

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

ABB ROBOTS

3HAC021731-001

INDUSTRIAL MOTOR

Applicable product family: ABB robotics and control systems

OFFICIAL SOURCE

irb2400.pdf

The following pages are selected from the supplied manufacturer document and retain their original page content.

4 Repair

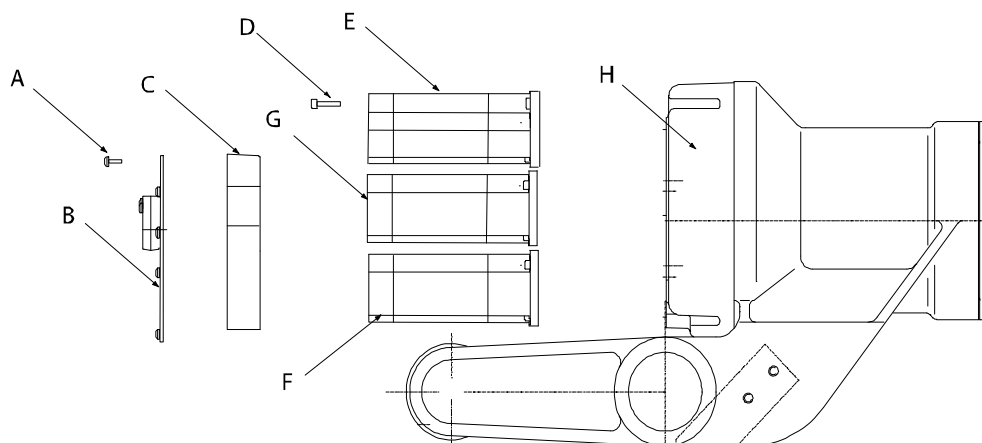
4.7.5 Replacement of motors, axes 4-6, IRB 2400/10/16

4.7.5 Replacement of motors, axes 4-6, IRB 2400/10/16

Location of motors axis 4-6

The motors axis 4-6 are located on the back of the upper arm as shown in the figure below:

A more detailed view of the component and its position may be found in chapter [Spare part lists on page 233](#).



xx0300000108

A	Torx screw
B	Cover
C	Connection box
D	Screw
E	Motor axis 6
F	Motor axis 5
G	Motor axis 4
H	Gearbox

Required equipment

Note! The different motors are not compatible. Make sure to replace with correct model!

Equipment, etc.	Spare part no.	Art. no.	Note
Motor unit axis 4	3HAC10602-1		(Elmo)
Motor unit axis 4	3HAC021353-001		(Yaskawa)
Motor unit axis 5	3HAC10600-1		IRB 2400/10 (Elmo)
Motor unit axis 5	3HAC10601-1		IRB 2400/16 (Elmo)
Motor unit axis 5	3HAC021722-001		Color: ABB Orange IRB 2400/10/16 (Yaskawa)
	3HAC021722-003		Color: Graphite White IRB 2400/10/16 (Yaskawa)

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Equipment, etc.	Spare part no.	Art. no.	Note
Motor unit axis 6	3HAC10602-2		(Elmo)
	3HAC021731-001		Color: ABB Orange (Yaskawa)
	3HAC021731-003		Color: Graphite White (Yaskawa)
O-ring	3HAB3772-12		One piece for each motor.
Locking liquid		-	Loctite 2400 (or equivalent Loctite 243)
Bearing grease		3HAB 3537-1	
Lubricating oil		3HAC 0860-1	1,500 ml Optimol BM 100 For the gearbox of axis 4.
Measuring tool		3HAB7887-1	
Power supply		-	24 VDC, max. 1.5 A. For releasing the brakes.
Standard toolkit			The content is defined in the section Standard tools on page 230 .
Other tools and procedures may be required. See references to these procedures in the step-by-step instructions below.			These procedures include references to the tools required.

**CAUTION**

Always cut the paint with a knife and grind the paint edge when disassembling parts. See [Cut the paint or surface on the robot before replacing parts on page 113](#).

Removal, motors axes 4-6 (10/16 kg)

The procedure below details how to remove the motors of axes 4-6.

