	
7	Damper axis 5	3HAC029256-001	

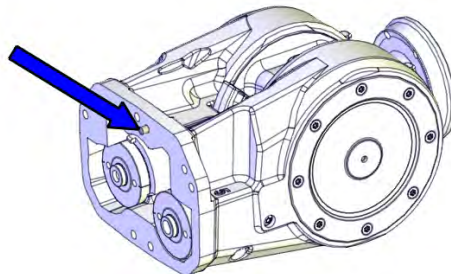
### Complete wrist 60 kg Foundry Plus

Pos	Wrist	Spare part no.	Color
1	Wrist, complete	3HAC059479-001	ABB Orange
1	Wrist, complete	3HAC059479-002	Graphite White

### Complete wrist 12/20 kg

Pos	Wrist parts	Spare parts no.	Color
1	Wrist complete <sup>i</sup>	3HAC059445-001	ABB Orange
		3HAC059445-002	Graphite White

<sup>i</sup> A guide pin is enclosed separately with the wrist. It is to be installed in the new wrist spare part if there is a guide pin hole available in the upper arm tube.



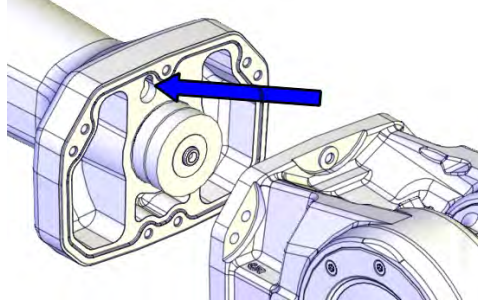
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## 5 Wrist unit (60 kg/45 kg/20 kg)

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The hole is available on robots introduced with Axis Calibration.

