Technical Description

CiRo S / M / MHD / L /XL

M0409-1

Tool changers | **Swivels** | Swivel tool changers | Grippers | Hose packages | Valve units | Tool systems

rsp robot system products

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1 INTRODUCTION

Robot System Products is a front-rank provider of peripheral products for high performance robot applications. We provide complete system solutions for your robot installations, aiming to improve your productivity with the most reliable and cost-effective tooling on the market. Continuously we explore emerging technologies, working with leading edge design.

Robot System Products has a wide range of standard robot peripheral products:

- Tool changers
- Swivels
- Swivel tool changers
- CiRo
- Grippers
- Hose Packages
- Valve units
- Tool systems
- Tool parking systems

Robot System Products' tool changers are constructed to maximize the flexibility and reliability of your robot fleet. Through our patented locking device TrueConnect™ robustness and high safety are combined with low weight and compactness. With our swivels compressed air, water, electrical and data signals as well as weld and servo power are transferred to your tools with robot motion capabilities fully maintained. Our Swivel tool changers unite the TrueConnect™ mechanism with our swivel technology, combining the best out of the two technologies. With RSP's cost-effective CiRo, cables and hoses can be freely selected with high robot flexibility maintained, and space requirements reduced. Our integrated Tool systems are delivered as complete plug-and-play solutions designed for quick and simple installation.

Robot System Products' product lines are available for all major robot brands and come with complete documentation. 3D-models for simulation are available for download at: robotsystemproducts.com.

1.1 Documents

This document, *Product Description*, contains product information, drawings, data, electrical and pneumatic diagrams, safety software function and lists of spare parts. In the document *Installation and Maintenance* (M0410-1) procedures for mounting, installation, replacement of equipment is described together with descriptions of inspection, cleaning and lubrication activities including maintenance intervals.

1.2 Complementary Equipment

Complementary equipment is described in separate documents.

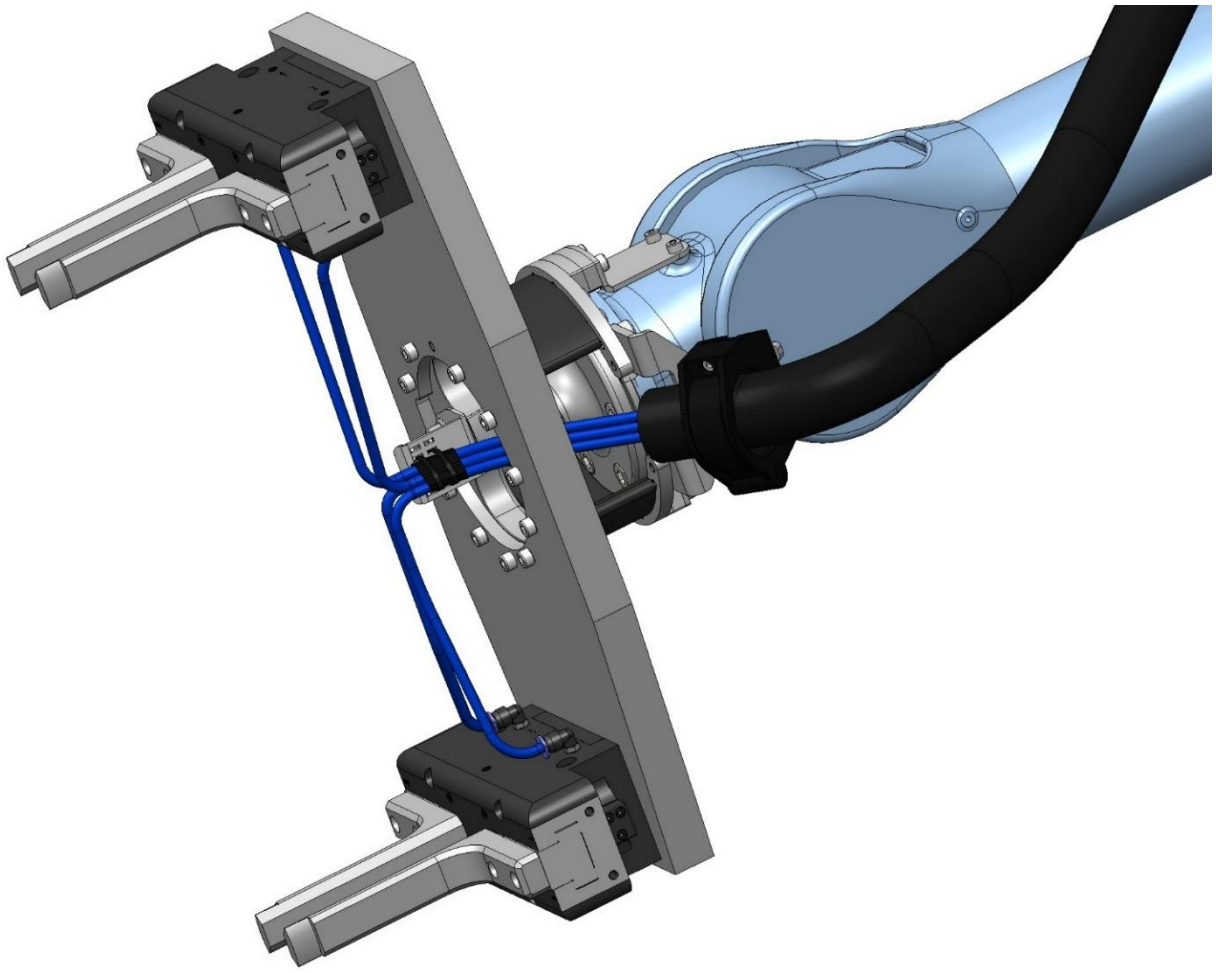
Article	Note
Cable and Hose Packages	Complete packages for most robots on the market ready to be mounted without any modifications.
External valve units	Mounted at the rear of the upper arm.
Tool adapter kit for tool changers	For mounting of tool changer on the CiRo a tool adapter kit is required
3D-models	Available in Solid Works®, STEP and Parasolid-format.

2 TECHNICAL SPECIFICATIONS

2.1 Description of CiRo

This document presents the Robot System Products' CiRo S, M, MHD, L and XL. With the CiRo, cables and hoses can be connected to tools or tool changers similarly to robots with internal dressing. The robots working range and ability to move freely, independent of transferred media, is maximised. Hoses and cables for air, signals and power can be selected according to the requirements of the application.

With a CiRo the compressed air, signals and power will be directly available at the tool or tool changer. Axis 6 can rotate up to 500 degrees, only limited by the flexibility of hoses and cables. Footprint and swing of cables and hoses are reduced, programming becomes faster and more reliable and design and installation time for the system integrator is significantly reduced.



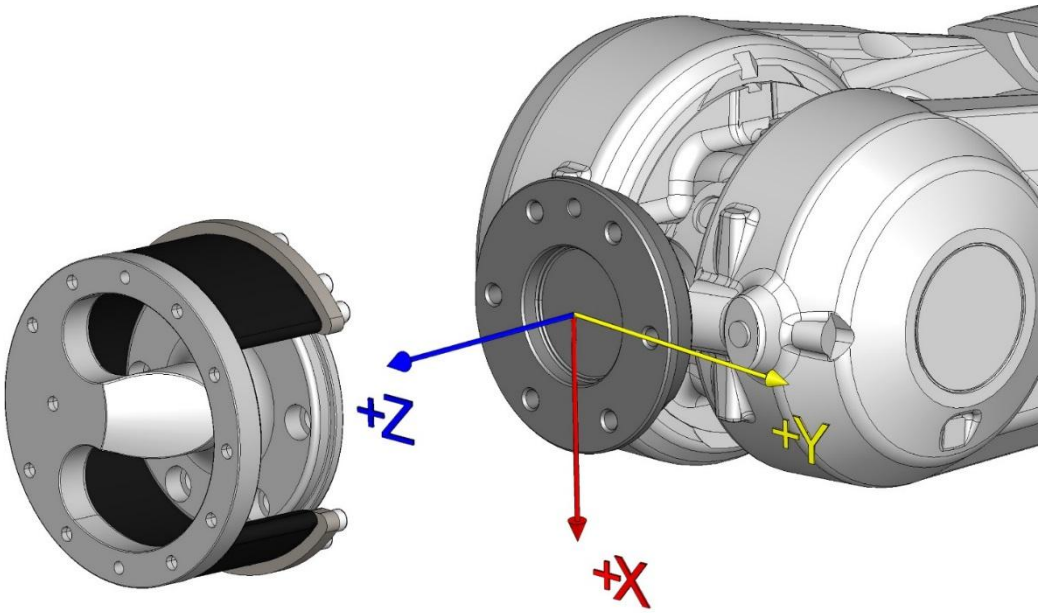
Example of gripper configuration using the CiRo M

NOTE! During rotation of the 6th axis, cables and hoses must be allowed to slide freely through the protective hose.

NOTE! Only cables specifically designed for the high torsional and bending stress of robot applications should be used. Hose packages and cables from RSP are recommended.

2.1.1 Coordinate System Definition

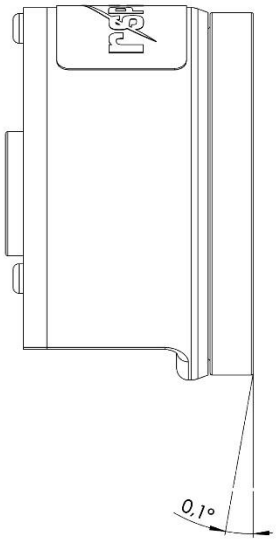
A CiRo, and attached tool changer and tools, add load to the robot. If the arm and tool loads are not stated correctly during programming the behaviour of the robot and the wear of the equipment will be affected. Information about weight and centre of gravity can, in accordance with the co-ordinate system stated below, be found in the technical specification tables of each specific CiRo.



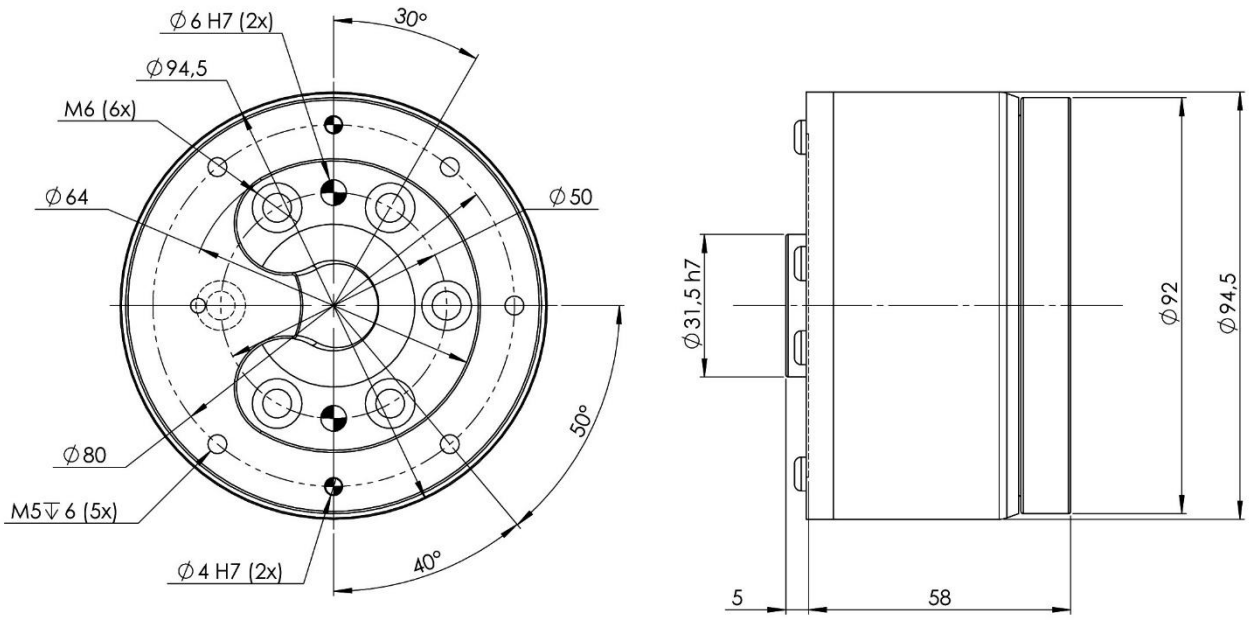
NOTE! For the CiRo the origo of the co-ordinate system is situated on the surface in the centre of the robot mounting flange.

2.1.2 Deflection angle

NOTE!
Deflection load$_{xy}$ (0,1°) corresponds the torque applied to obtain an deflection around the x/y-axes of 0,1°



2.1.3 CiRo S1, Article: P5131



CiRo small S1 supports and holds cables and hoses allowing rotation of 6th axis. To be used on robots with ISO 9409-1 50-6-M6 bolt pattern together with robot adaptation kit (section 2.2.5).

