

IRB6790, MANIPULATOR HARNESS

Manipulator harness for IRB6790

Description and installation information

Contents

- 1. Purpose and Basic Description2
- 2. Installation instructions.....3
 - 2.1. Required components3
 - 2.2. Connect the harness to the Overpressure unit 4
 - 2.2.1. Airtightness testing the power connector R1.MP5
 - 2.2.2. Evaluating the installation and reasonable air leakage flow data 6
 - 2.2.3. After installation..... 6
- 3. Additional Information.....7
 - 3.1. Listing of related documents.....7
- 4. Revisions.....7

This only concerns manipulators IRB6790 produced (delivered from factory) prior to 2025, when exchanging manipulator harness 3HAC061214-001 with manipulator harness 3HAC090903-001 (as spare part).

(As deliveries in 2025 and forward already are adapted for the usage of the manipulator harness 3HAC090903-001.)

PREPARED	STATUS	SECURITY LEVEL		
2026-04-28	Approved	Public		
APPROVED	DOCUMENT KIND			
2026-04-29	Instruction			
OWNING ORGANIZATION	DOCUMENT ID.	REV.	LANG.	PAGE
ABB RA/Robotics	9AKK108470A2987	C	en	1/7

1. Purpose and Basic Description

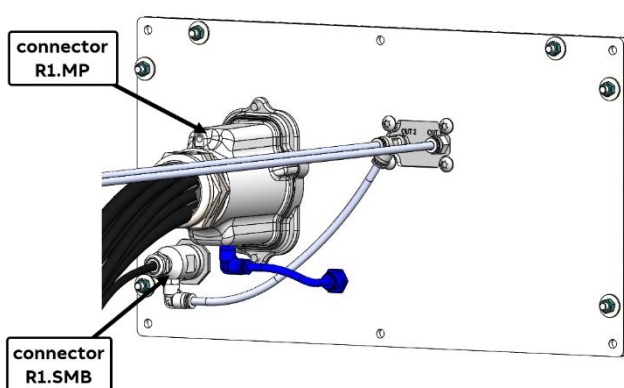
Description

This document is only related to the *manipulator axis 1-6 harness* 3HAC090903-001. (harness 3HAC090903-001 has replaced harness 3HAC061214-001 in PDP/SE IRB6790 production and as proposed Spare part for existing systems of IRB6790)

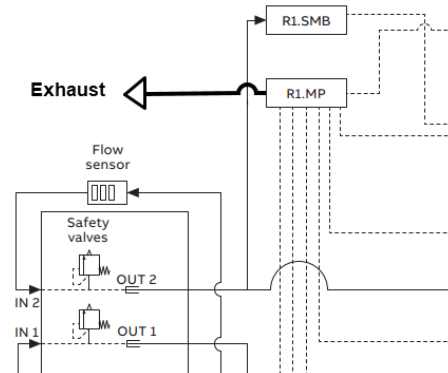
Main feature and functionality of the harness 3HAC090903-001:

- All power/signal cables are **sealed** in “cable ends” in the manipulator (motors, SMB cavity and wrist).
- New air hose routing for realizing “air exhaust” at R1.MP (instead of pressurizing). This will minimize harmful strain in the cable jackets due to internal air overpressure.

NOTE! Realizing “air exhaust” is only approved when harness 3HAC090903-001 is used.



Overpressure diagram - Exhaust air hose routing



Reason for specific installation information

The installing of the IRB6790 manipulator harness 3HAC090903-001 (introduced 2025Q1), at spare part harness exchange for example, may require minor adaptation/modification of the routing of air hoses at R1.MP connector (depending on original system delivery year) to realize the improved functionality, lifetime and performance.

Improvements/advantages

- Improved lifetime of the cable jacket
- Air leakage through cables is excluded in the flow data sensor and supervision of the air leakage in the system is more directly focusing/indicating on the important areas such as motors, SMB-unit and gaskets in for example the wrist.

