

# Product manual, spare parts IRB 1600/1660

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Workspace R17-1 version a7  
Checked in 2017-03-22  
Skribenta version 5.1.011

## **Product manual, spare parts**

**IRB 1600 - 5/1.2 type A**  
**IRB 1600 - 5/1.45 type A**  
**IRB 1600 - 6/1.2 type A**  
**IRB 1600 - 6/1.45 type A**  
**IRB 1600 - 7/1.2 type A**  
**IRB 1600 - 7/1.45 type A**  
**IRB 1600 - 8/1.2 type A**  
**IRB 1600 - 8/1.45 type A**  
**IRB 1600 - 10/1.2 type A**  
**IRB 1600 - 10/1.45 type A**  
**IRB 1600ID - 4/1.5**  
**IRB 1600ID - 4/1.5 type A**  
**IRB 1660ID - 6/1.55**  
**IRB 1660ID - 4/1.55**

**IRC5**

**Document ID: 3HAC049104-001**

**Revision: E**

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Original instructions.

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# Overview of this manual

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## About this manual

This manual contains spare parts for:

- IRB 1600 and all its variants.

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## Usage

This manual shall be used as a complement to the product manual for IRB 1600 during:

- maintenance work
- repair work.

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## Who should read this manual?

This manual is intended for:

- maintenance personnel
- repair personnel.

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## 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.

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## Organization of chapters

The manual is organized in the following chapters:

Chapter	Contents
1 Compatibility between gearboxes and motors	Information about matching motors and gear-boxes, due to different sub-suppliers.
2 Spare part lists and illustrations	Complete spare part list and complete list of robot components shown in exploded views.

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## References

Reference	Document ID
<i>Product manual - IRB 1600/1660</i>	<i>3HAC026660-001</i>
<i>Circuit diagram - IRB 1600/1660</i>	<i>3HAC021351-003</i>

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## Revisions

Revision	Description
-	First edition
A	Changes made in this revision: <ul style="list-style-type: none"><li>• Spare parts with color Graphite White are added to the spare part lists.</li></ul>

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Revision	Description
B	<p>Changes made in this revision:</p> <ul style="list-style-type: none"><li>• Added spare parts for IRB1600ID - 6/1.55, see <a href="#">Spare part list, upper arm IRB 1660ID on page 32</a>.</li><li>• Removed spare parts for Force sensor package small. These are described in <i>Product manual - Integrated Force Control</i>.</li><li>• Modified the article numbers of motors and gearboxes from <b>Rexnord</b>.</li><li>• Removed the spare part Axis-3 gearbox (from <b>Rexnord</b>) whose protection type is Clean Room because IRB 1600 has no Clean Room option.</li><li>• Corrected the spare part number of Cable harness motor 1 - 2 on frame from 3HAC023754-001 to 3HAC023754-007.</li><li>• Minor changes</li></ul>
C	<p>Changes made in this revision:</p> <ul style="list-style-type: none"><li>• Renamed the variant IRB 1600ID - 6/1.55 to IRB 1660ID - 6/1.55.</li><li>• Corrected names of spare parts</li></ul>
D	<p>Changes made in this revision:</p> <ul style="list-style-type: none"><li>• Added a new variant IRB 1660ID - 4/1.55.</li><li>• Removed 6/1.55 from the 1660ID section titles, for the variants 6/1.55 and 4/1.55 have the same spare parts.</li><li>• Updated the spare part number of Stop pin from 3HAB3258-1 to 3HAC057412-001.</li></ul>
E	<p>Published in release R17.1. The following updates are made in this revision:</p> <ul style="list-style-type: none"><li>• Updated spare parts due to new standard calibration method (Axis Calibration).<ul style="list-style-type: none"><li>- Base</li><li>- Axis-1 and axis-2 gearbox</li><li>- Lower arm</li><li>- Upper arm, IRB 1600 and IRB 1660ID</li><li>- Wrist unit, IRB 1600 and IRB 1660ID</li></ul></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 Compatibility between gearboxes and motors

## 1.1 Compatible gearboxes and motors

### Gearbox and motor pinion from the same sub-supplier

The sub-supplier of the gearbox also delivers a matching motor pinion. When replacing either the gearbox or the motor it is important that the motor pinion and gearbox are compatible, in other words come from the same sub-supplier.

The tables show which sub-supplier has designed which gearbox and also which motor contains a motor pinion from the same sub-supplier. Use the tables to determine which spare part to order based on what part the robot is equipped with.



### Note

Identify the old gearbox and motor by its article number. Order a new gearbox and motor with its spare part number, given in the table.

### Motors and gearboxes from SAMP

Article number	Spare part number	Color	Description
3HAC041022-001	3HAC044504-001	ABB Orange	Axis-1 and axis-2 motor
	3HAC050383-001	Graphite White	
3HAC039802-001	3HAC062042-001	ABB Orange	Axis-1 and axis-2 gearbox
	3HAC062042-002	Graphite White	
3HAC041023-001	3HAC044557-001	-	Axis-3 motor
3HAC039803-001 (axis-3 gearbox)	3HAC062072-001 (complete upper arm)	ABB Orange	Type of protection: Standard, Foundry Plus
3HAC039803-001 (axis-3 gearbox)	3HAC062072-002 (complete upper arm)	Graphite White	
3HAC039804-001 (axis-3 gearbox)	3HAC044560-001 (complete upper arm)	ABB Orange	1600ID upper arm (with integrated cabling)
	3HAC050386-001 (complete upper arm)	Graphite White	

### Motors and gearboxes from Rexnord

Article number	Spare part number	Color	Description
3HAC021797-001	3HAC023557-001	ABB Orange	Axis-1 and axis-2 motor
	3HAC050387-001	Graphite White	
3HAC042220-001	3HAC023555-001	ABB Orange	Axis-1 and axis-2 gearbox
	3HAC050388-001	Graphite White	
3HAC021798-001	3HAC021798-003	-	Axis-3 motor

*Continues on next page*

# 1 Compatibility between gearboxes and motors

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## 1.1 Compatible gearboxes and motors

*Continued*

Article number	Spare part number	Color	Description
3HAC042222-001 (axis-3 gearbox)	3HAC026567-001 (complete upper arm)	ABB Orange	Type of protection: Standard, Foundry Plus
	3HAC050389-001 (complete upper arm)	Graphite White	
3HAC042224-001 (axis-3 gearbox)	3HAC029215-001 (complete upper arm)	ABB Orange	1600ID upper arm (with integrated cabling)
	3HAC050390-001 (complete upper arm)	Graphite White	

## 2 Spare part lists and illustrations

### 2.1 Spare parts - base

#### Base, spare part list

The spare parts for the base are listed below and shown in the following figure.

Item number	Description	Spare part number	Color	Dimension/note
1	Base, spare	3HAC062041-001	ABB Orange	
		3HAC062041-002	Graphite White	
2	Stop pin	3HAC057412-001	-	
3	Cover base, spare	3HAC023554-001	ABB Orange	
		3HAC050393-001	Graphite White	
4	Gasket, base cover	3HAC022047-001	-	
6	VK-cover	3HAA 2166-26	-	D=180, B=12
7	Serial measurement board	3HAC031851-001	-	DSQC 633A Use only with battery pack (2-pole battery contact) 3HAC16831-1.
7	Serial measurement board	3HAC044168-001	-	RMU101Use only with battery unit (3-pole battery contact) 3HAC044075-001
8	Push button unit	3HAC020967-001	-	
9	Battery pack (2-pole battery contact)	3HAC16831-1	-	Lithium, 34x102x63 Use only with SMB 3HAC031851-001
9	Battery unit (3-pole battery contact)	3HAC044075-001	-	Lithium, 2-cell RMU Use only with SMB 3HAC044168-001
11	Push button guard	3HAC6499-1	-	
12	Signal cable SMB	3HAC4050-1	-	
13	Torx pan head screw	9ADA618-56	-	Steel 8.8-A2F M6 x 16
14	Centering piece	3HAC025815-001	-	
100	Cable harness IRB 1600/1.45	3HAC021827-001	-	

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## 2 Spare part lists and illustrations

