

INSTALLATION GUIDE

*LSH Delta
dresspack system*





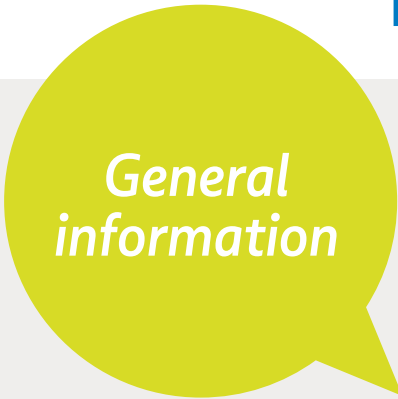
*Table of
contents*

▶ *General information*

▶ *1. Base plate installation*

▶ *2. Loop management installation*

▶ *3. Installation of the retract system*



General information

► Safety instructions

- For this product, the safety instructions of the higher-level system on which it is operated apply. The general safety instructions also apply. The country-specific, legally prescribed safety measures, the regulations and the ordinances for the prevention of personal injury and damage to property must always be observed. Personal protective equipment must be worn when carrying out work on the plant, plant components or equipment.
- Danger of crushing due to tensioned springs. During removal and installation work on the dresspack assembly there is a risk of crushing due to pre-tensioned springs.
- Due to the properties of the polymer used, the specified tightening torques must not be exceeded.
- The installation of the dresspack must be carried out by qualified personnel.
- The components are not designed as a climbing aid during maintenance.

► Tools required

- Cross-recess screwdriver
- Torque wrench
(measuring range min. 4–20 Nm)
- Hexagonal bits suitable for the torque wrench
(Wrench sizes: 5 mm; 6 mm; 8 mm; 10 mm)

► Wear parts list

Itemno.	Description	Flame resistance	Wear part
AAA00000012	Base plate FANUC	V0	
AAA00000039	Base plate KUKA / ABB	V0	
AAA00000013	LSH Delta	V0	
AAA00000031	LSH Delta Slide & Click	V0	
AAA00000016	Guidance for CT70 LSH Delta	V2	x
AAA00000037	Guidance for CT48 LSH Delta	V2	x
AAA00000018	Spring connector 70	V2	x
AAA00000034	Spring connector 48	V2	x
AAA00000024	LSH Delta Side arm assembly	V0	
AAA00000025	LSH Delta Support arm assembly	V0	
AAA00000043	Aluminium tube Ø 20 mm	metal	
AAA00000027	Spacer type A	V0	
AAA00000028	Spacer type B	V0	
AAA00000032	Spacer type C	V2	
AAA00000040	Spacer type E	metal	
AAA00000042	Compression spring LSH Delta 70	metal	
AAA00000046	Compression spring LSH Delta 48	metal	
B00761-00-18	Cable Clamp 70	V2	
B00761-00-48K	Cable Clamp 48	V2	
EDPXXXXXXXX	Dresspack	V2	x
M48-BU	Corrugated hose NW 48	V2	x
M70-BU	Corrugated hose NW 70	V2	x

► Overview LSH Delta components

Retract system



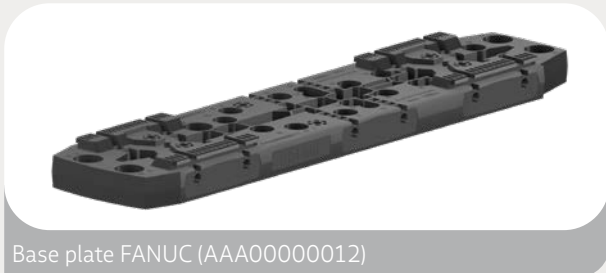
LSH Delta (AAA00000013)

Slide & Click



Slide & Click adapter (AAA00000031)

Base plate



Base plate FANUC (AAA00000012)

► Exploded view – example



Base plate ABB / KUKA (AAA00000039)

Loop support



Side arm (AAA00000024)



Support arm (AAA00000025)



Aluminium tube (AAA00000043)

Spacer



Spacer A (AAA00000027)



Spacer B (AAA00000028)



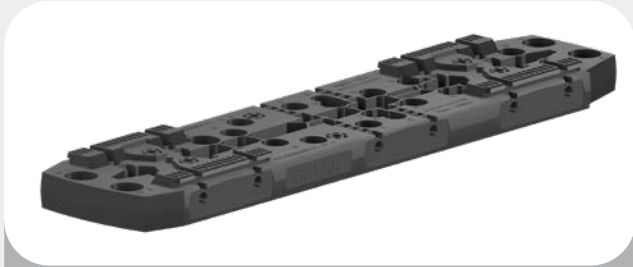
Spacer C (AAA00000032)



Spacer E (AAA00000040)

1. Base plate installation

► Parts overview



Base plate FANUC (AAA00000012)



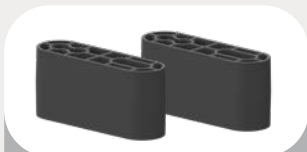
Base plate ABB / KUKA (AAA00000039)



Spacer A (AAA00000027)



Spacer B (AAA00000028)



Spacer C (AAA00000032)



Spacer E (AAA00000040)

► Assembly steps to be performed

For LSH Delta

- Without spacer Step 1.1 – 1.2
- With spacer type A Step 1.1; 1.2.1
- With spacer type B Step 1.1; 1.2.2
- With spacer type C Step 1.1; 1.2.3
- With spacer type E Step 1.1; 1.2.4

For LSH Delta with optional Slide & Click feature

- Without spacer Step 1.2
- With spacer type A Step 1.2.1
- With spacer type B Step 1.2.2
- With spacer type C Step 1.2.3
- With spacer type E Step 1.2.4