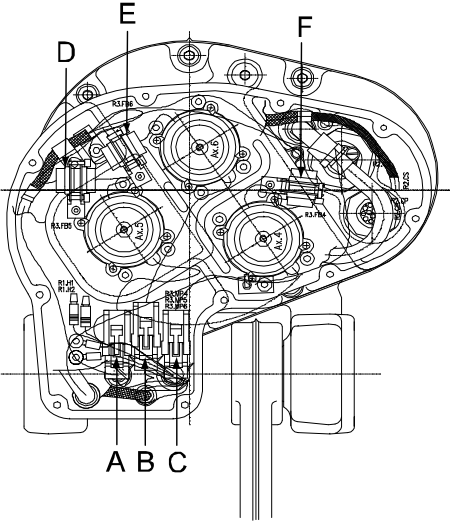
	Action	Note/Illustration
1	 DANGER Turn off all electric power, hydraulic and pneumatic pressure supplies to the robot!	
2	Drain the oil from the axis 4 gearbox.	
3	Remove the cover of the connection box.	Shown in the figure Location of motors axis 4-6 on page 190 .

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4.7.5 Replacement of motors, axes 4-6, IRB 2400/10/16

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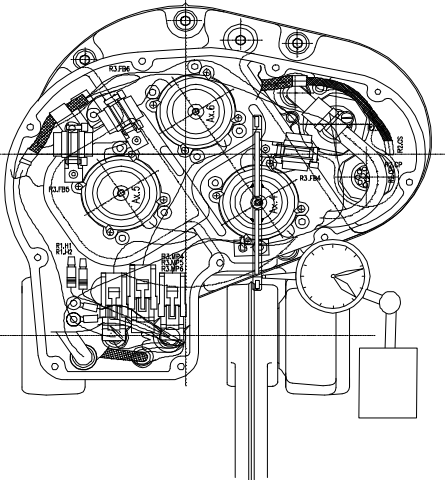
	Action	Note/Illustration
4	Disconnect the connectors R3.MP4-6 and R3.FB4-6.	 xx0200000406 A R3.MP5 B R3.MP6 C R3.MP4 D R3.FB5 E R3.FB6 F R3.FB4
5	Remove the connection box by unscrewing its three attachment screws and plain washers.	
6	Use a marker pen to mark out the position of the motors, if same motors are to be re-fitted.	
7	Remove the attachment screws and plain washers from the motors.	
8	Remove the motors by gently lifting them straight out (horizontal movement).	

Refitting, motor axis 4

The procedure below details how to refit the motor, axis 4.

	Action	Note/Illustration
1	 DANGER Turn off all electric power, hydraulic and pneumatic pressure supplies to the robot!	
2	Check that the assembly surfaces are clean and the motor unscratched.	
3	Fit a new <i>o-ring</i> on the motor.	Spare part no. is specified in Required equipment on page 190 .
4	Lubricate the gear with bearing grease.	Art. no. is specified in Required equipment on page 190 .

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	Action	Note/Illustration
5	Fit the <i>measuring tool</i> at the rear of the motor.	 xx0300000005 Art. no. is specified in Required equipment on page 190.
6	The motor's fixing screws shall be fastened, but do not tighten them, to be sure that the motor will be able to move parallel to the gear when the adjustment is done	
7	In order to release the brakes, connect the 24 VDC power supply to the motor.	Connect to connector R3.MP4: • + : pin 7 • -: pin 8
8	Start with a play in all positions and then find the smallest play by turning the motor shaft six turns and thereby finding the area with the smallest play within this range. Use swift movements to avoid noticing the magnetic field, which makes the gears stick together.	
9	Push or tap the motor in radial direction so that the play becomes minimal within one motor turn, without the gear "chewing". Do not use force!	
10	Tighten the motor attachment screws and secure them with locking fluid.	Tightening torque: 4.1 Nm. Loctite 2400 (or equivalent Loctite 243)
11	Refill the gearbox with oil.	Art. no. and amount is specified in Required equipment on page 190 .
12	Reconnect the cabling.	Described in Refitting, cable harness, axes 4-6 on page 125 .
13	Recalibrate the robot. (When all service work is done, i.e. the other motors are also refitted.)	Calibration is detailed in a separate calibration manual enclosed with the calibration tools. General calibration information is included in the section Calibration information on page 203 .

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