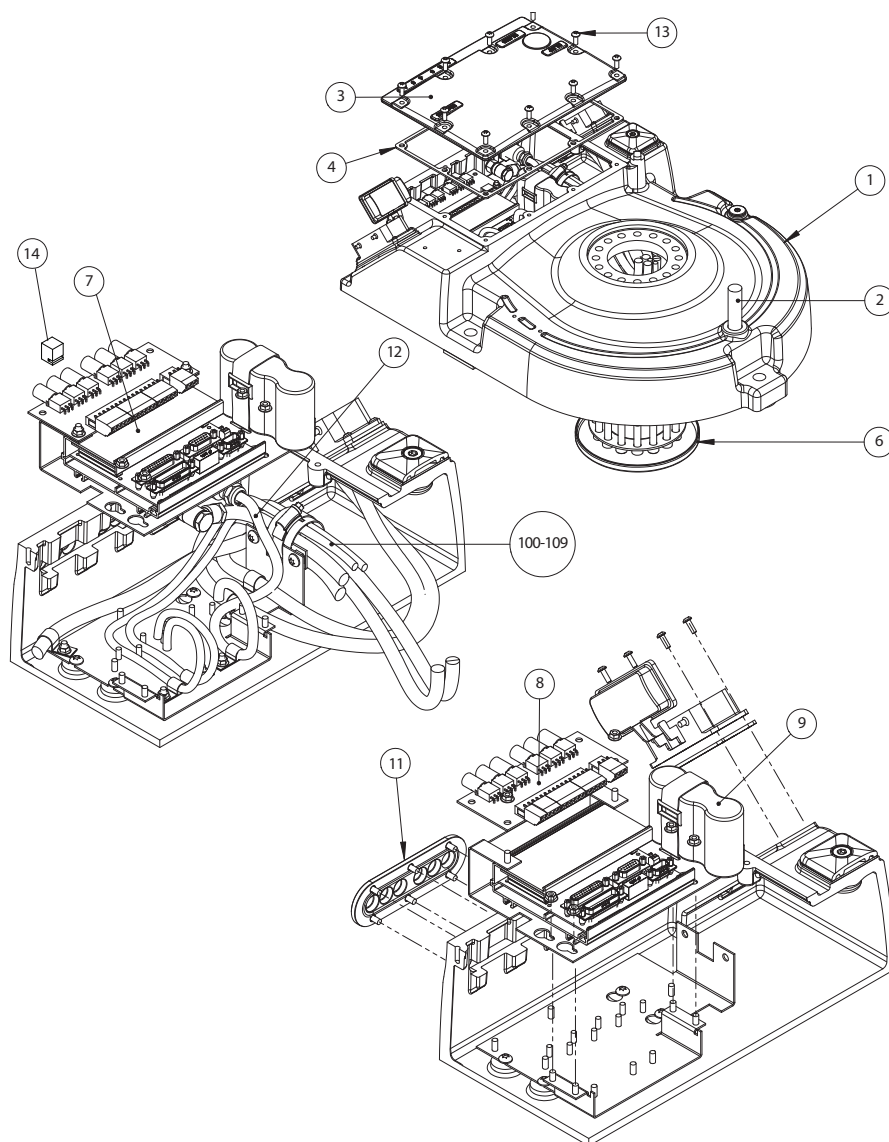
### 2.1 Spare parts - base

*Continued*

Item number	Description	Spare part number	Color	Dimension/note
102	Cable harness IRB 1600/1.45, Customer connections	3HAC021828-001	-	
106	Cable harness IRB 1600/1.45, Wire feeder	3HAC021830-001	-	
108	Cable harness, Motor 1-2	3HAC023754-007	-	
109	Cable harness IRB 1600/1.2, Customer connections	3HAC021828-003	-	

#### Base, exploded view

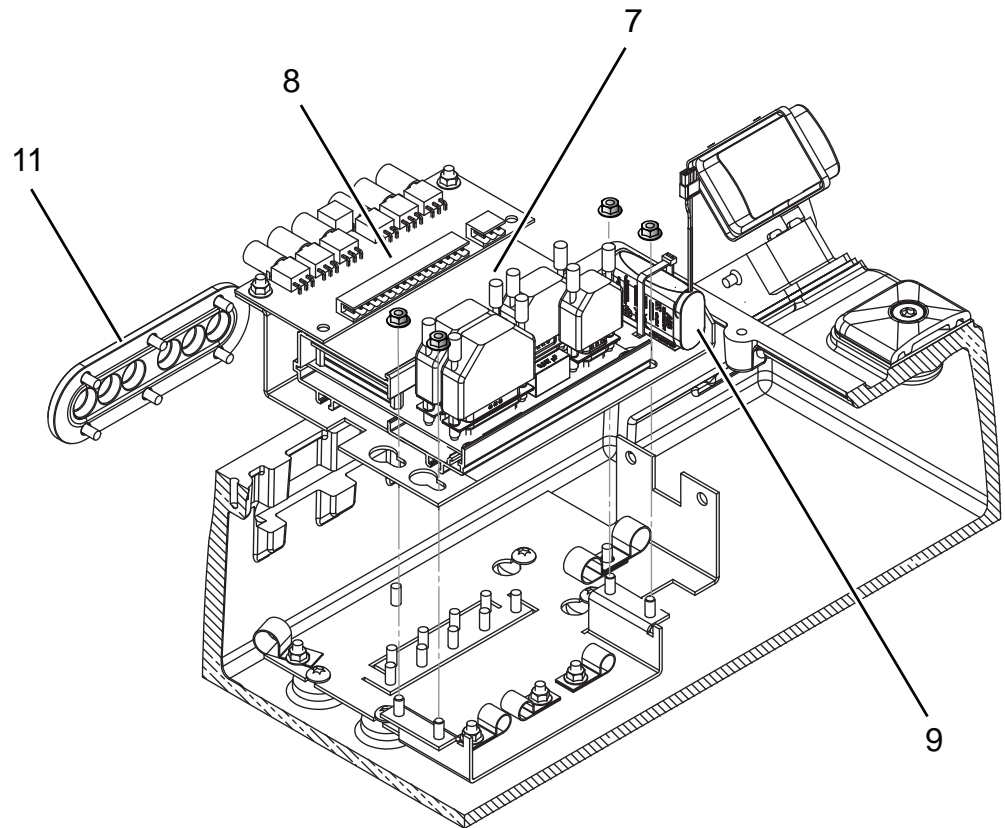
DSQC 633A



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RMU 101



## 2 Spare part lists and illustrations

### 2.2 Spare parts - base connections

### 2.2 Spare parts - base connections

#### Base connections, spare part list

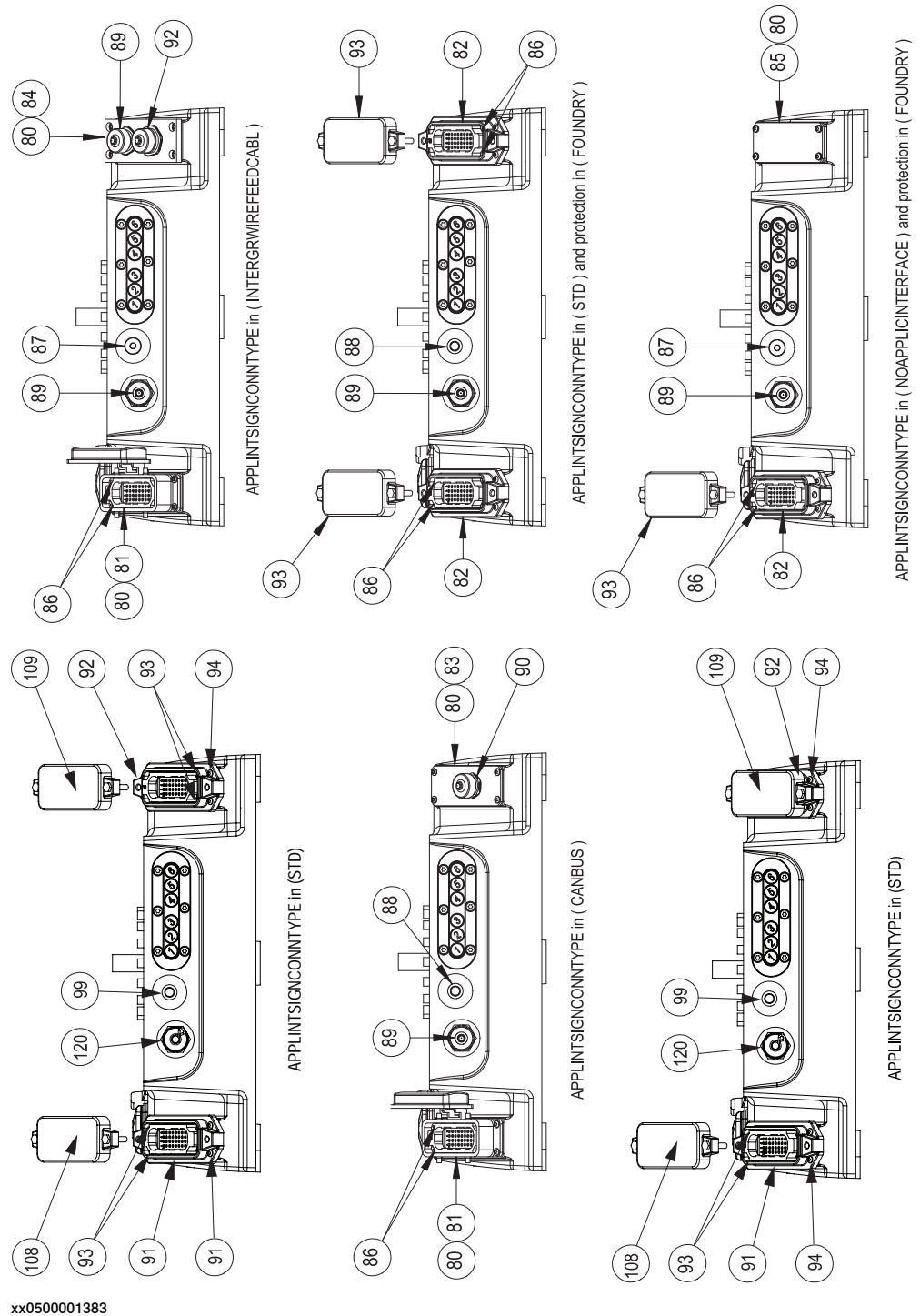
The spare parts for connections at the base are listed below and shown in the following figure.