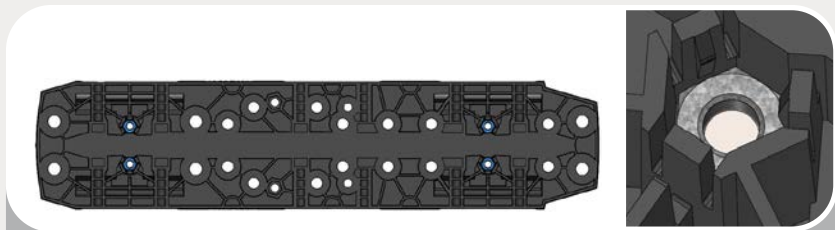
Component list

Instructions

▶ Step 1.1 – pre-assemble the nuts for the LSH Delta



1 x AAA00000012 / 39
1 x mounting kit 01

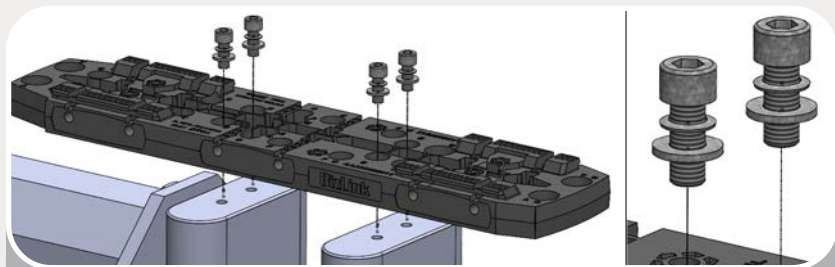


- Insert the nuts from the mounting kit 01 into the marked grooves of the base plate (AAA00000012 or AAA00000039).
- The nuts are held in position automatically and will be needed in step 3.1 to screw the LSH Delta to the base plate.

▶ Step 1.2 – fix the base plate on the robot (without spacer)



1 x AAA00000012 / 39
According to robot type:
1 x mounting kit 05 for M10
1 x mounting kit 06 for M12

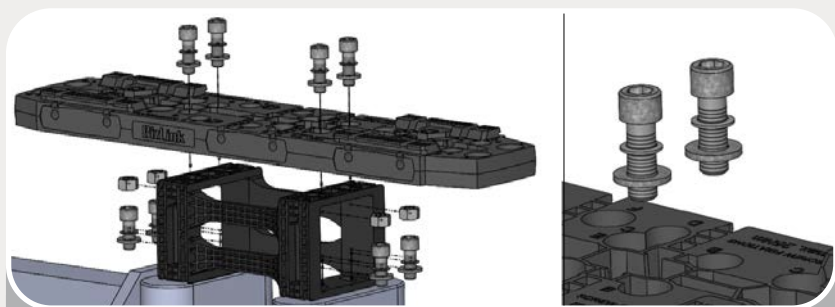


- For detailed information regarding the correct mounting position, see p. 8 – 12.
- Mount the base plate on the robot using mounting kit 05 or 06.
- The choice of the right mounting kit depends on the thread sizes of the robot.
- Max. permissible tightening torque: 15 Nm.

▶ Step 1.2.1 – fix the base plate on the robot (spacer type A) ¹⁾



1 x AAA00000012
1 x AAA00000027
According to robot type:
Mounting kit 05 & 04 for M10
Mounting kit 06 & 07 for M12



- For detailed information regarding the correct mounting position, see p. 8 – 12.
- Screw the base plate (AAA00000012) to the spacer A (AAA00000027).
- Then position the spacer on the robot and screw it in place.
- Max. permissible tightening torque: 15 Nm.
- Mounting kits are selected to match the robot type.

¹⁾When using the spacer, please observe the specified load values. See notes on technical data sheet.

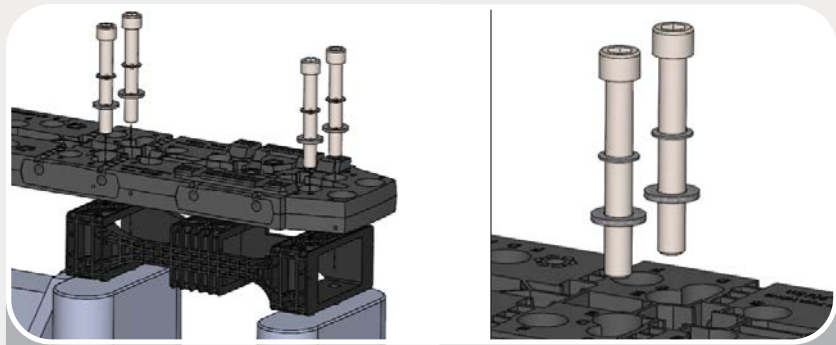
Component list

Instructions

▶ Step 1.2.2 – fix the base plate on the robot (spacer type B) ¹⁾



1 x AAA00000012
1 x AAA00000028
1x mounting kit 08



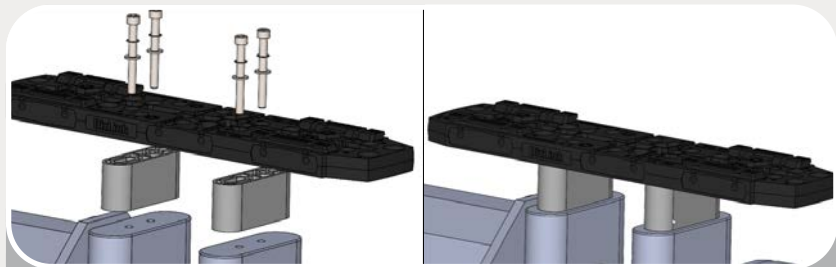
- For detailed information regarding the correct mounting position, see p. 8 – 12.
- Mount the base plate (AAA00000012) on the robot, placing spacer B (AAA00000028) between the base plate and the robot and screwing the components by using mounting kit 08.
- Max. permissible tightening torque: 15 Nm.

