ROBOTICS

Product specification

IRBP/D2009

Trace back information:
Workspace 23D version a16
Checked in 2023-12-14
Skribenta version 5.5.019

Product specification

IRBP A-250/500/750
IRBP B-250/500/750
IRBP C-500/1000
IRBP K-300/600/1000
IRBP L-300/600/1000/2000/5000
IRBP R-300/600/1000

IRC5

Document ID: 3HAC038208-001

Revision: Y

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

Overview of this product specification 7

1 Description 11

1.1 Structure 11
1.1.1 Introduction 11
1.1.2 Structure 12
1.1.3 Block diagram 16
1.1.4 Warranty information for loading diagrams 19
1.2 Positioner interface 20
1.2.1 The positioner interface 20
1.3 Robot stand 22
1.3.1 Introduction 22
1.4 Installation 24
1.4.1 Installation 24
1.5 Safety equipment 25
1.5.1 Introduction 25
1.5.2 Safety functions 26
1.5.3 Safety module 31
1.5.4 Operator panel 32
1.5.5 Manual jog 34
1.5.6 Light beam 36
1.5.7 Pre reset 37
1.5.8 Activation unit - Programming from operator area 38
1.5.9 Station indication and Home position 39
1.5.10 Gate switch 42
1.6 Applicable standards 44
1.7 Maintenance and Troubleshooting 46
1.7.1 Introduction 46

2 Technical data 47

2.1 IRBP A-250/500-750 47
2.1.1 General 47
2.1.2 Technical data 49
2.1.3 Loading table 50
2.1.4 Dimensional drawings 53
2.2 IRBP B-250/500/750 60
2.2.1 General 60
2.2.2 Technical data 62
2.2.3 Loading table 63
2.2.4 Dimensional drawings 66
2.3 IRBP C-500/1000 73
2.3.1 General 73
2.3.2 Technical data 74
2.3.3 Loading table 75
2.3.4 Dimensional drawings 77
2.4 IRBP K-300/ -600/ -1000 84
2.4.1 General 84
2.4.2 Technical data 85
2.4.3 Loading diagram 87
2.4.4 Dimensional drawings 93
2.5 IRBP L-300/ -600/ -1000/ -2000/ -5000 102
2.5.1 General 102
2.5.2 Technical data 103
2.5.3 Loading diagram 104
2.5.4 Dimensional drawings 114

2.6 IRBP R-300/ -600/ -1000 137
2.6.1 General 137
2.6.2 Technical data 138
2.6.3 Loading diagram 139
2.6.4 Dimensional drawings 145
2.7 Integration of fixtures 154
2.7.1 IRBP K-300/-600/-1000, L-300/-600/-1000/-2000, R-300/-600/-1000 154
2.7.2 IRBP A-250/-500/-750, B-250/-500/-750, C-500/-1000 155
2.8 Swivels 156
2.8.1 Introduction 156
2.8.2 Air swivel for 1 channel 157
2.8.3 Electrical swivel 158
2.8.4 Air/water swivel for 2 channels 159
2.8.5 Air swivel for 1 channel and electrical swivel 160
2.8.6 Swivel connections 161
2.8.7 Extra current collector for positioner types K / L / R 162
2.9 Drilling patterns 164
2.10 Load diagrams 167
2.10.1 Introduction 167
2.11 Operating requirements 168

3 Variants and options 171

3.1 Introduction to variants and options 171
3.2 Robot type 172
3.3 Positioner 173
3.4 Positioner interface 180
3.5 Safety options 182

Index 189

Overview of this product specification

About this product specification

It describes the performance of the different positioners in terms of:

- The structure and dimensional prints
- The fulfilment of standards, safety and operating requirements
- The load diagrams, mounting of additional equipment, the motion and reach
- Customer connections
- The specification of variants and options available
- Control equipment
- Safety system

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.

Users

It is intended for:

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

References

Reference	Document ID
Product specification - Controller IRC5 IRC5 with main computer DSQC1000.	*3HAC047400-001*
Product specification - Controller software IRC5 IRC5 with main computer DSQC1000 and RobotWare 5.6x..	*3HAC050945-001*
Product specification - Controller software IRC5 IRC5 with main computer DSQC1000 and RobotWare 6..	*3HAC050945-001*
Product manual - Product.ProductName /D2009	*3HAC037731-001*
Product specification - Robot user documentation, IRC5 with RobotWare 6	*3HAC052355-001*

Revisions

Revision	Description		
-	New product specification		
A	Text regarding standards updated, corrections		
B	Minor corrections, updated load diagrams for L-positioners		
C	• Table for ambient temperature adjusted • Minor corrections		

Continues on next page

Continued

Revision	Description		
D	• Text for warranty adjusted		
E	• Minor correction/update		
F	• Minor corrections/update		
G	• Color options are added		
H	• Minor corrections/update		
J	• Minor corrections/update • Option 1201-13 removed from spec.		
K	• Measure (C) and dimensional drawings for IRBP A-500 / -750 Ø1450 mm is changed. • A caution note is added in technical data for IRBP types regarding stop times.		
L	Published in release R17.1. The following updates are done in this revision: • The term *INTERCH* is deleted from the technical data of IRBP R. • The weight information when loading IRBP B is changed. See loading table IRBP B. • The dimension drawing for MTD500/750 is updated. • Added load difference at standstill. • Added explanation of force.		
M	Published in release R17.2. The following updates are done in this revision: • Updated list of applicable standards. • More description of Extra current collector added.		
N	Published in release R18.1. The following updates are done in this revision: • Updated graphic for Tailstock for L positioner. • LoadID warranty warning added in the Load diagrams section. • Data for IRBP A, B, C, D, L, K and R removed.		
P	The following updates are done in this revision: • Data for IRBP A, B, C, D, L, K and R added back.		
Q	Published in release R18.2. The following updates are done in this revision: • Technical data of stop times are removed.		
R	Published in release R19B. The following updates are done in this revision: • Dimension for IRBP D600 when combined with a floor frame added. • Drilling patterns section added.		
S	Published in release R19D. The following updates are done in this revision: • Terms in IRBP (STN, PLATE, ARM) corrected.		
T	Published in release R20C The following updates are done in this revision: • Change the description for option 1228-2. • Removed option 1214-10 as it was phase out.		

Continues on next page

Revision	Description		
U	Published in release R21B The following updates are done in this revision: • Dimension drawing updated for IRBP L-2000.		
V	Published in release R21C, The following updates are done in this revision: • Standard ANSI/UL removed from the document. See *Region specific standards*. • Added information about required option 922-1 for the positioner interface.		
W	Published in release R22D, The following updates are done in this revision: • Update the introduction for manipulator color. • Remove the introduction for D-600 (DOUBLE) as already phased out.		
X	Published in release R23C, The following updates are done in this revision: • Added information about the new rotary unit MTE.		
Y	Published in release R23D, The following updates are done in this revision: • Illustrations updated with measures for rotary unit MTE.		

This page is intentionally left blank

1 Description

1.1 Structure

1.1.1 Introduction

General

IRBP positioners are designed to handle work pieces of a weight between 250 and 5000 kg (including fixture) in connection with robot applications. The use of the positioners offers one work piece set up for all operations, less floor space, less fixtures, and higher production capacity and quality.

The modular design, few and heavy-duty moving parts as well as minimal maintenance demands make the positioners service friendly.

Operating system

The IRBP is equipped with the controller IRC5 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 *.Product specification - Controller IRC5*.

Safety

The applicable safety standards are valid for the complete robot, that is, manipulator, IRBP, and controller.

Additional functionality

For additional functionality, the robot can be equipped with optional software for application support - for example gluing and welding, network communication features, and advanced functions such as multitasking, sensor control etc. For a complete description on optional software, see *Product specification - Controller IRC5*.

Limitations

- Cannot be combined with add on Motor Units.
- Cannot be combined with *IRB XXXX/Additional - Drive Units*
- *Electronic Position Switches* (EPS) or *SafeMove* is not valid for IRBP positioners.

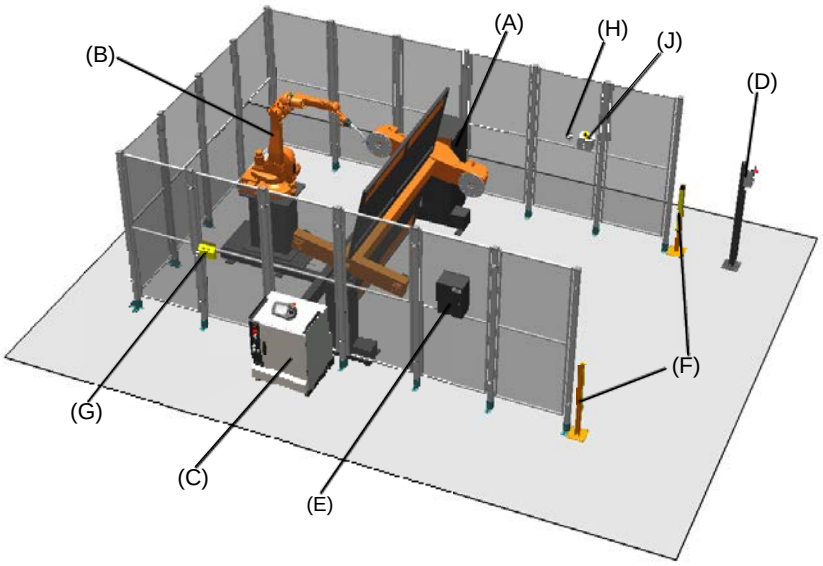
1.1.2 Structure

System overview

The function package IRBP consists of the following units:

- The positioner(s) with one or two operator stations
- Robot(s) with process equipment for e.g. arc welding
- Control cabinet, IRC5
- Operator panel(s)
- Personal safety system

Positioner with one operator station

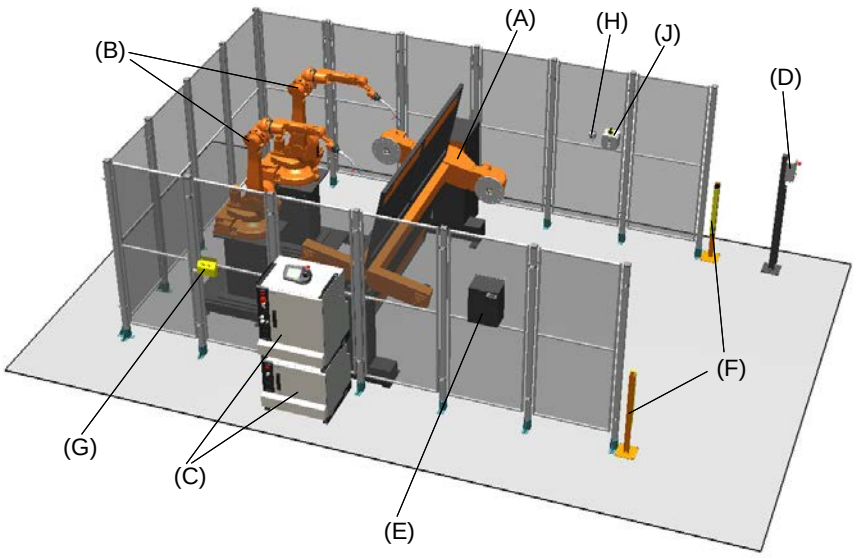


xx1000000671

Position	Description
A	Positioner
B	Robot
C	Controller
D	Operator panel
E	Safety interface
F	Guard system, e.g. light beam
G	Gate switch
H	Pre reset
J	Manual jog

Continues on next page

Multiple robot system



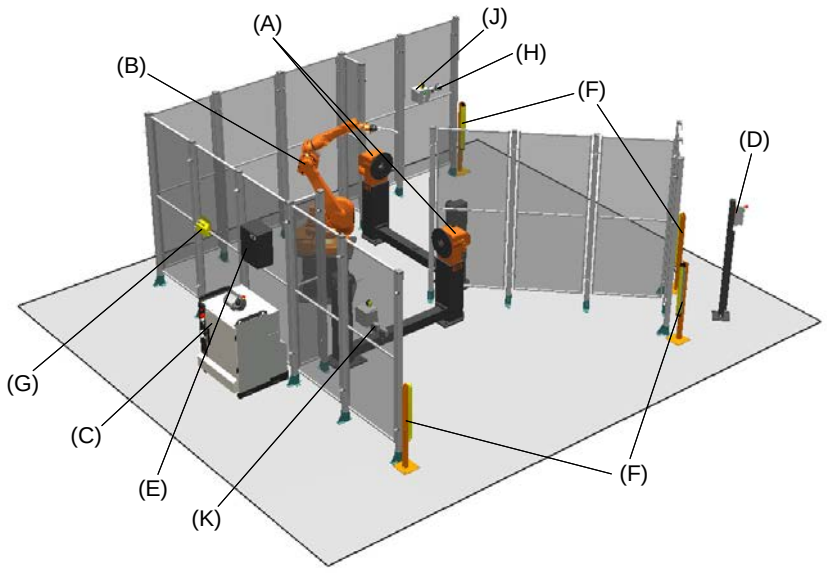
xx1000000672

Position	Description
A	Positioner
B	Robots
C	Controller with second drive module.
D	Operator panel
E	Safety interface
F	Guard system, e.g. light beam
G	Gate switch
H	Pre reset
J	Manual jog

Continues on next page

1.1.2 Structure
Continued

Positioners with two operator stations

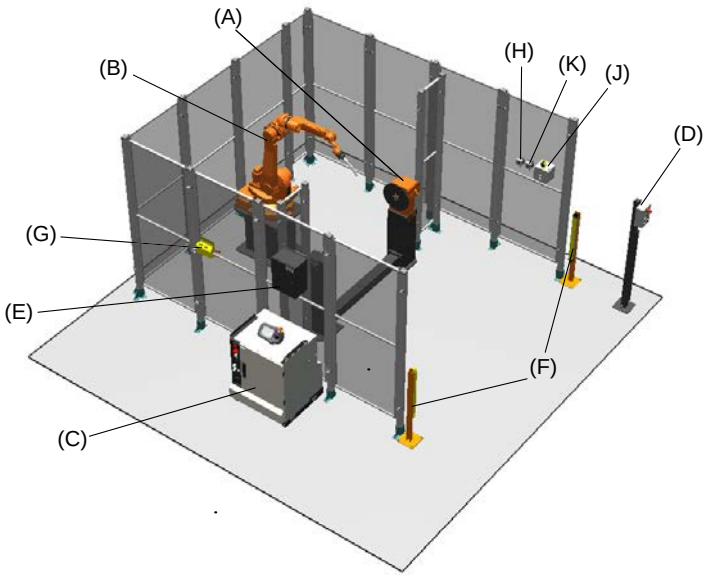


xx1000000673

Position	Description
A	Positioners
B	Robot
C	Controller
D	Operator panel(s), one or two
E	Safety interface
F	Guard system, e.g. light beam
G	Gate switch
H	Pre reset
J	Manual jog
K	Activation unit (programming from operator area)

Continues on next page

Positioner with one operator station

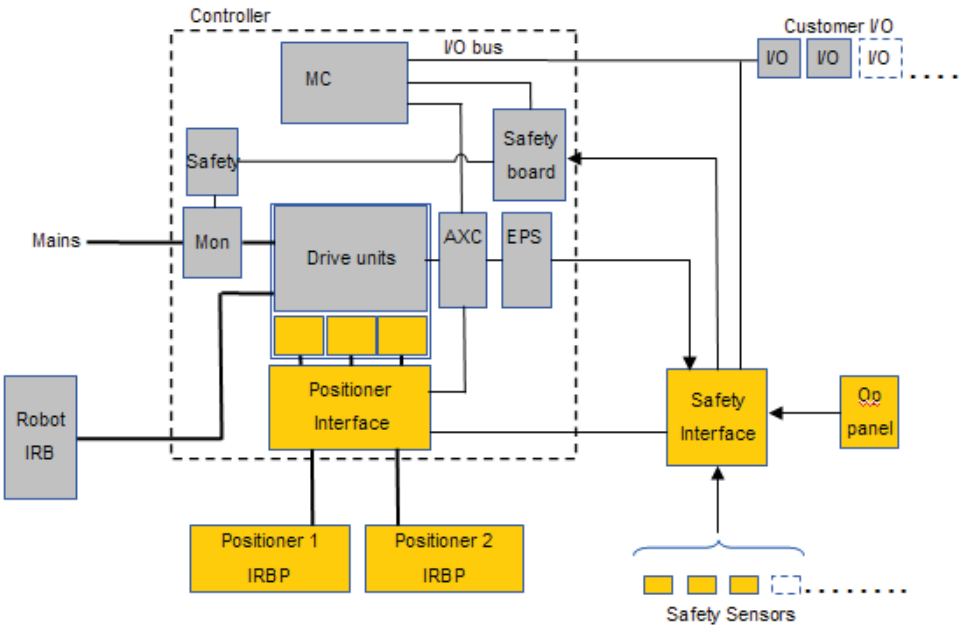


xx1000000674

Position	Description
A	Positioner
B	Robot
C	Controller
D	Operator panel
E	Safety interface
F	Guard system, e.g. light beam
G	Gate switch
H	Pre reset
J	Manual jog
K	Activation unit (programming from operator area)

1.1.3 Block diagram

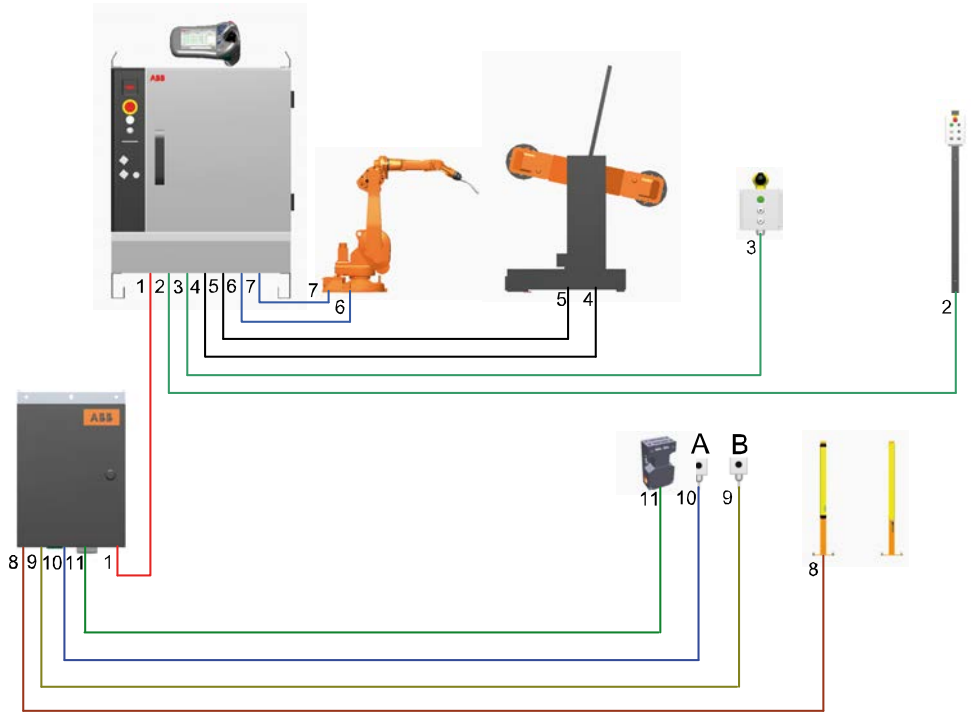
Block diagram Function Package IRBP



xx1000000675

Continues on next page

Block diagram IRBP B/C/K/R



xx1000000676

Pos	Description
A	Gate reset
B	Pre-reset

External cables IRBP B/C/K/R

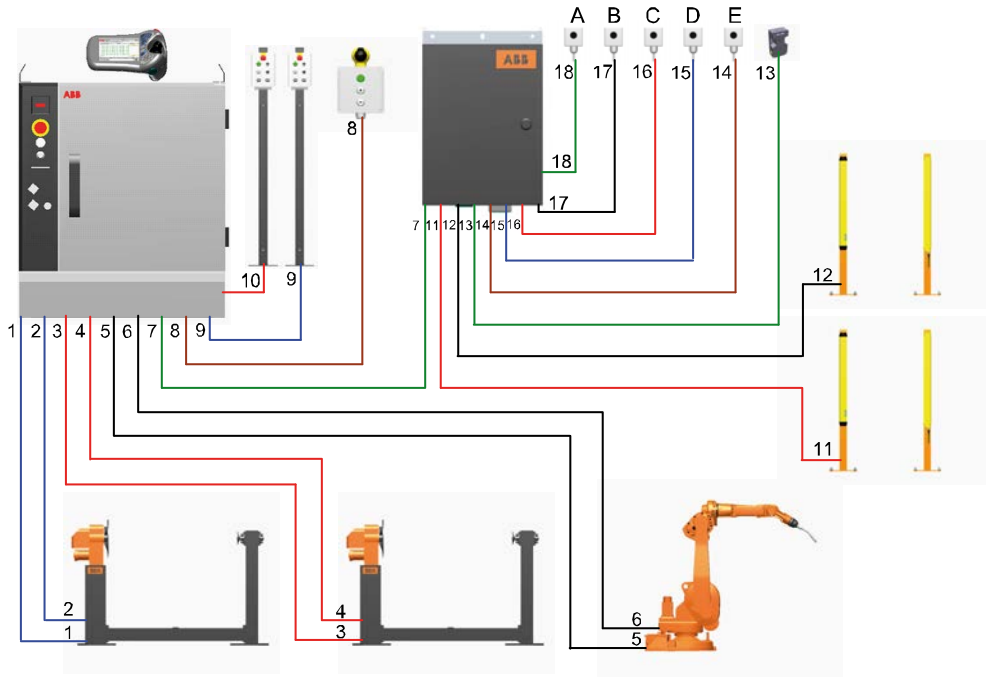
Figures in table below refers to block diagram above.

Pos	Description	Length
1	Cable CAN bus + cable safety signals + cable position switches	2.5 m
2	Cable CAN bus + cable operator panel	15 m
3	Cable control panel manual jog	15 m
4	Cable signal IRBP	7/10/15 m
5	Cable motor IRBP	7/10/15 m
6	Cable signal robot IRB	7/10/15 m
7	Cable motor robot IRB	7/10/15 m
8	Cable light beam	15 m
9	Cable pre reset	7 m
10	Cable external reset push button, gate switch	15 m
11	Cable gate switch	7 m

Continues on next page

1.1.3 Block diagram
Continued

Block diagram External cables IRBP A/L



xx1000000677

Pos	Description	Pos	Description
A	Pre-reset STN1	D	Activation unit STN2
B	Pre-reset STN2	E	Gate reset
C	Activation unit STN1		

External cables IRBP A/L/S

Figures in table below refers to block diagram above.

Pos	Description	Length
1 / 3	Cable signal IRBP STN1 / STN2	7/10/15 m
2 / 4	Cable motor IRBP STN1 / STN2	7/10/15 m
5	Cable signal robot IRB	7/10/15 m
6	Cable motor robot IRB	7/10/15 m
7	CAN bus + cable safety signals + cable position switches	2.5 m
8	Cable control panel maual jog	15 m
9 / 10	Cable CAN bus + cable operator panel STN1 / STN2	15 m
11 / 12	Cable light beam STN1 / STN2	15 m
13	Cable gate switch	7 m
14	Cable external reset push button, gate switch	15 m
15 / 16	Cable activation unit “Programming from operator area” STN1 / STN2	7 m
17 / 18	Cable pre reset STN1 / STN2	7 m

1.1.4 Warranty information for loading diagrams

Warning

WARNING

It is very important to use correct load for each type of positioners according to load diagrams.

If incorrect load and/or loads outside load diagram is used the following parts can be damaged due to overload:

- motors
- gearboxes
- mechanical structure
- bearings

Warning

WARNING

Positioners running with incorrect loads outside load diagram will not be covered by the warranty.

1.2 Positioner interface

1.2.1 The positioner interface

Information

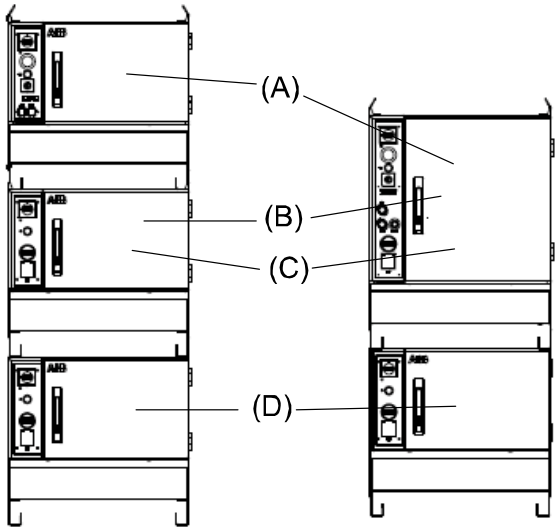
The positioners interface is a harness located in the robot controller. The harness is described in the product manual for the positioners, 3HAC037731-001. The controller is described in the product manual for the respective robot controller.

Note

The harnesses XS41/XS41.2 are needed to connect the robot controller with the positioner. To get the harness with connectors XS41/XS41.2 on the robot controller, the option *922-1 Prepared for IRBP* has to be booked and the positioner type must be specified.

MultiMove system

In a MultiMove system, the positioner interface is located in the first drive module for robot 1. Two different combinations of controllers are shown below. One dual cabinet with two drive modules and one single cabinet with one drive module.



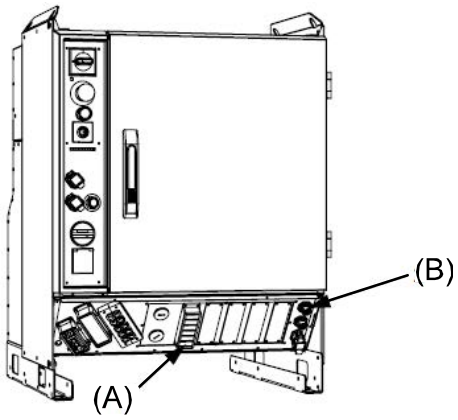
xx1000000679

A	Control module
B	Drive module, robot 1
C	Positioner interface located in drive module for robot 1
D	Drive module, robot 2

Continues on next page

The positioner is connected to the controller according to:

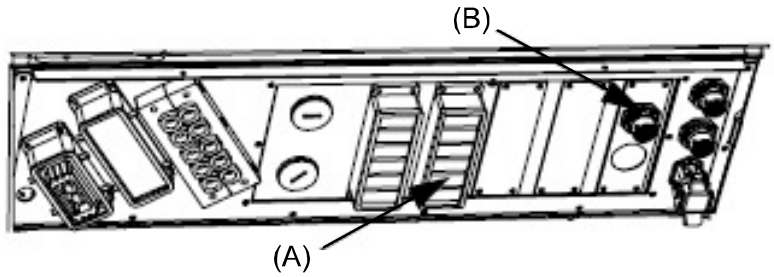
Positioner 1



xx1000000680

A	Power connection for positioner 1
B	Serial measurement connection for positioner 1

Positioner 2

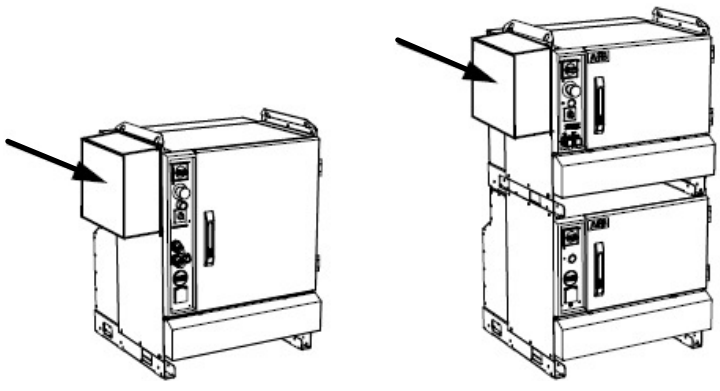


xx1000000819

A	Power connection for positioner 2
B	Serial measurement connection for positioner 2

Safety interface

The safety interface can be located on the side of the cabinet, on the fence or on a wall close to the controller.



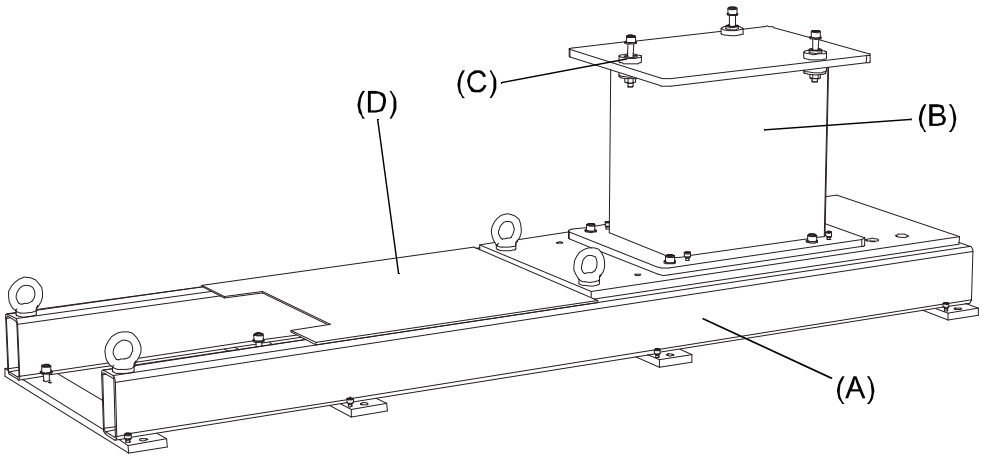
xx1000000681

1.3 Robot stand

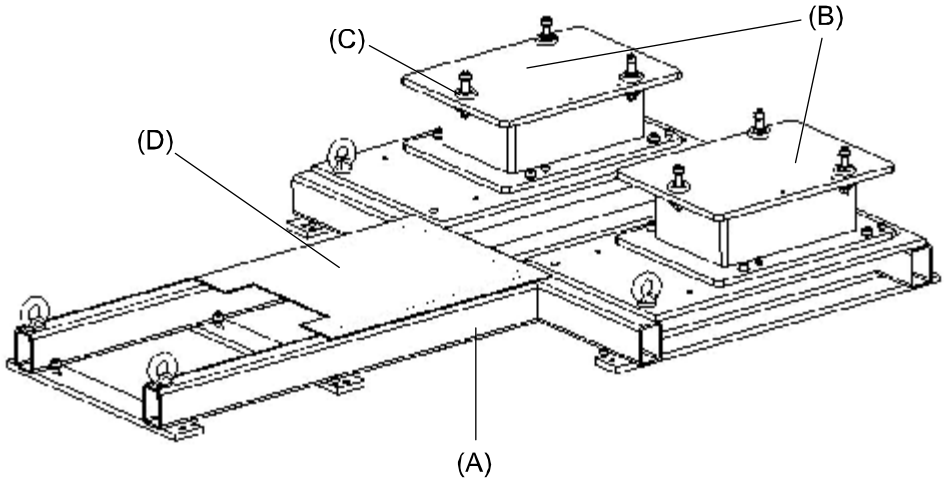
1.3.1 Introduction

General

The robot stand consists of the following parts:



xx1000000804



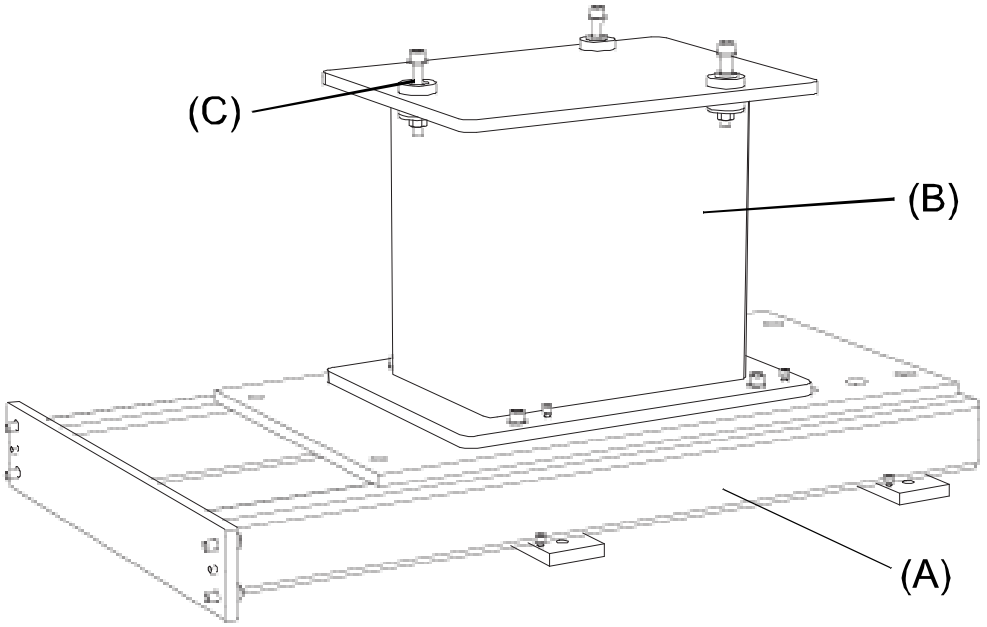
xx1000000766

Pos	Description	Pos	Description
A	Floor mount base, opt. 1214-X	C	Insulation
B	Robot pedestal, opt. 1216-X	D	Cover plate

The pedestal can be placed in different hole groups on the stand.

- Exercise care to ensure the robot and positioner do not collide during station switching. Recommended spacing, see the chapter for respective positioner.

Continues on next page



xx1000000805

Pos	Description	Pos	Description
A	Floor mount base, opt. 1214-X	C	Insulation
B	Robot pedestal, opt. 1216-X	D	Cover plate

The pedestal can be placed in different hole groups on the stand.

- Exercise care to ensure the robot and positioner do not collide during station switching. Recommended spacing, see the chapter for respective positioner.

1.4 Installation

1.4.1 Installation

General

The IRBP's are intended for floor mounting and requires a good foundation and/or a concrete floor with strength according to standard C20/25 or better according to ENV 206. If necessary, use shims under the foundation of the positioner to avoid alignment problem.

The bolts can be either anchor or chemical type.

For more detailed information regarding installation please see Product Manual for the positioner.

1.5 Safety equipment

1.5.1 Introduction

General

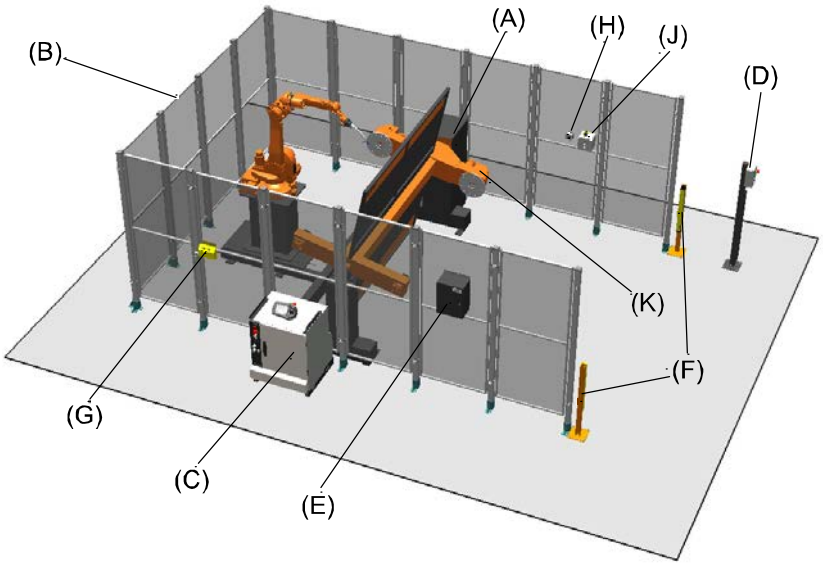
For personnel to work safely in a IRBP Function Package, the system is equipped with a number of safety components, that are interconnected in the control system's safety unit. The safety equipment can be adapted to different station solutions. The safety options are found in chapter Specification of Variants and Options.

1.5.2 Safety functions

General

- Working area surveillance with e.g. light beams
- Pre reset for e.g. light beams
- Station indication for:
- - Robot or track motion
- - Positioner
- Home position indication for robot
- Gate supervision
- Supervision of positioner axes activation
- Programming from the operator area
- Manual jog of axes in the operator area
- Status indication to the controller from the safety system

Continues on next page

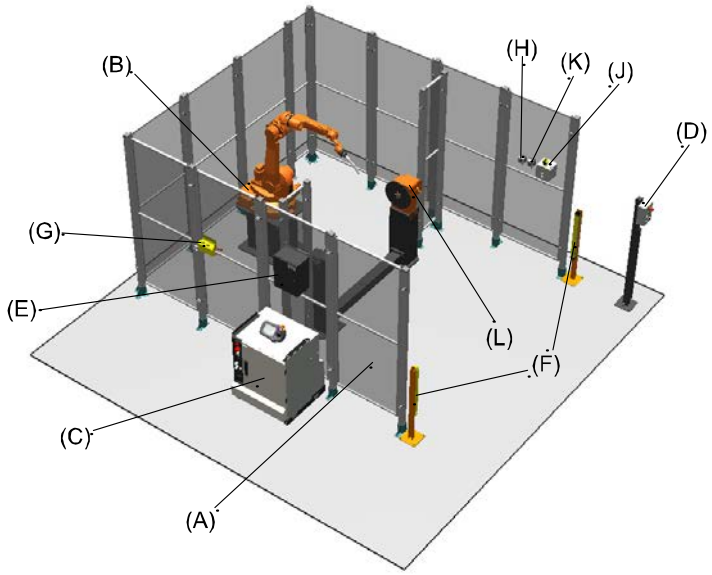


xx1000000807

Pos	Description
A	Station indication
B	Area protection (not included in delivery)
C	Controller
D	Operator
E	Safety module
F	Light beams
G	Gate switch
H	Pre reset
J	Manual jog
K	Supervision motor activation

Continues on next page

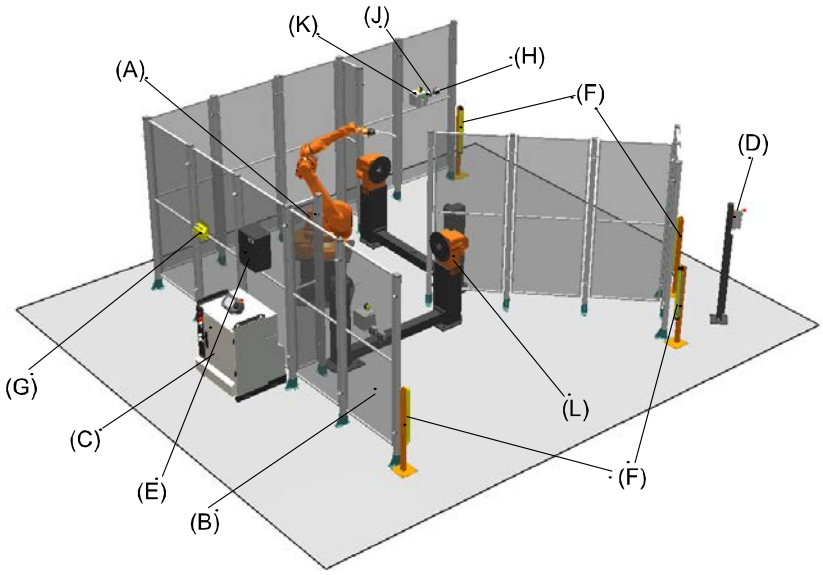
1.5.2 Safety functions
Continued



xx1000000808

Pos	Description
A	Area protection (not included in delivery)
B	Home position
C	Controller
D	Operator panel
E	Safety module
F	Light beams
G	Gate switch
H	Pre reset
J	Manual jog
K	Activation unit (programming from the operator area)
L	Supervision motor activation

Continues on next page



xx1000000806

Pos	Description
A	Station indication
B	Area protection (not included in delivery)
C	Controller
D	Operator panel
E	Safety module
F	Light beams
G	Gate switch
H	Pre-reset
J	Activation (programming from the operator area)
K	Manual jog
L	Supervision motor activation

Use

In order to avoid personal danger it is necessary to have continuous monitoring of:

- moving machine parts
- operator communication
- the status of safety components

Events that can cause personal danger:

- carelessness
- incorrect handling
- machine faults
- personell entering the safety zones

Continues on next page

1.5.2 Safety functions
Continued

Design

The safety equipment includes functions that directly break the power to the drive system and enable the brakes in all motors if an event has occurred that can cause personal danger.

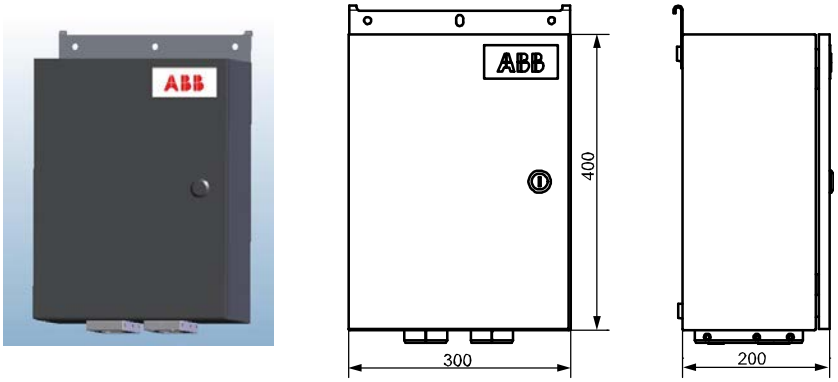
The equipment works with the control system's safety stop loop. If something that is not permitted occurs either General stop or Auto stop is tripped.

1.5.3 Safety module

General

The safety module is used for monitoring the personal safety functions which are built in in the IRBP function package.

The Safety Module (SIB) can be mounted on the side of the controller encapsulation or on a fence, wall beside the controller.



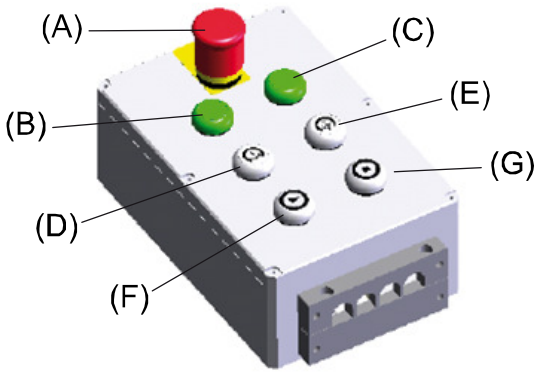
xx1000000810

xx1000000809

1.5.4 Operator panel

General

The operator panel is used to control events in the work flow.



xx1000000802

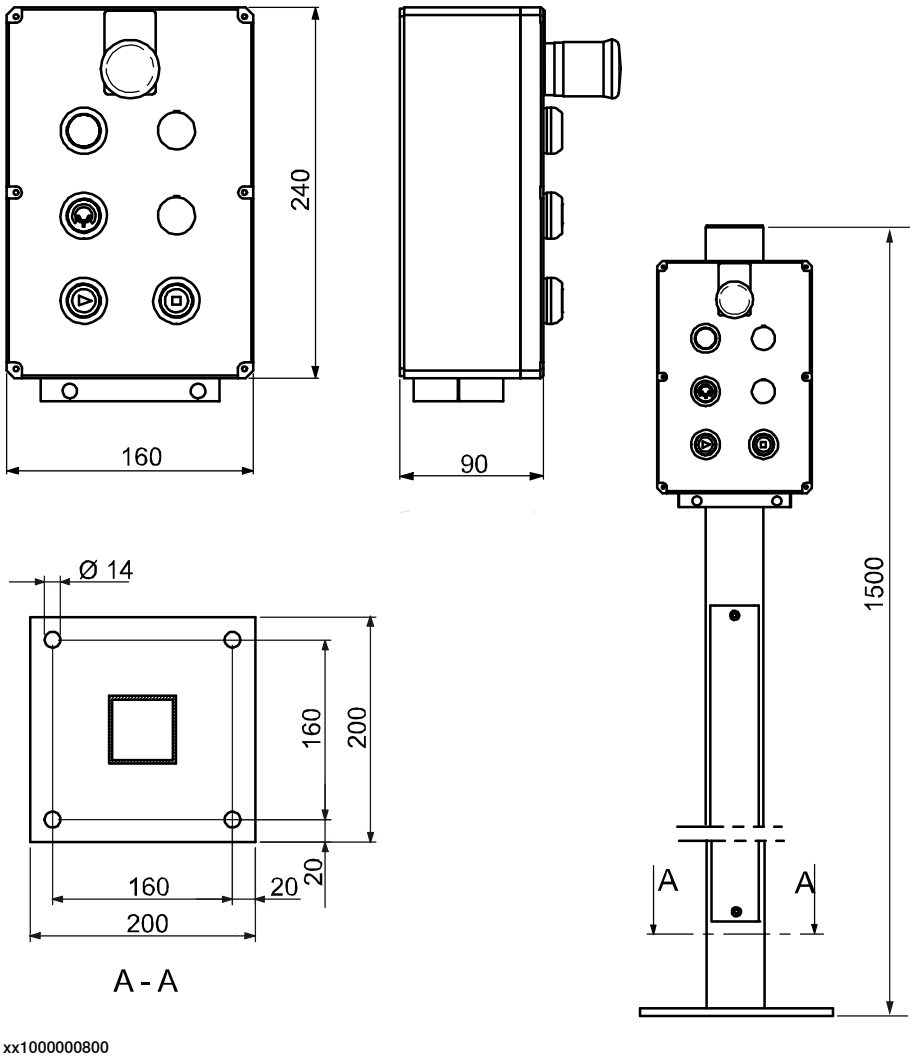
Pos	Description
A	Emergency stop
B	Entry permitted indication lamp, station 1
C	Entry permitted indication lamp, station 2
D	Start process, reset (toggle function), station1
E	Start process, reset (toggle function), station2
F	Program start
G	Program stop

Description of buttons

	Description
Emergency stop	Pressing the emergency stop button immediately stops the entire robot system. The emergency stop button is connected in series with other emergency stop buttons in the system.
Entry permitted indication, station 1 / station 2	Lamp, when green, indicates to the operator that station 1/station 2 is ready for loading. Entry into the monitored area is permitted.
Start process, station 1 / station 2	Press the push button after loading the work piece in station 1/station 2. The indicator lamp in the button turns on: • Gives the ready signal to the robot system that loading of the work piece in the • station is complete. • Resets personal safety protection around the station's working area. • Starts the process. Press the button once again; the status lamp goes out: • Cancel button for operator ready. Stops the process.
Program start	Starts execution of the robot program. Enables welding restart.

Continues on next page

	Description
Program stop	Stops execution of the robot program.

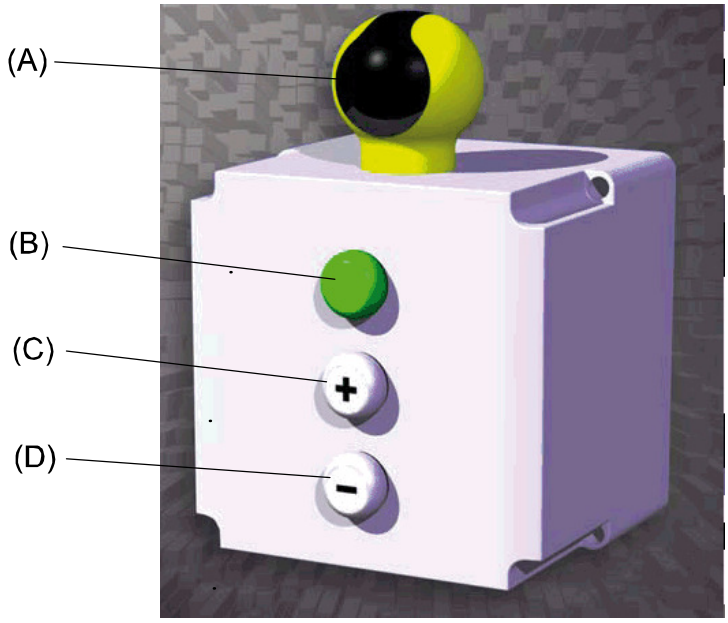


xx1000000800

1.5.5 Manual jog

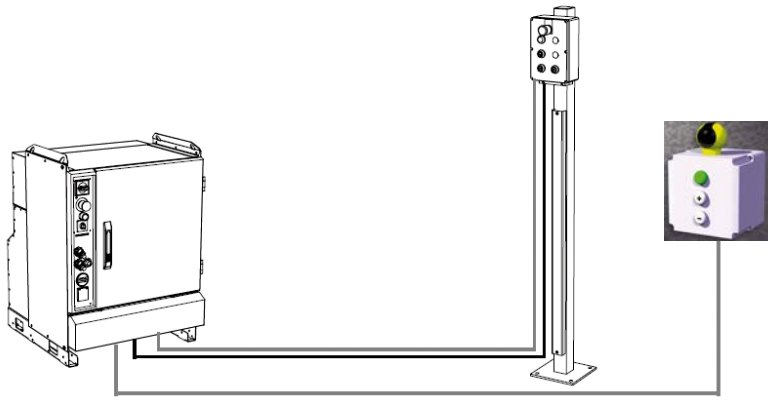
General

From this control panel it is possible to manually rotate the positioner axis on the loading side in order to achieve desired positions for loading/unloading the positioner.



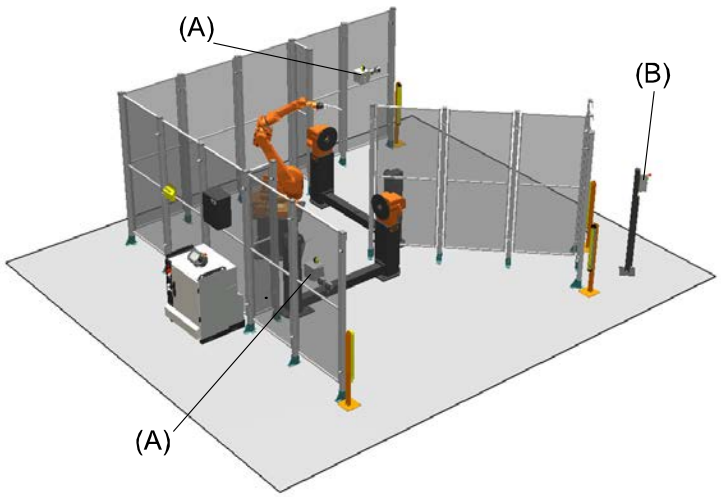
xx1000000798

Pos	Description
A	Hold to run
B	Indication
C	Rotate positive
D	Rotate negative



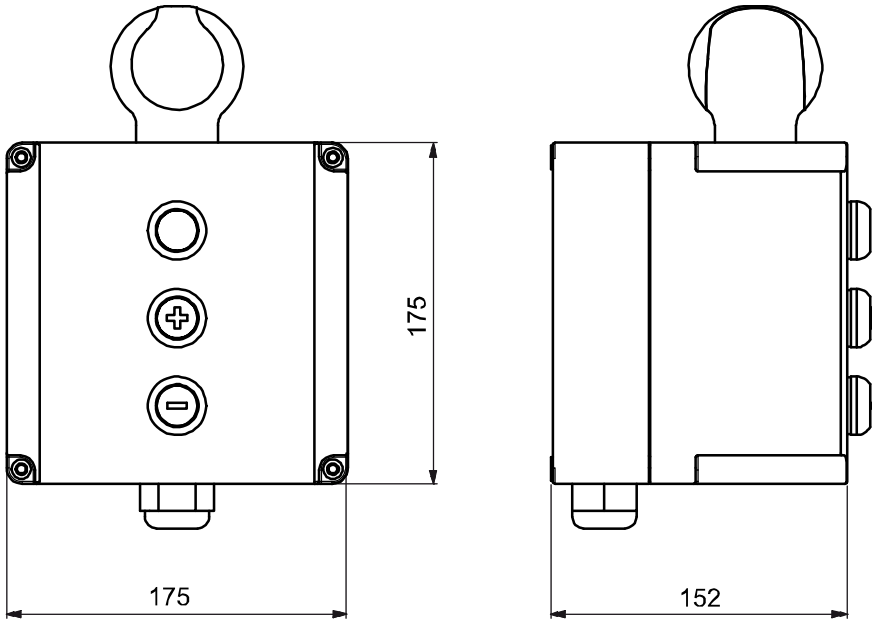
xx1000000797

Continues on next page



xx1000000796

Pos	Description
A	Manual jog panel
B	Operator panel



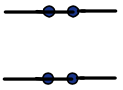
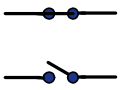
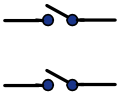
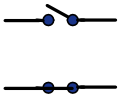
xx1000000799

1.5.6 Light beam

General

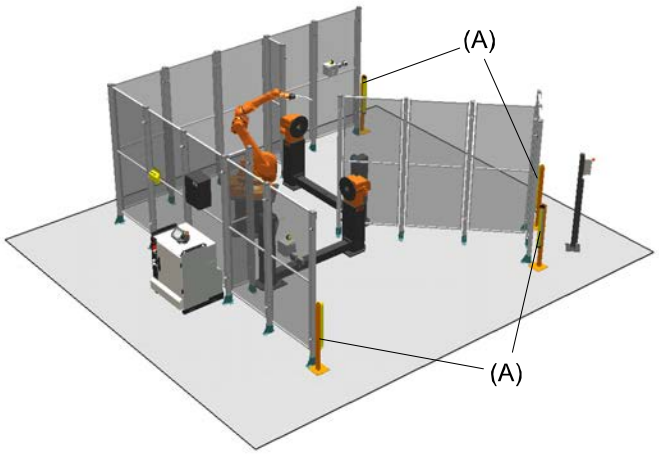
Entry protection, e.g. light beams in the robot system, is used to stop the robot and positioner if someone enters the risk zone while moving parts are active.

The safety module (SIB) can be configured for connection of a number of different input signals from e g light beams from different manufacturers. It can be done without adding any extra components.

Output signals from Light beam/Hatch/Roll door				
Relay 2 x NO	Relay 1 x NO 1 x NC	Transistor 1 x PNP 1 x NPN	Transistor 1 x PNP 1 x PNP	Transistor 1 x PNP 1 x PNP$_{INV}$
Not activated	Not activated	Not activated	Not activated	Not activated
		PNP +24V NPN 0V	PNP +24V PNP +24V	PNP +24V PNP$_{INV}$ ---
Activated	Activated	Activated	Activated	Activated
		PNP ---- NPN ----	PNP ---- PNP ----	PNP --- PNP$_{INV}$

xx1000000760

Activated = Broken light beam or open door.



xx1000000795

Pos	Description
A	Light beams Max distance: 7 m Beam hights: Lower beam = 400 mm, Upper beam = 900 mm

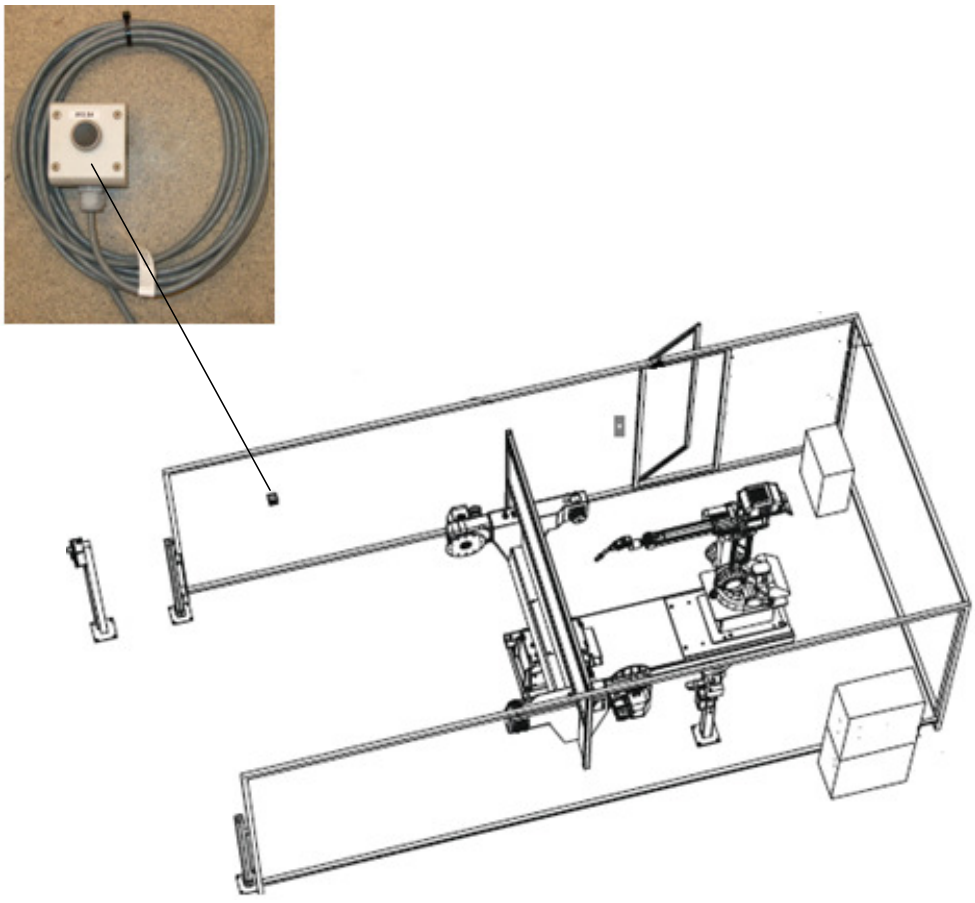
1.5.7 Pre reset

General

The pre reset unit is used to prevent anyone remaining within the risk zone. Activation of the pre reset function allows a reset of the guard system (e g light beams) within 10 seconds.

