

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

ABB ROBOTS

3HAC021722-001

INDUSTRIAL CONTROL BOARD

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.

	Action	Note
6	In order to release the brakes, connect the 24 VDC power supply to the motor.	Connect to connector R3.MP6: • + : pin 7 • -: pin 8
7	Find the smallest play by turning the outgoing shaft for axis 4 in intervals of 90°, totally one whole turn, and thereby finding the area where the play for motor 6 becomes smallest. Turn the motor for axis 5 one full turn at the time, totally five turns. Find the smallest play for axis 6 within this area. Turn the motor for axis 6 one full turn at a time for a time for a total of three turns. Find the smallest play for axis 6 within this area. Use swift movements to avoid noticing the magnetic field, which makes the gears stick together	
8	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!	
9	Tighten the motor attachment screws and secure them with locking fluid.	Tightening torque: 4.1 Nm. Loctite 2400 (or equivalent Loctite 243)
10	Reconnect the cabling.	Described in Refitting, cable harness, axes 4-6 on page 125 .
11	Recalibrate the robot.	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 .
12	 DANGER Make sure all safety requirements are met when performing the first test run. See Test run after installation, maintenance, or repair on page 85 .	

4 Repair

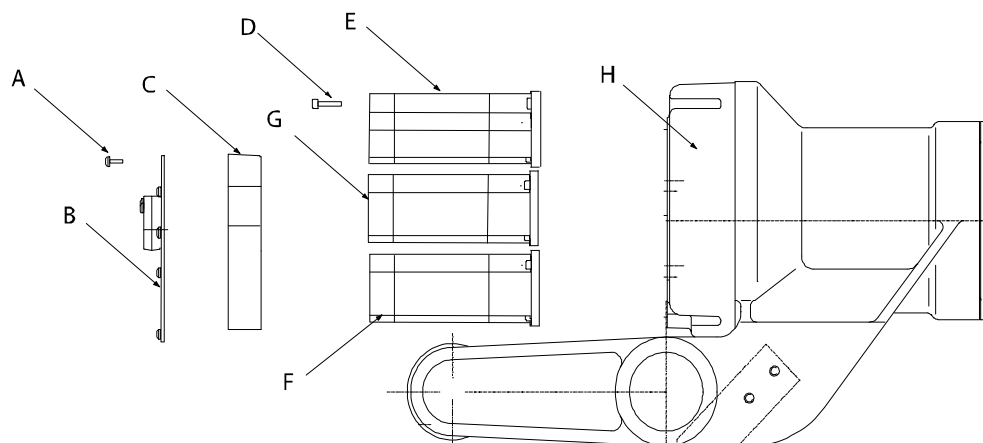
4.7.5 Replacement of motors, axes 4-6, IRB 2400/10/16

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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.

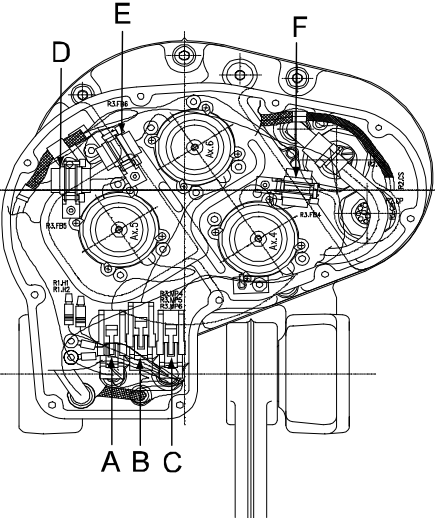
	Action	Note/Illustration
1	 DANGER Turn off all electric power, hydraulic and pneumatic pressure supplies to the robot!	
2	Drain the oil from the axis 4 gearbox.	
3	Remove the cover of the connection box.	Shown in the figure Location of motors axis 4-6 on page 190 .

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4 Repair

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

Continued

	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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