General information concerning improved version of manipulator harness:

-Identified by the article number of the manipulator harness (verify article number on harness connector R1.MP and/or in webconfig)

New harness: 3HAC090903-001

Old harness: 3HAC061214-001

STATUS	SECURITY LEVEL	DOCUMENT ID.	REV.	LANG.	PAGE
Approved	Public	9AKK108470A2987	C	en	2/7

2. Installation instructions

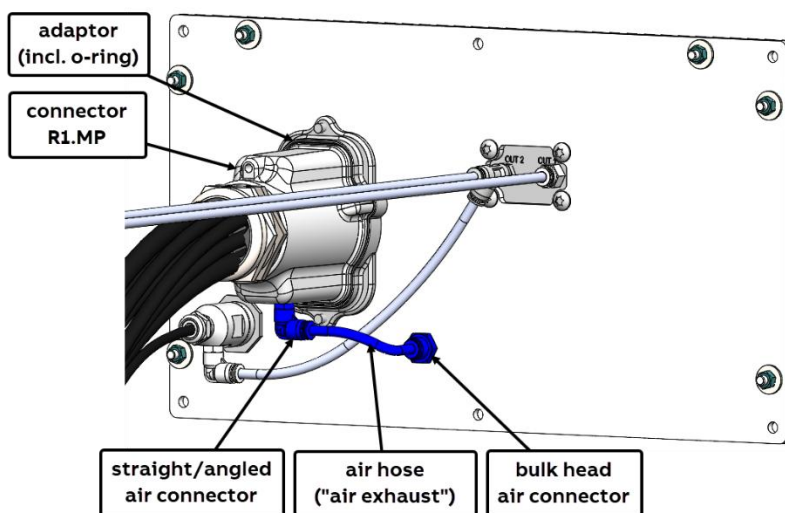
The installation of the improved version of IRB6790 manipulator harness (introduced 2025Q1), for example at harness of exchange, may require minor adaptation/modification (depending on original system delivery year) to realize the improved functionality, lifetime and performance.

2.1. Required components

Due to the components in the original system, there may be need to acquire items below.

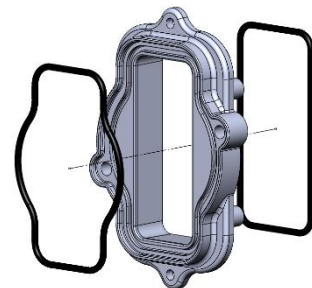
Order from BoL if needed

- Bulkhead fitting (Ø6), 3HAC094178-001
- Angled air connector (Ø6), 3HAC061987-001
- 1m air hose (Ø6), 3HAC062050-005



- Also need of drills (HSS) to produce a Ø14 hole in the stainless-steel interface/connection plate.
- Always exchange the adapter 3HAC11774-3 (includes the o-rings 3HAC061327-080), when exchanging the manipulator harness axis 1-6, to secure a leakproof interface between the adapter and the R1.MP connector, which is absolutely necessary in harsh environment/conditions.

NOTE! The implementation of “air exhaust” in the connector R1.MP (used to be pressurized) increase the importance of verifying the sealings in adaptor.



- See also Spare part manual IRB6790, 3HAC064429-001, for more information.

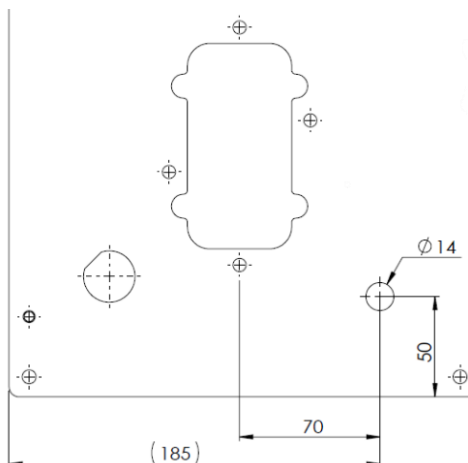
STATUS	SECURITY LEVEL	DOCUMENT ID.	REV.	LANG.	PAGE
Approved	Public	9AKK108470A2987	C	en	3/7

2.2. Connect the harness to the Overpressure unit

For general information, see Product Manual IRB 6790.

Specific additional steps of installation:

- 1) Drill a $\varnothing 14$ hole in the interface/connection plate (stainless steel)
(use a HSS drill or similar, low rpm and press during drilling, start with a smaller pilot hole) See dimensions below.