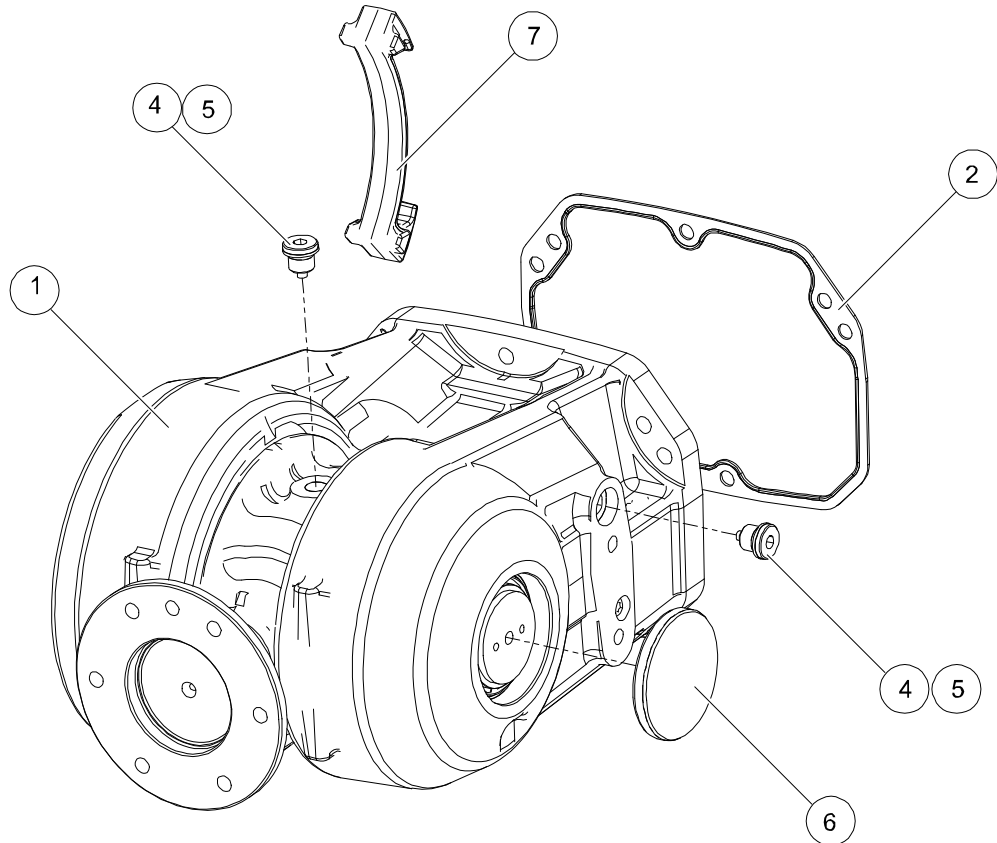


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If the guide pin is not installed on a robot calibrated with Axis Calibration, the calibration result will be affected negatively.

### Illustration wrist unit, 60 kg

Link to [Spare parts wrist 45/60 kg on page 25](#)



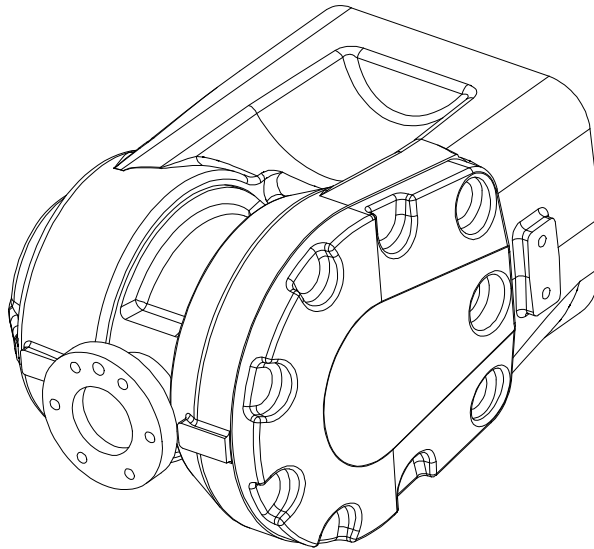
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### Illustration wrist 12/20 kg

Wrist 12/20 kg is used on variant IRB 4600-20/2.50.

Link to [Complete wrist 12/20 kg on page 25](#)



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## 6 Electrical connections

### Spare parts list, electrical connections

#### Cable harness for protection type Standard

Spare part	Spare part number	Type C	Other design than Type C
Manipulator harness, axes 1-6, basic	3HAC029420-001		X
Cable harness, basic	3HAC043964-001	X	
Manipulator harness, axes 1-6 customer	3HAC029000-001		X
Cable harness, customer connections	3HAC043963-001	X	
Cable harness, multi-bus	3HAC029864-001		X
Cable harness, multi-bus	3HAC043206-001	X	
Cable harness, profibus	3HAC037798-001		X
Cable harness, profibus	3HAC043965-001	X	

#### Cable harness for protection type Foundry Prime

Spare part	Spare part number
Cable harness, basic	3HAC029420-008
Cable harness, customer connections	3HAC029000-004
Cable harness, multibus	3HAC029864-005
Cable harness, profibus	3HAC037798-005

#### Other parts



#### Note

Robots with protection type Foundry Prime have only complete motor units as spare parts, see [Motors on page 37](#).

Item	Spare part	Color	Spare part number
A	Connection box FS130	ABB Orange	3HAC054659-005 Includes o-ring 3HAC054692-001
	Connection box FS130	Graphite White	3HAC054659-004 Includes o-ring 3HAC054692-001
B	O-ring (2 pcs) <sup>i</sup>		3HAC3772-110
	O-ring (2 pcs) <sup>i</sup>		3HAC054692-001
C	Cover box FS130	ABB Orange	3HAC029302-002

