
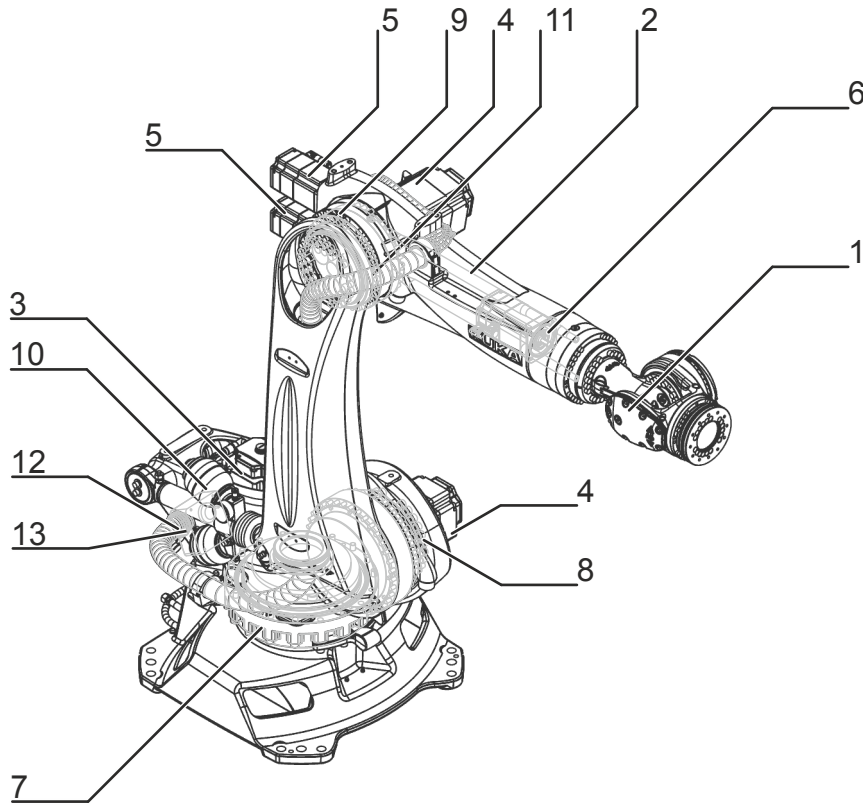


KUKA | Xpert

Identification number: AR34715

货号	0000-325-897
材料状态	10 - 批准预生产
制造商	KUKA Roboter
产品图片	

Spare parts



Spare parts graphic KR 210 R3100-2 , schematic representation

Pos.	Article number	Designation	Component	Work instruction
1	0000-336-010	SPP IW 300	In-line wrist	更换机器人腕部
2	0000-336-055	SPP shaft Quantec-2 970 COS	Connecting shaft	更换连接轴
3	0000-334-485	SPP motor 5.5kW L0 ME	Motor A1	Exchanging motor A1 更换轴 A2 的电机 更换轴 A3 的电机
4	0000-334-484	SPP motor 5.8kW L0 ME	Motor A2 Motor A3	更换轴 A2 的电机 更换轴 A3 的电机
5	0000-334-482	SPP motor 2.5kW L0 ME	Motor A4 Motor A5	更换轴 A4 的电机 更换轴 A5 的电机
6	0000-334-483	SPP motor 2.5kW L1 ME	Motor A6	更换轴 A6 的电机
7	0000-334-488	SPP gear unit RV-400CS i=256 (wo)	Gear A1	