¹⁾When using the spacer, please observe the specified load values. See notes on technical data sheet.

▶ Step 1.2.3 – fix the base plate on the robot (spacer type C)



1 x AAA00000012 / 39
2 x AAA00000032
Mounting kit 09

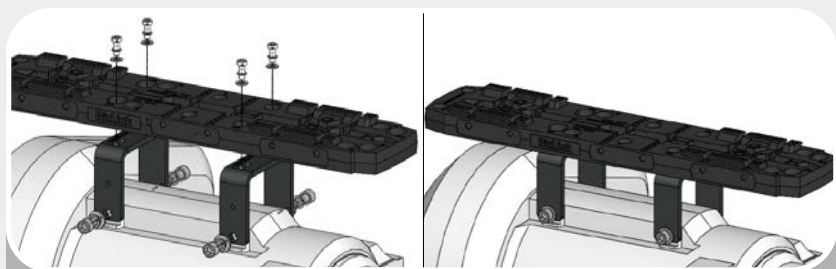


- For detailed information regarding the correct mounting position, see p. 8 – 12.
- Mount the Base plate (AAA00000012 / AAA00000039) on the robot, placing the two spacers C (AAA00000032) between the base plate and the robot and screwing the components by using mounting kit 09.
- Max. permissible tightening torque: 15 Nm.

▶ Step 1.2.4 – fix the base plate on the robot (spacer type E)

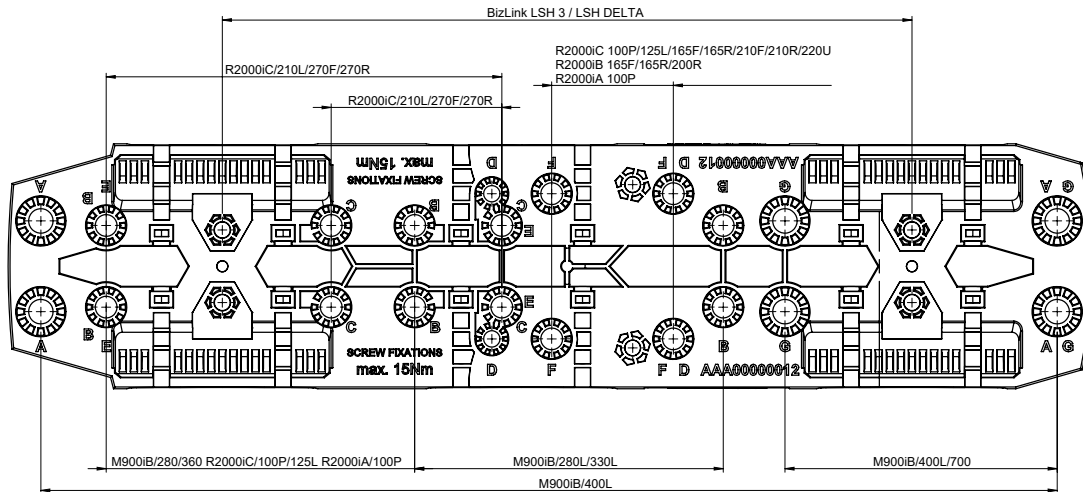


1 x AAA00000039
2 x AAA00000040
Mounting kit 10
Mounting kit 11



- For detailed information regarding the correct mounting position, see p. 11 – 12.
- Screw the base plate (AAA00000039) to the two spacers E (AAA00000040) using mounting kit 10.
- Then position the spacers on the robot and screw it in place using mounting kit 11.
- Max. permissible tightening torque: 15 Nm.

► Mounting positions on FANUC robots



M900iB/280: B
 M900iB/280L: B¹⁾
 M900iB/330L: B¹⁾
 M900iB/360: B¹⁾
 M900iB/400L: A³⁾, G¹⁾
 M900iB/700: A³⁾, G¹⁾
 R2000iC/100P: B, F¹⁾
 R2000iC/125L: B, F¹⁾
 R2000iC/165F: F
 R2000iC/165R: F

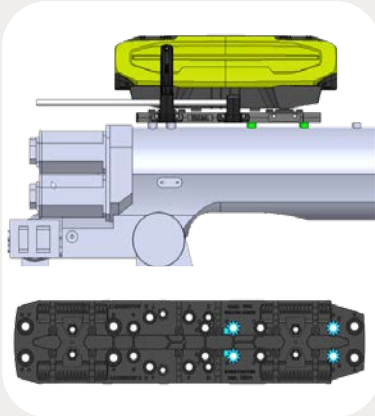
R2000iC/210L: C²⁾, E²⁾
 R2000iC /210F: F
 R2000iC /210R: F
 R2000iC /220U: F
 R2000iC/270F: C²⁾, E²⁾
 R2000iC/270R: C²⁾, E²⁾
 R2000iB/165F: F
 R2000iB /165R: F
 R2000iB /200R: F
 R2000iA/100P: B, F¹⁾

Description:

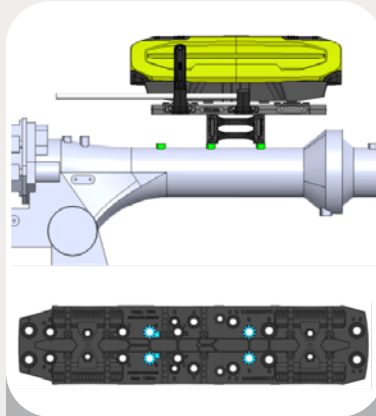
- ¹⁾ Only in combination with AAA00000027
- ²⁾ Only in combination with AAA00000028
- ³⁾ Optionally with 2x AAA00000032