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## 6 Electrical connections

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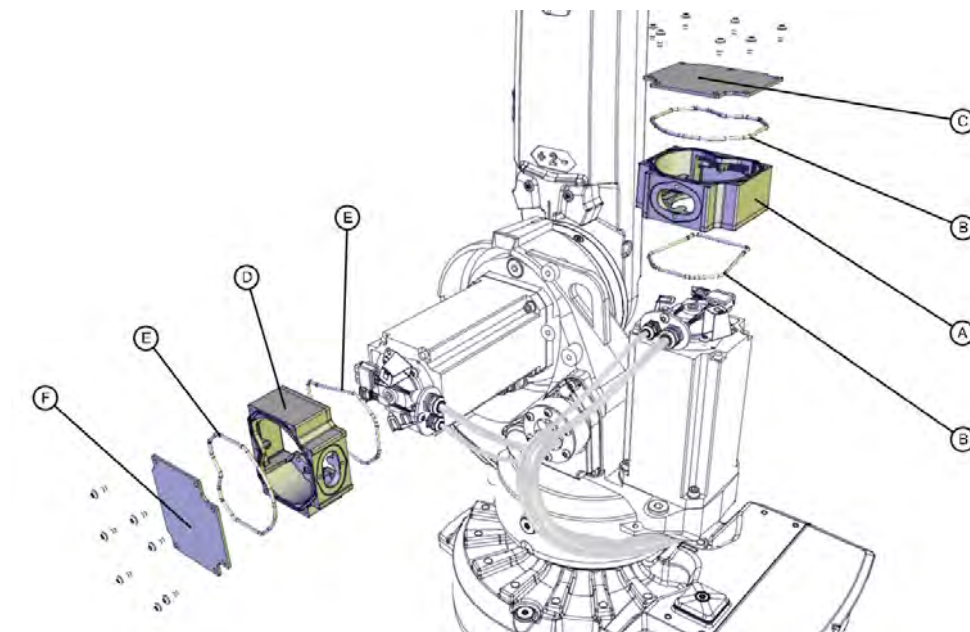
Item	Spare part	Color	Spare part number
F	Cover box FS130	Graphite White	3HAC029302-006
D	Connection box FS180	ABB Orange	3HAC054660-005 Includes o-ring 3HAC054692-002
	Connection box FS180	Graphite White	3HAC054660-004 Includes o-ring 3HAC054692-002
E	O-ring (2 pcs) <sup>i</sup>		3HAC3772-111
	O-ring (2 pcs) <sup>i</sup>		3HAC054692-002
F	Cover box FS180	ABB Orange	3HAC029303-002
	Cover box FS180	Graphite White	3HAC029303-006
G	DSQC 536 Brake release board		3HAC16035-1
H	Battery pack (2-pole battery contact) Lithium		3HAC16831-1
	Battery unit (3-pole battery contact) Lithium		3HAC044075-001 Can only be used with SMB board 3HAC044168-001.
J	Serial measurement board, RMU 101		3HAC044168-001
-	Serial measurement unit		3HAC046277-001 Contains serial measurement board 3HAC044168-001 and battery unit 3HAC044075-001.
-	Signal cable SMB		3HAC4050-1
-	SMB replacement set		3HAC046686-001

<sup>i</sup> The cross-section profile is either circular or hexagon. If only ordering the o-ring, order the same profile that is currently installed in the connection box.

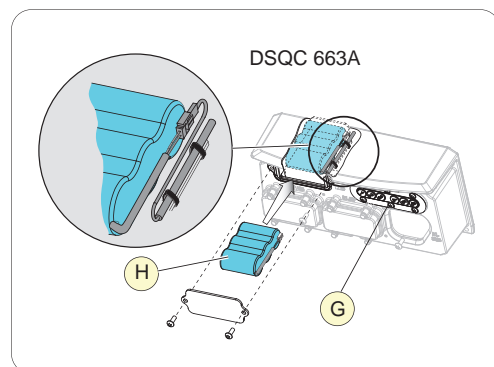
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## Illustration electrical connections