Note

Requires option board Pre Reset

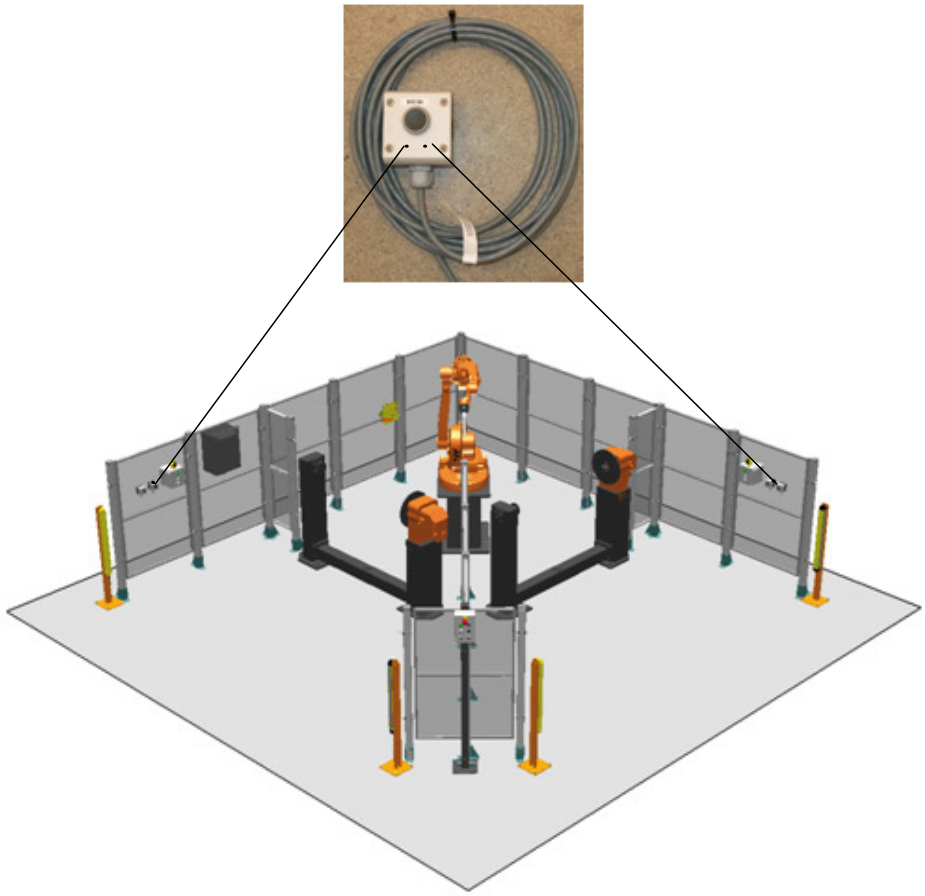


xx1000000803

1.5.8 Activation unit - Programming from operator area

General

The Activation unit is used to make it possible to program the positions on the workpiece from the operator area. This is done by allowing the operator to reset the light beam from a pushbutton located inside the operator area. The function is only allowed with the system set in manual operating mode (Teach/Man Full Speed).



xx1000000757

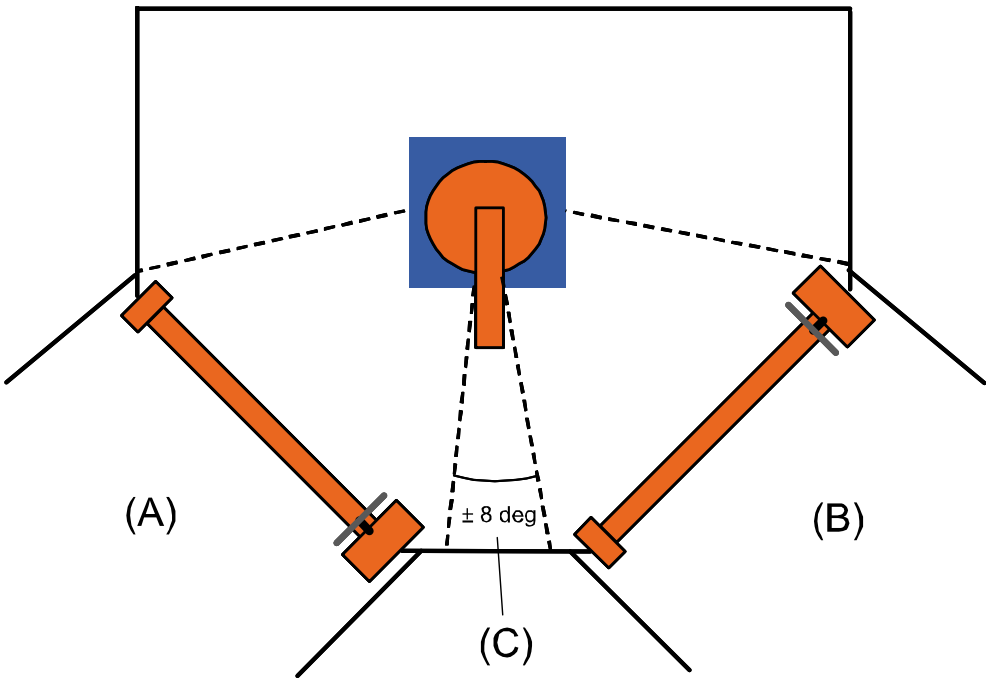
1.5.9 Station indication and Home position

Station indication

The station indication function is used to monitor the robot work zones. It indicates if the robot is positioned in the following positions.

- Area 1 (STN1)
- Area 2 (STN2)
- Service position

The service position is a limited area (position) between two workstations where the robot can perform tool cleaning. When the robot is in this area, the operator can enter both workstations when the robot is active.



xx1000000811

Pos	Description
A	Area 1
B	Area 2
C	Service position

Continues on next page

1.5.9 Station indication and Home position
Continued

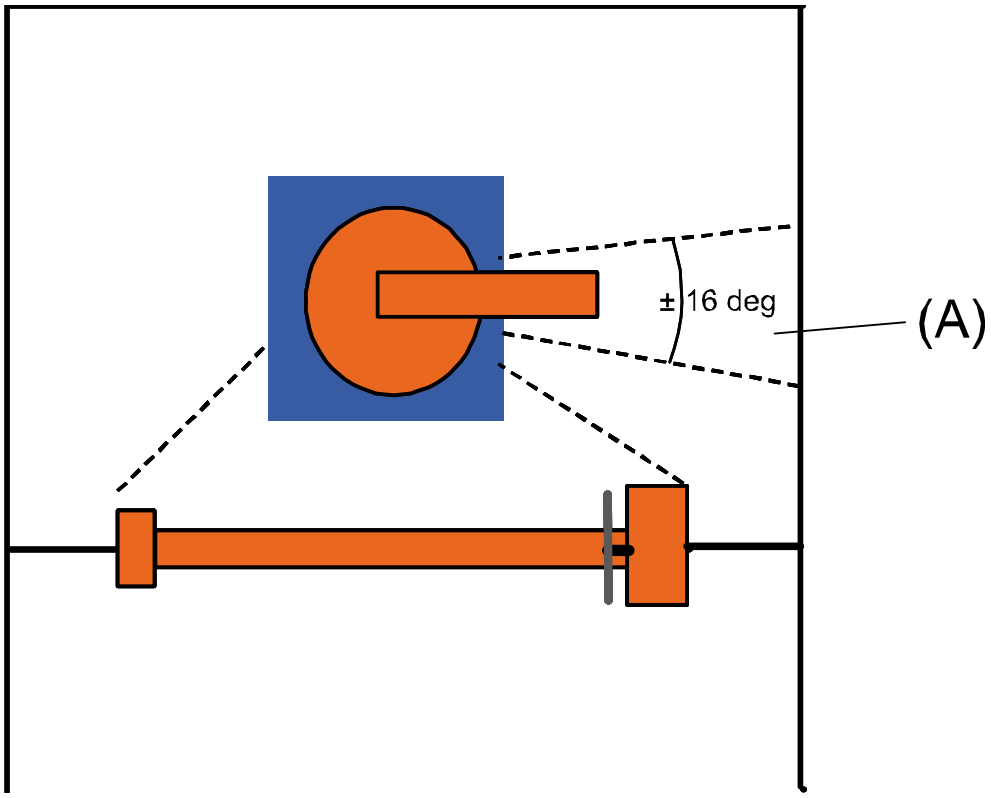
Home position

The home position is a safe position for the robot which is out of reach for the operator. The home position function is used in station solutions that consists of one workstation only for the robot and operator. When the robot is in the home position, the operator is permitted to enter the working area.

In the home position the robot is active and can perform e g tool cleaning.

Note

Requires option board Home Position.



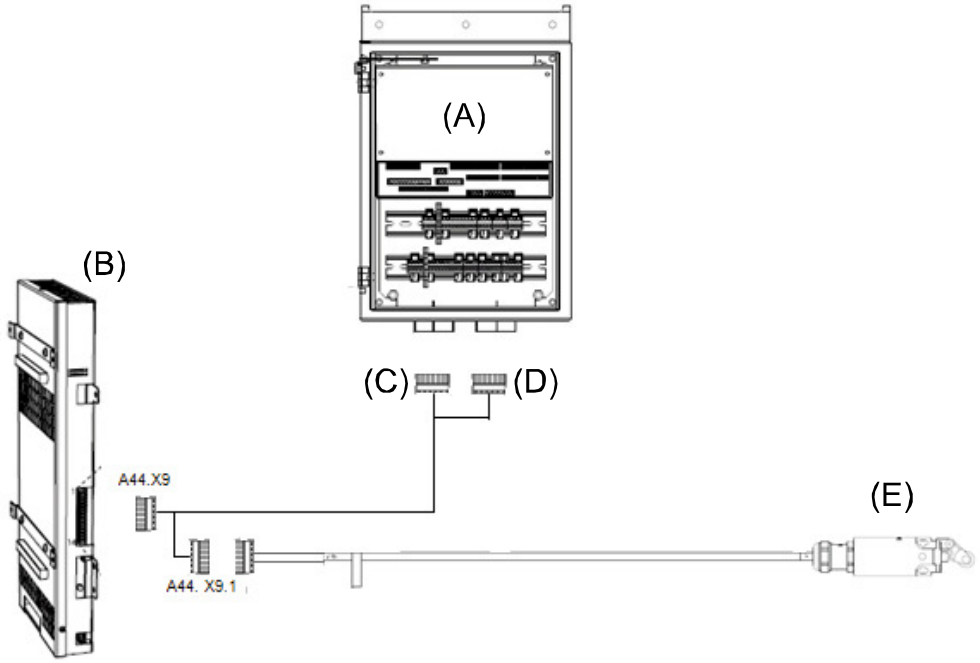
xx1000000767

Pos	Description
A	Home position

Continues on next page

EPS

The work zones for the functions Station indication and Home position are monitored by EPS (Electronic Position Switch). The safety outputs from the EPS are connected to the safety module.



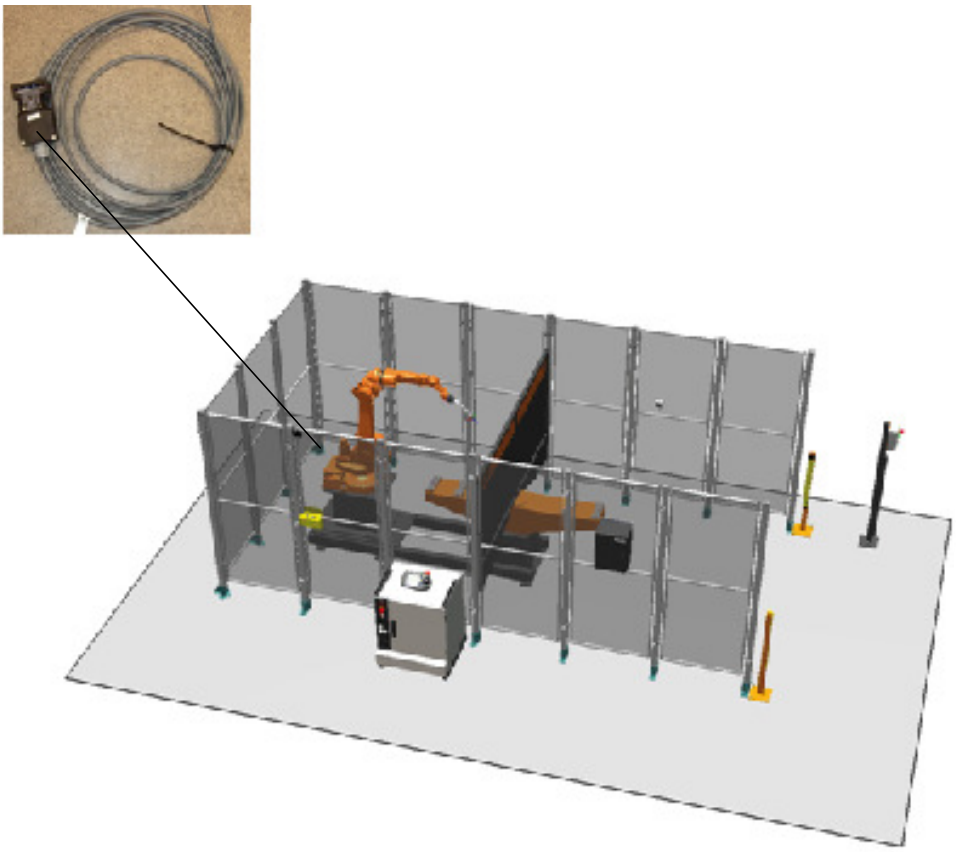
xx1000000762

Pos	Description
A	Safety module STN1 and STN 2
B	EPS computer
C	Satation indication outputs
D	Home position outputs
E	Sync switch

1.5.10 Gate switch

General

The protective barrier that surrounds the robot system can include one or more service gates to give access to the robot's working area, for e g maintenance or programming. The gate switch has forced make and break contacts (interlocked contacts).



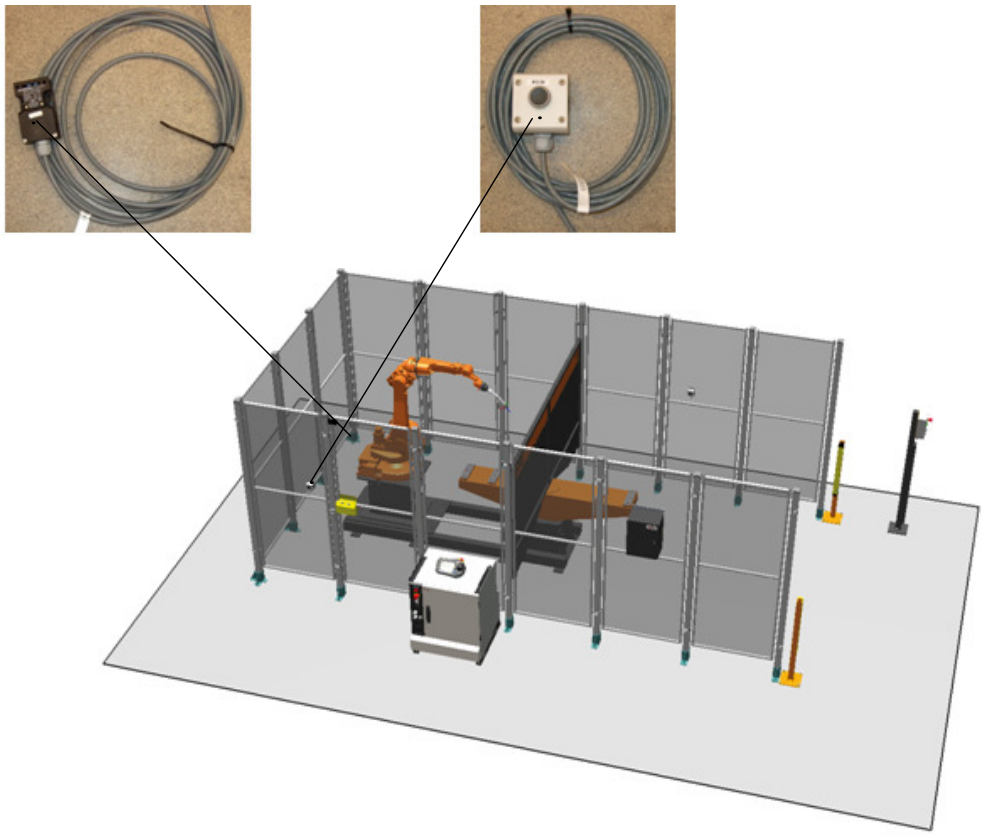
xx1000000765

Continues on next page

Gate switch with external reset

When the controller is located far from the service gate, where there is not a clear view of the safety zone, an external pushbutton must be added for resetting the gate interlock switch.

The pushbutton must be located outside the safety zone.



xx1000000817

1.6 Applicable standards

Note

The listed standards are valid at the time of the release of this document. Phased out or replaced standards are removed from the list when needed.

General

The product is designed in accordance 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 deviations from ISO 10218-1:2011, these are listed in the declaration of incorporation which is part of the product delivery.

Normative standards as referred to from ISO 10218-1

Standard	Description
ISO 9283:1998	Manipulating industrial robots - Performance criteria and related test methods
ISO 10218-2	Robots and robotic devices - Safety requirements for industrial robots - Part 2: Robot systems and integration
ISO 12100	Safety of machinery - General principles for design - Risk assessment and risk reduction
ISO 13849-1:2006	Safety of machinery - Safety related parts of control systems - Part 1: General principles for design
ISO 13850	Safety of machinery - Emergency stop - Principles for design
IEC 60204-1	Safety of machinery - Electrical equipment of machines - Part 1: General requirements

Deviations from ISO 10218-1:2011 for IRBP

Deviations from the standard are motivated for IRBP in the table below.

Requirement	Deviation for IRBP	Motivation
§5.12.1 Limiting the range of motion by adjustable stops (§5.12.2) or by safety functions (§5.12.3).	IRBP does not have adjustable mechanical stops.	The positioner is designed with fixed positions.

Region specific standards and regulations

Standard	Description
ANSI/RIA R15.06	Safety requirements for industrial robots and robot systems
CAN/CSA Z 434-03	Industrial robots and robot Systems - General safety requirements

Continues on next page

Other standards used in design

Standard	Description
ISO 9787:2013	Robots and robotic devices -- Coordinate systems and motion nomenclatures
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 13732-1:2006	Ergonomics of the thermal environment - Part 1
IEC 60974-1:2012 [i]	Arc welding equipment - Part 1: Welding power sources
IEC 60974-10:2014 [i]	Arc welding equipment - Part 10: EMC requirements
ISO 14644-1:2015 [ii]	Classification of air cleanliness
IEC 60529:1989 + A2:2013	Degrees of protection provided by enclosures (IP code)

i Only valid for arc welding robots. Replaces IEC 61000-6-4 for arc welding robots.
ii Only robots with protection Clean Room.

1.7 Maintenance and Troubleshooting

1.7.1 Introduction

General

The Positioners requires only minimum maintenance during operation. It has been designed to make it as easy to service 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 positioner. For detailed information on maintenance procedures, see Maintenance section in the Product Manual.

2 Technical data

2.1 IRBP A-250/500-750

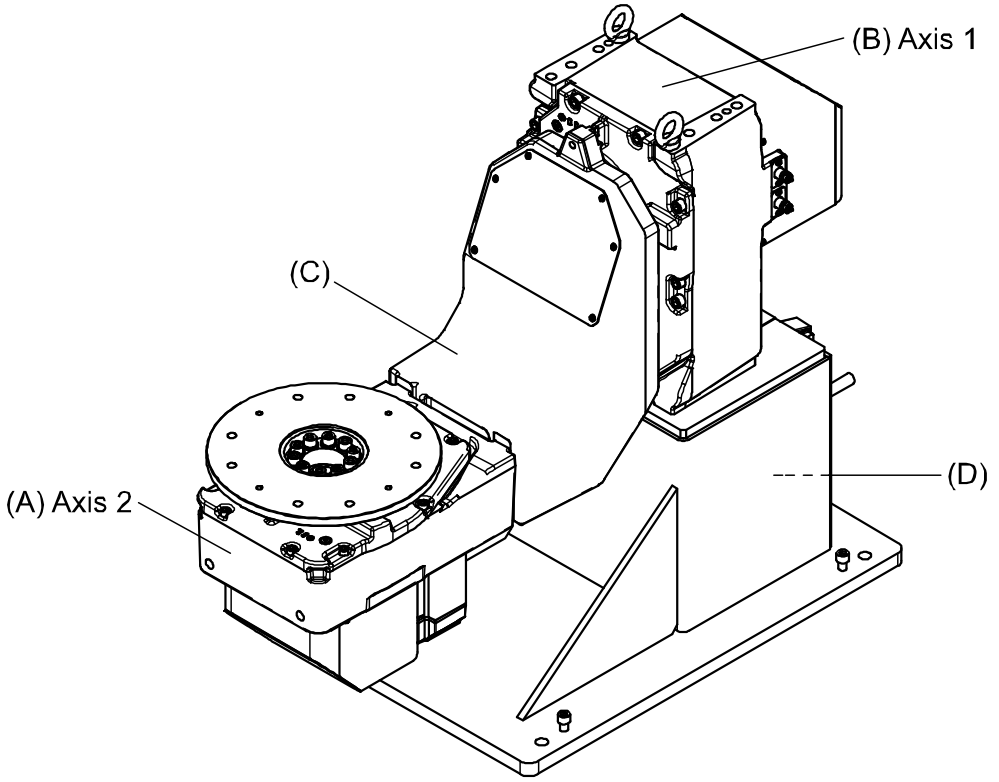
2.1.1 General

Introduction

The positioner is designed to handle workpieces of a weight up to 250/500/750 kg (including the fixture) in connection with robot processes.

The modular design, few and heavy-duty moving parts as well as minimal maintenance demands make the positioner service friendly.

The positioner is designed with the following main sections (Figure below)



xx1000000682

Pos	Description	Pos	Description
A	Rotary unit, PLATE	D	Stand
B	Rotary unit, ARM	E	SMB unit
C	Arm		

There is a rotary unit (B, ARM) fitted on the stand (D).

On (B) outgoing shaft there is an arm (C) which on its end there is a rotary unit (A) fitted.

On the outgoing shaft of the rotary unit (A, PLATE) a faceplate is fitted. The faceplate has plain holes and guide holes for securing fixtures.

Continues on next page

2.1.1 General
Continued

The rotary unit is fitted with a current collector in the form of a slip ring in order to transfer weld current.

2.1.2 Technical data

General

Note

Max speed specified in the table below only applies to standard products.

Technical Data	IRBP A-250		IRBP A-500		IRBP A-750	
	ARM	PLATE	ARM	PLATE	ARM	PLATE
Max. handling capacity	250 kg		500 kg		750 kg	
Max continuous torque	350 Nm		650 Nm		900 Nm	
Center of gravity	See loading table		See loading table		See loading table	
Positioning time 90 degrees	0.9 -1.3 s	0.8 -1.2 s	1.2 -2.2 s	0.9 -1.3 s	1.2 -2.2 s	0.9 -1.3 s
Positioning time 180 degrees	1.5 -2.1 s	1.3 -2.0 s	2.2 -3.5 s	1.5 -2.1 s	2.2 -3.5 s	1.5 -2.1 s
Positioning time 360 degrees	2.7 -2.9 s	2.3 -2.7 s	4.2 -4.9 s	2.7 -2.9 s	4.2 -4.9 s	2.7 -2.9 s
Working area	ARM = ± 181º PLATE = Infinite		ARM = ± 181º PLATE = Infinite		ARM = ± 181º PLATE = Infinite	
Repetition accuracy with equal loads at radius 500 mm	±0.05 mm		±0.05 mm		±0.05 mm	
Max. speed of rotation	150 deg/s	180 deg/s	90 deg/s	150 deg/s	90 deg/s	150 deg/s
Max welding power, 60% duty cycle	600 Amp		600 Amp		600 Amp	
Weight	470 kg		850 - 870 kg		850 - 870 kg	

2.1.3 Loading table

General

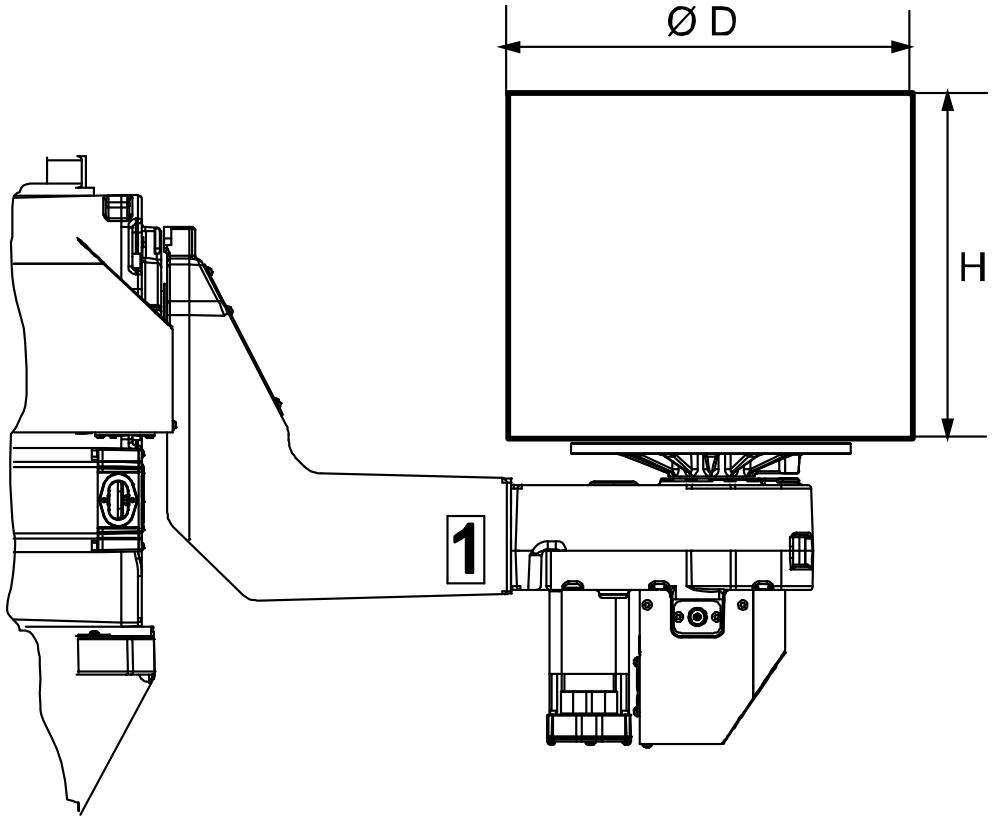
The tables show the maximum permitted center of gravity displacement from the center of rotation and the rotary unit's faceplate at different loads.

IRBP A-250

If the load is 225 kg the center of gravity must be within the area limited by the measurement ØD respective measurement H (317 mm respective 294 mm), see Figure Below

If the load is 235 kg use the column immediately above, that is the 250 kg column.

ØD (mm)	285	317	357	408	476	571	714	951
H (mm)	265	294	331	379	442	530	663	883
Weight of the workpiece including fixture (kg)	250	225	200	175	150	125	100	75



xx1000000683

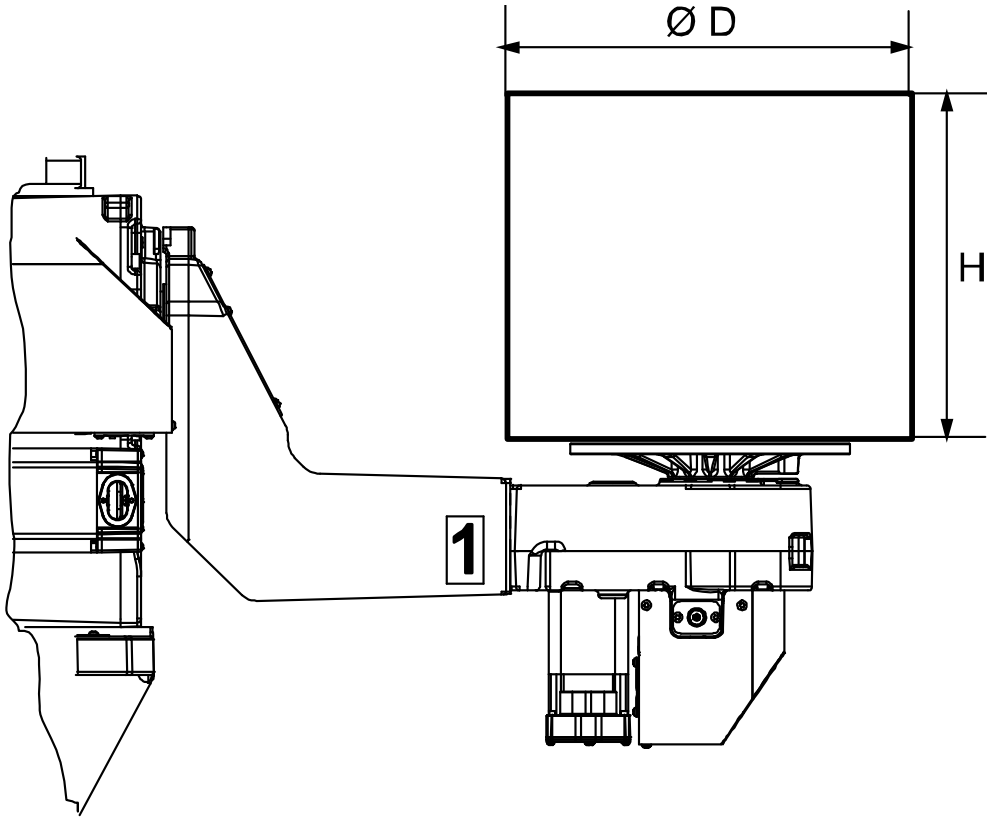
Continues on next page

IRBP A-500

If the load is 450 kg the center of gravity must be within the area limited by the measurement ØD respective measurement H (294 mm respective 748 mm), see Figure below.

If the load is 435 kg use the column immediately above, that is the 450 kg column.

Weight of the workpiece including fixture (kg)	500	450	400	350	300	250	200	150
ØD (mm)	265	294	331	379	442	530	663	888
H (mm)	673	748	841	950	950	950	950	950



xx1000000683

Continues on next page

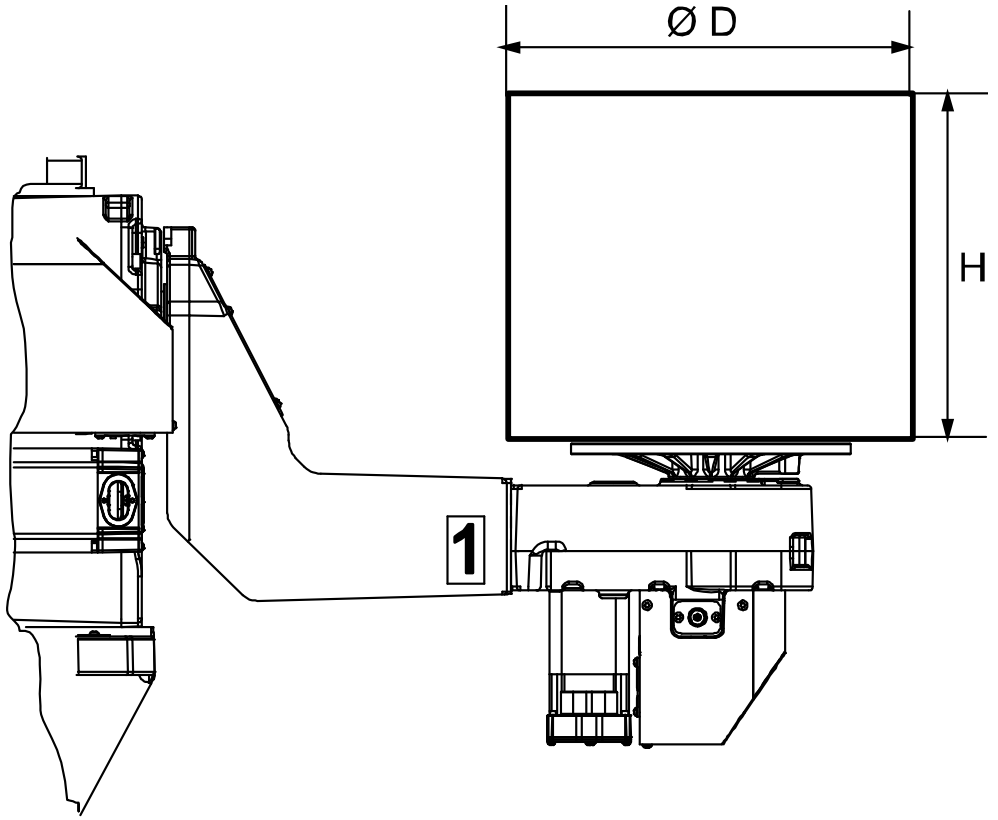
2.1.3 Loading table
Continued

IRBP A-750

If the load is 700 kg the center of gravity must be within the area limited by the measurement ØD respective measurement H (262 mm respective 728 mm), see Figure below.

If the load is 685 kg use the column immediately above, that is the 700 kg column.

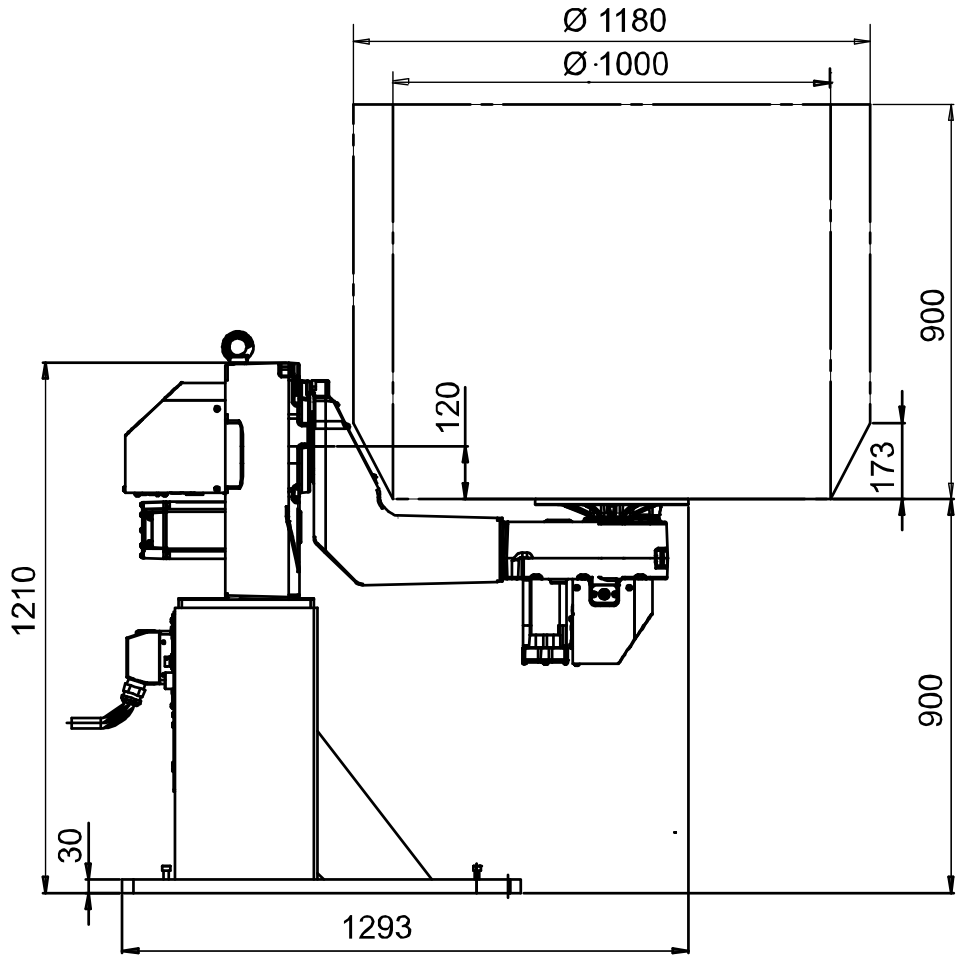
Weight of the workpiece including fixture (kg)	750	700	650	600	550	500	450	400
ØD (mm)	245	262	282	306	334	367	408	459
H (mm)	680	728	784	849	927	950	950	950



xx1000000683

2.1.4 Dimensional drawings

IRBP A-250

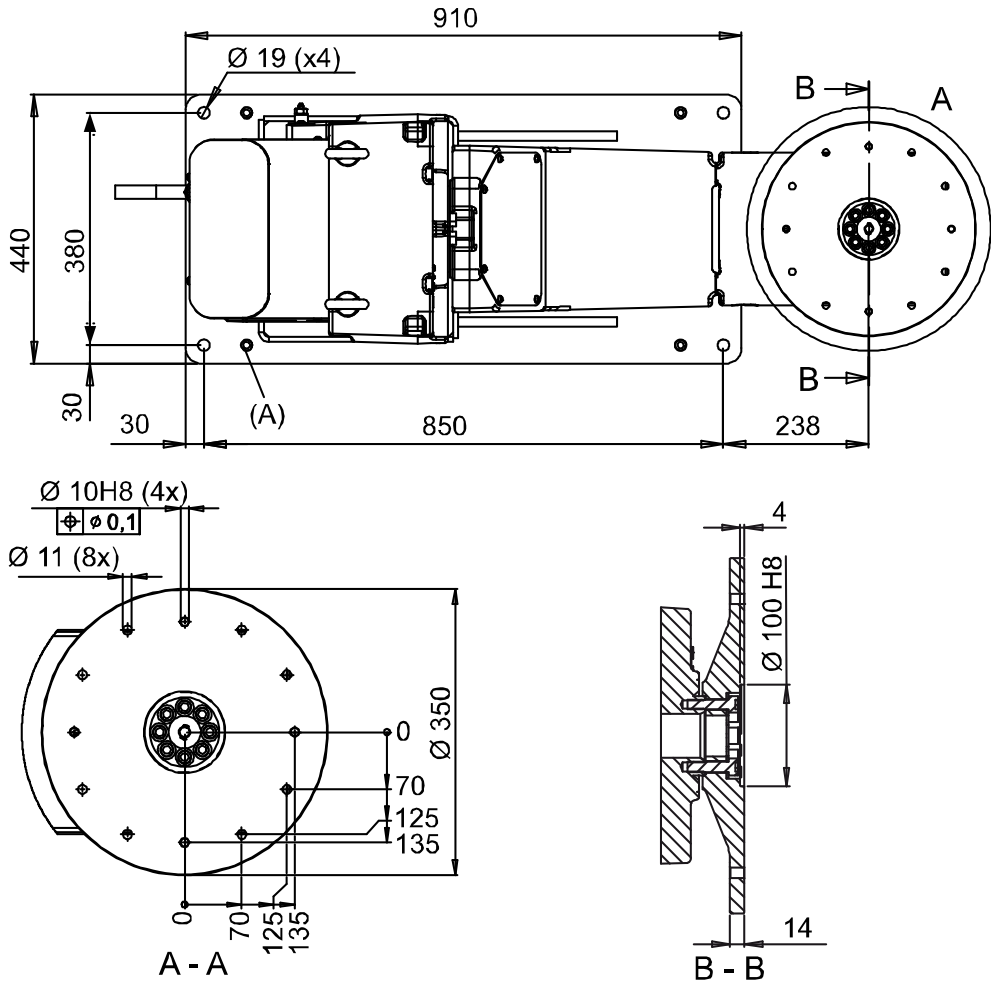


xx1000000684

Continues on next page

2.1.4 Dimensional drawings

Continued

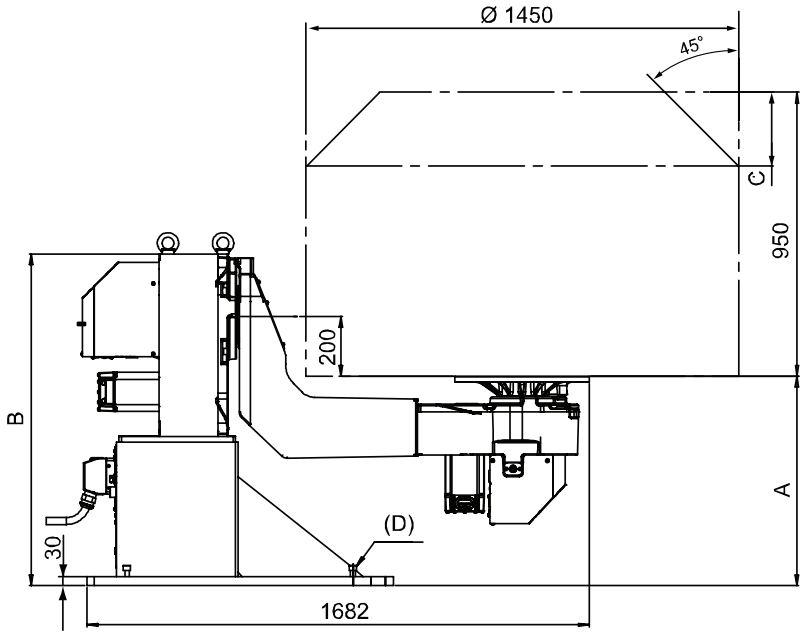


xx1000000685

Pos	Description
A	Adjusting bolts

Continues on next page

IRBP A-500 / -750 Ø1450 mm



xx1000000686

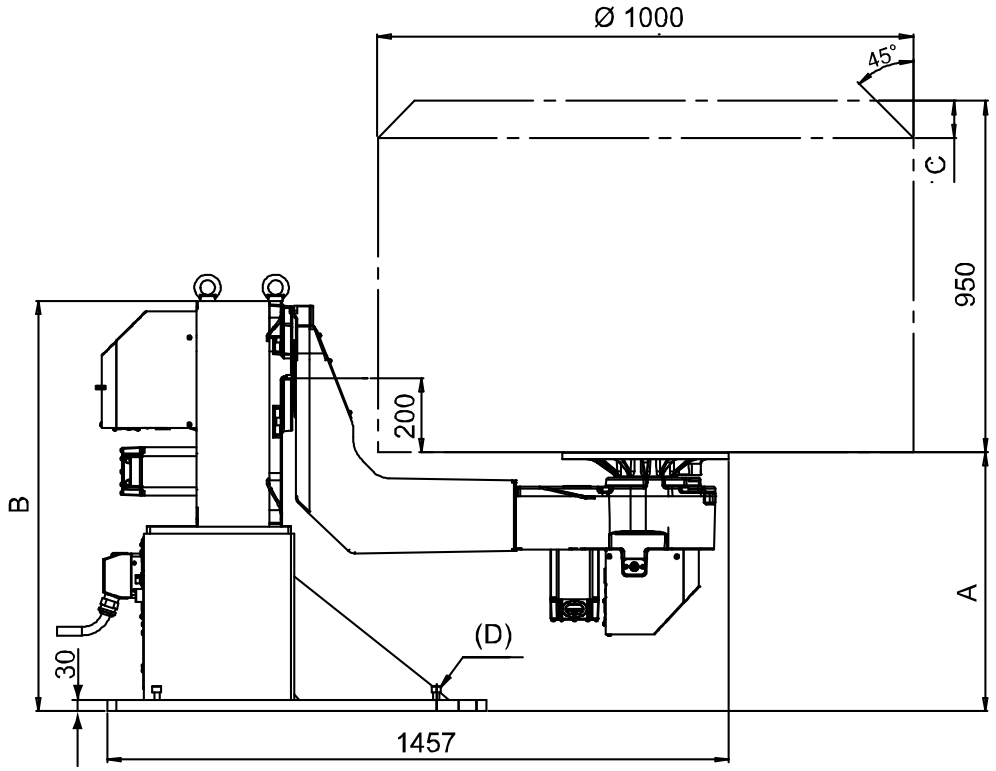
Pos	Description
D	Adjusting bolts

IRBP A-500 / -750 Ø1450		
A (mm)	B (mm)	C (mm)
700	1110	250
800	1210	0
900	1310	0

Continues on next page

2.1.4 Dimensional drawings
Continued

IRBP A-500 / -750 Ø1000 mm



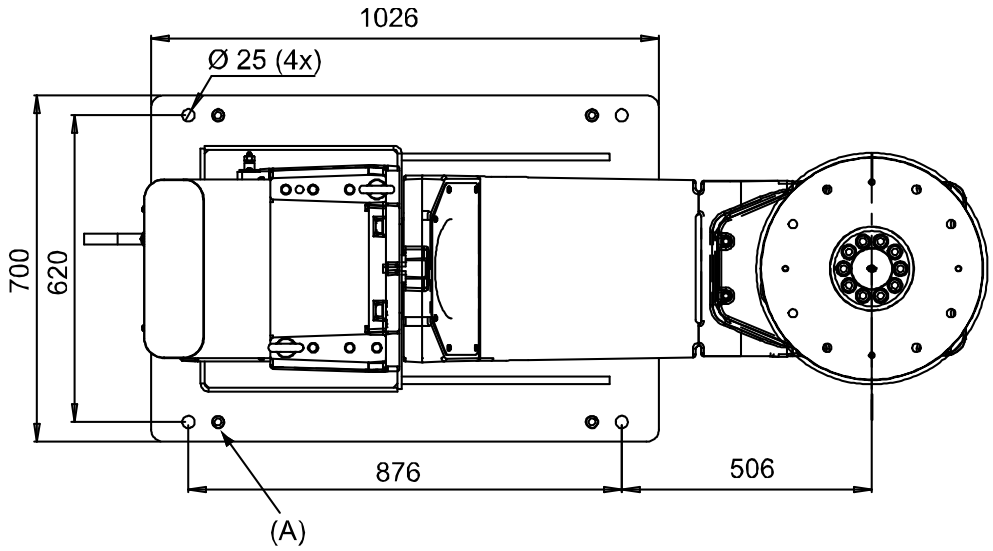
xx1000000687

Pos	Description
D	Adjusting bolts

IRBP A-500 / -750 Ø1000		
A (mm)	B (mm)	C (mm)
700	1110	100
800	1210	0
900	1310	0

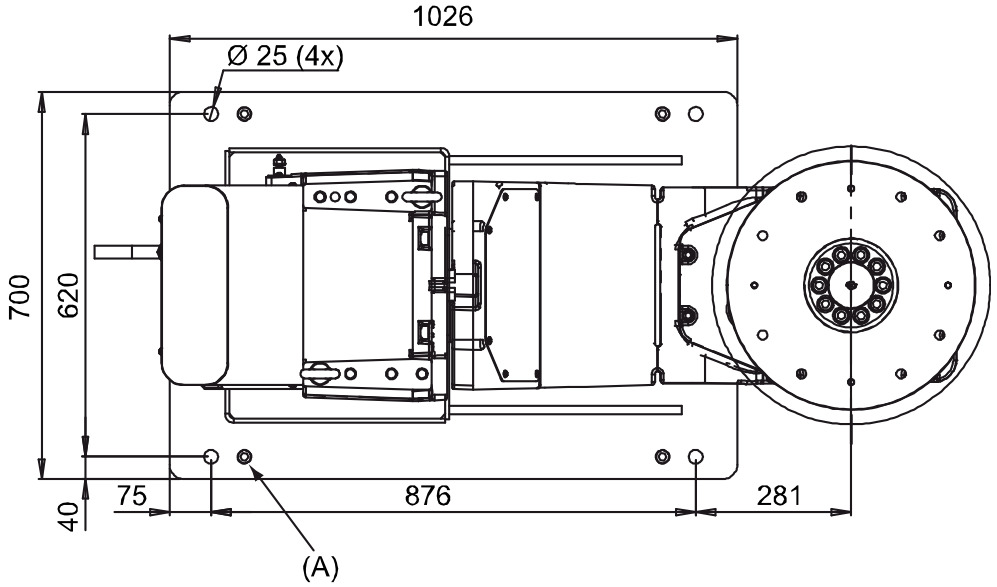
Continues on next page

IRBP A-500 / -750 Ø1450 mm



xx1000000688

IRBP A-500 / -750 Ø1000 mm



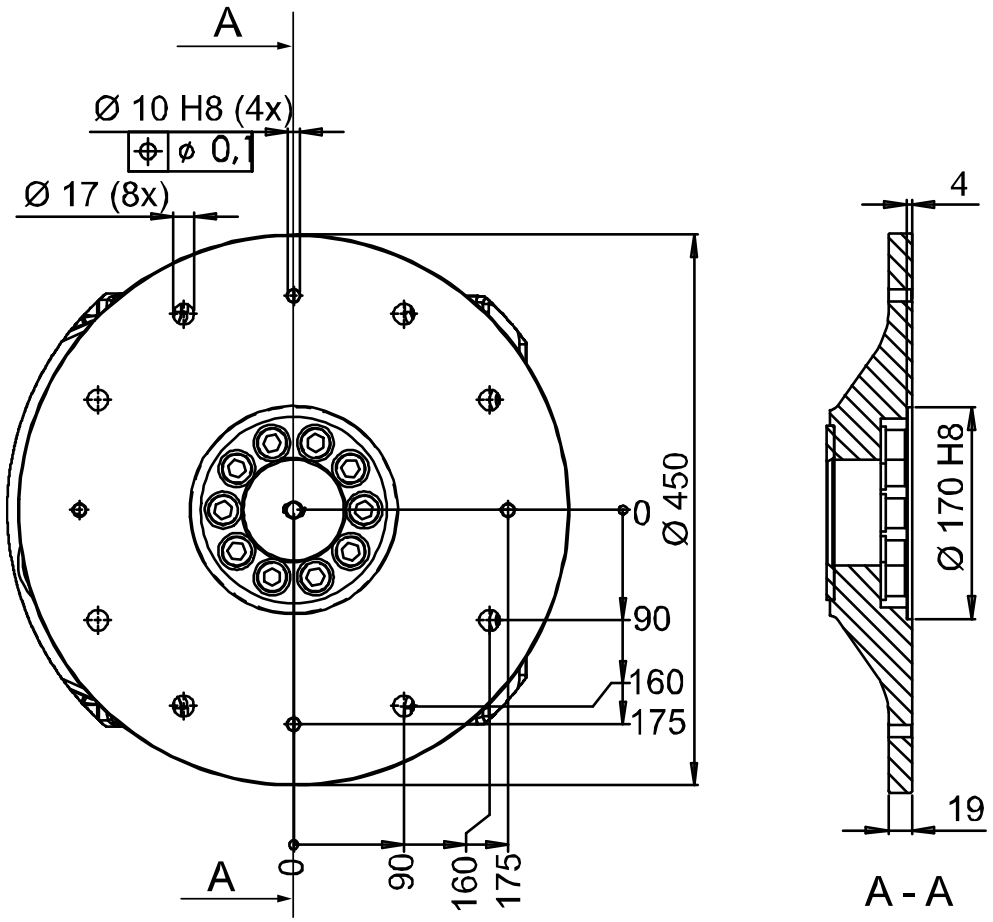
xx1000000689

Pos	Description
A	Adjusting bolts

Continues on next page

2.1.4 Dimensional drawings

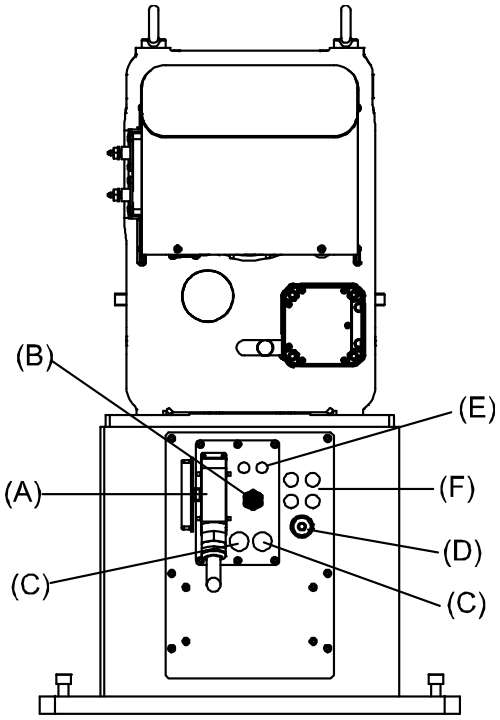
Continued



xx1000000690

Continues on next page

Connections



xx1000000820

Pos	Description	Pos	Description
A	Power cable	D	Weld return cable
B	Measurement cable, SMB	E	Profi Bus
C	Customer power	F	Air

2.2 IRBP B-250/500/750

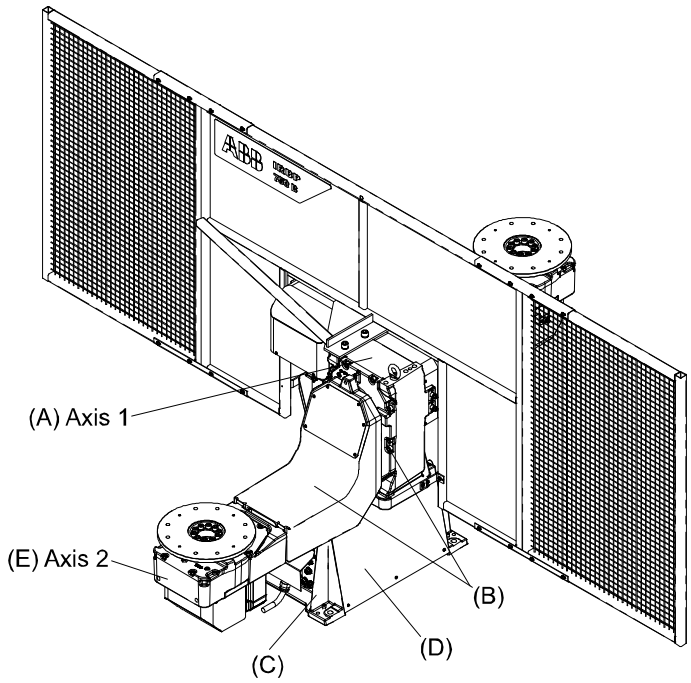
2.2.1 General

Introduction

The positioner is designed to handle workpieces of a weight up to 250/500/750 kg (incl. the fixture) in connection with robot processes.

The positioner features a twin station solution where the robot works on one side and the operator loads and unloads on the other.The modular design, few and heavy-duty moving parts as well as minimal maintenance demands make the positioner service friendly.

The positioner is designed with the following main sections (Figure below).



xx1000000691

Pos	Description	Pos	Description
A	Rotary unit, ARM	D	SMB unit
B	Stand	E	Rotary unit, PLATE
C	Station interchange unit, IN-TERCH		

On the outgoing shaft of the station interchange unit, there is a frame on which two rotary units are fitted.

On the outgoing shaft (A, ARM) there is an arm fitted, with a rotary unit mounted.

On the outgoing shaft of the rotary unit (E, PLATE) a faceplate is fitted. The faceplate has plain holes and guide holes for securing fixtures.

A screen is fitted between the two stations, which protects the operator from arc-eye.

Continues on next page

The rotary unit is fitted with a current collector in the form of a slip ring in order to transfer weld current.

2.2.2 Technical data

General

Note

Max speed specified in the table below only applies to standard products.

Technical data	IRBP B-250		IRBP B-500		IRBP B-750	
	ARM	PLATE	ARM	PLATE	ARM	PLATE
Max. handling capacity	250 kg		500 kg		750 kg	
Max load difference between sides 1 and 2 at operation	125 kg		250 kg		250 kg	
Max. load difference between sides 1 and 2 at standstill	250 kg		500 kg		750 kg	
Center of gravity	See *Loading table on page 63*		See *Loading table on page 63*		See *Loading table on page 63*	
Positioning time 90 degrees	0.9-1.3 s	0.8-1.2 s	1.2-2.2 s	0.9-1.3 s	1.2-2.2 s	0.9-1.3 s
Positioning time 180 degrees	1.5-2.1 s	1.3-2.0 s	2.2-3.5 s	1.5-2.1 s	2.2-3.5 s	1.5-2.1 s
Positioning time 360 degrees	2.7-2.9 s	2.3-2.7 s	4.2-4.9 s	2.7-2.9 s	4.2-4.9 s	2.7-2.95 s
Working area	INTERCH = ± 181º ARM = ± 181º PLATE = Infinite		INTERCH = ± 181º ARM = ± 181º PLATE = Infinite		INTERCH = ± 181º ARM = ± 181º PLATE= Infinite	
Repetition accuracy with equal loads at radius 500 mm	±0.05 mm		±0.05 mm		±0.05 mm	
Max. speed of rotation	150 deg/s	180 deg/s	90 deg/s	150 deg/s	90 deg/s	150 deg/s
Index time	3.4-3.7 s		3.7-4.4 s		3.7-4.4 s	
Weld to weld time	5.2-5.6 s		5.8-6.5 s		5.8-6.5 s	
Max welding current, 60% duty cycle	600 Amp		600 Amp		600 Amp	
Weight	915 kg		1,750 kg		1,750 kg	

2.2.3 Loading table

General

The tables shows max. permitted center of gravity shift from the rotation center and the rotary unit's faceplate at different loads.

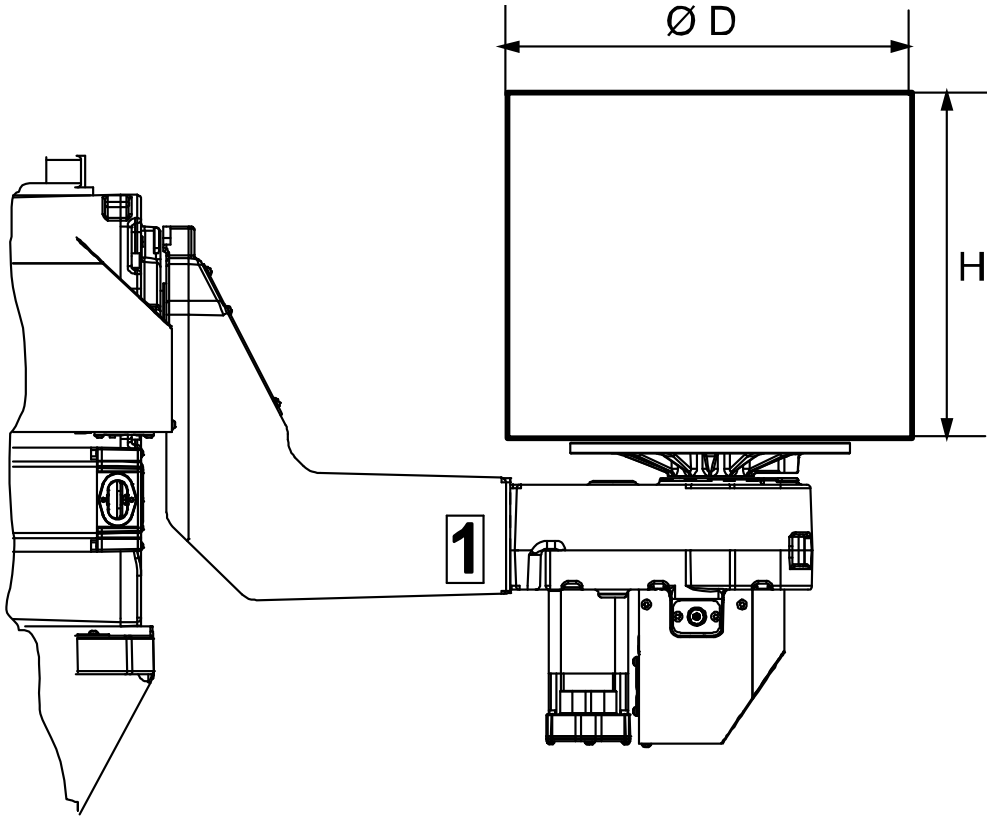
IRBP B-250

If the load is 225 kg, the center of gravity must be located within the area ØD and H (ØD=317 mm, H= 294 mm), see Figure below.

