ROBOTICS

Product specification

IRT 510

Trace back information:
Workspace 24D version a12
Checked in 2024-12-25
Skribenta version 5.6.018

Product specification

IRT 510

OmniCore

Document ID: 3HAC091205-001

Revision: B

The information in this manual is subject to change without notice and should not be construed as a commitment by ABB. ABB assumes no responsibility for any errors that may appear in this manual.

Except as may be expressly stated anywhere in this manual, nothing herein shall be construed as any kind of guarantee or warranty by ABB for losses, damage to persons or property, fitness for a specific purpose or the like.

In no event shall ABB be liable for incidental or consequential damages arising from use of this manual and products described herein.

This manual and parts thereof must not be reproduced or copied without ABB's written permission.

Keep for future reference.

Additional copies of this manual may be obtained from ABB.

Original instructions.

Table of contents

This page is intentionally left blank

Overview of this specification

About this product specification

This product specification describes the performance of the track motion in terms of:

- The structure and dimensional prints
- The fulfilment of standards, safety and operating requirements
- The load diagrams, mounting of extra equipment, motion and reach
- The specification of variants and options available

The product specification covers the track motion using in the OmniCore controller.

Usage

Product specifications are used to find data and performance about the product, for example to decide which product to buy. How to handle the product is described in the product manual.

The specification is intended for:

- Product managers and product personnel
- Sales and marketing personnel
- Order and customer service personnel
- Integrators and customers

References

Documentation referred to in the manual, is listed in the table below.

Document name	Document ID
Circuit diagram - IRT 510	*3HAC091050-001*
Product manual - IRT 510	*3HAC091203-001*
Product specification - OmniCore V line	*3HAC074671-001*
Product manual - OmniCore V400XT	*3HAC081697-001*
Product manual - OmniCore V250XT Type B	*3HAC087112-001*

Revisions

Revision	Description
A	First edition.
B	Published in release R24D. The following updates are made in this revision: • Updated forces data. • Corrected option numbers of Prepared for IRP option 1.

This page is intentionally left blank

1 Description of IRT 510

1.1 About the IRT 510

Introduction

The IRT 510 is a linear track motion which, like ABB robots, is driven by the OmniCore V250XT/V400XT. The movement on the track motion is programmed using the robot FlexPendant in the same way as on other robot's axes.

The IRT 510 track motion has different types categorized by the following aspects:

- Cover type: covered track and standard track

  The difference between the two is that the covered track has top covers, rail covers and two end covers while the standard track only has rail covers on both sides of the track.
- Carriage type: robot track

  For the robot track, IRT 510 expands the movement pattern of the robot with an extra degree of programmable freedom.
- Carriage quantity: single carriage track (standard) and double carriage track
- Cable chain type: standard track and mirrored track

  Mirrored tracks are tracks installed in an opposite way, which can be identified by the installation mode of the cable chain. For the robot track with single carriage, the cable chain(s) of the IRT 510 track motion can be standard or mirrored. For the robot track with double carriages, one of the two cable chains is standard and the other is mirrored.

Operating system

IRT 510 is equipped with the OmniCore V250XT/V400XT controller and robot control software, RobotWare. RobotWare supports every aspect of the robot system, such as motion control, development and execution of application programs, communication etc. See *Operating manual - OmniCore*.

Safety

Safety standards require the connection of IRT 510 to the robot system and are valid for complete track, manipulator and controller.

Additional functionality

For additional functionality, the track can be equipped with optional software for application support - for example gluing and welding, communication features - network communication - and advanced functions such as multitasking, sensor control etc. For a complete description on optional software, see the *Product specification - OmniCore V line*.

Continues on next page

Performance

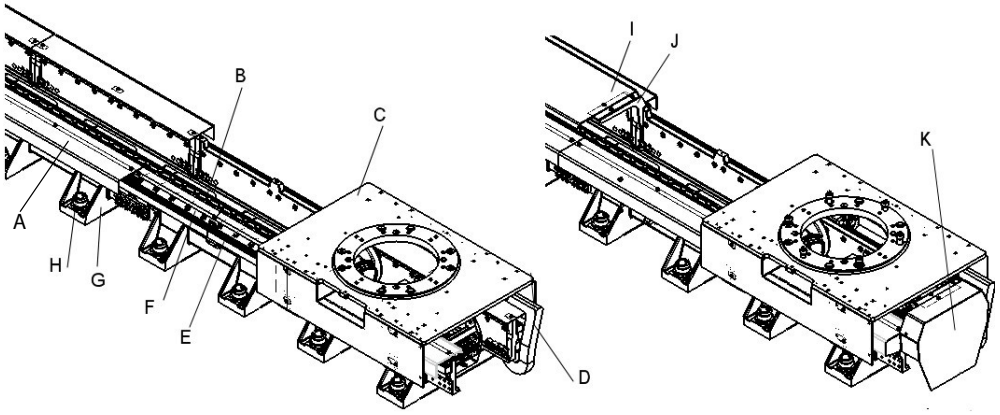
IRT 510 and its respective robot is a seven-axis dynamic model. ABB's unique QuickMove and TrueMove can be fully exploited, which means optimal movement for the robot and the track with actual load. Furthermore, path accuracy and speed are optimized.

Limitations

The option 3111-1, Independent Axis, is not possible to use together with IRT 510.

Track motion

Stand unit and carriage unit



xx1400000178

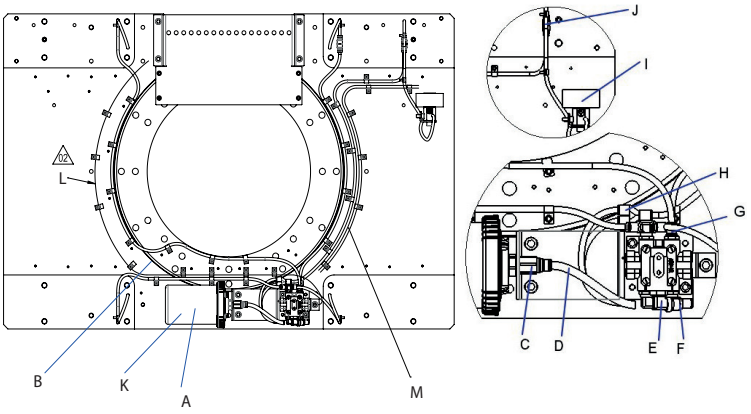
Pos	Description	Pos	Description
A	Rack cover	G	Section
B	Cable chain	H	Leveling screw
C	Carriage	I	Top cover
D	Mechanical stop	J	Top cover support
E	Linear guide	K	End cover
F	Rack		

Continues on next page

Automatic lubrication system

The IRT 510 track motion is equipped with an integrated automatic lubrication system and a dispatch circuit that routes lubricant to the ball bearing block, pinion, and rack. The lubrication 24V power is from the motor brake. If the system is activated, it delivers an exact quantity of grease to each port at a required time interval in at least one year. No other lubrication is required.

An opening on the side of the carriage casing allows the quick check of the quantity of grease left in the cartridge.



xx1900000133

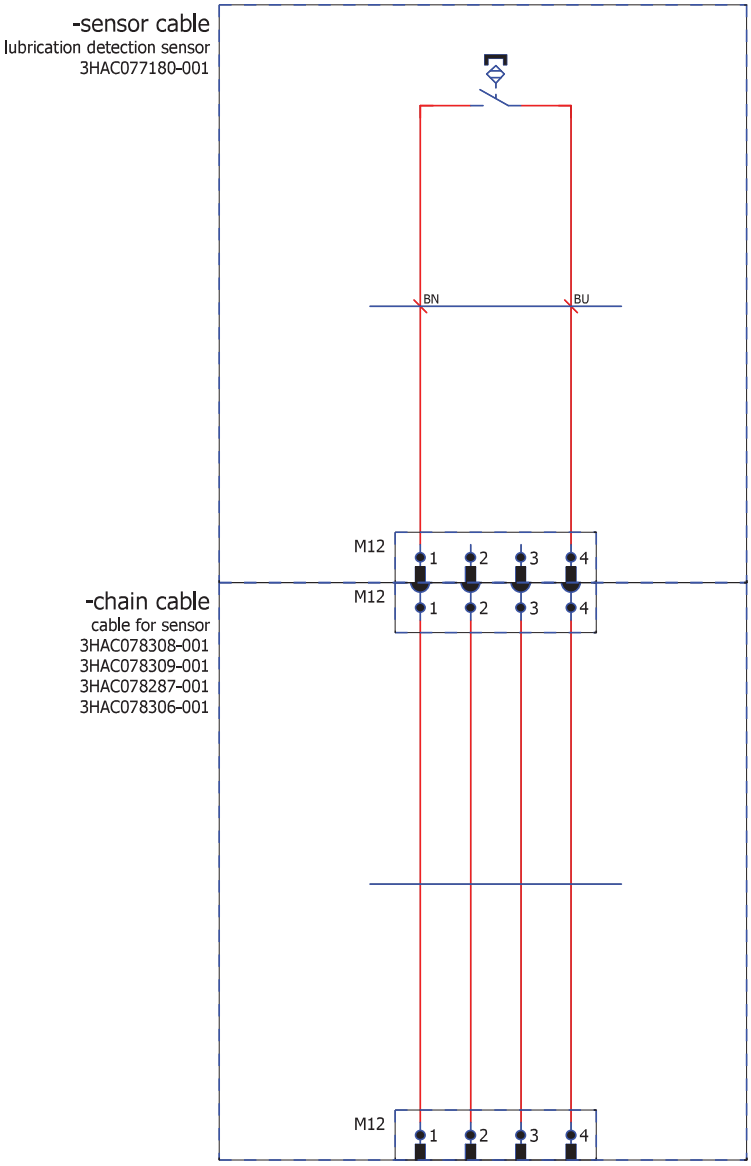
Pos	Description
A	Lubrication pump
B	Polyamide tube 4x6
C	Bulkhead union for pipe dia 8
D	Polyamide tube 6x8
E	Male stud elbow (white brass) D8 G1/4
F	Male stud elbow (white brass) D6 G1/8
G	Male stud straight (white brass) D6 G1/8
H	Y fitting D6-D6
I	Inline fitting-D6
J	Felt gear set
K	Grease package 240 CC
L	Lubrication sensor cable
M	Cable: from Memolub EPS to brake release box

Continues on next page

1.1 About the IRT 510

Continued

Circuit diagram for Lubrication sensor cable



xx2400000998

1.2 Standards

1.2.1 Applicable standards

General

The product is compliant with ISO 10218-1:2011, *Robots for industrial environments - Safety requirements - Part 1 Robots*, and applicable parts in the normative references, as referred to from ISO 10218-1:2011. In case of deviation from ISO 10218-1:2011, these are listed in the declaration of incorporation. The declaration of incorporation is part of the delivery.

Robot standards

Standard	Description
ISO 9283	Manipulating industrial robots – Performance criteria and related test methods
ISO 9787	Robots and robotic devices – Coordinate systems and motion nomenclatures
ISO 9946	Manipulating industrial robots – Presentation of characteristics

Other standards used in design

Standard	Description
IEC 60204-1	Safety of machinery - Electrical equipment of machines - Part 1: General requirements, normative reference from ISO 10218-1
IEC 61000-6-2	Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity standard for industrial environments
IEC 61000-6-4	Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – Emission standard for industrial environments
ISO 13849-1:2006	Safety of machinery - Safety related parts of control systems - Part 1: General principles for design, normative reference from ISO 10218-1

1.3 Technical data for IRT 510

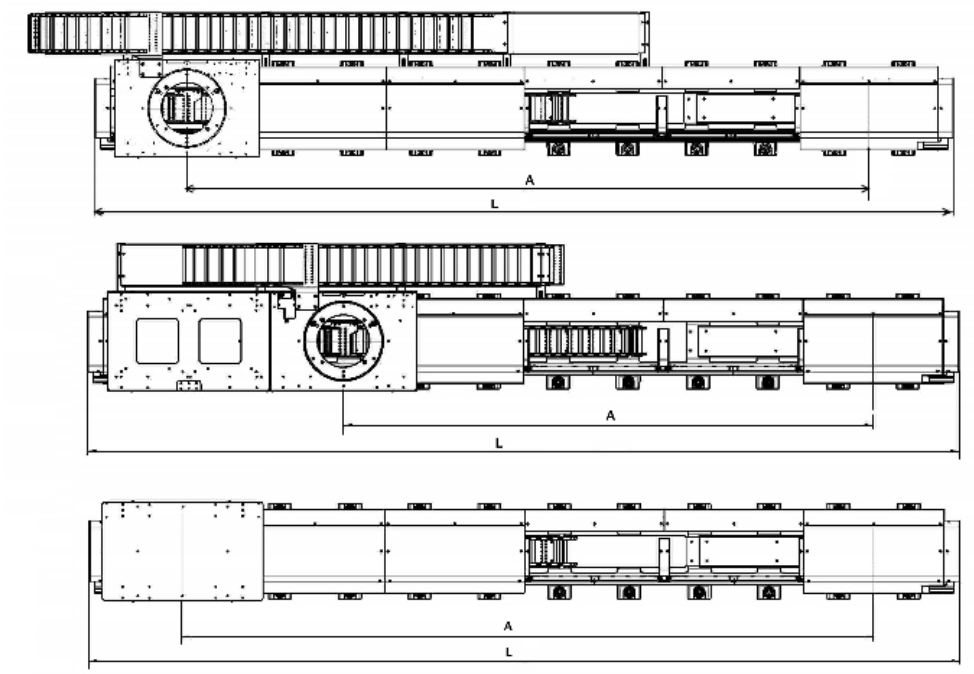
Travel length

The travel length of the IRT 510 track motion varies based on the carriage type and carriage quantity.

Carriage type	Carriage quantity	Description	Travel length (m) [i]
Robot track	Single carriage	Robot	0.8 to 19.8 (in steps of 1 m)
	Single carriage	Robot with extra plate	1.7 to 18.7 (in steps of 1 m)
	Double carriages	Robot + Robot	1.6 to 18.6 (in steps of 1 m)
	Double carriages	Robot + Robot with extra plate	1.4 to 17.4 (in steps of 1 m)
	Double carriages	Robot with extra plate + Robot with extra plate	1.3 to 16.3 (in steps of 1 m)

[i] Travel length is the maximum distance that the carriage(s) can move.