Item number	Description	Spare part number	Dimension
80	Gasket	3HAB9040-1	115 T=3
81	Housing 40P	3HAB6411-1	
82	Surface mounted housing HIP. 16/40 AG	3HAC022964-001	
84	Cover, cable harness wire feeder	3HAC022918-002	
85	Cover	3HAC6823-1	
86	Key pin	5217687-9	
87	Plug	3HAC11719-1	
88	Protective hood	25222101-8	D=11.4
89	Dust cap	5217649-9	
90	Environmental dust cap	3HAA1001-727	
92	Dust cap	3HAA1001-630	
93	Cover	3HAC7816-1	
94	Torx pan head roll. screw	9ADA629-34	
108	Protection cover 40-p	3HAC7816-1	
109	Protection cover 40-p	3HAC7816-1	

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#### Base connections, illustrations



## 2 Spare part lists and illustrations

### 2.3 Spare parts - frame

### 2.3 Spare parts - frame

#### Frame, spare part list

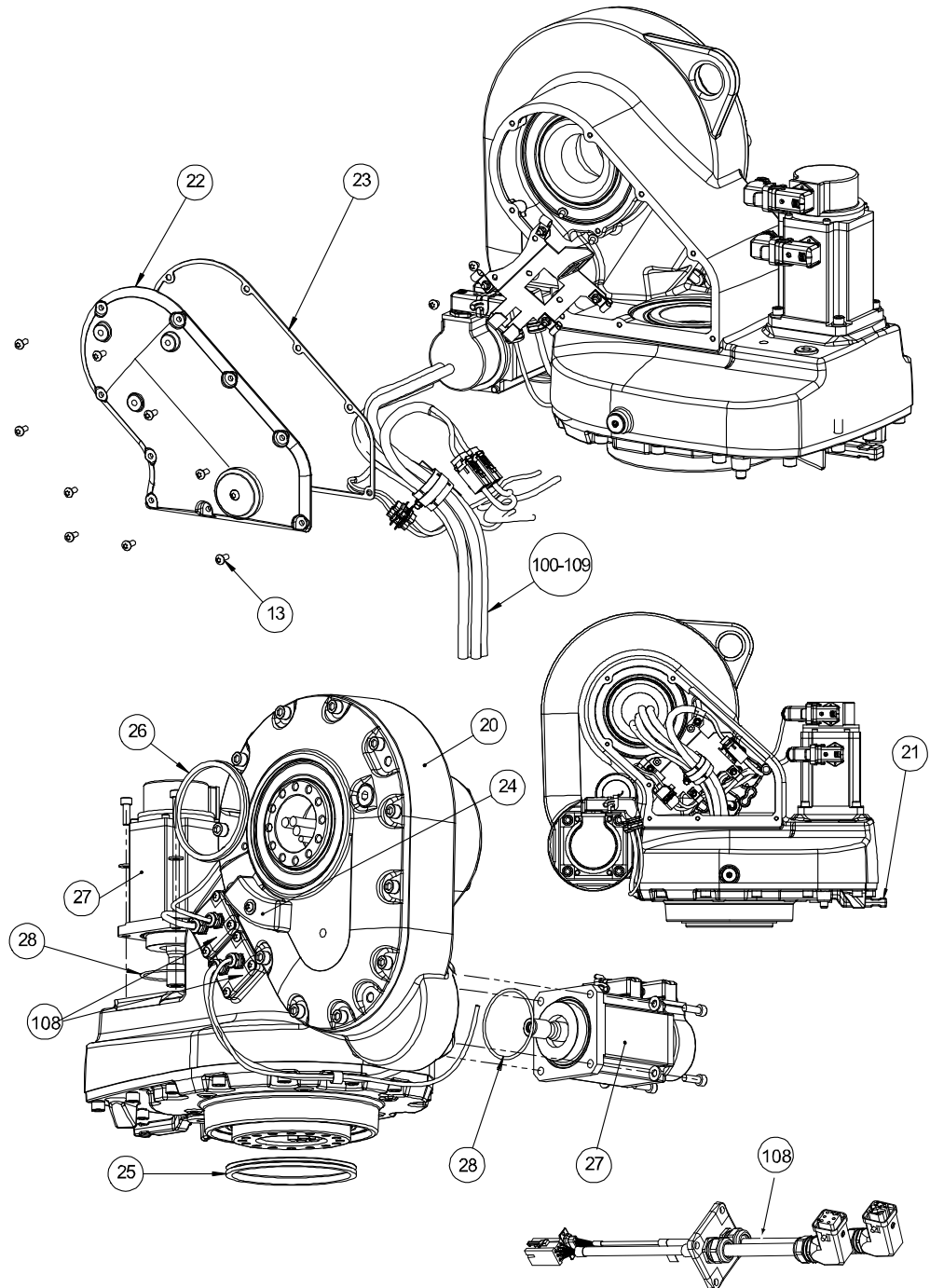
The spare parts are listed below and shown in the following figure.

Item number	Description	Spare part number	Color	Dimension
13	Torx pan head screw	9ADA618-56	-	Steel 8.8-A2F M6 x 16
20	Gearbox axis 1-2, spare	See note <sup>i</sup>		
21	Stop arm	3HAC050409-001	ABB Orange	
		3HAC050410-001	Graphite White	
22	Cover, gearbox axis 1-2	3HAC023556-001	ABB Orange	
		3HAC050394-001	Graphite White	
23	Gasket, gearbox axis 1-2	3HAC022048-001	-	
24	Damper, axis 2	3HAC022013-001	-	
25	V-ring (sealing ring)	3HAB3732-21	-	V-150A 135x12.8
26	Sealing ring (V-ring)	3HAB3732-13	-	V-110-L 99x10.5
27	Standard, Rot. ac motor incl. pinion	See note <sup>i</sup>		
28	O-ring	21522012-428	-	Nitrile rubber 79.5x3
100-109	Cabling	See section <a href="#">Base, spare part list on page 13</a> .		
108	Cable harness motor 1 - 2	3HAC023754-007	-	
109	Cable protection	3HAC036288-001	-	

<sup>i</sup> It is important that the gearbox and the mating motor pinion are provided by the same sub-supplier, make sure to order the correct spare part! See [Compatible gearboxes and motors on page 11](#) to determine the correct spare part.

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#### Frame, exploded view



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## 2 Spare part lists and illustrations

### 2.4 Spare parts - lower arm

### 2.4 Spare parts - lower arm

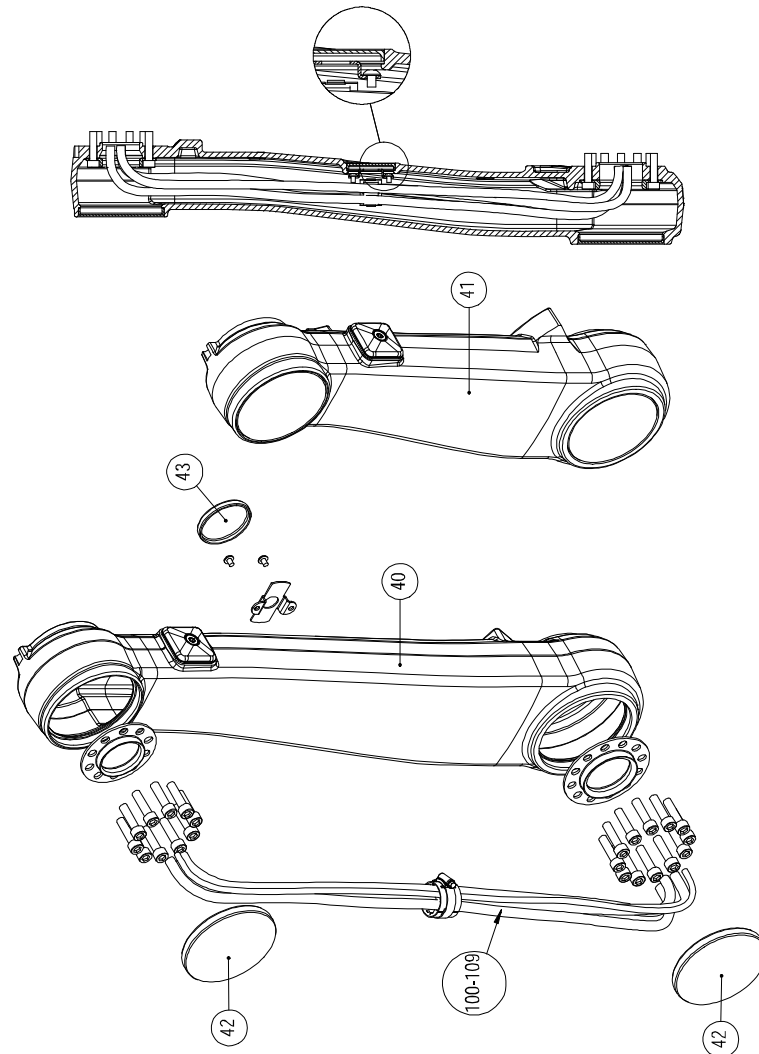
#### Lower arm, spare part list

The spare parts are listed below and shown in the following figure.