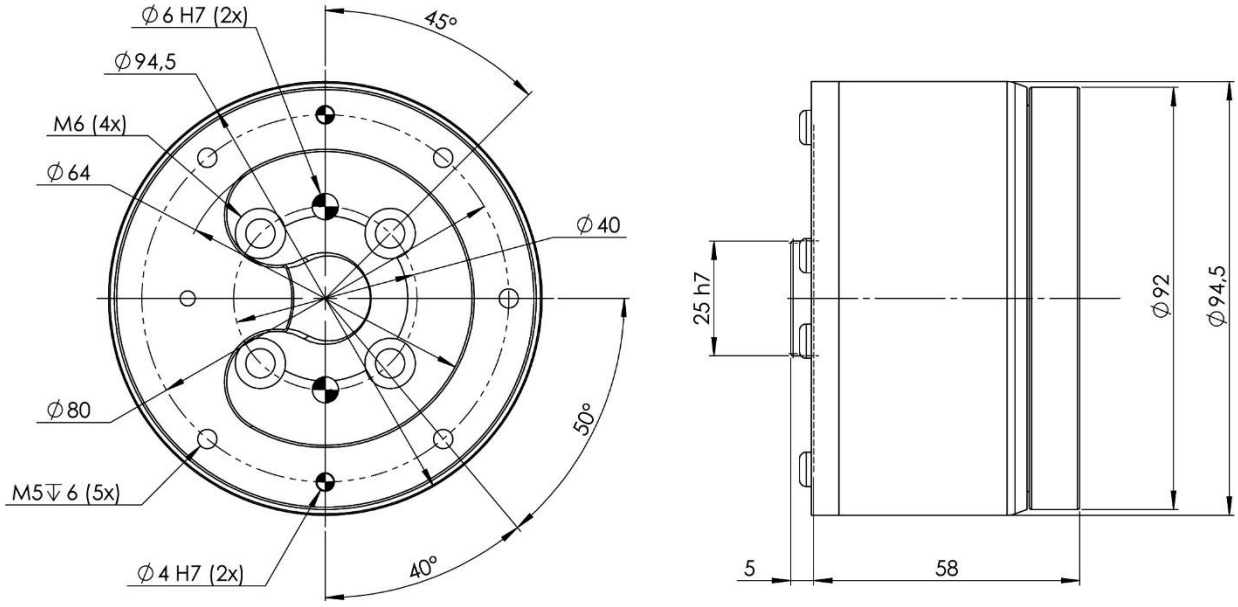
Technical data

Working temperature		+10°C–+50°C
Bolt pattern	Robot side	ISO 9409-1 50-6-M6
	Tool side	80-5-M5 (see note below)
Maximum tool load	Fz (static)	± 100 N
	Mx/My (dynamic)	± 100 Nm
	Mz (dynamic)	± 100 Nm
Weight		1.2 kg
Centre of gravity	Z-direction	+32 mm
Deflection load$_{xy}$ (0,1°)		33 Nm (see note section 2.1.2)
Hoses and cables	Maximum rotation	± 250°
	Maximum bundle size	7 x Ø6 mm

NOTE! Hoses and cables should be specifically designed for applications with high torsional and bending stresses. Hose packages, cables and air hoses are available from Robot System Products.

NOTE! Tool adapter kit P5305 (see section 2.2.1) is designated for mounting on CiRo S1, S2, S3, S4.

2.1.4 CiRo S2. Article: P5132



CiRo S2 supports and holds cables and hoses allowing rotation of 6th axis. To be used on robots with ISO 9409-1 40-4-M6 bolt pattern together with robot adaptation kit (section 2.2.5).

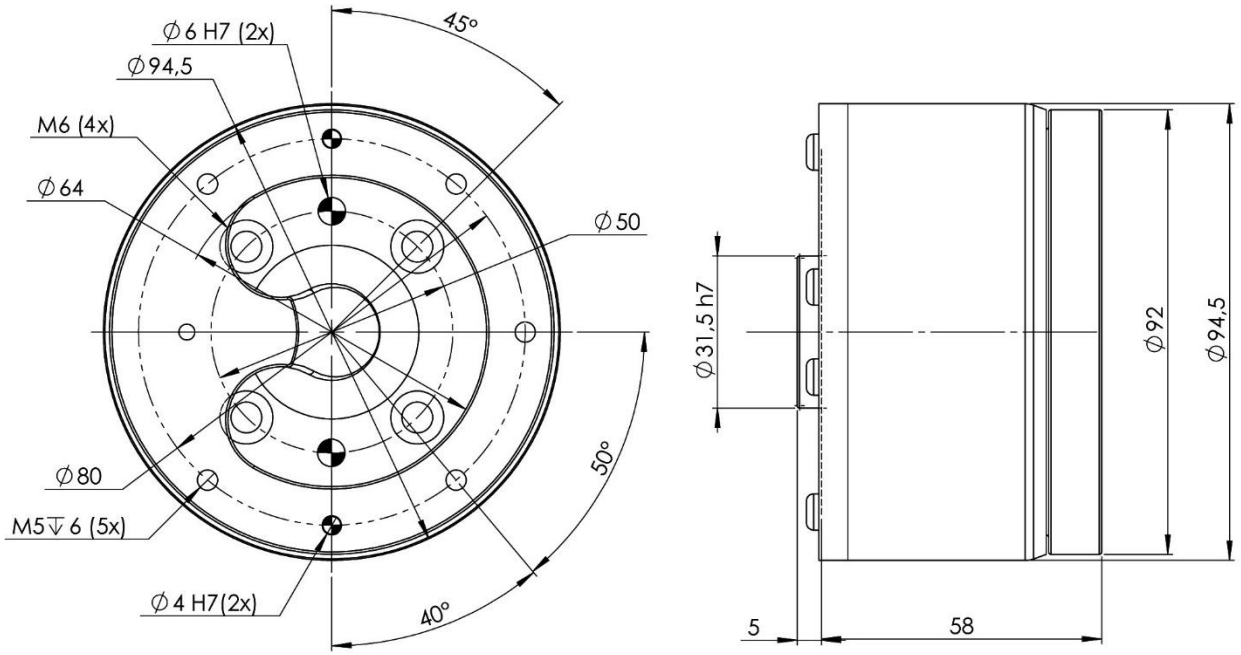
Technical data

Working temperature		+10°C−+50°C
Bolt pattern	Robot side	ISO 9409-1 40-4-M6
	Tool side	80-5-M5 (see note below)
Maximum tool load	Fz (static)	± 100 N
	Mx/My (dynamic)	± 100 Nm
	Mz (dynamic)	± 80 Nm
Weight		1.2 kg
Centre of gravity	Z-direction	+32 mm
Deflection load$_{xy}$ (0,1°)		33 Nm (see note section 2.1.2)
Hoses and cables	Maximum rotation	± 250°
	Maximum bundle size	7 x Ø6 mm

NOTE! Hoses and cables should be specifically designed for applications with high torsional and bending stresses. Hose packages, cables and air hoses are available from Robot System Products.

NOTE! Tool adapter kit P5305 (see section 2.2.1) is designated for mounting on CiRo S1, S2, S3, S4.

2.1.5 CiRo S3. Article: P5133



CiRo S3 supports and holds cables and hoses allowing rotation of 6th axis. To be used on robots with ISO 9409-1 50-4-M6 bolt pattern together with robot adaptation kit (section 2.2.5).

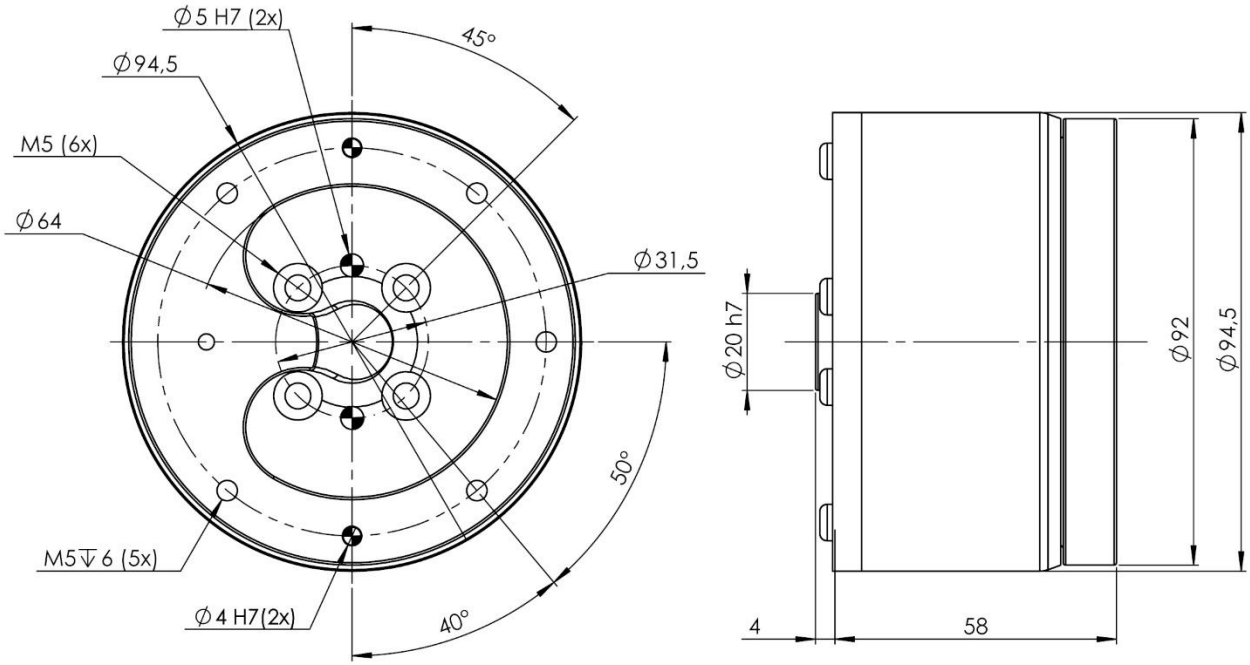
Technical data

Working temperature		+10°C−+50°C
Bolt pattern	Robot side	ISO 9409-1 50-4-M6
	Tool side	80-5-M5 (see note below)
Maximum tool load	Fz (static)	± 100 N
	Mx/My (dynamic)	± 100 Nm
	Mz (dynamic)	± 100 Nm
Weight		1.2 kg
Centre of gravity	Z-direction	+32 mm
Deflection load$_{xy}$ (0,1°)		33 Nm (see note section 2.1.2)
Hoses and cables	Maximum rotation	± 250°
	Maximum bundle size	7 x Ø6 mm

NOTE! Hoses and cables should be specifically designed for applications with high torsional and bending stresses. Hose packages, cables and air hoses are available from Robot System Products.

NOTE! Tool adapter kit P5305 (see section 2.2.1) is designated for mounting on CiRo S1, S2, S3, S4.

2.1.6 CiRo S4. Article: P5134



CiRo S4 supports and holds cables and hoses allowing rotation of 6th axis. To be used on robots with ISO 9409-1 31,5-4-M5 bolt pattern together with robot adaptation kit (section 2.2.5).

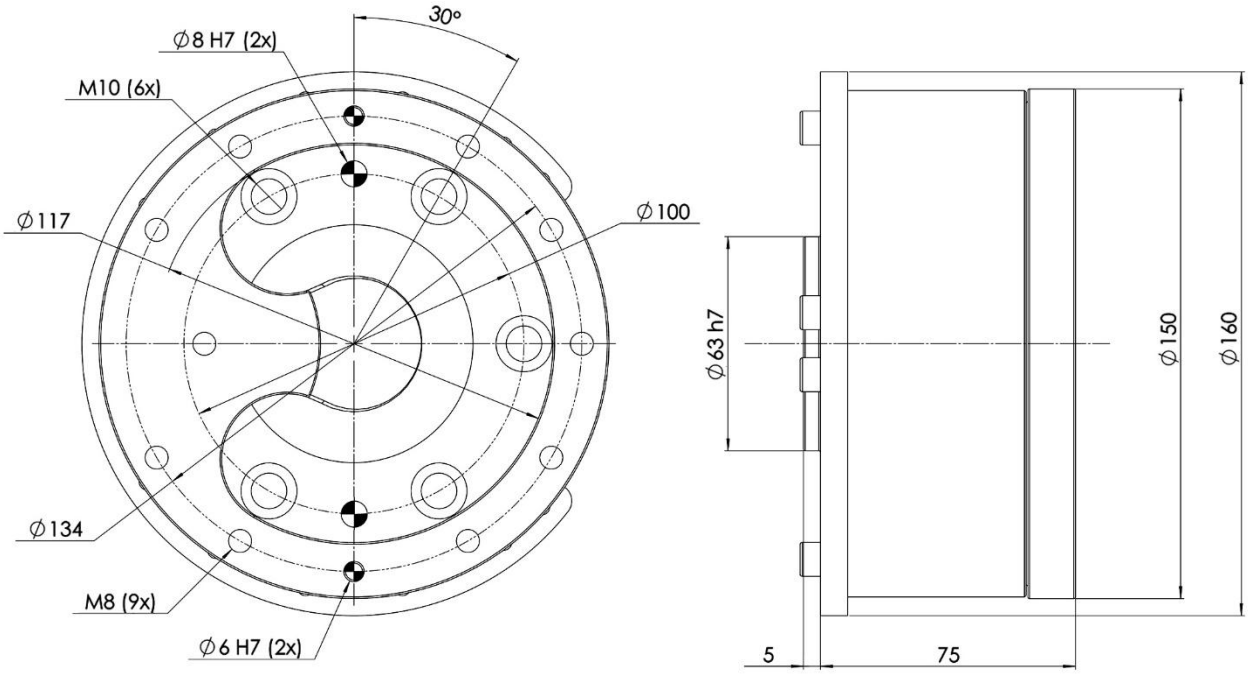
Technical data

Working temperature		+10°C–+50°C
Bolt pattern	Robot side	ISO 9409-1 31,5-4-M5
	Tool side	80-5-M5 (see note below)
Maximum tool load	Fz (static)	± 50 N
	Mx/My (dynamic)	± 50 Nm
	Mz (dynamic)	± 50 Nm
Weight		1.2 kg
Centre of gravity	Z-direction	+31 mm
Deflection load$_{xy}$ (0,1°)		20 Nm (see note section 2.1.2)
Hoses and cables	Maximum rotation	± 250°
	Maximum bundle size	7 x Ø6 mm

NOTE! Hoses and cables should be specifically designed for applications with high torsional and bending stresses. Hose packages, cables and air hoses are available from Robot System Products.

NOTE! Tool adapter kit P5305 (see section 2.2.1) is designated for mounting on CiRo S1, S2, S3, S4.

2.1.7 CiRo M1. Article: P5121



CiRo M1 supports and holds cables and hoses allowing rotation of 6th axis. To be used on robots with ISO 9409-1 100-6-M10 and ISO 9409-1 100-6-M8 bolt pattern together with robot adaptation kit (section 2.2.5).