► **Mounting positions on FANUC robots**

M-900iB 280

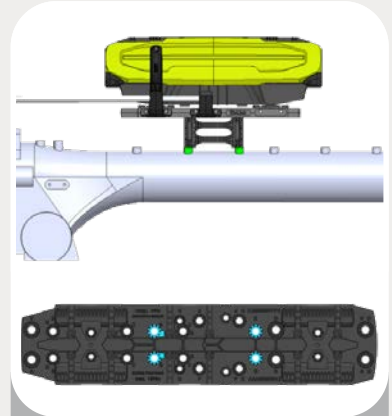


M-900iB 280L



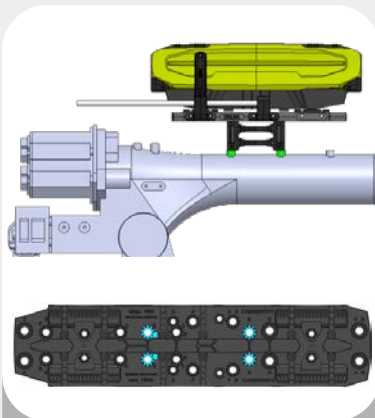
With spacer type A

M-900iB 330L



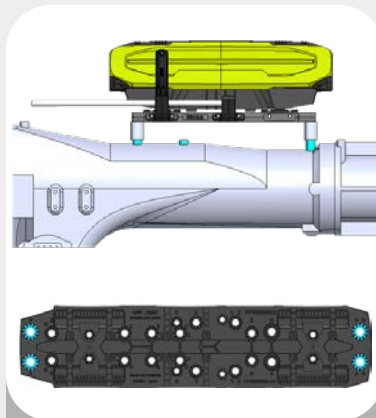
With spacer type A

M-900iB 360



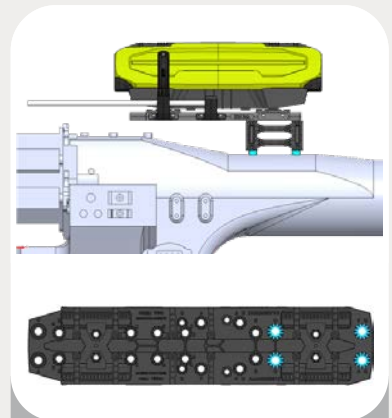
With spacer type A

M-900iB 400L



With spacer type C

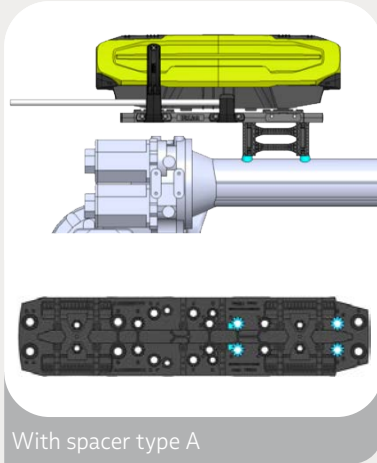
M-900iB 700



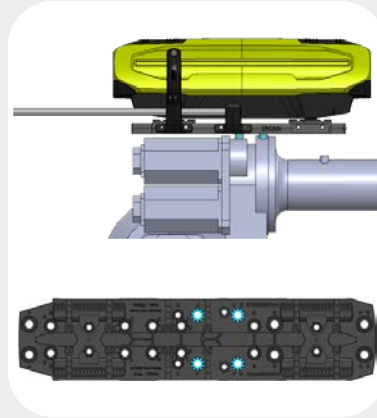
With spacer type A

► **Mounting positions on FANUC robots**

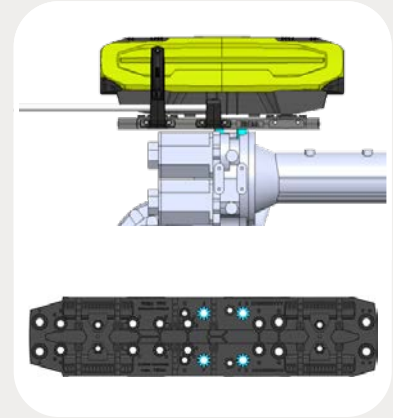
R-2000iC 125L / R-2000iC 100P



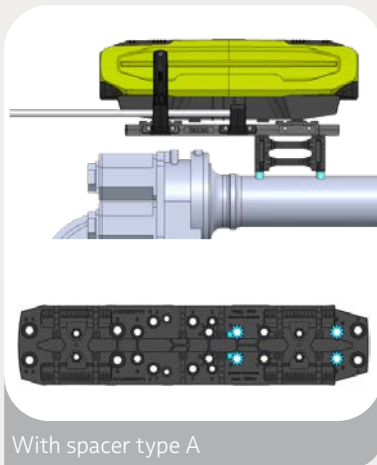
R-2000iB 165F / 165R / 200R



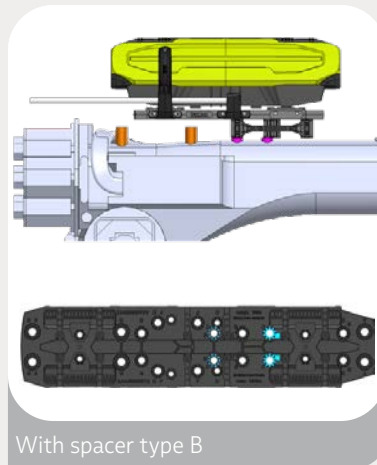
R-2000iC 165F / 165R / 210F / 210R / 220U