Single carriage

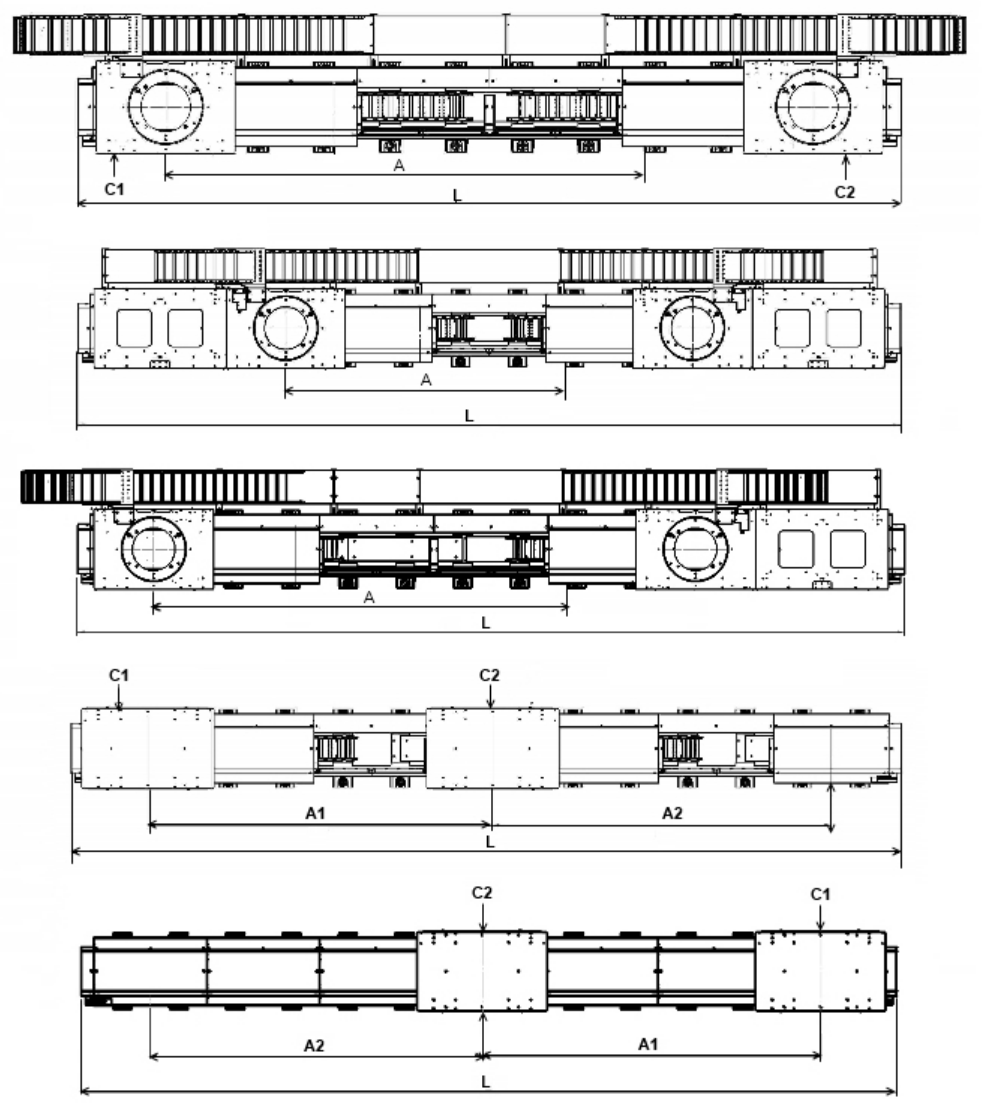


xx1500001397

Item	Description
L	Total length of linear guide = 230 + 1000 x N mm, in which N indicates the number of sections.
A	Travel length (in mm)

Continues on next page

Double carriages



xx1500001396

Item	Description
L	Total length of linear guide = 230 + 1000 x N mm, in which N indicates the number of sections.
A	Travel length (in mm) of one carriage on the robot track Note: The two carriages on the robot track have the same travel length.
A1	Travel length (in mm) of carriage 1 on the transfer track
A2	Travel length (in mm) of carriage 2 on the transfer track
C1	Carriage 1 For robot track, this carriage is always in standard mounting. For transfer track, refer to *Mounting of manipulator on the track on page 34* to acquire the mounting direction, standard or mirrored, of the carriage.

Continues on next page

Item	Description
C2	Carriage 2 For robot track, this carriage is always in mirrored mounting. For transfer track, refer to *Mounting of manipulator on the track on page 34* to acquire the mounting direction, standard or mirrored, of the carriage.

Required space for track installation

Note

The following tables only provide the space that the track motion itself requires. There is possibilities that additional spaces are required at the ends of the track motion at the installation site. In this case, add spaces as required.

Formula for required space

Required space for the track is calculated using the following formula:

Required space (mm) = 230 + (1000 x N)

In which, N indicates the number of sections.

Required space for installation of single carriage track - without external cable chain

The following table describes the required spaces for the installation of the tracks in different travel lengths without the external cable chain.

Travel length (m) [i]		Sections (pcs)	Required space for installation (m) [ii] [iii]
Robot	Robot with extra plate	Value of N	
0.8	N/A	2	2.23
1.8	N/A	3	3.23
2.8	1.7	4	4.23
3.8	2.7	5	5.23
4.8	3.7	6	6.23
5.8	4.7	7	7.23
6.8	5.7	8	8.23
7.8	6.7	9	9.23
8.8	7.7	10	10.23
9.8	8.7	11	11.23
10.8	9.7	12	12.23
11.8	10.7	13	13.23
12.8	11.7	14	14.23
13.8	12.7	15	15.23
14.8	13.7	16	16.23
15.8	14.7	17	17.23
16.8	15.7	18	18.23
17.8	16.7	19	19.23

Continues on next page

Travel length (m) [i]		Sections (pcs)	Required space for installation (m) [ii] [iii]
Robot	Robot with extra plate	Value of N	
18.8	17.7	20	20.23
19.8	18.7	21	21.23

i The travel length is described in *Travel length on page 14*.
ii The measurement for the required space is valid when not using the external cable chain.
iii How to calculate the required space is described in *Formula for required space on page 16*.

Required space for installation of double carriage track - without external cable chain

The following table describes the required spaces for the installation of double carriage tracks in different travel lengths without the external cable chain.

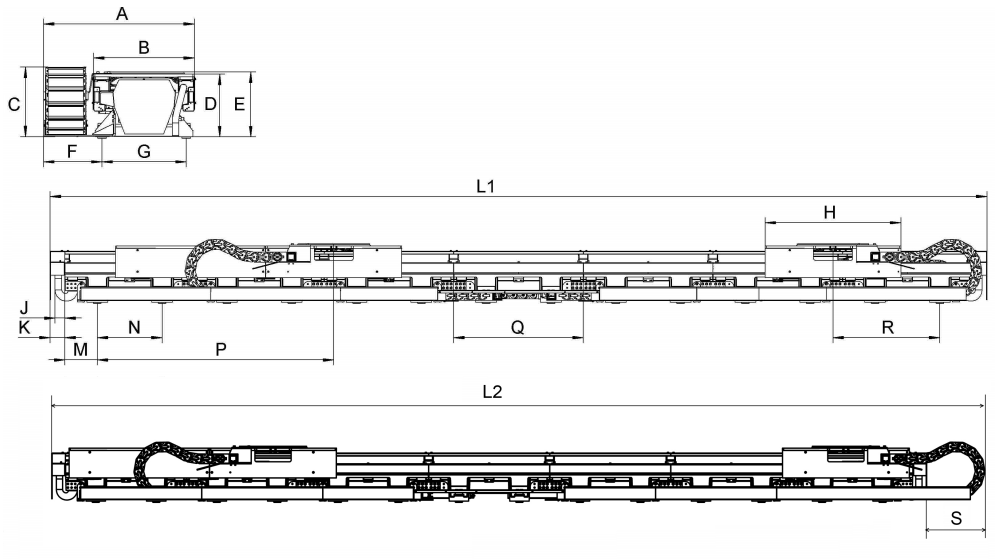
Travel length (m) [i]			Sections (pcs)	Required space for installation (m) [ii] [iii]
Robot + Robot	Robot + Robot with extra plate	Robot with extra plate + Robot with extra plate	Value of N	
1.6	N/A	N/A	4	4.23
2.6	1.4	N/A	5	5.23
3.6	2.4	1.3	6	6.23
4.6	3.4	2.3	7	7.23
5.6	4.4	3.3	8	8.23
6.6	5.4	4.3	9	9.23
7.6	6.4	5.3	10	10.23
8.6	7.4	6.3	11	11.23
9.6	8.4	7.3	12	12.23
10.6	9.4	8.3	13	13.23
11.6	10.4	9.3	14	14.23
12.6	11.4	10.3	15	15.23
13.6	12.4	11.3	16	16.23
14.8	13.4	12.3	17	17.23
15.6	14.4	13.3	18	18.23
16.6	15.4	14.3	19	19.23
17.6	16.4	15.3	20	20.23
18.6	17.4	16.3	21	21.23

i The travel length is described in *Travel length on page 14*.
ii The measurement for the required space is valid when not using the external cable chain.
iii How to calculate the required space is described in *Formula for required space on page 16*.

Continues on next page

1.3 Technical data for IRT 510
Continued

Dimensions



xx1400000180

Item	Description	Value (unit: mm)			
		Robot	Robot with extra plate	Transfer	External cable chain
A	Total width with external cable chain	1048			N/A
B	Total width	700			N/A
C	Height	N/A			490
D		N/A		435	N/A
E		450		N/A	N/A
F	Width from the outer edge of external cable chain to its nearby foot center	406			N/A
G	Width (foot print)	584			N/A
H	Carriage table length	1048	2209	1150	N/A
J	Distance between edges of the rack and mechanical stop	75.5			N/A
K	End cover	115			N/A
M	Distance between the rack edge and its nearest foot	250			N/A
N	Distance between two feet	500			N/A
Q	Section length	1000			N/A
P	Width from the center of first foot to the center of carriage table at calibration position	824.5	N/A	824.5	N/A
R		N/A	1824.5	N/A	N/A
S	Length of the external cable chain that exceeds the end of the track	N/A			0-490[i]

Continues on next page

Item	Description	Value (unit: mm)			
		Robot	Robot with extra plate	Transfer	External cable chain
L1	Total length of the track with internal cable chain	230 + (N x 1000) [ii] In which, N indicates the number of sections			N/A
L2	Total length of the track without external cable chain or with external cable chain but the chain does not exceed the end of the track [iii]	230 + (N x 1000) *[ii]* In which, N indicates the number of sections			N/A
	Total length of the track with one external cable chain exceeding the end of the track *[iii]*	720 + (N x 1000) *[ii]* In which, N indicates the number of sections			N/A
	Total length of the track with double external cable chains exceeding the end of the track *[iii]*	1210 + (N x 1000) *[ii]* In which, N indicates the number of sections			N/A

i For robot with extra plate, the external cable chain cannot exceed the end of the track.

ii The total length of IRBT 2005 depends on the quantity of modules, each of which is 1000 mm long. IRBT 2005 can be assembled with a minimum of 2 modules and a maximum of 110 modules.

iii For details about the track with or without external cable chain and how the external cable chain exceeds the end of the track, see *Double carriages on page 15*.

Measures of the carriage table

Robot carriage table

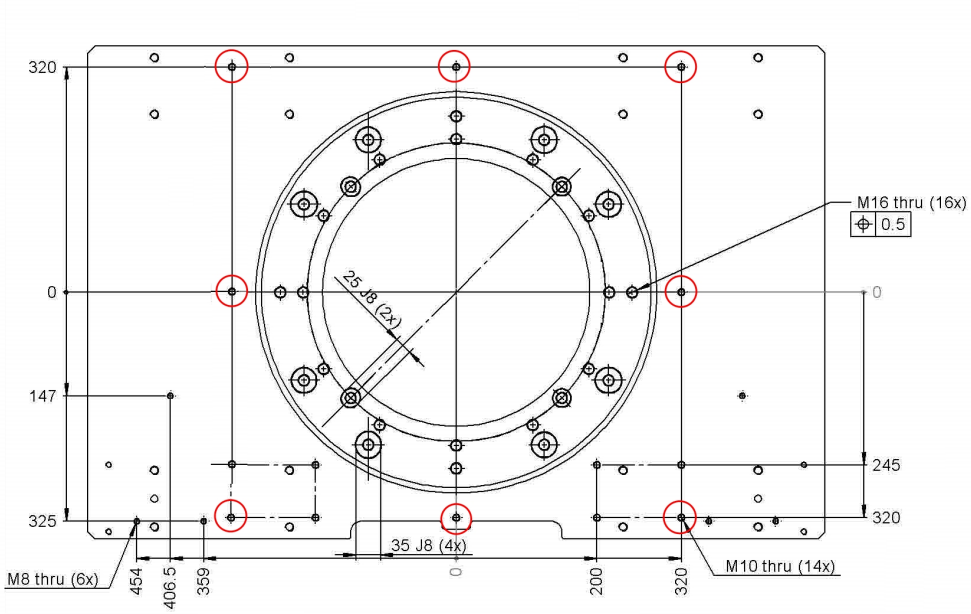
The robot carriage table is available to various robot models and the bolting patterns of the table match those of the robots. The robot carriage table is symmetrically designed to allow different manipulator mounting orientations (in line, 90 degrees, 180 degrees or 270 degrees) regardless of the table orientation.

Use the hole configuration for the manipulator when designing fixtures to be used on the track. The figures below show the dimensions of the robot carriage table in mm. Both tables on double carriage track are the same.