- 2) Mount a bulkhead fitting (seal if needed)
- 3) Mount an angled air connector in the connector R1.MP
- 4) Connect the R1.MP connector with the air coupling positioned at the bottom side of the connector (see picture at page 3).
To create an initial pressure on the o-ring, push the R1.MP connector firmly into the adapter and tighten the two screws (tightening torque for R1.MP: 10 Nm)
NOTE! Do not use any additional sealing compounds in the interface between the R1.MP connector and the adapter.
- 5) Route the air hoses according to pneumatic diagram related to the improved design of manipulator harness (see PM IRB6790, 3HAC063331-001, chapter 2.4.4)

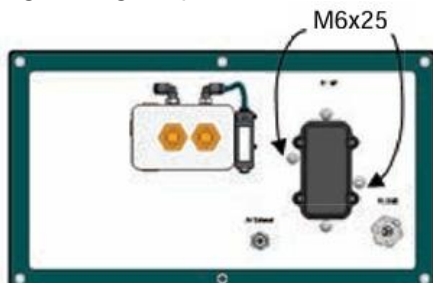
STATUS	SECURITY LEVEL	DOCUMENT ID.	REV.	LANG.	PAGE
Approved	Public	9AKK108470A2987	C	en	4/7

2.2.1. Airtightness testing the power connector R1.MP

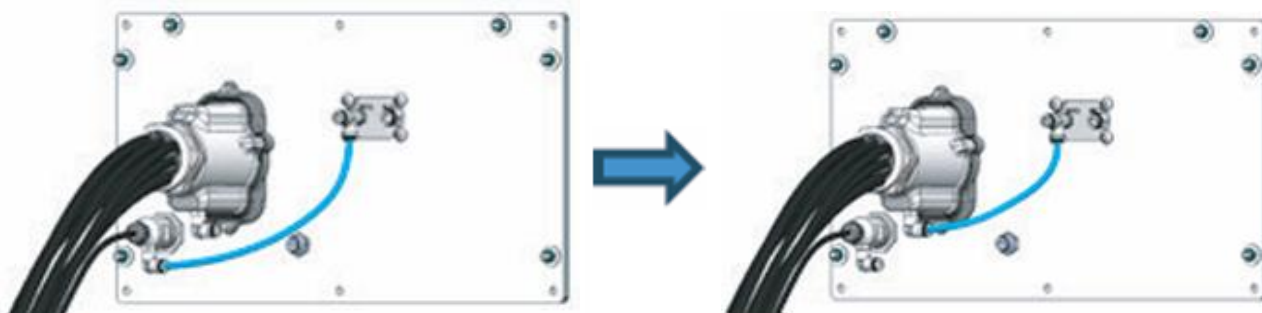
This procedure describes how to perform an airtightness test of the power connector R1.MP, to achieve a correct installation of the connector.

- 1) Verify that the power connector R1.MP is tightened properly with the two attachment screws.

Tightening torque for R1.MP: 10 Nm

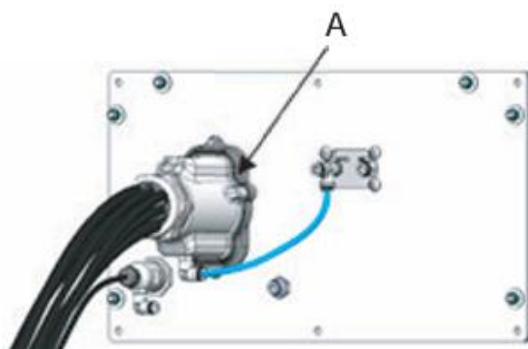


- 2) Remove the air exhaust hose temporarily from the connector R1.MP
- 3) Move the air hose (0.3 bar) temporarily from the R1.SMB to the power connector R1.MP



- 4) Use leakage detection spray in the entire gap (A) between the R1.MP hood and the adapter.

If leakage is detected, loosen and re-tighten the two M6x25 screws with 10 Nm. Repeat this step until tightness is achieved.



- 5) When air tightness is achieved, move the air hose back to the connector R1.SMB and connect the exhaust hose back to connector R1.MP

STATUS	SECURITY LEVEL	DOCUMENT ID.	REV.	LANG.	PAGE
Approved	Public	9AKK108470A2987	C	en	5/7

2.2.2. Evaluating the installation and reasonable air leakage flow data

When completed the “air exhaust” at R1.MP (instead of pressurizing), the air flow (sensor data) is expected to be close to 0.1 Lpm (0.0-0.3 Lpm).