Pos.	Article number	Designation	Component	Work instruction
	0000-334-491	SPP input shaft RV-400CS		Exchanging gear unit input shaft A1
	0000-334-492	SPP input seal RV-400CS		Exchanging input seal A1
8	0000-334-489	SPP gear unit RV-550N i=269 (wo)	Gear A2	
	0000-334-493	SPP input shaft RV-550N		Exchanging gear unit input shaft A2
	0000-334-494	SPP input seal RV-550N		Exchanging input seal A2
9	0000-334-490	SPP gear unit RV-500N i=252 (wo)	Gear A3	
	0000-334-495	SPP input shaft RV-500N		
	0000-334-496	SPP input seal RV-500N		Exchanging input seal A3
10	0000-311-666	CBS assy, type GA20	Counterbalancing system	更换平衡配重
11	0000-326-287	Cable set INT 084ST2900	Cable set	Exchanging the cable set
12	0000-254-559	Resolver Digital Converter RDC cool	RDC	
13	0000-236-267	Electronic Data Storage EDS Cool	EDS	
14	0000-106-814	Gauge cartridge IP67 (A20) short	Gauge cartridge	

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Maintenance information

Gear oil



The quantity of oil drained depends on the draining time and the oil temperature. The refilling quantity is the quantity of oil that was drained from the gear unit at the correct operating temperature and with the correct draining time. This oil quantity must be determined. Only this quantity of oil may be used when refilling.

If less than 70 % of the specified oil quantity flows out, flush the gear unit with the determined quantity of drained oil once, then pour in the amount of oil that was drained. If less than 50% of the specified oil quantity flows out (e.g. inclined installation), the flushing operation must be repeated twice. During the flushing procedure, move the axis at jog velocity throughout the entire axis range.

The oil quantities specified in the table correspond to the oil quantities in the gear unit at first filling.

Gear oil new filling quantity	
A1	5.70 l
A2	2.10 l
A3	1.40 l
A4	2.10 l
A5 / A6	1.90 l
Gear oil refilling quantity	
A1	-
A2	-
A3	-
A4	-
A5 / A6	-

Counterbalancing system

Gas pressure p0	156 bar
Oil pressure p1	176 bar

Technical data

Basic data

	KR 210 R3100-2
Number of axes	6
Number of controlled axes	6
Volume of working envelope	86.3 m ³
Pose repeatability (ISO 9283)	± 0.05 mm
Weight	approx. 1134 kg
Rated payload	210 kg
Maximum payload	281 kg
Maximum reach	3100 mm
Protection rating (IEC 60529)	IP65
Protection rating, in-line wrist (IEC 60529)	IP65 / IP67
Sound level	< 75 dB (A)
Mounting position	Floor
Footprint	754 mm x 754 mm
Hole pattern: mounting surface for kinematic system	S780
Permissible angle of inclination	≤ 5 °
Default color	Base frame: black (RAL 9005); Moving parts: KUKA orange 2567
Controller	KR C4
Transformation name	KR C4: KR210R3100_2 C4 FLR

Ambient conditions

Humidity class (EN 60204)	-
Classification of environmental conditions (EN 60721-3-3)	-
Ambient temperature	
During operation	0 °C to 55 °C (273 K to 328 K)
During storage/transportation	-40 °C to 60 °C (233 K to 333 K)