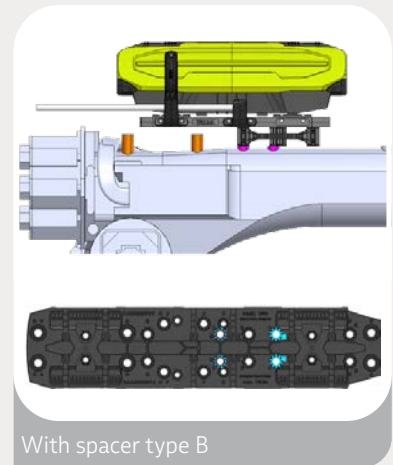
R2000iA 100P



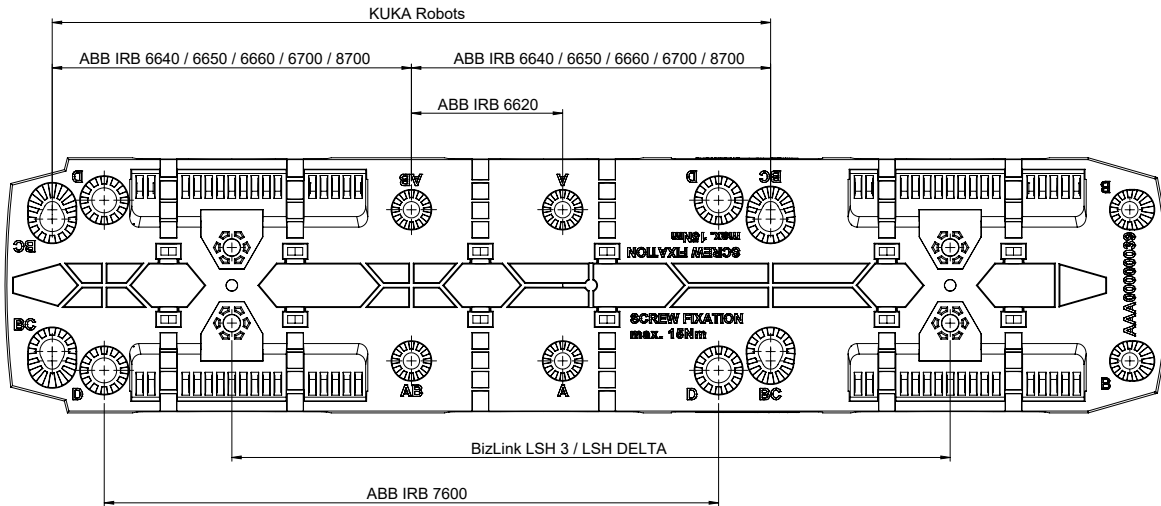
R-2000iC 210L



R 2000iC 270F / 270R



► **Mounting positions on ABB and KUKA robots**



- ABB IRB 6620: A²⁾
- ABB IRB 6640: A-B²⁾
- ABB IRB 6650: A-B²⁾
- ABB IRB 6660: A-B²⁾
- ABB IRB 6700: A-B²⁾
- ABB IRB 7600: D¹⁾
- ABB IRB 8700: A-B²⁾
- KUKA: C³⁾

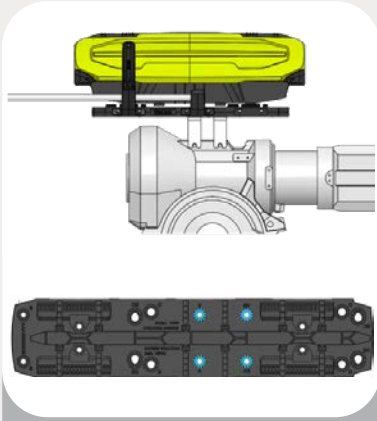
Description:

- ¹⁾ Only in combination with 2 x AAA00000032
- ²⁾ Only in combination with 2 x AAA00000040
- ³⁾ Optionally with 2 x AAA00000032

1. Base plate installation

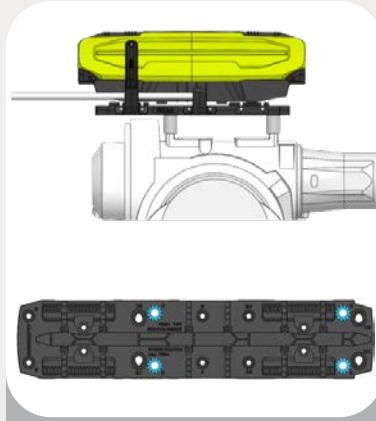
► **Mounting positions on ABB robots**

ABB IRB 6620



With spacer type E

ABB IRB 7600



With spacer type C

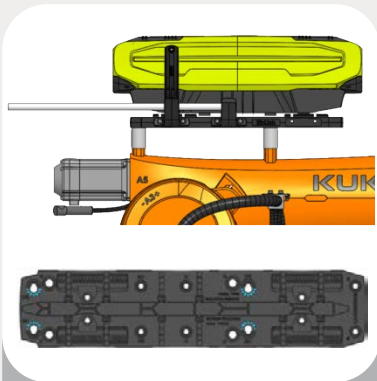
ABB IRB 6640 / 6650 / 6660 / 6700 / 8700