Item number	Description	Spare part number	Color	Dimension
40	Lower arm, spare	3HAC062043-001	ABB Orange	
		3HAC062043-002	Graphite White	
41	Lower arm, short, spare	3HAC062044-001	ABB Orange	
		3HAC062044-002	Graphite White	
42	VK-cover	3HAA2166-23	-	D=120, B=12
43	VK-cover	3HAA2166-21	-	D=68, B=8
100-109	Cabling	See section <a href="#">Base, spare part list on page 13</a> .		

*Continues on next page*

#### Lower arm, exploded view



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## 2 Spare part lists and illustrations

### 2.5 Spare parts - upper arm

### 2.5 Spare parts - upper arm

#### Spare part list, upper arm

The spare parts listed below are shown in the exploded views, located on the next two pages.

Item number	Description	Spare part number	Protection type	Color	Dimension
13	Torx pan head screw	9ADA 618-56		-	Steel 8.8-A2F M6 x 16
60	Upper arm	See note <sup>i</sup>	Standard		
60	Upper arm	See note <sup>i</sup>	Clean Room		
61	Rot. ac motor incl pinion	3HAC021799-003		-	
62	O-ring	3HAB3772-81		-	Nitrile rubber D1=41, D2=3
63	Rot. ac motor incl pinion	3HAC021800-003		-	
64	Timing belt	3HAC6779-1		-	
65	Timing belt	3HAC021304-001		-	
66	O-ring sealingplate	3HAC025420-001		-	
67	Wrist	3HAC027003-001	Standard/Foundry	ABB Orange	
	Wrist	3HAC027003-003	Standard/Foundry	Graphite White	
	Wrist	3HAC026569-004	Clean Room	White	
	Wrist	3HAC061146-002	Foundry Plus	ABB Orange	
		3HAC061146-003	Foundry Plus	Graphite White	
68	Rot. ac motor incl pinion	See note <sup>i</sup>		-	
69	O-ring	21522012-426		-	Nitrile rubber 74.5x3
70	Damper, axis 3	3HAC022260-001		-	
71	Sealing ring (V-ring)	3HAB3732-19		-	Flourinated rubber/V-95A 85x11
72	Damper, axis 5	3HAB8964-1		-	
73	Arm housing cover, spare	3HAC023560-001		ABB Orange	
		3HAC050398-001		Graphite White	
74	Gasket, upper arm cover	3HAC022049-001		-	
75	Gasket, customer connections	3HAC022050-001		-	
73	Contact panel	3HAC022173-001		-	
77	Connector panel	3HAC022173-002		-	
79	Contact pane, Wire feeder	3HAC022173-006		-	

*Continues on next page*

## 2 Spare part lists and illustrations

### 2.5 Spare parts - upper arm *Continued*

Item number	Description	Spare part number	Protection type	Color	Dimension
88	Protective hood	25222101-8		-	D=11.4-13
89	Dust cap	5217649-9		-	
90	Environmental dust cap	3HAA1001-727		-	
91	Dust cap	5217649-82		-	
94	Plug with o-ring M10	3HAC022881-003		-	
95	Coupling	3HAB3333-20		-	
96	Lamp unit	3HAC050417-001		ABB Orange	
		3HAC050418-001		Graphite White	
100-109	Cabling	See section <a href="#">Base, spare part list on page 13</a> .			

- i It is important that the gearbox and the mating motor pinion are provided by the same sub-supplier, make sure to order the correct spare part! See [Compatible gearboxes and motors on page 11](#) to determine the correct spare part.

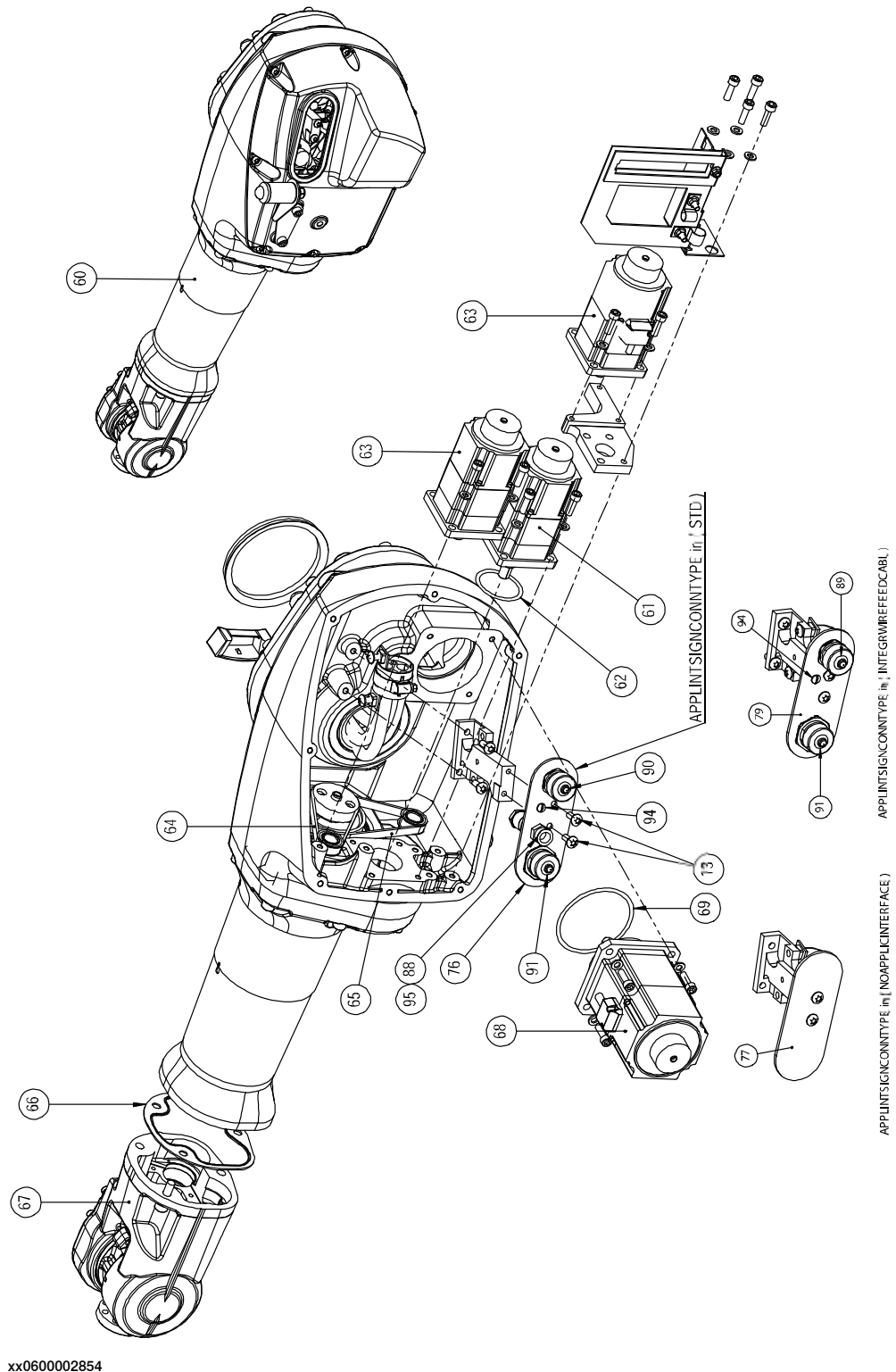
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## 2 Spare part lists and illustrations