More elevated values indicate leakages at other mechanical parts such as gaskets, connectors etc and investigation is proposed to locate the leakage.

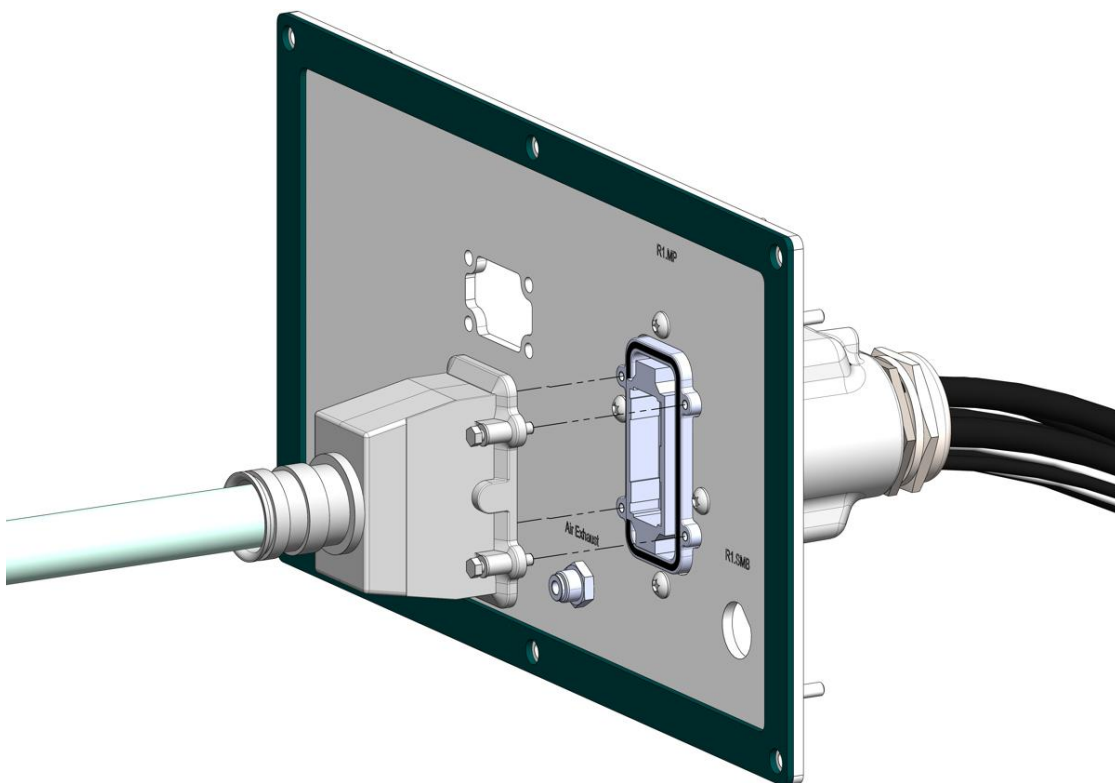
2.2.3. After installation

-Document the actual flowdata, to be used for historic analyze.

-Update Webconfig with new material number of the harness.

- After two weeks of operation, it is recommended to verify a leakproof assembly, which is necessary in harsh environment/conditions.

Shut down the power supply and disconnect the floor power cable connector (R1.MP) and investigate if any moisture can be detected inside the connector R1.MP.



If moisture is detected without any clear root cause found, please contact Product support via Salesforce case.

STATUS	SECURITY LEVEL	DOCUMENT ID.	REV.	LANG.	PAGE
Approved	Public	9AKK108470A2987	C	en	6/7

3. Additional Information

3.1. Listing of related documents

Ref #	Document Kind, Title	Document No.

4. Revisions

Rev.	Page (P) Chapt. (C)	Description	Date Dept./Init.
B	2.1, 2.2, 2.2.2	- Always exchange the adapter 3HAC11774-3 - Tightening torque for R1.MP: 10 Nm - Two week leakproof check	2025-10-24/QMCM
C	2.2.1	-Added chapter 2.2.1. Airtightness testing the power connector R1.MP	2026-04-28/QMCM