Continues on next page

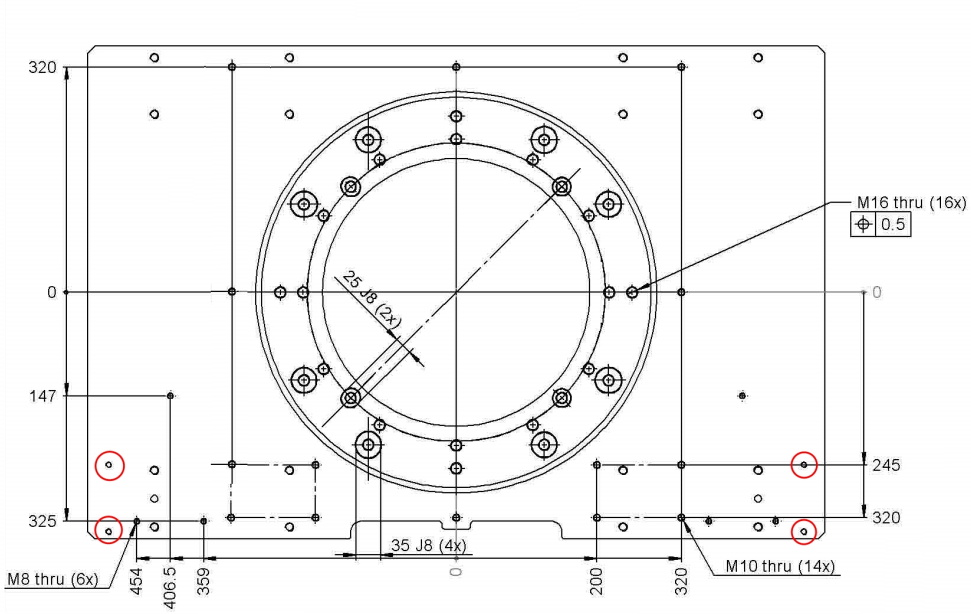
1.3 Technical data for IRT 510
Continued

Eight M10 holes circled in the following figure are available for fastening the fixture on the carriage.



xx1400000467

Two holes at each side of the carriage table, circled in the following figure, are available for ground cables.



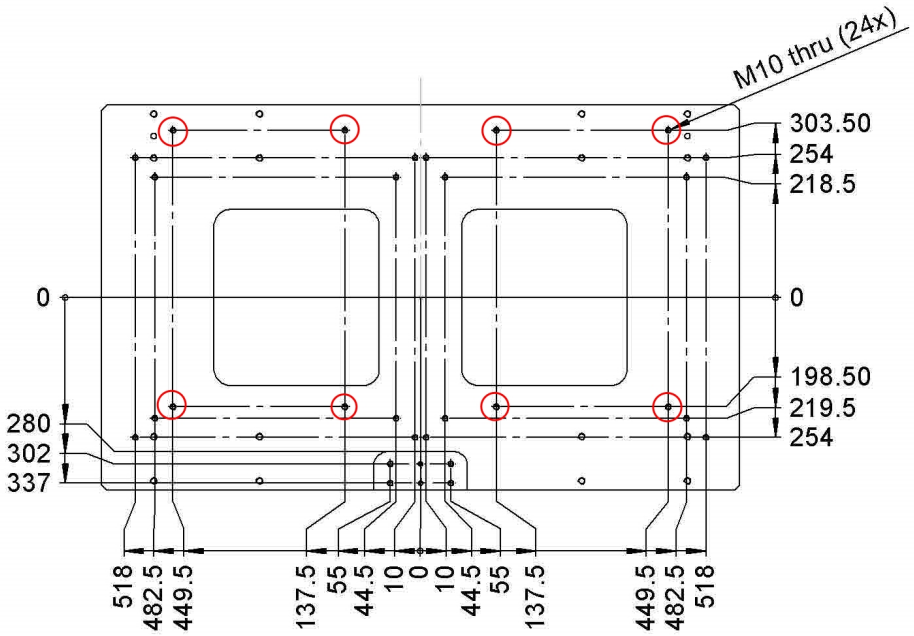
xx1500001610

Continues on next page

Extra plate

The figures below show the dimensions of the extra plate in mm. The holes in the figures are originally designed for fastening the arc welding equipment with a specific layout, but the holes can also be used for arc welding applications with other layouts and other equipment required to be fastened on the plate.

Eight M10 holes circled in the following figure are available for fastening the welder on the extra plate.

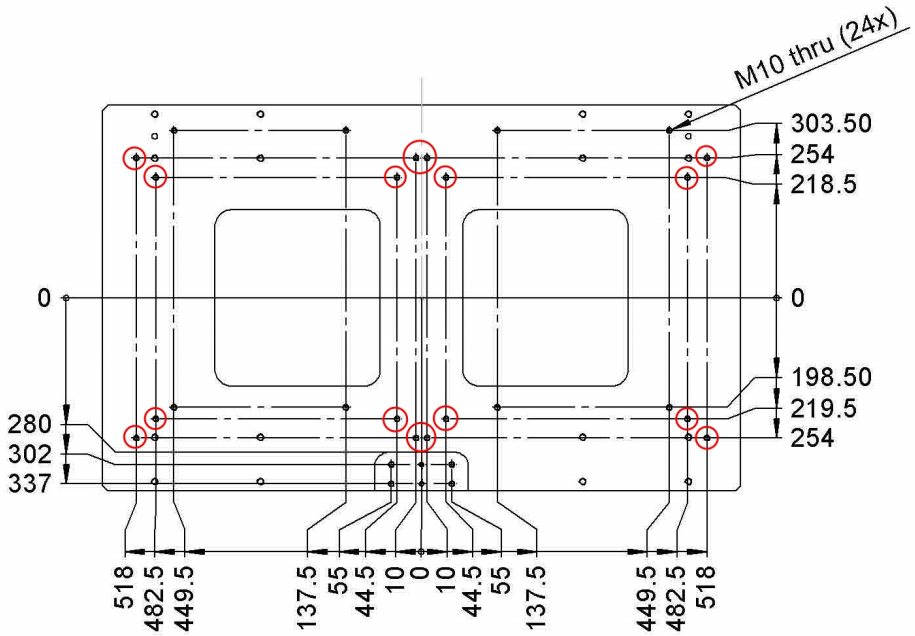


xx1500001607

Continues on next page

1.3 Technical data for IRT 510
Continued

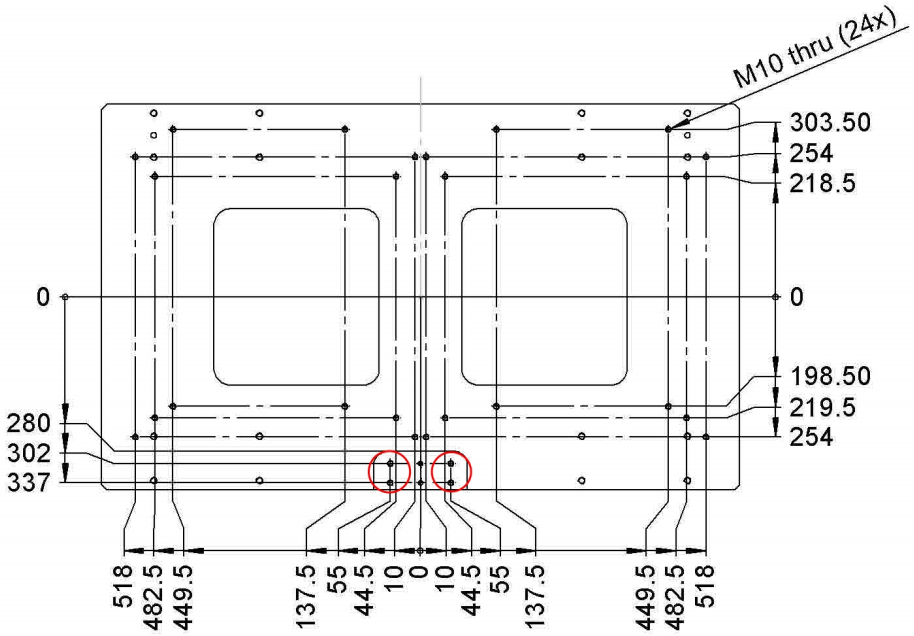
Sixteen M10 holes circled in the following figure are available for welder wires.



xx1500001613

Continues on next page

Four M10 holes circled in the following figure are available for fastening TSC adapter plate. (The adapter board for TSC installation is not included)

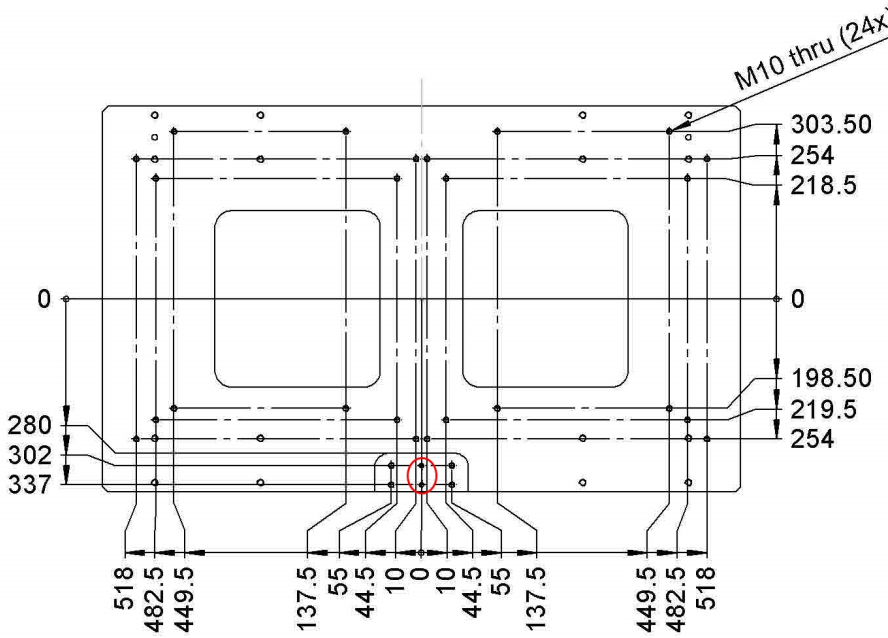


xx1500001614

Continues on next page

1.3 Technical data for IRT 510
Continued

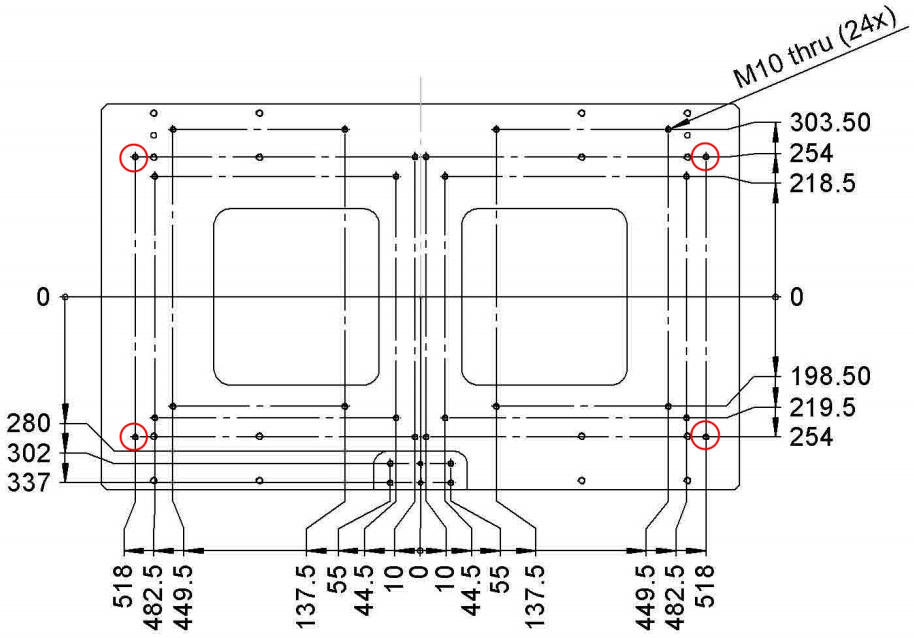
Two pin holes circled in the following figure are available for locating TSC adapter plate.(The adapter board for TSC installation is not included)



xx1500001615

Continues on next page

Two holes at each side of the extra plate, circled in the following figure, are available for ground cables.



xx1500001612

Weight of track motion and number of joined sections in transport

Formula for weight of track motion

Carriage quantity	Weight (Unit: kg; N indicates the number of sections)
Robot	W = 232 + 202 x N
Robot with extra plate	W = 375 + 202 x N
Transfer	W = 249 + 202 x N
Robot + Robot	W = 232 x 2 + 202 x N
Root + Robot with extra plate	W = (232 + 375) + 202 x N
Robot with extra plate + Robot with extra plate	W = 375 x 2 + 202 x N

Weight of single carriage track

Sections (pcs)	Joined sections in transport	Weight (kg)		
Value of N		Robot	Robot with extra plate	Transfer
2	1	636	779	653
3	1	838	981	855
4	1	1040	1183	1057
5	1	1242	1385	1259

Continues on next page

1.3 Technical data for IRT 510
Continued

Sections (pcs)	Joined sections in transport	Weight (kg)		
Value of N		Robot	Robot with extra plate	Transfer
6	1	1444	1587	1461
7	1	1646	1789	1663
8	1	1848	1991	1865
9	1	2050	2193	2067
10	2	2252	2395	2269
11	2	2454	2597	2471
12	2	2656	2799	2673
13	2	2858	3001	2875
14	2	3060	3203	3077
15	2	3262	3405	3279
16	2	3464	3607	3481
17	2	3666	3809	3683
18	3	3868	4011	3885
19	3	4070	4213	4087
20	3	4272	4415	4289
21	3	4474	4617	4491

Weight of double carriage track

Sections (pcs)	Joined sections in transport	Weight (kg)			
Value of N		Robot + Robot	Robot + Robot with extra plate	Robot with extra plate + Robot with extra plate	Transfer + Transfer
4	1	1272	1415	1558	1306
5	1	1474	1617	1760	1508
6	1	1676	1819	1962	1710
7	1	1878	2021	2164	1912
8	1	2080	2223	2366	2114
9	1	2282	2425	2568	2316
10	2	2484	2627	2770	2518
11	2	2686	2829	2972	2720
12	2	2888	3031	3174	2922
13	2	3090	3233	3376	3124
14	2	3292	3435	3578	3326
15	2	3494	3637	3780	3528
16	2	3696	3839	4184	3730
17	2	3898	4041	3982	3932
18	3	4100	4243	4386	4134

Continues on next page

Sections (pcs)	Joined sections in transport	Weight (kg)			
Value of N		Robot + Robot	Robot + Robot with extra plate	Robot with extra plate + Robot with extra plate	Transfer + Transfer
19	3	4302	4445	4588	4336
20	3	4504	4647	4790	4538
21	3	4706	4849	4992	4740

Weight of pedestal

Pedestal height (mm)[i]	Weight (kg)
250	70
500	95
750	165
1000	190

[i] Heights 500, 750 and 1000 are unavailable for IRB 4600.

Airborne noise level

The sound pressure level outside the working space is less than 76 dB (A) / 1 m.

Power consumption at maximum load

Type	Description
Track	1.63 KW [i]
Robot	Within specification for respective robot.

[i] The track power consumption is measured on the condition of IRT 510 with a largest supported robot, that is, IRB 4600-60/2.05.

The actual power consumption may vary according to the actual installed robot and site conditions.