Axis data

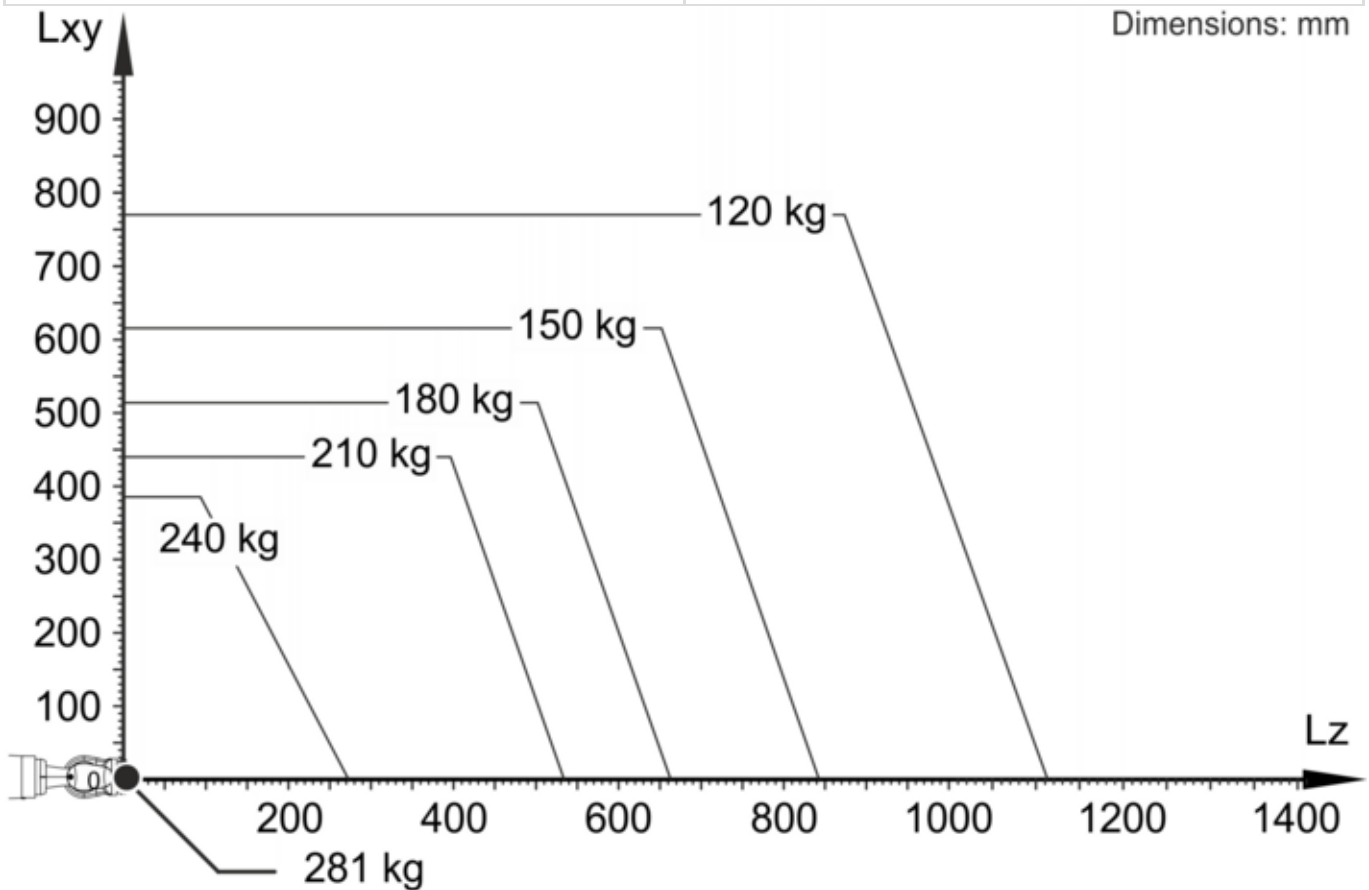
Motion range	
A1	±185 °
A2	-140 ° / -5 °
A3	-120 ° / 168 °
A4	±350 °
A5	±122.5 °
A6	±350 °
Speed with rated payload	
A1	105 °/s
A2	94 °/s
A3	100 °/s
A4	136 °/s
A5	129 °/s
A6	206 °/s