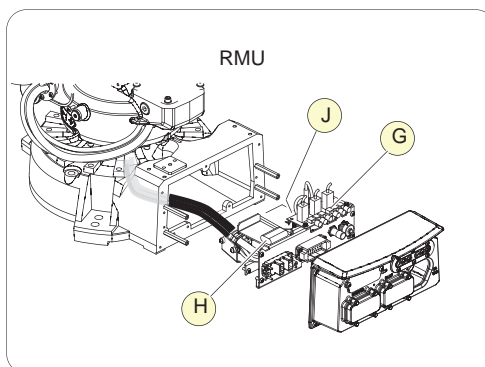
### Protection type Standard



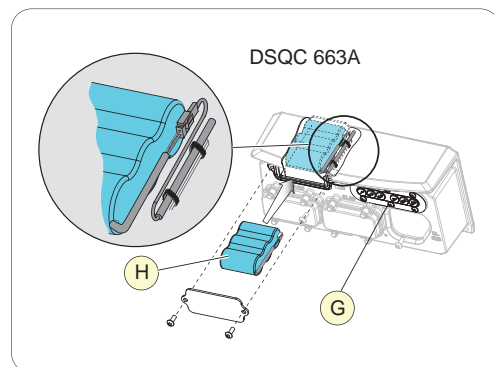
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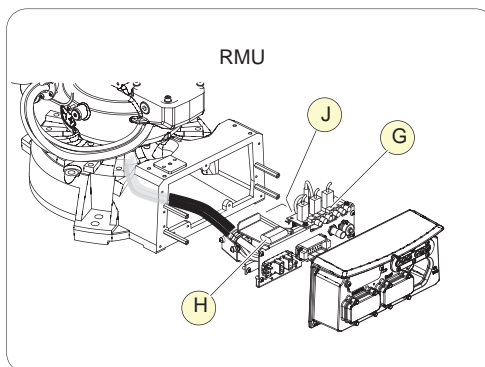
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### Protection type Foundry Prime



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## 7 Gearboxes

### Delivery of spare part gearboxes

Spare part gearboxes are delivered with o-ring.

#### Gearboxes, type C

Pos	Axis	Spare part number	Color	60/2.05	45/2.05	40/2.55	20/2.55
A	Axis 1 RV-155C-127.97	3HAC043090-003		X	X	X	X
B	Axis 2 RV-320E3 i= 171	3HAC044361-001		X	X	X	X
	Axis 2 RV-320E3 i= 171	3HAC044361-002	Graphite White	X	X	X	X
	Axis 2 RV-320E3 i= 171	3HAC044361-003	ABB Orange	X	X	X	X
C	Axis 3 RV-125N-145.61	3HAC043134-003		X	X	X	X

#### Gearboxes, other design than type C

Pos	Axis	Spare part number	Color	60/2.05	45/2.05	40/2.55	20/2.55
A	Axis 1 TS245RHS i= 125	3HAC028837-004	ABB Orange	X	X	X	X
	Axis 1 TS245RHS i= 125	3HAC028837-009	Graphite White	X	X	X	X
	Axis 1 TS245RHS i=125, Foundry Prime	3HAC028837-008	Grey	X	X	X	X
B	Axis 2 RV-320E3 i= 171	3HAC031958-002	ABB Orange	X	X	X	X
	Axis 2 RV-320E3 i=171 Foundry Prime	3HAC031958-010	Grey	X	X	X	X
	Axis 2 RV-320E3 i=171	3HAC031958-011	Graphite White	X	X	X	X
C	Axis 3, type A TS225R i=142.0588	3HAC034535-003		X	X	X	X
	Axis 3, type B TS225R i= 137	3HAC039109-002	ABB Orange	X	X	X	X
	Axis 3, type B TS225R i= 137	3HAC039109-004	Graphite White	X	X	X	X
	Axis 3 TS225R i=137 Foundry Prime	3HAC039473-003	Grey	X	X	X	X

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## 7 Gearboxes

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### O-rings & oil plug sealing washer, type C