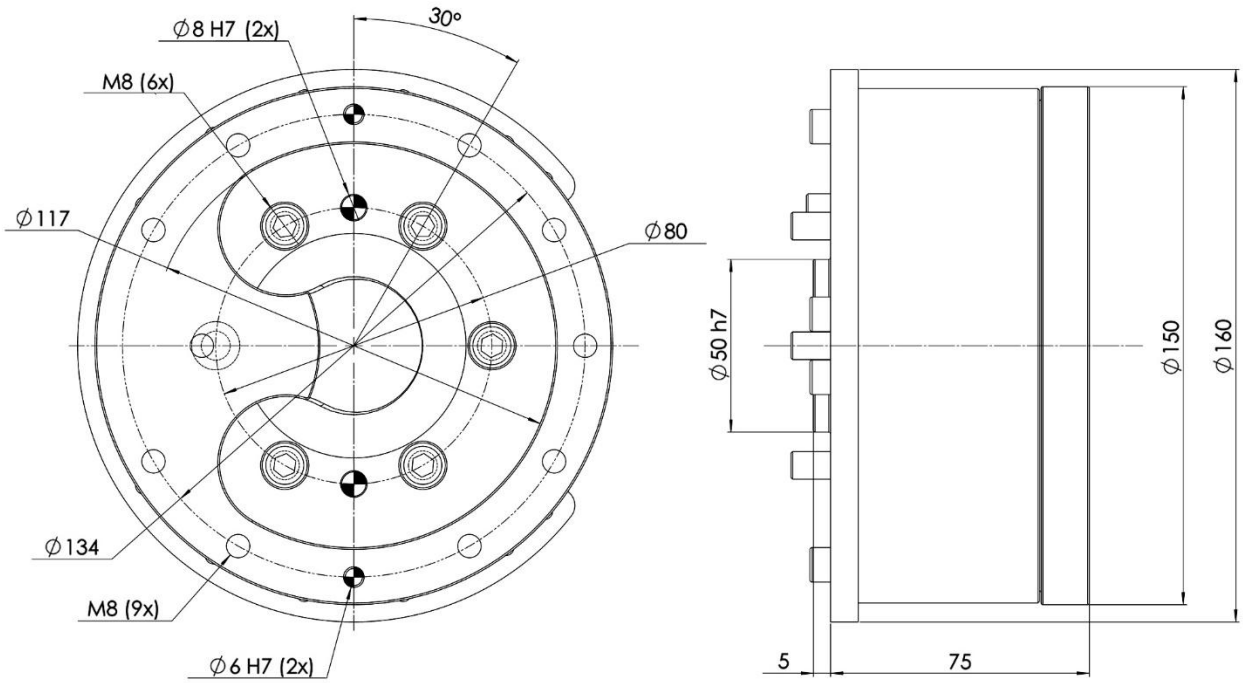
Technical data

Working temperature		+10°C−+50°C
Bolt pattern	Robot side	ISO 9409-1 100-6-M10
	Tool side	134-9-M8
Maximum tool load	Fz (static)	± 400 N
	Mx/My (dynamic)	± 400 Nm
	Mz (dynamic)	± 400 Nm
Weight		3.7 kg
Centre of gravity	Z-direction	+34 mm
Deflection load$_{xy}$ (0,1°)		133 Nm (see note section 2.1.2)
Hoses and cables	Maximum rotation	± 250°
	Maximum bundle size	7 x Ø8 mm

NOTE! Hoses and cables should be specifically designed for applications with high torsional and bending stresses. Hose packages, cables and air hoses are available from Robot System Products.

NOTE! CiRo M1 can be mounted using six M8-screws in combination with dedicated washers. Such washers are part of applicable robot adaptation kit.

2.1.8 CiRo M2. Article: P5124



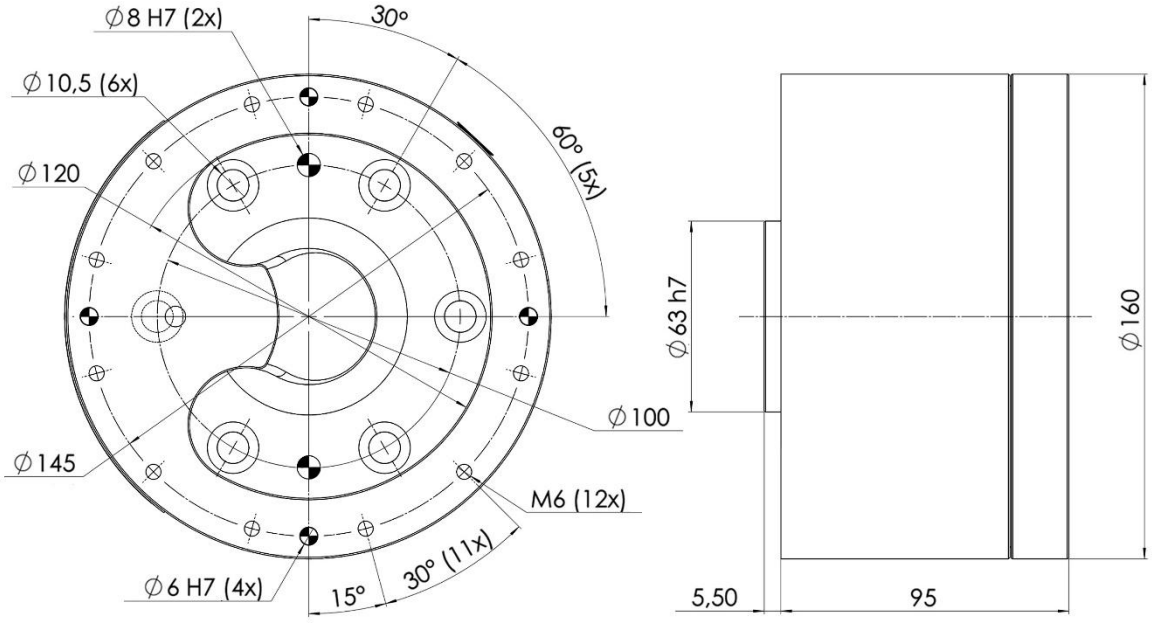
CiRo M2 supports and holds cables and hoses allowing ± 250° rotation of 6th axis. To be used on robots with ISO 9409-1 80-6-M8 bolt pattern together with robot adaptation kit (section 2.2.5).

Technical data

Working temperature		+10°C−+50°C
Bolt pattern	Robot side	ISO 9409-1 80-6-M8
	Tool side	134-9-M8
Maximum tool load	Fz (static)	± 400 N
	Mx/My (dynamic)	± 400 Nm
	Mz (dynamic)	± 400 Nm
Weight		3.7 kg
Centre of gravity	Z-direction	+35 mm
Deflection load$_{xy}$ (0,1°)		133 Nm (see note section 2.1.2)
Hoses and cables	Maximum rotation	± 250°
	Maximum bundle size	7 x Ø8 mm

NOTE! Hoses and cables should be specifically designed for applications with high torsional and bending stresses. Hose packages, cables and air hoses are available from Robot System Products.

2.1.9 CiRo MHD1. Article: P5125



CiRo MHD1 supports and holds cables and hoses allowing rotation of 6th axis. To be used on robots with ISO 9409-1 100-6-M10 and ISO 9409-1 100-6-M8 bolt pattern together with robot adaptation kit (section 2.2.5).

Technical data

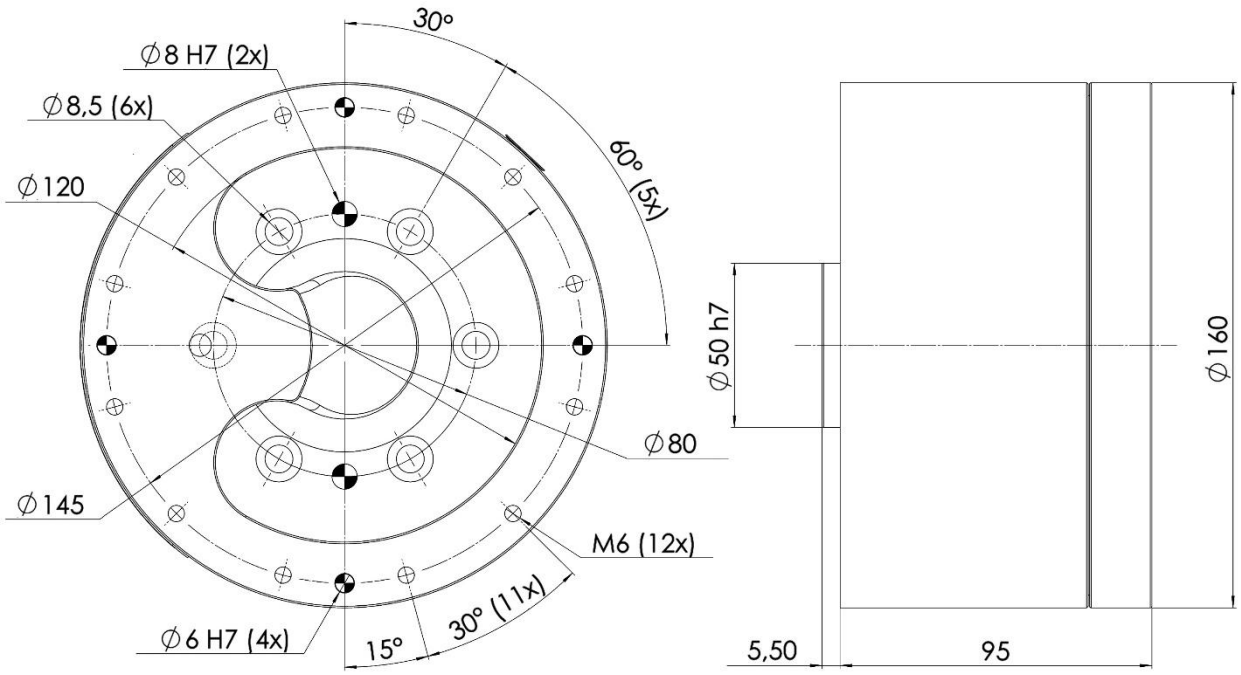
Working temperature		+10°C–+50°C
Bolt pattern	Robot side	ISO 9409-1 100-6-M10
	Tool side	145-12-M6
Maximum tool load (M10-screws)	Fz (static)	± 800 N
	Mx/My (dynamic)	± 800 Nm
	Mz (dynamic)	± 800 Nm
Maximum tool load (M8-screws)	Fz (static)	± 800 N
	Mx/My (dynamic)	± 800 Nm
	Mz (dynamic)	± 600 Nm
Weight		5.2 kg
Centre of gravity	Z-direction	52 mm
Deflection load$_{xy}$ (0,1°)		300 Nm (see note section 2.1.2)
Hoses and cables	Maximum rotation	± 250°
	Maximum bundle size	9 x Ø8 mm

NOTE! Hoses and cables should be specifically designed for applications with high torsional and bending stresses. Hose packages, cables and air hoses are available from Robot System Products.

NOTE! CiRo MHD1 can be mounted using six M8-screws in combination with dedicated washers. Such washers are part of applicable robot adaptation kit.

NOTE! Tool adapter kit P5205 (see section 2.2.2) is designated for mounting on CiRo MHD.

2.1.10 CiRo MHD2. Article: P5126



CiRo MHD2 supports and holds cables and hoses allowing rotation of 6th axis. To be used on robots with ISO 9409-1 80-6-M8 bolt pattern together with robot adaptation kit (section 2.2.5).

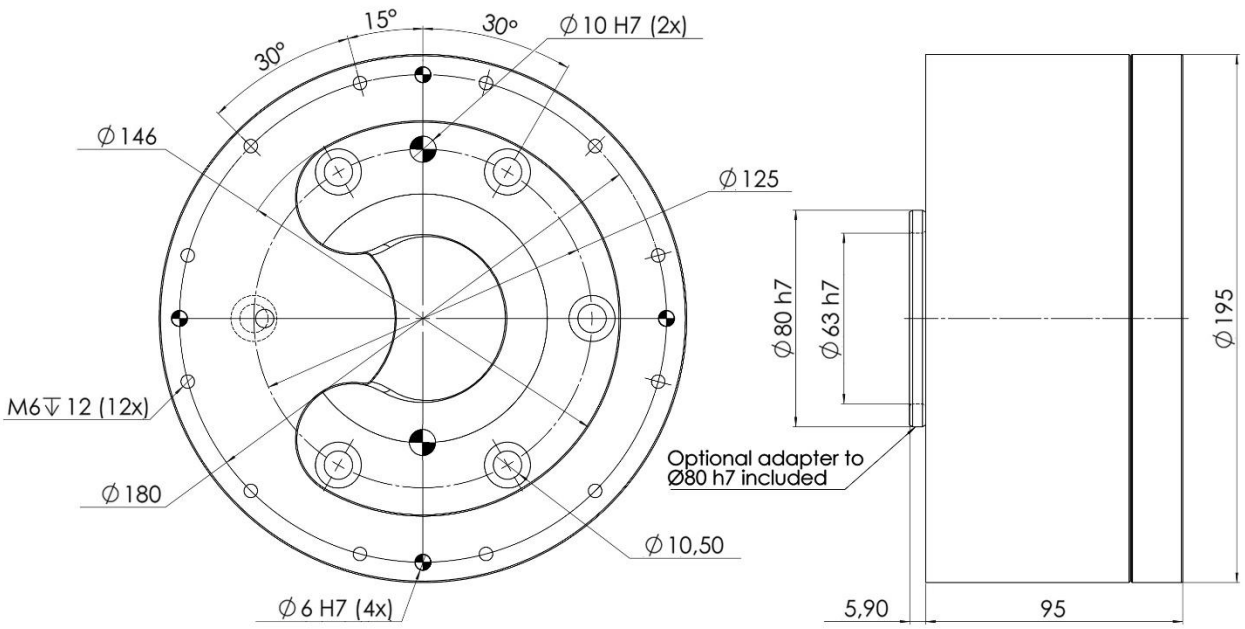
Technical data

Working temperature		+10°C−+50°C
Bolt pattern	Robot side	ISO 9409-1 80-6-M8
	Tool side	145-12-M6
Maximum tool load	Fz (static)	± 800 N
	Mx/My (dynamic)	± 800 Nm
	Mz (dynamic)	± 450 Nm
Weight		5.2 kg
Centre of gravity	Z-direction	52 mm
Deflection load$_{xy}$ (0,1°)		300 Nm (see note section 2.1.2)
Hoses and cables	Maximum rotation	± 250°
	Maximum bundle size	9 x Ø8 mm

NOTE! Hoses and cables should be specifically designed for applications with high torsional and bending stresses. Hose packages, cables and air hoses are available from Robot System Products.