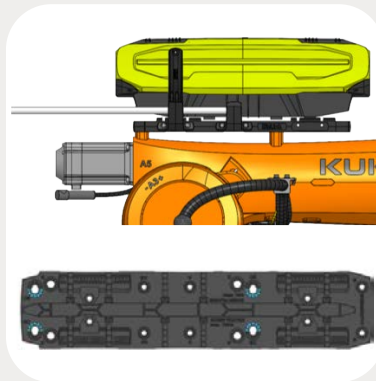
With spacer type E

► **Mounting positions on KUKA robots**

KUKA Quantec



With spacer type C



KUKA Fortec



With spacer type C



2. Loop management installation

► *Parts overview*



Side arm (AAA00000024) and
Cable clamp (B00761-00-18) /
(B00761-00-48K)



Support Arm (AAA00000025)



Aluminium tube (AAA00000043)
incl. end cap (PSP00000012)

► *Assembly steps to be performed*

- For systems without loop management:
Please skip this chapter
- For systems with 1 side arm:
Steps 2.1 – 2.2
- For systems with 2 support arms:
Steps 2.2 – 2.4
- For systems with 1 support arm and 1 side arm:
Steps 2.1 – 2.4

Component list

Instructions

▶ **Step 2.1 – pre-assemble side arm**



1 x AAA00000024
For NW 70:
1 x B00761-00-18
1 x mounting kit 15
For NW 48:
1 x B00761-00-48K
1 x mounting kit 16

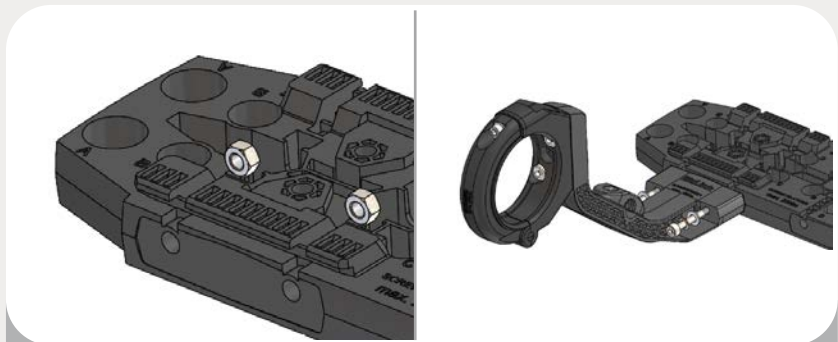


- Screw the cable clamp (B00761-00-18 / B00761-00-48K) to the side arm (AAA00000024) with mounting kit 15 / 16 (SUB00000037 / SUB00000038).
- Max. tightening torque: 15 Nm.

▶ **Step 2.2 – screw side arm / support arm(s) to the base plate**



(1x side arm pre-assembled)
1-2 x AAA00000025
1-2 x mounting kit 03



- First, insert the nuts from mounting kit 03 (SUB00000023) into the pockets in the base plate.
- Screw the pre-assembled side arm and the support arm(s) (AAA00000025) to the base plate in the required position using screws and washers of mounting kit 03.
- For correct positioning of the components please refer to your assembly drawing.
- The amount of side arms / support arms needed depends on the routing. For detailed information, please refer to your assembly drawing or parts list.
- Max. permissible tightening torque: 15 Nm.

▶ **Step 2.2 – possible part combinations**



▶ **Step 2.2 – possible mounting positions**



▶ **Step 2.3 – pre-assemble the loop support**

Component list



1 x AAA00000043
1 x PSP00000012

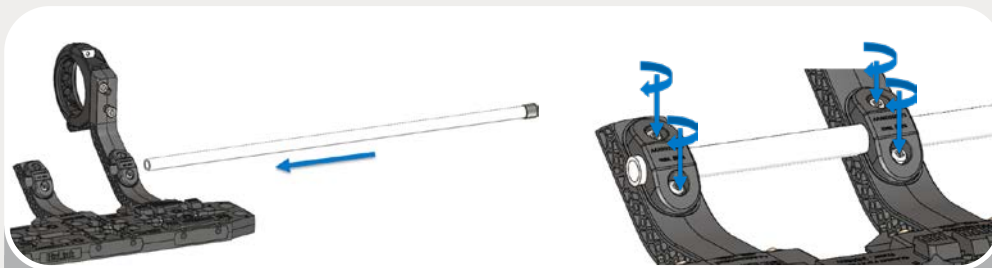
Instructions



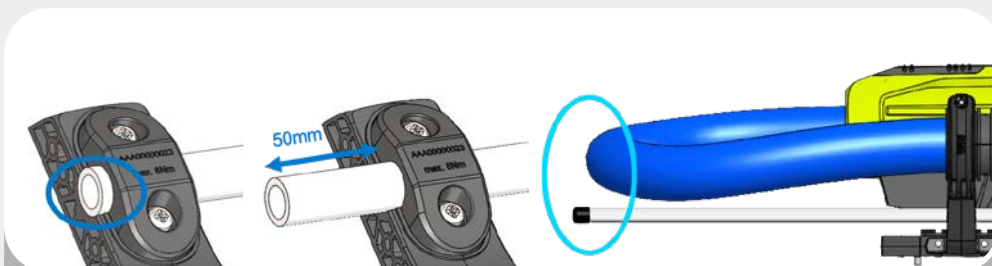
Place the end cap (PSP00000012) on the aluminium tube (AAA00000043).

▶ **Step 2.4 – fasten the loop support**

Instructions



- Position the aluminium tube (AAA00000043) in the tube clamps of the side arm and support arm.
- Then tighten the pipe clamps with the screws to hold the pipe in place.
- Max. permissible tightening torque: 8 Nm.



- By default, the tube is aligned flush with the support arm.
- The aluminium tube can be moved up to 50 mm in some applications.
- The aluminum tube serves as a support for the loop of the dresspack. Therefore, it must be ensured that the dresspack rests on the tube at all times and cannot fall down. The aluminum tube must therefore always be longer than the loop.