### 2.5 Spare parts - upper arm

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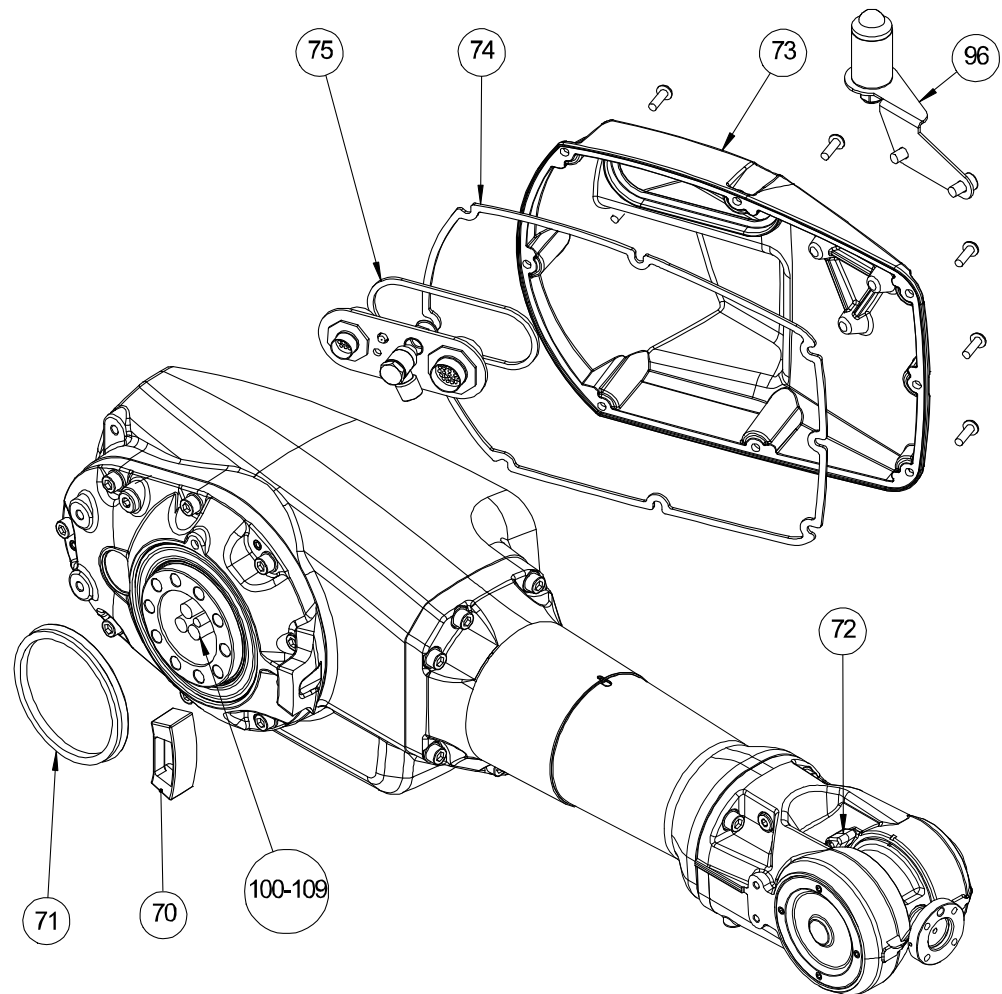
#### Upper arm, exploded view 1



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#### Upper arm, exploded view 2



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## 2 Spare part lists and illustrations

### 2.6 Spare parts - upper arm 1600ID

### 2.6 Spare parts - upper arm 1600ID

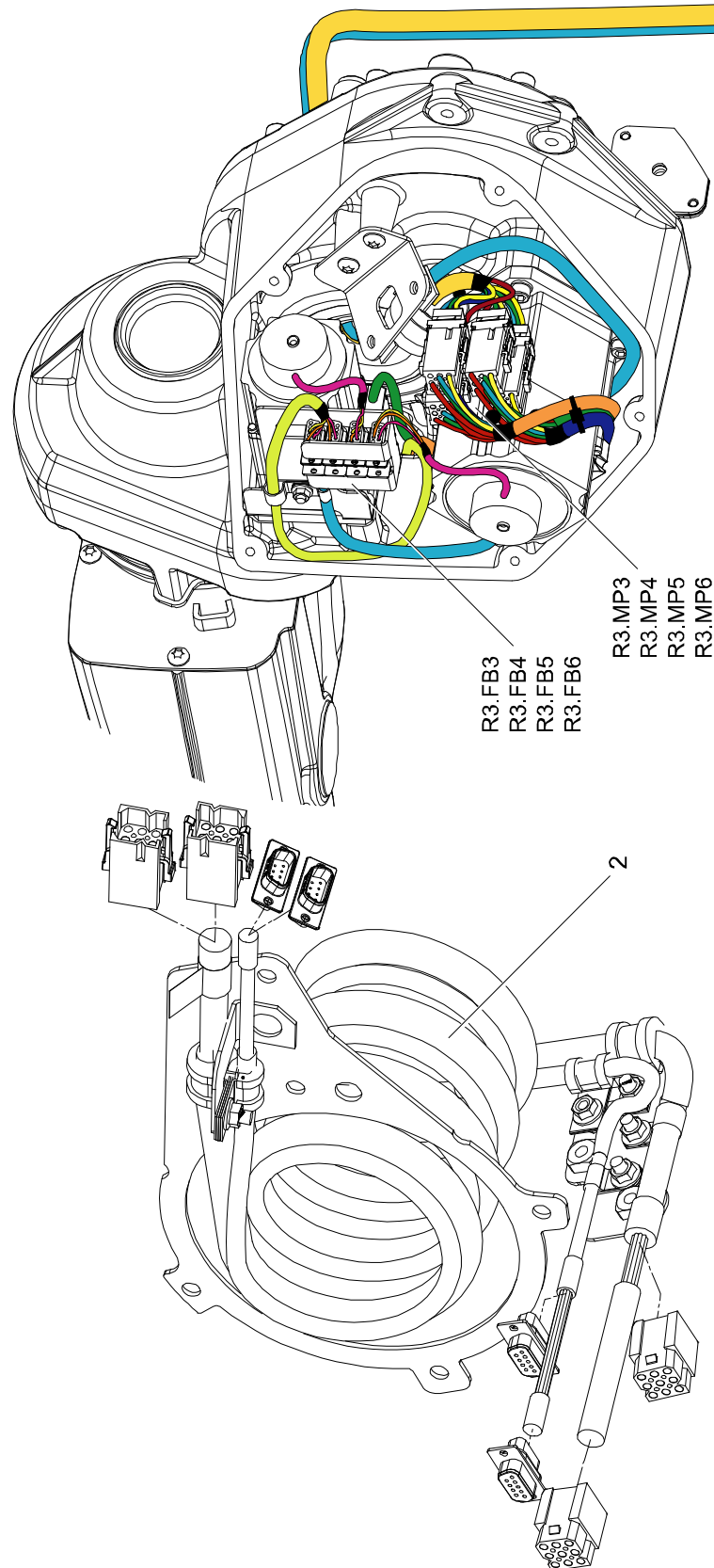
#### Spare part list, upper arm

The spare parts listed below are shown in the exploded views, located on the next pages.

Item number	Description	Spare part number	Color	Dimension
1	Wrist	3HAC027716-001	ABB Orange	without motor, plates and screws.
		3HAC050411-001	Graphite White	
2	<a href="#">Cable harness IRB 1600ID-4/1.5 on page 27</a>	3HAC027523-001	-	plate
3	Motor axis 3 ( <a href="#">Motors and O-rings on page 28</a> )	3HAC021798-003	-	
4	O-ring motor axis 3 ( <a href="#">Motors and O-rings on page 28</a> )	2152 2012-426	-	
5	Motor axis 4 and 5 ( <a href="#">Motors and O-rings on page 28</a> )	3HAC021799-003	-	
6	O-ring motor 4 and 5 ( <a href="#">Motors and O-rings on page 28</a> )	3HAB3772-81	-	
7	Motor axis 6	3HAC17342-1	-	
8	Cover arm housing ( <a href="#">Covers and mechanical stops on page 29</a> )	3HAC027874-001	ABB Orange	
		3HAC050412-001	Graphite White	
9	Mecanical stop ( <a href="#">Covers and mechanical stops on page 29</a> )	3HAC027626-001	-	plate
10	Cover upper arm tube ( <a href="#">Covers and mechanical stops on page 29</a> )	3HAC027877-001	ABB Orange	
		3HAC050413-001	Graphite White	
11	Indicator lamp ( <a href="#">Indicator lamp on page 30</a> )	3HAC9258-1	-	
12	Sealing ring (V-ring) axis 3 ( <a href="#">Exploded view on page 31</a> )	3HAB3732-19	-	
13	V-ring (V 130A) axis 4	3HAB3732-25	-	

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#### Cable harness IRB 1600ID-4/1.5