NOTE! Tool adapter kit P5205 (see section 2.2.2) is designated for mounting on CiRo MHD2.

2.1.11 CiRo L1. Article: P5141



CiRo L1 supports and holds cables and hoses allowing rotation of 6th axis. To be used on robots with ISO 9409-1 125-6-M10 together with robot adaptation kit (section 2.2.5).

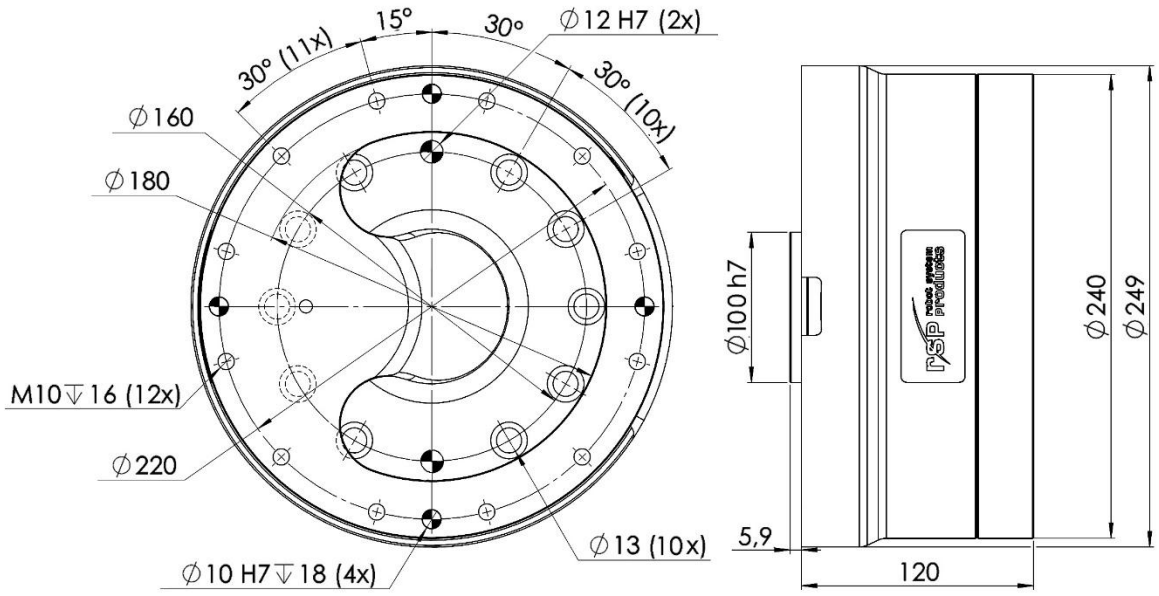
Technical data

Working temperature		+10°C–+50°C
Bolt pattern	Robot side	ISO 9409-1 125-6-M10
	Tool side	180-12-M6
Maximum tool load (M10-screws)	Fz (static)	± 1000 N
	Mx/My (dynamic)	± 1000 Nm
	Mz (dynamic)	± 1000 Nm
Weight		8.3 kg
Centre of gravity	Z-direction	52 mm
Deflection load$_{xy}$ (0,1°)		380 Nm (see note section 2.1.2)
Hoses and cables	Maximum rotation	± 250°
	Maximum bundle size	9 x Ø8 mm

NOTE! Hoses and cables should be specifically designed for applications with high torsional and bending stresses. Hose packages, cables and air hoses are available from Robot System Products.

NOTE! Tool adapter kit P5407 (see section 2.2.3) is designated for mounting on CiRo L1.

2.1.12 CiRo XL1. Article: P5151



CiRo XL1 supports and holds cables and hoses allowing rotation of 6th axis. To be used on robots with ISO 9409-1 160-11-M12 together with robot adaptation kit (section 2.2.5).

Technical data

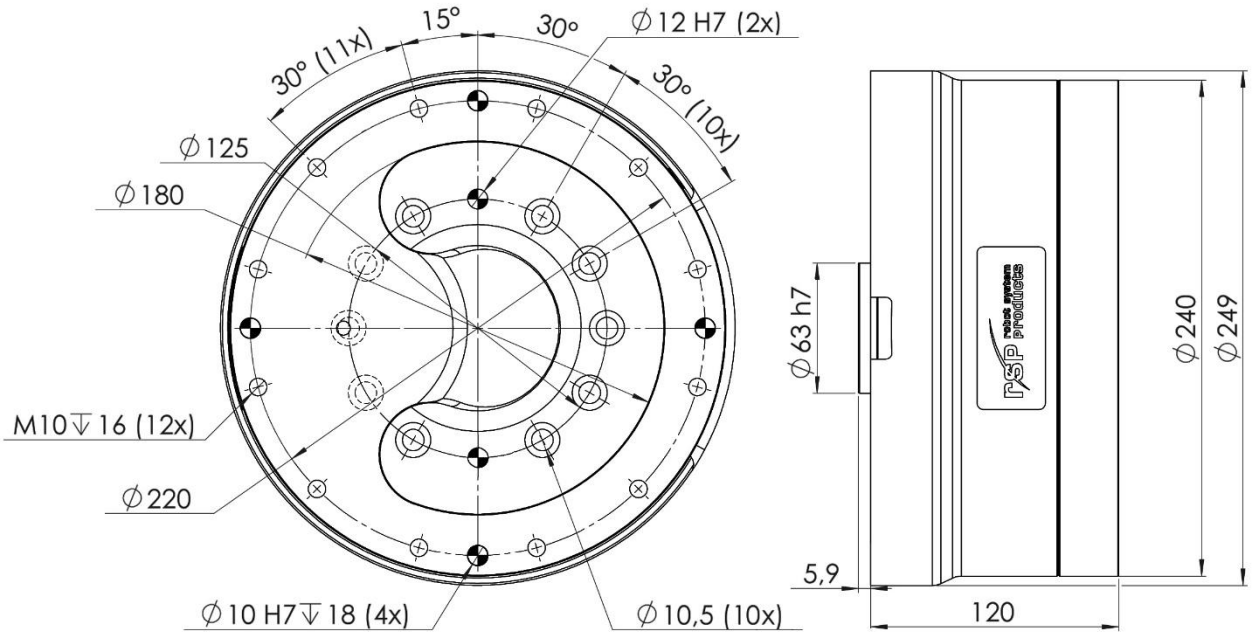
Working temperature		+10°C–+50°C
Bolt pattern	Robot side	ISO 9409-1 160-10-M12 160-6-M10 (See note below)
	Tool side	220-12-M10
Maximum tool load (11xM12-screws) (11xM10-screws)	Fz (static) Mx/My (dynamic) Mz (dynamic)	± 2000 N ± 2200 Nm ± 2000 Nm
Maximum tool load (6xM10-screws)	Fz (static) Mx/My (dynamic) Mz (dynamic)	± 2000 N ± 2200 Nm ± 1400 Nm
Weight		17,5 kg
Centre of gravity	Z-direction	62 mm
Deflection load$_{xy}$ (0,1°)		1200 Nm (see note section 2.1.2)
Hoses and cables	Maximum rotation	± 250°
	Maximum bundle size	9 x Ø8 mm

NOTE! Hoses and cables should be specifically designed for applications with high torsional and bending stresses. Hose packages, cables and air hoses are available from Robot System Products.

NOTE! Tool adapter kit P5501 (see section 2.2.4) is designated for mounting on CiRo XL1 and XL2.

NOTE! CiRo XL1 can be mounted using eleven or six M10-screws in combination with dedicated washers. Such washers are part of applicable robot adaptation kit.

2.1.13 CiRo XL2. Article: P5152



CiRo XL2 supports and holds cables and hoses allowing rotation of 6th axis. To be used on robots with ISO 9409-1 125-11-M10 together with robot adaptation kit (section 2.2.5).

Technical data

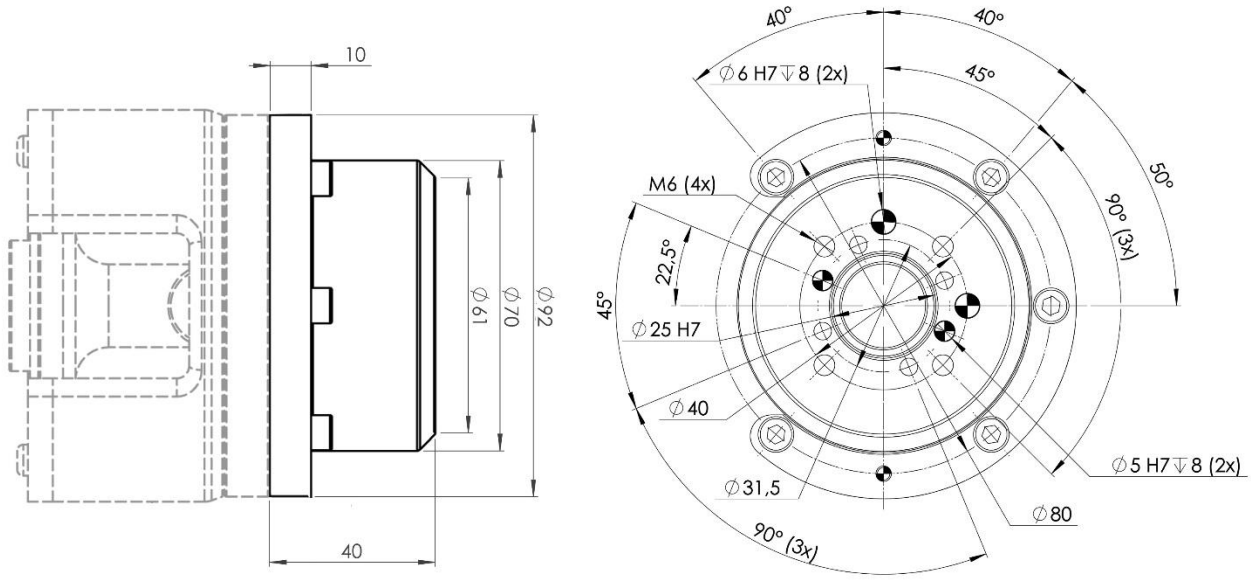
Working temperature		+10°C–+50°C
Bolt pattern	Robot side	ISO 9409-1 125-10-M10
	Tool side	220-12-M10
Maximum tool load	Fz (static)	± 2000 N
(11xM10-screws)	Mx/My (dynamic)	± 2200 Nm
	Mz (dynamic)	± 1900 Nm
Maximum tool load	Fz (static)	± 2000 N
(6xM10-screws)	Mx/My (dynamic)	± 2200 Nm
	Mz (dynamic)	± 1100 Nm
Weight		17,5 kg
Centre of gravity	Z-direction	62 mm
Deflection load$_{xy}$ (0,1°)		1200 Nm (see note section 2.1.2)
Hoses and cables	Maximum rotation	± 250°
	Maximum bundle size	9 x Ø8 mm

NOTE! Hoses and cables should be specifically designed for applications with high torsional and bending stresses. Hose packages, cables and air hoses are available from Robot System Products.

NOTE! Tool adapter kit P5501 (see section 2.2.4) is designated for mounting on CiRo XL1 and XL2.

2.2 Options for CiRo

2.2.1 Tool adapter kit CiRo S, Article: P5305



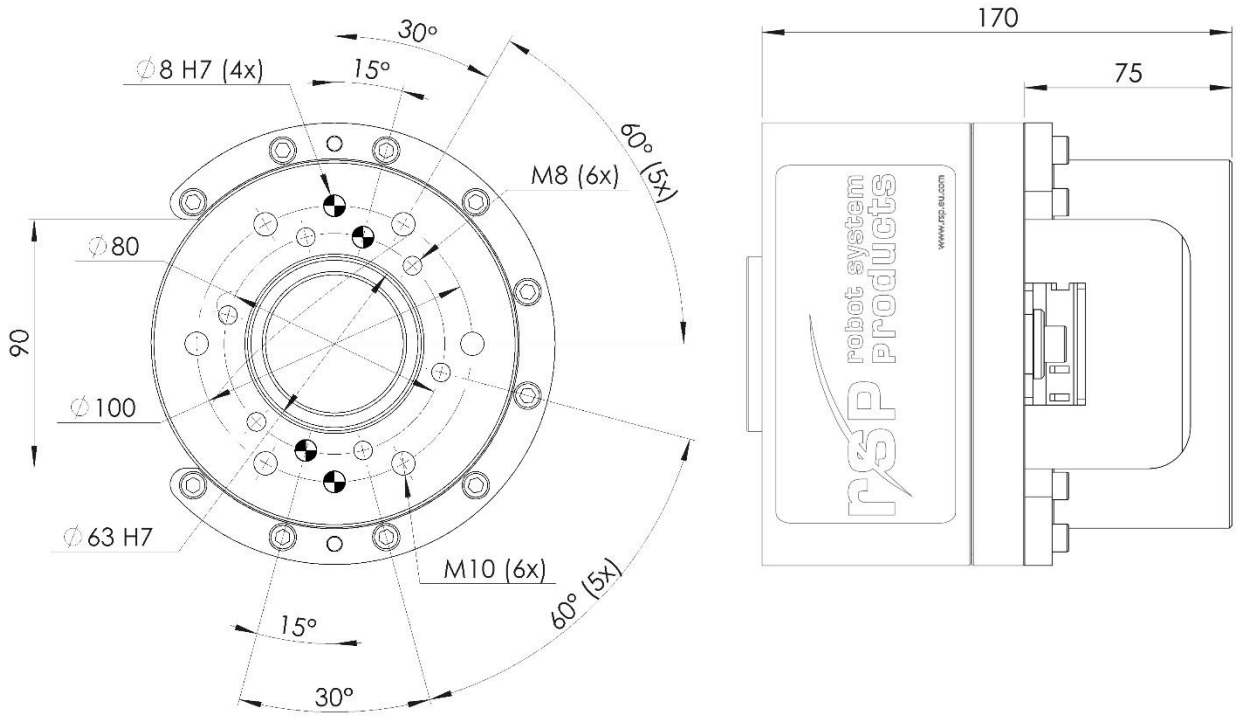
The tool adapter kit P5305 shall be mounted on on CiRo S1, S2, S3 or S4 and used for mounting of tool or tool changer with bolt pattern ISO 9409-1 40-4-M6 or ISO 9409-1 31,5-4-M5.