3. Installation of the LSH Delta

► *Parts overview*



LSH Delta (AAA00000013)



LSH Delta Slide & Click (AAA00000031)

► *Assembly steps to be performed*

- For LSH Delta:
Steps 3.1; 3.4 – 3.6
- For LSH Delta with optional
Slide & Click feature:
Steps 3.2 – 3.6

3. Installation of the LSH Delta

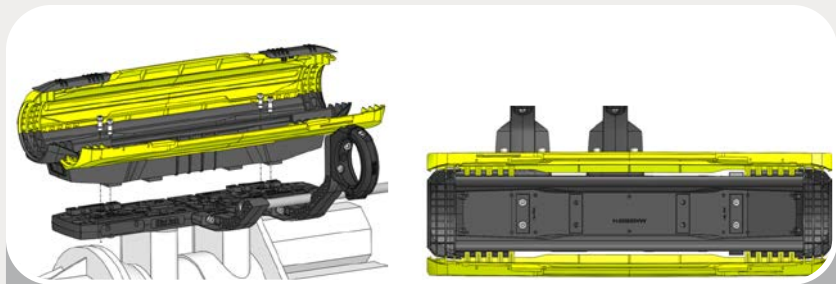
Component list

Instructions

▶ Step 3.1 – mount LSH Delta on the base plate



1 x AAA00000013
1 x mounting kit 01

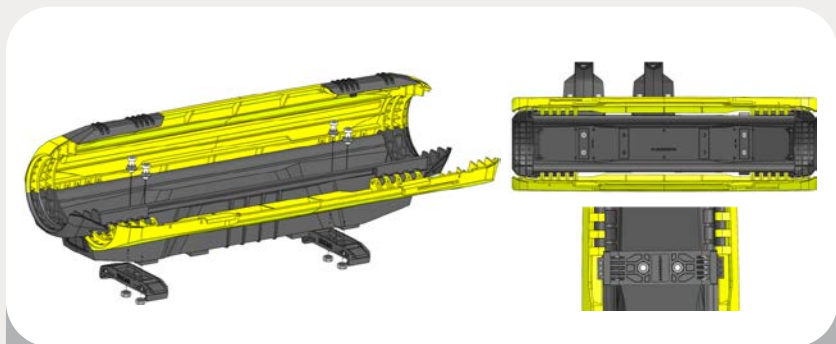


- Fix the LSH Delta (AAA00000013) to the base plate (AAA00000012 / AAA00000039) using the nuts pre-assembled in step 1.1 and the remaining parts of mounting kit 01.
- Max. permissible tightening torque: 15 Nm.

▶ Step 3.2 – pre-assemble Slide & Click adapter



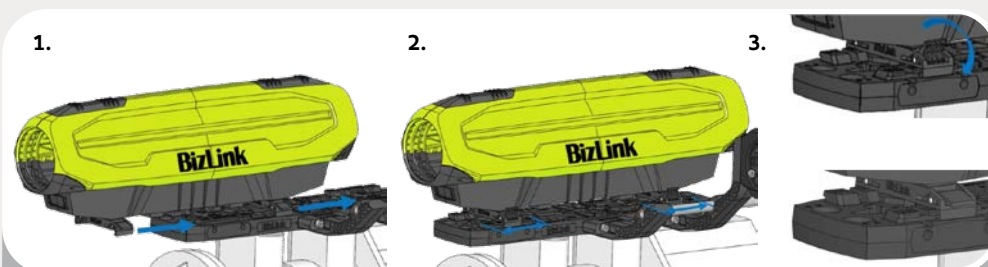
1 x AAA00000013
2 x AAA00000031
1 x mounting kit 02



- Screw LSH Delta (AAA00000013) to the Slide & Click adapters (AAA00000031).
- Max. permissible tightening torque: 15 Nm.

▶ Step 3.3 – mount LSH Delta with optional Slide & Click feature on base plate

Instructions

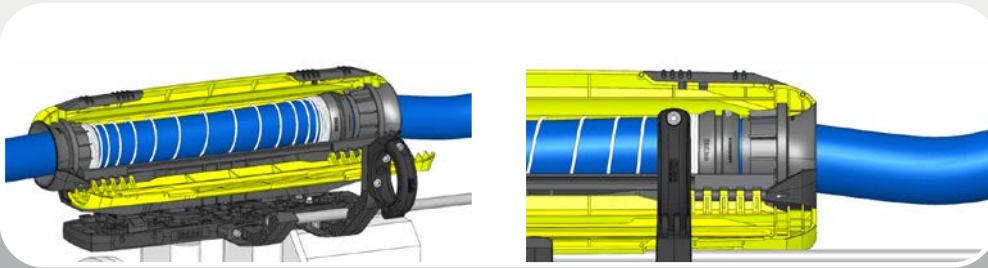


1. Slide the LSH Delta sideways onto the base plate until the required position is reached.
2. The position can be adjusted in the longitudinal direction.
3. Then fix the LSH Delta by pressing down the adapter locks.

