

3HAC5954-1

IRB 4400 Axis 2/3 Elmo Motor Unit with Pinion

ABB 3HAC5954-1 is an Elmo motor unit with pinion specified for axes 2 and 3 of the IRB 4400 robot. It provides the axis motor-and-brake assembly that must be mechanically adjusted, reconnected, recalibrated and test-run after replacement.

BRAND	ABB	FAMILY	ABB IRB 4400 industrial robot
PART	3HAC5954-1	SYSTEM ROLE	Provides the motor-and-pinion drive unit for either axis 2 or axis 3

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3HAC5954-1

MANUFACTURER SOURCE RECORD

Product manual - IRB 4400
ABB document 3HAC022032-001, Revision AB, 2026

Product Overview

SYSTEM FUNCTION

ABB 3HAC5954-1 is an Elmo motor unit with pinion specified for axes 2 and 3 of the IRB 4400 robot. It provides the axis motor-and-brake assembly that must be mechanically adjusted, reconnected, recalibrated and test-run after replacement.

FUNCTION 1

Provides the motor-and-pinion drive unit for either axis 2 or axis 3

FUNCTION 2

Contains the motor brake that must be managed while securing the arm system

FUNCTION 3

Requires controlled motor-to-gear adjustment before final fastening

FUNCTION 4

Returns the serviced axis to operation only after recalibration and test run

System Components

COMPONENT	DOCUMENTED ROLE
Host / carrier	ABB IRB 4400 industrial robot
Primary interface	Provides the motor-and-pinion drive unit for either axis 2 or axis 3
Engineering context	Service the selected IRB 4400 axis with all energy isolated and the arm system secured. Preserve the connector and sealing record, then adjust, calibrate and test the repaired axis.
Commissioning duty	Recalibrate the robot, review axis diagnostics and complete a controlled test run before production release.

TECHNICAL NOTE

Secure the arm system before removal because the brake is inside the motor. Fit only the matching Elmo execution, adjust the motor-to-gear engagement, restore oil, recalibrate and test-run the robot.

Technical Data

PARAMETER	VALUE	PARAMETER	VALUE
Spare part number	3HAC5954-1	Axis 2 connector	R3.MP2
Robot model	IRB 4400	Axis 3 connector	R3.MP3
Equipment	Motor unit, axes 2 and 3	Brake-release pins	Pin 7 (+24 V); pin 8 (0 V)
Motor execution	Elmo	Attachment screws	2 x M10x70; 2 x M10x30
Included component	Pinion	Tightening torque	60 Nm
Color	ABB Orange	O-ring	21520431-11
Brake-release supply	24 VDC, 1.5 A	Axis 2 flange sealing	Loctite 574; 12340011-11

Related Products on Apter Power

MODEL	SYSTEM ROLE	APTER POWER PAGE
3HAC025466-001	robot component	View 3HAC025466-001 page
3HAC058040-001	robot component	View 3HAC058040-001 page
3HAC033388-001	robot component	View 3HAC033388-001 page
DSQC323	3HAB5956-1 robot board	View DSQC323 page
DSQC223	YB560103 BD/4 robot board	View DSQC223 page
DSQC679	3HAC028357-001 robot interface	View DSQC679 page
3HAC17484-8	robot component	View 3HAC17484-8 page
DSQC662	3HAC026254-001 robot I/O unit	View DSQC662 page

ENGINEERING BOUNDARY

Confirm 3HAC5954-1, IRB 4400 host, axis 2 or axis 3 position, Elmo hardware execution, pinion and gear condition, R3.MP2/R3.MP3 connector assignment, 24 VDC brake-release wiring, grounding, O-ring and flange sealing, motor adjustment, fastener torque, oil level, robot calibration and controlled test-run results before commissioning.

Applications and Precautions

Common Applications

IRB 4400 axis 2 motor replacement

Restores the documented axis 2 drive assembly with the matching connector and brake-release procedure.