A power consumption measurement of a track with robot could be done with a simulated cycle in RobotStudio.

1.4 Installation

1.4.1 Introduction

General

The IRT 510 track motion is intended for floor mounting. Detailed information regarding mechanical installation can be found in the Product Manual.

Maximum load

The maximum load for different types of IRT 510:

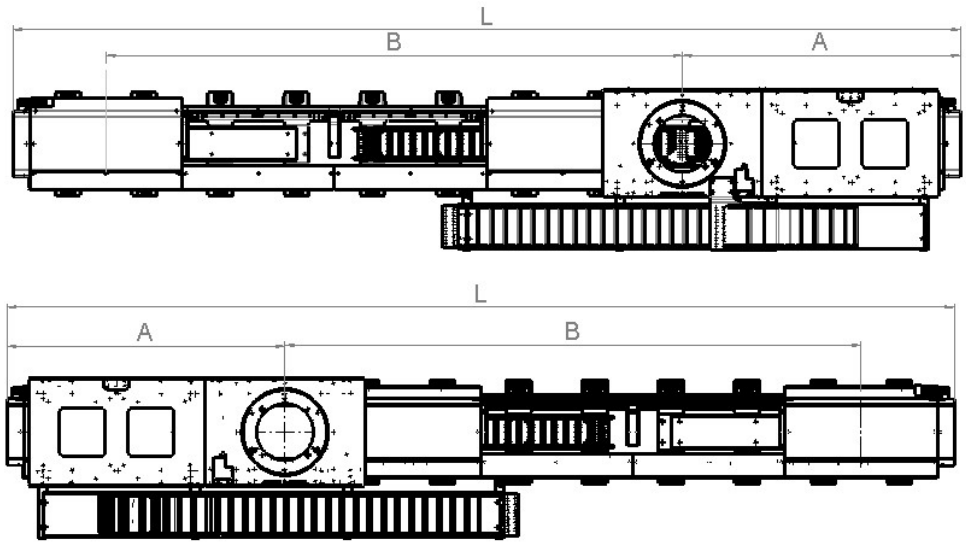
Type	Permitted load/carriage [i]
Robot track	Weight of IRB payload + robot pedestal + 50 kg (Max. 1.2 tons total)

[i] Maximum payload included. For the pedestal weight, refer to *Weight of pedestal on page 27*.

Robot payload is specified in the Product Specification for the robot.

Installation of standard and mirrored track

Below are an example of installed mirrored and standard IRT 510 track.



xx1400002687

Pos	Description
L	Total track length with external cable chain
A	1/2 x Inner length of the carriage (from the outward edge of one carriage to the opposite edge).
B	Travel length (in mm)

1.4.2 Operating requirements

Protection standards

Standard Track Motion IP65 for mechanical parts and main electrical connections.

Explosive environments

The track motion cannot be located or operated in an explosive environment.

Ambient temperature

Description	Standard/Option	Temperature
Track motion during operation	Standard	+5°C[i] (41°F) to + 50°C (122°F)
For the controller	Standard/Option	See the *Product specification - OmniCore V line*.

[i] At low environmental temperature < 10° C is, as with any other machine, a warm-up phase recommended to be run with the robot. Otherwise there is a risk that the robot stops or run with lower performance due to temperature dependent oil- and grease viscosity.

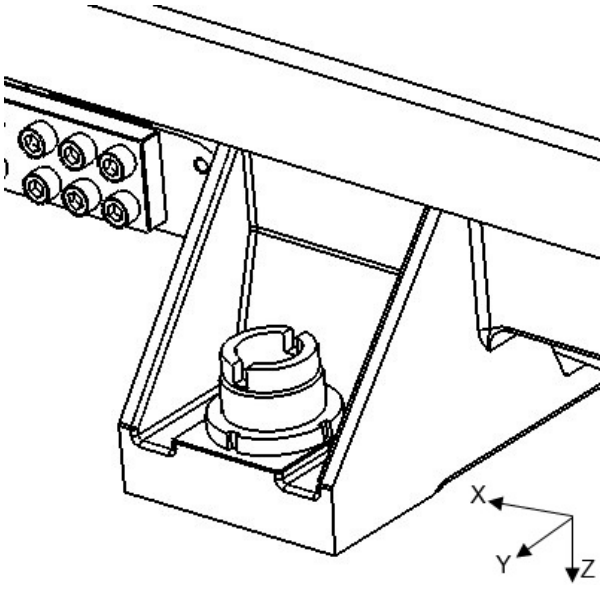
Relative humidity

Description	Relative humidity
Complete track during transportation and storage	Max. 95% at constant temperature
Complete track during operation	Max. 95% at constant temperature

Continues on next page

Forces

Maximum floor loads in relation to the base coordination system are indicated per each foot of the section, see the following figure.



xx1400000039

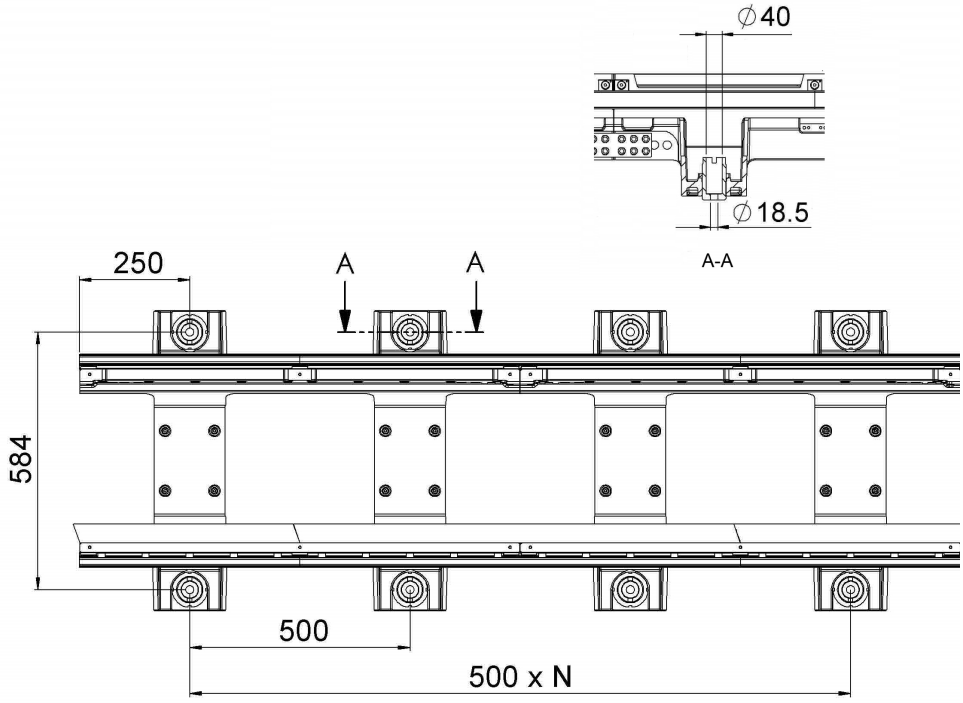
Robot	Endurance load in operation (kN)		Max. load at emergency stop (kN)	
	Fxy	Fz	Fxy	Fz
IRB 1600 without pedestal	±0.75	1.25±2.25	±1.75	2.0±4.0
IRB 1600 with 1000 mm pedestal	±0.75	2.5±4.5	±1.75	3.0±9.0
IRB 2600 without pedestal	±1.5	2.5±4.0	±3.5	3.0±7.0
IRB 2600 with 1000 mm pedestal	±1.5	3.0±5.5	±3.5	3.0±11.0
IRB 4600 without pedestal	±1.5	3.0±7.0	±3.5	3.0±14.5
IRB 4600 with 250 mm pedestal	±1.5	3.0±7.0	±3.5	3.0±15.0

Note

If doing fatigure calculations with combined tension (Fz) and shear loads (Fxy), the shear loads (Fxy) are allowed to be reduced with a factor 0.7.

1.4.3 Hole configuration

Dimension



xx1400001434

The table describes the value of N in the figure above with different travel lengths.

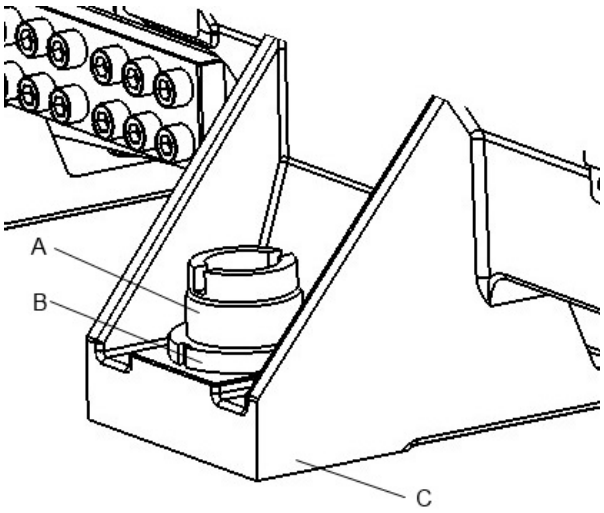
Travel length	Total length of the stand	Quantity N
2.8 / 1.6 m	4 m	4
3.8 / 2.6 m	5 m	5
4.8 / 3.6 m	6 m	6
etc.		

Continues on next page

1.4.3 Hole configuration
Continued

Hole configuration

The stands have leveling screws for adjusting the level of the track.



xx1400000649

Item	Art.	Art. No.	Note
A	Lifting threaded block M60x2,00	3HAW108201422	Leveling screw
B	Slotted nut KM12 for leveling screw	3HAWC100857	Fitting nut
C	-	-	Stand

Screws for fastening track to base

Attachment screws are not provided on delivery. Following table lists the recommended specification for the attachment screws. Users need to prepare the corresponding screws according to the actual application.

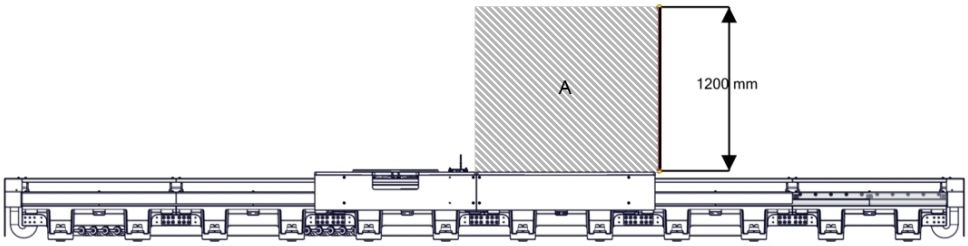
Foundation condition[i]	Recommended screw/washer specification
Steel structure	Screw: M16x50, ISO 4762, class 12.9 Washer: M16, DIN6796 Tightening torque: 300 Nm
Concrete floor	Screw: M16x190 (HAS 5.8, Hilti), valid length no less than 125 mm Tightening torque: 80 Nm

i The type and dimension of screws depend on the foundation conditions. See description for maximum floor loads in *Forces*.

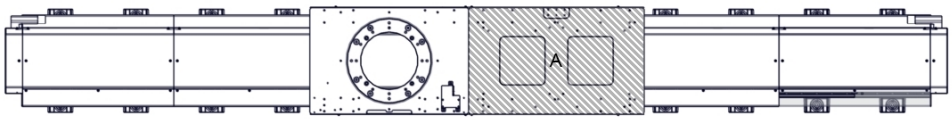
1.5 Fitting of equipment

General

Extra loads can be mounted on to the track carriages. Definitions of load area and permitted load are shown in figures below. The center of gravity of the extra load shall be within the marked load areas. The track is supplied with holes for fitting of extra equipment. (See *Measures of the carriage table on page 19*).



xx1500001618



xx1500001619

Track type	Load area	Max load
Robot track, extra plate	A	700 kg

1.6 Mounting of manipulator on the track

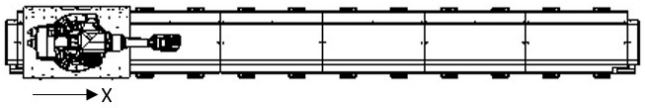
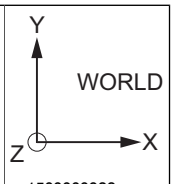
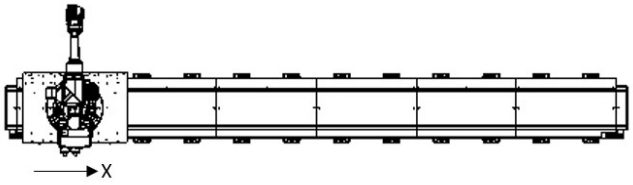
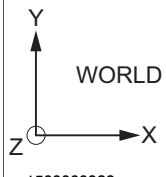
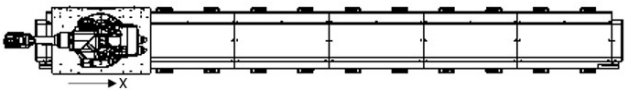
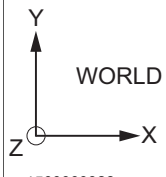
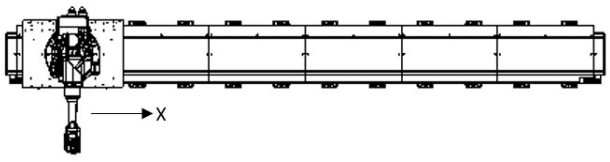
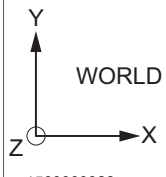
General

The manipulator can be mounted in four directions, 0 degrees (in line), 90 degrees, 180 degrees, and 270 degrees with the cable chain standard or mirrored. Other mounting orientations are not allowed. The world coordinate system is shown in the following figures.

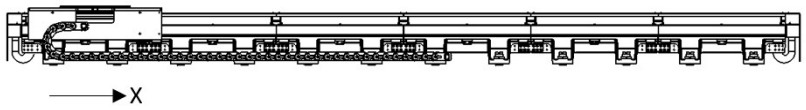
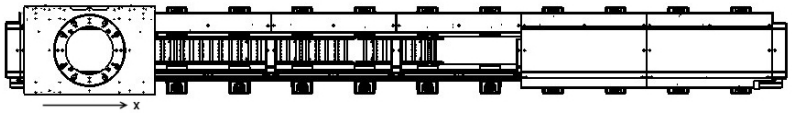
Robot orientation with standard cable chain

Following figures illustrate the manipulator mounted in different directions with the standard cable chain.

The positive X direction is the positive motion direction of the track. The positive Y direction is the direction of the cabling outlet on the carriage.