3. Installation of the LSH Delta

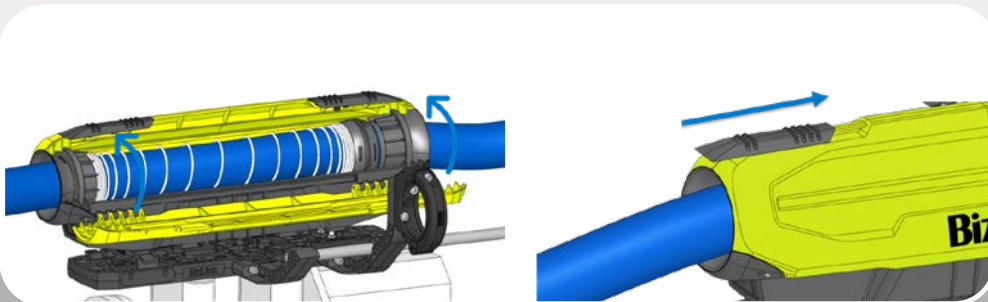
Instructions

▶ Step 3.4 – insert dresspack



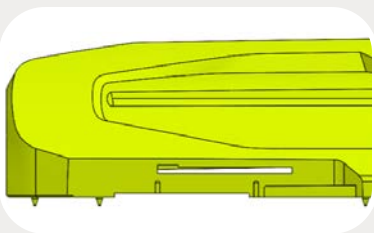
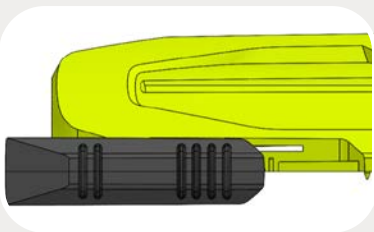
- Preload the spring system to place the dresspack in the LSH Delta.
- Ensure the correct position of the guidance (AAA00000016 / AAA00000037) in the housing (see right picture).

▶ Step 3.5 – close the LSH Delta housing

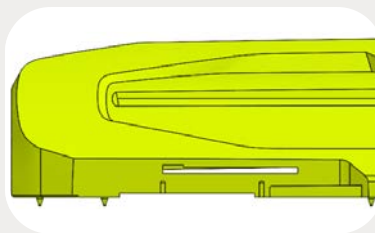
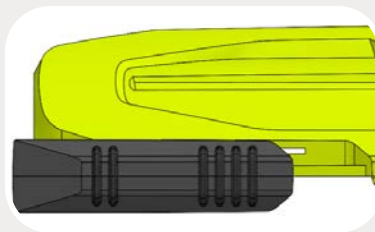


- Close the cover units of the LSH Delta.
- To do so, move the closing latches to the closed position.
- For description of the different positions, see pictures below.

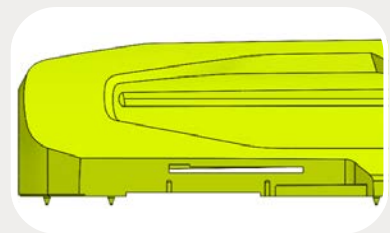
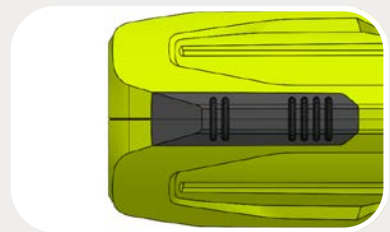
Mounting position



Fixed position



Closed position



3. Installation of the LSH Delta

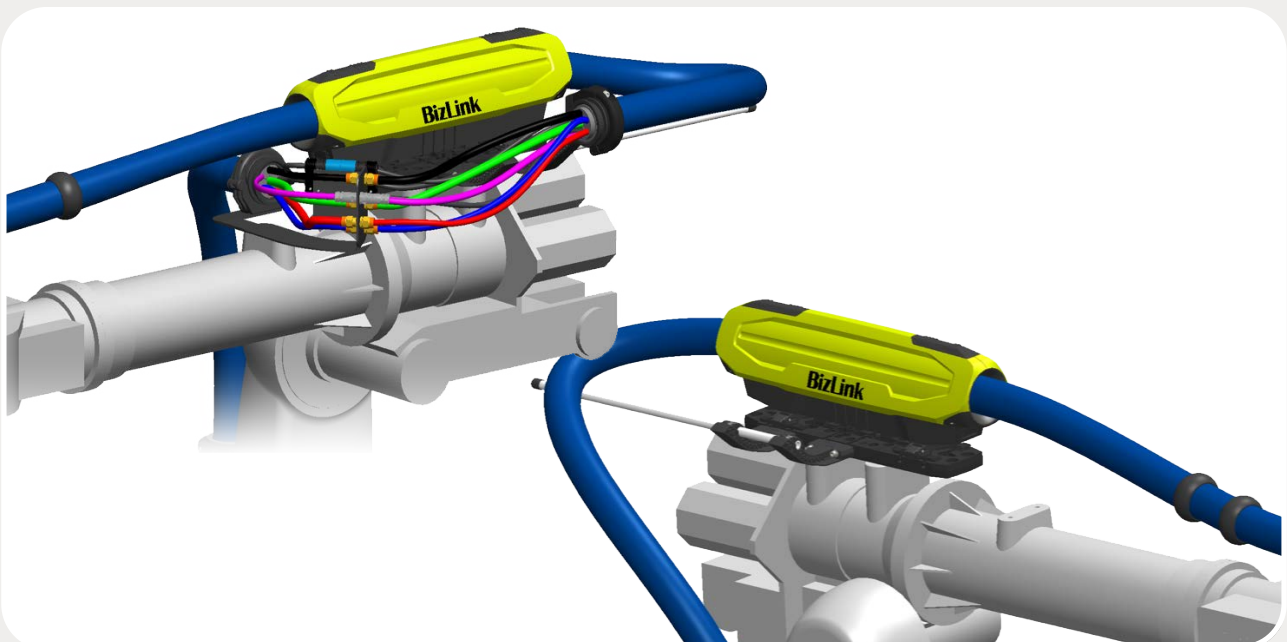
► Step 3.6 – fix the hose in the cable clamp

Instructions



- Open all cable clamps by unfastening the screws.
- Insert the dresspack into the open cable clamps and close it by fastening the screw again.

► Examples for successful installation





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