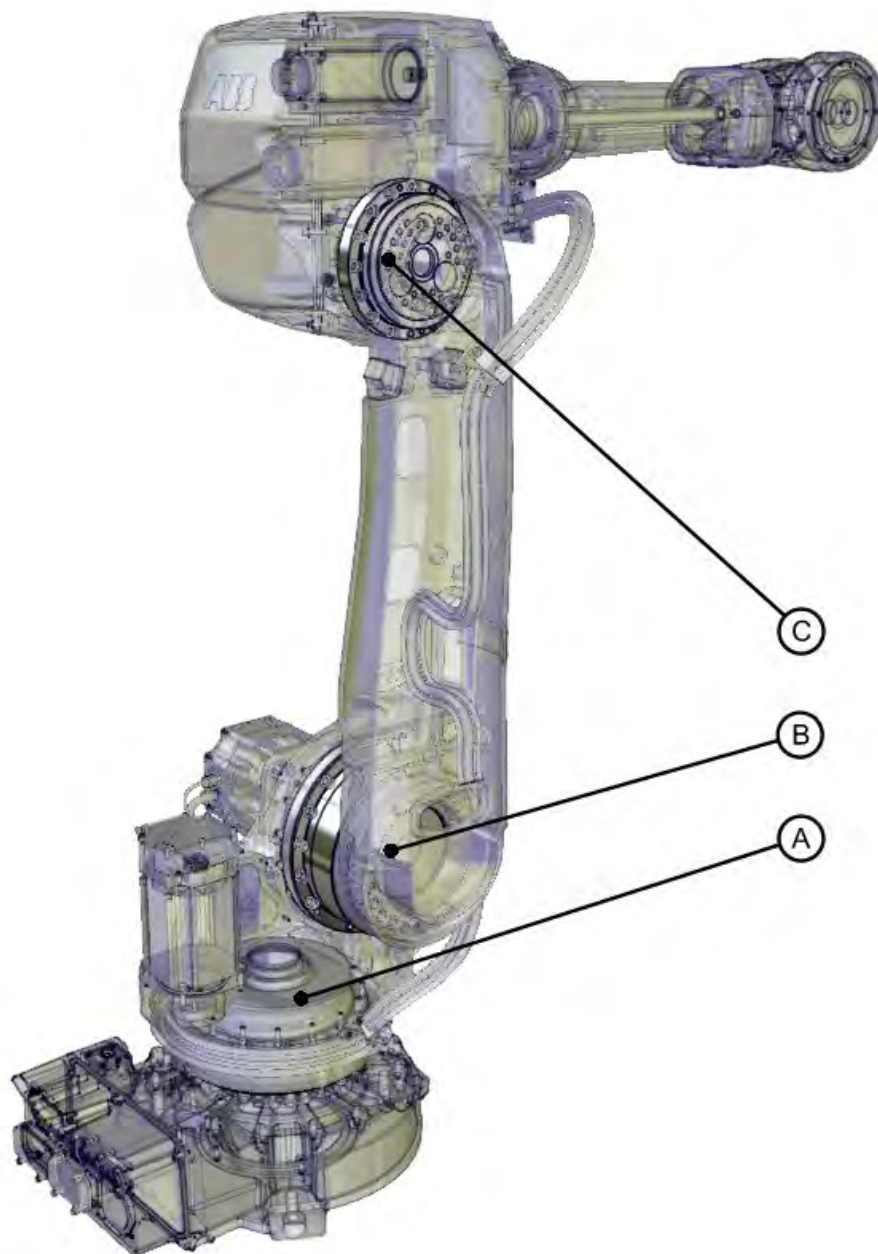
Pos	Gearbox	Spare parts no.	Type C	Other design than Type C
-	Axis-1, o-ring	3HAB3772-149	X	
-	Axis-1, o-ring	3HAB3772-128		X
-	Axis-1, oil plug gasket	3HAC029646-001		X
-	Axis-2, o-ring	3HAB3772-120	X	X
-	Axis-2, oil plug gasket	3HAC029646-001		X
-	Axis-3, o-ring	3HAB3772-129	X	X

### O-rings & oil plug sealing washer, other design than type C

Pos	Gearbox	Spare parts no.
-	Axis-1, o-ring	3HAB3772-128
-	Axis-1, oil plug sealing washer	3HAC029646-001
-	Axis-2, o-ring	3HAB3772-120
-	Axis-2, oil plug sealing washer	3HAC029646-001
-	Axis-3, o-ring	3HAB3772-129

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### Location of gearboxes



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## 8 Motors

### Delivery of spare part motors

Spare part motors are delivered with pinion and o-ring.