If the load is 235 kg, see the column for 250 kg load.

The maximum load difference at stationary is the handling capacity, as long as the positioner is standing still.

Weight of the workpiece including fixture (kg)	250	225	200	175	150	125	100	75
ØD (mm)	285	317	357	408	476	571	714	951
H (mm)	265	294	331	379	442	530	663	883



xx1000000683

Continues on next page

2.2.3 Loading table
Continued

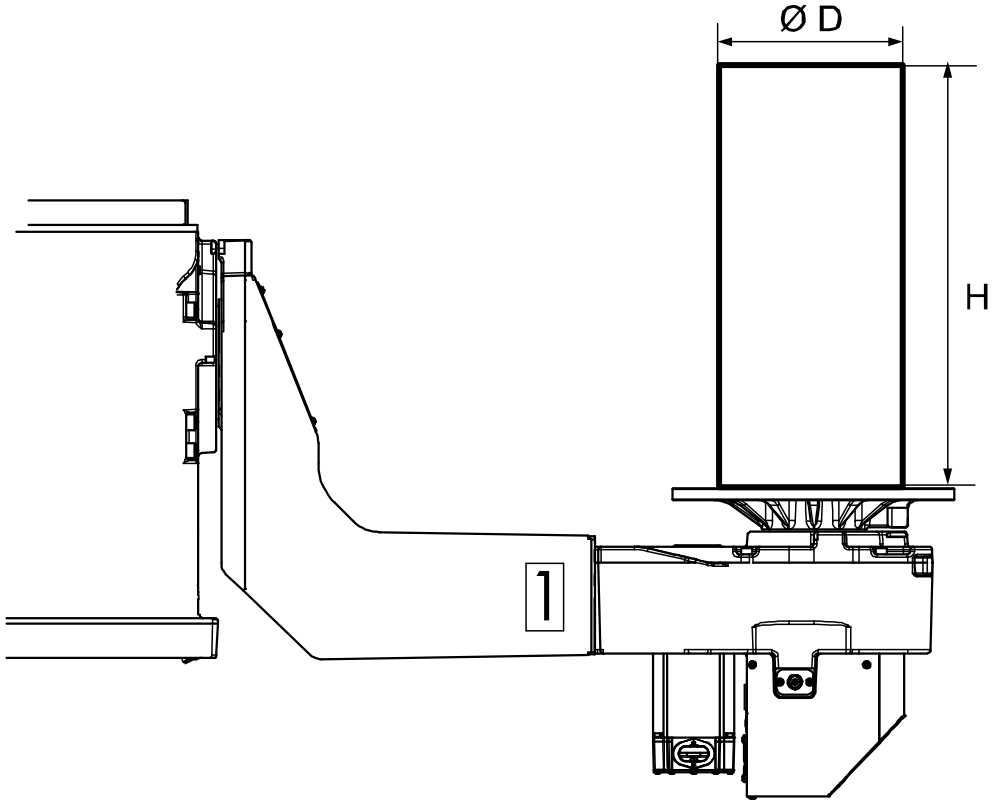
IRBP B-500

If the load is 450 kg, the center of gravity must be located within the area ØD and H (ØD=294 mm, H= 748 mm), see Figure below.

If the load is 435 kg, see the column for 450 kg load.

The maximum load difference at stationary is the handling capacity, as long as the positioner is standing still.

Weight of the workpiece including fixture (kg)	500	450	400	350	300	250	200	150
ØD (mm)	265	294	331	379	442	530	663	888
H (mm)	673	748	841	950	950	950	950	950



xx1000000692

Continues on next page

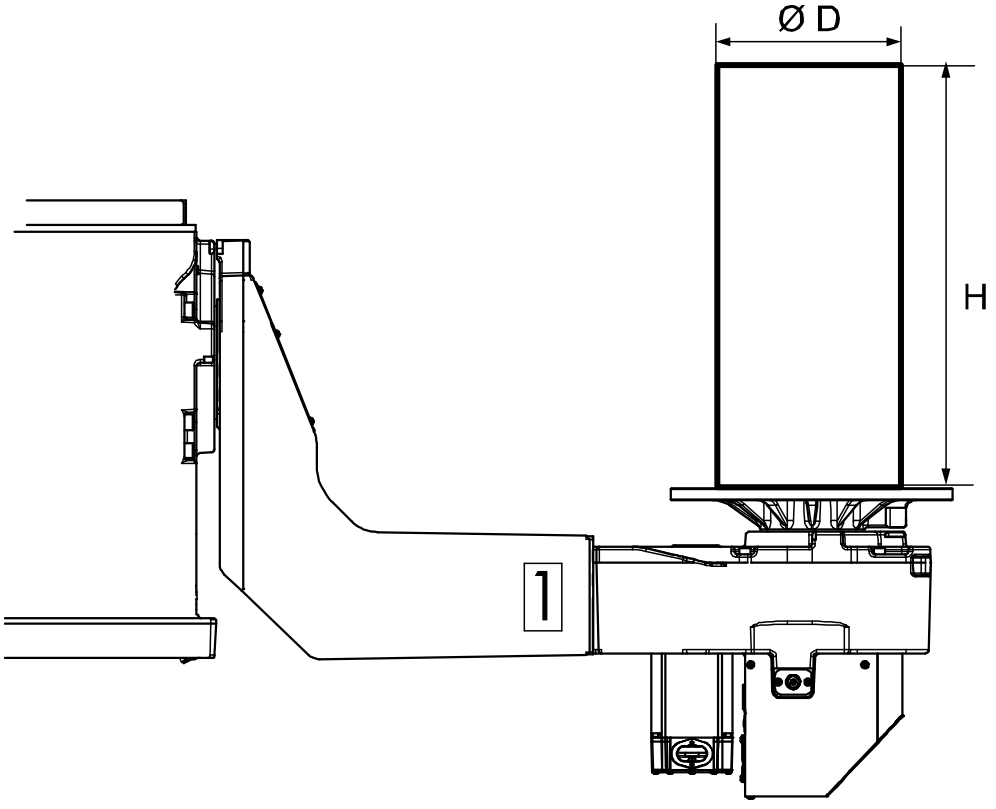
IRBP B-750

If the load is 700 kg, the center of gravity must be located within the area ØD and H, (ØD=262 mm, H= 728 mm), see Figure below.

If the load is 685 kg, see the column for 700 kg load.

The maximum load difference at stationary is the handling capacity, as long as the positioner is standing still.

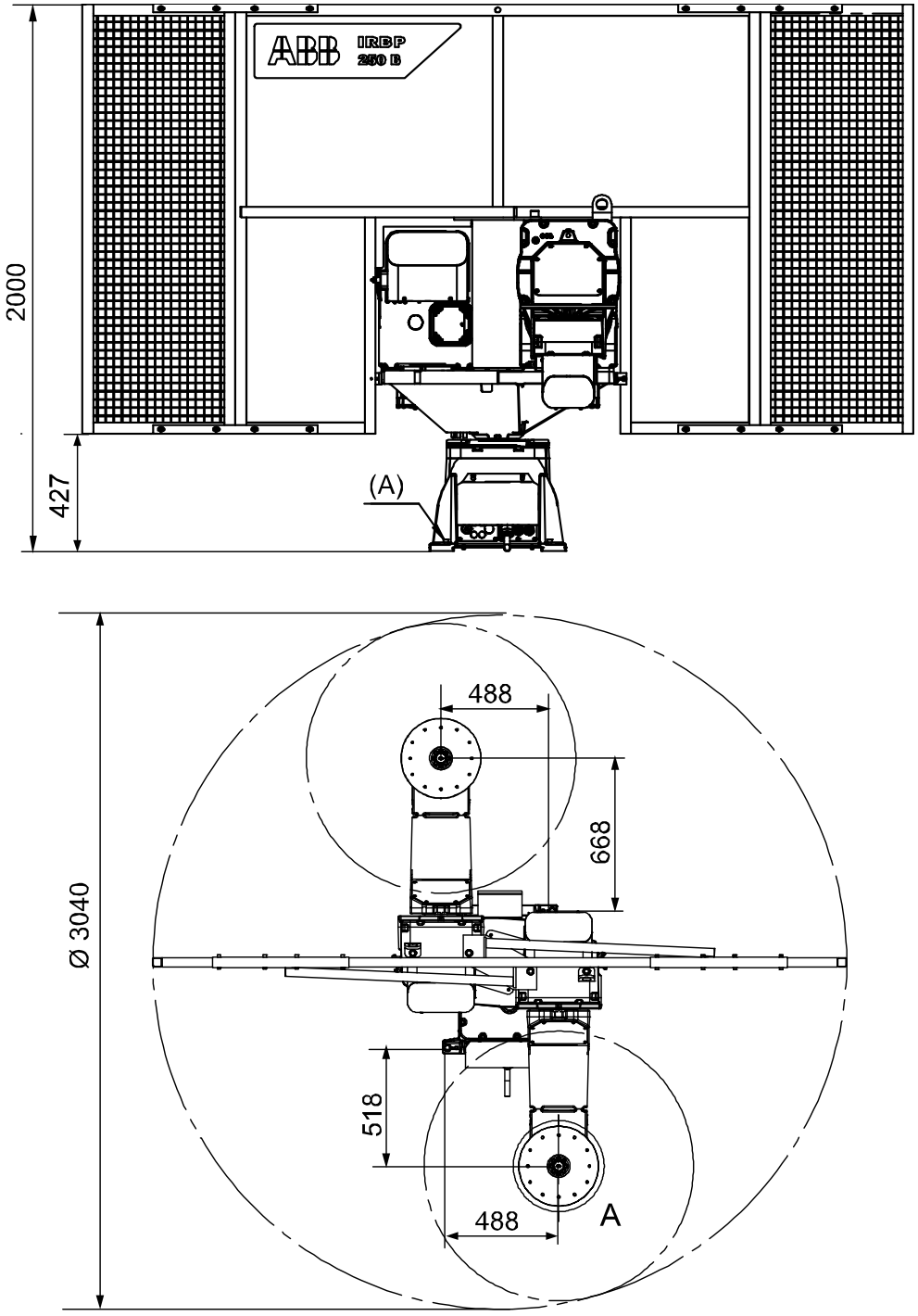
Weight of the workpiece including fixture (kg)	750	700	650	600	550	500	450	400
ØD (mm)	245	262	282	306	334	367	408	459
H (mm)	680	728	784	849	927	950	950	950



xx1000000692

2.2.4 Dimensional drawings

IRBP B-250

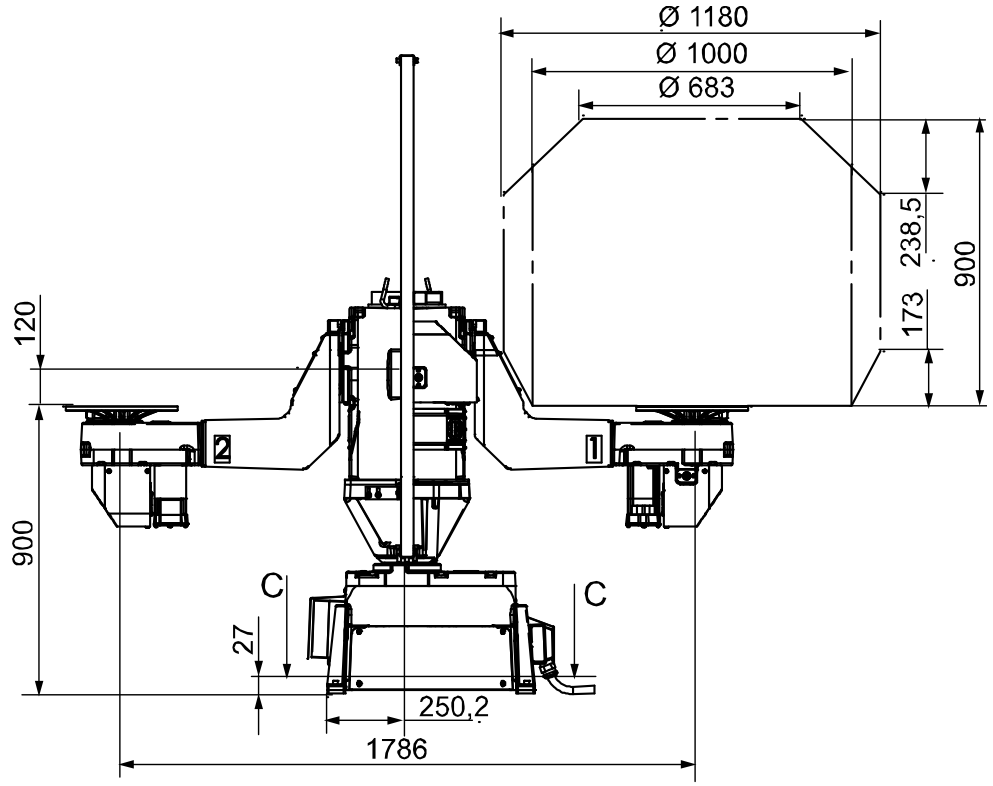


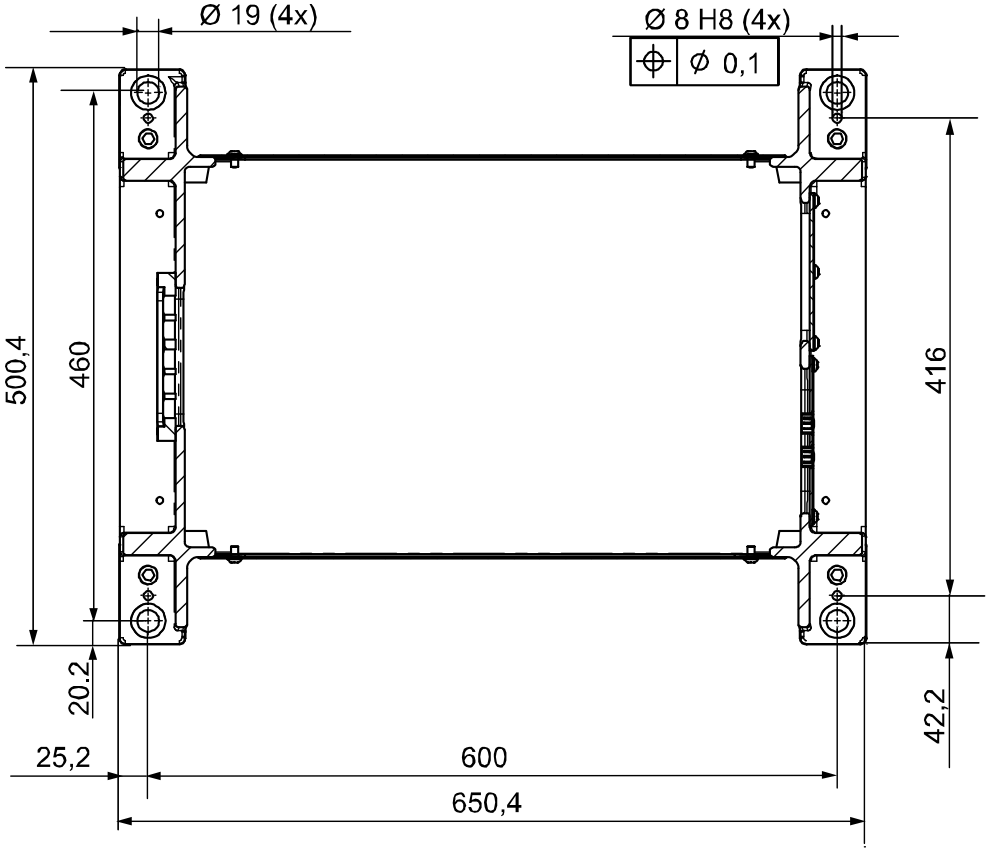
xx1000000693

Pos	Description
A	Adjusting bolts

Continues on next page

2.2.4 Dimensional drawings
Continued





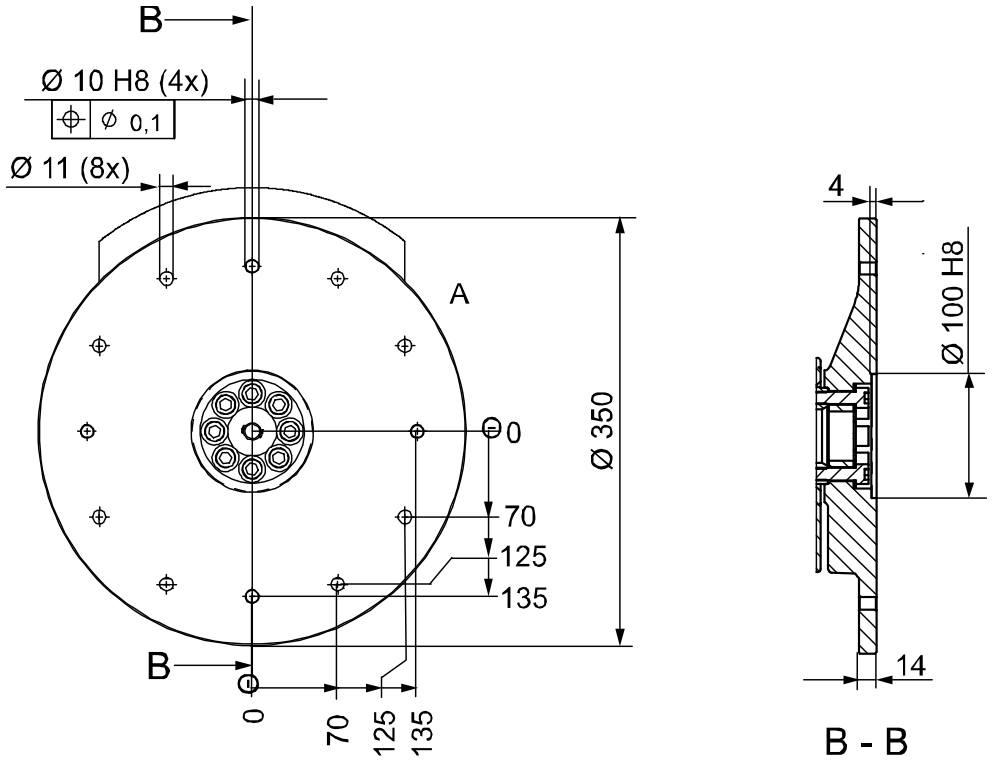
C - C

xx1000000694

Continues on next page

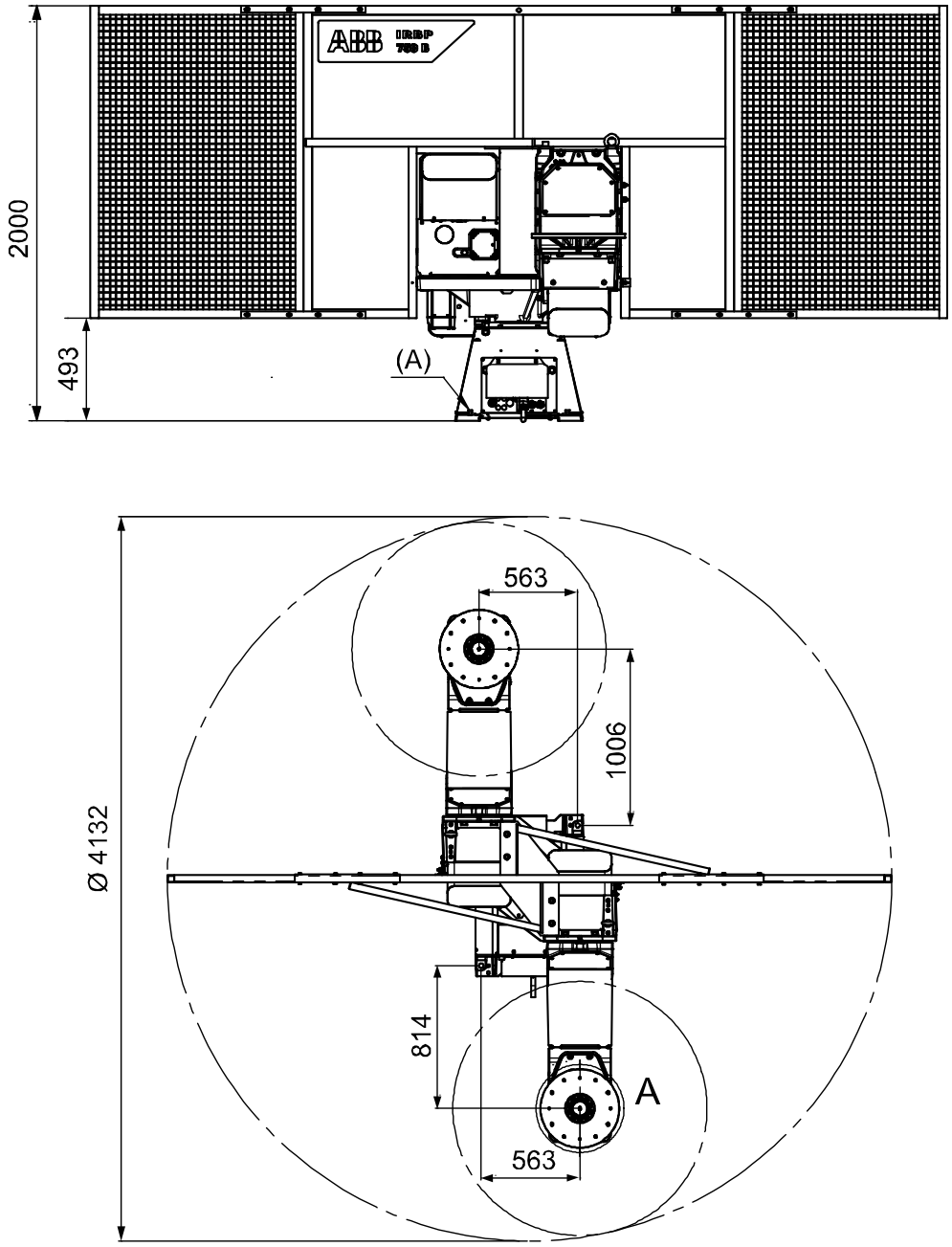
2.2.4 Dimensional drawings

Continued



Continues on next page

IRBP B-500 / -750



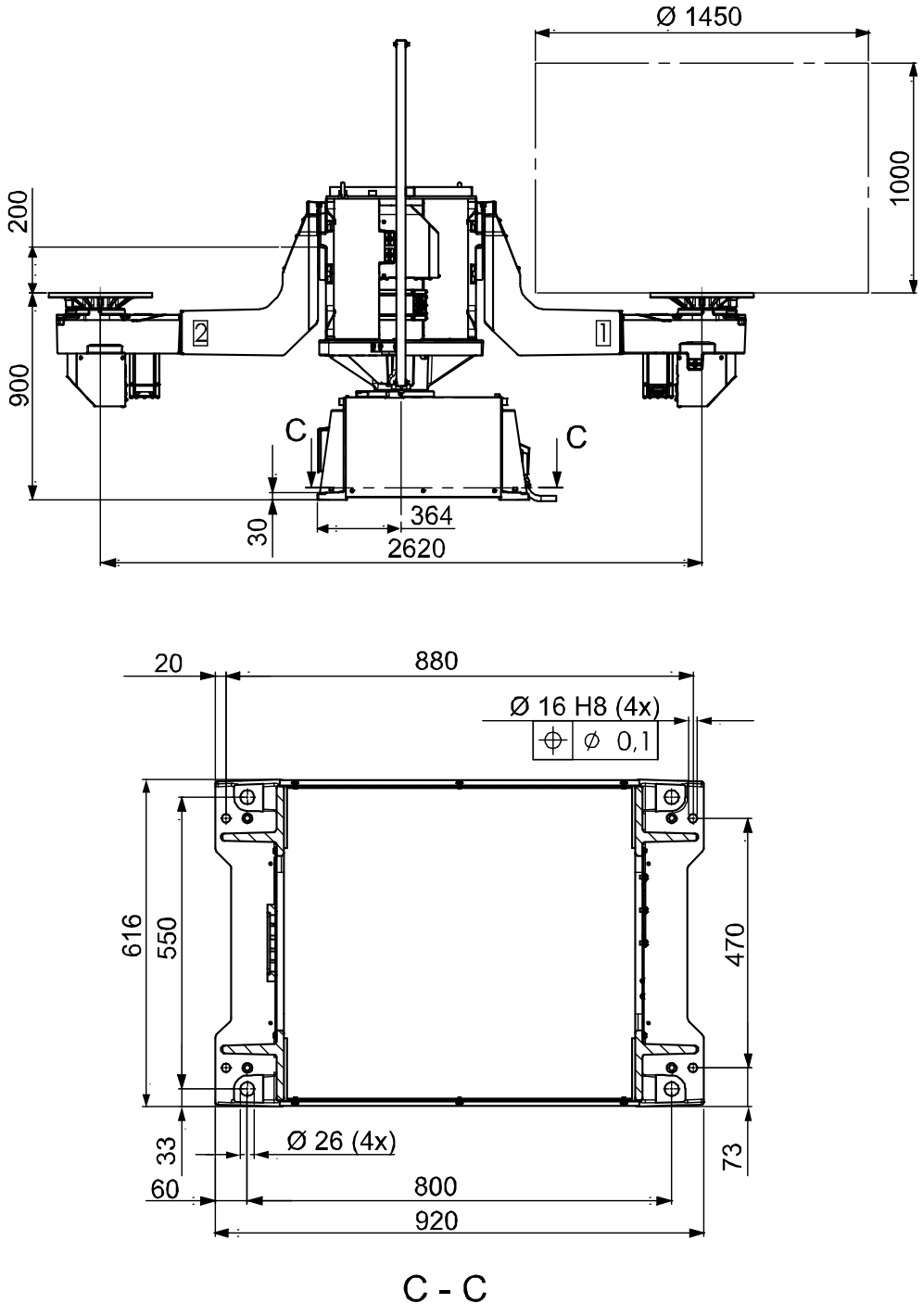
xx1000000696

Pos	Description
A	Adjusting bolts

Continues on next page

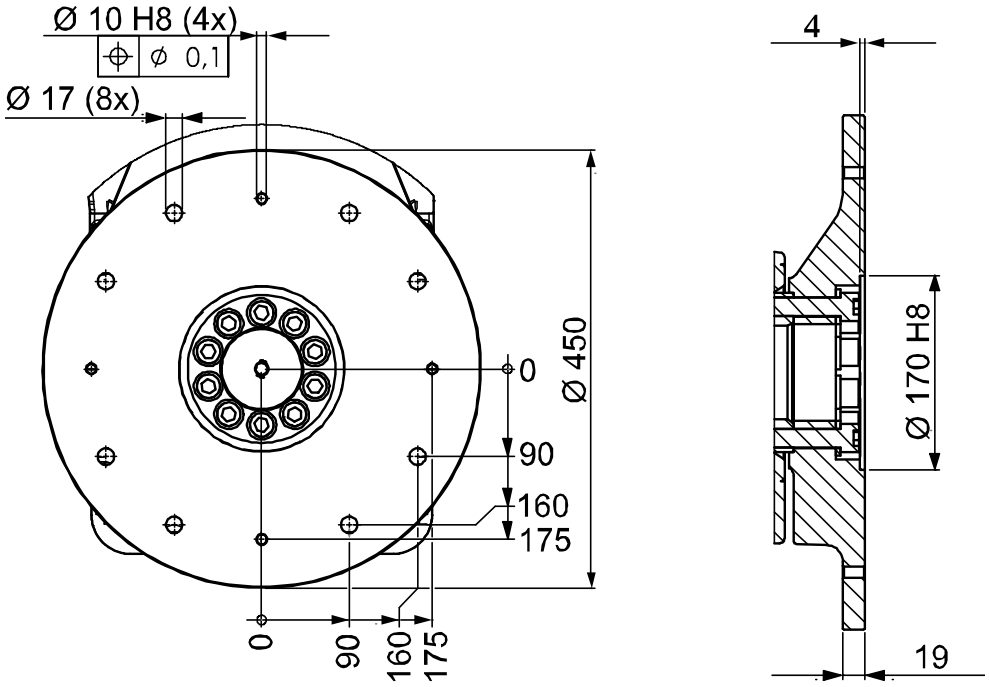
2.2.4 Dimensional drawings

Continued



xx1000000697

Continues on next page

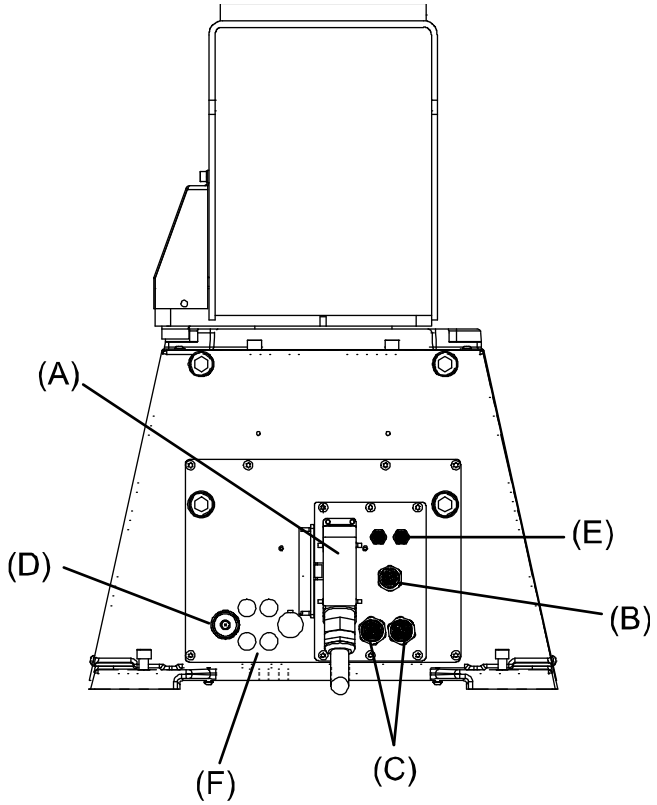


xx1000000698

Continues on next page

2.2.4 Dimensional drawings
Continued

Connections



xx1000000699

Pos	Description	Pos	Description
A	Power cable	D	Weld power
B	Measurement cable, SMB	E	Profi Bus
C	Customer power	F	Air

2.3 IRBP C-500/1000

2.3.1 General

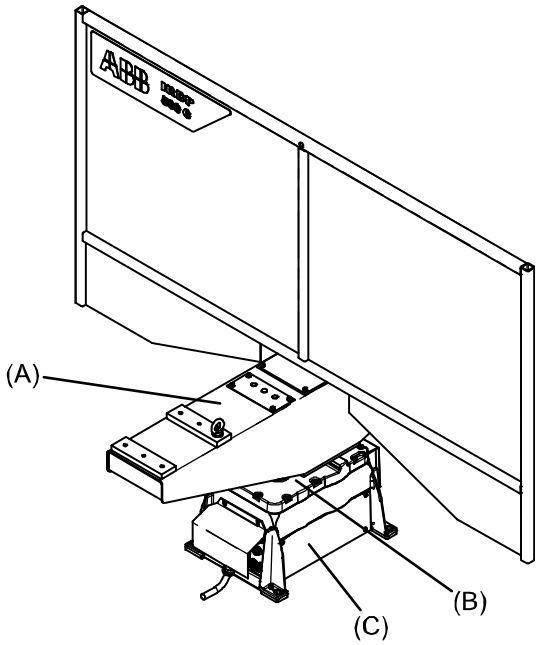
Introduction

The positioner is designed to handle workpieces of a weight up to 500/1000 kg (including the fixture) in connection with robot processes.

The positioner features a twin station solution where the robot works on one side and the operator loads and unloads on the other.

The modular design, few and heavy-duty moving parts as well as minimal maintenance demands make the positioner service friendly.

The positioner is designed with the following main sections (Figure below):



xx1000000700

Pos	Description
A	Stand
B	Station interchange unit, INTERCH
C	SMB unit

On the outgoing shaft of the station interchange unit there is a frame on which two fixed tables are fitted.

The tables have plain holes and guide holes for securing fixtures.

A screen is fitted between the two stations, which protects the operator from arc-eye.

The drive equipment is placed in the system's equipment cabinet.

2.3.2 Technical data

General

Note

Max speed specified in the table below only applies to standard products.

Technical Data	IRBP C-500	IRBP C-1000
Max. handling capacity	500 kg / side	1000 kg / side
Max load difference between sides 1 and 2 at operation	350 kg	500 kg
Center of gravity	See loading table	See loading table
Repetition accuracy with equal loads and radius 500 mm	±0.05 mm	±0.05 mm
Index time	3.3 - 3,8 s	3.5 - 3,7 s
Weld to weld time	5.1 - 5.6 s	5.8 - 6.0 s
Max welding power, 60% duty cycle	600 Amp	600 Amp
Weight	380 kg	660 kg

2.3.3 Loading table

IRBP C-500

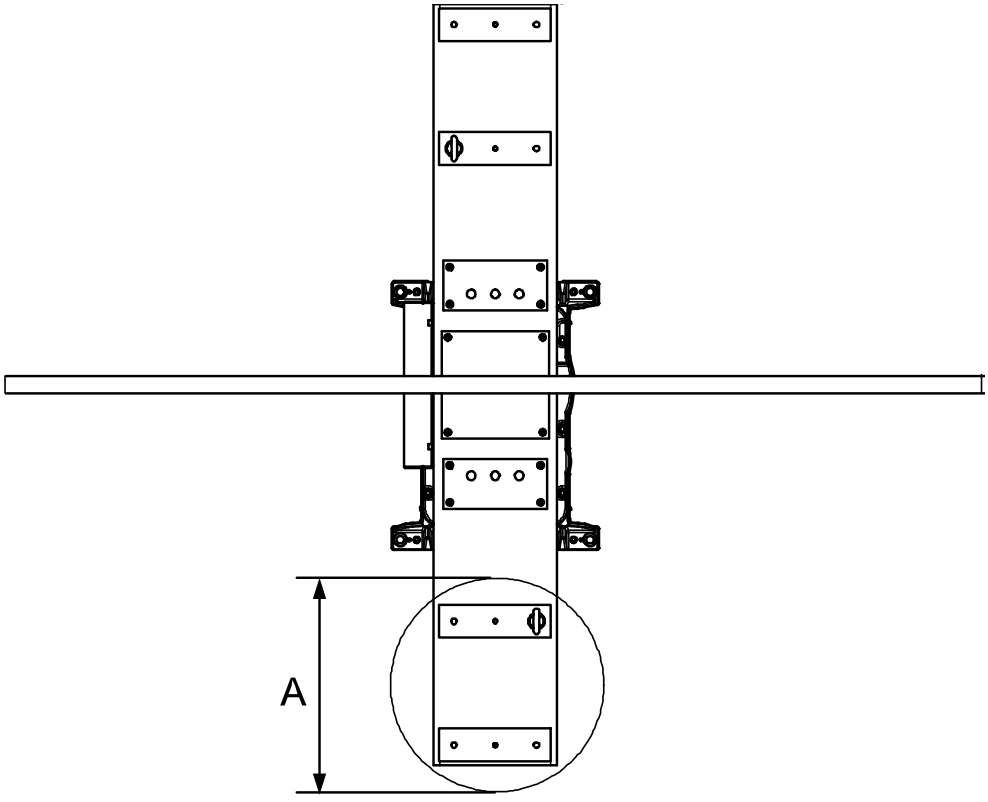
The table shows the limits for the position of the center of gravity at different loads.

If the load is 500 kg the center of gravity for the workpiece including the fixture must be within the area which is limited by the circle with a diameter of A.

If the load is, for example, 475 kg use the column immediately above, that is the 500 kg column.

The sides can be loaded with different weights as long as the load difference between the side 1 and side 2 is less than 350 kg.

Weight of the workpiece including fixture (kg)	500	450	400	350	300	250
Ø A (mm)	120	220	350	500	680	850



xx1000000701

Continues on next page

2.3.3 Loading table
Continued

IRBP C-1000

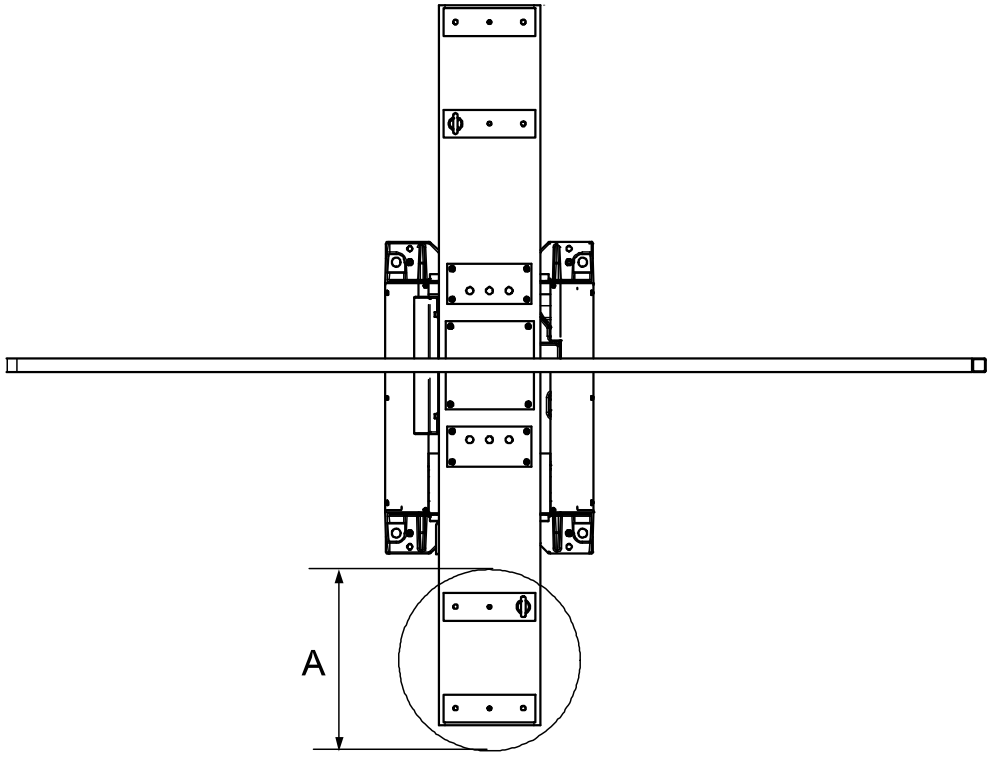
The table shows the limits for the position of the center of gravity at different loads.

If the load is 1000 kg the center of gravity for the workpiece including the fixture must be within the area which is limited by the circle with a diameter of A.

If the load is, for example, 820 kg use the column immediately above, that is the 850 kg column.

The sides can be loaded with different weights as long as the load difference between side 1 and side 2 is less than 500 kg.

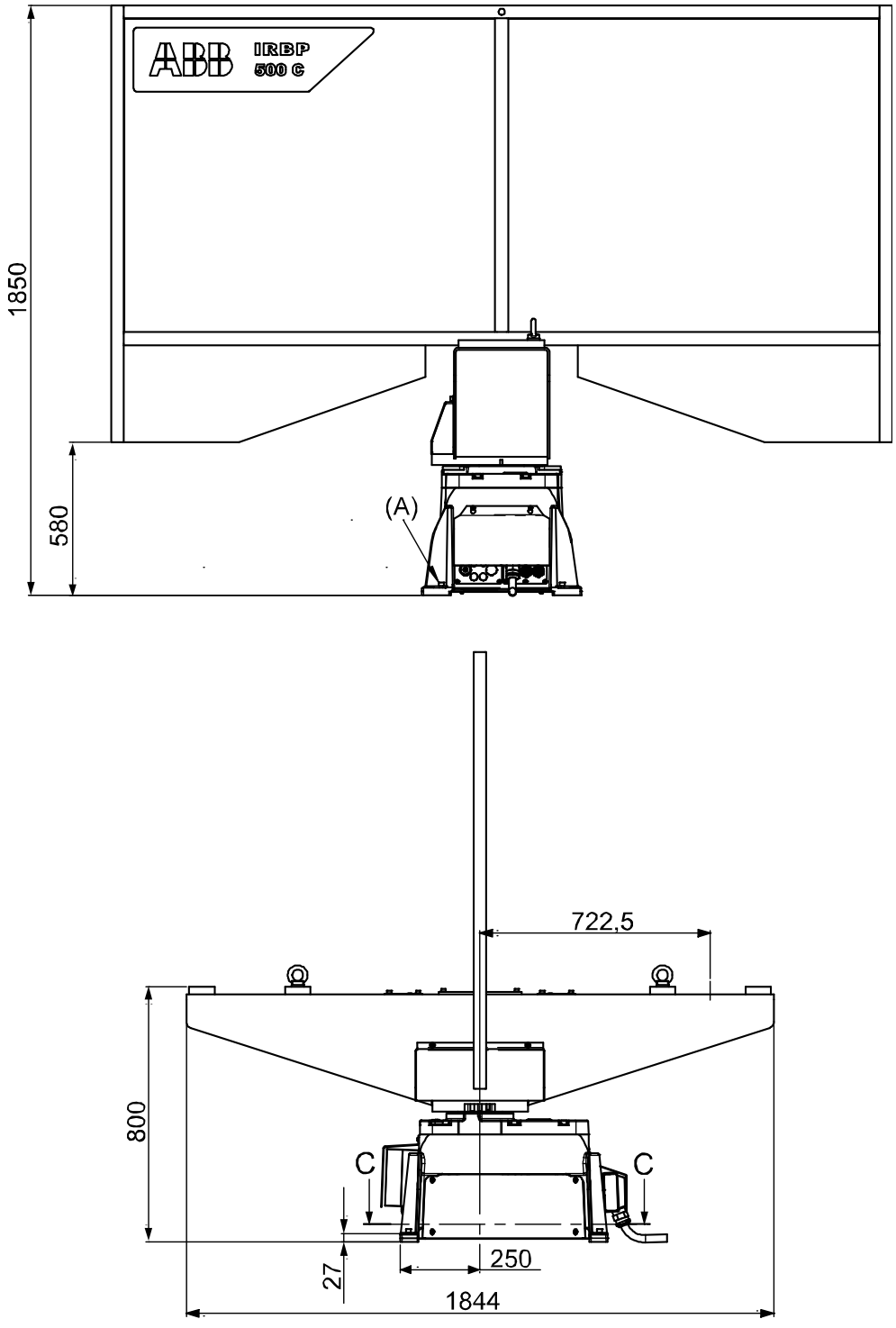
Weight of the workpiece including fixture (kg)	1000	950	900	850	800	750	700	650
Ø A (mm)	400	470	550	620	700	790	900	1000



xx1000000756

2.3.4 Dimensional drawings

IRBP C-500



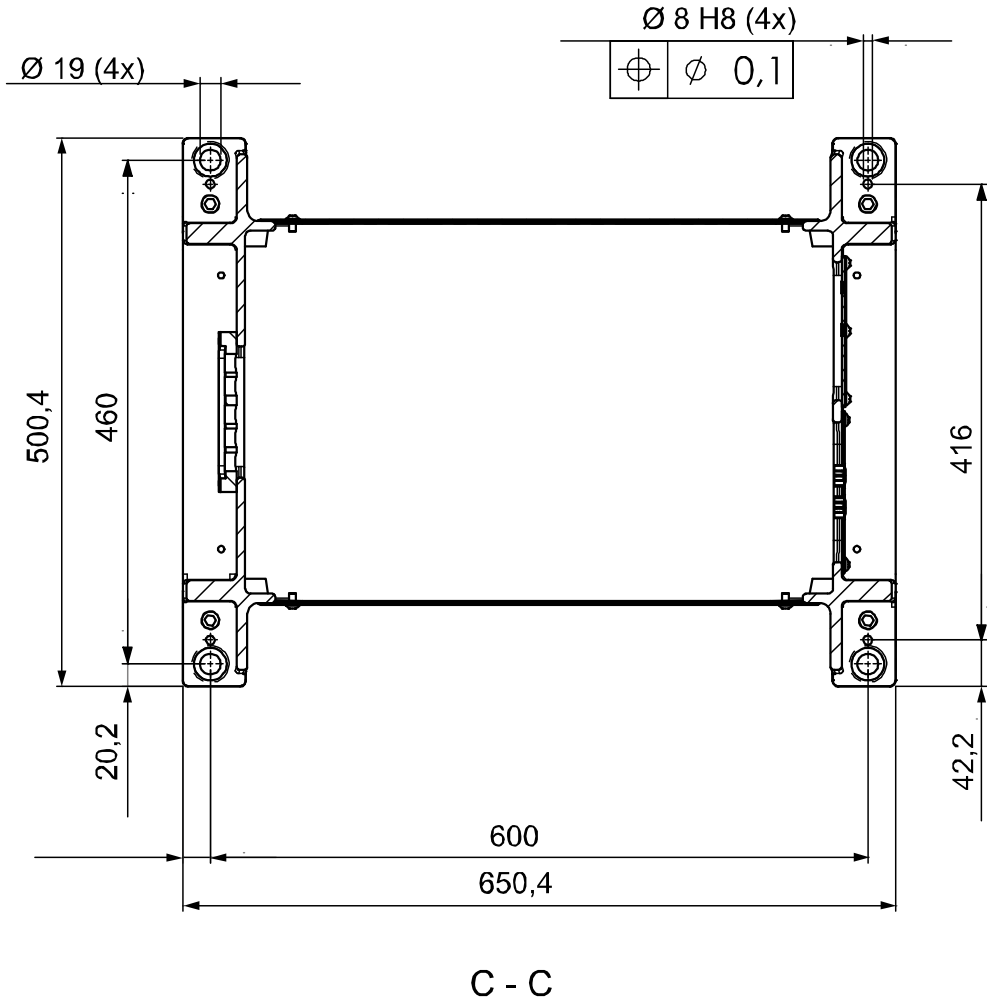
xx1000000702

Pos	Description
A	Adjusting bolts

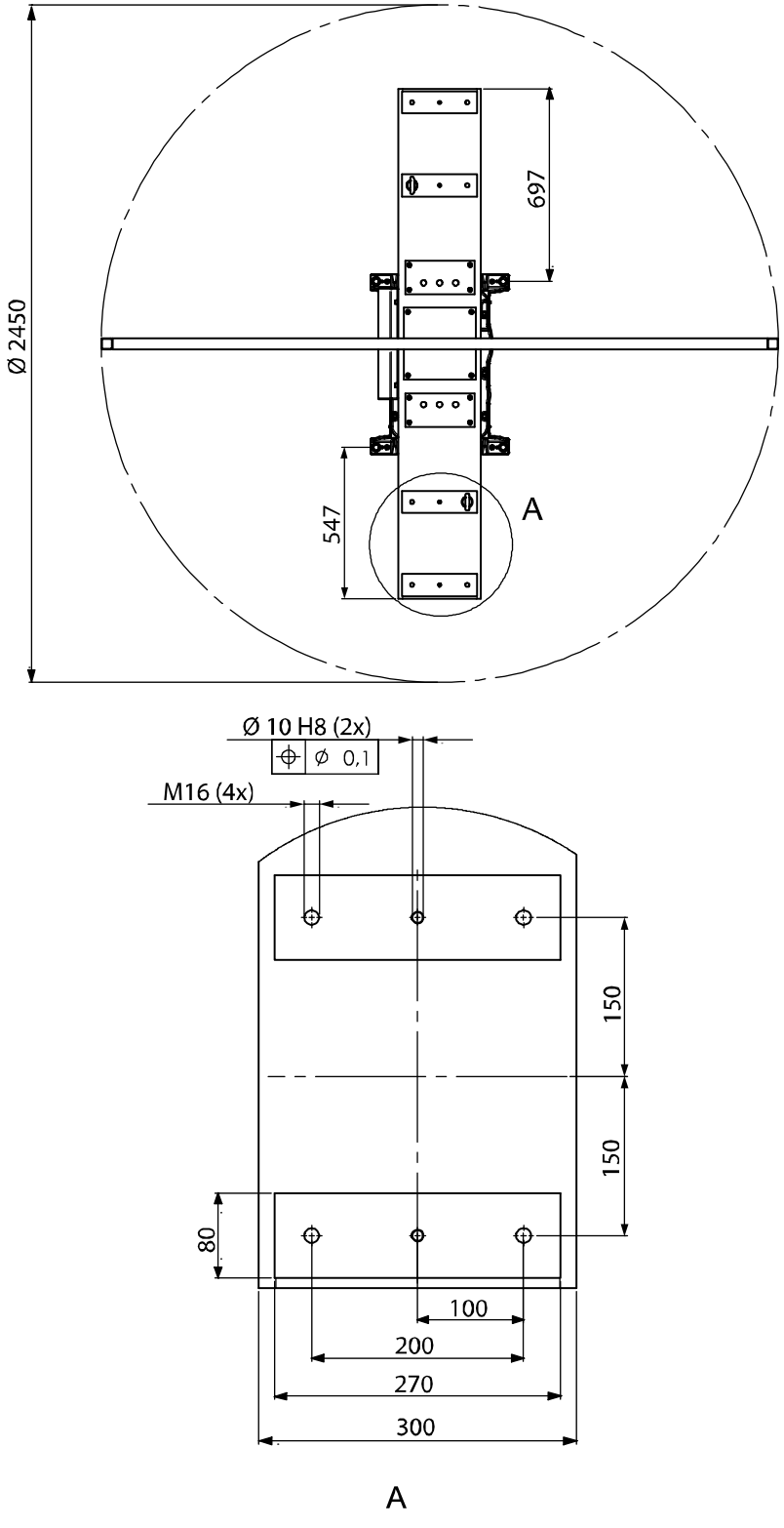
Continues on next page

2.3.4 Dimensional drawings

Continued



Continues on next page



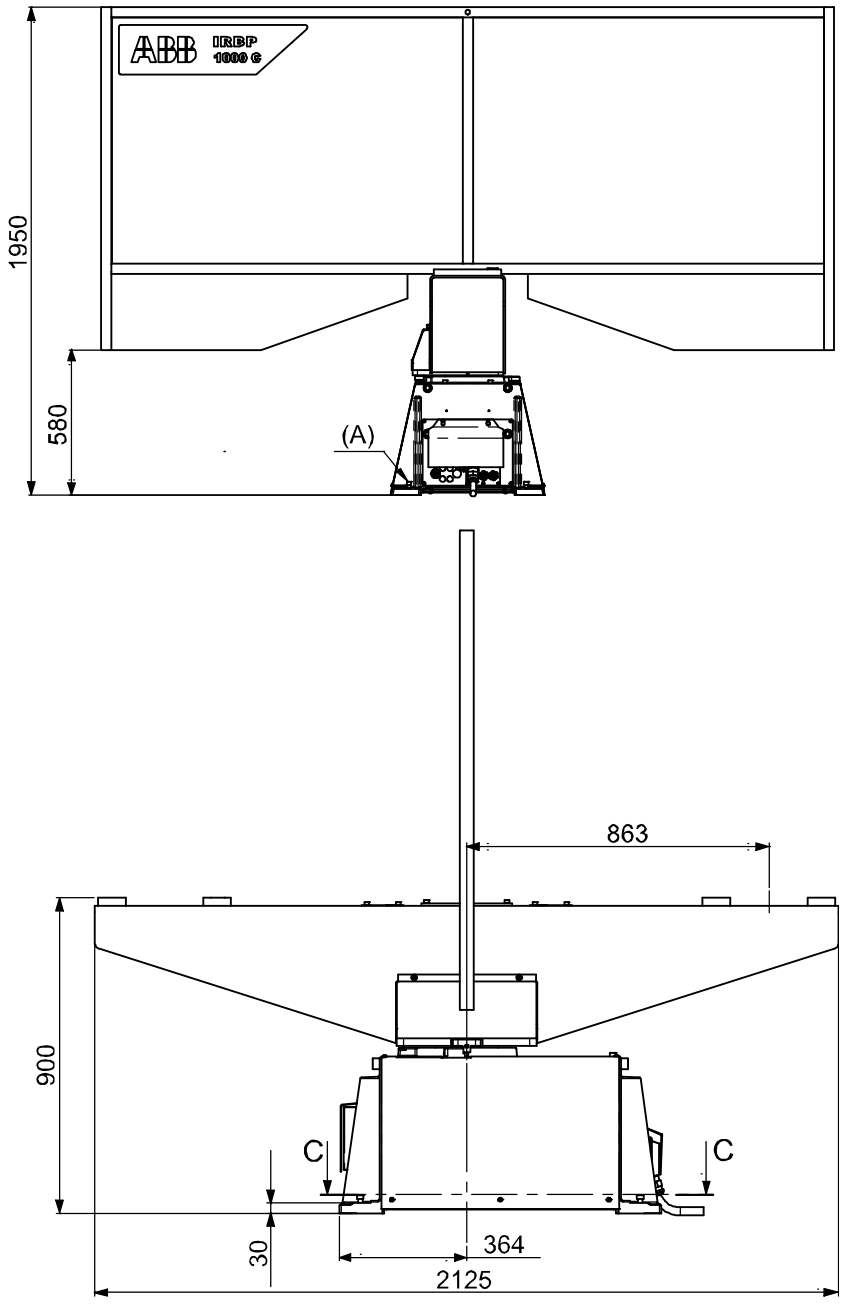
xx1000000704

Continues on next page

2.3.4 Dimensional drawings

Continued

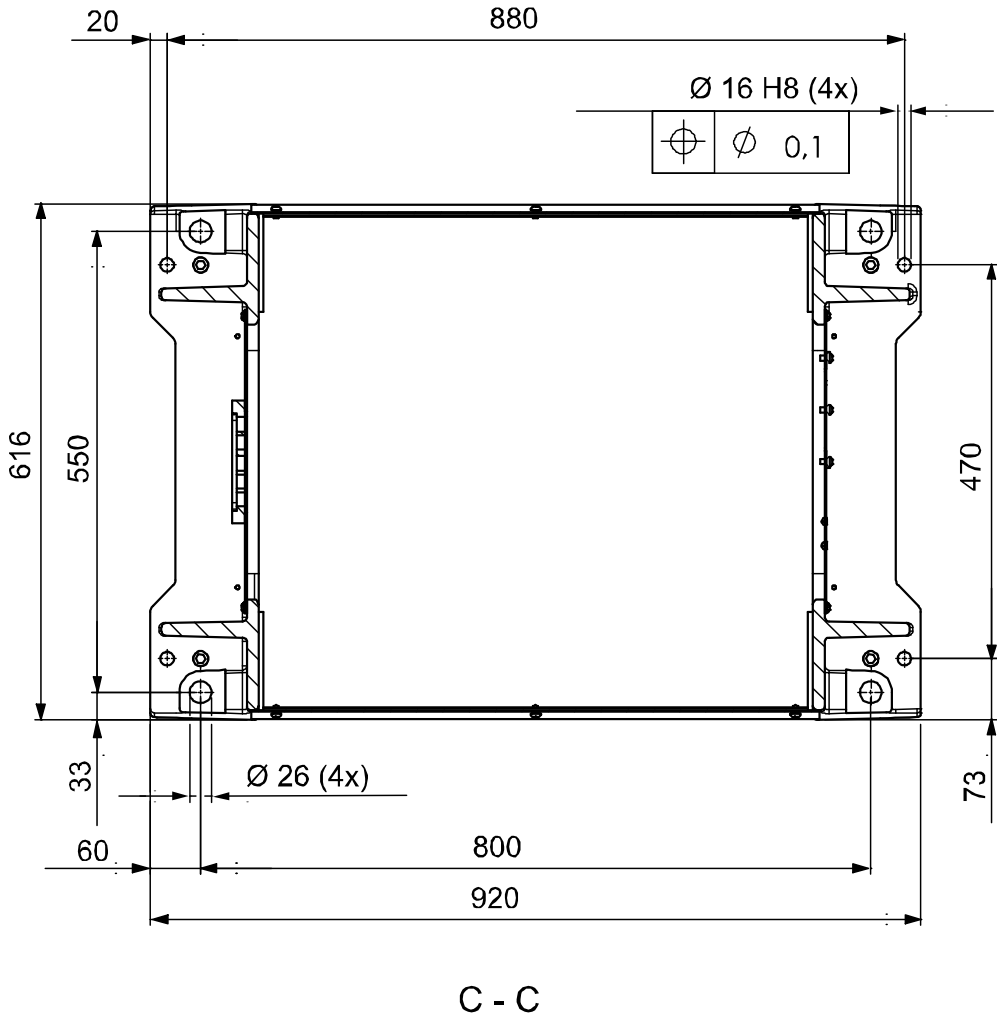
IRBP C-1000



xx1000000854

Pos	Description
A	Adjusting bolts

Continues on next page

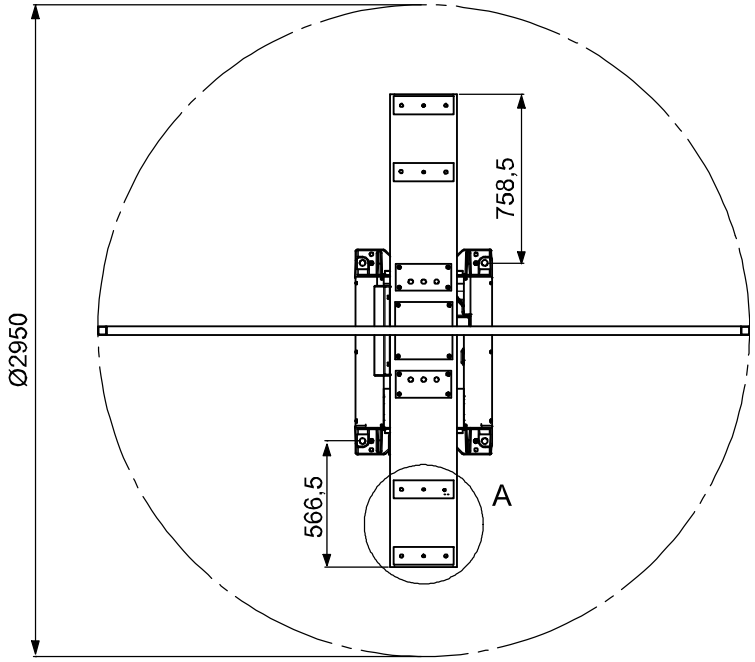


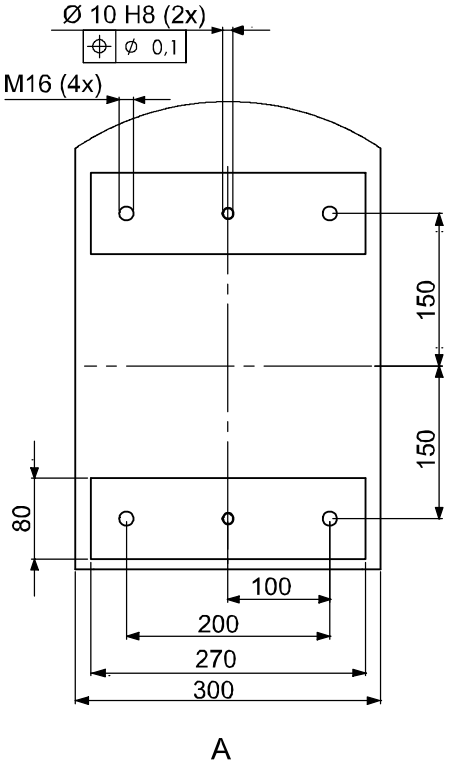
xx1000000705

Continues on next page

2.3.4 Dimensional drawings

Continued

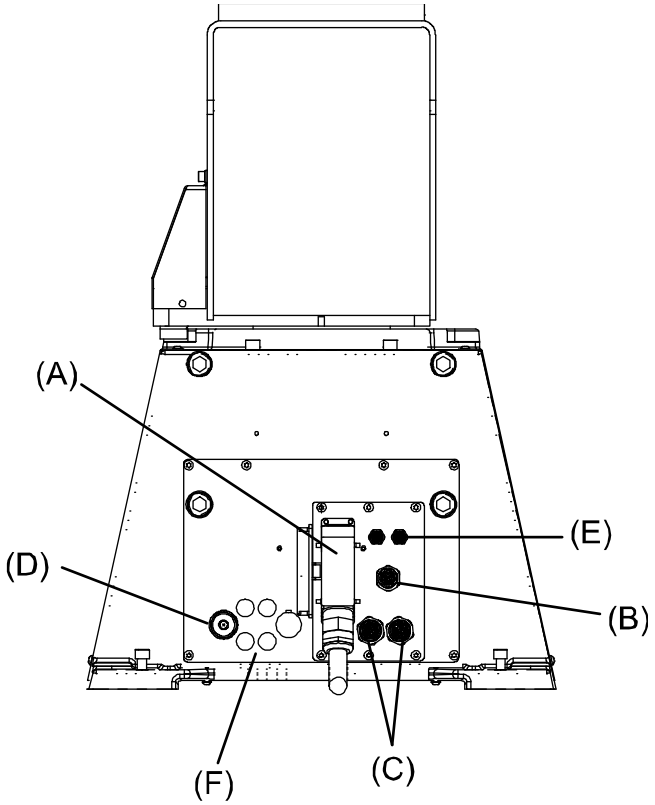




xx1000000706

Continues on next page

Connections



xx1000000699

Pos	Description	Pos	Description
A	Power cable	D	Weld power
B	Measurement cable, SMB	E	Profi Bus
C	Customer power	F	Air

2.4 IRBP K-300/ -600/ -1000

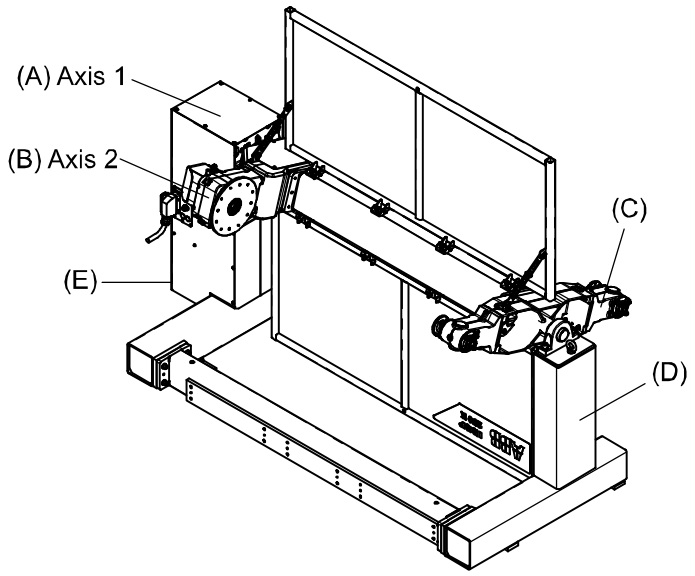
2.4.1 General

Introduction

The positioner is designed to handle workpieces of a weight up to 300/600/1000 kg including the fixture in connection with robot processes.