Technical data

Working temperature		+10°C–+50°C
Bolt pattern	CiRo side Tool side	80-5-M5 ISO 9409-1 40-4-M6 ISO 9409-1 31,5-4-M5
Maximum tool load (on S1, S2 or S3)	Fz (static) Mx/My (dynamic) Mz (dynamic)	± 100 N ± 80 Nm ± 80 Nm
Maximum tool load (on S4)	Fz (static) Mx/My (dynamic) Mz (dynamic)	± 50 N ± 40 Nm ± 40 Nm
Weight (see note!) **Centre of gravity**	(CiRo S and P5305) Z-direction	1,4 kg 36 mm

NOTE! Weight and centre of gravity is stated for the tool adapter kit (P5305) mounted on CiRo S1, S2, S3 or S4.

2.2.2 Tool adapter kit for CiRo MHD1 and MHD2. Article: P5205



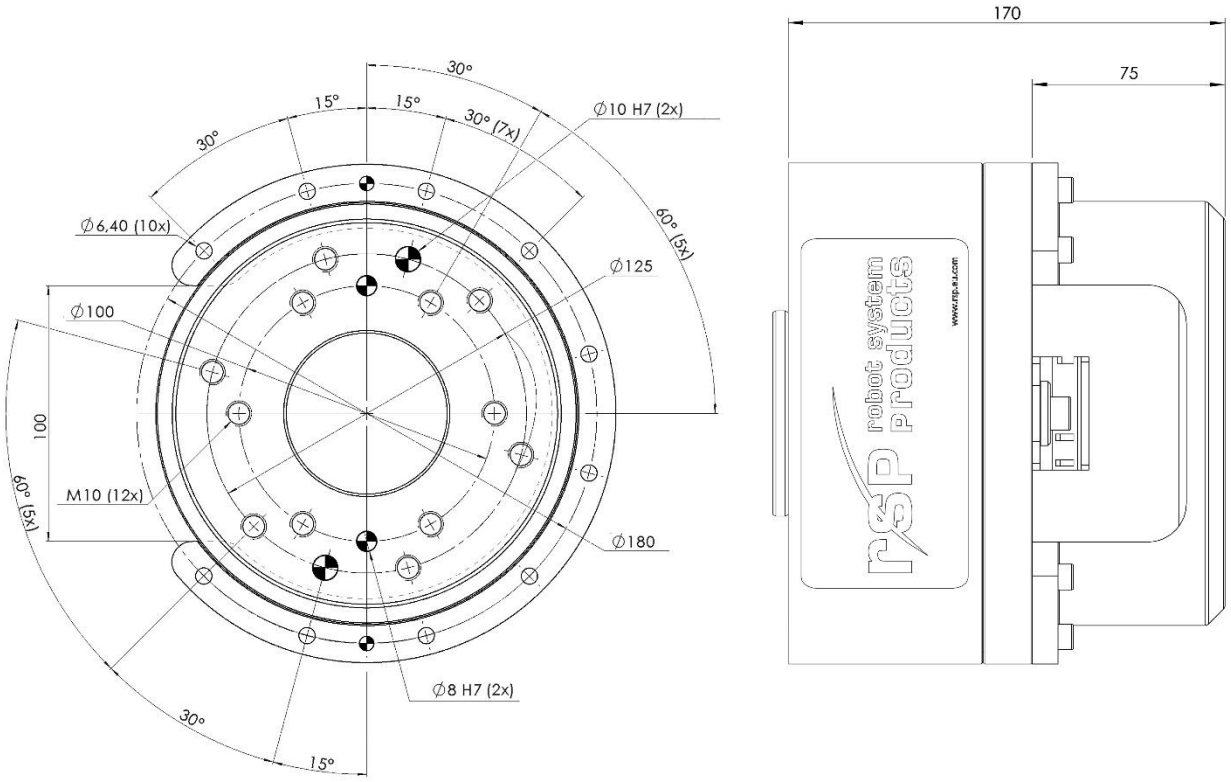
The tool adapter kit P5205 shall be mounted on CiRo MHD1 or MHD2 and used for mounting of tool or tool changer with bolt pattern ISO 9409-1 100-6-M10 or ISO 9409-1 80-6-M8 (with enclosed adaptation ring).

Technical data

Working temperature		+10°C–+50°C
Bolt pattern	CiRo side Tool side Tool side (with adaptation ring)	145-10-M6 ISO 9409-1 100-6-M10 ISO 9409-1 80-6-M8
Maximum tool load (on MHD1 with 100-6-M10)	Fz (static) Mx/My (dynamic) Mz (dynamic)	± 800 N ± 600 Nm ± 700 Nm
Maximum tool load (on MHD2 with 100-6-M10)	Fz (static) Mx/My (dynamic) Mz (dynamic)	± 800 N ± 600 Nm ± 450 Nm
Maximum tool load (on MHD1 or MHD2 with 80-6-M8)	Fz (static) Mx/My (dynamic) Mz (dynamic)	± 800 N ± 600 Nm ± 450 Nm
Weight (see note!) **Centre of gravity**	(P5125/ P5126 and P5205) Z-direction	6,2 kg 62 mm

NOTE! Weight and centre of gravity is stated for the tool adapter kit (P5205) mounted on the CiRo MHD1 (P5125) or MHD2 (P5126).

2.2.3 Tool adapter kit for CiRo L1. Article: P5407



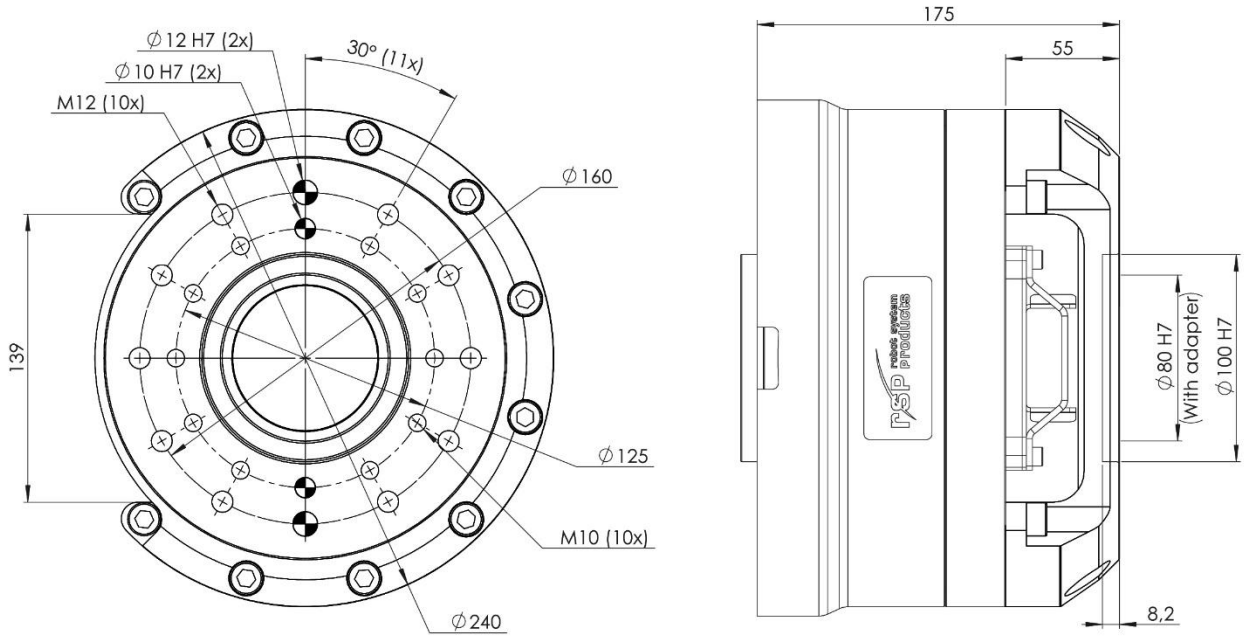
The tool adapter kit P5407 shall be mounted on CiRo L1 and used for mounting of tool or tool changer with bolt pattern ISO 9409-1 125-6-M10 or ISO 9409-1 100-6-M10.

Technical data

Working temperature		+10°C–+50°C
Bolt pattern	CiRo side Tool side	180-10-M6 ISO 9409-1 125-6-M10 ISO 9409-1 100-6-M10
Maximum tool load	Fz (static) Mx/My (dynamic) Mz (dynamic)	± 1000 N ± 750 Nm ± 900 Nm
Weight (see note!) **Centre of gravity**	(P5141 and P5407) Z-direction	9,9 kg 61 mm

NOTE! Weight and centre of gravity is stated for the tool adapter kit (P5407) mounted on the CiRo L1 (P5141).

2.2.4 Tool adapter kit for CiRo XL. Article: P5501



The tool adapter kit P5501 shall be mounted on CiRo XL1 or XL2 and used for mounting of tool or tool changer with bolt pattern ISO 9409-1 125-10-M10 or ISO 9409-1 160-10-M12.

Technical data

Working temperature		+10°C–+50°C
Bolt pattern	CiRo side Tool side	220-10-M10 ISO 9409-1 125-10-M10 ISO 9409-1 160-10-M12
Maximum tool load	Fz (static) Mx/My (dynamic) Mz (dynamic)	± 2000 N ± 2000 Nm ± 2000 Nm (See note below)
Weight (see note!) **Centre of gravity**	(P5151/P5152 and P5407) Z-direction	20.4 kg 74 mm

NOTE! Weight and centre of gravity is stated for the tool adapter kit (P5501) mounted on the CiRo XL1 (P5151) or XL2 (P5152).

NOTE! The maximum tool load of the tool adapter is limited by the maximum tool load of the mounted CiRo XL1 (section 2.1.12) or CiRo XL2 (section 2.1.13) respectively.

2.2.5 Robot adaptation kits

A robot adaptation kit is compulsory for a CiRo. Such an adaptation kit consists of one or two rotation stops, prohibiting the CiRo to rotate in relation to the robot, a holder for the protective hose and screws for fastening the CiRo to the robot flange.

Robot	CiRo	Robot adaptation kit
ABB IRB 2400/2600	S1 (P5131)	P5301
ABB IRB 140, IRB1600	S2 (P5132)	P5302
ABB IRB1200-7/0.7	S4 (P5134)	P5308
ABB IRB260	M2 (P5124)	P5208
ABB IRB260	MHD2 (P5126)	P5208-1
ABB IRB4600	M1 (P5121)	P5203
ABB IRB4600	MHD1 (P5125)	P5203-1
ABB IRB460	MHD1 (P5125)	P5212-1
ABB IRB460	L1 (P5141)	P5411
ABB IRB6700 Lower Line	L1 (P5141)	P5403
ABB IRB6700 Lower Line	XL1 (P5151)	P5504
ABB IRB6700 Higher Line	L1 (P5141)	P5404
ABB IRB6700 Higher Line	XL1 (P5151)	P5502
ABB IRB6700 Power Line	XL1 (P5151)	P5505
ABB IRB660	L1 (P5141)	P5408
ABB IRB6600	L1 (P5141)	P5409
ABB IRB6600/2,55-175 IRB6640/2,55-180	L1 (P5141)	P5412
Fanuc M-20iB/25	S2 (P5132)	P5309
Fanuc LR Mate 200iC/D	S4 (P5134)	P5313
Fanuc 710iC	M1 (P5121)	P5210
Fanuc 710iC	MHD1 (P5125)	P5210-1
Fanuc R-2000iB 165F/R 125L 100H	L1 (P5141)	P5405
Fanuc R-2000iB 210F	L1 (P5141)	P5406
Fanuc R-2000iC	L1 (P5141)	P5401
Kawasaki RS006L	S2 (P5132)	P5314
Kawasaki RS005L	S4 (P5134)	P5315
KUKA KR Cybertech	S3 (P5133)	P5311
KUKA KR Agilus-2	S4 (P5134)	P5312
KUKA KR6 R900 sixx	S4 (P5134)	P5306
KUKA KR90 R3100	M1 (P5121)	P5201
KUKA KR30/60-3	M1 (P5121)	P5204
KUKA KR30/60-3	MHD1 (P5125)	P5204-1
KUKA KR Quantec extra	L1 (P5141)	P5402
KUKA Series 2000	L1 (P5141)	P5413
Motoman HP20	S2 (P5132)	P5310
Motoman GP50/MH50 II	M2 (P5124)	P5211
Motoman GP50/MH50 II	MHD2 (P5126)	P5211-1
Staubli TX200	M1 (P5121)	P5202
Universal UR5	S2 (P5132)	P5303
Universal UR10	S3 (P5133)	P5304

NOTE! For robots and combinations not listed above please contact Robot System Products.