### Motors, type C and D



#### Note

Motors on axes 4, 5 and 6 can be ordered both as Type C and Type D. Make sure to order the correct one.



#### WARNING

Motors of Type D are not applicable to Foundry Prime! Therefore Type D can not be used on Foundry Prime robots.



#### WARNING

Motors of Type D are not compatible with other types and can only be replaced by motors of the same type. Do not mix motors of different types on the robot!

Pos	Axis	Spare part number	Color	60/2.05	45/2.05	40/2.55	20/2.55
A	Axis 1 Type C	3HAC043166-004	ABB Orange	X	X	X	X
		3HAC043166-005	Graphite White	X	X	X	X
		3HAC035061-003	Grey Foundry Prime	X	X	X	X
B	Axis 2 Type C	3HAC029032-004	ABB Orange	X	X	X	X
		3HAC029032-009	Graphite White	X	X	X	X
		3HAC035062-003	Grey Foundry Prime	X	X	X	X
C	Axis 3 Type C	3HAC043569-004	-	X	X	X	X
D	Axis 4 Type C	3HAC029034-004	-	X	X	X	
		3HAC030211-004	-				X
D	Axis 4 Type D	3HAC047577-002	-				X
E	Axis 5 Type C	3HAC029034-004	-	X	X	X	
		3HAC030211-004	-				X
E	Axis 5 Type D	3HAC047577-002					X
F	Axis 6 Type C	3HAC029034-004		X	X	X	
		3HAC030211-004					X
F	Axis 6 Type D	3HAC047577-002					X

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## 8 Motors

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### Motors, other design than type C and D