The positioner features a twin station solution where the robot works on one side and the operator loads and unloads on the other.

The modular design, few and heavy-duty moving parts as well as minimal maintenance demands make the positioner service friendly.The positioner is designed with the following main sections (see Figure below):



xx1000000790

Pos	Description	Pos	Description
A	Station interchange unit, INTERCH	D	Stand
B	Rotary unit, PLATE	E	SMB unit
C	Support bearing		

On the outgoing shaft of the station interchange unit (A, ARM) there is a frame on which two rotary units are fitted.

On the outgoing shaft of the rotary unit (B, PLATE) a faceplate is fitted. The faceplate has plain holes and guide holes for securing fixtures. On the opposite side there is a support collar used for fixture support.

A screen is fitted between the two stations, which protects the operator from arc-eye.

The rotary unit is fitted with a current collector in the form of a slip ring in order to transfer weld current.

The drive equipment for the positioner is placed in the system's equipment cabinet.

2.4.2 Technical data

IRBP K-300

Note

Max speed specified in the table below only applies to standard products.

Technical Data	IRBP K-300(Ø 1000)	IRBP K-300(Ø 1200)
Max. handling capacity	300 kg, see load diagram	300 kg, see load diagram
Max load difference between sides 1 and 2 at operation	180 kg	180 kg
Max. continuous torque	350 Nm	350 Nm
Center of gravity	See loading diagram	See loading diagram
Max bending moment	650 Nm	650 Nm
Positioning time 90 degrees	0.8 -1.2 s	0.8 -1.2 s
Positioning time 180 degrees	1.4 -1.9 s	1.4 -1.9 s
Positioning time 360 degrees	2.3 -2.7 s	2.3 -2.7 s
Repetition accuracy with equal loads and radius 500 mm	±0.05 mm	±0.05 mm
Max. speed of rotation	180 deg/s	180 deg/s
Index time	3,1 - 3,4 s	3,2 - 3,5 s
Weld to weld time	5.2 - 5.5 s	5.3 - 5.6 s
Max welding current, 60% duty cycle	600 Amp	600 Amp
Weight	1090 -1435 kg	1170 -1515 kg

IRBP K-600

Note

Max speed specified in the table below only applies to standard products.

Technical Data	IRBP K-600 (Ø 1200)	IRBP K-600 (Ø 1400)
Max. handling capacity	600 kg	600 kg
Max load difference between sides 1 and 2 at operation	400 kg	400 kg
Max. continuous torque	650 Nm	650 Nm
Center of gravity	See loading diagram	See loading diagram
Max bending moment	3300 Nm	3300 Nm
Positioning time 90 degrees	1.0 -1.3 s	1.0 -1.3 s
Positioning time 180 degrees	1.5 -2.1 s	1.5 -2.1 s
Positioning time 360 degrees	2.7 -3.4 s	2.7 -3.4 s

Continues on next page

2.4.2 Technical data
Continued

Technical Data	IRBP K-600 (Ø 1200)	IRBP K-600 (Ø 1400)
Repetition accuracy with equal loads and radius 500 mm	±0.05 mm	±0.05 mm
Max. speed of rotation	150 deg/s	150 deg/s
Index time	3.1 - 3.4 s	3.1 - 3.4 s
Weld to weld time	5.2 - 5.6 s	5.2 - 5.6 s
Max welding current, 60% duty cycle	600 Amp	600 Amp
Weight	1980 -2475 kg	2080 -2570 kg

IRBP K-1000

Note

Max speed specified in the table below only applies to standard products.

Technical Data	IRBP K-1000 (Ø 1200)	IRBP K-1000 (Ø 1400)
Max. handling capacity	1000 kg	1000 kg
Max load difference between sides 1 and 2 at operation	350 kg	350 kg
Max. continuous torque	900 Nm	900 Nm
Center of gravity	See load diagram	See load diagram
Max bending moment	5000 Nm	5000 Nm
Positioning time 90 degrees	1.0 -1.3 s	1.0 -1.3 s
Positioning time 180 degrees	1.5 -2.1 s	1.5 -2.1 s
Positioning time 360 degrees	2.7 -3.5 s	2.7 -3.5 s
Repetition accuracy with equal loads and radius 500 mm	±0.05 mm	±0.05 mm
Max. speed of rotation	150 deg/s	150 deg/s
Index time	3,3 - 3,7 s	3,3 - 3,7 s
Weld to weld time	5.5 - 5.9 s	5.5 - 5.9 s
Max welding current, 60% duty cycle	600 Amp	600 Amp
Weight	1980 -2475 kg	2080 -2570 kg

2.4.3 Loading diagram

General

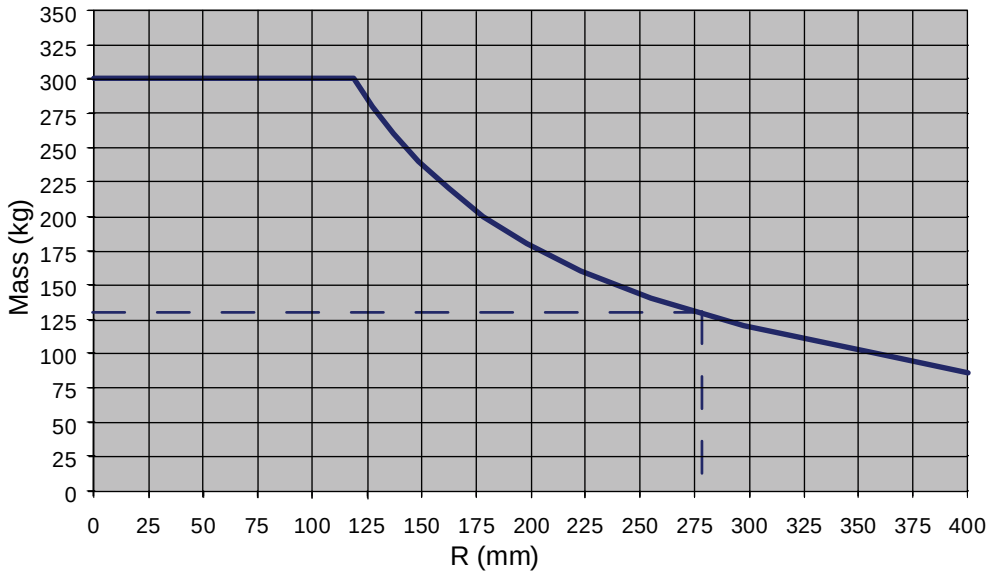
The diagrams (Figures below) show the maximum permitted center of gravity displacement from the center of rotation at different loads.

For the maximum load difference between side 1 and side 2, see the technical data in the chapter Positioner.

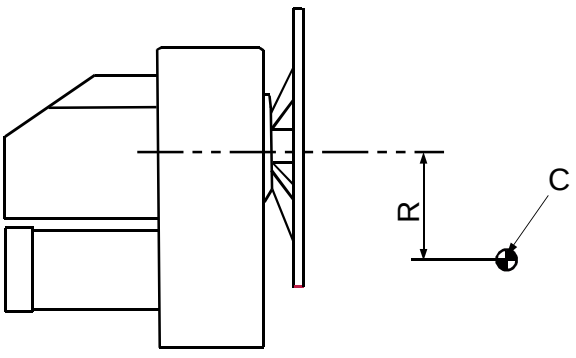
The load refers to the workpiece including the fixture. Also refer to the value for the max. continuous torque.

IRBP K-300

If the center of gravity is placed 276 mm from the center of rotation the load may not be greater than: 129 kg.



xx1000000788



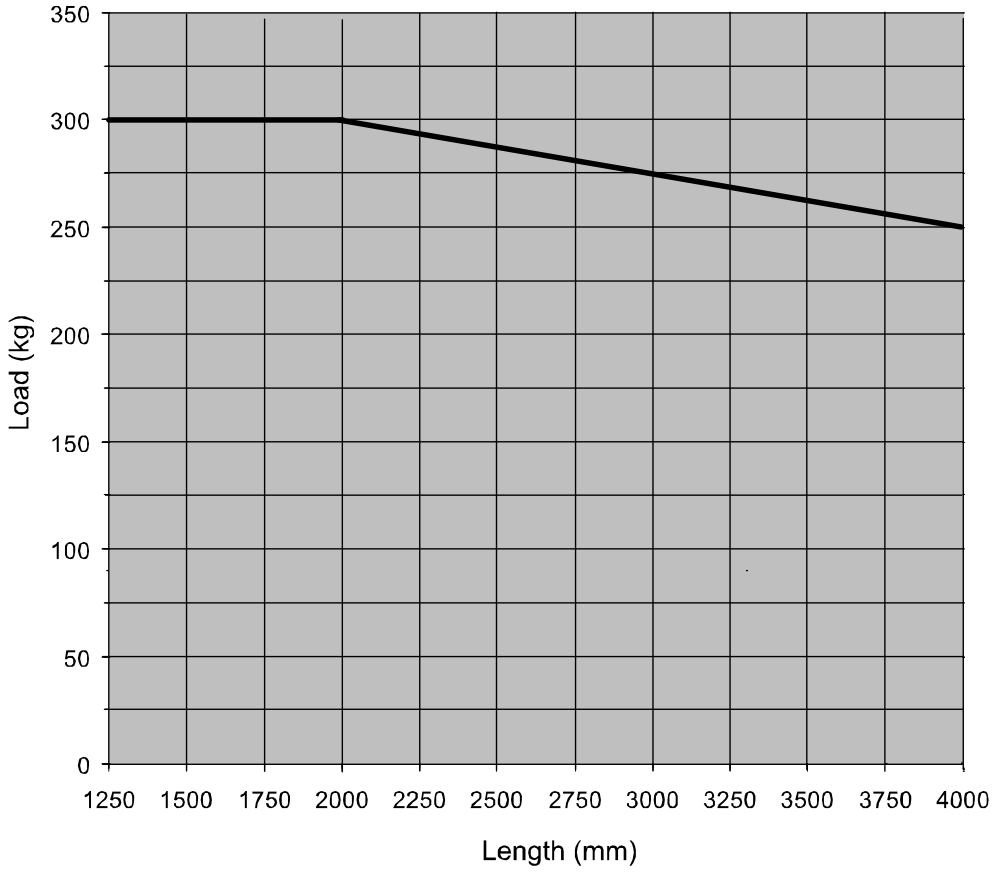
xx1000000801

Pos	Description
R	R = Distance in mm
C	Center of gravity

Continues on next page

2.4.3 Loading diagram
Continued

Max load at different length between rotary unit and support collar is shown below.



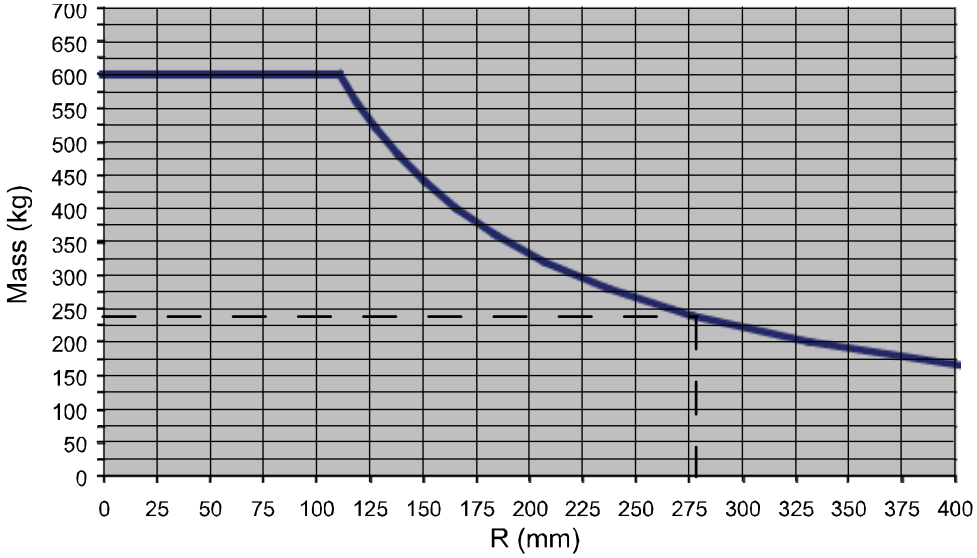
xx1000000789

Continues on next page

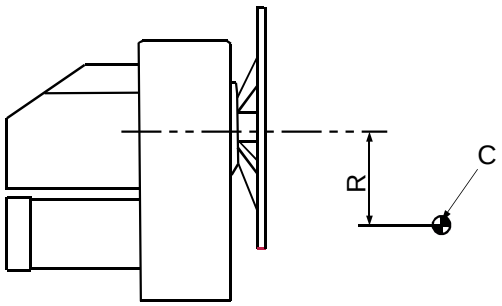
IRBP K-600

If the center of gravity is placed 276 mm from the center of rotation the load may not be greater than: 240 kg. The load refers to the workpiece including the fixture.

Also refer to the value for the max. continuous torque.



xx1000000791



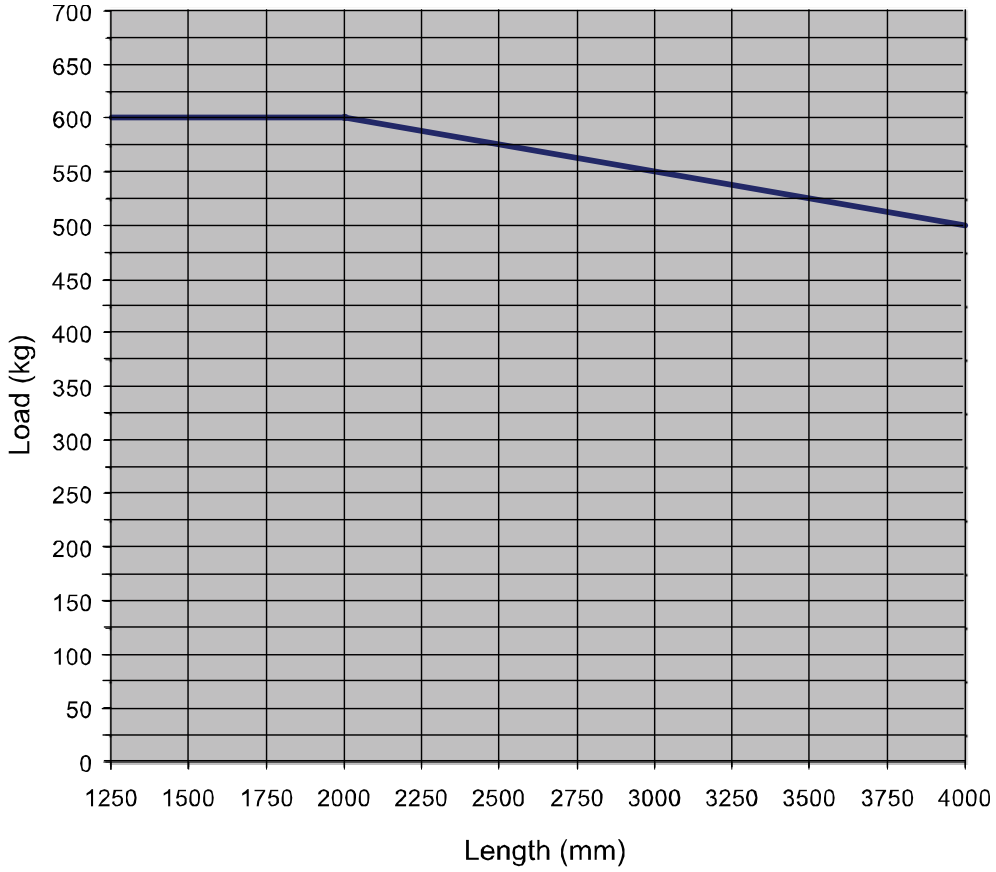
xx1000000801

Pos	Description
R	R = Distance in mm
C	Center of gravity

Continues on next page

2.4.3 Loading diagram
Continued

Max load at different length between rotary unit and support collar is shown below.



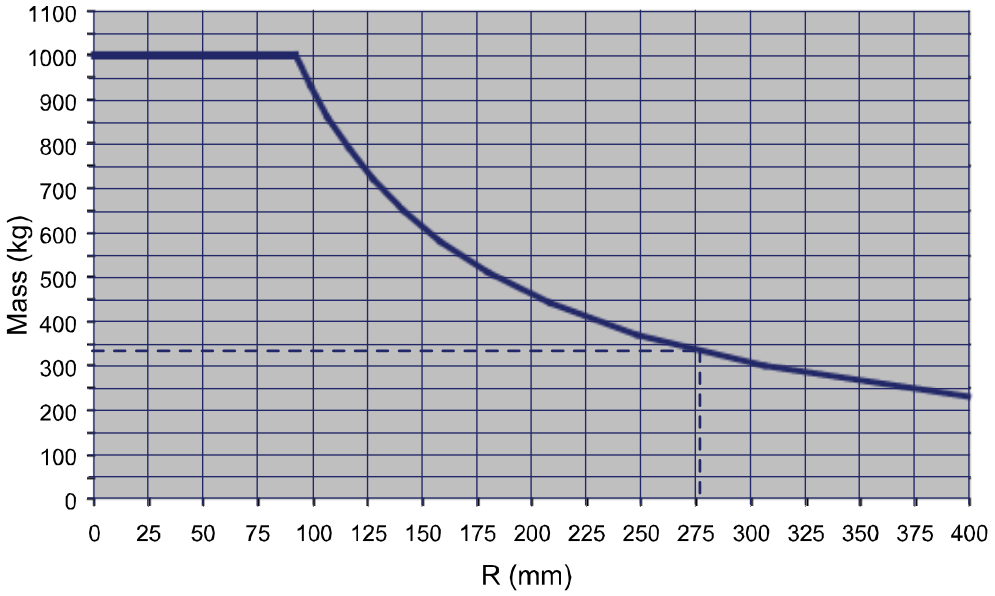
xx1000000792

Continues on next page

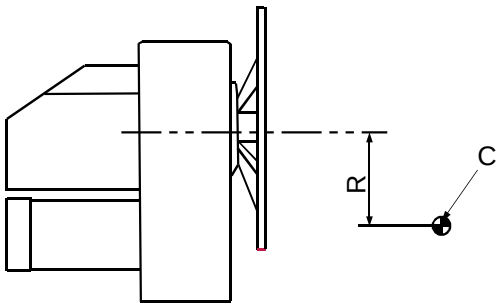
IRBP K-1000

If the center of gravity is placed 276 mm from the center of rotation the load may not be greater than: 333kg. The load refers to the workpiece including the fixture.

Also refer to the value for the max. continuous torque.



xx1000000793



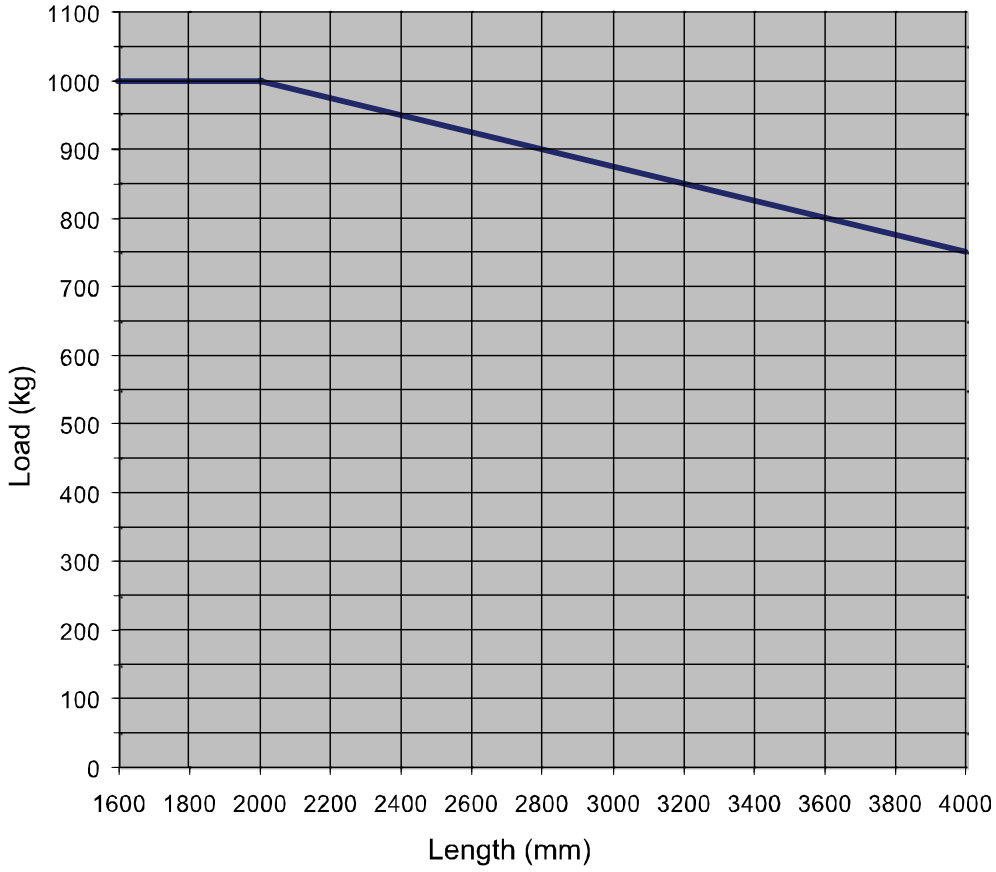
xx1000000801

Pos	Description
R	R = Distance in mm
C	Center of gravity

Continues on next page

2.4.3 Loading diagram
Continued

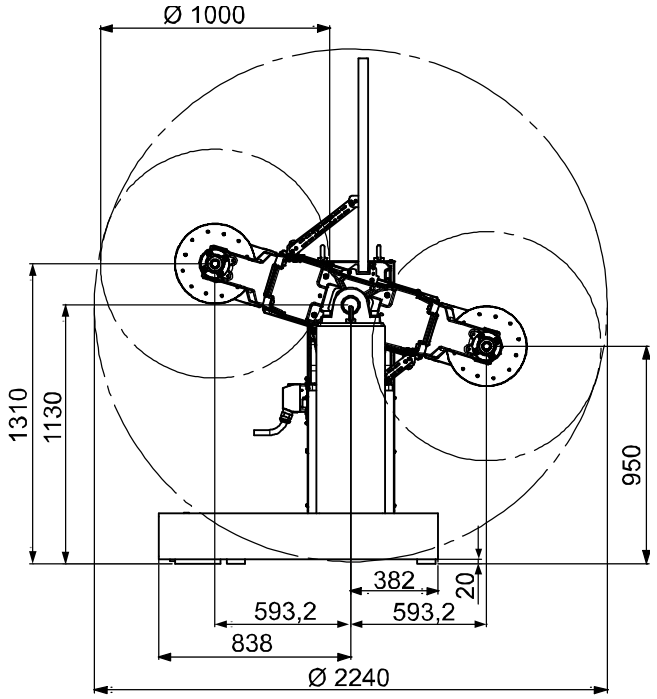
Max load at different length between rotary unit and support collar is shown below.



xx1000000794

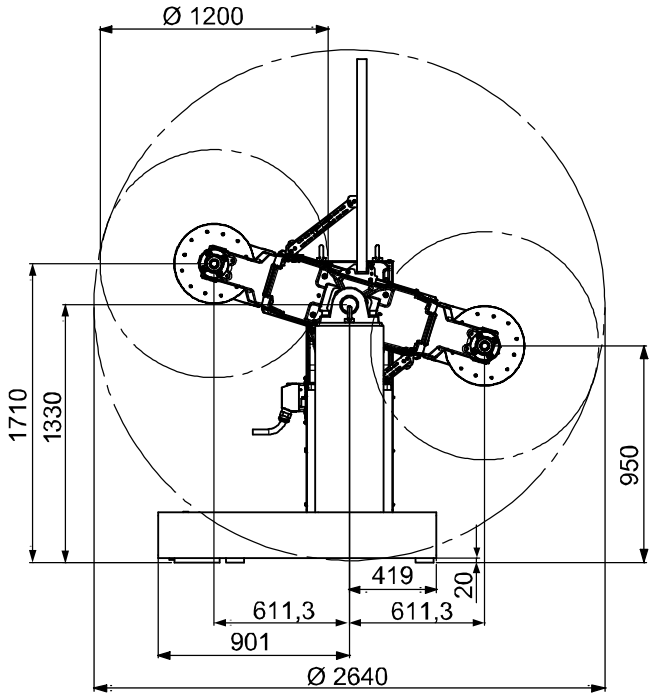
2.4.4 Dimensional drawings

IRBP K-300 Ø 1000 mm



xx1000000717

IRBP K-300 Ø 1200 mm

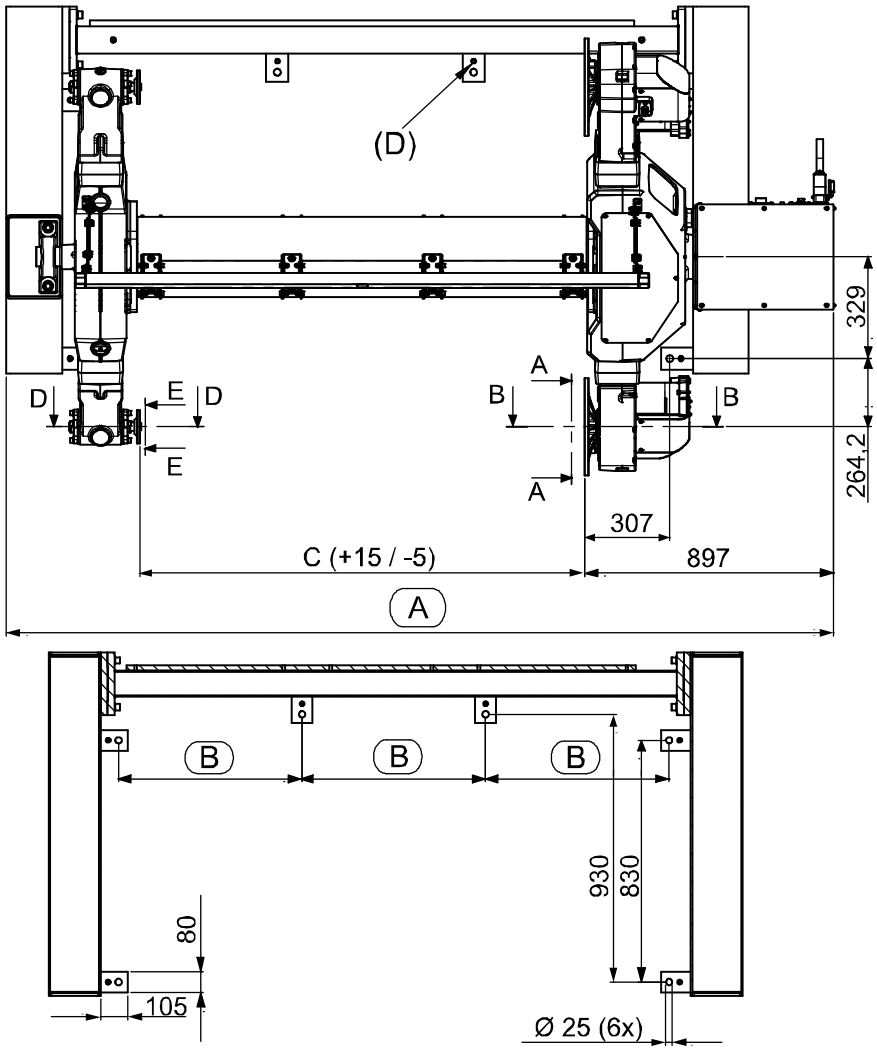


xx1000000718

Continues on next page

2.4.4 Dimensional drawings
Continued

IRBP K-300 Ø1000 mm



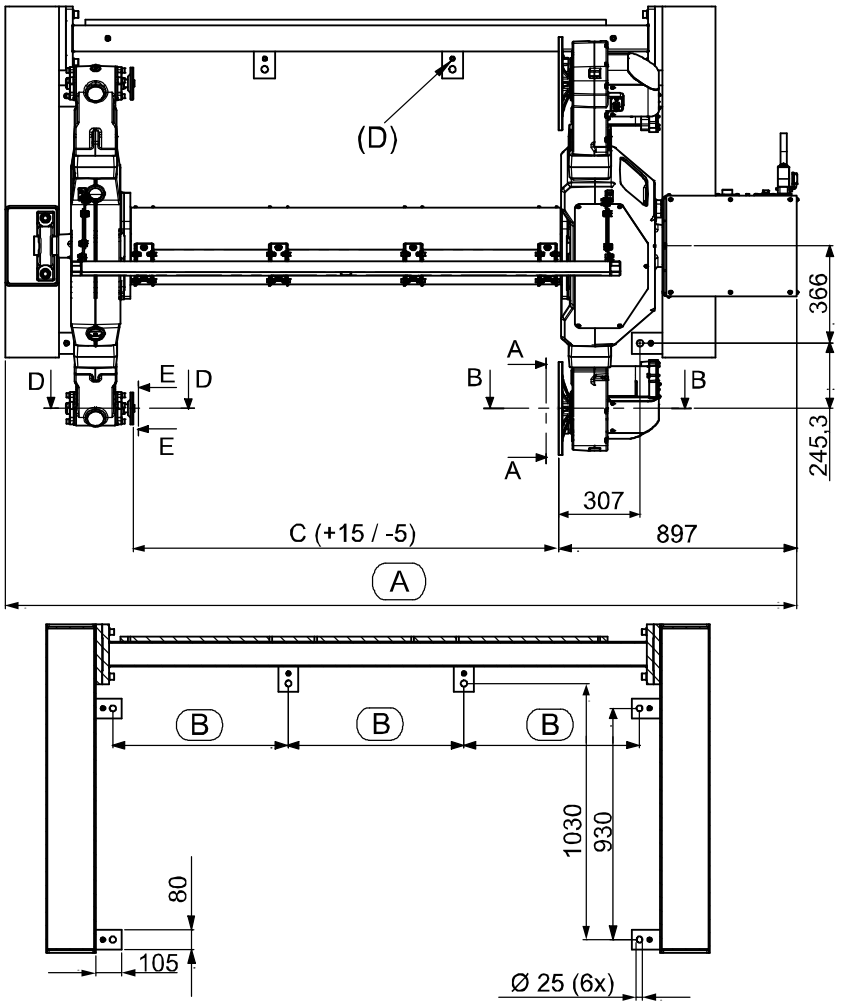
xx1000000719

Pos	Description
C	Length
D	Adjusting bolts (6x)

IRBP K-300 Ø1000		
C (mm)	**A (mm)**	**B (mm)**
1600	2977	706
2000	3377	840
2500	3877	1006
3150	4527	1223
3500	4877	1340
4000	5377	1506

Continues on next page

IRBP K-300 Ø1200 mm



xx1000000720

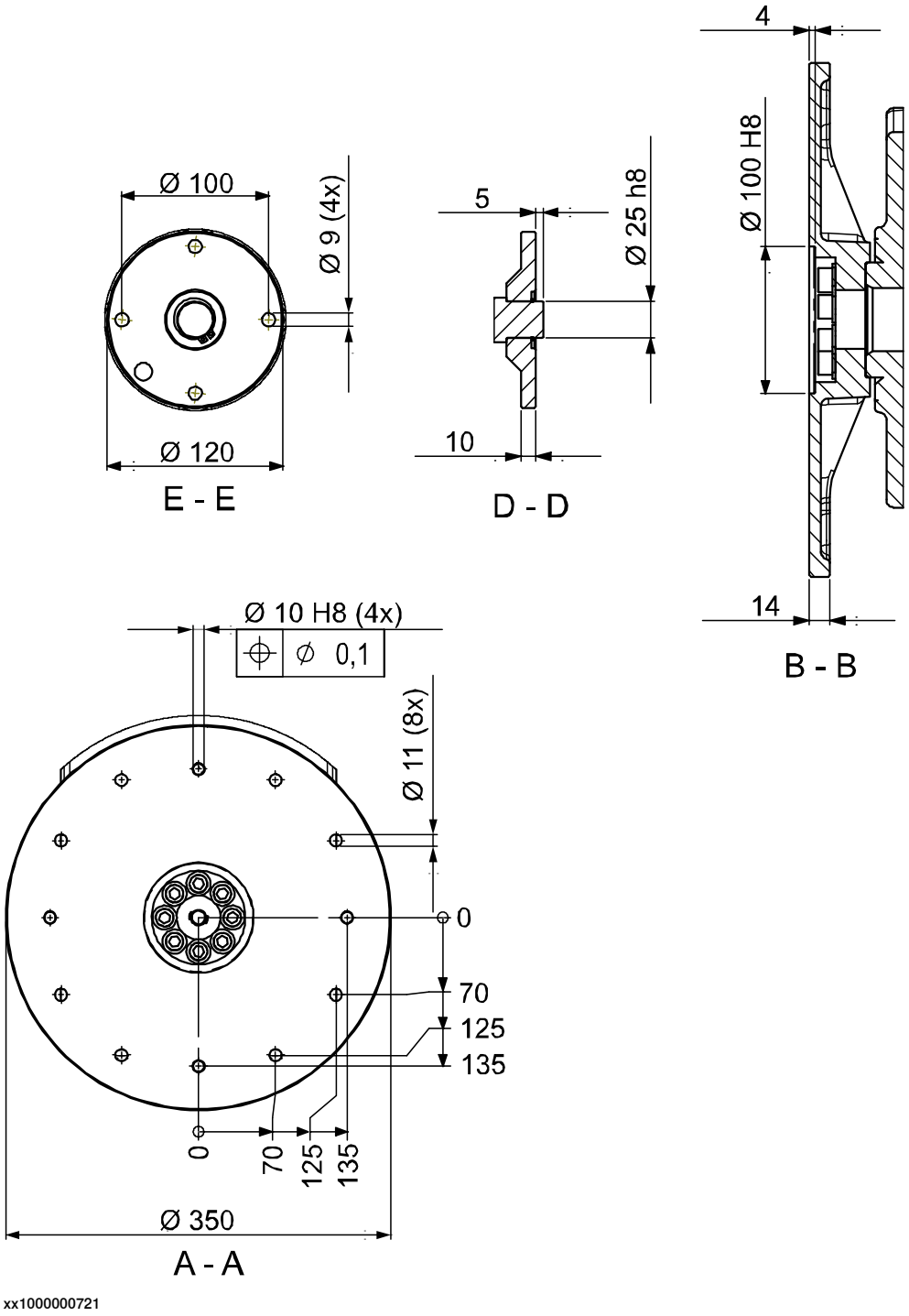
Pos	Description
C	Length
D	Adjusting bolts (6x)

IRBP K-300 Ø1200		
C (mm)	**A (mm)**	**B (mm)**
1600	2977	706
2000	3377	840
2500	3877	1006
3150	4527	1223
3500	4877	1340
4000	5377	1506

Continues on next page

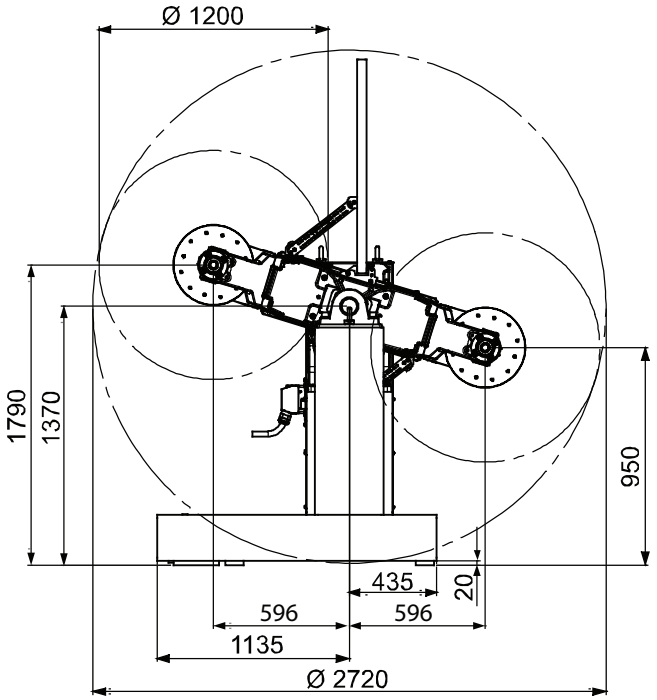
2.4.4 Dimensional drawings

Continued



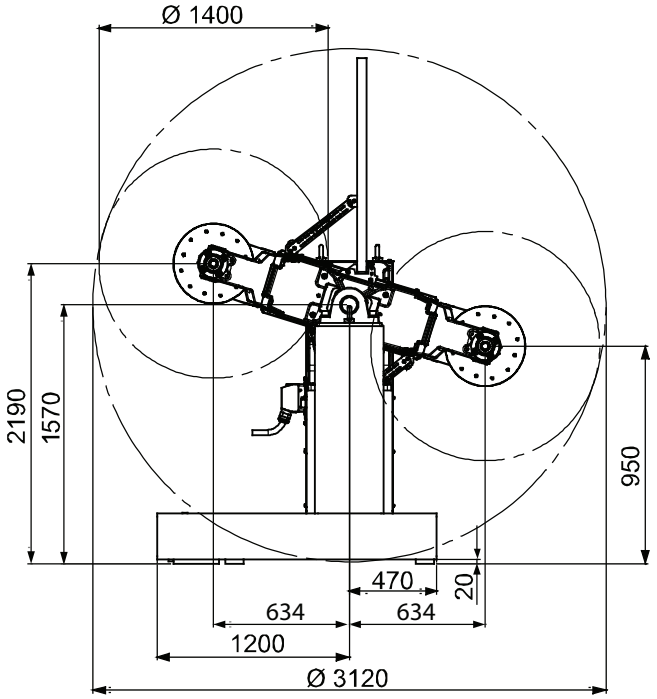
Continues on next page

IRBP K-600 / -1000 Ø1200 mm



xx1000000722

IRBP K-600 / -1000 Ø1400 mm

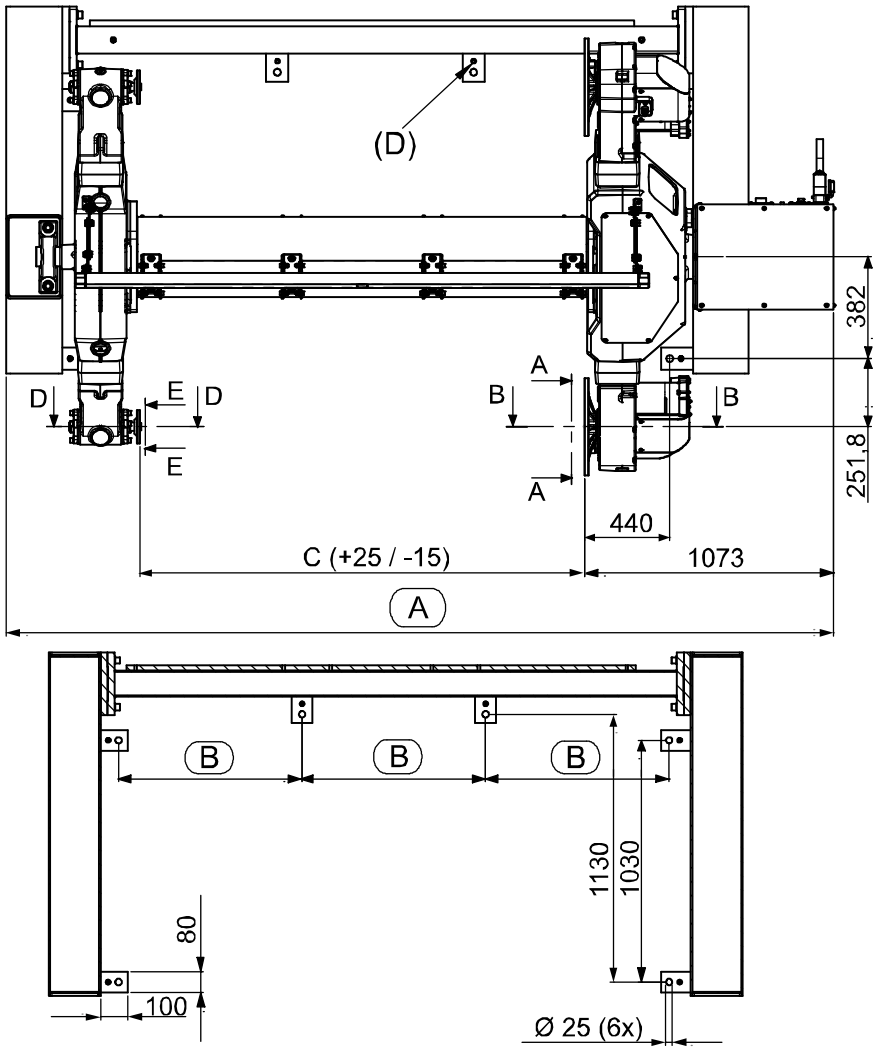


xx1000000723

Continues on next page

2.4.4 Dimensional drawings
Continued

IRBP K-600 / -1000 Ø1200 mm



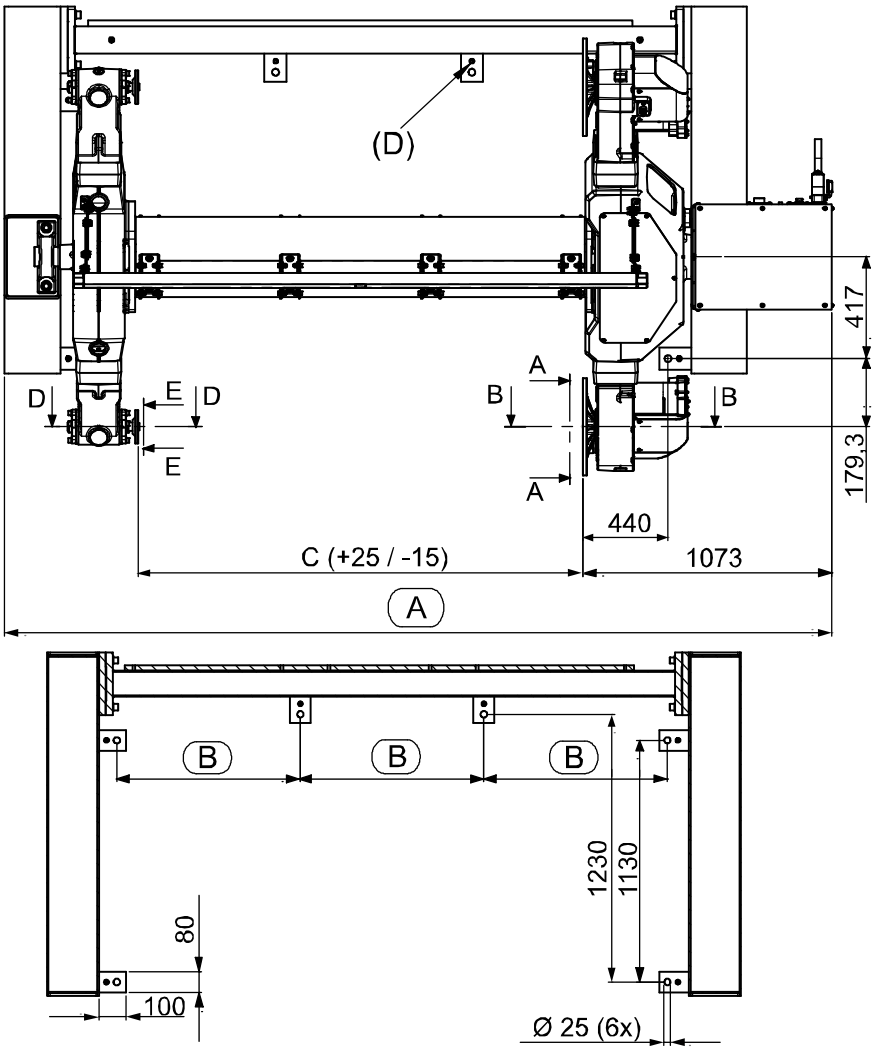
xx1000000724

Pos	Description
C	Length
D	Adjusting bolts (6x)

IRBP K-600 / -1000 Ø1200		
C (mm)	A (mm)	B (mm)
1600	3409	816
2000	3809	950
2500	4309	1116
3150	4959	1333
3500	5309	1450
4000	5809	1616

Continues on next page

IRBP K-600 / -1000 Ø1400 mm



xx1000000725

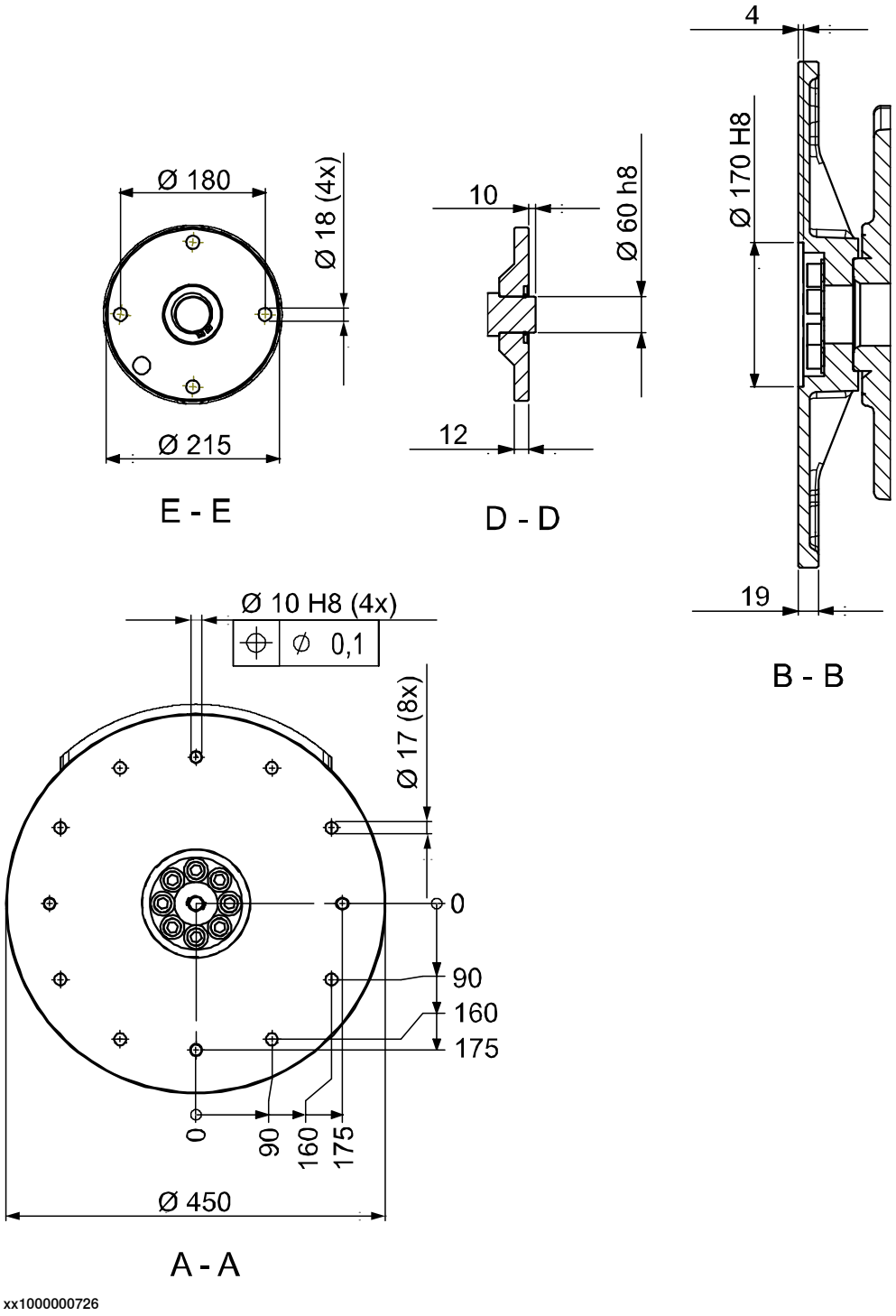
Pos	Description
C	Length
D	Adjusting bolts

IRBP K-600 / -1000 Ø1200		
C (mm)	**A (mm)**	**B (mm)**
1600	3409	816
2000	3809	950
2500	4309	1116
3150	4959	1333
3500	5309	1450
4000	5809	1616

Continues on next page

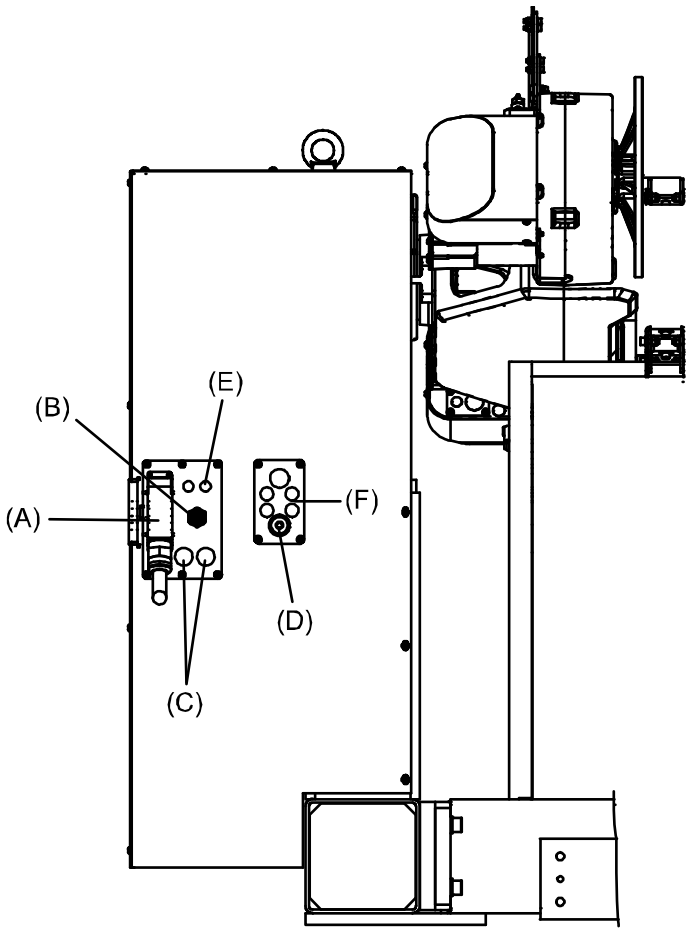
2.4.4 Dimensional drawings

Continued



Continues on next page

Connections



xx1000000758

Pos	Description	Pos	Description
A	Power cable	D	Weld power
B	Measurement cable, SMB	E	Profi Bus
C	Customer power	F	Air

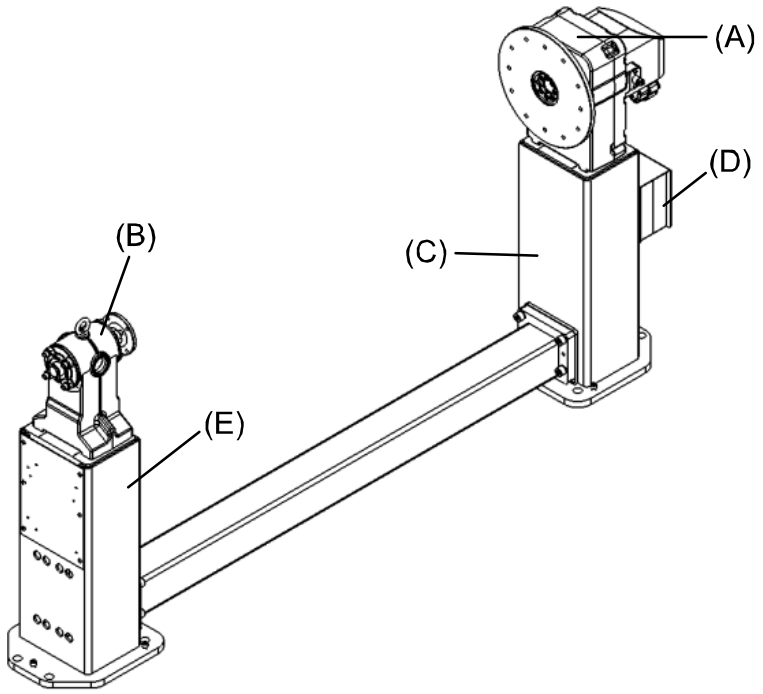
2.5 IRBP L-300/ -600/ -1000/ -2000/ -5000

2.5.1 General

Introduction

The positioner is designed to handle workpieces of a weight up to 300/600/1000/2000/5000 kg (including the fixture) in connection with robotprocesses. The modular design, few and heavy-duty moving parts as well as minimal maintenance demands make the positioner service friendly.