0 degrees (in line)	 xx1400001911	 xx1500000928
+90 degrees	 xx1400001912	 xx1500000928
+180 degrees	 xx1400001909	 xx1500000928
+270 degrees	 xx1400001910	 xx1500000928

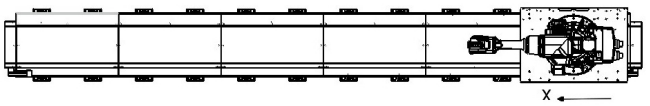
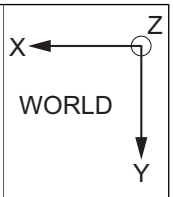
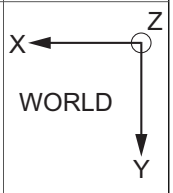
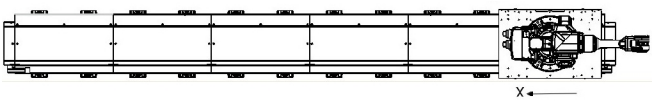
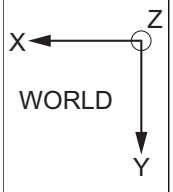
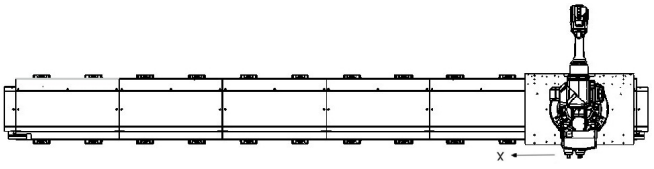
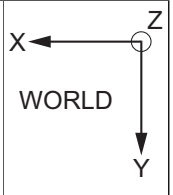
Continues on next page

Standard cable chain	Side view:  xx1500000597 Top view:  xx1400001952

Robot orientation with mirrored cable chain

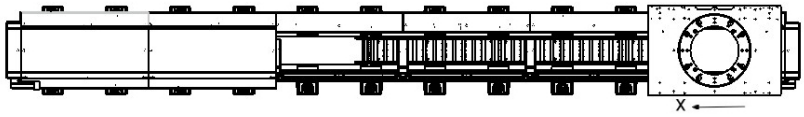
Following figures illustrate the manipulator mounted in different directions with the mirrored cable chain.

The positive X direction is the positive motion direction of the track. The positive Y direction is the opposite direction of the cabling outlet on the carriage.

0 degrees (in line)	 xx1500000631	 xx1500000927
+90 degrees	 xx1500000632	 xx1500000927
+180 degrees	 xx1500000633	 xx1500000927
+270 degrees	 xx1500000634	 xx1500000927

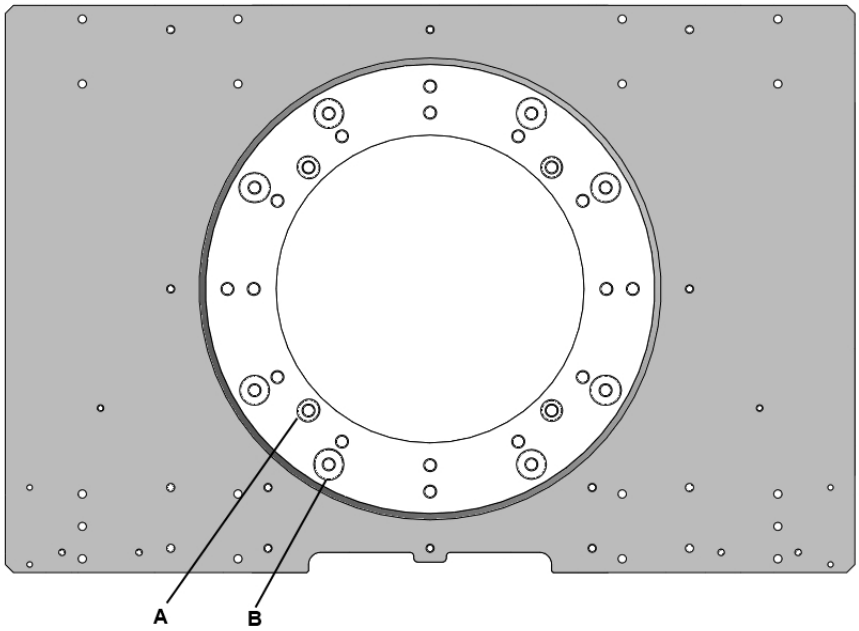
Continues on next page

1.6 Mounting of manipulator on the track
Continued

Mirrored cable chain	Side view:  xx1500000630 Top view:  xx1400001951

Assembly position

The following figure shows guide bushing assembly positions on the carriage table of the robot track.



xx1400002680

A	Guide bushing fitting hole for IRB 1520
B	Guide bushing fitting hole for IRB 1600/2600/4600

1.7 Motion

1.7.1 Track type

Overview

The IRT 510 track motion can be categorized into three main types based on the carriage type and carriage quantity, that is, single carriage for robot, double carriages for robot. Travel length varies according to track motion types. For the travel length, see *Travel length on page 14*.

1.7.2 Performance

General

The following table describes the dynamic performances of the IRT 510.

IRT 510	Performance
Pose repeatability (mm)	≤ ± 0.05
Max. acceleration (m/s^2)	≤ 4 [i]

[i] The maximum acceleration is limited to 4 m/s^2; however, under the maximum payload 1.2 tons, a maximum acceleration of 2.5 m/s^2 can be achieved.

1.7.3 Velocity

Maximum axis speeds

The maximum axis speed of IRT 510 is 2 m/s.

1.7.4 Positioning time

Positioning time at different travel length

The following table describes the typical positioning times.

Load	Travel length (m)									
	1	2	3	4	5	6	7	8	9	10
Max payload (1.2 tons)	1.42 s[i]	1.95 s	2.48 s	2.96 s	3.46 s	3.96 s	4.47 s	4.95 s	5.47 s	5.94 s
< 600 kg payload	1.15 s	1.65 s	2.15 s	2.66 s	3.16 s	3.66 s	4.14 s	4.65 s	5.14 s	5.65 s

[i] The distance is too short for the carriage to reach its maximum speed.

1.7.5 Stopping distance/time

General

The following table describes the stopping distances and time.

Category 0	Stopping time (s)	0.379
	Distance (m)	0.460
Category 1	Stopping time (s)	0.459
	Distance (m)	0.600
Main Power failure	Distance (m)	0.488

1.7.6 Thermal performance

General

The IRT 510 is designed for intermittent operation. It is not meant to continuously accelerate/decelerate. The latter can result in overheating of the track motor which will lead to a stop of the system or possibly a motor failure due to overheating.
Contact your local ABB Robotics office for advice in case of applications with high duty cycles.

1.8 Cabling

1.8.1 Overview

Cable delivery

The IRT 510 is driven by OmniCore V250XT/V400XT controller through a set of floor cables and flexible cables. Each carriage is equipped with an internal cable chain as standard, which carries the flexible cables under the castings, thus protecting the cables from a harsh environment.

The standard equipment includes the following flexible cables:

- IRT 510 motor power cable
- IRT 510 cable grounding

In option, additional cables can be added:

- Manipulator power cable
- Manipulator signal cable
- Other cables: CP/CS devicenet, CP/CS Parallel, EtherNet/ProfiNet, cable grounding, welder power supply
- Hoses for air

Connection overview

For robot track, connectors that connect cable harness from the carriage (flexible cables) to cable harness from the controller (floor cables) are freely positioned on the ground. And it needs fix bracket for brake release box on the track motor floor cable.

CAUTION

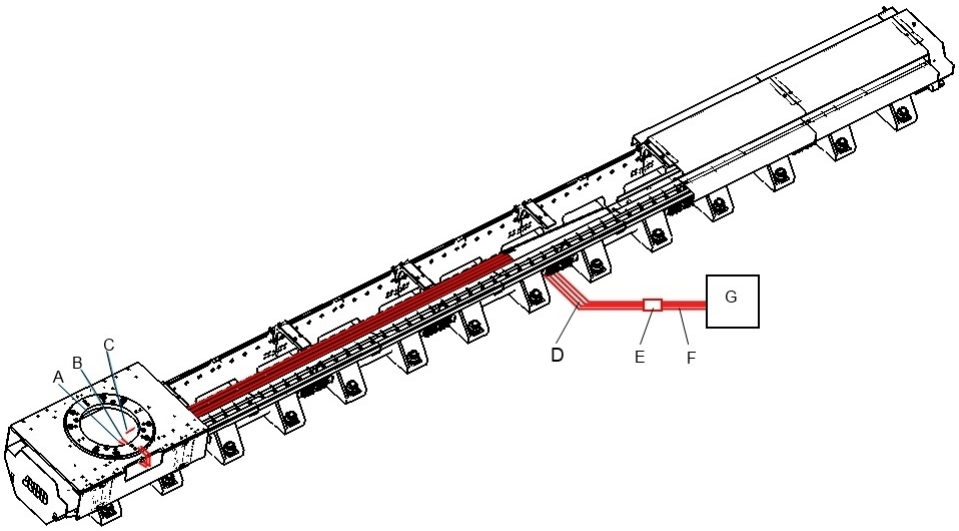
The floor cables must be grounded based on the requirements described in section *Circuit diagrams* in *Circuit diagram - IRT 510*.

Single-stranded copper wires with a diameter larger than 7 mm are recommended to be used as customer grounding cables, which will connect the cable grounding of the track.

Continues on next page

1.8.1 Overview
Continued

The following figure illustrates connection based on the robot track.



xx1400001286

Pos	Description
A	Robot or conveyor power cable
B	Signal cables
C	power cables
D	Flexible cable harness from the carriage • Power cables for track, robot or etc. (A, C, etc.) • Motor, manipulator signal cables (B) • Other cables: cable grounding and hoses etc.
E	Connectors connecting cable harness from the carriage and cable harness from the controller.
F	Floor cables from the controller • Power cable, available for OmniCore controller • Signal cable, available for OmniCore controller
G	Controller, available for OmniCore controller

Note

Cabling between the controller and the track should thread cable channels on the floor.

1.8.2 Floor cables

Floor cables

For detailed cable length and other spare part information about floor cables, see *Product manual - IRT 510*.

1.8.3 Flexible cables

Diameter and weight

The internal cable chain usually contains the motor power cable and resolver cables, robot cable and extra plate cable, which can be referred to the following table.

If necessary, an additional cable chain can be used. See *External cable chain on page 50*.

Cable reference No.	Description	Cable diameter (mm)	Cable weight (kg/m)
3HAC088222	IRT 510 motor power cable from controller	14.5	0.401
3HAC046926[i]	IRT 510 motor resolver cable from IRB 1520	7.1	0.074
3HAC039602	IRT 510 motor resolver cable from IRB 1600/2600/4600	7.1	0.074
3HAC046920	IRB 1520 movement power cable	16.4	0.55
3HAC046921	IRB 1600 movement power cable	15.4 mm + 15.4 mm	1.06
3HAC046922	Customer cable, CP/CS (for IRB 1600)	9.9 mm + 12.2 mm	0.25
3HAC029834	IRB 1520/1600/2600/4600 movement resolver cable	8.7	0.1
3HAC046924	IRB 2600/4600 movement power cable	15.4 mm + 15.4 mm	1.06
3HEA801277	CP/CS Parallel (for IRB 2600 and IRB 4600)	13.9 mm + 9.5 mm	0.7
3HEA801279	CP/CS DeviceNet	14 mm + 13 mm + 9 mm	1.0
3HAC032951	ProfiNet cable flex (for IRB 2600 and IRB 4600)	n/a	n/a
3HAC046927	Cable grounding	7	0.2
3HAC046928	Arc welding, DeviceNet cable	8.76	0.1
3HAC046929	Arc welding, Welder Power cable	15	0.4
3HAC050223	Arc welding, Welding Current cable	Max. 15.5	0.665
3HAC046930	Arc welding, Gas Hose	11.6	0.051
3HAC046931	Arc welding, Air Hose	11.6	0.051
3HAC046932	Arc welding, TSC cable	7.6	0.11

[i] The exact reference No. depends on the cable length.

Continues on next page

Other specifications

The following table describes the available types of wires/media.

Type	At terminals in cabinet	At Connection point, base/extra plate	Cable/part area	Allowed capacity
Customer cable, CP/CS, (for IRB 1600)				
Customer Power (CP)				
Utility Power	12	12	0.8 mm^2	300 V RMS, (-20°C to +80°C)
Customer Signals (CS)				
Signals twisted pair	11 x 2 + 1	11 x 2 + 1	0.23 mm^2	300 V RMS, (-20°C to +80°C)
CP/CS Parallel (for IRB 2600/4600)				
Customer Power (CP)				
Utility Power	4	4	1.0 mm^2	300/500 V RMS, (-40°C to +90°C)
Protective earth	1	1	1.0 mm^2	300/500 V RMS, (-40°C to +90°C)
Customer Signals (CS)	10 x 2	10 x 2		
Signals twisted pair	5 x 2	5 x 2	0.25 mm^2	50 V AC RMS, (-5°C to +90°C)
Signals twisted pair and separate shielded	8	8 (4 x 2)	0.25 mm^2	50 V AC RMS, (-5°C to +90°C)
CP/CS DeviceNet (for IRB 2600/4600)				
Customer Power (CP)				
Utility Power	4	4	1.0 mm^2	600 V, (-40°C to +80°C)
Protective earth	1	1	1.0 mm^2	600 V, (-40°C to +80°C)
Customer Signals (CS)				
Signals twisted pair	3 x 2	3 x 2	0.25 mm^2	450 V, (-40°C to +80°C)
Signals twisted pair	9 x 2	9 x 2	0.25 mm^2	450 V, (-40°C to +80°C)
Signals twisted pair and separate shielded	5 x 2	5 x 2	0.25 mm^2	450 V, (-40°C to +80°C)
Customer bus (CAN)			0.25 mm^2	