KR 210 R3100-2 , working envelope, overall

Payloads

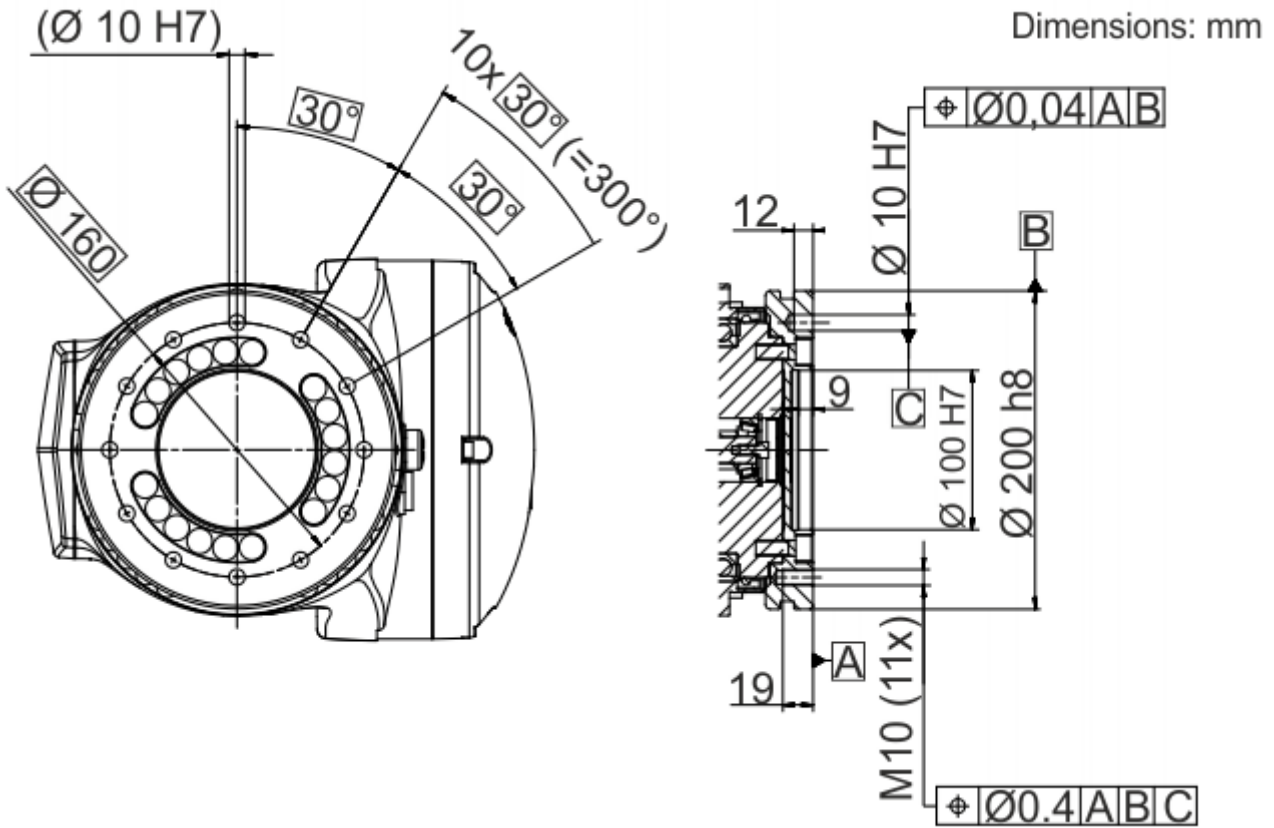
Rated payload	210 kg
Maximum payload	281 kg
Rated supplementary load, base frame	0 kg
Maximum supplementary load, base frame	0 kg
Rated supplementary load, rotating column	0 kg
Maximum supplementary load, rotating column	300 kg
Rated supplementary load, link arm	0 kg
Maximum supplementary load, link arm	130 kg
Rated supplementary load, arm	50 kg
Maximum supplementary load, arm	150 kg



KR 210 R3100-2 , payload diagram

Mounting flange

In-line wrist type	ZH300
Mounting flange	see drawing



Mounting flange D=160

Foundation loads

Vertical force F(v)	
F(v normal)	18164 N
F(v max)	24033 N
Horizontal force F(h)	
F(h normal)	7626 N
F(h max)	20063 N
Tilting moment M(k)	
M(k normal)	22790 Nm
M(k max)	38237 Nm
Torque about axis 1 M(r)	
M(r normal)	7817 Nm
M(r max)	17833 Nm

Vertical force F(v), horizontal force F(h), tilting torque M(k), torque about axis 1 M(r)

Process forces

Process forces are forces that are exerted on the robot in a defined manner by an external influence. Causes include pressing processes and machining tasks carried out by the robot. The process forces that the robot can withstand depend to a very great degree on the robot position, payload, direction and duration of action. For this reason, it is not possible for a simple limit value to be specified for permissible process forces.