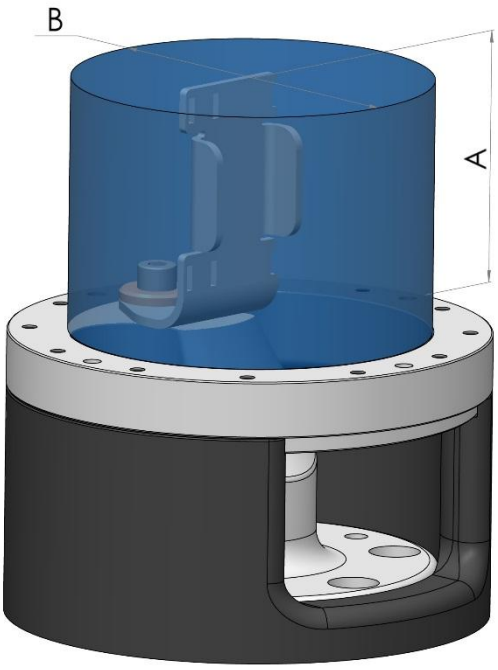
2.2.6 Cable and hose packages

Complete cable and hose packages from Robot System Products, designed for high torsional and bending stress, are recommended. They are available for most robots on the market and ready to be mounted without modifications.

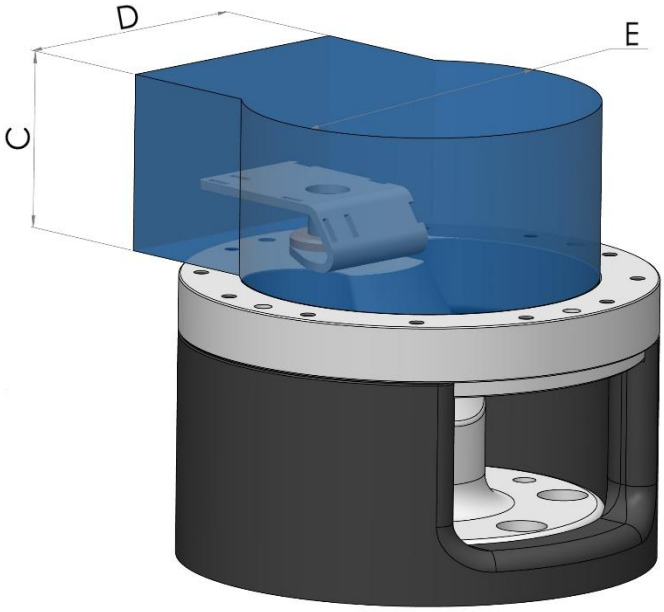
Robot	CiRo	Hose package
ABB IRB2400	S1 (P5131)	P2160-1
ABB IRB2600	S1 (P5131)	P2160-2
ABB IRB140	S2 (P5132)	P2161
ABB IRB4600/40	M1 (P5121), MHD1 (P5125)	P2158
ABB IRB4600/45-60	M1 (P5121), MHD1 (P5125)	P2159
ABB IRB6640	L1 (P5141)	P2168-1
ABB IRB6700-2,80/2,70/2,65/2,60	L1 (P5141), XL1 (P5151)	P2164-1
ABB IRB6700 -3,05/3,20	L1 (P5141), XL1 (P5151)	P2164-2
ABB IRB6700 -2,85/3,00	L1 (P5141), XL1 (P5151)	P2164-3
FANUC CR-7iA/L & LRMate 200iD	S4 (P5134)	P2432
FANUC M-20iB/25	S2 (P5132)	P2436-1
FANUC M-20iB/35S	S2 (P5132)	P2436-2
KUKA KR6 R900-2/KR10 R900-2	S4 (P5134)	P2319
KUKA KR10 R1420 Cybertech nano	S3 (P5133)	P2320-1
KUKA KR30/KR60	M1 (P5121), MHD1 (P5125)	P2314
KUKA KR90 R3100	M1 (P5121)	P2318
KUKA KR 150-2/180-2/210-2	L1 (P5141)	P2323-1
KUKA KR 150 L130-2/180 L150-2/ 210 L180-2	L1 (P5141)	P2323-2
KUKA KR 150 L110-2/180 L130-2/ 210 L150-2	L1 (P5141)	P2323-3
YASKAWA GP50/MH50II	M2 (P5124), MHD2 (P5126)	P2218

NOTE! For robots and combinations not listed above please contact Robot System Products.

2.3 Unobstructed space



Axial mounting



Radial mounting

In order to allow free movement of cables and hoses the space close to the CiRo must be free from any obstruction according to the figures above and the table below.

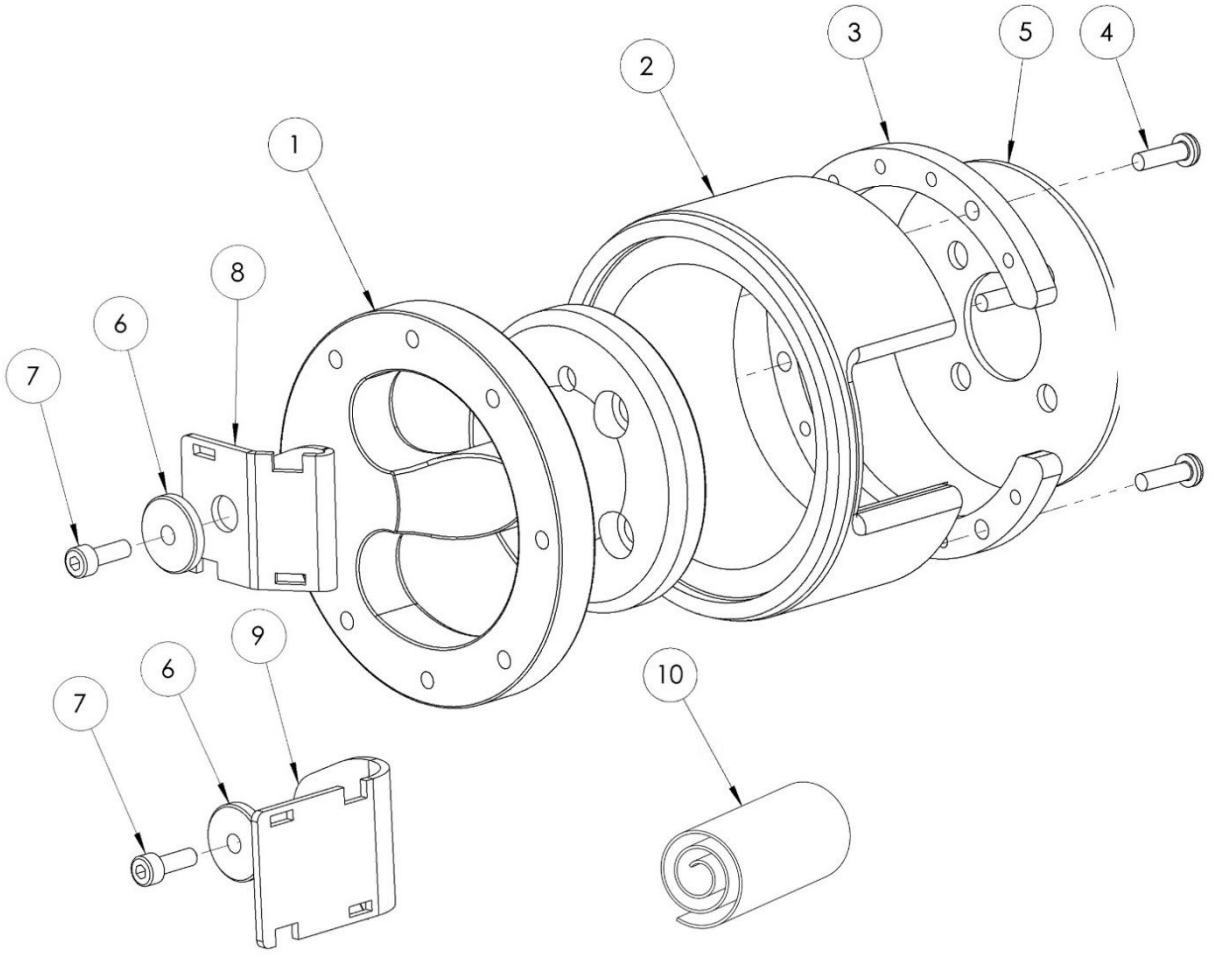
CiRo	A (depth)	B (diameter)	C (depth)	D (width)	E (diameter)
S1, S2, S3, S4	50 mm	64 mm	30 mm	52 mm	64 mm
M1, M2	85 mm	120 mm	60 mm	90 mm	120 mm
MHD1, MHD2	85 mm	120 mm	60 mm	90 mm	120 mm
L1	85 mm	145 mm	60 mm	100 mm	145 mm
XL1, XL2	90 mm	180 mm	40 mm	140 mm	180 mm

2.4 Limitation of Robot movements

There can be some limitations on the movement of axis 5 for some robot models. Contact Robot System Products for more information.