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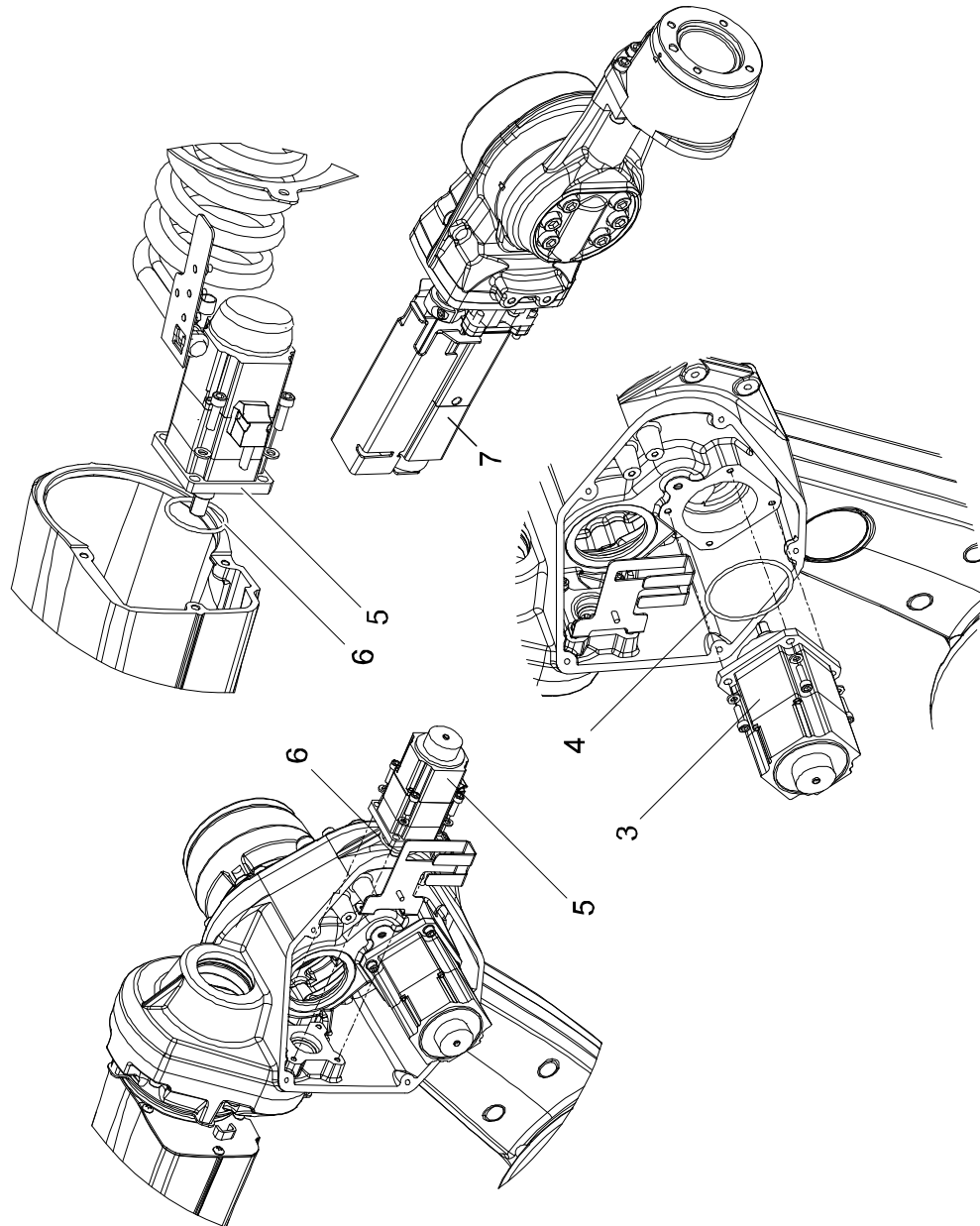
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## 2 Spare part lists and illustrations

### 2.6 Spare parts - upper arm 1600ID

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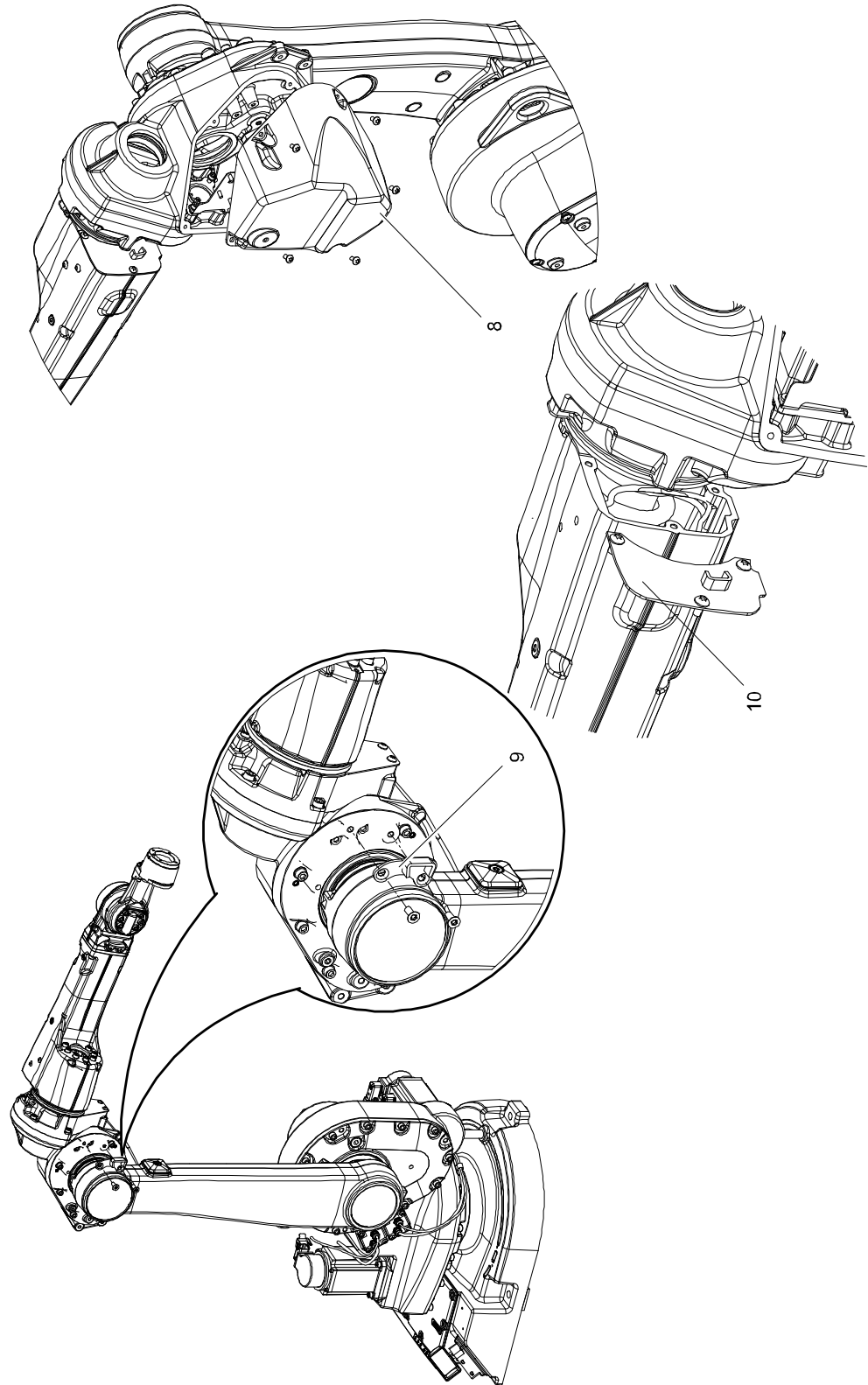
#### Motors and O-rings



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#### Covers and mechanical stops



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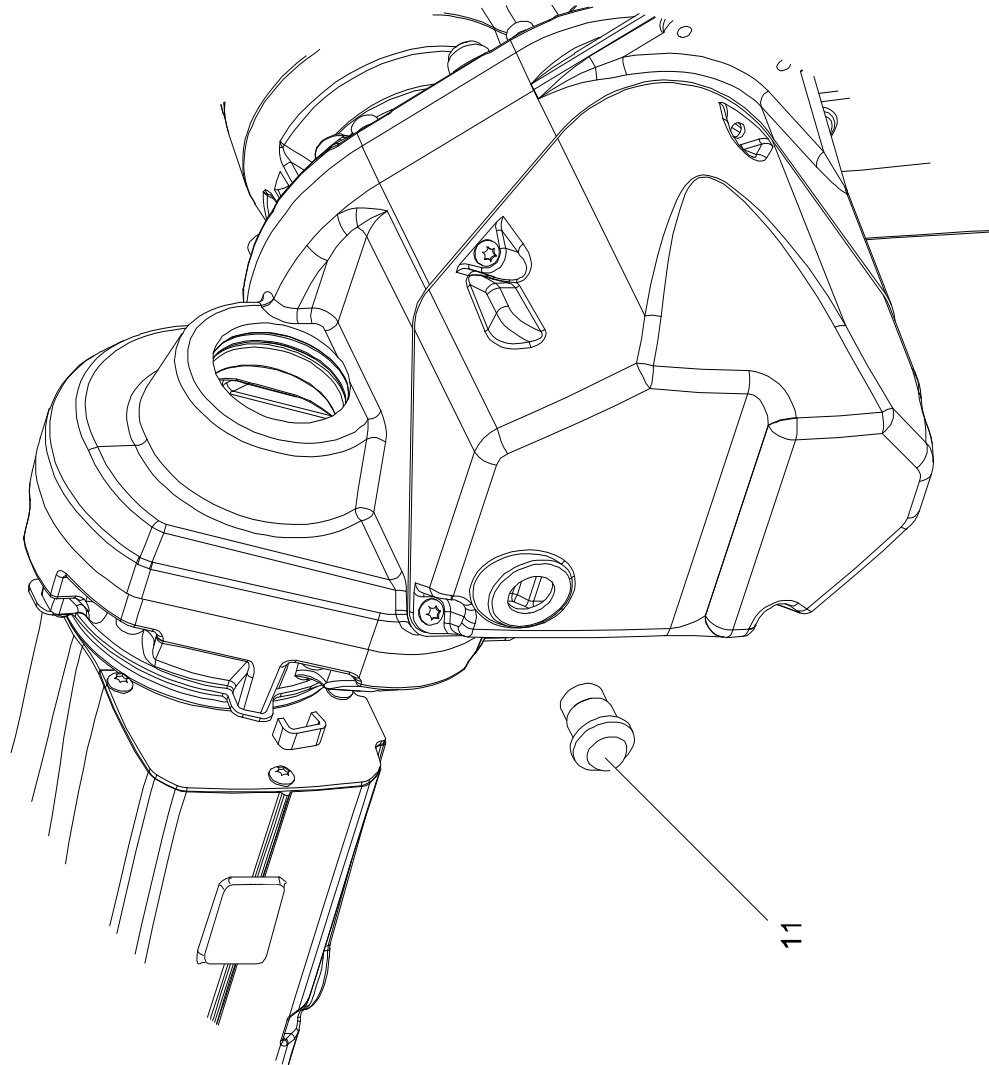
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## 2 Spare part lists and illustrations