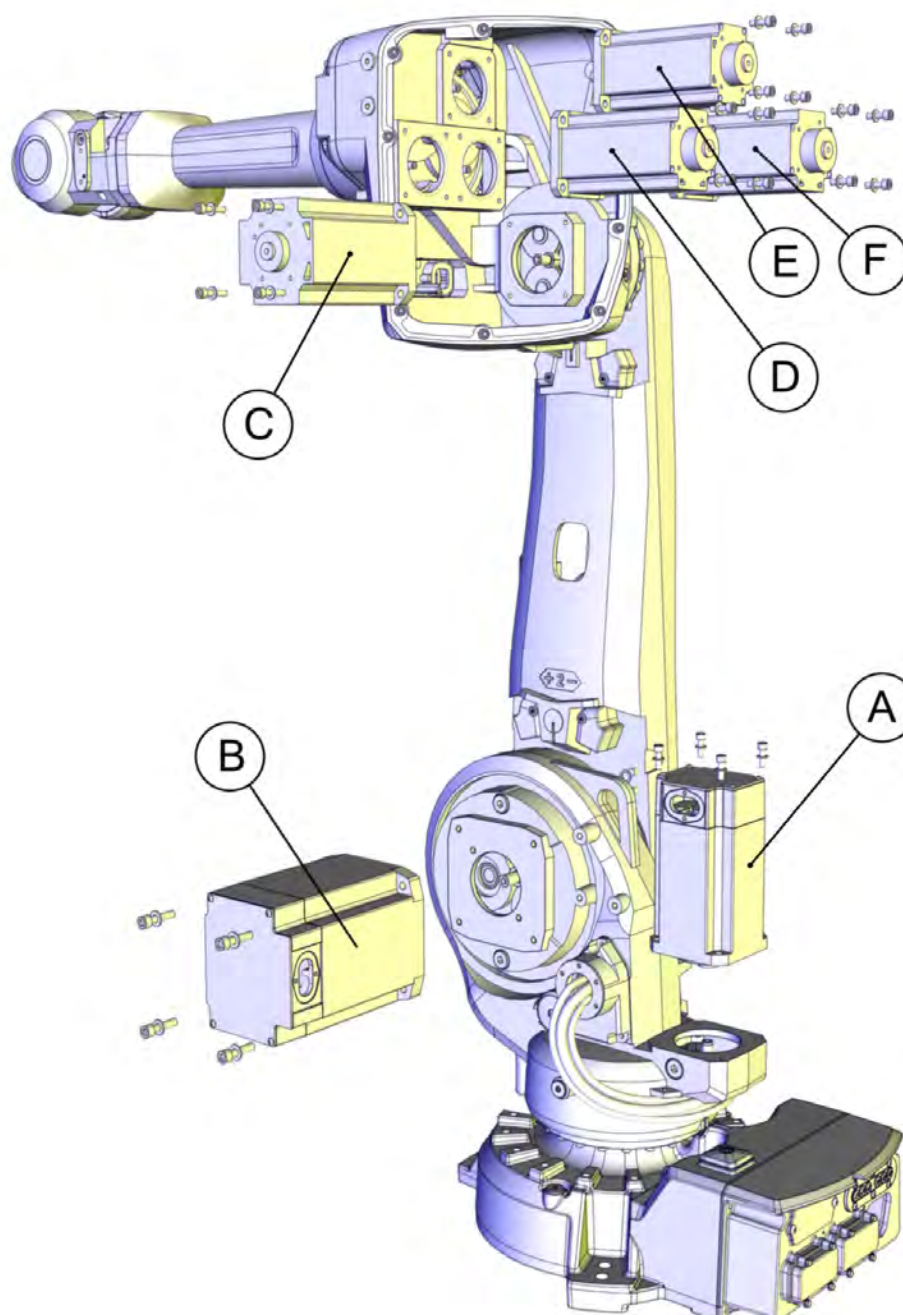
Pos	Axis	Spare part number	Color	60/2.05	45/2.05	40/2.55	20/2.55
A	Axis 1	3HAC029031-004	ABB Orange	X	X	X	X
		3HAC029031-009	Graphite White	X	X	X	X
B	Axis 2	3HAC029032-004	ABB Orange	X	X	X	X
		3HAC029032-009	Graphite White	X	X	X	X
C	Axis 3	3HAC031184-003		X	X	X	X
	Axis 3 Type A	3HAC034647-003		X	X	X	X
D	Axis 4	3HAC029034-004	ABB Orange	X	X	X	
		3HAC030211-004					X
E	Axis 5	3HAC029034-004	ABB Orange	X	X	X	
		3HAC029034-006	Graphite White	X	X	X	
		3HAC029031-009					X
F	Axis 6	3HAC029034-004	ABB Orange	X	X	X	
		3HAC029034-006	Graphite White	X	X	X	
		3HAC030211-004					X

### O-rings

Pos	Motor	Spare parts no.
-	Axis 1	3HAB3772-107
-	Axis 2	3HAB3772-107
-	Axis 3	3HAB3772-107
-	Axis 4	3HAB3772-102
-	Axis 5	3HAB3772-102
-	Axis 6	3HAB3772-102

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## Location of motors



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## 9 Calibration items

### Calibration items

Spare part number	Description	Note
3HAC059487-001 (protection type Standard) 3HAC060730-001 (protection type Foundry Prime)	Protection cover and plug set	Contains replacement calibration pin covers and protective plugs for the bushing.
Protective plug on turning disc	3HAC057511-001	Only on IRB 4600 - 20/2.50. Replace if damaged or missing.

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## 10 Labels

### Location of labels

For position and other details about the labels see section *Inspecting information labels* in *Product manual - IRB 4600*.