The positioner is designed with the following main sections (see Figure below):



xx1000000771

Pos	Description	Pos	Description
A	Rotary unit, PLATE	C	Stand
B	Support bearing	D	SMB unit
E	Tailstock		

There is a rotary unit fitted on the stand.

On the outgoing shaft of the rotary unit (A, PLATE) a faceplate is fitted. The faceplate has plain holes and guide holes for securing fixtures. On the opposite side there is a support collar used for fixture support.

The rotary unit is fitted with a current collector in the form of a slip ring in order to transfer weld current.

The drive equipment for the positioner is placed in the system's equipment cabinet.

2.5.2 Technical data

IRBP L-300 / -600 / -1000

Note

Max speed specified in the table below only applies to standard products.

Technical Data	IRBP L-300	IRBP L-600	IRBP L-1000
Max. handling capacity	300 kg, see load diagram	600 kg, see load diagram	1000 kg, see load diagram
Max. continuous torque	350 Nm	650 Nm	900 Nm
Center of gravity	See load diagram	See load diagram	See load diagram
Max bending moment	650 Nm	3300 Nm	5000 Nm
Positioning time 90 degrees	0.8 -1.2 s	1.0 -1.3 s	1.0 -1.3 s
Positioning time 180 degrees	1.4 -1.9 s	1.5 -2.1 s	1.5 -2.1 s
Positioning time 360 degrees	2.3 -2.7 s	2.7 -3.4 s	2.7 -3.5 s
Repetition accuracy with equal loads and radius 500 mm	±0.05 mm	±0.05 mm	±0.05 mm
Max. speed of rotation	180 deg/s	150 deg/s	150 deg/s
Max welding current, 60% duty cycle	600 Amp	600 Amp	600 Amp
Weight	250 - 300 kg	465 - 515kg	465 - 515kg

IRBP L-2000 / -5000

Note

Max speed specified in the table below only applies to standard products.

Technical Data	IRBP L-2000	IRBP L-5000
Max. handling capacity	2000 kg	5000 kg
Max continuous torque	3800 Nm	9000 Nm
Center of gravity	See load diagram	See load diagram
Max bending moment	15000 Nm	60000 Nm
Positioning time 90 degrees	1.2 - 2.2 s	2.5 - 3.1 s
Positioning time 180 degrees	2.2 - 3.8 s	4.8 - 5.9 s
Positioning time 360 degrees	4.2 - 5.1 s	9.4 - 10.0 s
Repetition accuracy with equal loads and radii 500 mm	±0.05 mm	±0.05 mm
Max. speed of rotation	90deg/s	39 deg/s
Max welding current, 60% duty cycle	1200 Amp	1200 Amp
Weight	700 - 740 kg	1800 kg

2.5.3 Loading diagram

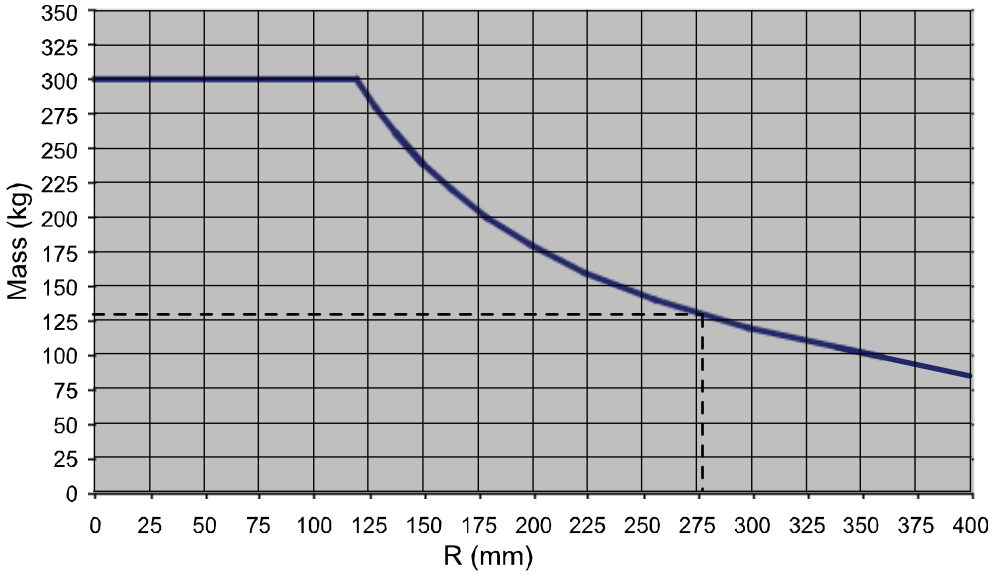
General

The diagrams (Figures below) show the maximum permitted center of gravity displacement from the center of rotation at different loads.

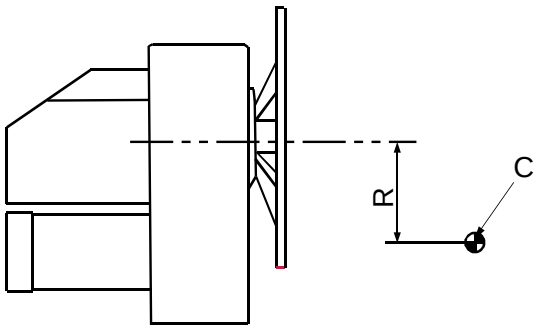
The load refers to the workpiece including the fixture. Also refer to the value for the max. continuous torque.

IRBP L-300, with tailstock

If the center of gravity is placed 276 mm from the center of rotation the load may not be greater than: 129 kg.



xx1000000768

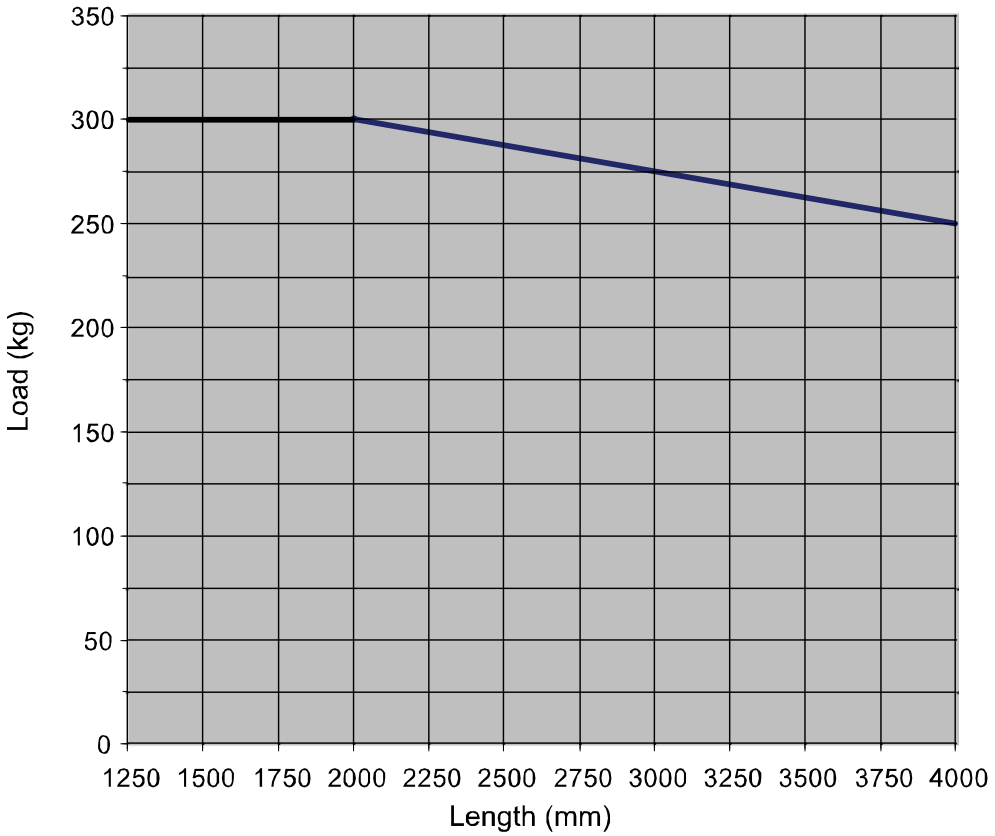


xx1000000801

Pos	Description
R	R = Distance in mm
C	Center of gravity

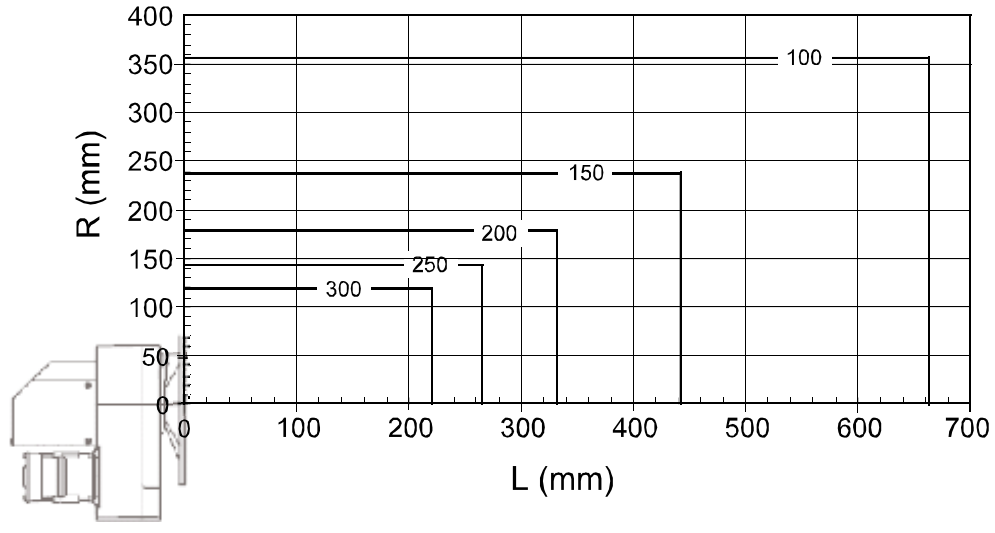
Continues on next page

Max load at different length between rotary unit and support collar is shown below.



xx1000000769

IRBP L-300, without tailstock



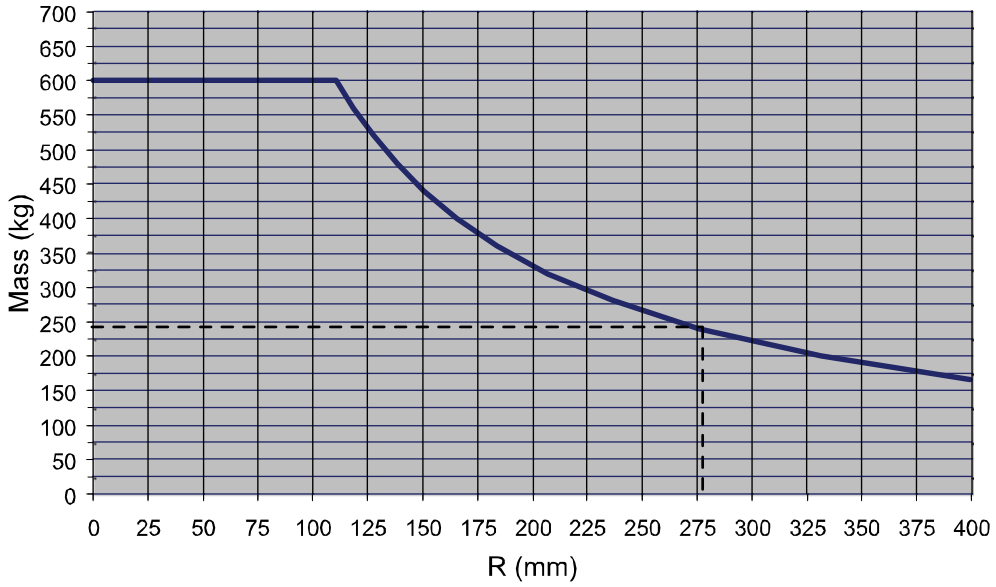
xx1100000011

Continues on next page

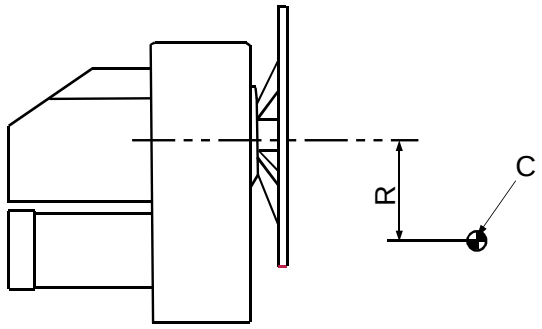
2.5.3 Loading diagram
Continued

IRBP L-600, with tailstock

If the center of gravity is placed 276 mm from the center of rotation the load may not be greater than: 240 kg.



xx1000000775

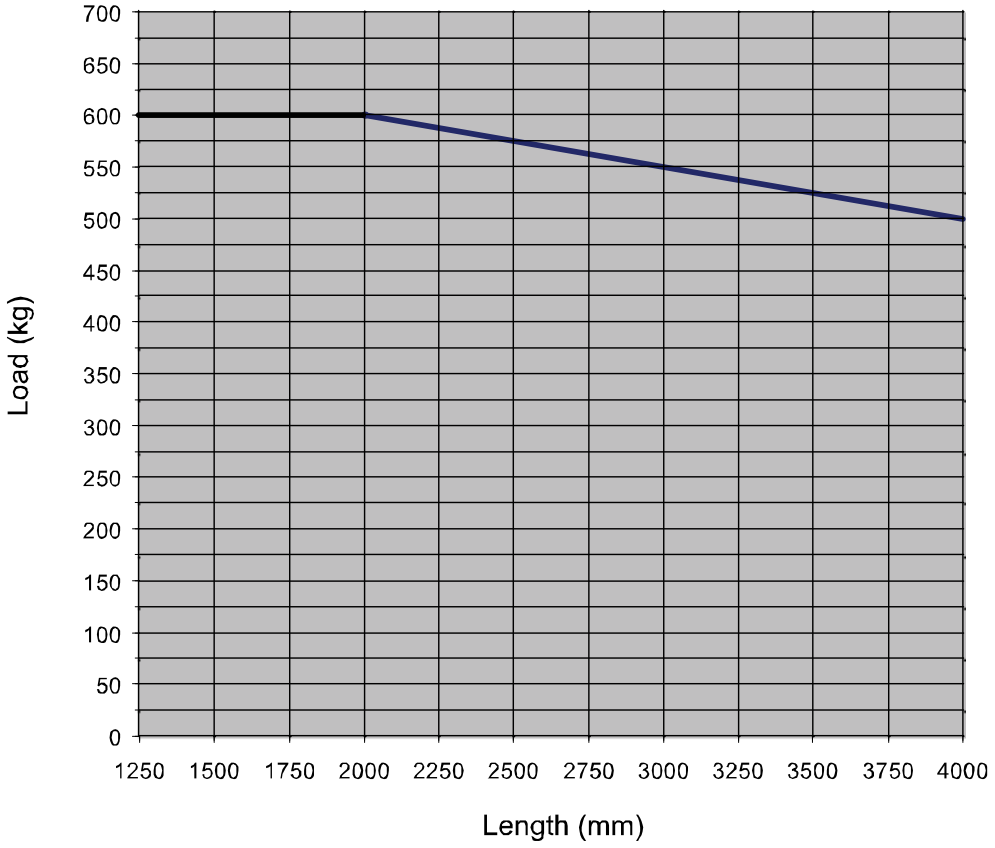


xx1000000801

Pos	Description
R	R = Distance in mm
C	Center of gravity

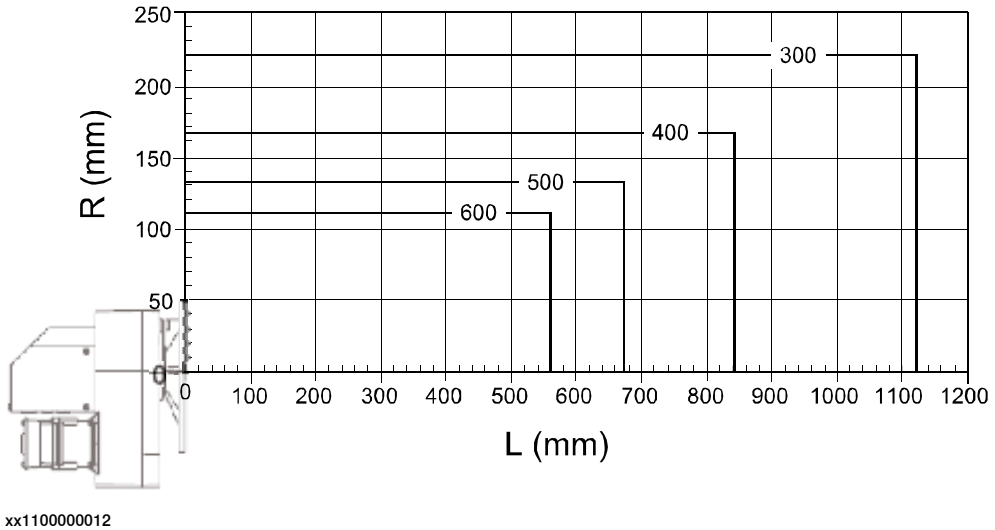
Continues on next page

Max load at different length between rotary unit and support collar is shown below.



xx1000000776

IRBP L-600, without tailstock



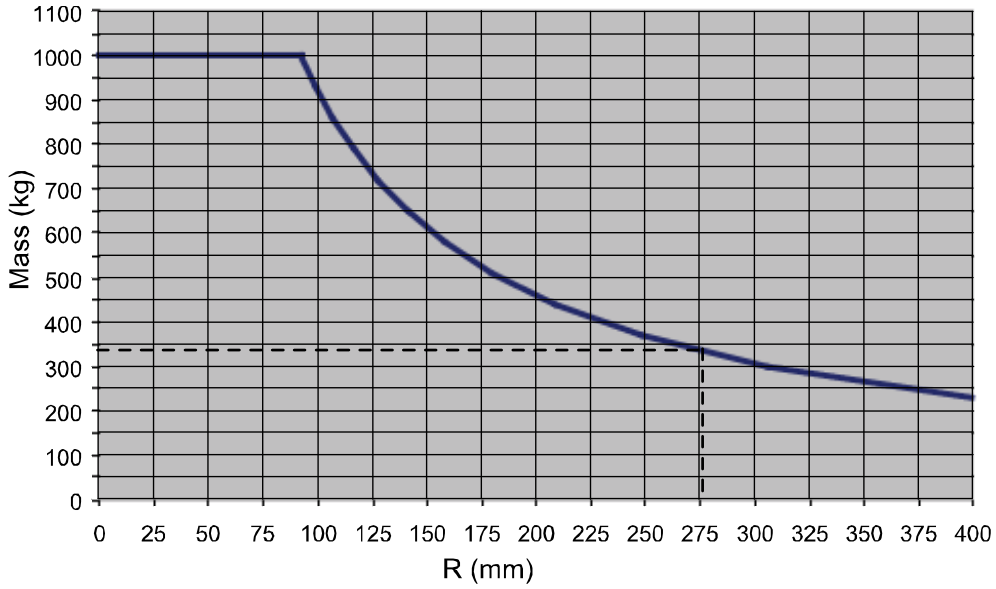
xx1100000012

Continues on next page

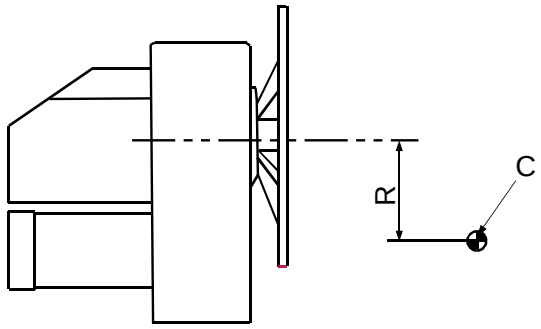
2.5.3 Loading diagram
Continued

IRBP L-1000, with tailstock

If the center of gravity is placed 276 mm from the center of rotation the load may not be greater than: 333 kg.



xx1000000780

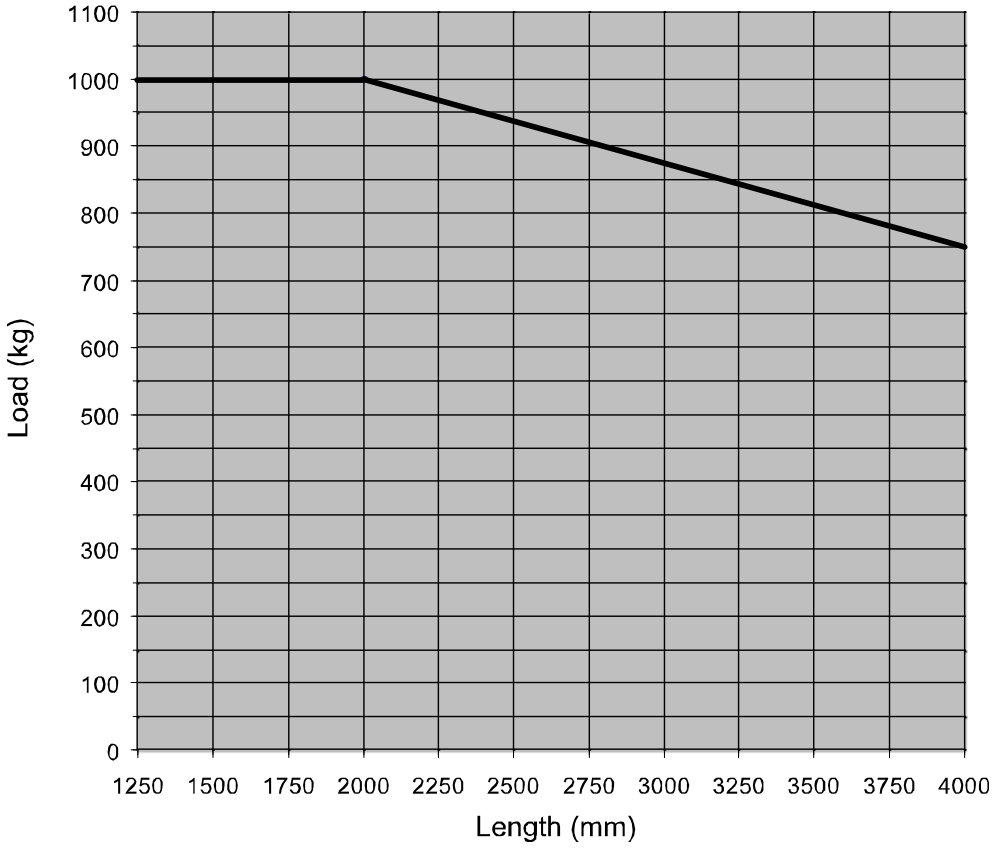


xx1000000801

Pos	Description
R	R = Distance in mm
C	Center of gravity

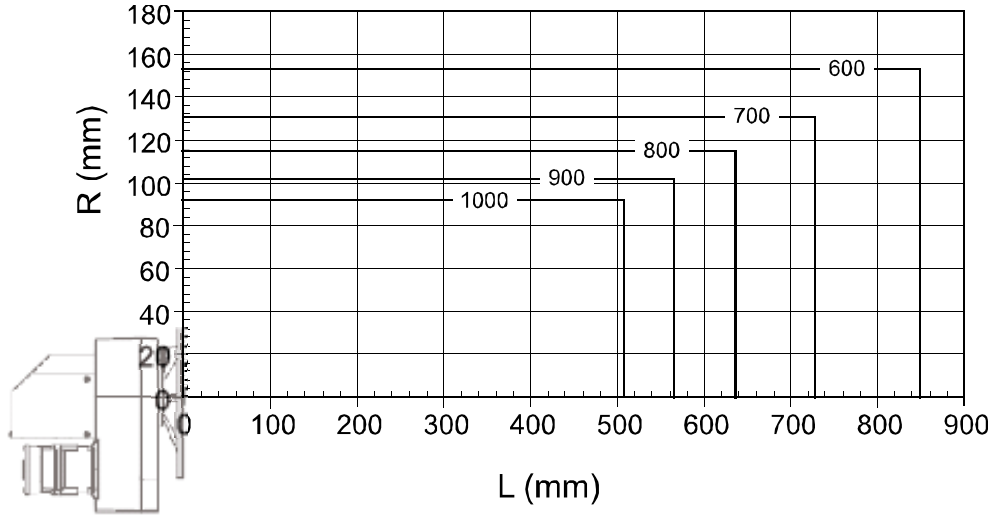
Continues on next page

Max load at different length between rotary unit and support collar is shown below.



xx1000000781

IRBP L-1000, without tailstock



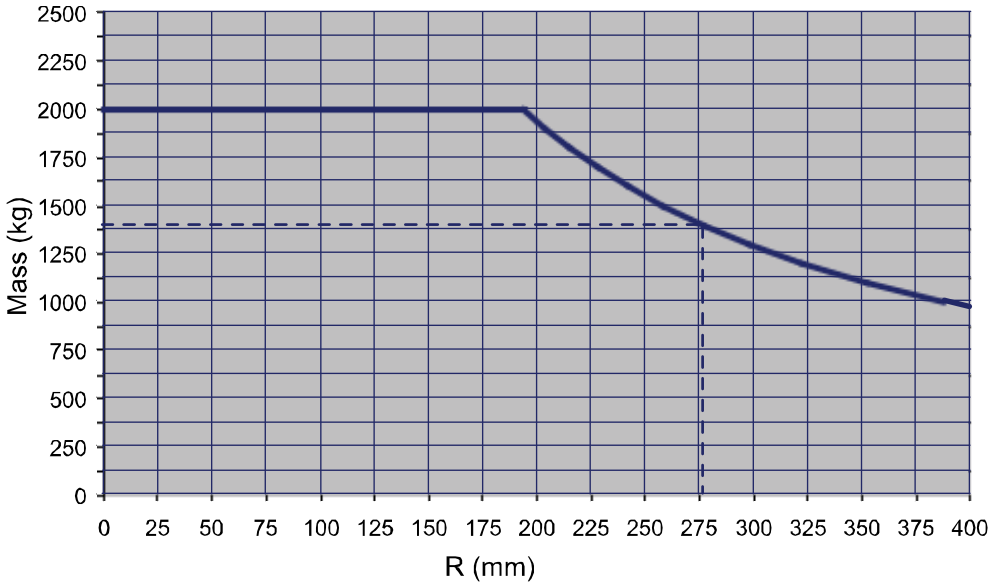
xx1100000013

Continues on next page

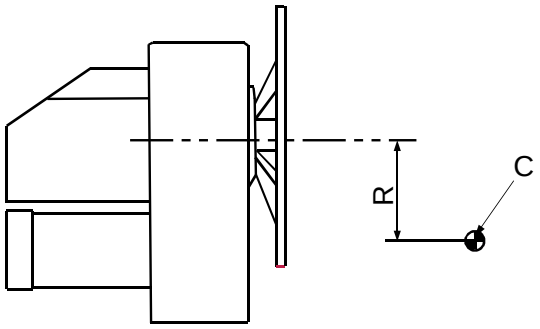
2.5.3 Loading diagram
Continued

IRBP L-2000, with tailstock

If the center of gravity is placed 276 mm from the center of rotation the load may not be greater than: 1400 kg.



xx1000000785

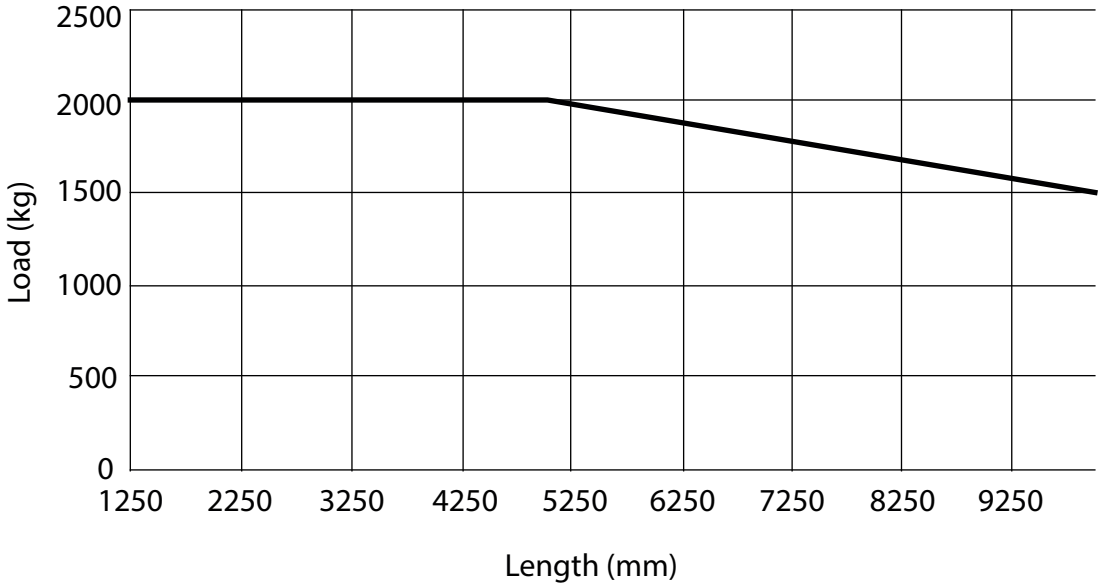


xx1000000801

Pos	Description
R	R= Distance in mm
C	Center of gravity

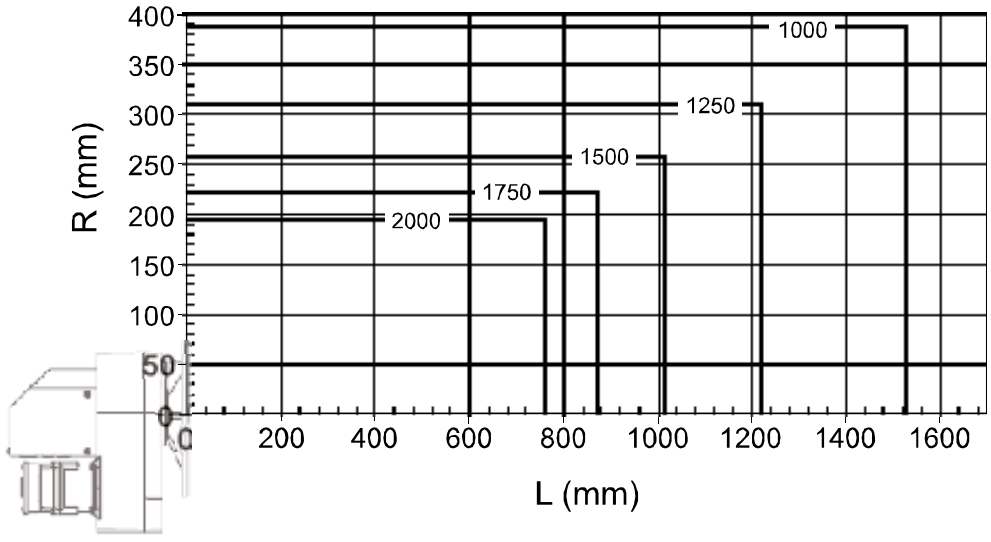
Continues on next page

Max load at different length between rotary unit and support collar is shown below.



xx1500003014

IRBP L-2000, without tailstock



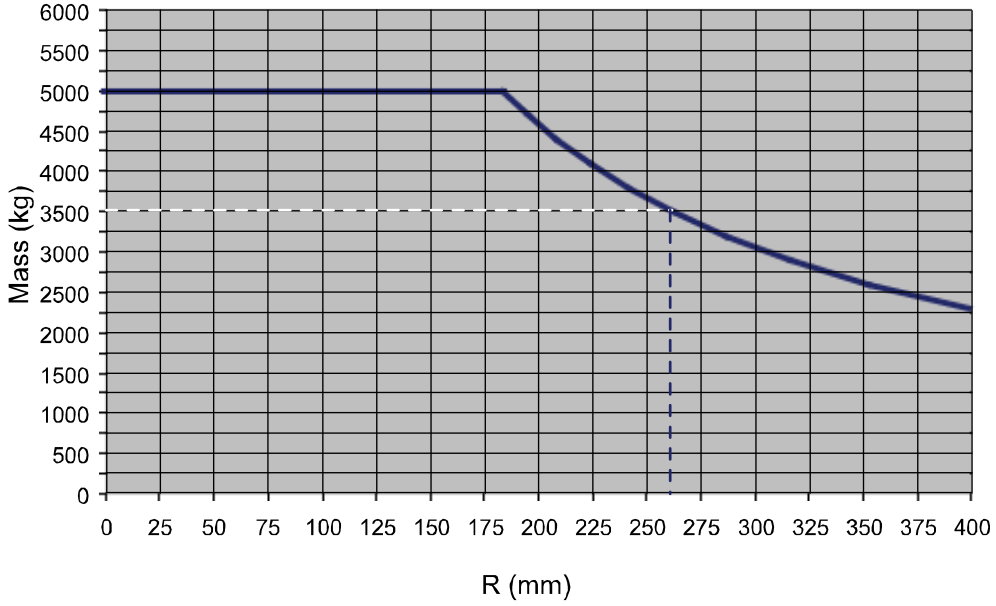
xx1100000014

Continues on next page

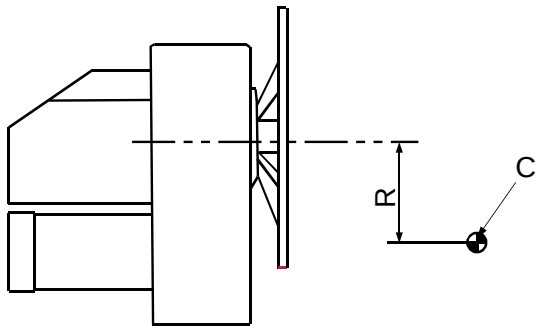
2.5.3 Loading diagram
Continued

IRBP L-5000, with tailstock

If the center of gravity is placed 262 mm from the center of rotation the load may not be greater than: 3500 kg.



xx1000000786

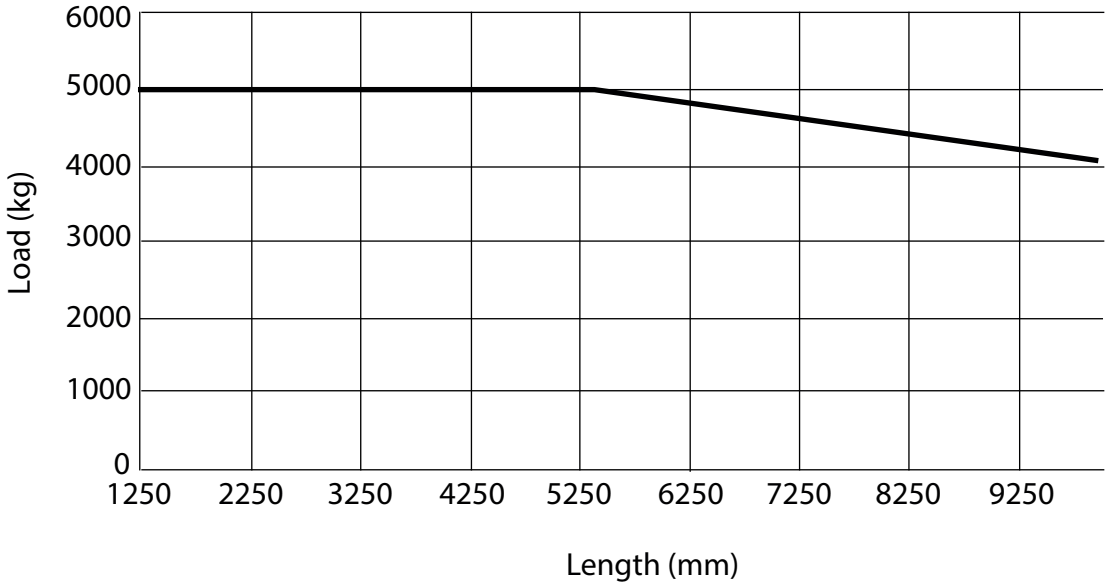


xx1000000801

Pos	Description
R	R= Distance in mm
C	Center of gravity

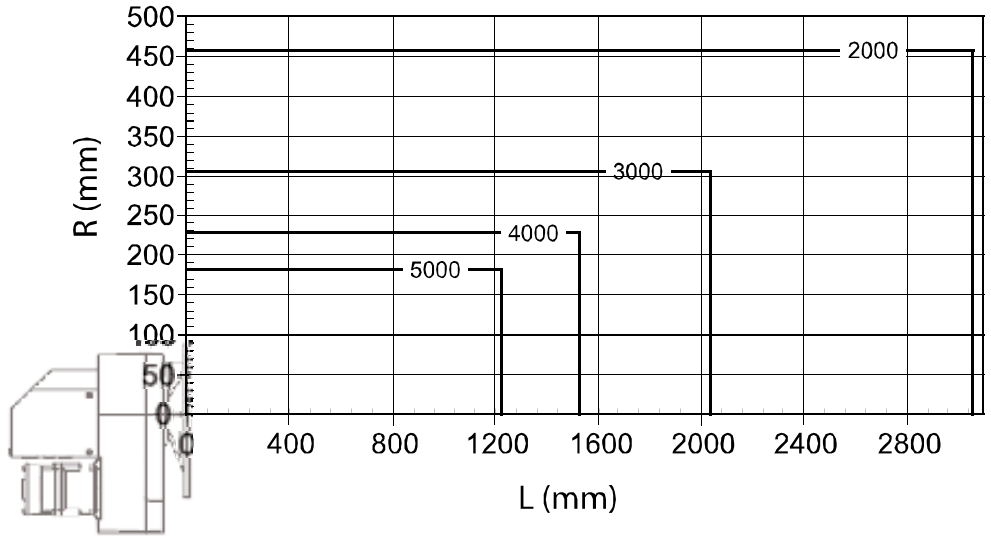
Continues on next page

Max load at different length between rotary unit and support collar is shown below.



xx1500003015

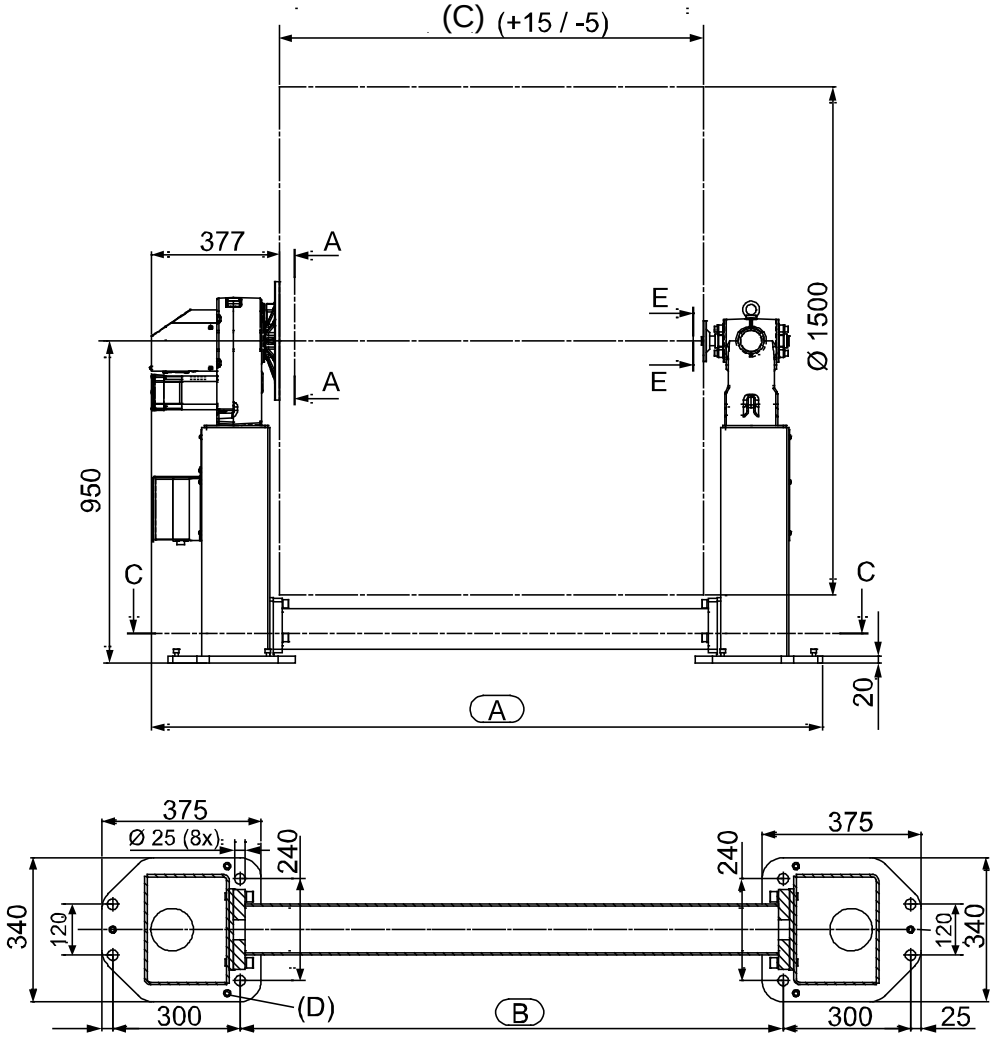
IRBP L-5000, without tailstock



xx1100000015

2.5.4 Dimensional drawings

IRBP L-300

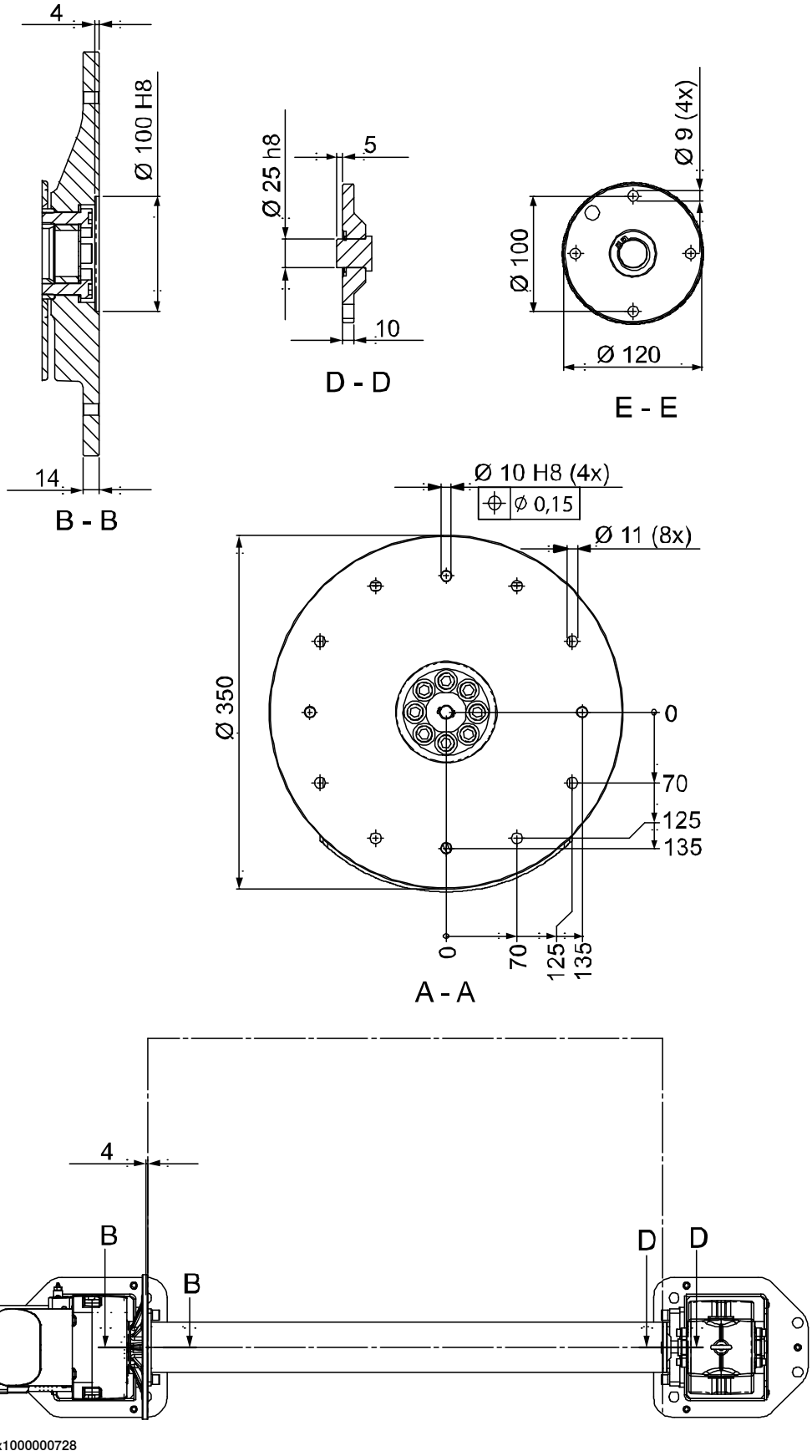


xx1000000727

Pos	Description
C	Length
D	Adjusting bolts (6x)

IRBP L-300 Ø1500		
C (mm)	**A (mm)**	**B (mm)**
1250	1979	1281
1600	2329	1631
2000	2729	2031
2500	3229	2531
3150	3879	3181
4000	4729	4031

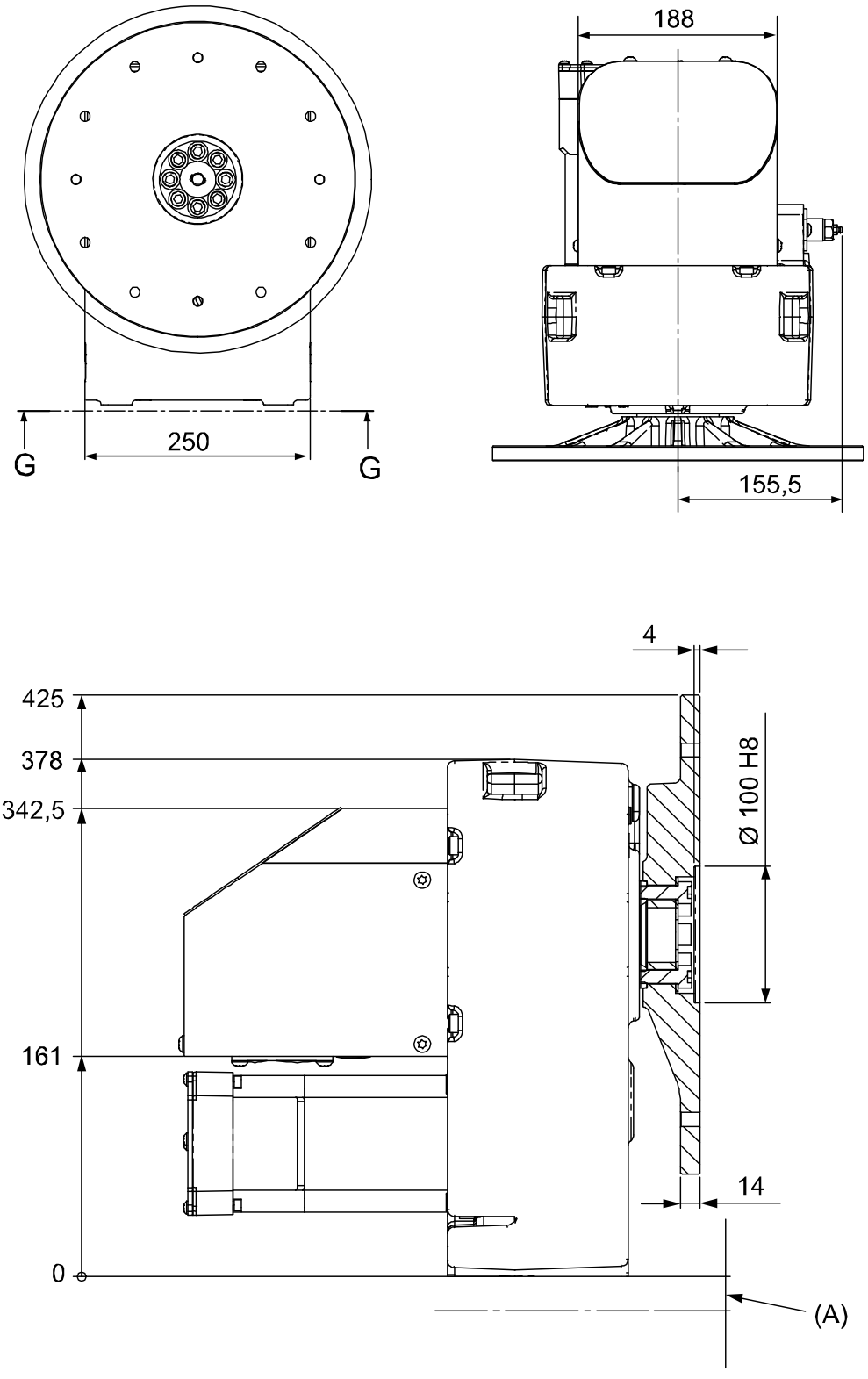
Continues on next page



Continues on next page

2.5.4 Dimensional drawings
Continued

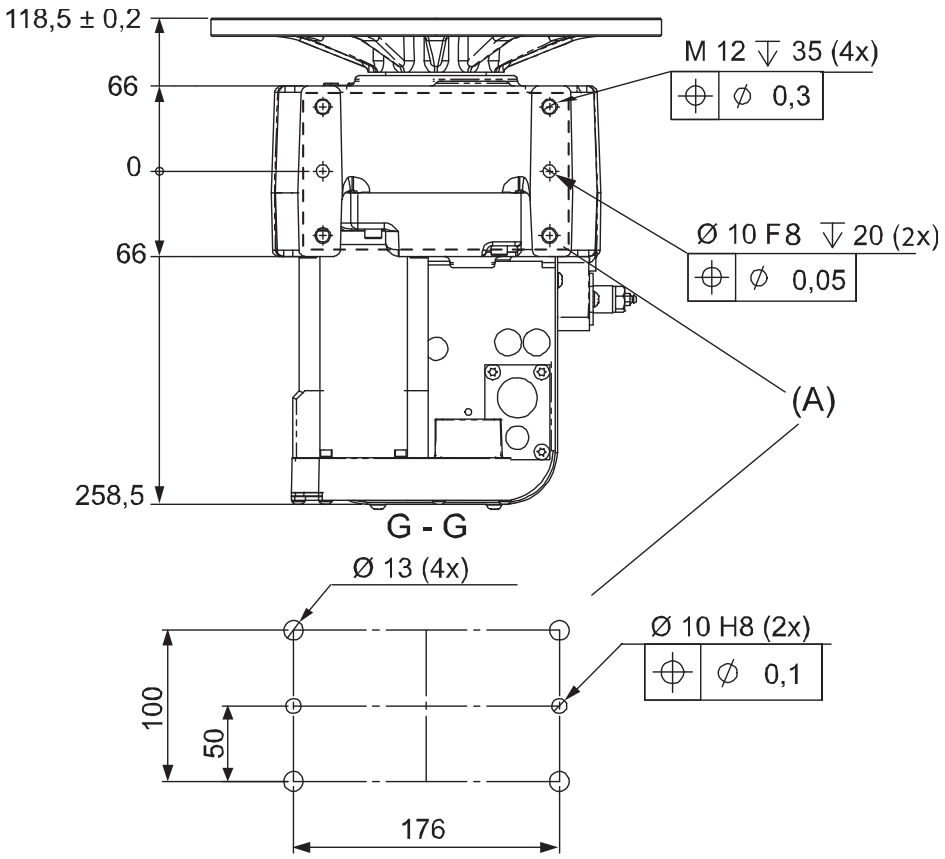
Rotary unit MTD 250



xx1000000729

Pos	Description
A	27 mm Recommended min. clamping length.

Continues on next page



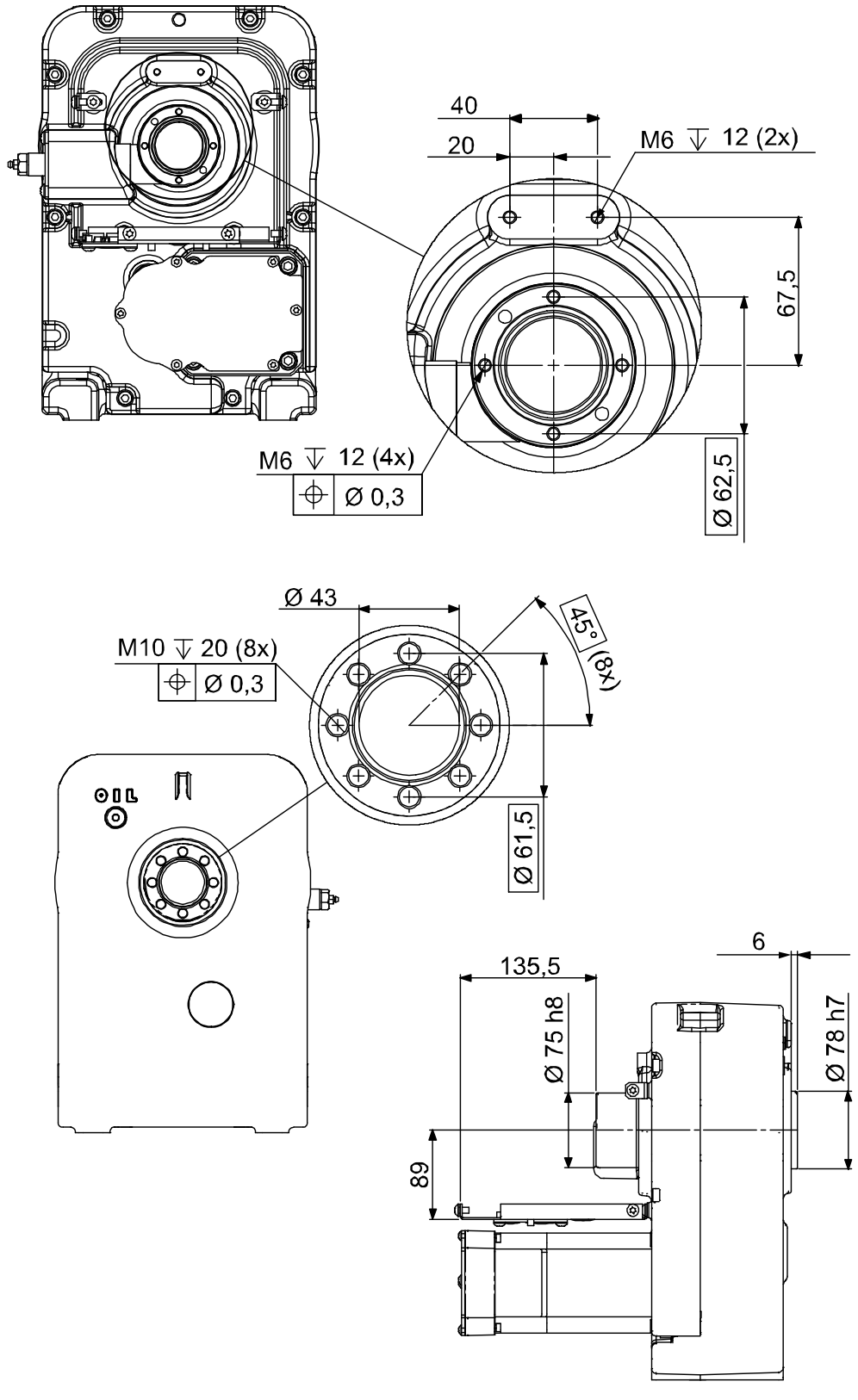
xx1000000730

Pos	Description
A	Hole configuration for mounting base.