### 2.6 Spare parts - upper arm 1600ID

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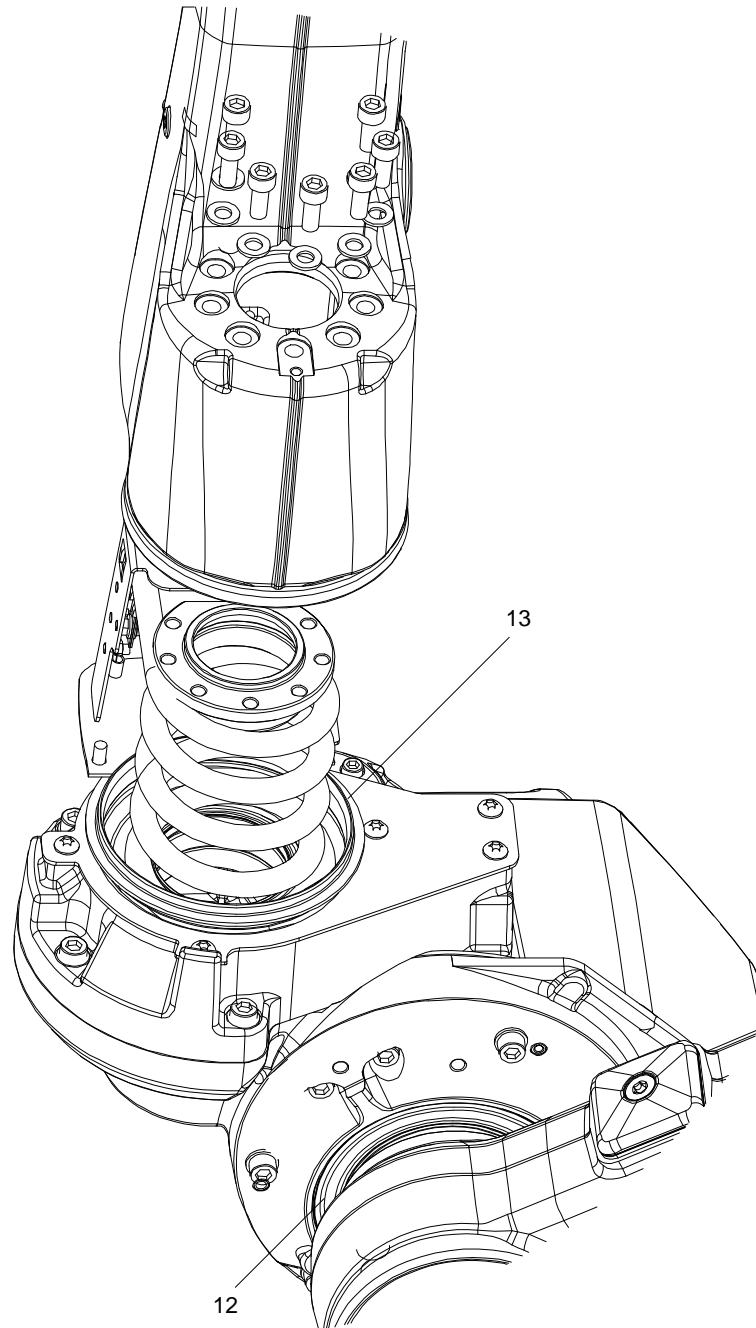
#### Indicator lamp



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#### Exploded view



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## 2 Spare part lists and illustrations

### 2.7 Spare parts - upper arm 1660ID

### 2.7 Spare parts - upper arm 1660ID

#### Spare part list, upper arm IRB 1660ID

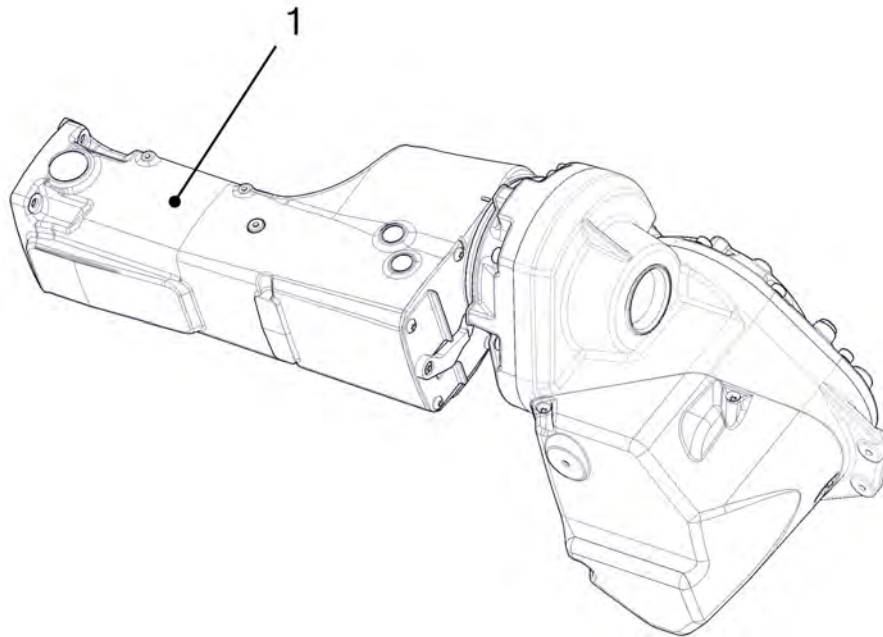
The spare parts listed below are shown in the exploded views, located on the next pages.

Item number	Description	Spare part number	Color
1	Complete upper arm ( <i>Complete upper arm IRB 1660ID on page 33</i> )	3HAC062069-001	Graphite White
2	Wrist ( <i>Upper arm, exploded view IRB1660ID on page 33</i> )	3HAC036626-005	ABB Orange
		3HAC059444-002	Graphite White
3	Cable harness ( <i>Cable harness IRB 1660ID on page 35</i> )	3HAC055651-001	-
4	Motor axis 3 ( <i>Upper arm, exploded view IRB1660ID on page 33</i> )	3HAC021798-003	-
5	O-ring motor axis 3 ( <i>Upper arm, exploded view IRB1660ID on page 33</i> )	2152 2012-426	-
6	Motor axis 4 ( <i>Upper arm, exploded view IRB1660ID on page 33</i> )	3HAC021799-003	-
7	O-ring motor 4 ( <i>Upper arm, exploded view IRB1660ID on page 33</i> )	3HAB3772-81	-
8	Motor axis 5 ( <i>Upper arm, exploded view IRB1660ID on page 33</i> )	3HAC047574-002	-
9	O-ring motor 5 ( <i>Upper arm, exploded view IRB1660ID on page 33</i> )	3HAB3772-112	-
10	Motor axis 6 ( <i>Upper arm, exploded view IRB1660ID on page 33</i> )	3HAC17342-1	-
11	Cover arm housing ( <i>Upper arm, exploded view IRB1660ID on page 33</i> )	3HAC058013-001	Graphite White
12	Mechanical stop ( <i>Upper arm, exploded view IRB1660ID on page 33</i> )	3HAC027626-001	-
13	Stop pin ( <i>Upper arm, exploded view IRB1660ID on page 33</i> )	3HAC055592-001	-
14	Distance ring ( <i>Upper arm, exploded view IRB1660ID on page 33</i> )	3HAC036561-001	-
15	O-ring M stop axis 4 ( <i>Upper arm, exploded view IRB1660ID on page 33</i> )	3HAB3772-61	-
16	Indicator lamp ( <i>Indicator lamp IRB 1660ID on page 36</i> )	3HAC9258-1	-
17	Sealing ring (V-ring) axis 3 ( <i>Upper arm, exploded view IRB1660ID on page 33</i> )	3HAB3732-19	-
18	V-ring (V 130A) axis 4 ( <i>Upper arm, exploded view IRB1660ID on page 33</i> )	3HAB3732-25	-