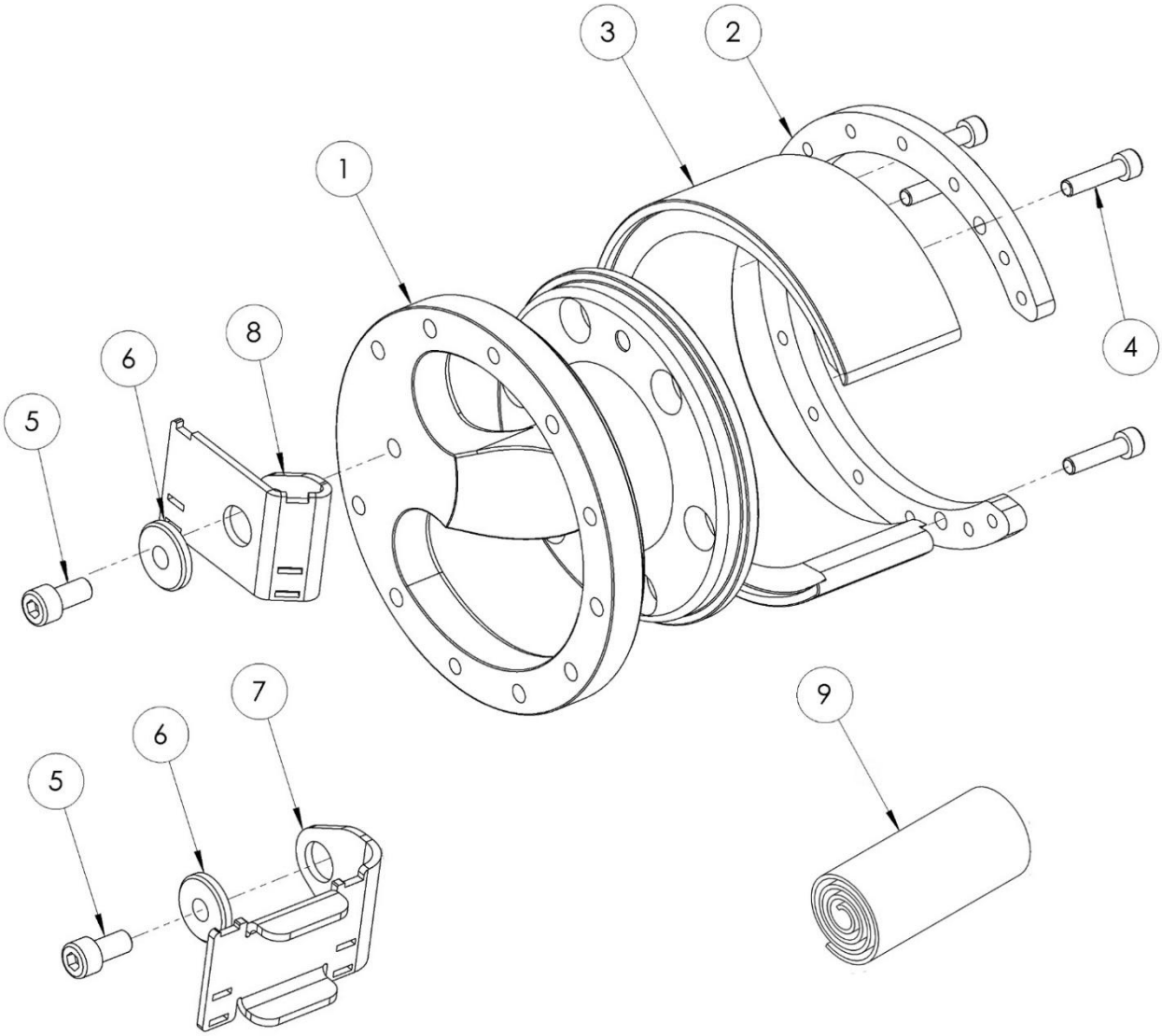
3 SPARE PARTS

3.1 Part list for CiRo S; P5131, P5132, P5133 and P5134



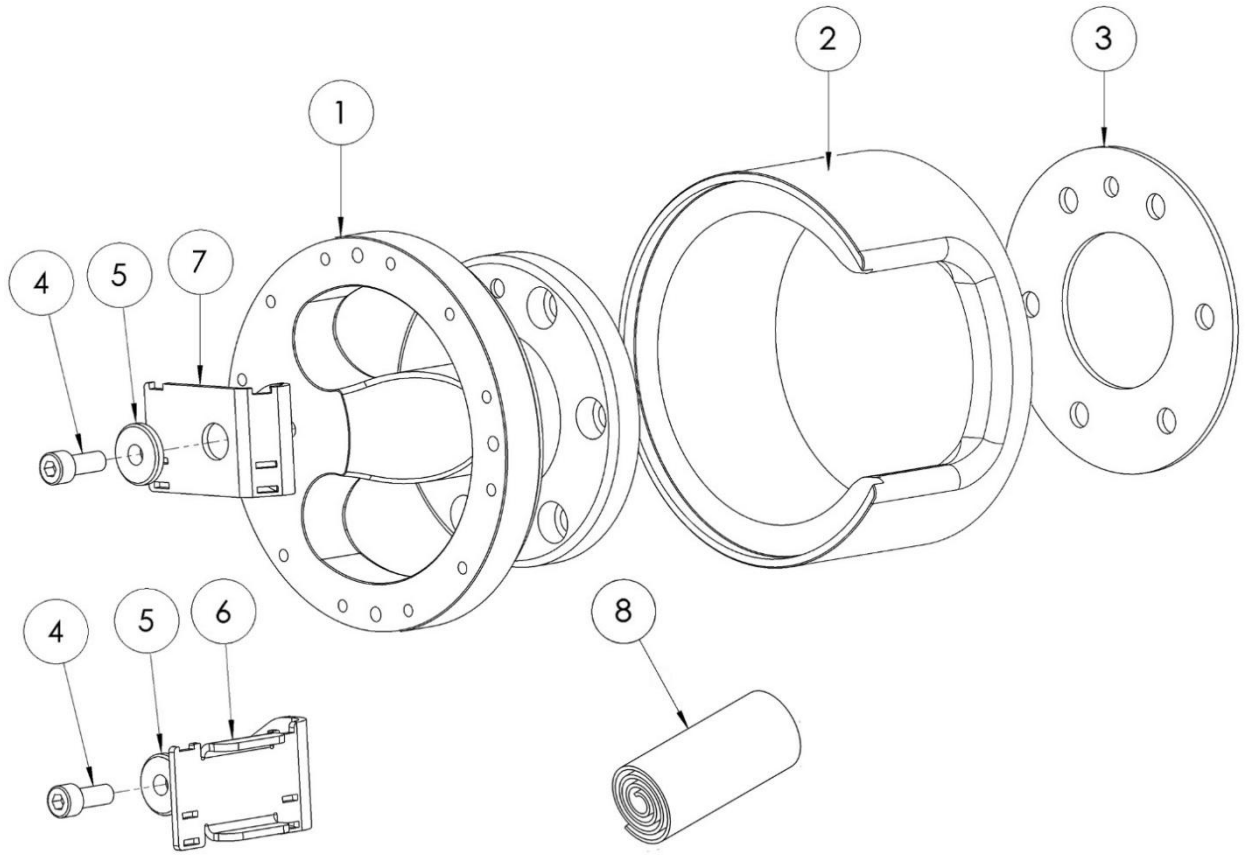
Item	Description	Part number	Wear part	Pcs
1	CiRo-shaft S1 (P5131 only)	P0183-017		1
1	CiRo-shaft S2 (P5132 only)	P0183-026		1
1	CiRo-shaft S3 (P5133 only)	P0183-023		1
1	CiRo-shaft S4 (P5134 only)	P0183-037		1
2	Housing	P0183-019		1
3	Mounting ring	P0183-018		1
4	Screw for plastic	KT-PT 4x14 WN 1452		4
5	Flange shim S1 (P5131 only)	P0183-022		1
5	Flange shim S2 (P5132 only)	P0183-031		1
5	Flange shim S3 (P5133 only)	P0183-030		1
5	Flange shim S4 (P5134 only)	P0183-041		1
6	Bushing	P0183-028	X	1
7	Screw M4x12	21212519-291	X	1
8	Hose/cable guide, radial	P0183-027	X	1
9	Hose/cable guide, axial	P0183-029	X	1
10	Rubber strip	P0183-062	X	1

3.2 Part list for CiRo M1, P5121, and M2, P5124



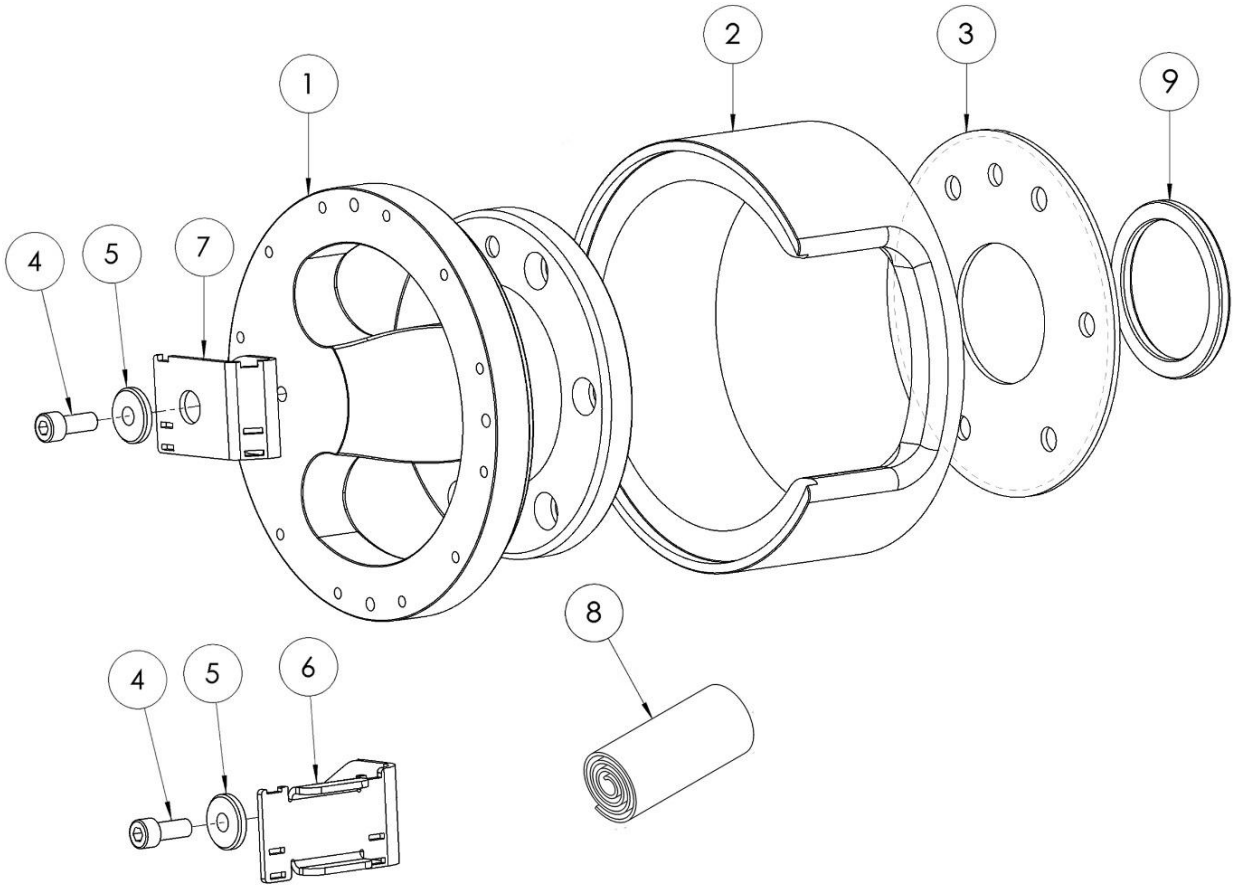
Item	Description	Part number	Wear part	Pcs
1	CiRo-shaft 100-6-M10 (P5121 only)	P0183-001		1
1	CiRo-shaft 80-6-M8 (P5124 only)	P0183-015		1
2	Mounting ring	P0183-002		1
3	Housing	P0183-003		1
4	Screw M6x25	21212519-372		4
5	Screw M8x16	21212519-449	X	1
6	Bushing	P0183-007	X	1
7	Hose/cable guide, axial	P0183-005	X	1
8	Hose/cable guide, radial	P0183-004	X	1
9	Rubber strip	P0183-021	X	1

3.3 Part list for CiRo MHD1, P5125 and MHD2, P5126



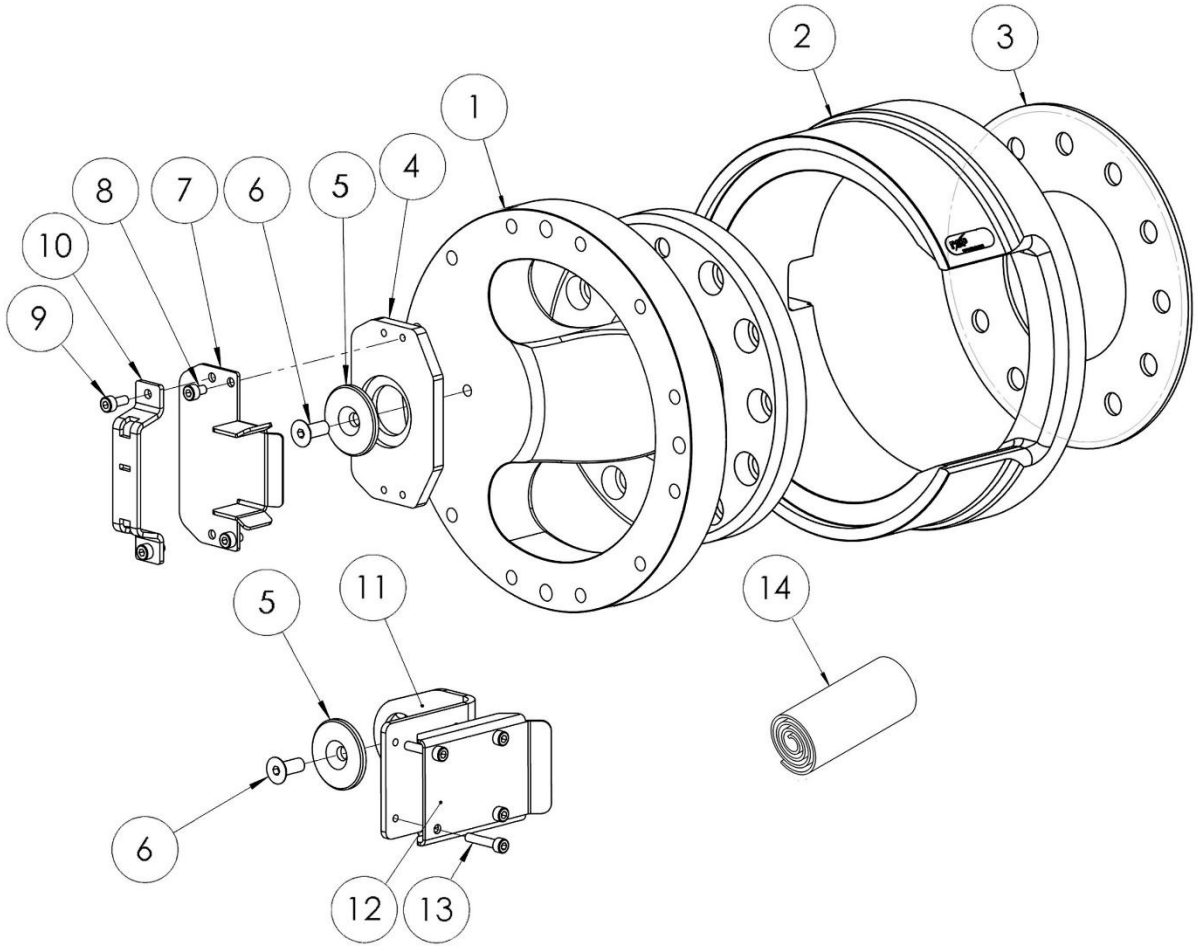
Item	Description	Part number	Wear part	Pcs
1	CiRo-shaft (P5125 only)	P0183-050		1
1	CiRo-shaft (P5126 only)	P0183-047		1
2	Housing	P0183-063		1
3	Flange shim (P5125 only)	P0183-054		1
3	Flange shim (P5126 only)	P0183-043		1
4	Screw M8x20	21212519-451	X	1
5	Bushing	P0183-007	X	1
6	Hose/cable guide, axial	P0183-005	X	1
7	Hose/cable guide, radial	P0183-004	X	1
8	Rubber strip	P0183-021	X	1

3.4 Part list for CiRo L1, P5141



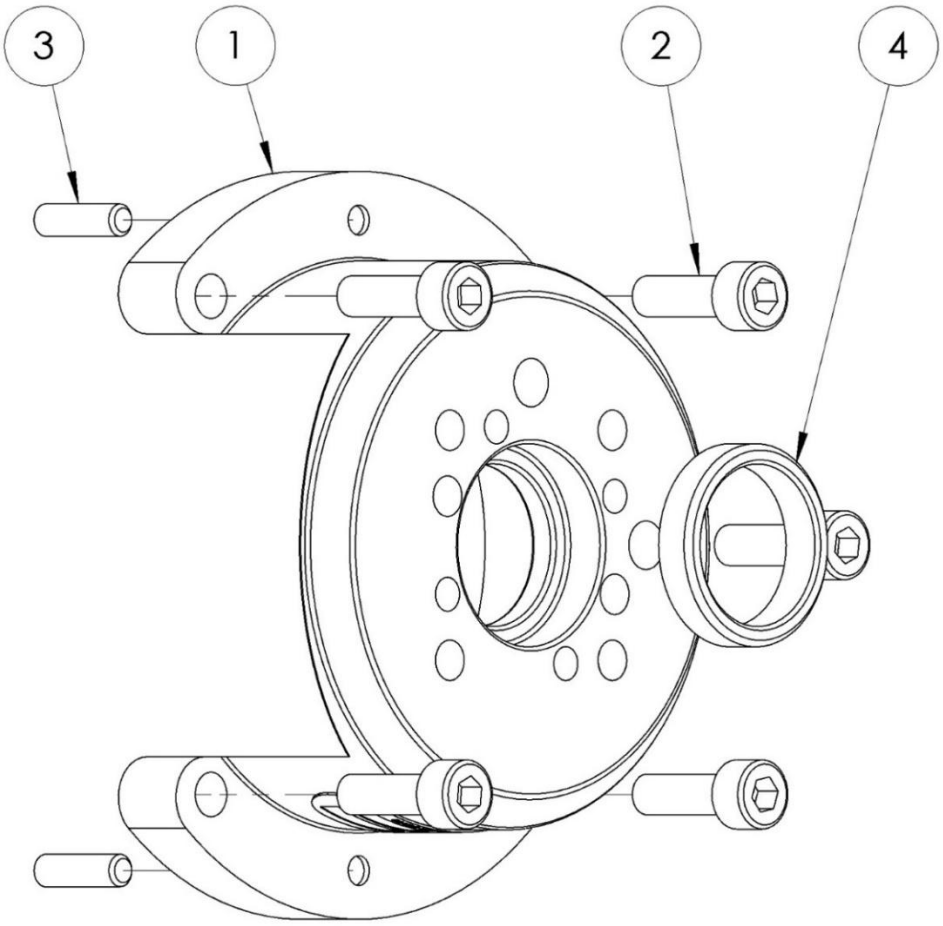
Item	Description	Part number	Wear part	Pcs
1	CiRo-shaft	P0183-055		1
2	Housing	P0183-064		1
3	Flange shim	P0183-061		1
4	Screw M8x20	21212519-451	X	1
5	Bushing	P0183-007	X	1
6	Hose/cable guide, axial	P0183-059	X	1
7	Hose/cable guide, radial	P0183-058	X	1
8	Rubber strip	P0183-021	X	1
9	Adaptation ring	P0196-026		1