Continues on next page

2.5.4 Dimensional drawings

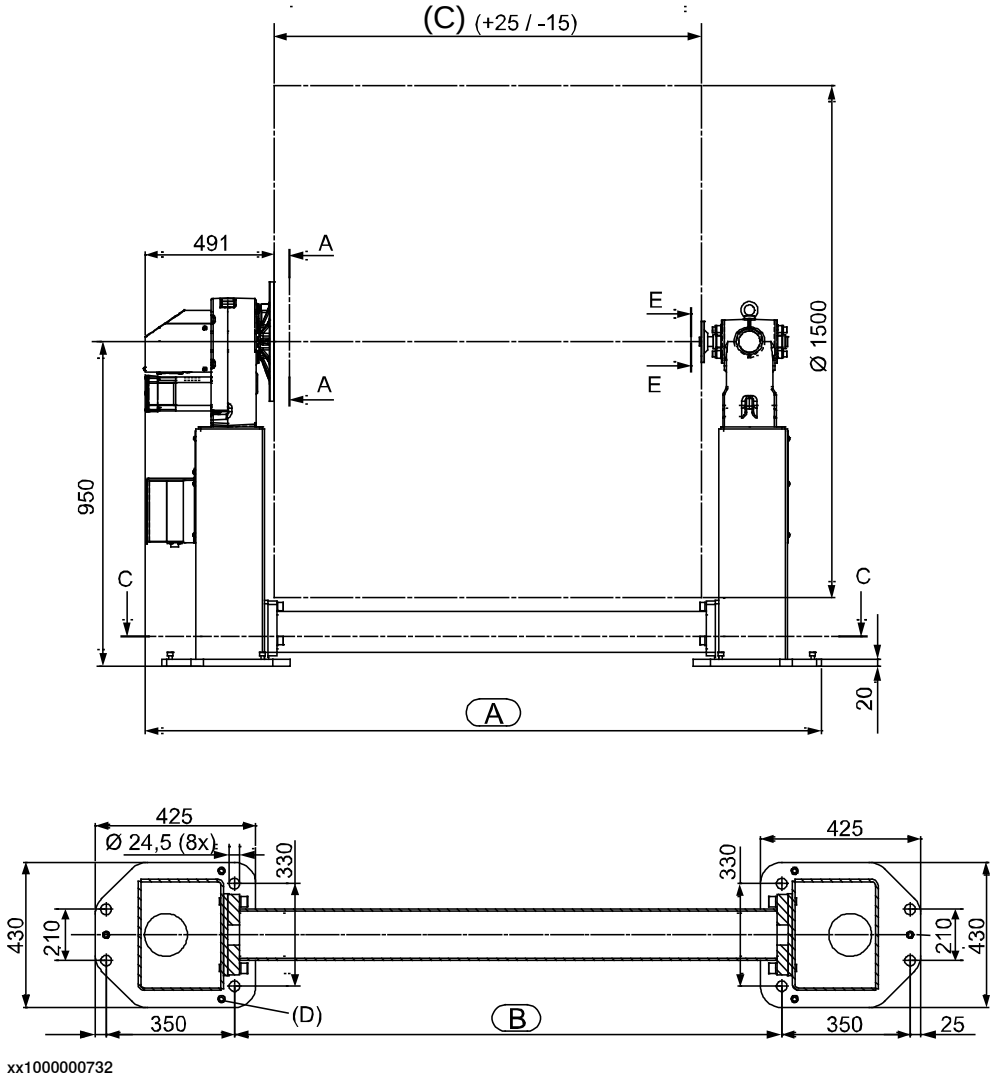
Continued



xx1000000731

Continues on next page

IRBP L-600 / -1000



xx1000000732

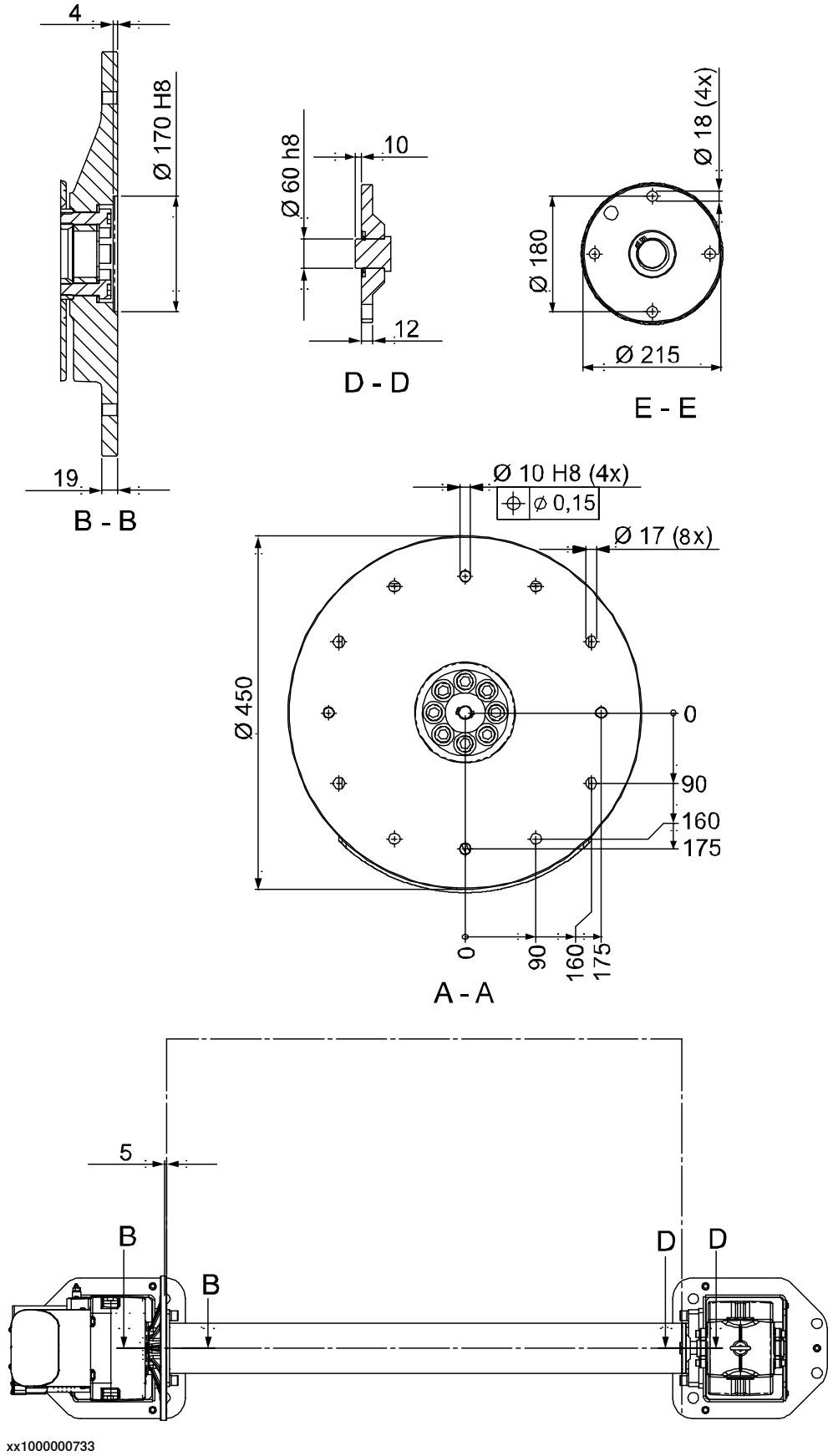
Pos	Description
C	Length
D	Adjusting bolts (6x)

IRBP L-600 / -1000 Ø1500		
C (mm)	**A (mm)**	**B (mm)**
1250	2182	1307
1600	2532	1657
2000	2932	2057
2500	3432	2557
3150	4082	3207
4000	4932	4057

Continues on next page

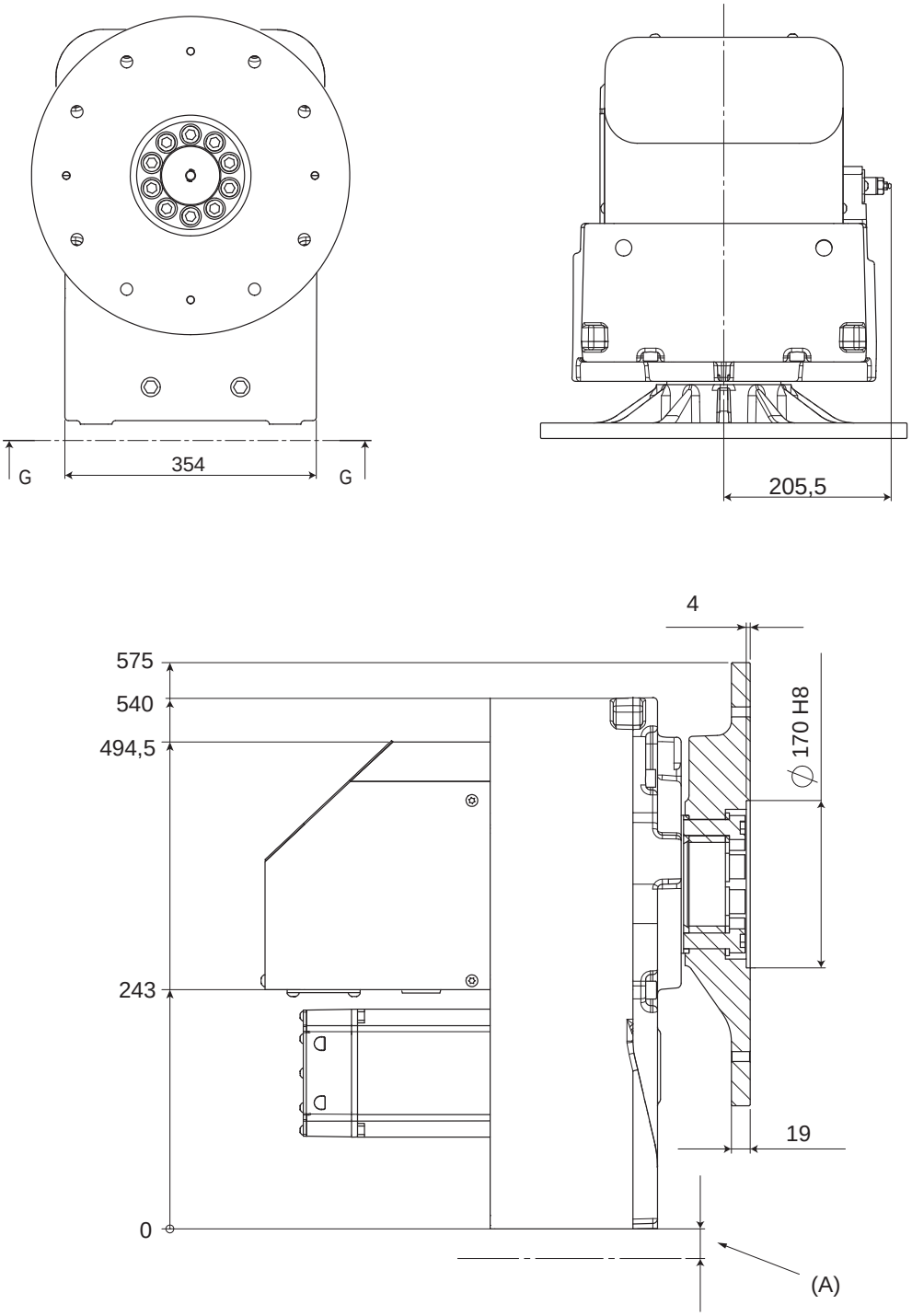
2.5.4 Dimensional drawings

Continued



Continues on next page

Rotary unit MTD 500/750



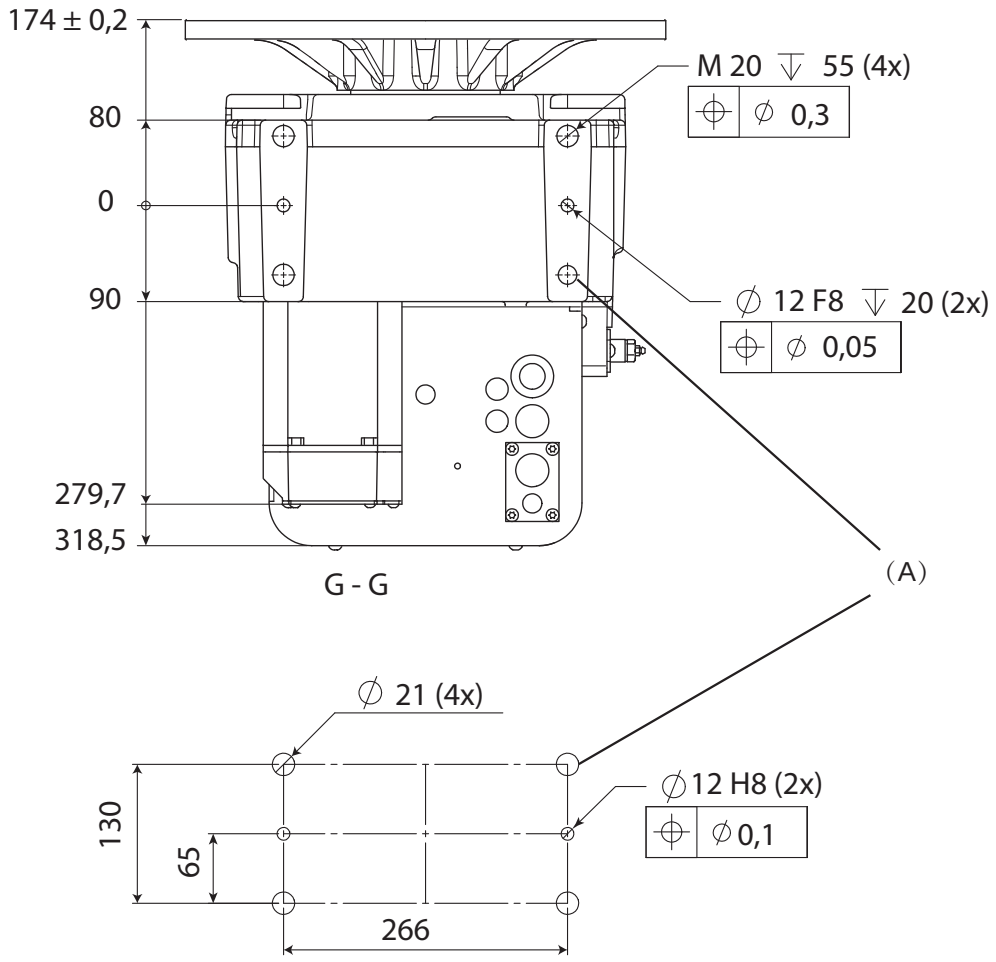
xx1000000734

Pos	Description
A	30 mm Recommended min. clamping length.

Continues on next page

2.5.4 Dimensional drawings

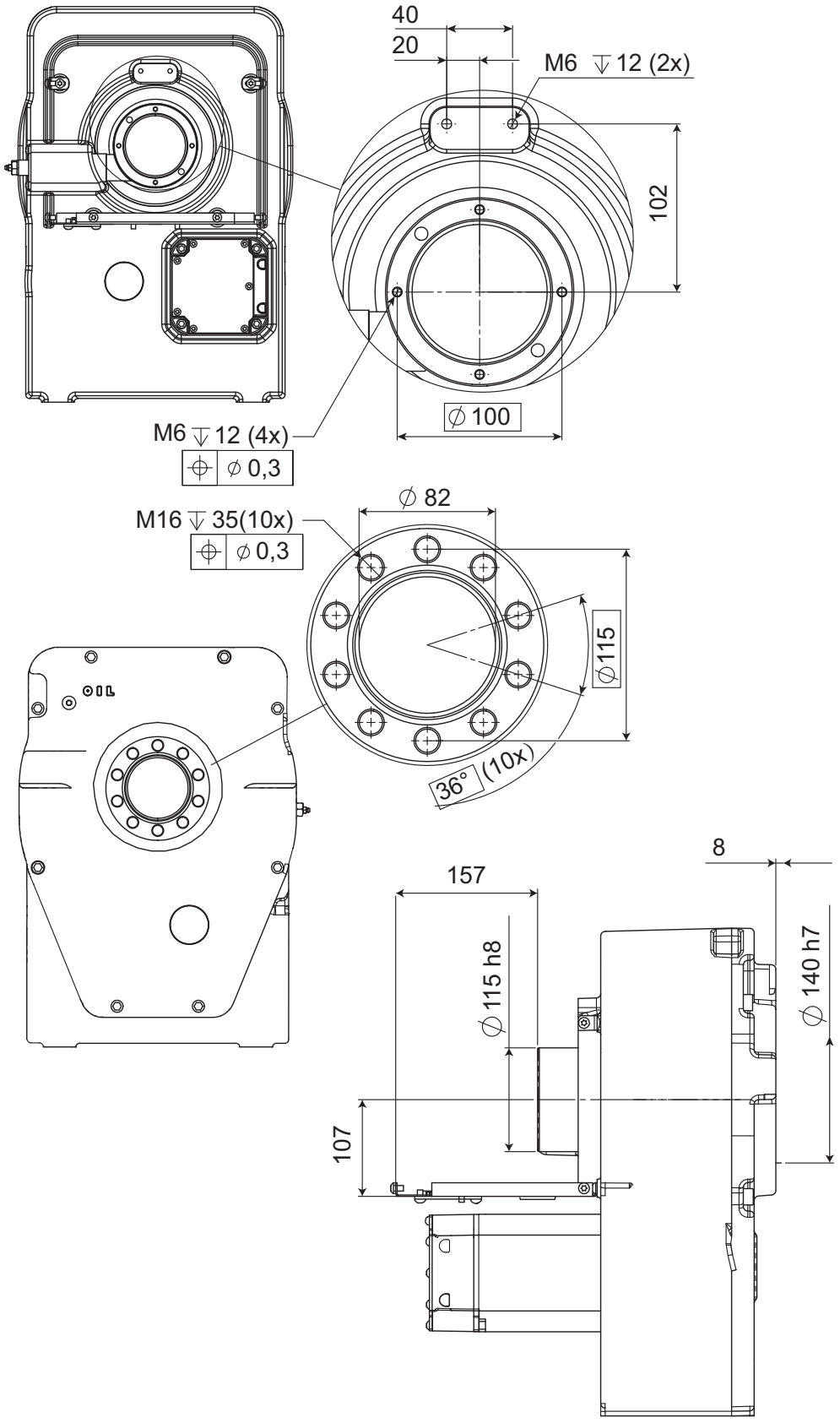
Continued



xx1000000735

Pos	Description
A	Hole configuration for mounting base.

Continues on next page

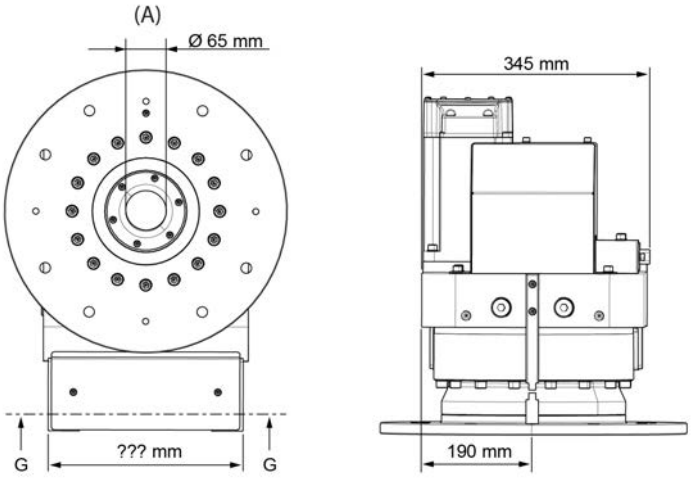


xx1000000736

Continues on next page

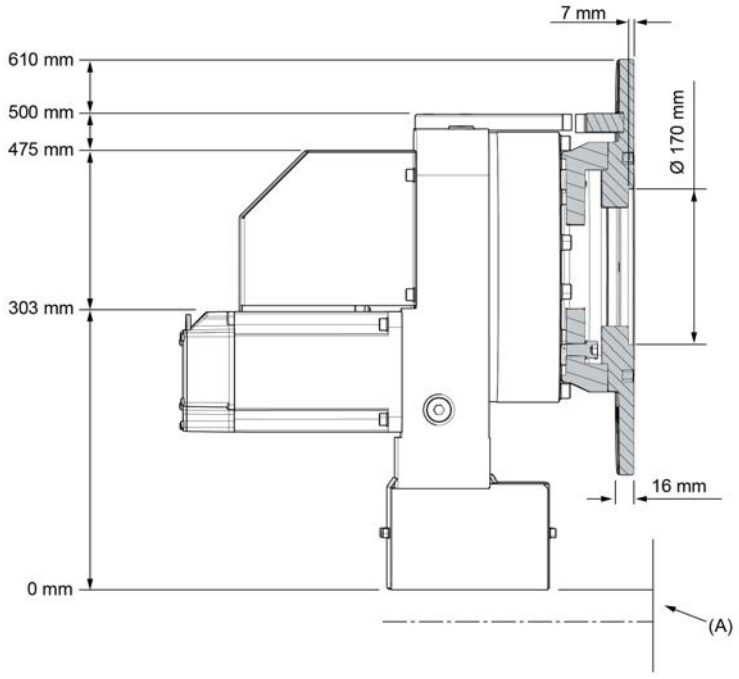
2.5.4 Dimensional drawings
Continued

Rotary unit MTE 500/750



xx2300001341

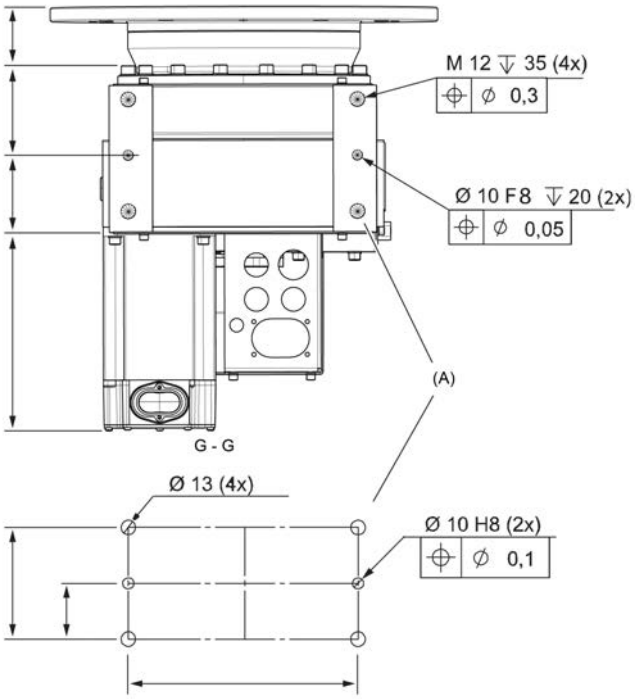
Pos	Description
A	Hollow shaft diameter.



xx2300001340

Pos	Description
A	30 mm Recommended min. clamping length.

Continues on next page



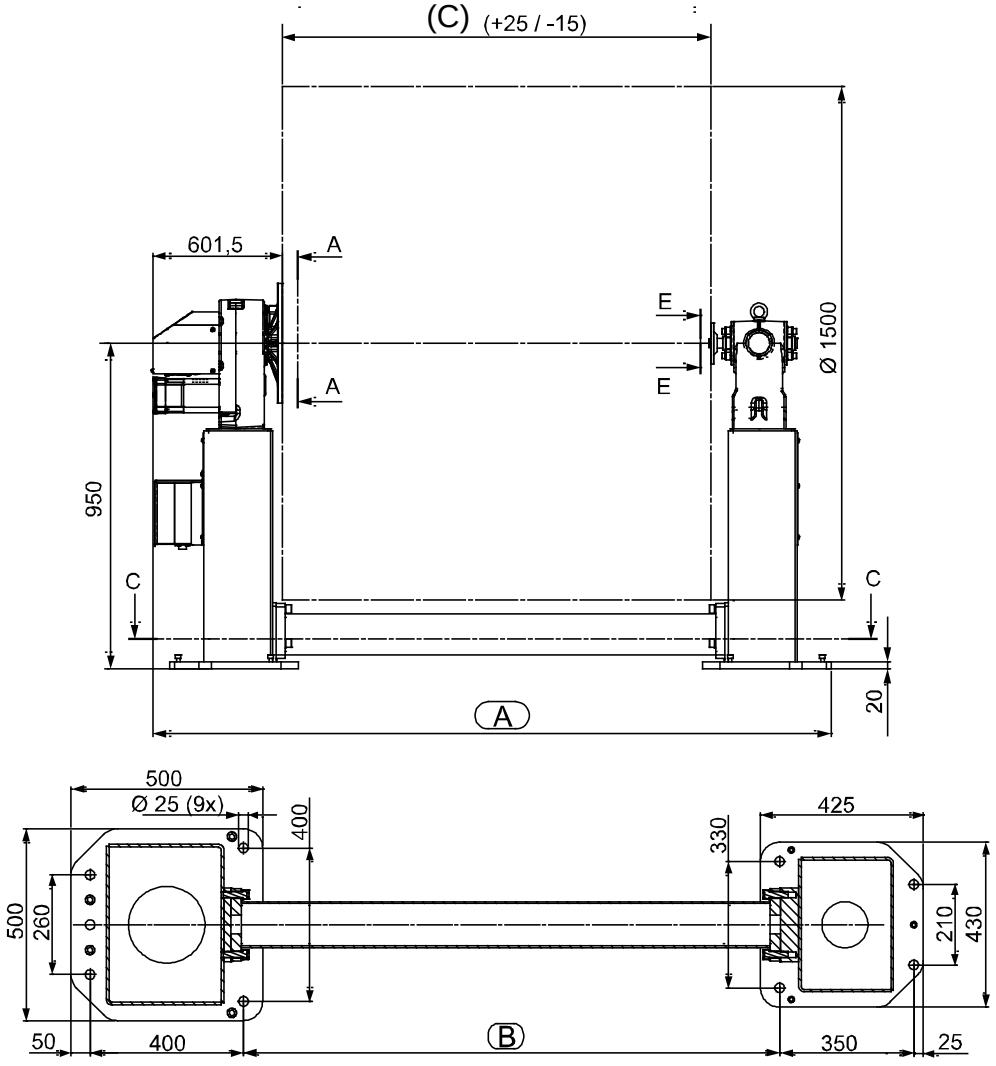
xx2300001342

Pos	Description
A	Hole configuration for mounting base.

Continues on next page

2.5.4 Dimensional drawings
Continued

IRBP L-2000

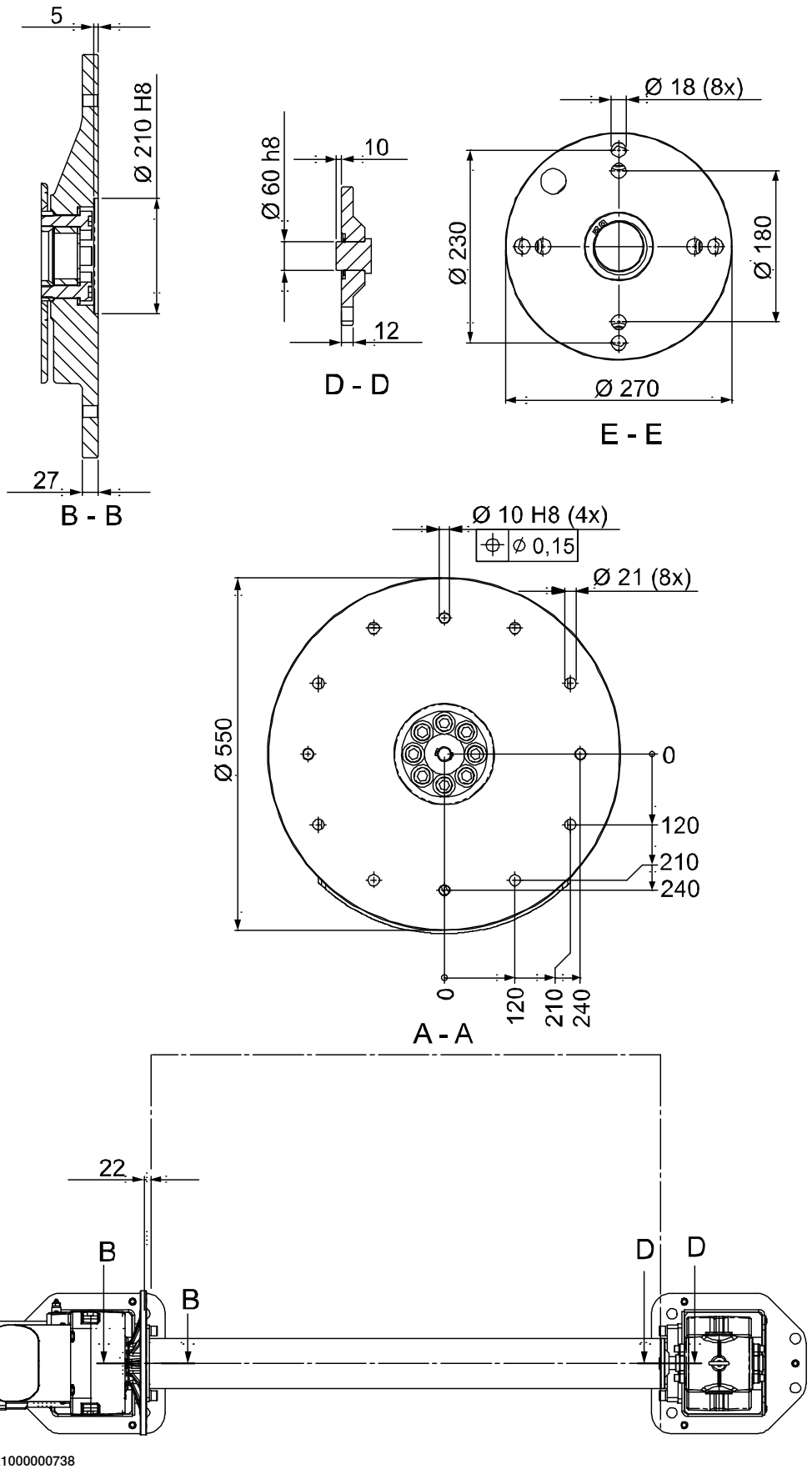


xx1000000737

Pos	Description
C	Length
D	Adjusting bolts (7x)

IRBP L-2000 Ø1500		
C (mm)	**A (mm)**	**B (mm)**
1250	2422	1398
1600	2772	1748
2000	3172	2148
2500	3672	2648
3150	4322	3298
4000	5172	4148

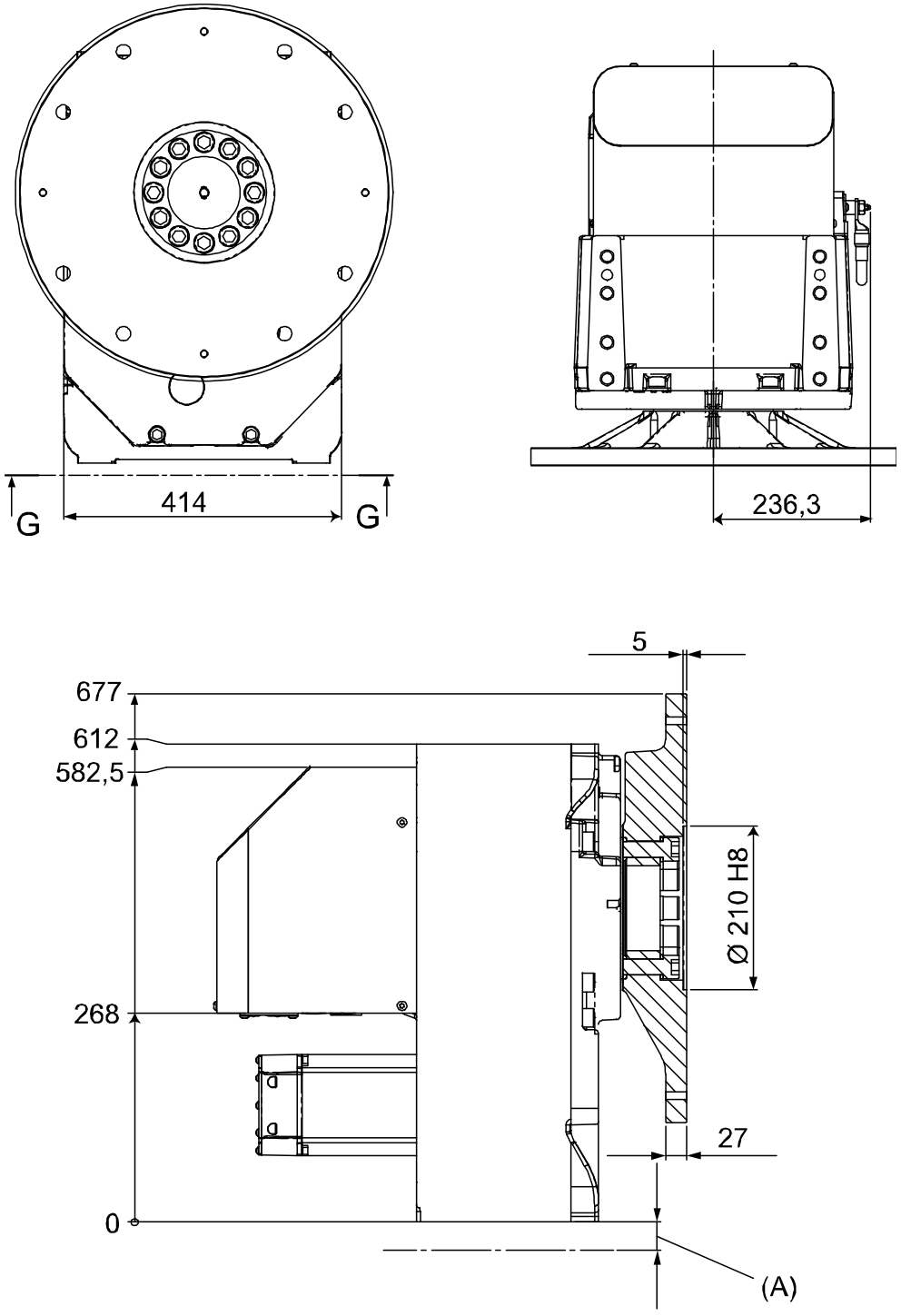
Continues on next page



Continues on next page

2.5.4 Dimensional drawings
Continued

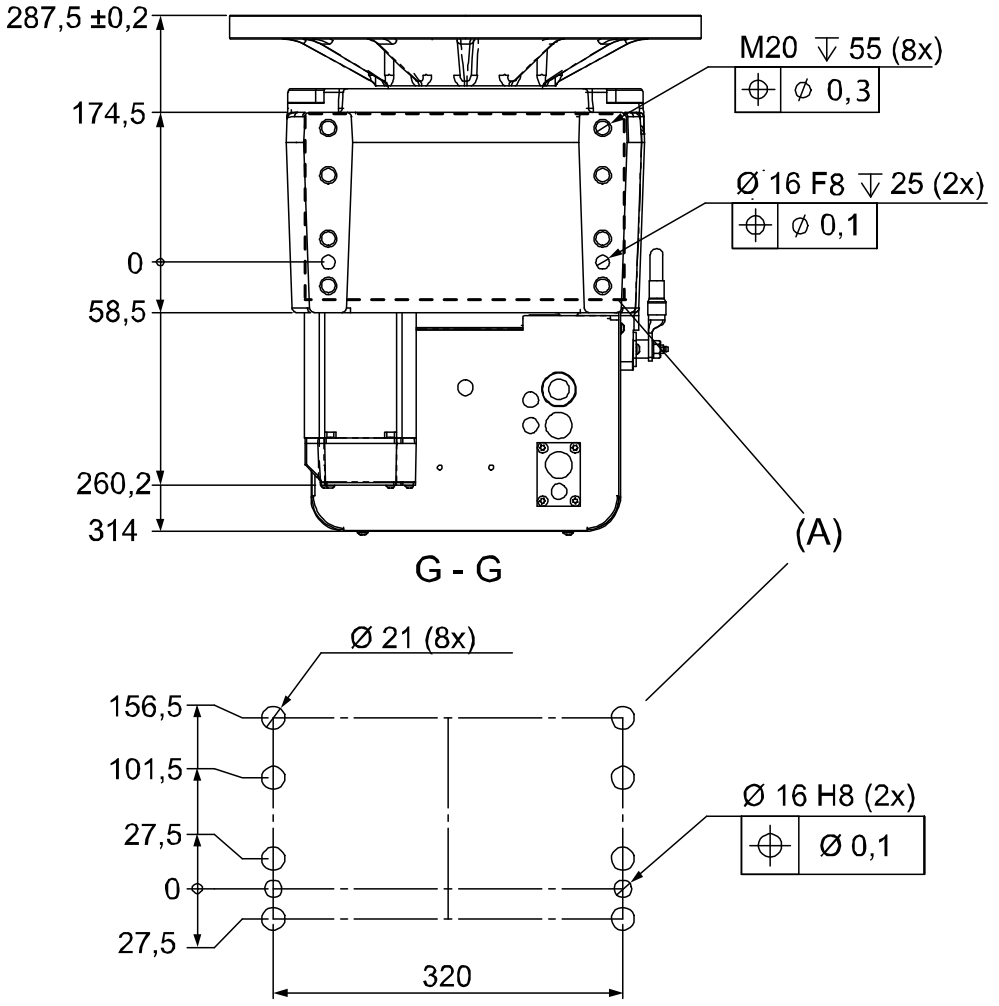
Rotary unit MTD 2000



xx1000000739

Pos	Description
A	36 mm Recommended min. clamping length.

Continues on next page



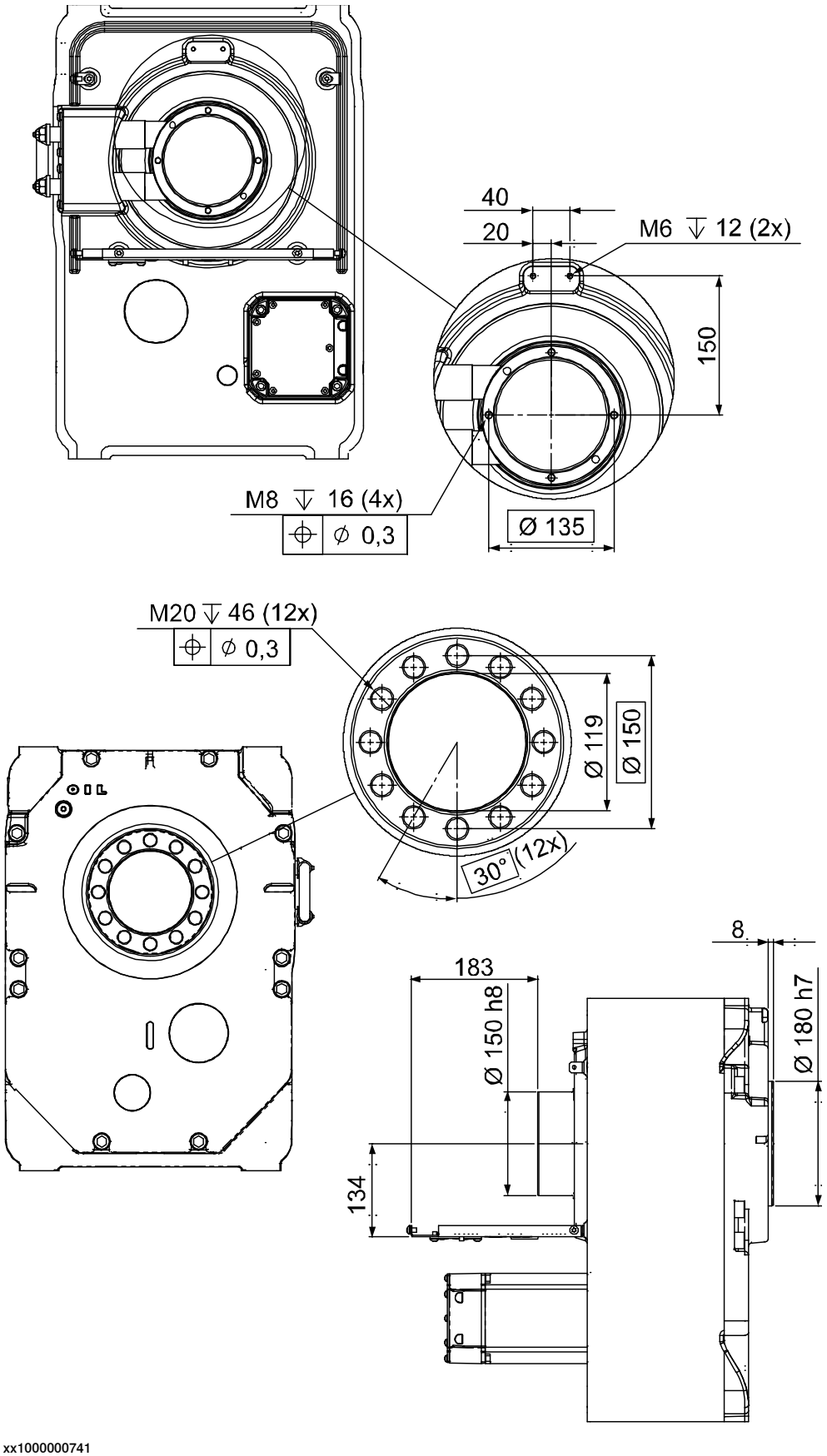
xx1000000740

Pos	Description
A	Hole configuration for mounting base.

Continues on next page

2.5.4 Dimensional drawings

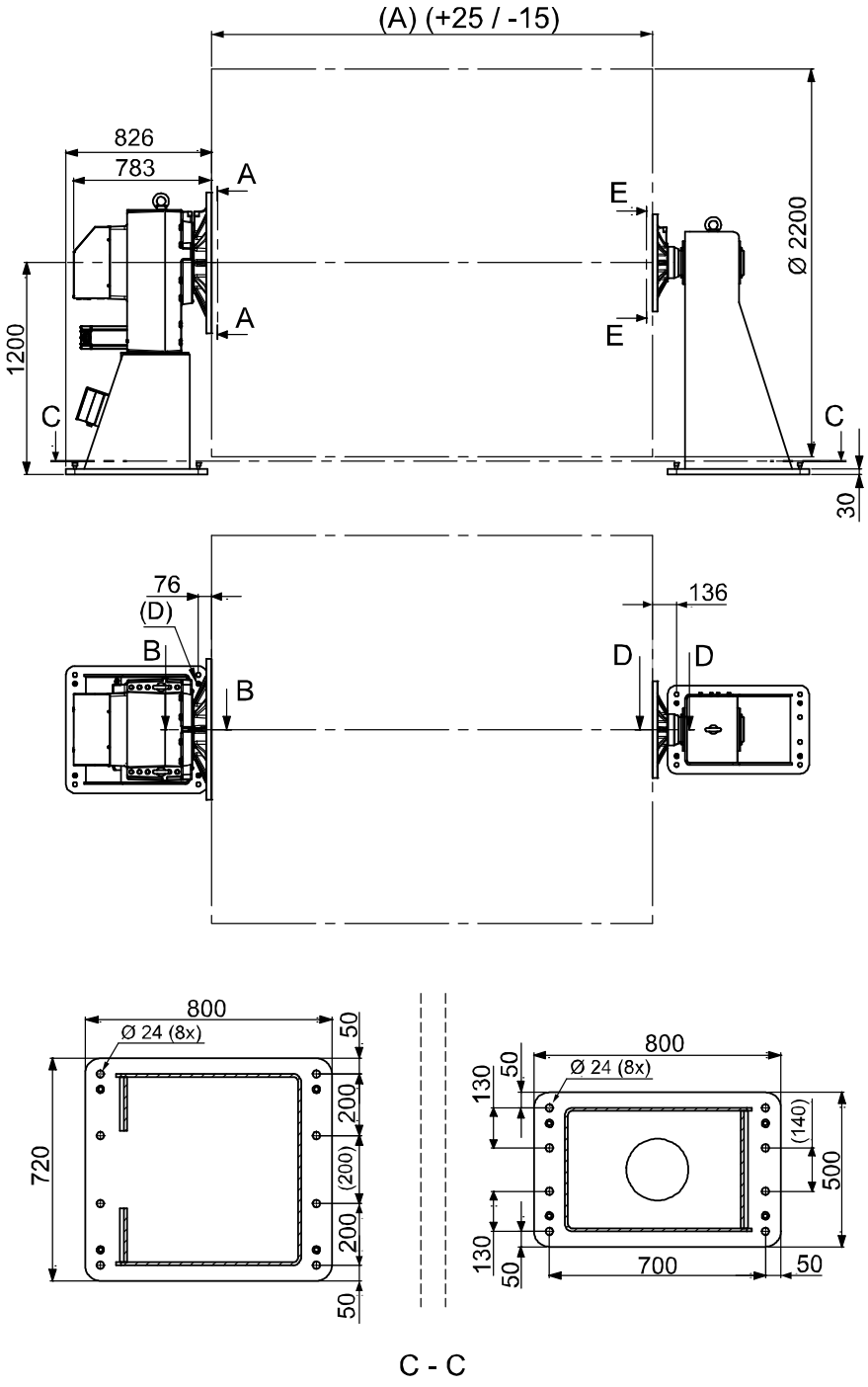
Continued



xx1000000741

Continues on next page

IRBP L-5000



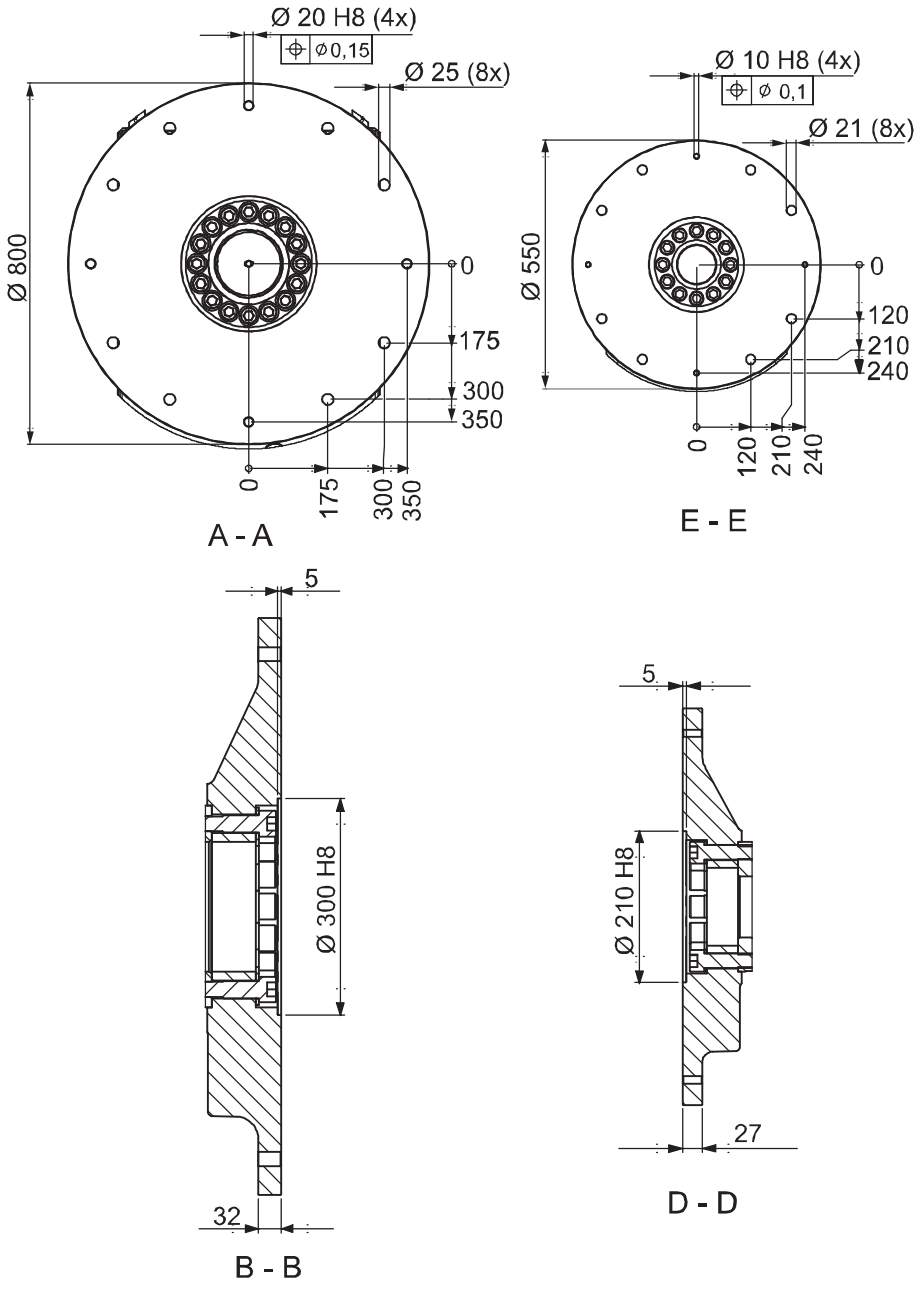
xx1000000742

Pos	Description
A	Length = X
D	Adsjusting bolts (8x)

Continues on next page

2.5.4 Dimensional drawings

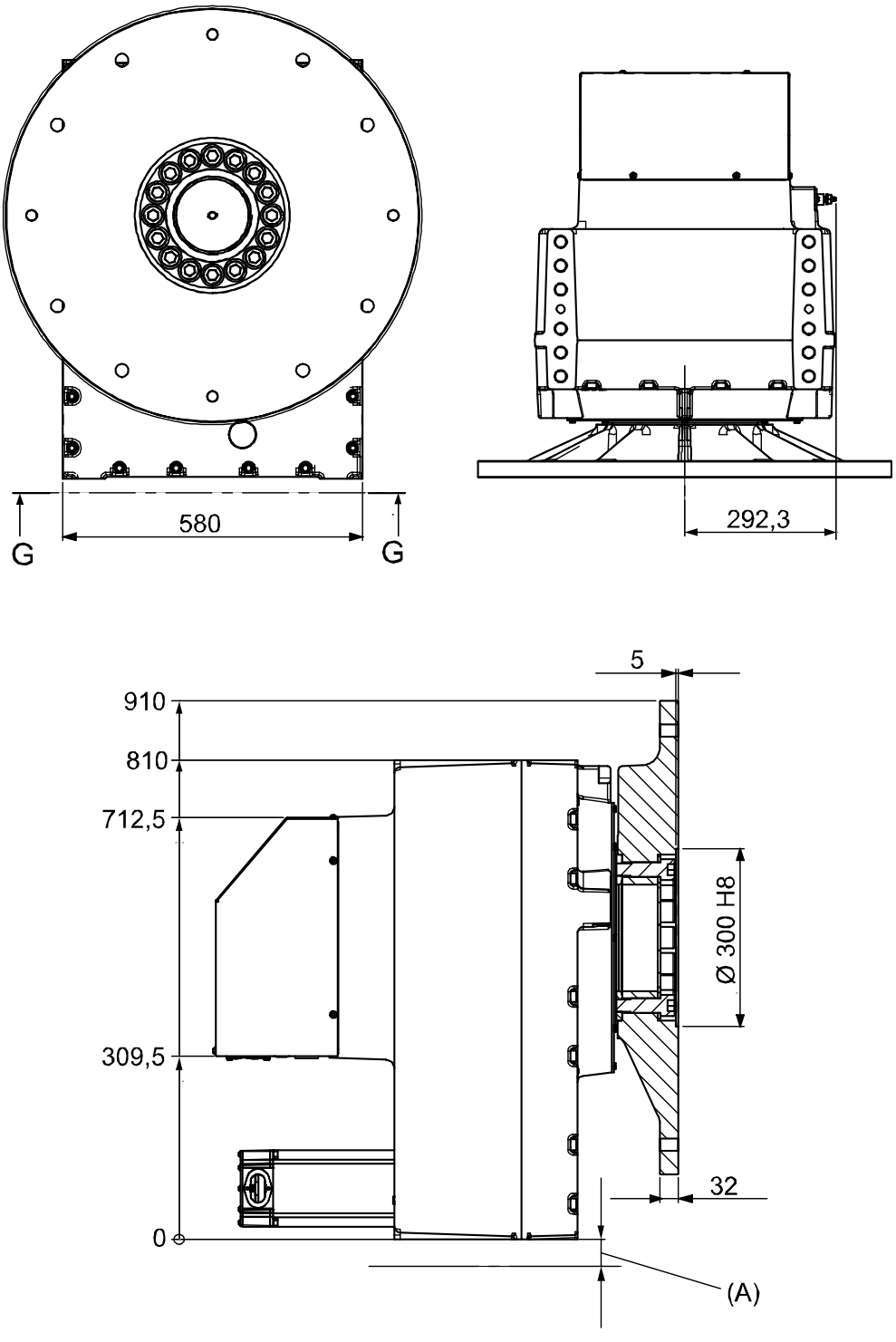
Continued



xx1000000743

Continues on next page

Rotary unit MTD 5000



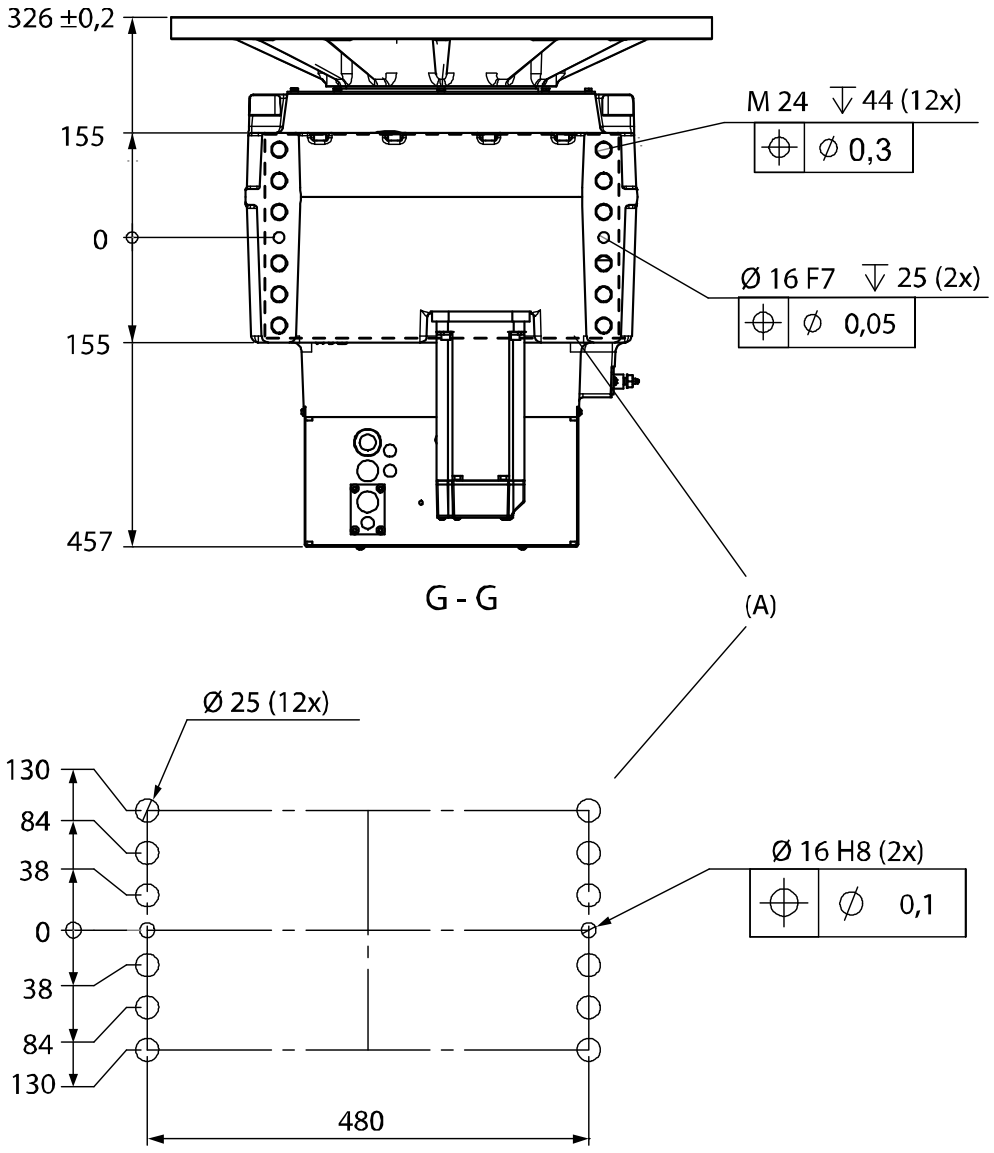
xx1000000744

Pos	Description
A	46 mm Recommended min. clamping length.

Continues on next page

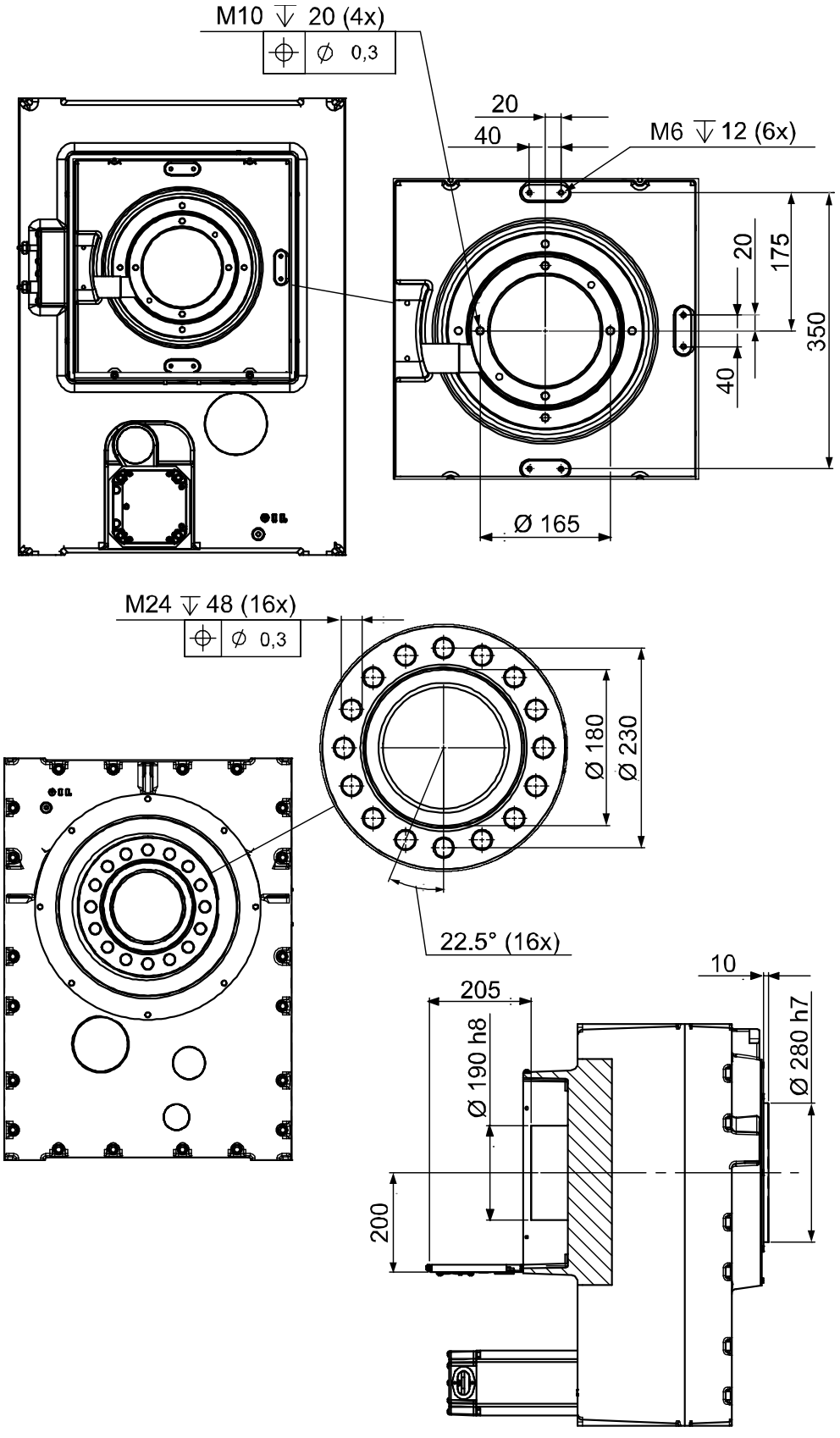
2.5.4 Dimensional drawings

Continued



Pos	Description
A	Hole configuration for mounting base.