### Label set

Pos	Lower arm parts	Spare parts no.
-	Warning sign (Symbol of Flash) 4 pcs	3HAC1589-1
-	Warning! (Risk of tipping) 1 pc	3HAC9191-1
-	Instruction plate (Warning! Brake release) 1 pc	3HAC8225-1
-	Instruction plate (Lifting instruction) 1 pc	3HAC029362-001
-	Instruction plate (Warning! High temperature) 2 pcs	29454489-16
-	Label (Max. Air pressure) 1 pc	3HAC023271-001
-	Designation sign 1 pc	3HAB8431-1
-	Label-Suspended robot 1 pc	3HAC034755-001
-	AbsAcc information sign 1 pc	3HAC14257-1
-	ABB logotype (dimension 75x30 mm) 1 pc	3HAC5127-1
-	ABB logotype (dimension 112x44 mm) 3 pcs	3HAC17765-1
-	ABB logotype (dimension 150x60 mm)	3HAC5089-1
-	Foundry Plus logotype	3HAC7835-1
-	Oil label (Kyodo Yushi TMO 150) 1 pc	3HAC032726-001
-	Oil label (Optimol Optigear BM 100) 1 pc	3HAC034752-001

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# 11 Options

## Spare parts options

Option no.	Spare parts	Spare parts no.
213-1	Safety lamp Protection type Standard	3HAC050417-001
87-1	Cooling fan axis 1, set Protection type Standard	3HAC033857-002
88-1	Cooling fan axis 2, set Protection type Standard	3HAC033859-002
224-2	Expansion container with cover (set) (Suspended position)	3HAC033862-005
459-1	CP/CS Proc1, base	3HAC16667-1
28-1	Mechanical stop kit axis 1, adjust (Working range limit, axis 1) (other than Type C)	3HAC033134-001
28-1	Mechanical stop kit axis 1, adjust (Working range limit, axis 1) (Type C)	3HAC043603-001
239-1	Connector set on base	3HAC033181-001
	Connector set R2.CP/R2.CS	3HAC025396-001
	Additional mechanical stop set, axis 1	3HAC033134-001

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## 12 Rebuilding parts

### Tubular shaft unit

The table shows which *tubular shaft unit* can be used on which variant.

Variant	Tubular shaft unit 3HAC059467-001	Tubular shaft unit 3HAC059468-001/ 3HAC059468-002	Tubular shaft unit 3HAC059469-001
IRB 4600-60/2.05	X		
IRB 4600-45/2.05	X		
IRB 4600-40/2.55		X	
IRB 4600-20/2.50			X

### Lower arm

#### Type C

The table shows which *lower arm* can be used on which variant.

Variant	Lower arm 3HAC059459- 001/3HAC059459-002	Lower arm 3HAC059458- 001/3HAC059458-002
IRB 4600-60/2.05	X	
IRB 4600-45/2.05	X	
IRB 4600-40/2.55		X
IRB 4600-20/2.50		X

#### Other design than Type C

The table shows which *lower arm* can be used on which variant.

Variant	Lower arm 3HAC059460- 001/3HAC059460-002	Lower arm 3HAC031002-005
IRB 4600-60/2.05	X	
IRB 4600-45/2.05	X	
IRB 4600-40/2.55		X
IRB 4600-20/2.50		X

### Wrist unit

The table shows which *wrist unit* can be used on which variant.

Variant	Wrist unit 3HAC059479-002	Wrist unit 3HAC059445- 001/3HAC059445-002
IRB 4600-60/2.05	X	
IRB 4600-45/2.05	X	
IRB 4600-40/2.55	X	
IRB 4600-20/2.50		X

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## 12 Rebuilding parts

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*Continued*

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### Motors, wrist unit

The table shows which motor unit can be used on which wrist variant when converting to or from a IRB 4600-20/2.5.

Variant	Motor unit 3HAC029034-004/3HAC029034-006	Motor unit 3HAC030211-001
IRB 4600-60/2.05	X	
IRB 4600-45/2.05	X	
IRB 4600-40/2.55	X	
IRB 4600-20/2.50		X





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