Continues on next page

1.8.3 Flexible cables
Continued

Type	At terminals in cabinet	At Connection point, base/extra plate	Cable/part area	Allowed capacity
Bus signals	At bus board	1 x 2	AWG22	30 V, (-20°C to +80°C)
Bus signals	At bus board	1 x 2	AWG24	30 V, (-20°C to +80°C)
Customer Power (CP)				
Utility Power	4	4	1.0 mm^2	600 V, (-40°C to +80°C)
Protective earth	1	1	1.0 mm^2	600 V, (-40°C to +80°C)
Customer Signals (CS)				
Signals twisted pair and separate shielded	2 x 2	2 x 2	0.25 mm^2	450 V, (-40°C to +80°C)
Signals twisted pair	9 x 2 +1	9 x 2 +1	0.25 mm^2	450 V, (-40°C to +80°C)
Signals twisted pair and separate shielded	5 x 2	5x2	0.25 mm^2	450 V, (-40°C to +80°C)
Customer bus (InterBus)				
Bus signals	At bus board	2 x 2 +1	0.25 mm^2	Max 250 V, (-30°C to +70°C)
Media				
Air (CP/CS)		1	9 mm inner diameter	Max. air pressure 10 bar (-35°C to +60°C)
Welder Power cable (Arc Welding)				
Welder power cable		4	6.0 mm^2	450/750 V, (-5°C to +70°C)
Protective earth		1	6.0 mm^2	450/750 V, (-5°C to +70°C)
DeviceNet Power cable (Arc Welding)				
Bus signals	At bus board	1x2	AWG22	30 V, (-20°C to +80°C)
Bus signals	At bus board	1x2	AWG24	30 V, (-20°C to +80°C)
Welder Current cable (Arc Welding)				
Welding current cable		2	50 mm^2	600 V, 200 A RMS at 20°C
TSC Cable (Arc Welding)				

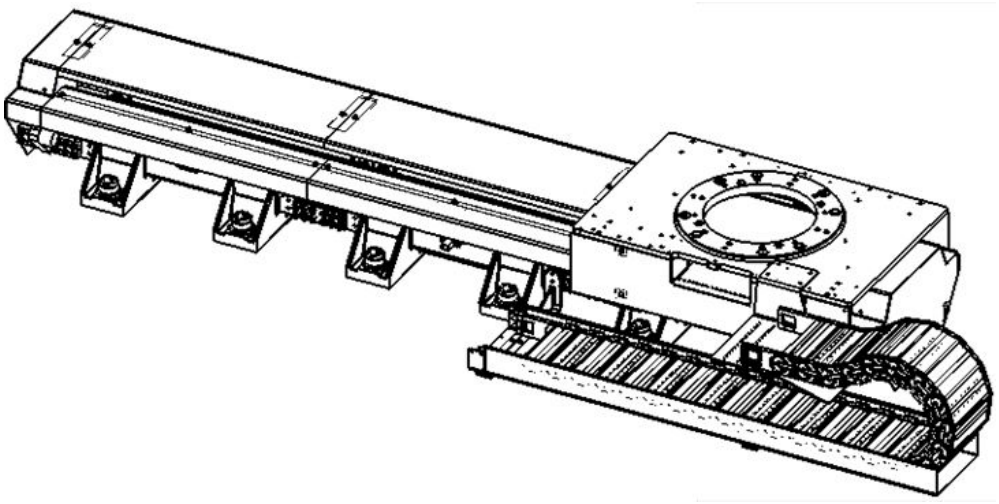
Continues on next page

Type	At terminals in cabinet	At Connection point, base/extra plate	Cable/part area	Allowed capacity
TSC Signals	11	11	0.5 mm^2	300 V, (-5°C to +70°C)
Media				
Gas/Air Hose		2	9 mm inner diameter	Max. air pressure 10 bar (-35°C to +60°C)

1.8.4 External cable chain

Overview

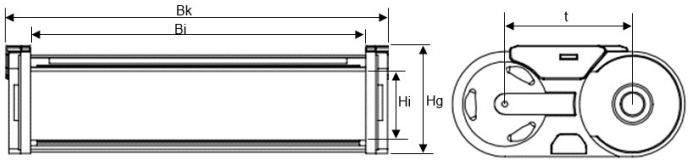
An external cable chain can be offered to fit additional customer cables and assembled in a complete housing for optimal protection.



xx1400001974

Specifications

Except the cable chain width, all other dimension specifications of the external cable chain are identical to those of the internal cable chain.



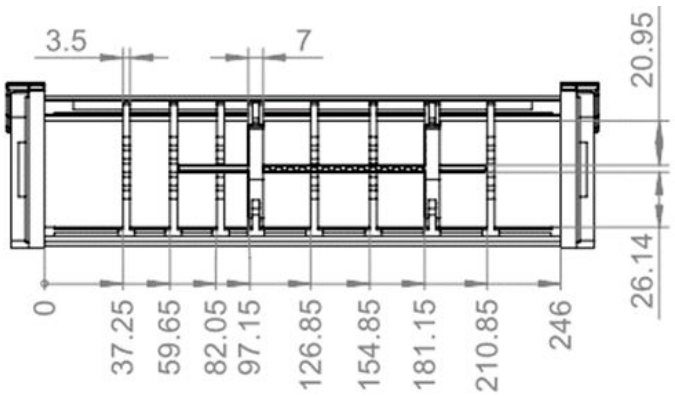
xx1400001975

Item	Value
Cable chain bend radius (mm)	200
Inner width Bi (mm)	246
External width Bk (mm)	282
Inner height Hi (mm)	52
External height Hg (mm)	78.5
t (Pitch) (mm)	91
Intrinsic chain weight (kg/m) [i]	1.5

i The track payload includes both the chain weight and the weight of additional cables or pipes used in the external cable chain.
Total weight of additional cables/pipes = Weight of the additional cables/pipes per meter x travel length.

Continues on next page

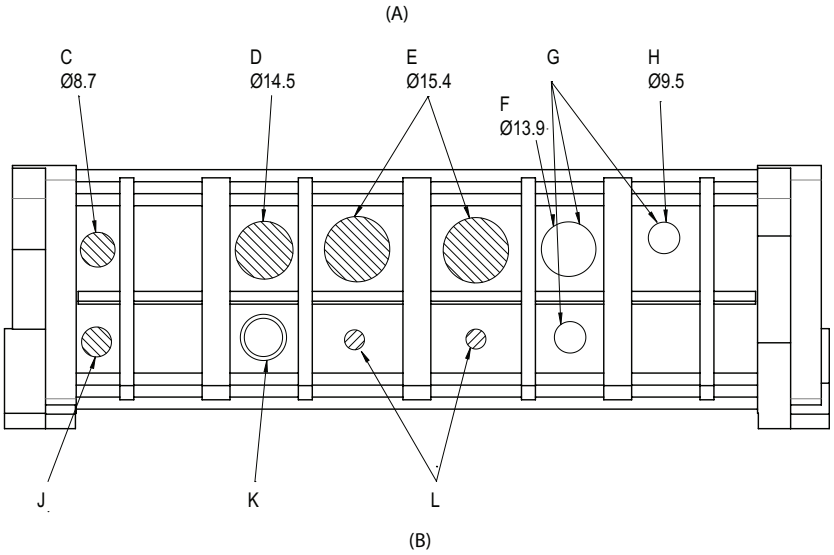
Within each cable, an external cable chain divider must be used every 8 links.



xx1400001976

1.8.5 Internal cable chain

Overview



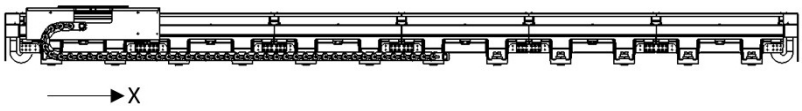
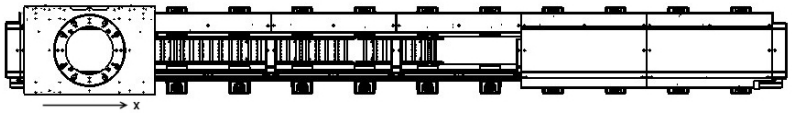
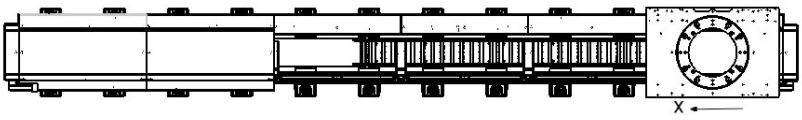
xx2400001006

A	Outer bend (view seen from movable end)
B	Inner bend (view seen from movable end)
C	Robot signal cable, 3HAC029834-XXX
D	Track power cable, 3HAC088222-XXX
E	Robot power cable, 3HAC046924-XXX
F	CP cable
G	Options: • CP/CS parallel, 3HEA801277-XXX • CP/CS DeviceNet, 3HEA801279-XXX • CP/CS EtherNet/ProfiNet, 3HAC032951-XXX
H	CS cable
J	Grounding cable
K	Option: Air hose CP/CS, 3HAC046923-XXX (available when option 4215-X or 4229-X is selected)
L	Option: Sensor for auto-lubrication, 3HAC078308-001 / 3HAC078287-001 / 3HAC078309-001 / 3HAC078306-001 (available when option 4216-1 or 4230-1 is selected)

1.8.6 Cable chain orientation

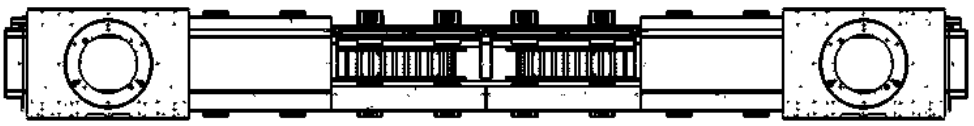
Overview

If required, and as an option, the internal and/or the external cable chains can be linked to the carriage symmetrically to the standard assembly.

Standard cable chain orientation	Side view:  xx1500000597 Top view:  xx1400001952
Mirrored cable chain orientation	Side view:  xx1500000630 Top view:  xx1400001951

Situation that requires mirrored assembly

The mirrored cable chain is required in the case of a double carriage to prevent the risk of chain collision:



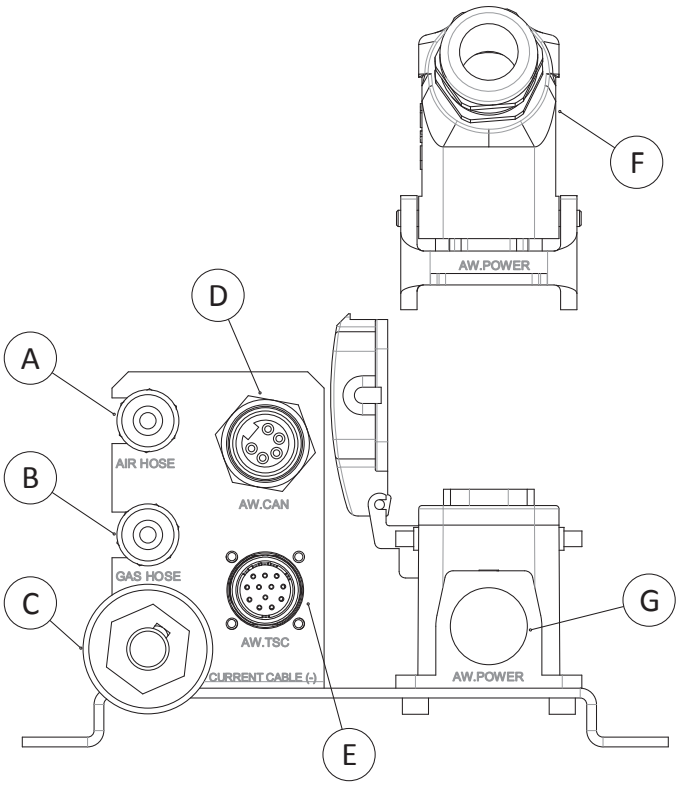
xx1400001977

1.9 Arc Welding connection

1.9.1 AW interfaces

Interface descriptions

The following interfaces are provided on the track carriage for cable connection when option 4212-X or 4226-X is selected.



xx1500003191

Pos	Interface	Description
A	AIR HOSE	Air hose for the torch and TSC
B	GAS HOSE	Gas hose for the torch
C	CURRENT CABLE (-)	Current cable (-) for the power source
D	AW.CAN	DeviceNet bus cable for the power source
E	AW.TSC	12-pin connector for the new generation TSC (available when Prepared for TSC option 1435-1 or 1448-1 is selected)
F	AW.POWER	AC connector reserved for customer's power source
G	AW.POWER	AC power connector from cable chain

Continues on next page

Interface pins

DeviceNet connection pins

The following table describes the pins of interface AW.CAN. For details, see *Circuit Diagram - IRT 510.*

Pin	Description
1	DRAIN
2	V+
3	V-
4	CAN_H
5	CAN_L

TSC connection pins

The following table describes the pins of interface AW.TSC. For details, see *Circuit Diagram - IRT 510.*

Pin	Description
1	Bulls eye input signals
2	0V
3	+24V
4	Cleaning finished input signals
5	Spare
6	0V
7	Cleaning output signals
8	Lubrication output signals
9	Clamped input signals
10	Cutter down input signals
11	Cutter up input signals
12	Low-level cleaning fluid input signal

Power connection pins

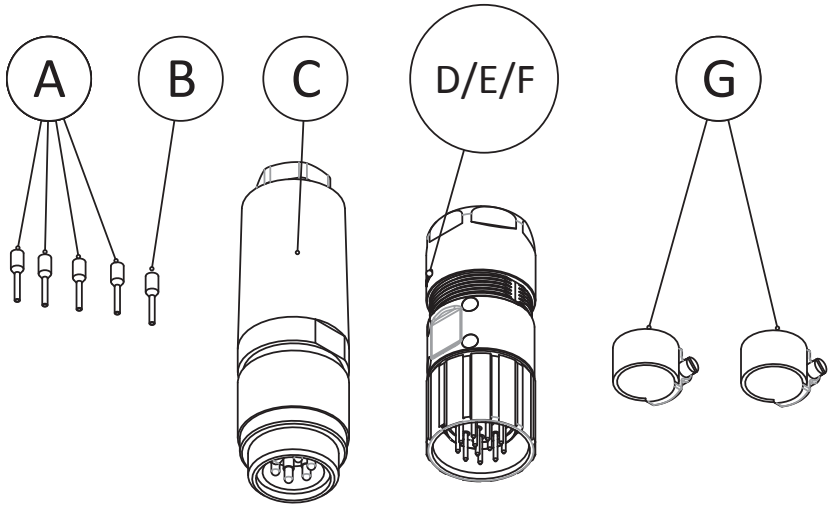
The following table describes the pins of interface AW.POWER. For details, see *Circuit Diagram - IRT 510.*

Pin	Description
1	R
2	S
3	T
4	N
5	Spare
6	Ground

1.9.2 Connection kits

With option 4212-1 or 4226-1

When option 4212-1 or 4226-1 is selected, a kit with connectors is offered and must be assembled by the customer. Assembled cables ending with these connectors will connect to the interfaces specified in *AW interfaces on page 54*.