IRB 4400 axis 3 motor replacement

Replaces the specified axis 3 motor unit while preserving the separate sealing and connection record.

Axis motor and drive-gear service

Supports coordinated inspection and adjustment where the motor pinion engages the robot drive gear.

Post-replacement robot acceptance

Provides the exact article identity for calibration, diagnostic review and a controlled test run.

Product Precautions

- 1

Confirm the complete 3HAC5954-1 marking, Elmo execution and whether the work is on IRB 4400 axis 2 or axis 3.
- 2

Switch off electrical, hydraulic and pneumatic supplies and confirm the robot is protected from uncontrolled movement.
- 3

Secure the arm system or upper arm before loosening the motor because the brake is contained in the motor unit.
- 4

Protect the pinion and gear wheel and do not use excessive force while mating the motor to the drive gear.
- 5

Do not interchange Elmo and Yaskawa motor units; ABB states that these executions are not compatible.
- 6

Preserve the motor label orientation, selected axis connector, O-ring and axis-specific flange-sealing arrangement.
- 7

Adjust the motor, tighten the specified M10 fasteners to 60 Nm and refill or verify the drive-gear oil before energization.
- 8

Recalibrate the robot, review axis diagnostics and complete a controlled test run before production release.

IMPORTANT NOTICE

Confirm 3HAC5954-1, IRB 4400 host, axis 2 or axis 3 position, Elmo hardware execution, pinion and gear condition, R3.MP2/R3.MP3 connector assignment, 24 VDC brake-release wiring, grounding, O-ring and flange sealing, motor adjustment, fastener torque, oil level, robot calibration and controlled test-run results before commissioning.

ACCEPTANCE CHECK	REQUIRED EVIDENCE
Identity	3HAC5954-1
Configuration	Adjust the motor, tighten the specified M10 fasteners to 60 Nm and refill or verify the drive-gear oil before energization.
Functional release	Recalibrate the robot, review axis diagnostics and complete a controlled test run before production release.

Engineer FAQ

Q1 How can the complete ABB 3HAC5954-1 identity be verified before replacement?

Check the spare-part marking, confirm IRB 4400, identify axis 2 or axis 3, and verify that the installed and replacement motor units are the Elmo execution with pinion.

Q3 What must be secured before removing ABB 3HAC5954-1 from axis 2?

Isolate all energy and secure the complete arm system, because the axis brake is incorporated in the motor and is released when the motor is removed.

Q5 Which brake-release connections apply to ABB 3HAC5954-1?

Use the selected axis motor connector: R3.MP2 for axis 2 or R3.MP3 for axis 3. The manual identifies pin 7 for +24 V and pin 8 for 0 V, using a 24 VDC, 1.5 A supply.

Q7 How should ABB 3HAC5954-1 be fitted to the IRB 4400 drive gear?

Keep mating surfaces clean, align the motor and gear carefully, avoid excessive force, complete the specified motor adjustment and only then finish tightening and restore the drive-gear oil.

Q2 Can ABB 3HAC5954-1 replace a Yaskawa motor unit on an IRB 4400?

No. The ABB IRB 4400 manual states that Elmo and Yaskawa motor units are not compatible; the installed motor execution must be matched before replacement.

Q4 What must be secured before removing ABB 3HAC5954-1 from axis 3?

Isolate all energy and secure the upper arm before the motor is loosened, then use the documented axis 3 brake-release and removal sequence.

Q6 Which installation hardware is documented for ABB 3HAC5954-1?

The procedure lists O-ring 21520431-11, two M10x70 screws, two M10x30 screws, a 60 Nm tightening torque and axis-specific Loctite 574 flange sealing.

Q8 What commissioning work is required after installing ABB 3HAC5954-1?

Reconnect the documented motor cable, verify oil and mechanical assembly, recalibrate the robot, review axis diagnostics and complete a controlled test run before returning the robot to production.

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