Permissible process torques are therefore specified for all axes of the robot. These values indicate the torque that each robot axis can withstand on a sustained basis as a result of external forces.

The following load torques must not be exceeded:

A1	5000 Nm
A2	6300 Nm
A3	6300 Nm
A4	1650 Nm
A5	1650 Nm
A6	1000 Nm

Flange loads

Flange loads

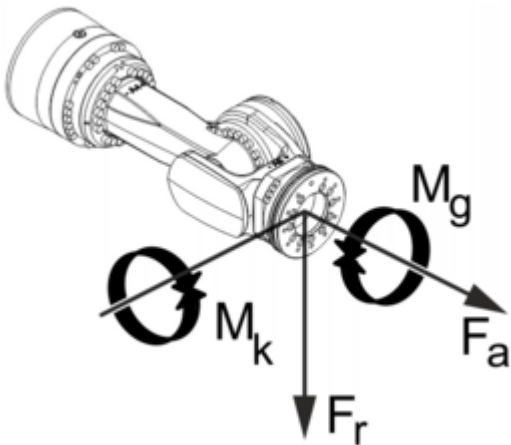
Due to the motion of the payload (e.g. tool) mounted on the robot, forces and torques act on the mounting flange. These forces and torques depend on the motion profile as well as the mass, load center of gravity and mass moment of inertia of the payload.

The specified values refer to nominal payloads at the nominal distance and do not include safety factors. It is imperative for the load data to be entered in the robot controller. The robot controller takes the payload into consideration during path planning. A reduced payload does not necessarily result in lower forces and torques.

The values are guide values determined by means of trial and simulation and refer to the most heavily loaded machine in the robot family. The actual forces and torques may differ due to internal and external influences on the mounting flange or a different point of application. It is therefore advisable to determine the exact forces and torques where necessary on site under the real conditions of the actual robot application.

The operating values may occur permanently in the normal motion profile. It is advisable to rate the tool for its fatigue strength.

The EMERGENCY STOP values may arise in the event of an Emergency Stop situation of the robot. As these should only occur very rarely during the service life of the robot, a static strength verification is usually sufficient.



Flange loads

Flange loads during operation	
F(a)	5127 N
F(r)	4555 N
M(k)	3410 Nm

M(g)	1649 Nm
Flange loads in the case of EMERGENCY STOP	
F(a)	8571 N
F(r)	11250 N
M(k)	6393 Nm
M(g)	5225 Nm

Axial force $F(a)$, radial force $F(r)$, tilting torque $M(k)$, torque about mounting flange $M(g)$

轨迹精度

线性运动的轨迹精度:

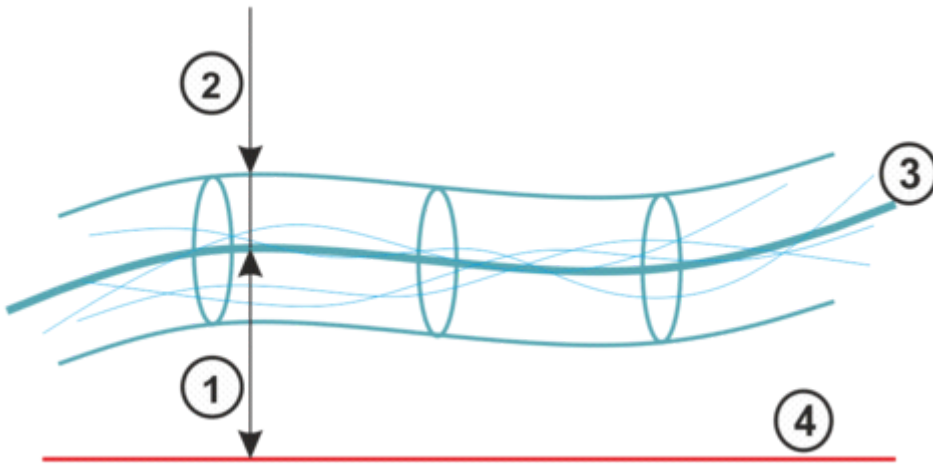
LIN 轨迹绝对精度 (ISO 9283)	$\pm 1.1 \text{ mm}$
SLIN 轨迹绝对精度 (ISO 9283)	$\pm 0.9 \text{ mm}$
轨迹重复精度 线性 (ISO 9283)	$\pm 0.2 \text{ mm}$