Continues on next page

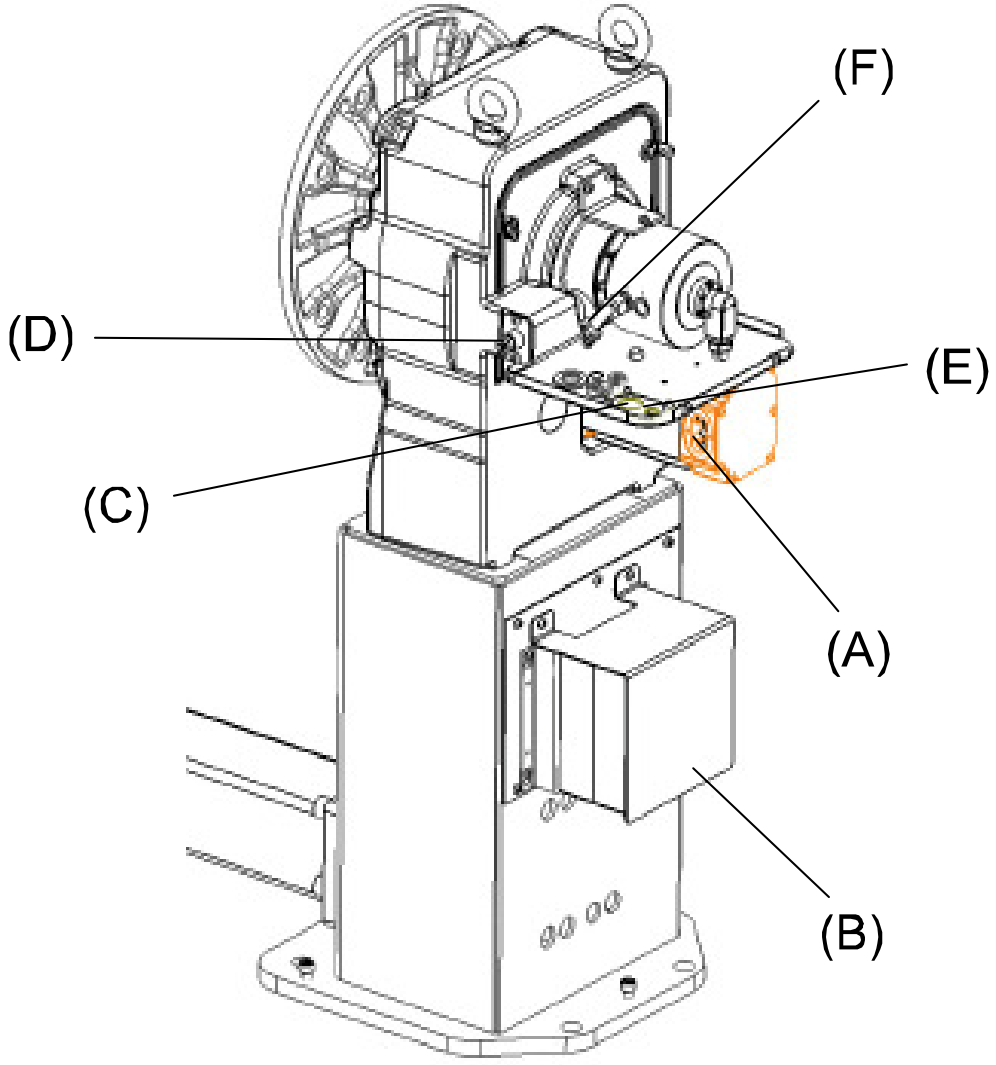


xx1000000746

Continues on next page

2.5.4 Dimensional drawings
Continued

Connections



xx1000000759

Pos	Description	Pos	Description
A	Power cable	D	Weld power
B	Measurement cable, SMB	E	Profi Bus
C	Customer power	F	Air

2.6 IRBP R-300/ -600/ -1000

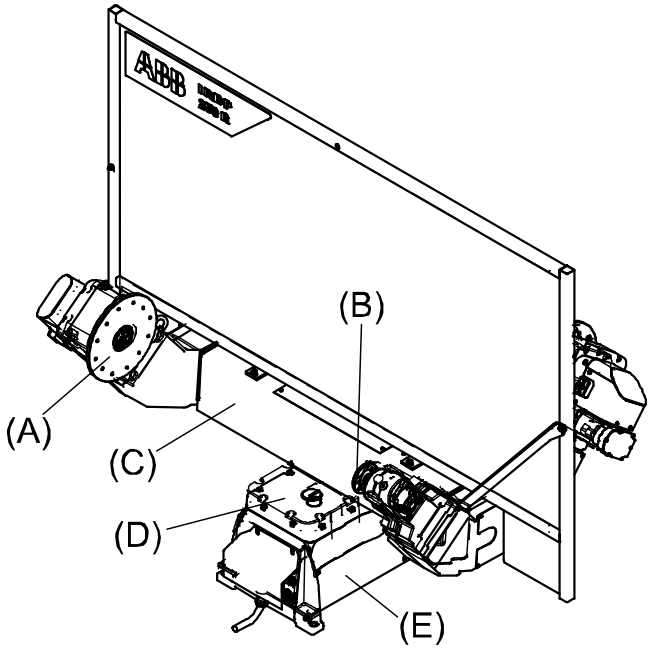
2.6.1 General

Introduction

The positioner is designed to handle workpieces of a weight up to 300/600/1000 kg (including the fixture) in connection with robot processes.

The positioner features a twin station solution where the robot works on one side and the operator loads and unloads on the other. The modular design, few and heavy-duty moving parts as well as minimal maintenance demands make the positioner service friendly.

The positioner is designed with the following main sections (Figure below).



xx1000000774

Pos	Description	Pos	Description
A	Rotary unit, PLATE	D	Station interchange unit, INTERCH
B	Support collar	E	SMB unit
C	Stand		

On the outgoing shaft of the station switching unit there is a frame on which two rotary units are fitted.

On the outgoing shaft of the rotary unit (A, PLATE) a faceplate is fitted. The faceplate has plain holes and guide holes for securing fixtures. On the opposite side there is a support collar used for fixture support.

A screen is fitted between the two stations, which protects the operator from arc-eye.

The rotary unit is fitted with a current collector in the form of a slip ring in order to transfer weld current.

2.6.2 Technical data

General

Note

Max speed specified in the table below only applies to standard products.

Technical Data	IRBP R-300	IRBP R-600	IRBP R-1000
Max handling capacity	300 kg / side	600 kg / side	1000 kg / side
Max load difference between sides 1 and 2 at operation	200 kg	350 kg	350 kg
Max continuous torque	350 Nm	650 Nm	900 Nm
Center of gravity	See load diagram	See load diagram	See load diagram
Max bending moment	650 Nm	3300 Nm	5000 Nm
Positioning time 90 degrees	0.8 -1.2 s	1.0 -1.3 s	1.0 -1.3 s
Positioning time 180 degrees	1.4 -1.9 s	1.5 -2.1 s	1.5 -2.1 s
Positioning time 360 degrees	2.3 -2.7 s	2.7 -3.4 s	2.7 -3.4 s
Repetition accuracy with equal loads and radius 500 mm	±0.05 mm	±0.05 mm	±0.05 mm
Max. rotation speed	180 deg/s	150 deg/s	150 deg/s
Index time	3.4 - 3.8 s	3.5 - 3.7 s	3.5 - 3.7 s
Weld to weld time	5.2 - 5.6 s	5.8 - 6.0 s	5.8 - 6.0 s
Max welding current, 60% duty cycle	600 Amp	600 Amp	600 Amp
Weight	620 -645 kg	1285 - 1380 kg	1285 - 1380 kg

2.6.3 Loading diagram

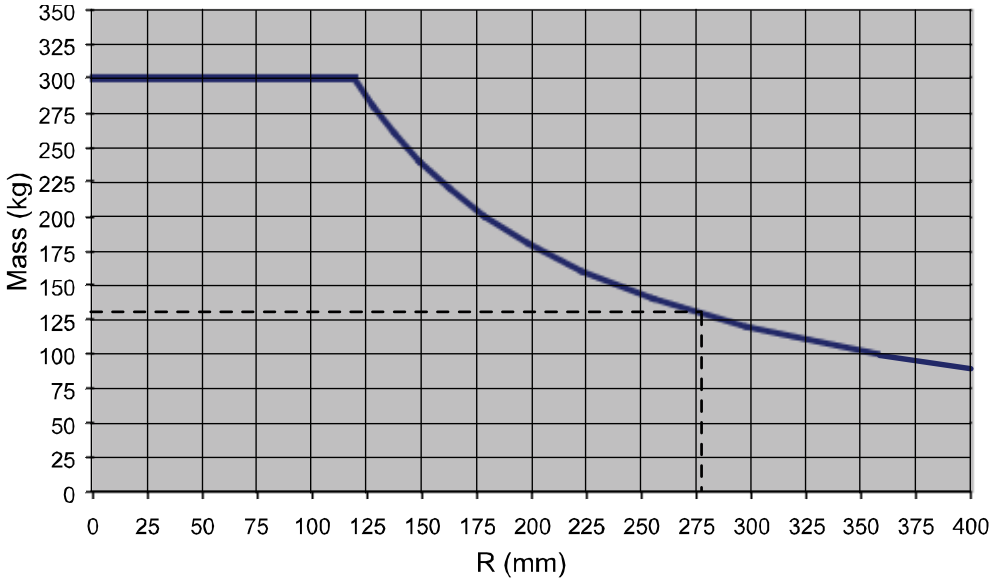
General

The diagrams (Figures below) show the maximum permitted center of gravity displacement from the center of rotation at different loads.

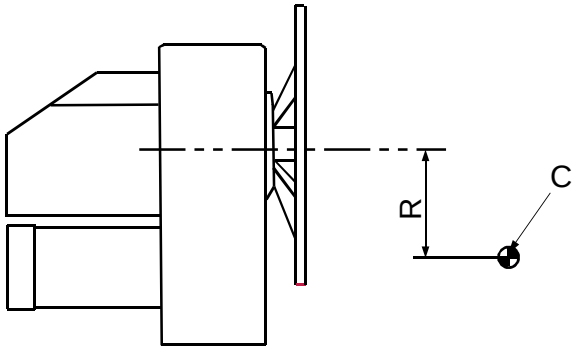
The load refers to the workpiece including the fixture. Also refer to the value for the max. continuous torque.

IRBP R-300

If the center of gravity is placed 276 mm from the center of rotation the load may not be greater than: 129 kg.



xx1000000772



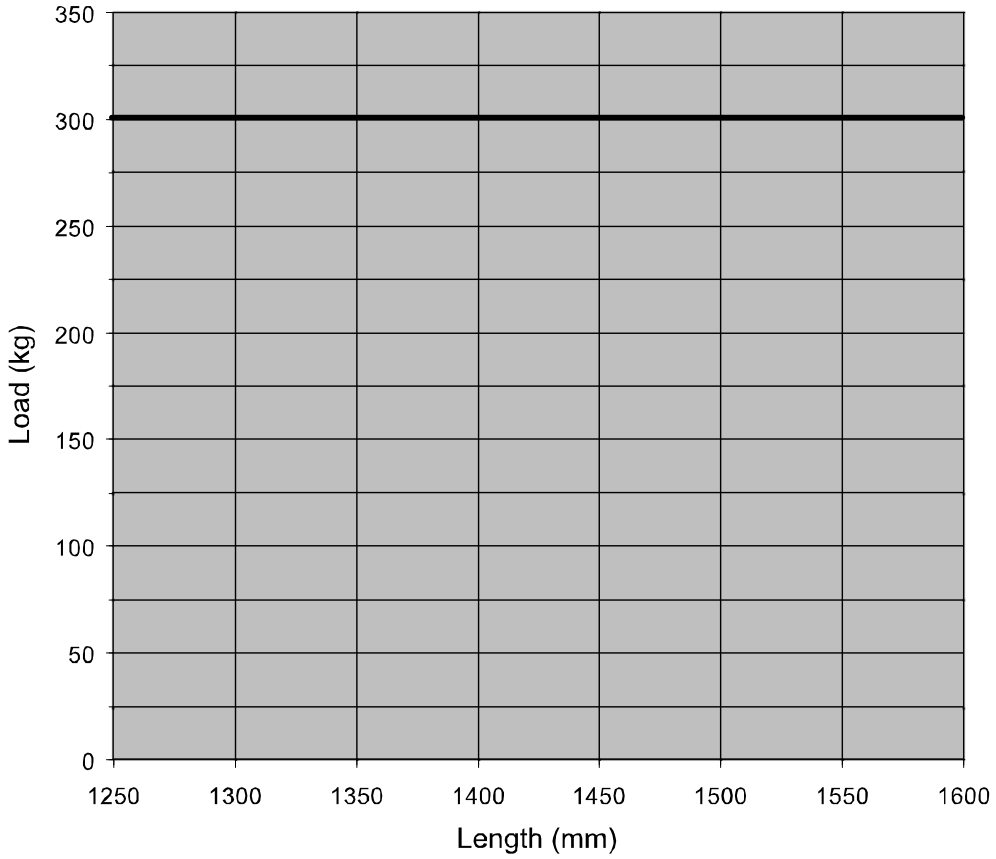
xx1000000801

Pos	Description
R	R = Distance in mm
C	Center of gravity

Continues on next page

2.6.3 Loading diagram
Continued

Max load at different length between rotary unit and support collar is shown below.

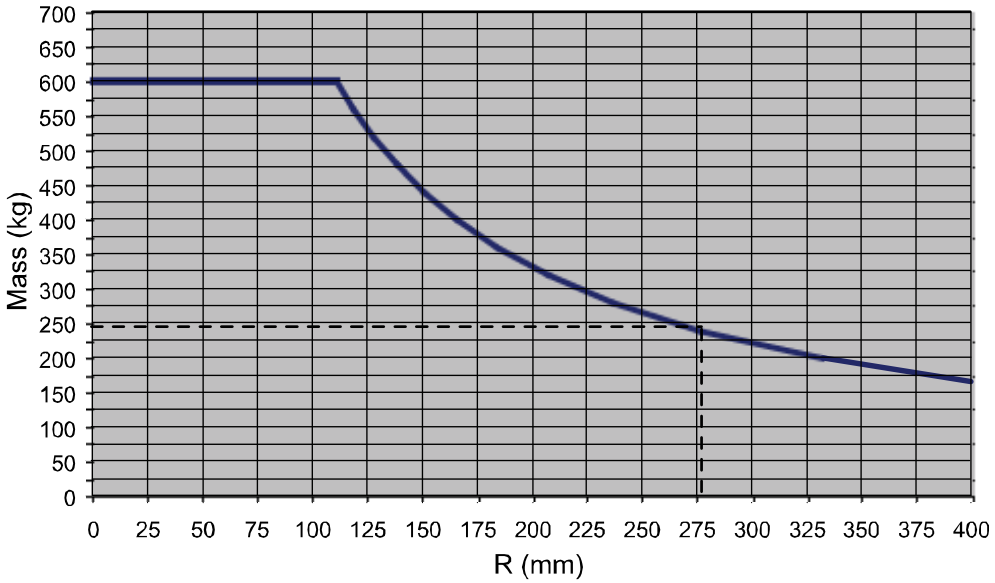


xx1000000773

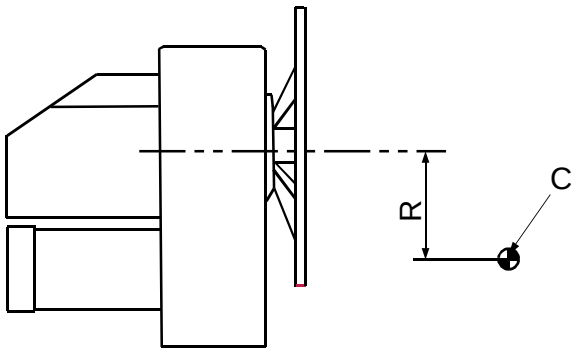
Continues on next page

IRBP R-600

If the center of gravity is placed 276 mm from the center of rotation the load may not be greater than: 240 kg.



xx1000000778



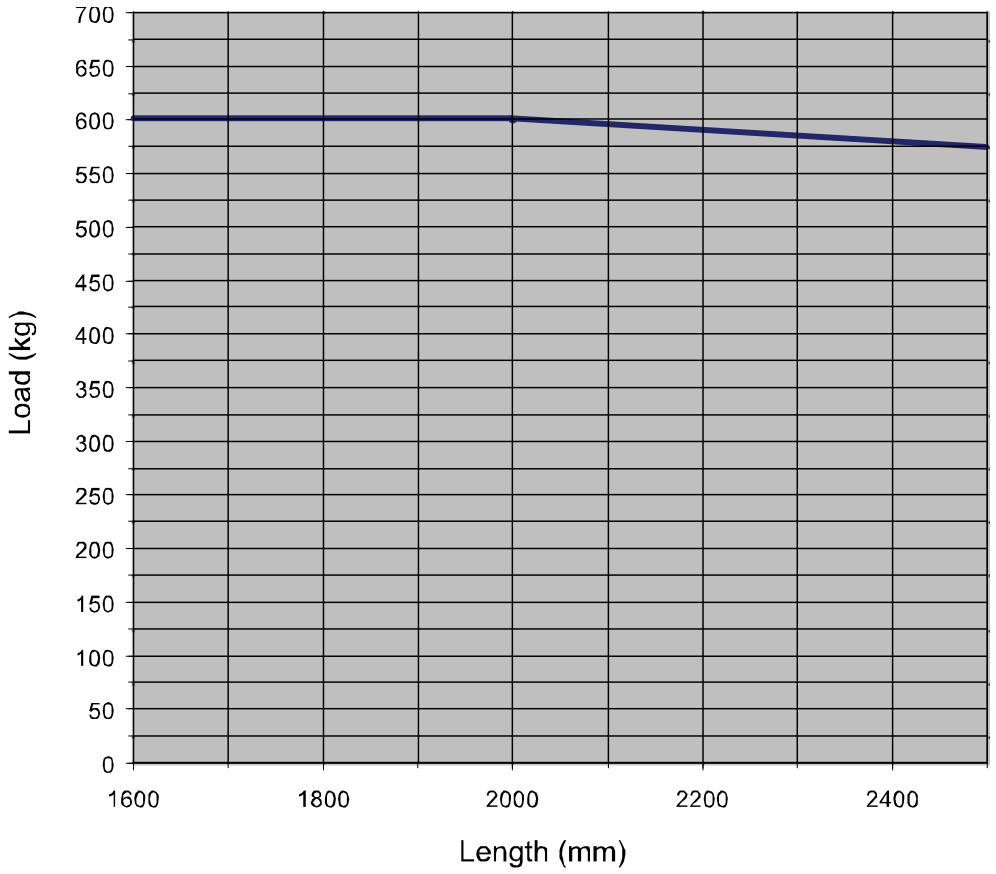
xx1000000801

Pos	Description
R	R = Distance in mm
C	Center of gravity

Continues on next page

2.6.3 Loading diagram
Continued

Max load at different length between rotary unit and support collar is shown below.

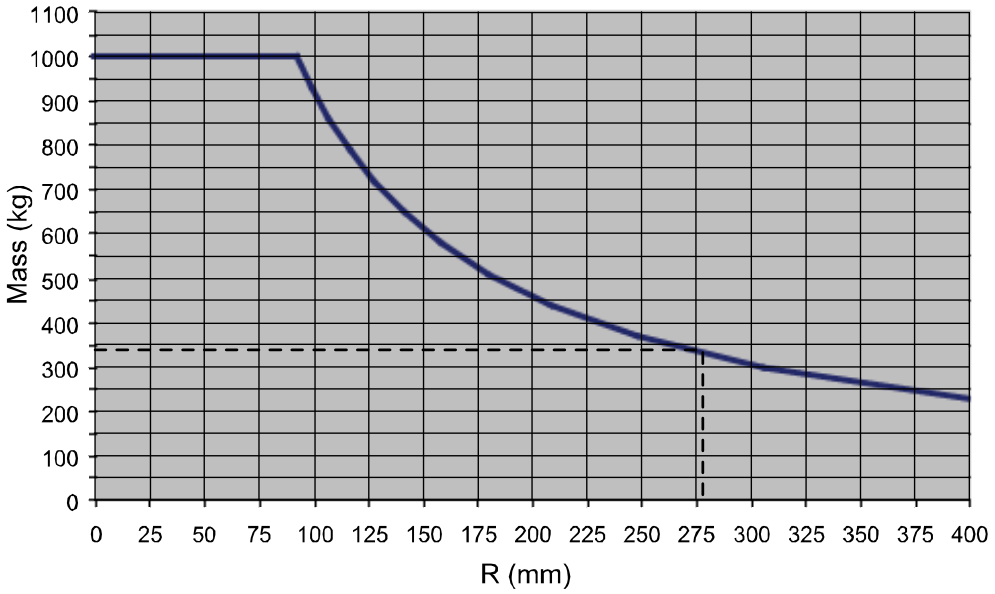


xx1000000779

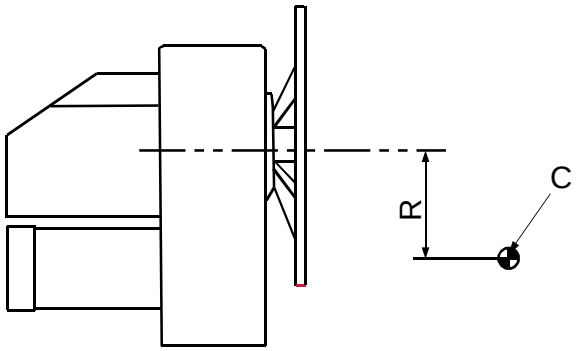
Continues on next page

IRBP R-1000

If the center of gravity is placed 276 mm from the center of rotation the load may not be greater than: 333 kg.



xx1000000783



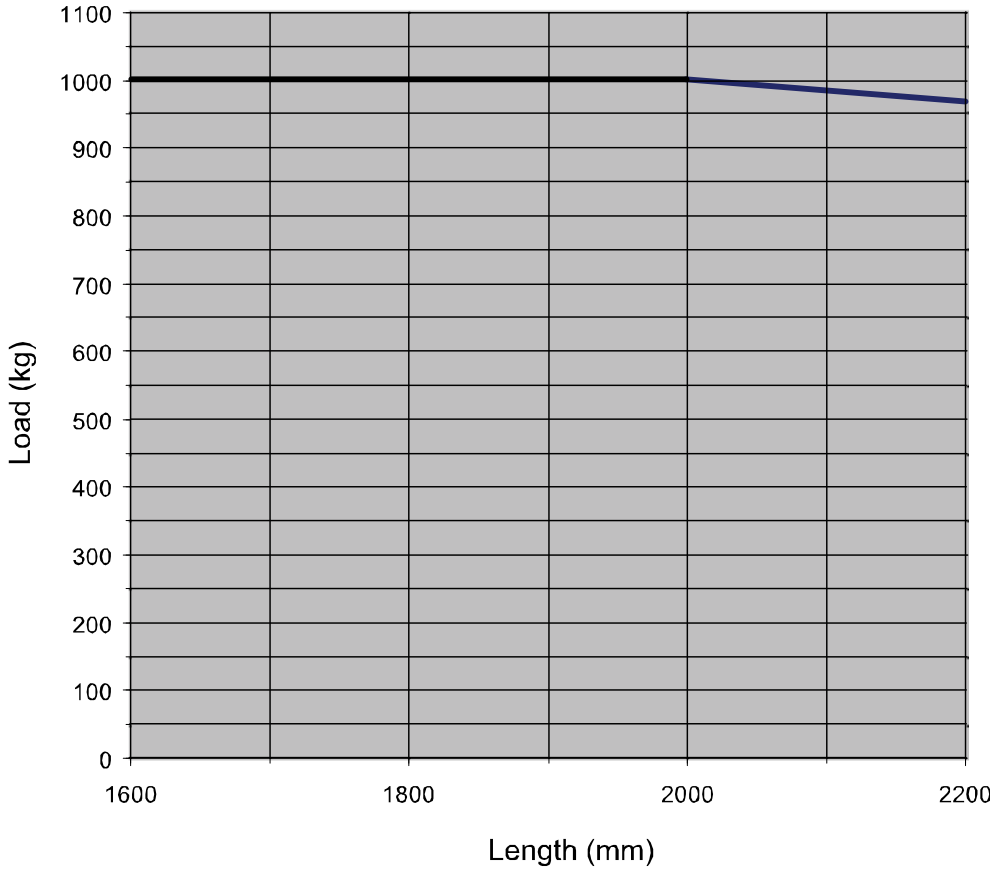
xx1000000801

Pos	Description
R	R = Distance in mm
C	Center of gravity

Continues on next page

2.6.3 Loading diagram
Continued

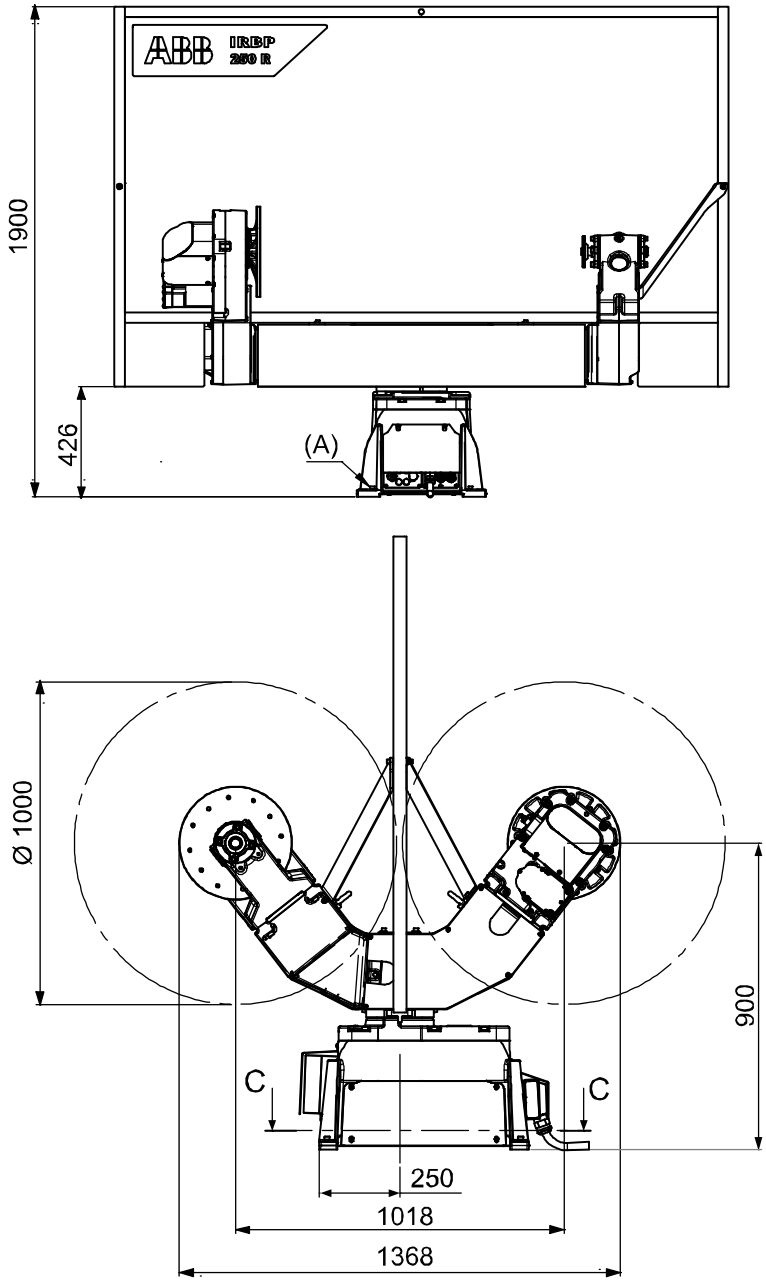
Max load at different length between rotary unit and support collar is shown below.



xx1000000784

2.6.4 Dimensional drawings

IRBP R-300



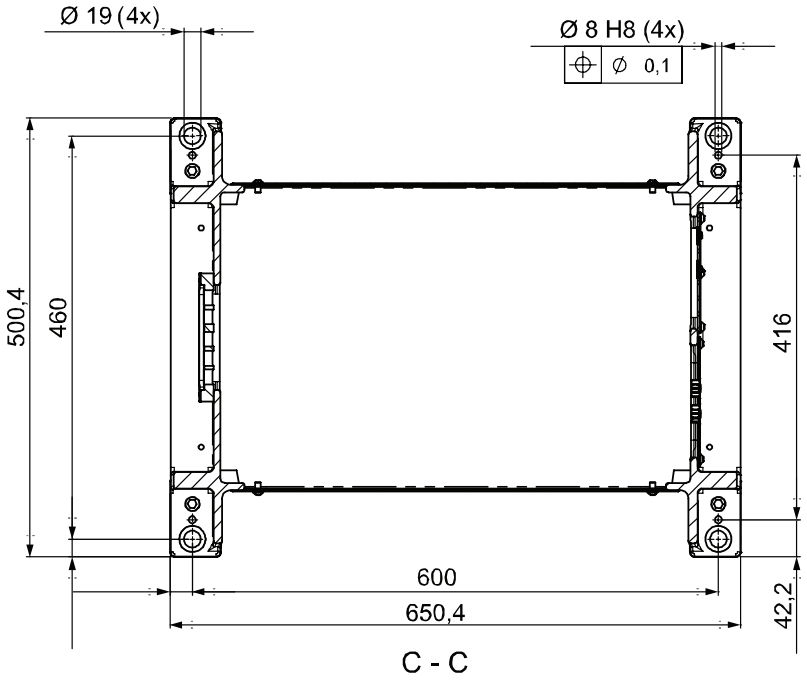
xx1000000747

Pos	Description
A	Adjusting bolts (4x)

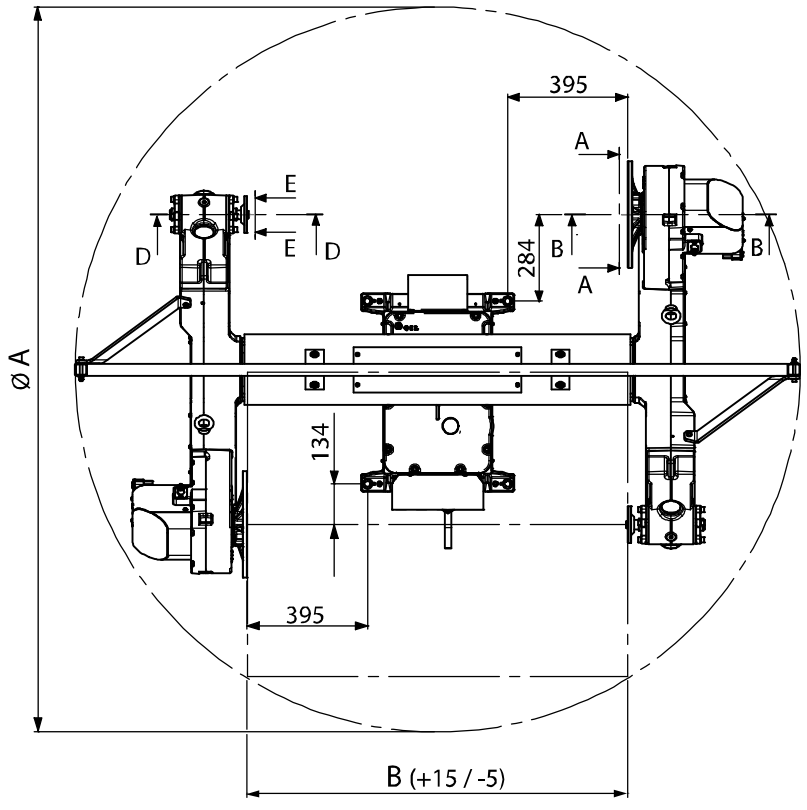
Continues on next page

2.6.4 Dimensional drawings

Continued



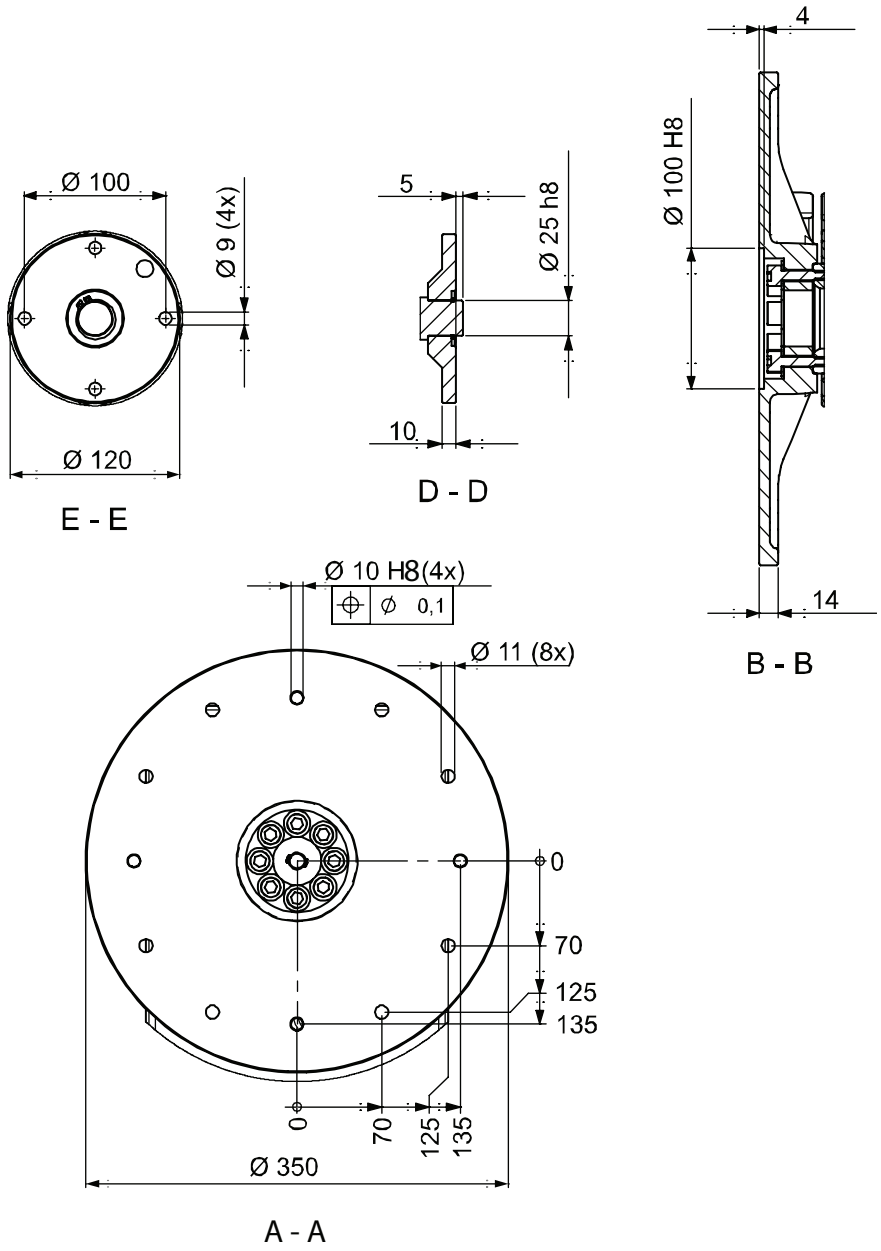
xx1000000748



xx1000000749

Pos	Description
A - B	2380 - 1250 mm or 2680 - 1600 mm

Continues on next page

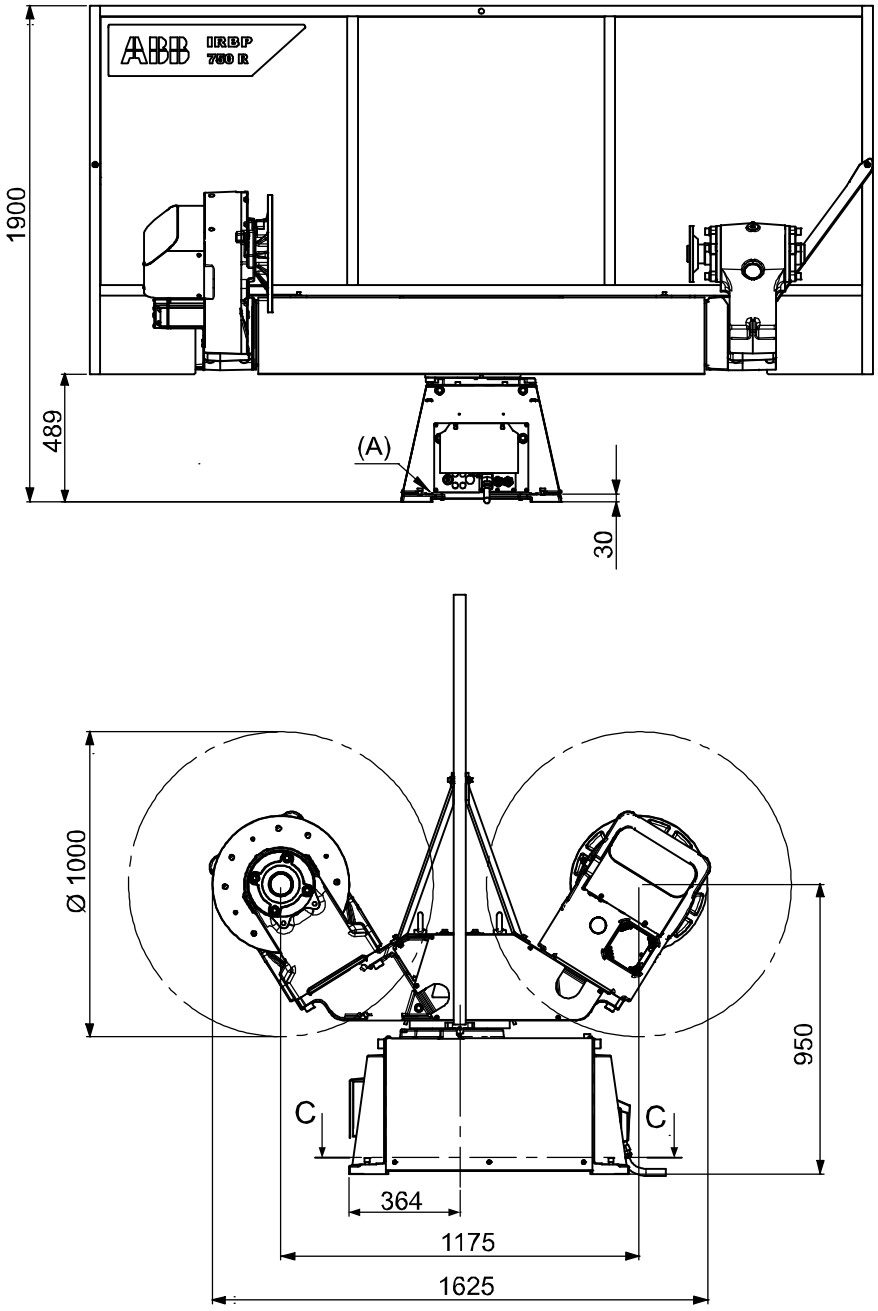


xx1000000750

Continues on next page

2.6.4 Dimensional drawings
Continued

IRBP R-600 / -1000 Ø 1000

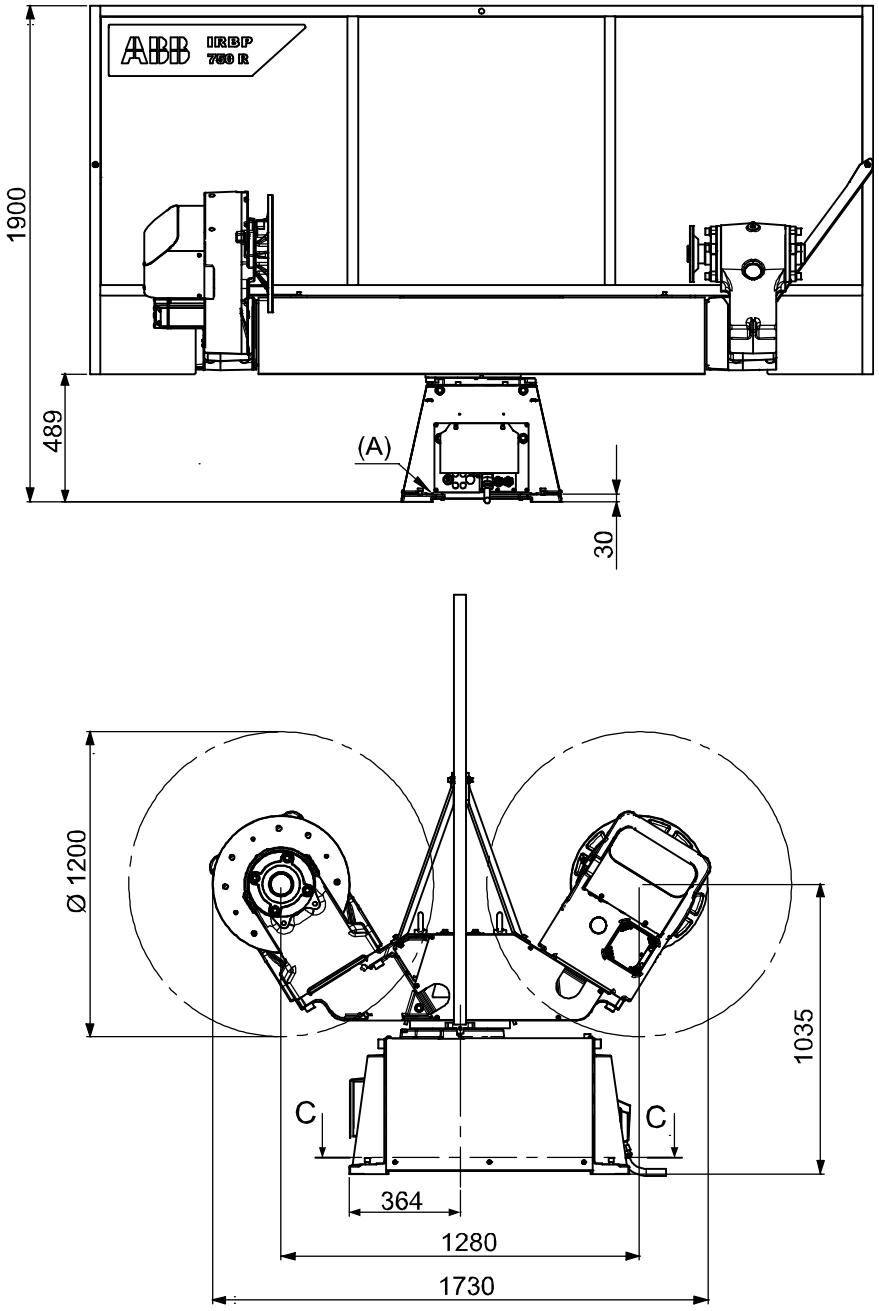


xx1000000751

Pos	Description
A	Adjusting bolts (4x)

Continues on next page

IRBP R-600 / -1000 Ø 1200



xx1000000752

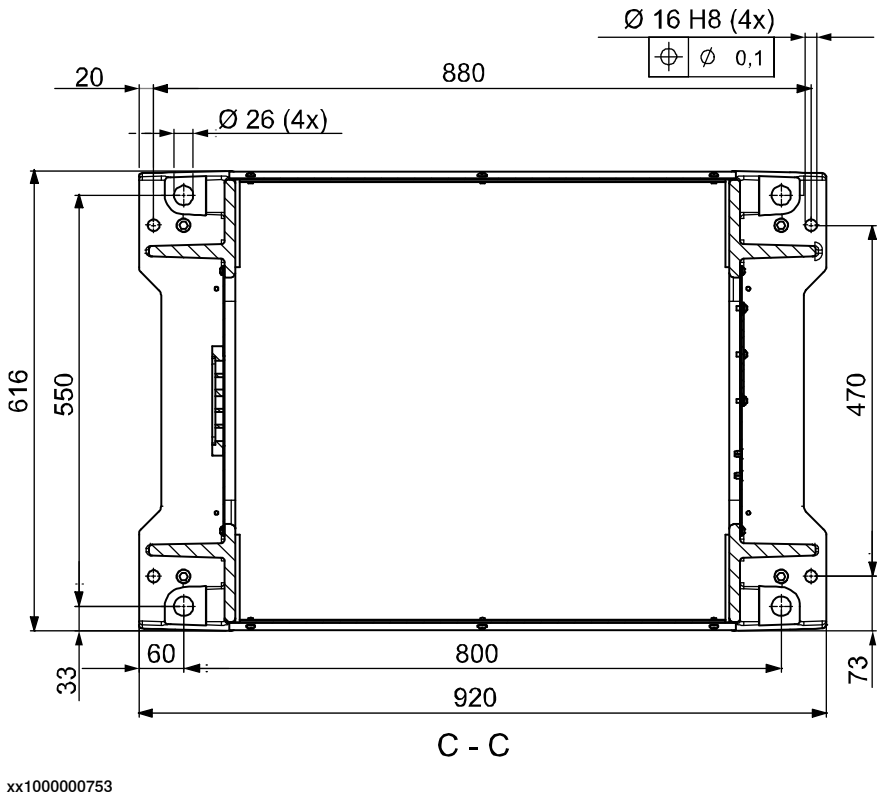
Pos	Description
A	Adjusting bolts (4x)

Continues on next page

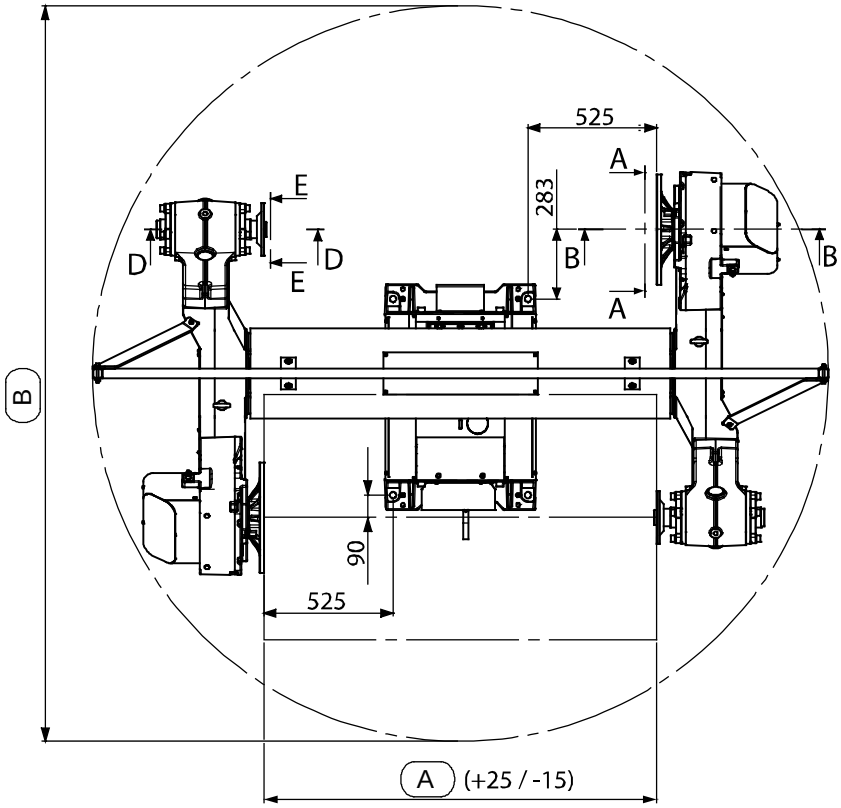
2.6.4 Dimensional drawings

Continued

IRBP R-600 / -1000



Continues on next page



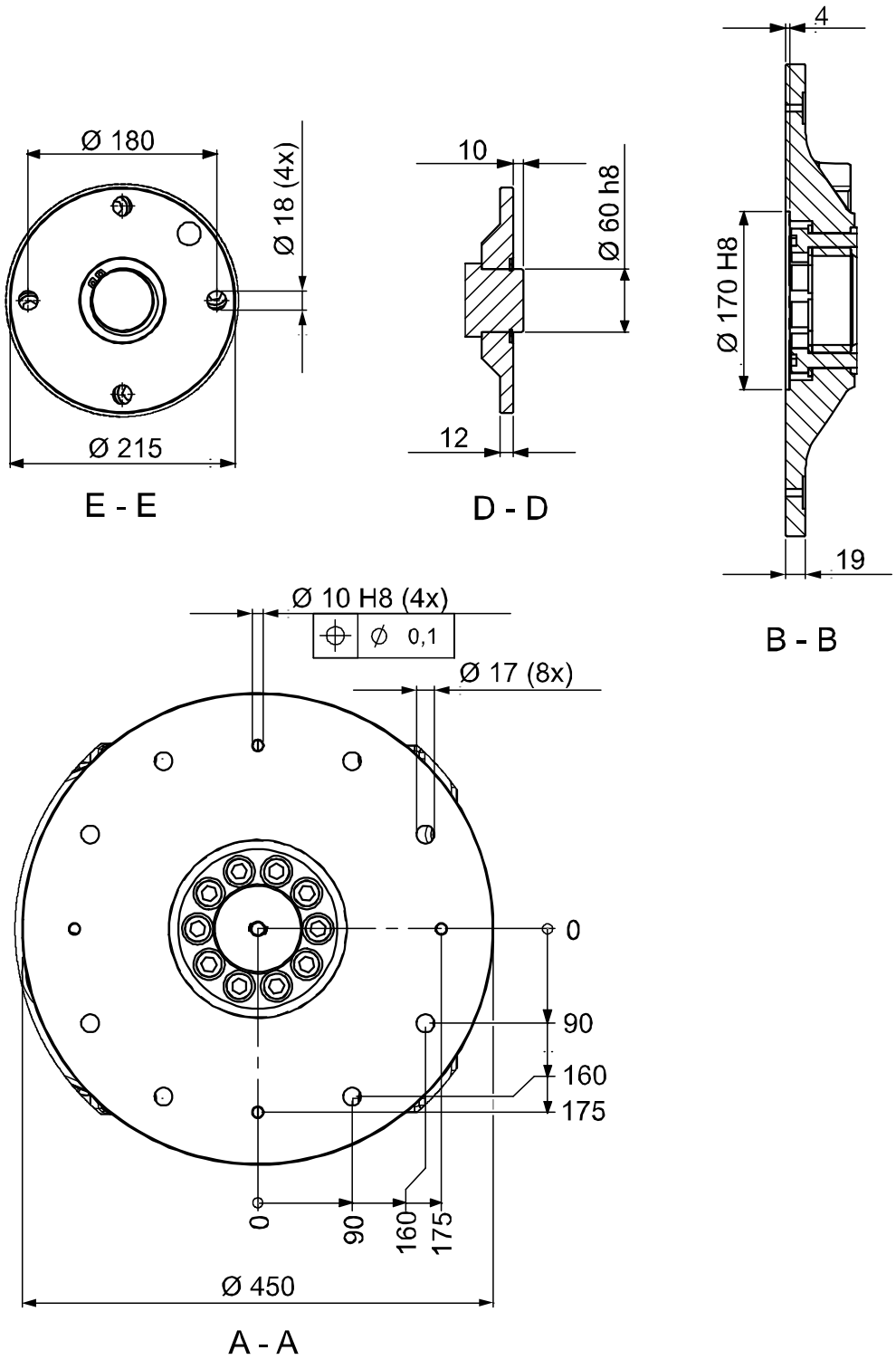
xx1000000754

IRBP R-600 / -1000 Ø 1000		IRBP R-600 / -1000 Ø 1200	
A (mm)	B (mm)	A (mm)	B (mm)
1600	3000	1600	3000
2000	3350	2000	3350

Continues on next page

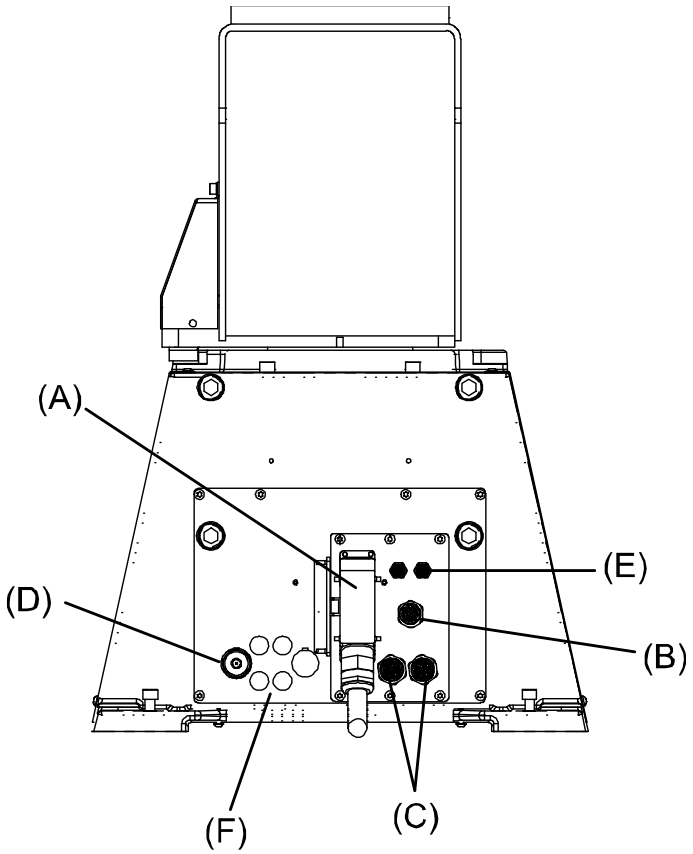
2.6.4 Dimensional drawings

Continued



Continues on next page

Connections



xx1000000699

Pos	Description	Pos	Description
A	Power cable	D	Weld power
B	Measurement cable, SMB	E	Profi Bus
C	Customer power	F	Air

Continues on next page

2.7 Integration of fixtures

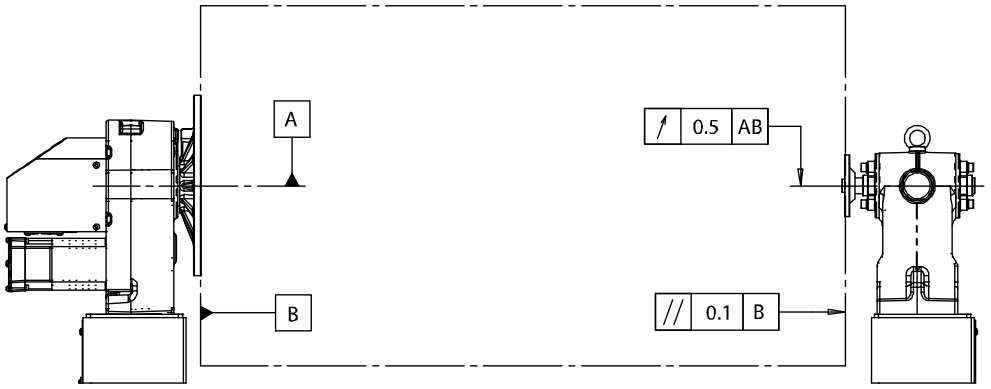
2.7.1 IRBP K-300/-600/-1000, L-300/-600/-1000/-2000, R-300/-600/-1000

General

The position of the center of gravity is to be calculated when designing fixtures. After this check that the center of gravity is within the permitted range (see the chapter Loading diagram).

See the dimensional drawings for the positioner, faceplate and support collar for the fasteners' installation measurements. The strength grade for the bolts in the fixture should be 12.9 or the equivalent.

The fixture must conform to specific tolerances to maintain trueness and parallelism in order to prevent clamping forces from occurring. See Figure below.



xx1000000763

2.7.2 IRBP A-250/-500/-750, B-250/-500/-750, C-500/-1000

General

See the dimensional drawings for the positioner for the fasteners' installation measurements.

The strength grade for the bolts in the fixture should be 12.9 or the equivalent.

2.8 Swivels

2.8.1 Introduction

General

The swivels can be combined in different configurations for different requirements.

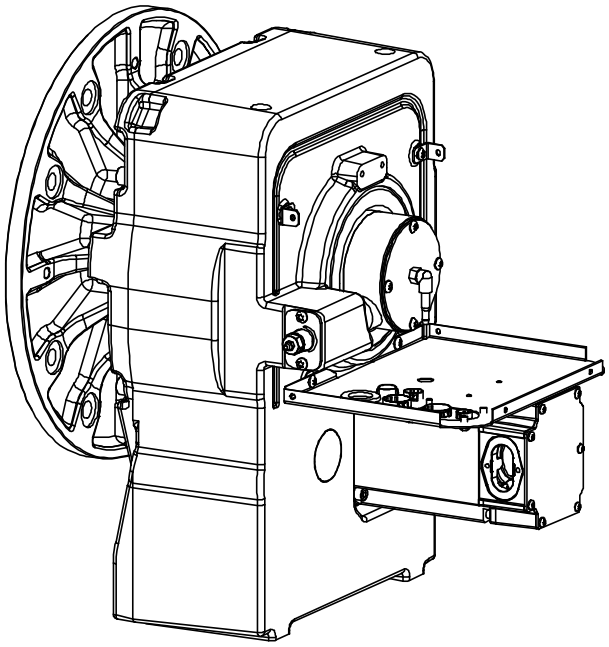
- Air swivel for 1 or 2 channels
- Electrical swivel for 10 signals.
- Air/electrical swivel for 10 signals and 1 air channel.

Note

Swivels are not applicable for rotary unit MTE.