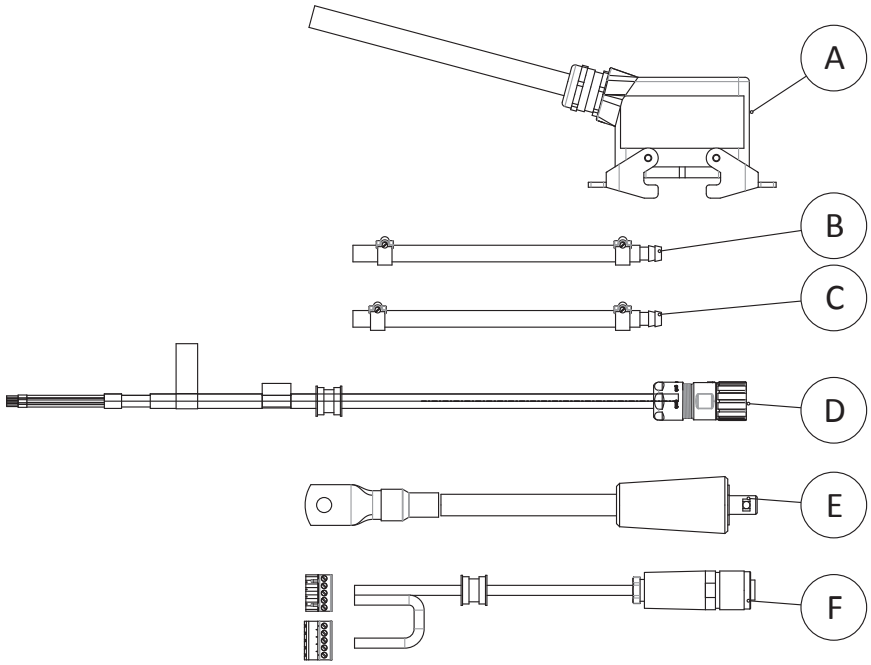
xx1600000037

Pos	Description	Used for connecting interface	Qty.	Article
A	End sleeve 0.25 mm^2	AW.CAN	4	Common article, buy locally
B	End sleeve 0.5 mm^2		1	Common article, buy locally
C	DeviceNet male connector		1	Lumberg, RSC 50/9
D	M23, Straight connector, female	AW.TSC	1	Hummel, 7.106.500.000
E	M23, Insert 12-pole pins		1	Hummel, 7.003.912.101
F	Crimp contacts, pin, 1 mm, 0.14-1 mm^2		12	Hummel, 7.010.901.001
G	Hose clamp D 13/7	AIR HOSE and GAS HOSE	2	Common article, buy locally

Continues on next page

With option 4213-X or 4227-X

When option 4213-X or 4227-X is selected, the following floor cables with connectors are offered.



xx1600000038

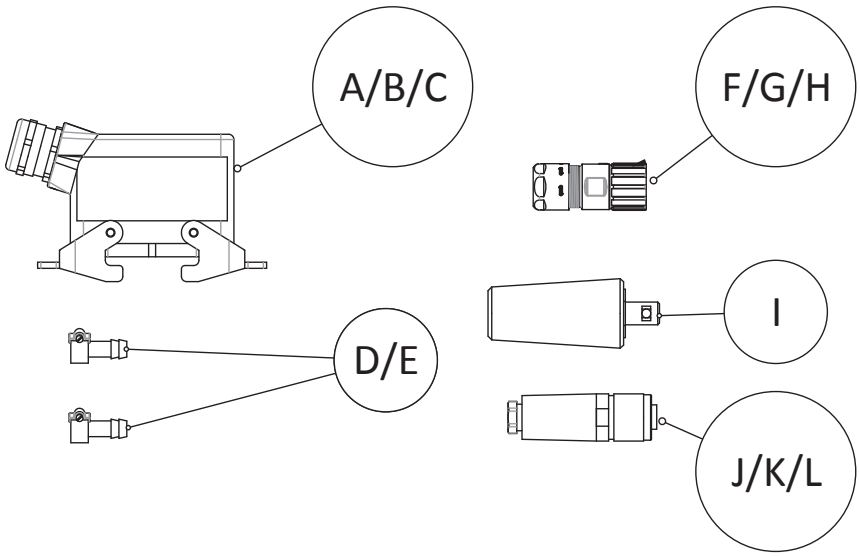
Pos	Description	Used for connecting interface	Qty.	Spare part number
A	AW welder power cable, floor	AW.POWER	1	7 m: 3HAC046935-001 15 m: 3HAC046935-002 22 m: 3HAC046935-003
B	AW gas hose, floor	GAS HOSE	1	7 m: 3HAC046936-001 15 m: 3HAC046936-002 22 m: 3HAC046936-003
C	AW air hose, floor	AIR HOSE	1	7 m: 3HAC046937-001 15 m: 3HAC046937-002 22 m: 3HAC046937-003
D	AW TSC cable, floor Required option 4211-1	AW.TSC	1	7 m: 3HAC046938-001 15 m: 3HAC046938-002 22 m: 3HAC046938-003

Continues on next page

1.9.2 Connection kits
Continued

Pos	Description	Used for connecting interface	Qty.	Spare part number
E	AW welding current cable. floor	AW.CURRENT(-)	1	7 m: 3HAC053948-001 15 m: 3HAC053948-002 22 m: 3HAC053948-003

If the option 4213-X or 4227-X is not selected, floor cables must be prepared by the customer, with the following detailed connector information as reference.



xx1600000039

Pos	Description	Used for connecting interface	Qty.	Article
A	Hoods: side entry 1xM25	AW.POWER	1	Harting, 19300161531
B	Female insert 400/690V 35A		1	Harting, 09310062701
C	Progress MS, M25		1	AGRO, 1060.25
D	Hose joint	AIR HOSE	2	ESAB, 365803004
E	Hose clamp D 13/7	GAS HOSE	2	Common article, buy locally
F	M23 Straight connector, female	AW.TSC	1	Hummel, 7.106.500.000
G	M23, Insert, 12-pole socket		1	Hummel, 7.003.912.102
H	Crimp contacts, socket, 1 mm, 0.34-1 mm^2		12	Hummel, 7.010.901.002
I	Connector OKC male	AW.CURRENT(-)	1	ESAB, 160360883

Continues on next page

Pos	Description	Used for connecting interface	Qty.	Article
J	DeviceNet female conn.	AW.CAN	1	Lumberg, RKC 50/9
K	End sleeve 0.25 mm^2		4	Common article, buy locally
L	End sleeve 0.5 mm^2		1	Common article, buy locally

1.10 Maintenance and troubleshooting

1.10.1 Introduction

General

The track motion requires only the minimum maintenance during operation. It has been designed to make it as easy for services as possible:

- Maintenance-free AC motor is used.
- Oil is used for the gear boxes.
- The cabling is routed for longevity, and in the unlikely event of a failure, its modular design makes it easy to change.

Maintenance

The maintenance intervals depend on the use of the track motion. For detailed information about maintenance procedures, see *Maintenance* in the product manual.

2 Specification of variants and options

2.1 Introduction to variants and options

General

Different variants and options for the IRT 510 track motion are described in the following sections. The same option numbers are used here as in the specification form.

2.2 Track motion

Drives and connection

The following table describes the drives that are used in the robot controller for different types of robots used together with the track, as well as the connection for the robot types.

Product	For	Option
IRT 510	IRB 1520	• Option 3062-1, drive unit • Option 3322-1 Resolver connection, axis 7 (on base)
	IRB 1600	• Option 3062-1, drive unit • Option 3322-1 Resolver connection, axis 7 (on base)
	IRB 2600	• Option 3062-1, drive unit • Option 3322-1 Resolver connection, axis 7 (on base)
	IRB 4600	• Option 3062-1, drive unit • Option 3322-1 Resolver connection, axis 7 (on base)

Track type based on carriage type

Option	Description[i]	Travel length (m)
4200-1	Robot carriage	For single carriage, available travel length from 0.8 m to 19.8 m in steps of 1 m For double carriage, available travel length from 1.6 m to 18.6 m in steps of 1 m

[i] The carriage quantity can be chosen.

Track type based on cover type

Option	Description[i]	Travel length (m)
4201-1	Covered track	Available travel length from 2 m to 21 m in steps of 1 m
4202-1	Standard track	Available travel length from 2 m to 21 m in steps of 1 m

[i] Internal chain is standard.

Installation tool kit

Option	Description	Note
4203-1	Installation tool kit	1x3HAC091500-001 M60 Lock nut Tightening Tooling 1x3HAC054535-001 tooling for M60 leveling 1x3HAW107700354 Calibration pin

2.3 Carriage basics (NUMBER 1)

Travel length 1

Option	Description	Note
4204-1	Travel length 1	Automatically calculated and cannot be chosen if option 4200-1 Robot carriage is selected.

Direction of travel 1

Option	Description	Note
4205-1	Standard mounting 1	Select to mount the track in the standard direction.
4205-2	Mirrored mounting 1	Select to mount the track in the mirrored direction.

Valid for product 1

Option	Description	Note
4206-1	IRB 4600	Only applicable with option 4200-1 Robot carriage with the carriage quantity larger than or equal to one.
4206-2	IRB 2600	Only applicable with option 4200-1 Robot carriage with the carriage quantity larger than or equal to one.
4206-3	IRB 1600	Only applicable with option 4200-1 Robot carriage with the carriage quantity larger than or equal to one.
4206-4	IRB 1520	Only applicable with option 4200-1 Robot carriage with the carriage quantity larger than or equal to one.

Robot orientation 1

Option	Description	Note
4207-1	Inline	Only applicable with option 4200-1 Robot carriage and one of options 4206-1, 4206-2, 4206-3, and 4206-4 (Product IRB 4600/2600/1600/1520).
4207-2	90 Degrees	Only applicable with option 4200-1 Robot carriage and one of options 4206-1, 4206-2, 4206-3, and 4206-4 (Product IRB 4600/2600/1600/1520).
4207-3	180 Degrees	Only applicable with option 4200-1 Robot carriage and one of options 4206-1, 4206-2, 4206-3, and 4206-4 (Product IRB 4600/2600/1600/1520).
4207-4	270 Degrees	Only applicable with option 4200-1 Robot carriage and one of options 4206-1, 4206-2, 4206-3, and 4206-4 (Product IRB 4600/2600/1600/1520).

Robot pedestal 1

Option	Description	Note
4208-1	250 mm	Only applicable with option 4200-1 Robot carriage and one of options 4206-1,4206-2, 4206-3, and 4206-4 (Product IRB 4600/2600/1600/1520).

Continues on next page

Option	Description	Note
4208-2	500 mm	Only applicable with option 4200-1 Robot carriage and one of options 4206-2, 4206-3, and 4206-4 (Product IRB 2600/1600/1520).
4208-3	750 mm	Only applicable with option 4200-1 Robot carriage and one of options 4206-2, 4206-3, and 4206-4 (Product IRB 2600/1600/1520).
4208-4	1000 mm	Only applicable with option 4200-1 Robot carriage and one of options 4206-2, 4206-3, and 4206-4 (Product IRB 2600/1600/1520).

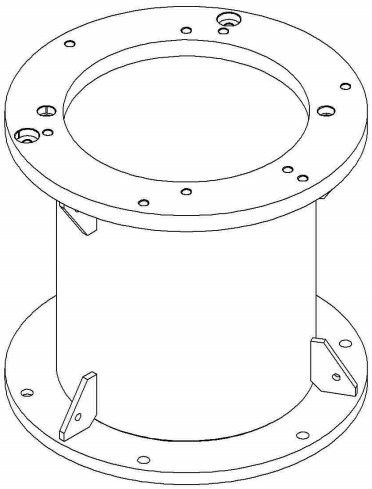
The robot pedestal is designed to fix the robot. Six Ø18.5 screw holes are used to secure the pedestal on the carriage table.

The pedestal has two height models, 250 mm and 500 mm. Users can choose the suitable pedestal/pedestal combination to meet their requirements. The following height models can be provided by the pedestal/pedestal combination: 250 mm, 500 mm, 750 mm and 1000 mm.

Note

500mm, 750 mm and 1000 mm risers are not applicable to IRB 4600.

The following illustration shows a pedestal with the height of 500 mm.



xx1400000468

External cable chain 1

Option	Description	Note
4231-1	External cable chain 1	Only applicable with option 4200-1 Robot carriage and one of options 4206-1, 4206-2, 4206-3, and 4206-4 (Product IRB 4600/2600/1600/1520). Available length from 1 m to 20 m in steps of 1 m. Must be the same value as option 4204-1 Travel length 1.

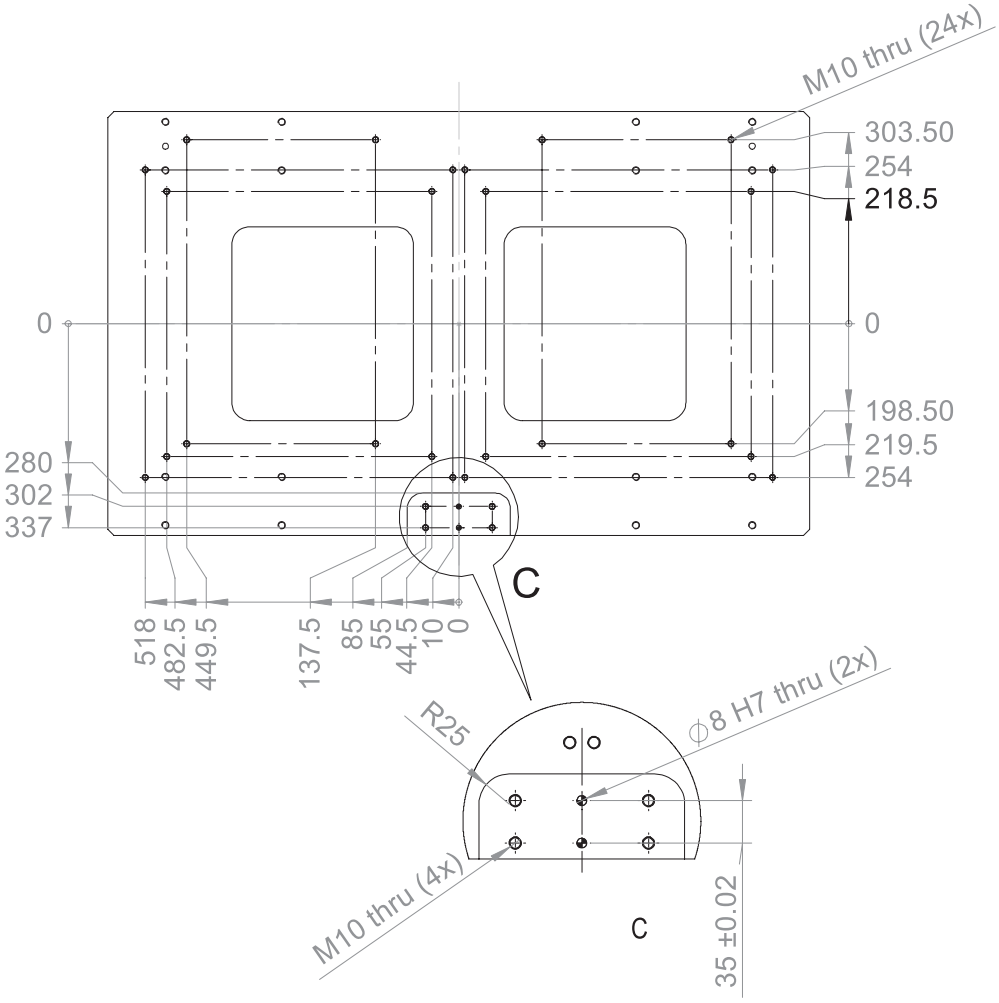
Continues on next page

Floor cables OmniCore to track 1

Option	IRBT Type	Note
4209-1	7 m Track to floor cables	Only applicable with option 4200-1 Robot carriage and one of options 4206-1, 4206-2, 4206-3, and 4206-4 (Product IRB 4600/2600/1600/1520).
4209-2	15 m Track to floor cables	Only applicable with option 4200-1 Robot carriage and one of options 4206-1, 4206-2, 4206-3, and 4206-4 (Product IRB 4600/2600/1600/1520).
4209-3	22 m Track to floor cables	Only applicable with option 4200-1 Robot carriage and one of options 4206-1, 4206-2, 4206-3, and 4206-4 (Product IRB 4600/2600/1600/1520).