3.5 Part list for CiRo XL1, P5151 and CiRo XL2, P5152



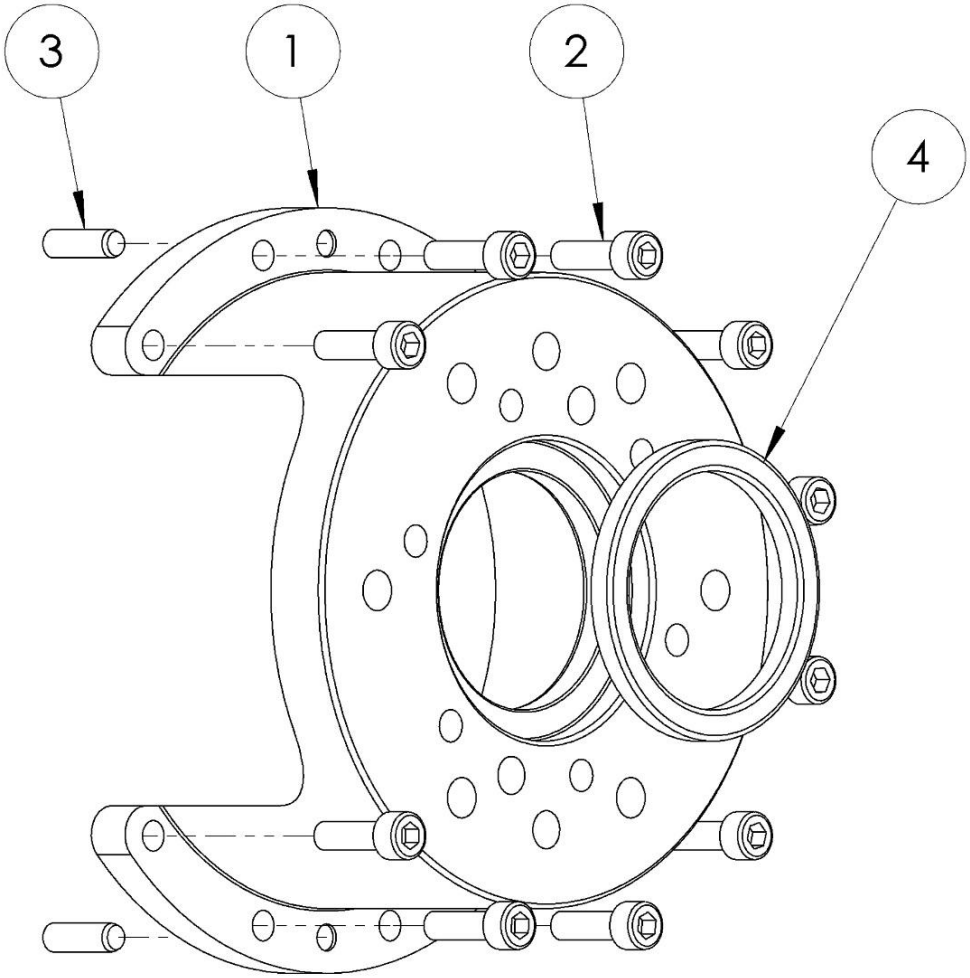
Item	Description	Part number	Wear part	Pcs
1	CiRo-shaft (P5151 only)	P0183-035		1
1	CiRo-shaft (P5152 only)	P0183-136		1
2	Housing	P0183-128		1
3	Flange shim (P5151 only)	P0183-129		1
3	Flange shim (P5152 only)	P0183-045		1
4	Hose/cable guide base	P0183-133	X	1
5	Bushing	P0183-048	X	1
6	Screw M8x20	21210604-6	X	1
7	Hose/cable guide, radial	P0183-134	X	1
8	Screw M5x8	21212519-324		2
9	Screw M5x12	21212519-327		2
10	Hose/cable clamp radial	P0183-049	X	1
11	Hose/cable guide, axial	P0183-135	X	1
12	Hose/cable clamp, axial	P0183-132	X	1
13	Screw M5x25	21212519-333		4
14	Rubber strip	P0183-193	X	1

3.6 Part list for Tool adapter kit, P5305



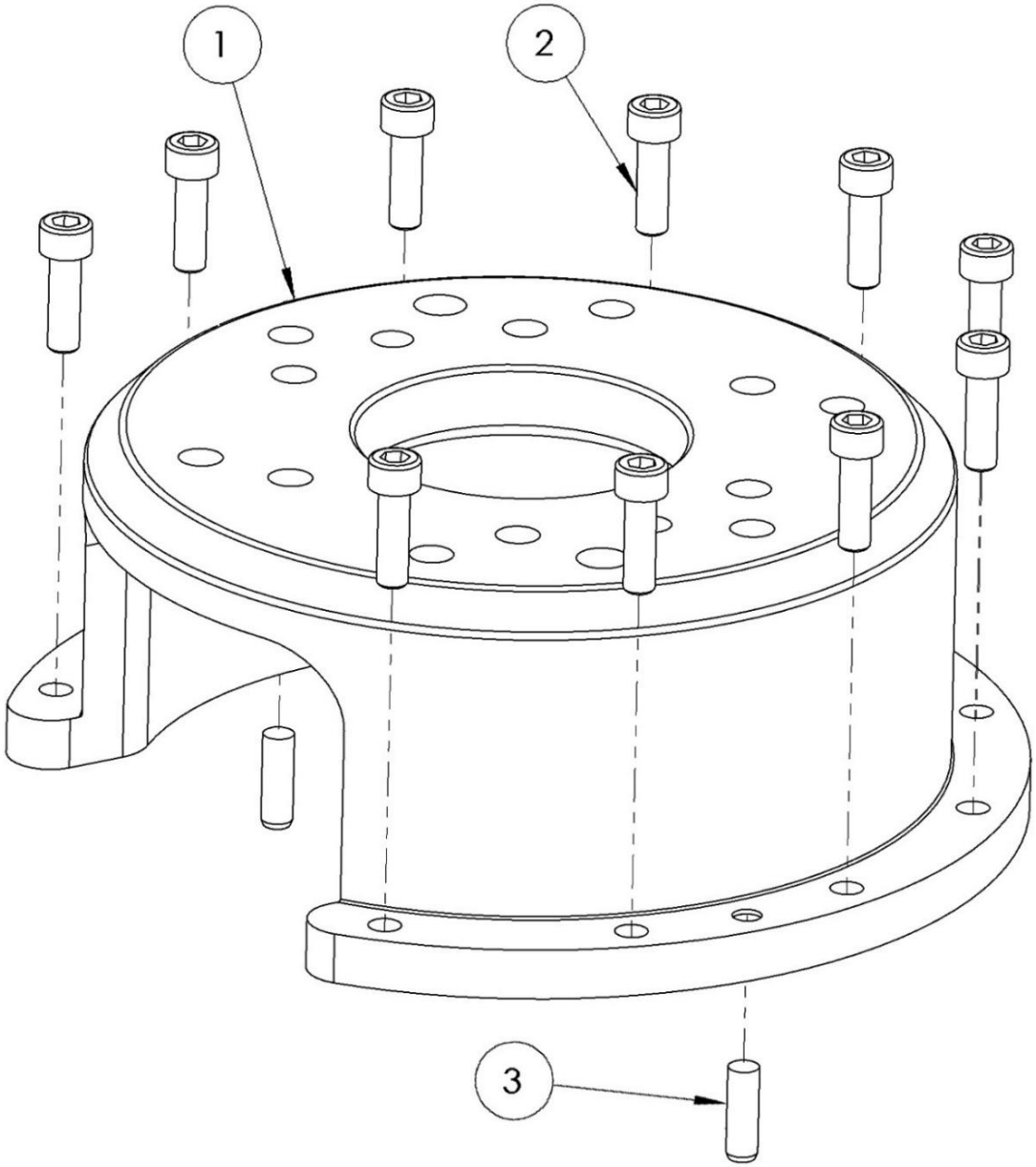
Item	Description	Part number	Wear part	Pcs
1	Tool adapter 40-4-M6	P0183-038		1
2	Screw M5x16	21212519-329		5
3	Guide pin	CPK 4x14		2
4	Adaptation ring	P0183-101		1

3.7 Part list for Tool adapter kit, P5205



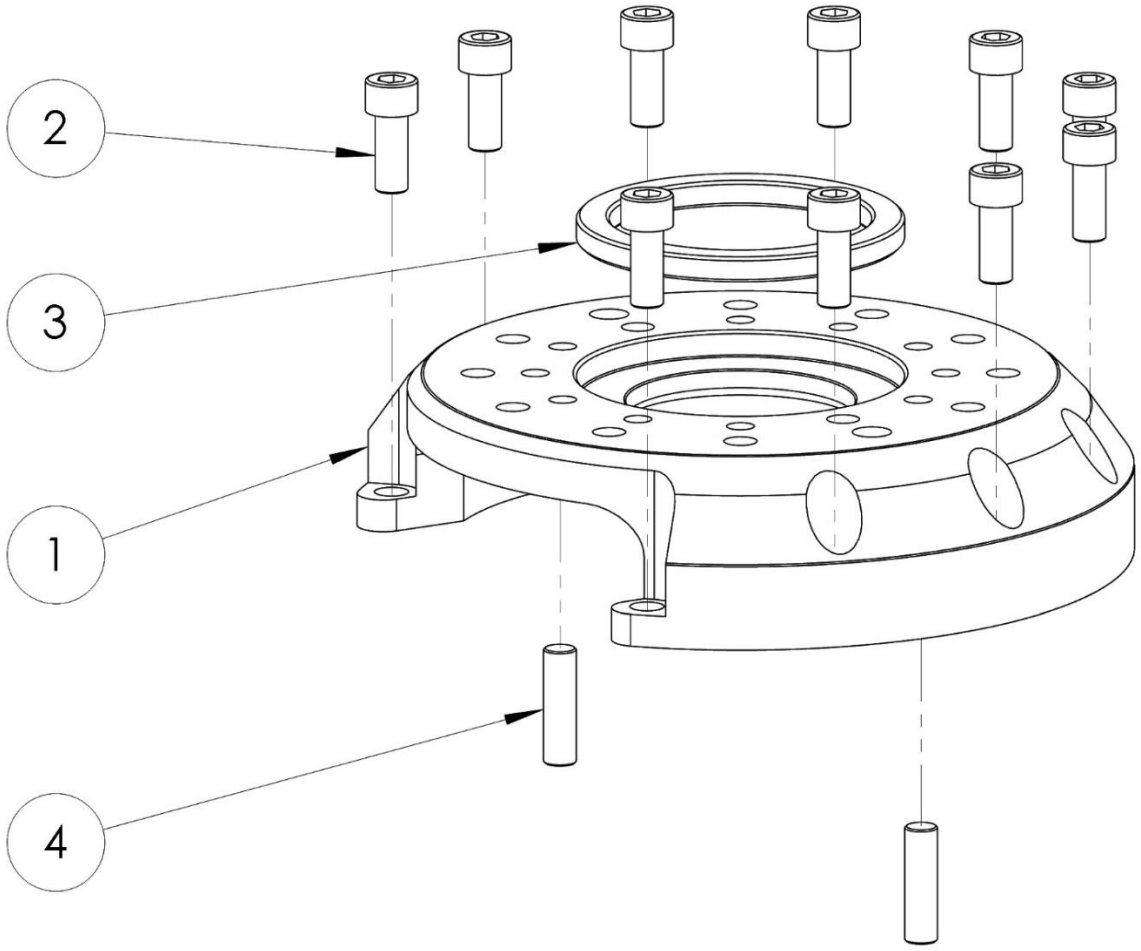
Item	Description	Part number	Wear part	Pcs
1	Tool adapter	P0183-053		1
2	Screw M6x20	21212519-370		10
3	Guide pin	CPK 6x20		2
4	Adaptation ring	P0183-081		1

3.8 Part list for Tool adapter kit, P5407



Item	Description	Part number	Wear part	Pcs
1	Tool adapter	P0183-057		1
2	Screw M6x20	21212519-370		10
3	Guide pin	CPK 6x20		2

3.9 Part list for Tool adapter kit, P5501



Item	Description	Part number	Wear part	Pcs
1	Tool adapter	P0183-130		1
2	Screw M10x25	21212519-493		10
3	Adaptation ring	P0183-137		1
4	Guide pin	CPK 10x36		2