2.8.2 Air swivel for 1 channel

General



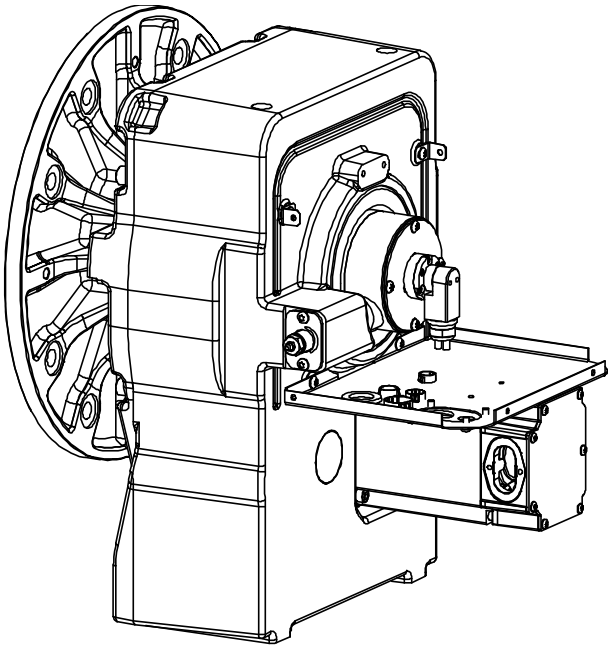
xx1000000816

Technical specificationfor 1-channel swivel

Channels	1
Dimensions	1 /4“
Media	Air, max 10 bar
Max. temperature media	60 °C

2.8.3 Electrical swivel

General



xx1000000815

The function is to transfer electrical signals between a fixed part and a moving part.

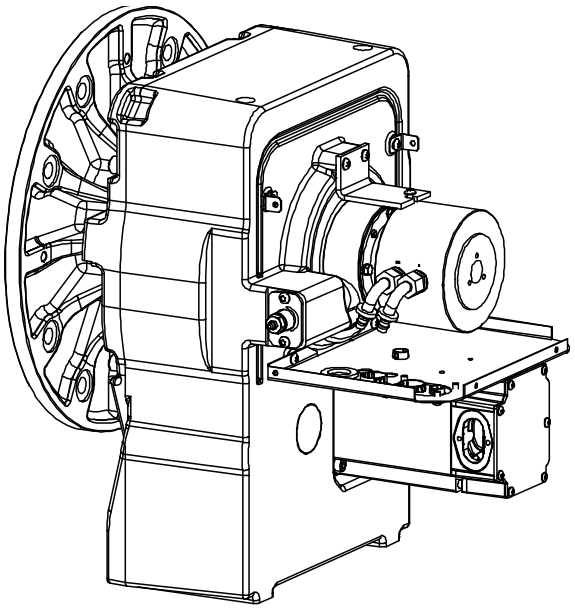
The electrical swivel can transfer different types of signals, for example 24 V DC and data bus systems. Technical specification, see table below.

Technical specification for the electrical swivel

Power	
Channels	10
Current	Max 3 A /channel
Voltage	Max 24 V DC
Conductor cross-section	0.15 mm² AWG 22
Data bus	
Profibus DP	Max 12 MBit/s
Conductor cross-section	0.64 mm²

2.8.4 Air/water swivel for 2 channels

General



xx1000000814

The function is to transfer air/water between a fixed part and a moving part.
Technical specification, see table below.

Technical specification for 1/2 channels air/water swivel for IRBP 250-series

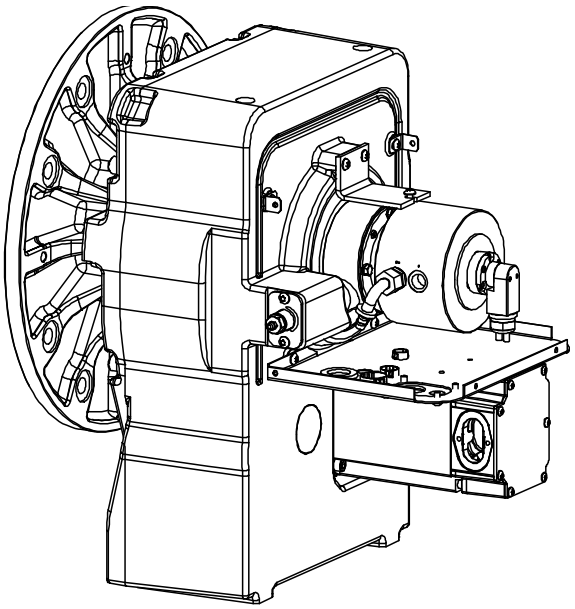
Channels	1 or 2
Dimensions	1 / 4"
Media 1	Air, max 10 bar

Technical specification for 1/2 channels air/water swivel for IRBP 500/750/2000/5000

Channels	1 or 2
Dimensions	1 / 2"
Media 1	Air, max 10 bar

2.8.5 Air swivel for 1 channel and electrical swivel

General



xx1000000813

The function is to transfer air and electrical signals between a fixed part and a moving part. Technical specification, see table below.

Technical specification for 1 channel air swivel for IRBP 250-series

Channels	1
Dimensions	1 / 4"
Media 1	Air, max 10 bar

Technical specification for 1 channel air swivel for IRBP 500/750/2000/5000

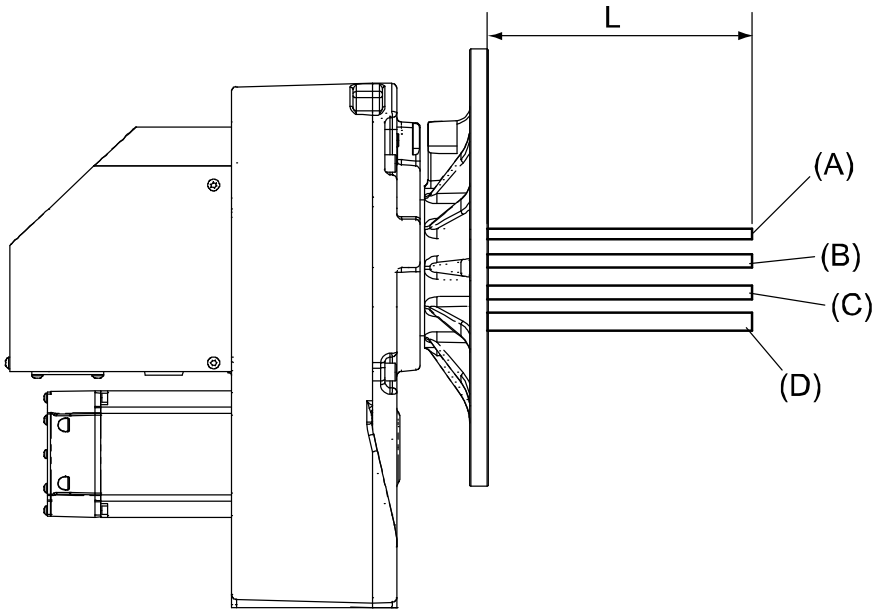
Channels	1
Dimensions	1 / 2"
Media 1	Air, max 10 bar

Technical specification for the electrical swivel

Power	
Channels	10
Current	Max 3 A /channel
Voltage	Max 24 V DC
Conductor cross-section	0.15 mm^2 AWG 22
Data bus	
Profibus DP	Max 12 MBit/s
Conductor cross-section	0.64 mm^2

2.8.6 Swivel connections

General



xx1000000812

Pos	Description	Pos	Description
L	Free length= 500 mm	C	Air hose 1, diam. (Ø XX mm) see table below.
A	Profibus cable, diam 6 mm	D	Air hose 2, diam. (Ø XX mm) see table below.
B	Power cable, diam. 8 mm		

IRBP type	1 ch. air	2 ch. air	1 ch. air + 10 el.	IRBP type	1 ch. air	2 ch. air	1 ch. air + 10 el.
IRBP A-250	13	13	13	IRBP K-300	13	13	13
IRBP A-500	13	16	16	IRBP K-600	13	16	16
IRBP A-750	13	16	16	IRBP K-1000	13	16	16
IRBP B-250	13	13	13	IRBP L-300	13	13	13
IRBP B-500	13	16	16	IRBP L-600	13	16	16
IRBP B-750	13	16	16	IRBP L-1000	13	16	16
IRBP C-500	13	16	16	IRBP L-2000	13	16	16
IRBP C-1000	13	16	16	IRBP L-5000	13	16	16
IRBP D-300	13	13	13	IRBP R-300	13	13	13
IRBP D-600	13	16	16	IRBP R-600	13	16	16
				IRBP R-1000	13	16	16

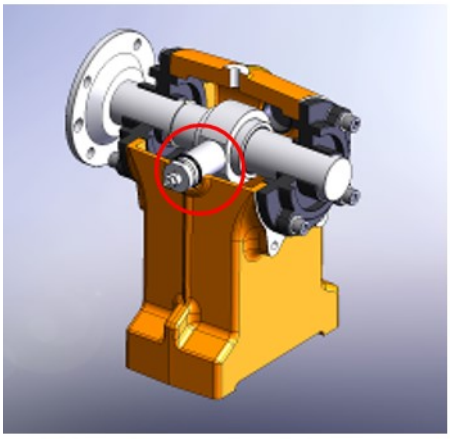
2.8.7 Extra current collector for positioner types K / L / R

General

An extra current collector can be fitted to increase max weld currents and/or aviod problems with the magnetic blow mechanism when welding.

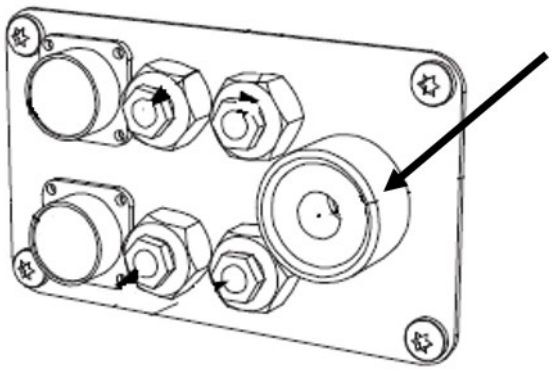
Collector for types L

L-positioners have the second weld return outlet on the tailstock.



Collector for types R and K

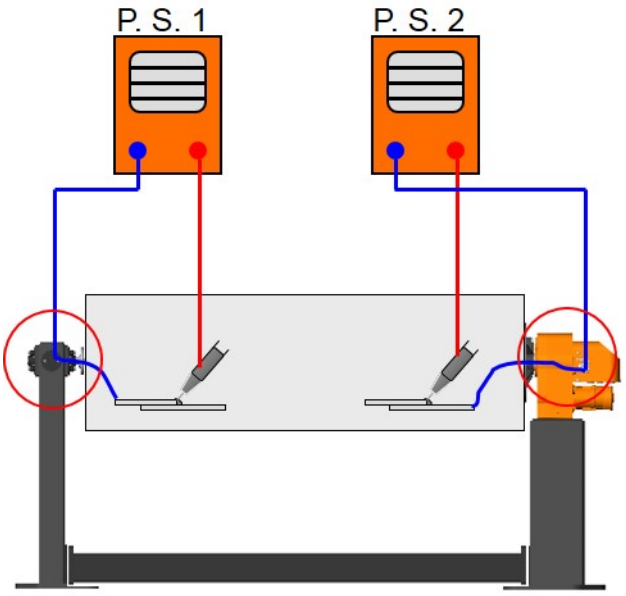
R and K positioners have the second weld return outlet on the station interchange unit.



Continues on next page

Principle of extra current collector

Two welding equipment connected to a positioner with a second current collector.



Note

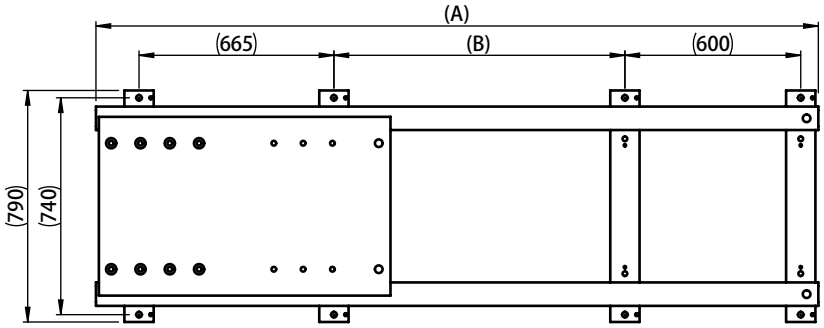
Current from one weld circuit is transferred through the current collector in the gearbox.

Two seperated weld circuits gives less risk for interference.

2.9 Drilling patterns

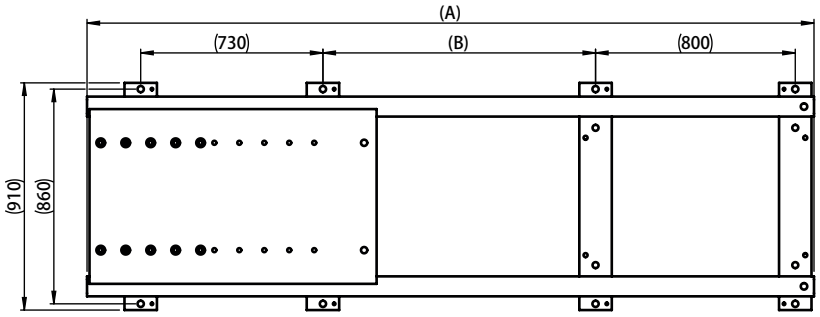
General

The drilling patterns for the positioners base frames are in the figures below.



xx1900000906

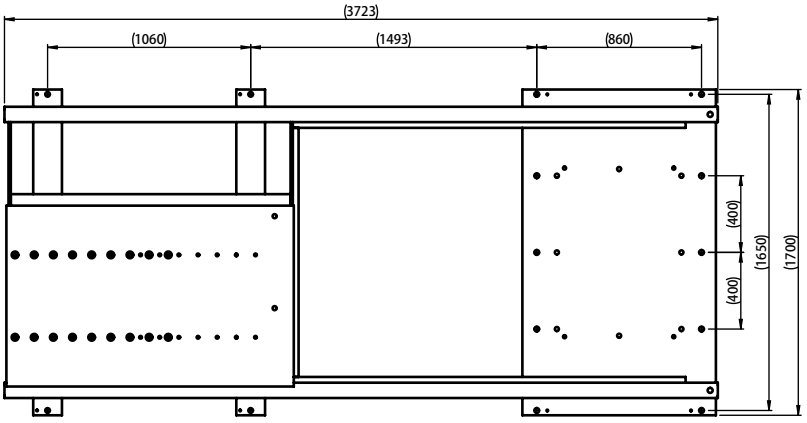
FMB for variants		
IRBP	A	B
R-300 / C-500	2465	993
B-250	2815	1343



xx1900000907

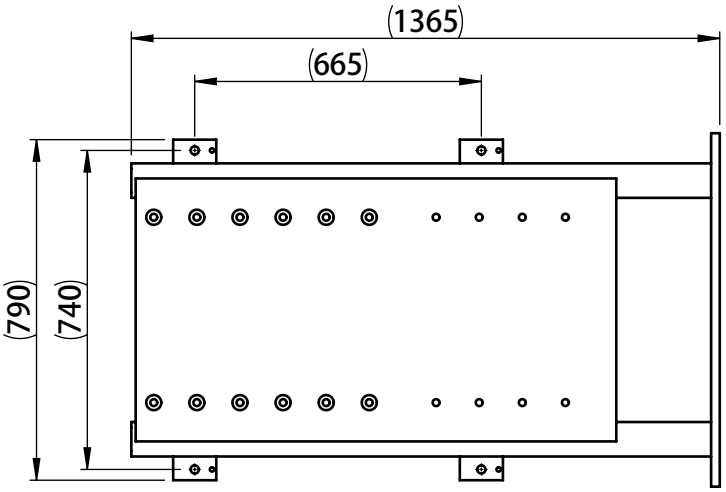
FMB for variants		
IRBP	A	B
R-600/1000	2912	1092
B-500/750	3456	1636

Continues on next page



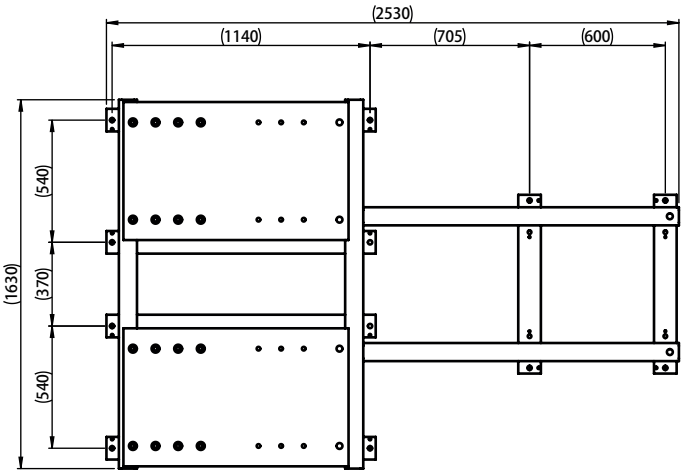
FMB for D-600

xx1900000908



FMB for K-300/600/1000

xx1900000909

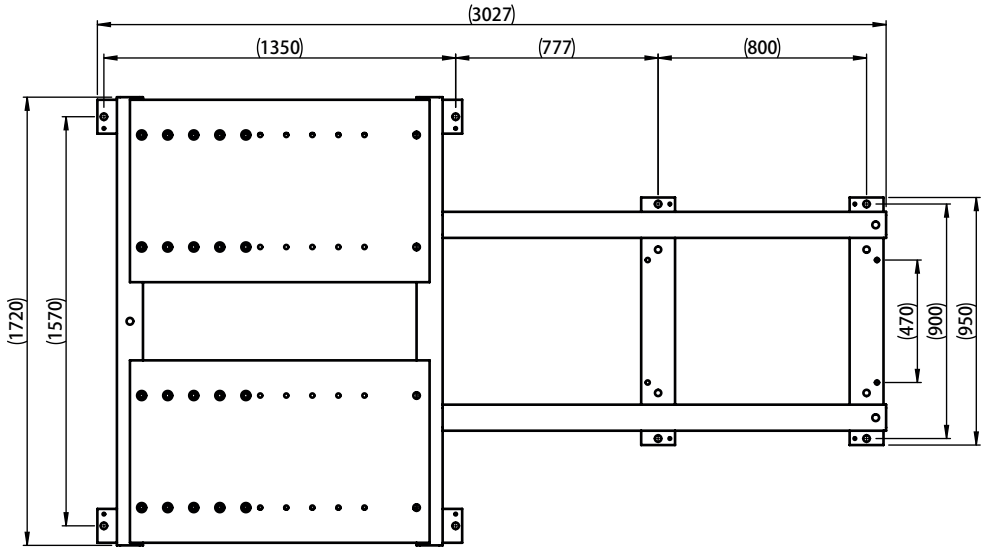


FMB for R-300 (DOUBLE)

xx1900001206

Continues on next page

2.9 Drilling patterns
Continued



FMB for variants R-600/1000 (DOUBLE)

xx1900001207

2.10 Load diagrams

2.10.1 Introduction

WARNING

It is very important to always define correct actual load data and correct payload of the positioner. Incorrect definitions of load data can result in overloading of the positioner.

If incorrect load data is used, and/or if loads outside the load diagram are used, the following parts can be damaged due to overload:

- motors
- gearboxes
- mechanical structure

WARNING

In RobotWare, the service routine LoadIdentify can be used to determine correct load parameters. The routine automatically defines the tool and the load.

See *Operating manual - IRC5 with FlexPendant*, for detailed information.

WARNING

Positioners running with incorrect load data and/or with loads outside the load diagram, will not be covered by robot warranty.

2.11 Operating requirements

Protection standards

Positioner type	Protection
IRBP A/B/C/K/R	IP42
IRBP L	IP65

Explosive environments

The positioner must not be located or operated in an explosive environment.

Ambient temperature

Description	Standard/Option	Temperature
Positioner during operation	Standard	+ 5°C [a] (41°F) to + 50°C (122°F)
For short periods (not exceeding 24 hours)	Standard	up to + 70°C (158°F)

a) 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 unit during transportation and storage	Max. 95% at constant temperature
Complete unit during operation	Max. 95% at constant temperature

Forces

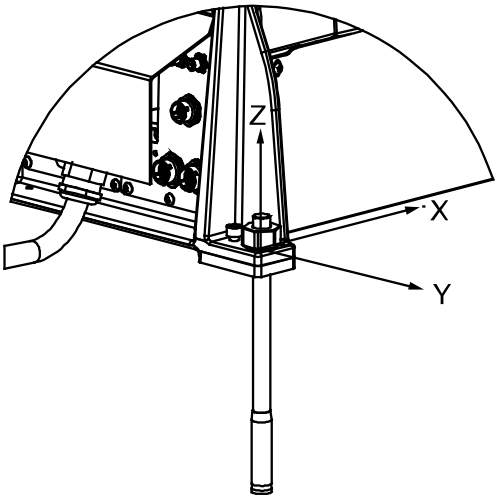
When a floor mounting base (FMB) is used, then the floor load is the combined load from both the positioner and the robot. The forces are the sum of the maximum component for each direction.

Maximum floor loads in relation to the base coordinate system and indicated per each screw of the base on the positioner, see figure below.

Positioner type	Endurance load in operation (kN)		Max. load at emergency stop (kN)		Screw dim. (qty)
	Fxy	Fz (±)	Fxy	Fz (±)	
IRBP A-250	0.8	6.3	1.93	11.5	M16 (4)
IRBP A-500	3.3	12.9	6.7	23.2	M20 (4)
IRBP A-750	4.4	17.2	9	31	M20 (4)
IRBP B-250	2	8.3	3.6	12.4	M16 (4)
IRBP B-500	5	20.6	9	30.9	M20 (4)
IRBP B-750	5	20.6	9	30.9	M20 (4)
IRBP C-500	1.5	6	3	8	M16 (4)

Continues on next page

Positioner type	Endurance load in operation (kN)		Max. load at emergency stop (kN)		Screw dim. (qty)
IRBP C-1000	2.7	15	6.4	22.3	M20 (4)
IRBPRBPI K-300	1	3.1	1.5	5	M20 (6)
IRBP K-600	2	7	2	10.2	M20 (6)
IRBP K-1000	2	7	2	10.2	M20 (6)
IRBP L-300	0.5	5.2	1.8	8.9	M20 (4+4)
IRBP L-600	1.2	12	2.2	18.8	M20 (4+4)
IRBP L-1000	1.2	12	2.2	18.8	M20 (4+4)
IRBP L-2000	1.7	25.7	3.7	36.7	M20 (5+4)
IRBP L-5000	3.0	35.0	9.0	44.5	M20
IRBP R-300	1.38	5.4	3	7.8	M16 (4)
IRBP R-600	2.7	15	6.4	22.3	M20 (4)
IRBP R-1000	2.7	15	6.4	22.3	M20 (4)



xx1000000764

This page is intentionally left blank

3 Variants and options

3.1 Introduction to variants and options

General

The different variants and options for the IRBP are described in the following sections. The same option numbers are used here as in the specification form.

The variants and options related to the robot controller are described in the product specification for the controller.

3.2 Robot type

Robot types

Option	Robot
1200-1	IRB 460
1200-2	IRB 660
1200-3	IRB 760
1200-3	IRB 1300
1200-3	IRB 1510
1200-15	IRB 1520
1200-3	IRB 1600
1200-3	IRB 2600
1200-4	IRB 4400
1200-4	IRB 4600
1200-5	IRB 5710
1200-6	IRB 5720
1200-7	IRB 6660
1200-14	IRB 6700
1200-8	IRB 6710
1200-9	IRB 6720
1200-10	IRB 6730
1200-11	IRB 6740
1200-12	IRB 7600

Controller variants

Option	Type	Description
3000-310	V250XT	Controller with external drives
3000-3XX	V400XT	Controller with external drives

3.3 Positioner

Positioner type

See chapter *Description on page 11*.

Option	IRBP Type	Option	IRBP type
1201-1	No positioner		
1201-2	IRBP A-250	1201-17	IRBP L-600 [a]
1201-3	IRBP A-250 x2	1201-18	IRBP L-600 x2 [a]
1201-4	IRBP A-500	1201-19	IRBP L-1000 [a]
1201-5	IRBP A-500 x2	1201-20	IRBP L-1000 x2 [a]
1201-6	IRBP A-750	1201-21	IRBP L-2000 [a]
1201-7	IRBP A-750 x2	1201-22	IRBP L-2000 x2 [a]
1201-8	IRBP B-250	1201-23	IRBP L-5000 [a]
1201-9	IRBP B-500	1201-24	IRBP L-5000 x2 [a]
1201-10	IRBP B-750	1201-25	IRBP K300
1201-11	IRBP C-500	1201-26	IRBP K-600
1201-12	IRBP C-1000	1201-27	IRBP K-1000
1201-14	IRBP D-600	1201-28	IRBP R-300
1201-15	IRBP L-300 [a]	1201-29	IRBP R-600
1201-16	IRBP L-300 x2 [a]	1201-30	IRBP R-1000

a. Rotary unit and SMB-box included.

Manipulator color

Option	Color	RAL code [i]
209-1	ABB Orange **(Not available for MTE)**	RAL7032
209-202	ABB Graphite White **(Standard color)**	RAL7035

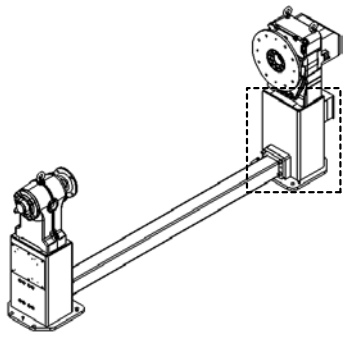
i The colors can differ depending on supplier and the material on which the paint is applied.

Note

The rule is that the moving parts are graphite white (or orange), except the shields / baffle walls which are always dark grey (RAL 7012). All other non-moving parts of the positioners plus the floor mounting base and the pedestals have the same dark grey color.

Continues on next page

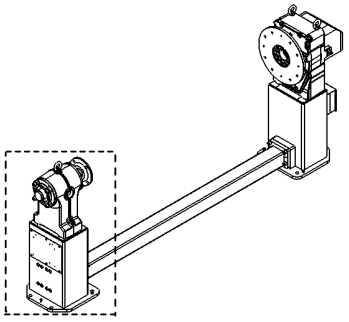
Stand for rotary unit



xx1000000841

Option	Type	Description
1202-2	Stand L-300	Only together with one IRBP L-300
1202-3	Stand L-300 x2	Only together with two IRBP L-300
1202-4	Stand L-600/-1000	Only together with one IRBP L-600/-1000
1202-5	Stand L-600/-1000 x2	Only together with two IRBP L-600/-1000
1202-6	Stand L-2000	Only together with one IRBP L-2000
1202-7	Stand L-2000 x2	Only together with two IRBP L-2000
1202-8	Stand L-5000	Only together with one IRBP L-5000
1202-9	Stand L-5000 x2	Only together with two IRBP L-5000

Tailstock for L positioner

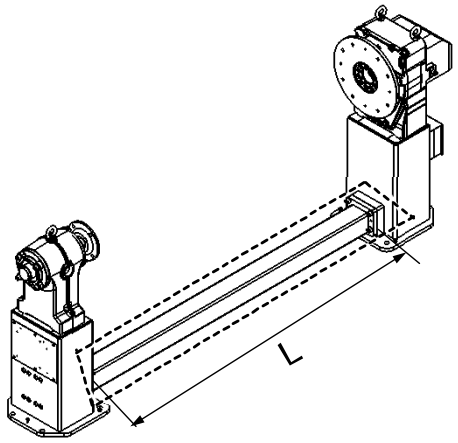


xx1000000842

Option	Type	Description
1203-2	Tailstock L-300	Only together with one IRBP L-300
1203-3	Tailstock L-300 x2	Only together with two IRBP L-300
1203-4	Tailstock L-600/-1000	Only together with one IRBP L-600/-1000
1203-5	Tailstock L-600/-1000 x2	Only together with two IRBP L-600/-1000
1203-6	Tailstock L-2000	Only together with one IRBP L-2000
1203-7	Tailstock 2000L x2	Only together with two IRBP L-2000
1203-8	Tailstock L-5000	Only together with one IRBP L-5000
1203-9	Tailstock L-5000 x2	Only together with two IRBP L-5000

Continues on next page

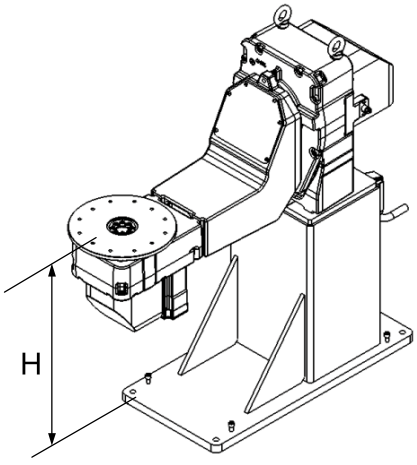
Distance beam for L positioner



xx1000000843

Option	Length (mm)	Description
1204-2	Beam L=1250	Only together with one IRBP L-300/-600/-1000/-2000
1204-3	Beam L=1250 x 2	Only together with two IRBP L-300/-600/-1000/-2000
1204-4	Beam L=1600	Only together with one IRBP L-300/-600/-1000/-2000
1204-5	Beam L=1600 x 2	Only together with two IRBP L-300/-600/-1000/-2000
1204-6	Beam L=2000	Only together with one IRBP L-300/-600/-1000/-2000
1204-7	Beam L=2000 x 2	Only together with two IRBP L-300/-600/-1000/-2000
1204-8	Beam L=2500	Only together with one IRBP L-300/-600/-1000/-2000
1204-9	Beam L=2500 x 2	Only together with two IRBP L-300/-600/-1000/-2000
1204-10	Beam L=3150	Only together with one IRBP L-300/-600/-1000/-2000
1204-11	Beam L=3150 x 2	Only together with two IRBP L-300/-600/-1000/-2000
1204-12	Beam L=4000	Only together with one IRBP L-300/-600/-1000/-2000
1204-13	Beam L=4000 x 2	Only together with two IRBP L-300/-600/-1000/-2000

Positioner height / IRBP A



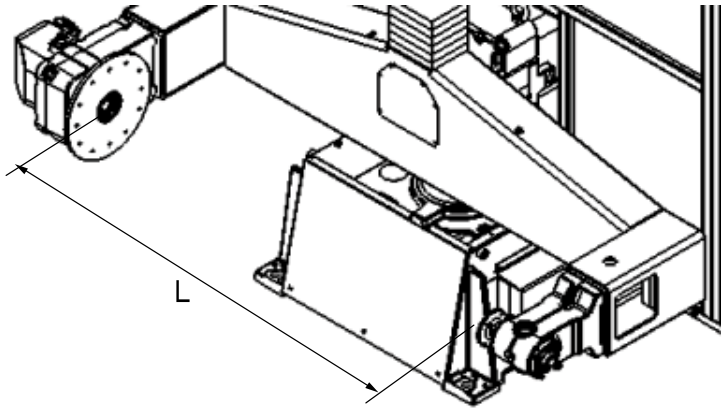
xx1000000844

Continues on next page

3.3 Positioner
Continued

Option	Height (mm)	Description
1205-2	H=700	Only together with one or two IRBP A-500/-750
1205-3	H=800	Only together with one or two IRBP A-500/-750
1205-4	H=900	Only together with one or two IRBP A-500/-750

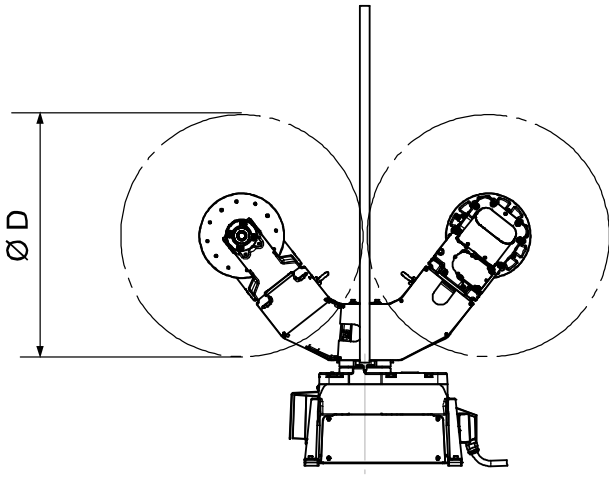
Positioner length



xx1000000845

Option	Length (mm)	Description
1206-2	L=1250	Only together with IRBP R-300, D-300
1206-3	L=1600	Only together with IRBP R-300/-600/-1000, K-300/-600/-1000, D-300/-600
1206-4	L=2000	Only together with IRBP R-600/-1000, K-300/-600/-1000, D-600
1206-5	L=2500	Only together with IRBP K-300/-600/-1000
1206-6	L=3150	Only together with IRBP K-300/-600/-1000
1206-7	L=3500	Only together with IRBP K-300/-600/-1000
1206-8	L=4000	Only together with K-300/-600/-1000

Positioner diameter



xx1000000846

Continues on next page

Option	Diameter (mm)	Description
1207-2	D=1000 (R)	Only together with IRBP R-600/-1000
1207-3	D=1000 (K)	Only together with IRBP K-300
1207-4	D=1000 (A)	Only together with one or two IRBP A-500/-750
1207-5	D=1000 (D)	Only together with IRBP D-300/-600
1207-6	D=1200 (R)	Only together with IRBP R-600/-1000
1207-7	D=1200 (K)	Only together with IRBP K-300/-600/-1000
1207-8	D=1200 (D)	Only together with D-600
1207-9	D=1400 (K)	Only together with IRBP K-600/-1000
1207-10	D=1450 (A)	Only together with one or two IRBP A-500/-750

Swivels and slip rings

See *Swivels on page 156*.

Option	Type	Description
1208-2	1 air (L/A/C)	1 ch air. For one IRBP L-300/-600/-1000/-2000/-5000, one IRBP A-250/-500/-750, IRBP C-500/1000
1208-3	1 air (L/A) x 2	1 ch air. For two IRBP L-300/-600/-1000/-2000/-5000, two IRBP A-250/-500/-750
1208-4	2 air (L/A/C)	2 ch air. For one IRBPL-300/-600/-1000/-2000/-5000, one IRBP A-250/-500/-750, IRBP C-500/1000
1208-5	2 air (L/A) x 2	2 ch air. For two IRBP L-300/-600/-1000/-2000/-5000, two IRBP A-250/-500/-750
1208-6	10 el. (L/A)	10 ch electr. sign. For one IRBP L-300/-600/-1000/-2000/-5000, one IRBP A-250/-500/-750
1208-7	10 el. (L/A) x 2	10 ch electr. sign. For two IRBP L-300/-600/-1000/-2000/-5000, two IRBP A-250/-500/-750
1208-8	10 el. + 1 air (L/A)	10 ch electr. sign. + 1 ch air. For one IRBP L-300/-600/-1000/-2000/-5000, one IRBP A-250/-500/-750
1208-9	10 el. + 1 air (L/A) x 2	10 ch electr. sign.+ 1 ch air. For two IRBP L-300/-600/-1000/-2000/-5000, two IRBP A-250/-500/-750
1208-10	1 air (R/K/B/D)	1 ch air. For IRBP R-300/-600/-1000, IRBP K-300/-600/-1000, IRBP B-250/-500/-750, IRBP D-300/-600
1208-11	2 air (R/K/B/D)	2 ch air. For IRBP R-300/-600/-1000, IRBP 250/500/750K, IRBP B-250/-500/-750, IRBP D-300/-600
1208-12	10 el. (R/K/B/D)	10 ch electr. sign. For IRBP R-300/-600/-1000, IRBP K-300/-600/-1000, IRBP B-250/-500/-750, IRBP D-300/-600
1208-13	10 el. + 1 air (R/K/B/D)	10 ch electr. sign.+ 1 ch air. For IRBP R-300/-600/-1000, IRBP K-300/-600/-1000, IRBP B-250/-500/-750, IRBP D-300/-600

Positioner cable 1

Option	Length	Description
1209-1	-	No cable 1

Continues on next page

Option	Length	Description
1209-2	7 m	
1209-3	10 m	Standard length
1209-4	15 m	

Positioner cable 2

Option	Length	Description
1210-1	-	No cable 2
1210-2	7 m	
1210-3	10 m	Standard length
1210-4	15 m	

Extra current collector

See *Extra current collector for positioner types K / L / R on page 162*.

Option	Type	Description
1211-2	Current collector (L)	For one IRBP L-300/-600/-1000/-2000/-5000
1211-3	Current collector (L)x2	For two IRBP L-300/-600/-1000/-2000/-5000
1211-4	Current collector	For IRBP R-300/-600/-1000, IRBP K-300/-600/-1000

Weld return cable

Extra weld return cable.

Option	Length	Description
1212-1	-	No weld return cable
1212-2	7 m	
1212-3	7 m x 2	
1212-4	10 m	
1212-5	10 m x 2	
1212-6	15 m	
1212-7	15 m x 2	

Return cable OKC T-connection

Option	Qty	Description
1213-1	1 or 2 (chose quantity)	Only for IRBP L / Extra current collector

Floor mounting base

See *Robot stand on page 22*.

Option	Type	Description
1214-2	Base (1)	For IRBP K-300/-600/-1000 for one IRB 1600/2400/2600
1214-3	Base (1) x2	For IRBP K-300/-600/-1000 for two IRB 1600/2400/2600

Continues on next page

Option	Type	Description
1214-4	Base (2)	For IRBP R-300 and C-500 for one IRB 1600/2400/2600
1214-5	Base (3)	For IRBP R-600/-1000 and C-1000 for one IRB 1600/2400/2600
1214-6	Base (4)	For IRBP B-250 for one IRB 1600/2400/2600
1214-7	Base (5)	For IRBP D-300/-600 and B-500/-750 for one IRB 1600/2400/2600
1214-8	Base (6)	For IRBP R-300 for two IRB 1600/2400/2600
1214-9	Base (7)	For IRBP R-600/-1000 for twoIRB 1600/2400/2600

Positioner foot

Option	Height (mm)	Description
1215-2	140	Mandatory when using a IRBP D-300 and D-600 positioner without a floor mounting base.
1215-3	230	Mandatory when using a IRBP D-300 and D-600 positioner with a floor mounting base.

Robot pedestal

See Specification Form for IRB 1600/2400.

3.4 Positioner interface

Interface for positioner

Option	Type	Description
1217-1	-	No positioner interface
1217-2	IRBP A	Interface for one or two IRBP A positioner
1217-3	IRBP B	Interface for one IRBP B positioner
1217-4	IRBP C	Interface for one IRBP C
1217-5	IRBP L	Interface for one or two IRBP L positioner
1217-6	IRBP K/R tripple	Interface for one IRBP K/R positioner

Note

The harnesses XS41/XS41.2 are needed to connect the robot controller with the positioner. To get the harness with connectors XS41/XS41.2 on the robot controller, the option *922-1 Prepared for IRBP* has to be booked and the positioner type must be specified.

Manual jog

To enable the operator to manually control the positioner. There is a control panel with two button functions (+/-) and a hold to run device. The control panel is used to obtain desired position for loading/unloading the positioner. See *Manual jog on page 34*.

xx1000000847

Option	Type	Description
1218-2	Man jog IRBP L	
1218-3	Man jog IRBP K/R	

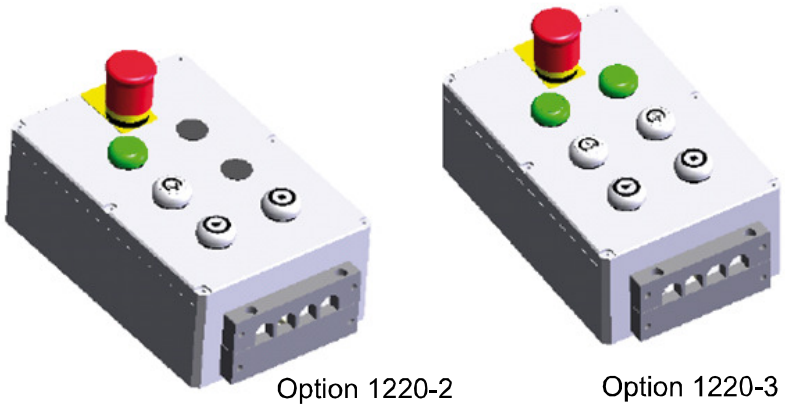
Continues on next page

Working area

Option	Type	Description
1219-2	One working area	
1219-3	Two working areas	

Operator panel

Operator panel with a number of button functions to enable the operator to communicate with the arc welding robot system. The following operator panel standard options are available. See *Operator panel on page 32*.



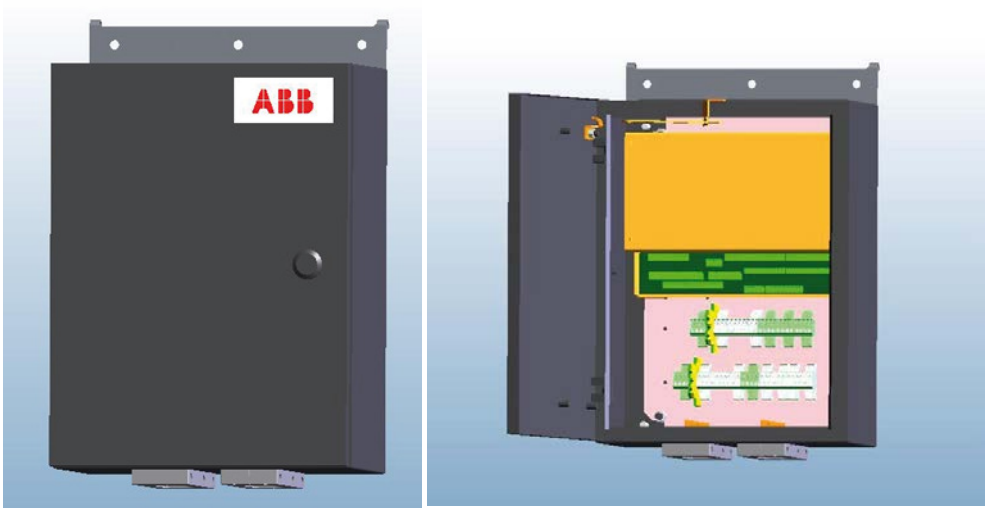
xx1000000848

Option	Type	Description
1220-2	Operators panel 1 area	For one working area
1220-3	Operators panel 2 areas	For two working areas
1220-4	2 x operator panels 2 areas	Two operator panels, one for each working area

3.5 Safety options

Safety interface

Safety interface module, contans Safety Interface Board, connection point for Safety Sensors. Can be located on the controller or on safety fence. See *Safety module on page 31*.



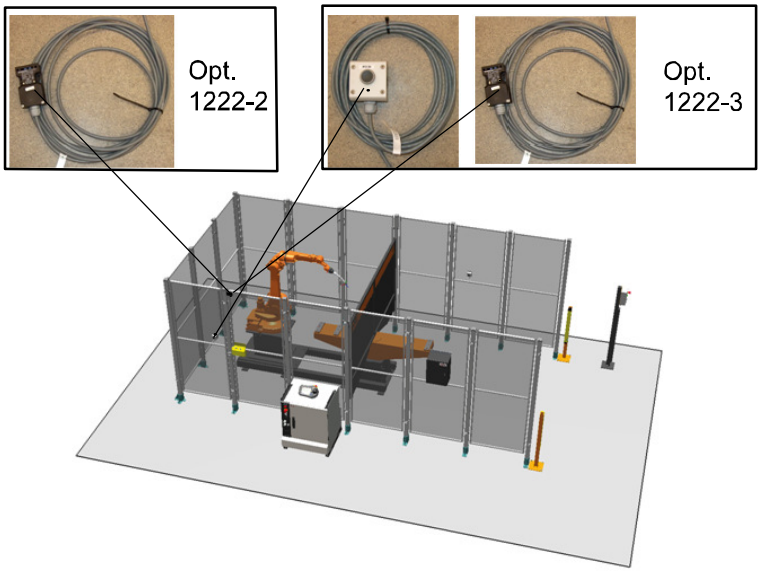
xx1000000849

Option	Type	Description
1221-2	IRBP A, L	Safety interface for IRBP types A and L
1221-3	IRBP B, C, D, K, R	Safety interface for IRBP types B, C, D, K and R
1221-4	Supervision act. relays	Customer connection of signals for monitoring the motor contactors

Continues on next page

Gate switch

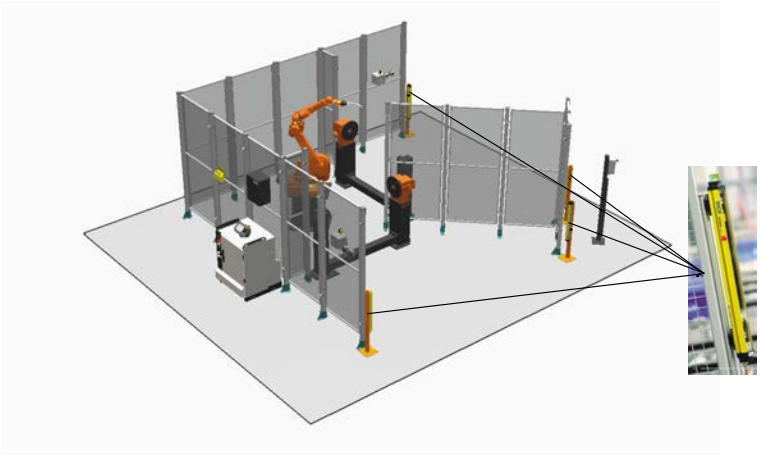
See *Gate switch on page 42*.



xx1000000850

Option	Type	Description
1222-2	Gate switch	Reset from controller
1222-3	Gate switch/ ext. reset	External reset

Lightbeam



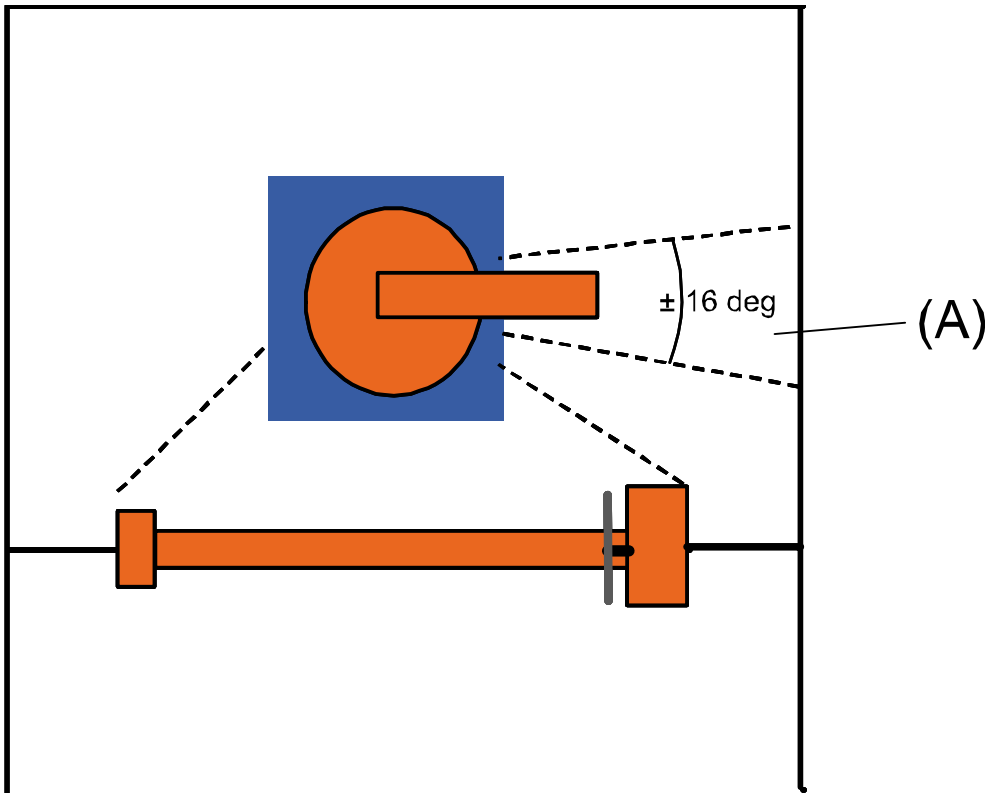
xx1000000851

Option	Type	Description
1223-1	(1-2) Chose quantity	Qty 1 or 2, one working area requires one PC of ”two level light beams”. Two working areas rerquire two PCs of “two level light beams”.

Continues on next page

Home position switch

Allows the operator to enter the load area in a safe way when the robot is in the home position. See *Station indication and Home position on page 39*.



xx1000000852

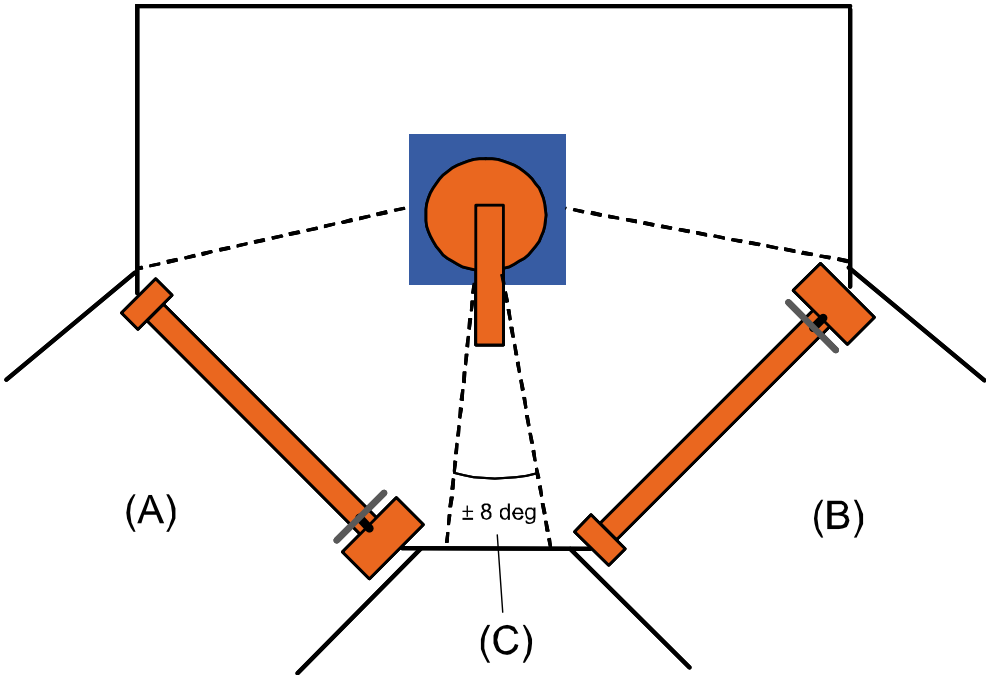
A	Home position.

Option	Type	Description
1224-2	Home position switch	Home position switch for IRB 1600/2400, one working area.

Continues on next page

Station indication

Allows the operator to enter the areas in a safe way when the robot is in the service position. See *Station indication and Home position on page 39*.



xx1000000853

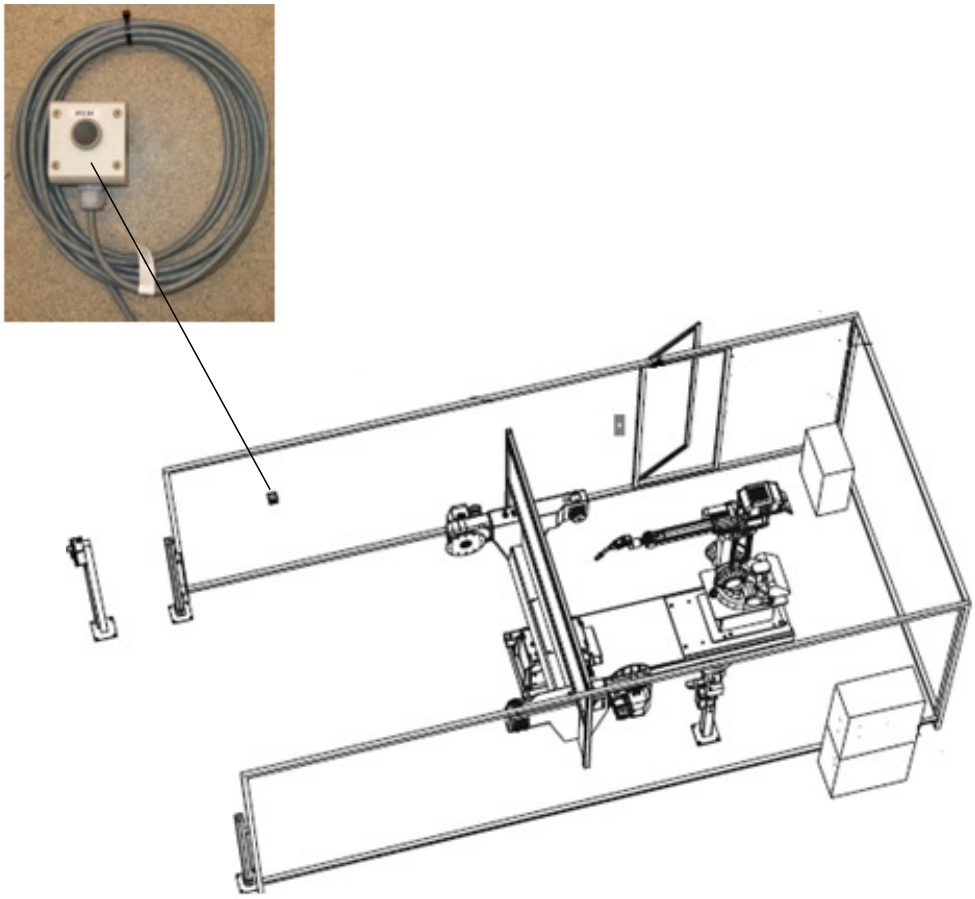
A	Service position.
B	Area 1
C	Area 2

Option	Type	Description
1225-2	Station indication	Station indication for IRB 1600/2400, two working areas.

Continues on next page

Pre-reset unit

The optional board is located inside the Safety Inteface Module. See *Pre reset on page 37*.



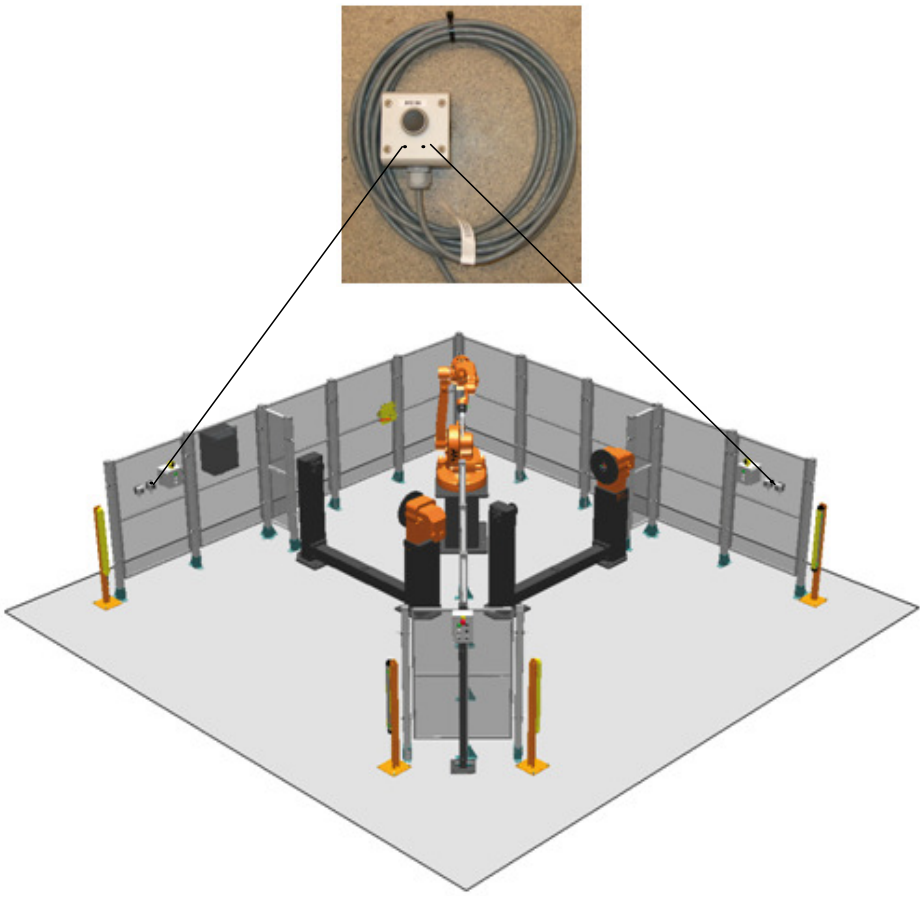
xx1000000803

Option	Type	Description
1226-1	(1-2) Chose quantity	Qty 1 or 2, one working area requires one PC of “Pre-reset”. Two working areas require two PCs of “Pre-reset”.

Continues on next page

Prog from load area

See *Activation unit - Programming from operator area on page 38*.



xx1000000757

Option	Type	Description
1227-1	(1-2) Chose quantity	Qty 1 or 2, one requires one PC of “Activation unit”. Two working areas require two PCs of “Activation unit”.

Extended EM stop

Option	Type	Description
1228-2	Extended EM stop	Required when using external EM-stop push buttons.

Continues on next page

Warranty

For the selected period of time, ABB will provide spare parts and labour 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 in the ABB Ability service *Condition Monitoring & Diagnostics* 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.
438-5	Standard warranty + 24 months	Standard warranty extended with 24 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.
438-7	Standard warranty + 30 months	Standard warranty extended with 30 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*.

Index

O
options, 171

P
product standards, 44

S
safety standards, 44
standards, 44
  ANSI, 44
  CAN, 44
  EN IEC, 44
  EN ISO, 44
standard warranty, 188
stock warranty, 188

V
variants, 171

W
warranty, 188

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

3HAC038208-001, Rev Y, en