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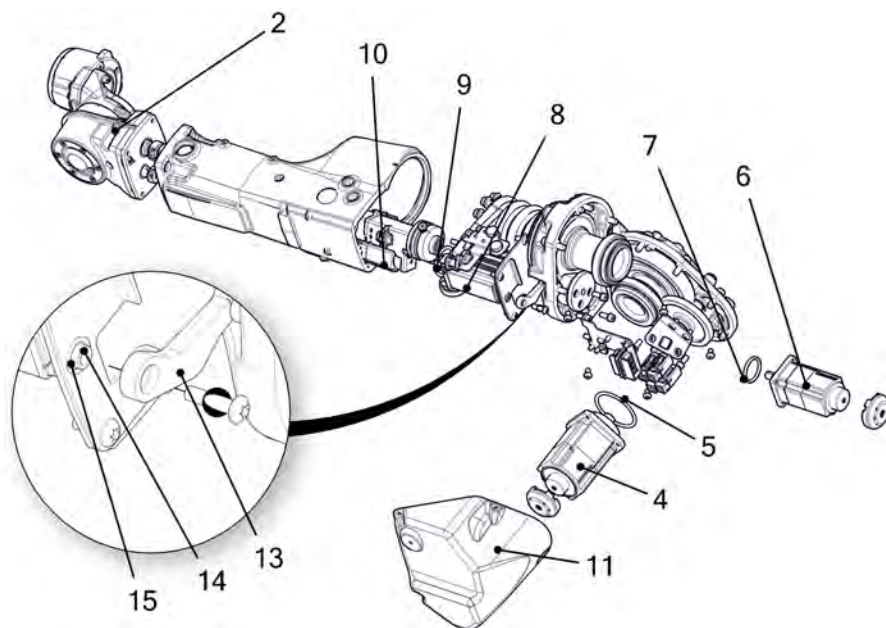


Complete upper arm IRB 1660ID



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Upper arm, exploded view IRB1660ID



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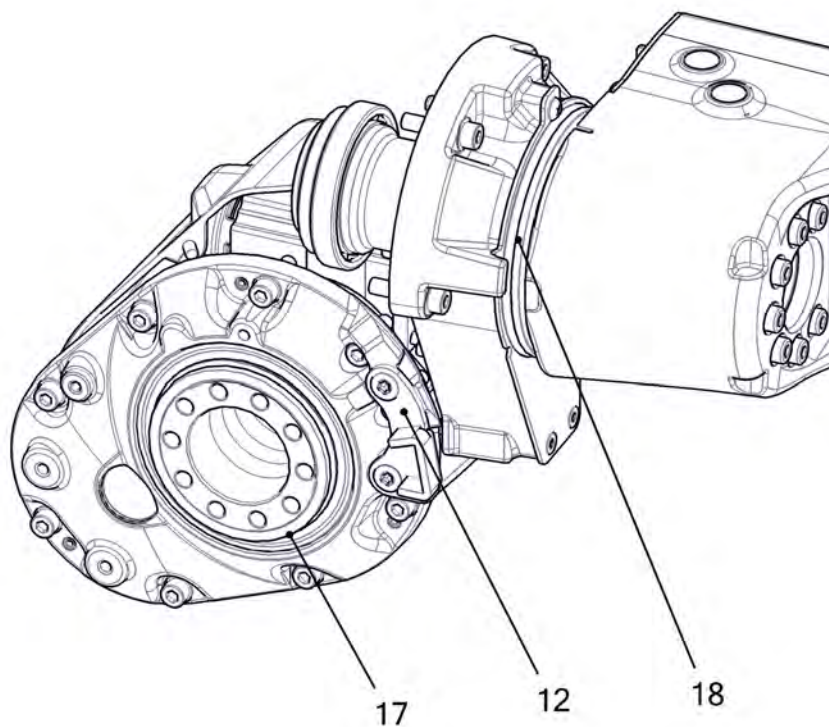
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## 2 Spare part lists and illustrations

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### 2.7 Spare parts - upper arm 1660ID

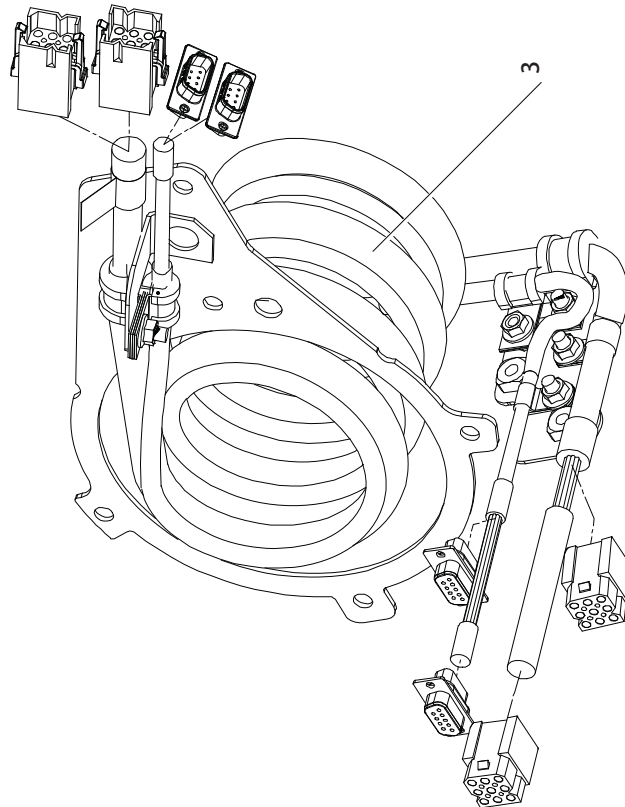
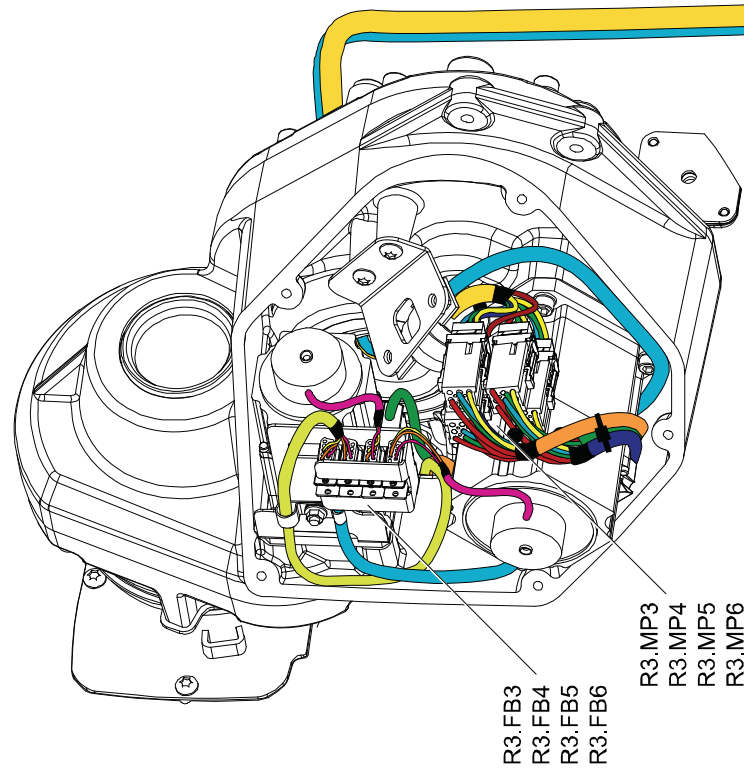
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#### Cable harness IRB 1660ID



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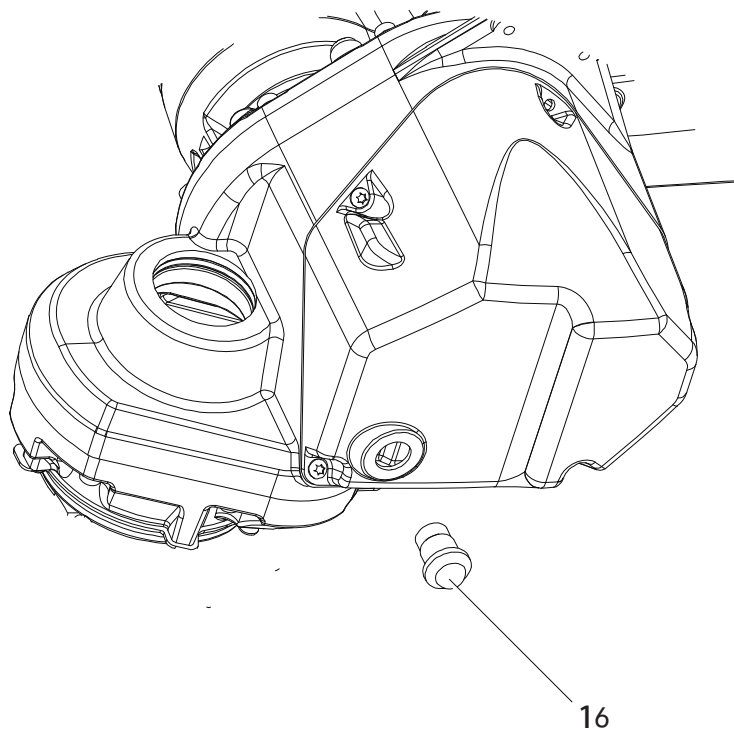
## 2 Spare part lists and illustrations

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### 2.7 Spare parts - upper arm 1660ID

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#### Indicator lamp IRB 1660ID



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## 2.8 Spare parts - options

### General

This section specifies available options for the robot.

### Spare parts - options

Option number	Description	Spare part number	Note
213-1	Lamp unit	3HAC022235-005	
431-1	Connection set R2.CP/R2.CS	3HAC025396-001	Only for standard connection.
25-3	Position switch, axis 1	3HAC023973-001	Includes 3 switches.
28-1	Working range limit axis 1	3HAC026119-001	
32-1	Working range limit axis 2	3HAC026120-001	
34-1	Working range limit axis 3	3HAC026121-001	

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