Additional carriage plate 1

Option	Description	Note
4210-1	Extra plate	Only applicable with option 4200-1 Robot carriage The adapter board for TSC installation is not included



xx1400000462

Continues on next page

Prepared for TSC option 1

Option	Description	Note
4211-1	TSC, TS96, Bulls eye	Only applicable with option 4210-1 Extra plate and prepared for option 4212-X AW Power Source 1.

Prepared for AW power source 1

Option	Description	Note[i]
4212-1	Only Interface box	Only applicable with option 4210-1 Extra plate and one of options 4206-1, 4206-2, 4206-3, and 4206-4 (Product IRB 4600/2600/1600/1520).
4212-2	AristoMig 5000i	Only applicable with option 4210-1 Extra plate and one of options 4206-1, 4206-2, 4206-3, and 4206-4 (Product IRB 4600/2600/1600/1520).

i For details about the AW interfaces, connection pins and connection kits, see *Arc Welding connection on page 54*.

Note

When you choose 4212-X(AW Power Source 1), isolation kit will be chosen according to 4206-X (robot type of carriage no.1)

When you choose 4226-X(AW Power Source 2), isolation kit will be chosen according to 4219-X (robot type of carriage no.2)

Floor cables - Power Source 1

Option	Description	Note[i]
4213-1	7 m	Prepared for option 4212-X AW Power source 1.
4213-2	15 m	Prepared for option 4212-X AW Power source 1.
4213-3	22 m	Prepared for option 4212-X AW Power source 1.

i For details about the floor cables ending with connectors and alternative connection kits for AW, see *Arc Welding connection on page 54*.

Prepared for IRP option 1

Option	Description	Note[i]
4214-1	7 m	Prepared for option 4212-X AW Power source 1.
4214-2	15 m	Prepared for option 4212-X AW Power source 1.
4214-3	22 m	Prepared for option 4212-X AW Power source 1.

i For details about the floor cables ending with connectors and alternative connection kits for AW, see *Arc Welding connection on page 54*.

CP/CS 1

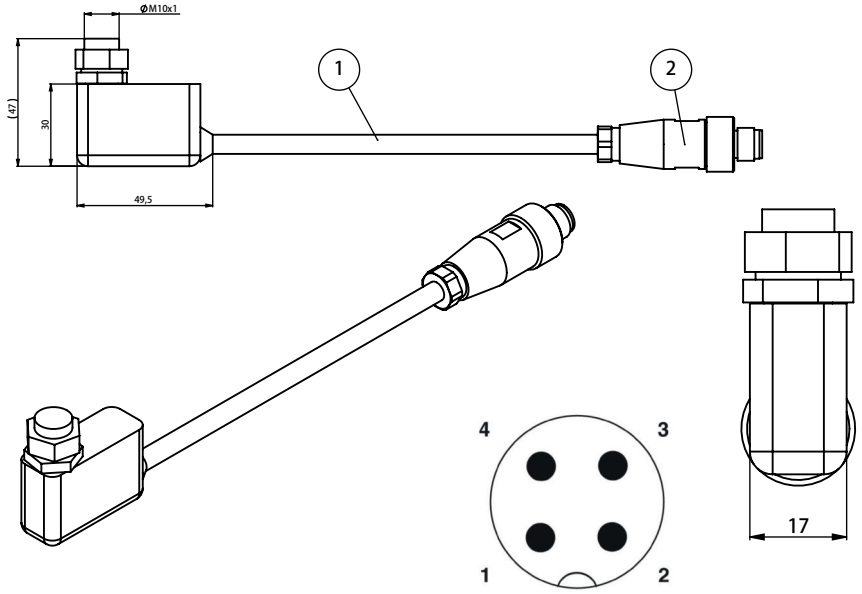
Option	Description	Note
4215-1	Parallel	Only applicable with option 4200-1 Robot carriage and one of options 4206-1, 4206-2 and 4206-3(Product IRB 4600/2600/1600).

Continues on next page

Option	Description	Note
4215-2	DeviceNet	Only applicable with option 4200-1 Robot carriage and one of options 4206-1 and 4206-2 (Product IRB 4600/2600).
4215-4	Ethernet/Profinet	Only applicable with option 4200-1 Robot carriage and one of options 4206-1 and 4206-2 (Product IRB 4600/2600).

Lubrication detection 1

Option	Description	Note
4216-1	Grease Detection sensor	Select to choose a sensor to detect if lubrication system functionally works or oil is empty.



xx1900000138

Pos	Description
1	Memolub feedback sensor
2	M12 connector

2.4 Carriage basics (NUMBER 2)

Travel length 2

Option	Description	Note
4217-1	Travel length 2	Automatically calculated and cannot be chosen if option 4200-1 Robot carriage is selected.

Direction of travel 2

Option	Description	Note
4218-1	Standard mounting 2	Select to mount the track in the standard direction.
4218-2	Mirrored mounting 2	Select to mount the track in the standard direction.

Valid for product 2

Option	Description	Note
4219-1	IRB 4600	Only applicable with option 4200-1 Robot carriage with two carriages.
4219-2	IRB 2600	Only applicable with option 4200-1 Robot carriage with two carriages.
4219-3	IRB 1600	Only applicable with option 4200-1 Robot carriage with two carriages.
4219-4	IRB 1520	Only applicable with option 4200-1 Robot carriage with two carriages.

Robot orientation 2

Option	Description	Note
4220-1	Inline	Only applicable with option 4200-1 Robot carriage and one of options 4219-1, 4219-2, 4219-3 and 4219-4 (Product IRB 4600/2600/1600/1520).
4220-2	90 Degrees	Only applicable with option 4200-1 Robot carriage and one of options 4219-1, 4219-2, 4219-3 and 4219-4 (Product IRB 4600/2600/1600/1520).
4220-3	180 Degrees	Only applicable with option 4200-1 Robot carriage and one of options 4219-1, 4219-2, 4219-3 and 4219-4 (Product IRB 4600/2600/1600/1520).
4220-4	270 Degrees	Only applicable with option 4200-1 Robot carriage and one of options 4219-1, 4219-2, 4219-3 and 4219-4 (Product IRB 4600/2600/1600/1520).

Robot pedestal 2

Option	Description	Note
4221-1	250 mm	Only applicable with option 4200-1 Robot carriage and one of options 4219-1, 4219-2, 4219-3 and 4219-4 (Product IRB 4600/2600/1600/1520).
4221-2	500 mm	Only applicable with option 4200-1 Robot carriage and one of options 4219-2, 4219-3 and 4219-4 (Product IRB 2600/1600/1520).

Continues on next page

Option	Description	Note
4221-3	750 mm	Only applicable with option 4200-1 Robot carriage and one of options 4219-2, 4219-3 and 4219-4 (Product IRB 2600/1600/1520).
4221-4	1000 mm	Only applicable with option 4200-1 Robot carriage and one of options 4219-2, 4219-3 and 4219-4 (Product IRB 2600/1600/1520).

External cable chain 2

Option	Description	Note
4222-1	External cable chain 2	Only applicable with option 4200-1 Robot carriage and one of options 4219-1, 4219-2, 4219-3 and 4219-4 (Product IRB 4600/2600/1600/1520). Available length from 1 m to 20 m in steps of 1 m. Must be the same value as option 4217-1 Travel length 2.

Floor cables OmniCore controller to Track 2

Option	Description	Note
4223-1	7 m Track-floor cables	Only applicable with option 4200-1 Robot carriage and one of options 4219-1, 4219-2, 4219-3 and 4219-4 (Product IRB 4600/2600/1600/1520).
4223-2	15 m Track-floor cables	Only applicable with option 4200-1 Robot carriage and one of options 4219-1, 4219-2, 4219-3 and 4219-4 (Product IRB 4600/2600/1600/1520).
4223-3	22 m Track-floor cables	Only applicable with option 4200-1 Robot carriage and one of options 4219-1, 4219-2, 4219-3 and 4219-4 (Product IRB 4600/2600/1600/1520).

Additional carriage plate 2

Option	Description	Note
4224-1	Extra plate	Only applicable with option 4200-1 Robot carriage.

Prepared for TSC option 2

Option	Description	Note
4225-1	TSC, TS96, Bulls eye	Only applicable with option 4224-1 Extra plate and prepared for option 4226-X Arc Welding Power Source 2.

Prepared for AW power source 2

Option	Description	Note[i]
4226-1	Only Interface box	Only applicable with option 4224-1 Extra plate and one of options 4219-1, 4219-2, 4219-3 and 4219-4 (Product IRB 4600/2600/1600/1520).
4226-2	AristoMig 5000i	Only applicable with option 4224-1 Extra plate and one of options 4219-1, 4219-2, and 4219-3 (Product IRB 4600/2600/1600).

i For details about the AW interfaces, connection pins and connection kits, see *Arc Welding connection on page 54*.

Continues on next page

Floor cables - Power Source 2

Option	Description	Note[i]
4227-1	7 m	Prepared for option 4226-X AW Power source 2.
4227-2	15 m	Prepared for option 4226-X AW Power source 2.
4227-3	22 m	Prepared for option 4226-X AW Power source 2.

i For details about the floor cables ending with connectors and alternative connection kits for AW, see *Arc Welding connection on page 54*.

Prepared for IRP option 2

Option	Description	Note[i]
4228-1	7 m	Prepared for option 4226-X AW Power source 2.
4228-2	15 m	Prepared for option 4226-X AW Power source 2.
4228-3	22 m	Prepared for option 4226-X AW Power source 2.

i For details about the floor cables ending with connectors and alternative connection kits for AW, see *Arc Welding connection on page 54*.

CP/CS 2

Option	Description	Note
4229-1	Parallel	Only applicable with option 4224-1 Extra plate and one of options 4219-1, 4219-2, and 4219-3 (Product IRB 4600/2600/1600).
4229-2	DeviceNet	Only applicable with option 4224-1 Extra plate and one of options 4219-1 and 4219-2 (Product IRB 4600/2600).
4229-3	Ethernet/Profinet	Only applicable with option 4224-1 Extra plate and one of options 4219-1 and 4219-2 (Product IRB 4600/2600).

Lubrication detection 2

Option	Description	Note
4230-1	Grease Detection sensor	Select to choose a sensor to detect if lubrication system functionally works or oil is empty.

Warranty

For the selected period of time, ABB will provide spare parts and labor to repair or replace the non-conforming portion of the equipment without additional charges. During that period, it is required to have a yearly *Preventative Maintenance* according to ABB manuals to be performed by ABB. If due to customer restrains no data can be analyzed with ABB Connected Services for robots with OmniCore controllers, and ABB has to travel to site, travel expenses are not covered. The *Extended Warranty* period always starts on the day of warranty expiration. Warranty Conditions apply as defined in the *Terms & Conditions*.

Note

This description above is not applicable for option *Stock warranty* [438-8]

Option	Type	Description
438-1	Standard warranty	Standard warranty is 12 months from *Customer Delivery Date* or latest 18 months after *Factory Shipment Date*, whichever occurs first. Warranty terms and conditions apply.
438-2	Standard warranty + 12 months	Standard warranty extended with 12 months from end date of the standard warranty. Warranty terms and conditions apply. Contact Customer Service in case of other requirements.
438-4	Standard warranty + 18 months	Standard warranty extended with 18 months from end date of the standard warranty. Warranty terms and conditions apply. Contact Customer Service in case of other requirements.
438-6	Standard warranty + 6 months	Standard warranty extended with 6 months from end date of the standard warranty. Warranty terms and conditions apply.
438-8	Stock warranty	Maximum 6 months postponed start of standard warranty, starting from factory shipment date. Note that no claims will be accepted for warranties that occurred before the end of stock warranty. Standard warranty commences automatically after 6 months from *Factory Shipment Date* or from activation date of standard warranty in WebConfig.  **Note** Special conditions are applicable, see *Robotics Warranty Directives*.

This page is intentionally left blank

Index

ABB AB
Robotics & Discrete Automation
S-721 68 VÄSTERÅS, Sweden
Telephone +46 10-732 50 00

ABB AS
Robotics & Discrete Automation
Nordlysvegen 7, N-4340 BRYNE, Norway
Box 265, N-4349 BRYNE, Norway
Telephone: +47 22 87 2000

ABB Engineering (Shanghai) Ltd.
Robotics & Discrete Automation
No. 4528 Kangxin Highway
PuDong New District
SHANGHAI 201319, China
Telephone: +86 21 6105 6666

ABB Inc.
Robotics & Discrete Automation
1250 Brown Road
Auburn Hills, MI 48326
USA
Telephone: +1 248 391 9000

abb.com/robotics

3HAC091205-001, Rev B, en