该数据针对的是 1 m/s 的参考速度。

圆周运动的轨迹精度:

CIRC 轨迹绝对精度 (ISO 9283)	$\pm 1 \text{ mm}$
SCIRC 轨迹绝对精度 (ISO 9283)	$\pm 0.8 \text{ mm}$
圆周轨道重复精度 (ISO 9283)	$\pm 0.2 \text{ mm}$

该数据针对的是 0.5 m/s 的参考速度。



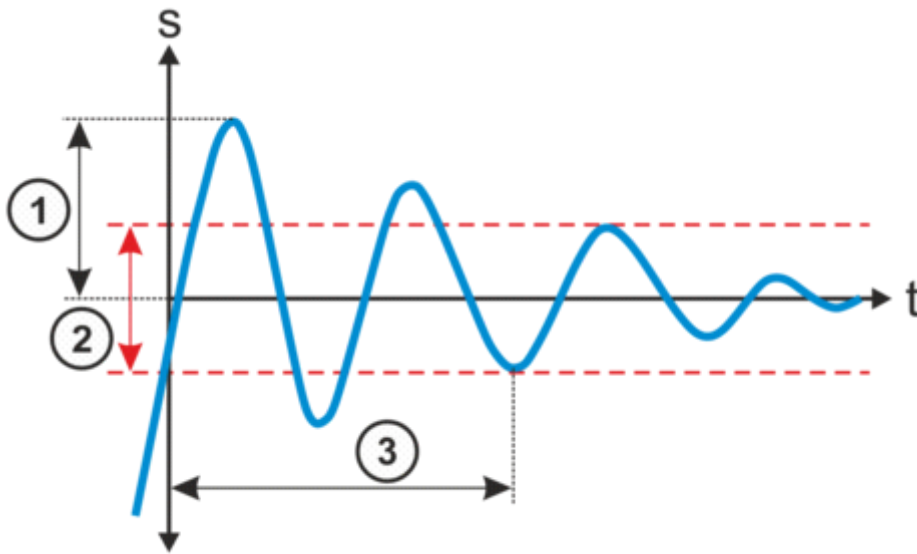
轨迹精度

1	轨迹绝对精度	3	运行轨迹的平均值
2	轨迹重复精度	4	编程的轨迹

- 轨迹精度表示机器人在编程的轨迹上运动的能力。
- 轨迹重复精度表示 10 个运行轨迹与运行轨迹平均值的偏差。

超调状态

振幅	0.5 mm
定位时间	0.6 s



超调状态

1	超调振幅	3	定位时间
2	公差范围		

- 超调振幅影响机器人在特定位置执行受控的精确暂停的能力。
- 定位时间表示机器人在特定位置上停止的速度。

更多的信息

- 给出的数据基于 ISO 9283，并使用 Krypton/Metris 的基于摄像机的系统测得。因此重复精度被定义为 3 sigma 值。
- 所有数值均以额定负载测得。

关税信息

统计货号	84795000
原产地	DE
制造商	KUKA Roboter
重量	1134 kg

- > **KR 210 R3100-2** 需要 (8)
- > **KR 210 R3100-2** 带有如下的工具 (26)
- > **KR 210 R3100-2** 带有如下的备件 (17)
- > **KR 210 R3100-2** 有以下选项 (59)