

Product Data Sheet

Robax-200 Precision Tilting, Indexing Turntable

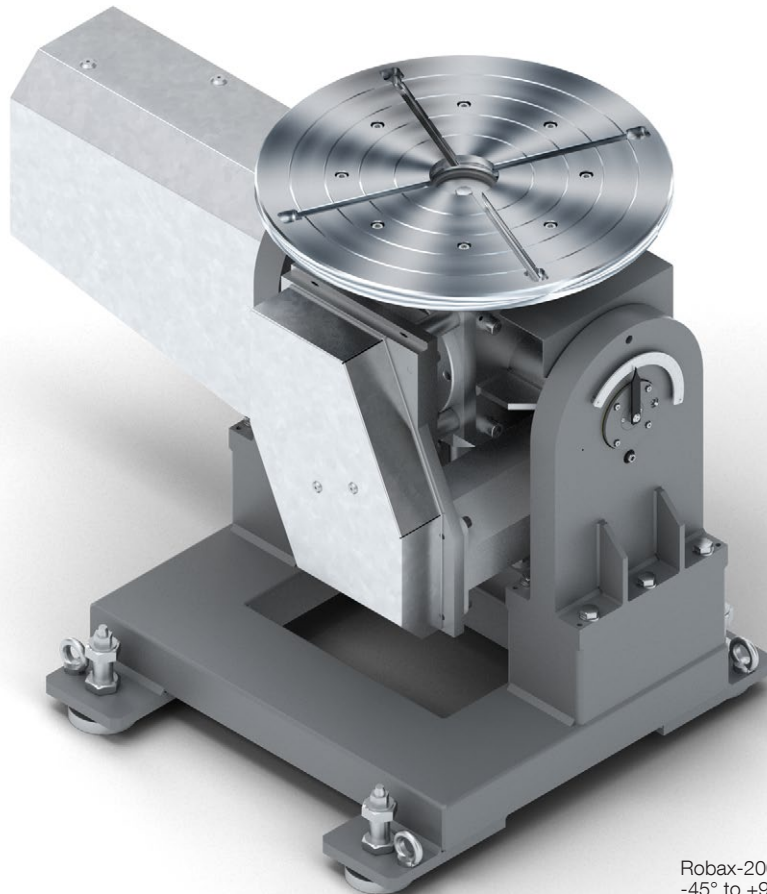
The Robax™-200 is a two-axis, high-precision tilting and indexing turntable designed to withstand the rigors of thermal spray processing. Robax-200 is designed to precisely, accurately and repeatedly position parts with very fast dynamic response. Robax-200 is designed for operation as a robot axis as part of the robotic motion program.

The Robax-200 Tilting Turntable is designed to hold rotationally symmetrical workpieces such as shafts, turbine parts or other workpieces that must be rotated or positioned during the coating process.

The Robax-200 can handle parts as heavy as 200 kg (440 lb) and has tilting capability from -45° to $+90^{\circ}$. It can index and position with an accuracy of $\pm 0.1^{\circ}$. The direction of rotation can be either clockwise or counterclockwise.

The Robax-200 is modular in its design. Aluminum face plates can be purchased in various sizes and configurations. In addition, options are available to expand the functionality of the Robax-200.

The rotary and tilting axes are completely integrated and recognized as robotic axes. This makes the Robax-200 suitable for a wide variety of applications. Thus, the rotational and tilt movements of the Robax-200 are coordinated with the robot movements, allowing even geometrically complex surfaces to be coated.



Robax-200
 -45° to $+90^{\circ}$
Shown at 0° Tilt

1 General Description

1.1 Construction

The Robax-200 consists of the following main components:

1. Chassis
2. Rotation unit
3. Tilt unit
4. Face plate

Rotational and tilt movements are controlled, allowing for accurate and fast rotation and positioning of the workpiece. Various rotational drives are available, depending on the robot used. The rotation and the tilt drive of -45° to $+90^{\circ}$ is designed for robotic integration.

Clockwise or counterclockwise rotary motion of the turntable is direct drive with fast dynamic positioning. Depending on the control system, the rotary motion can stop, change direction or speed almost instantaneously for inertial moments up to $10 \text{ kg}\cdot\text{m}^2$ ($237.3 \text{ lb}\cdot\text{ft}^2$) while normal operation handles up to $90 \text{ kg}\cdot\text{m}^2$ to ($2135.7 \text{ lb}\cdot\text{ft}^2$).

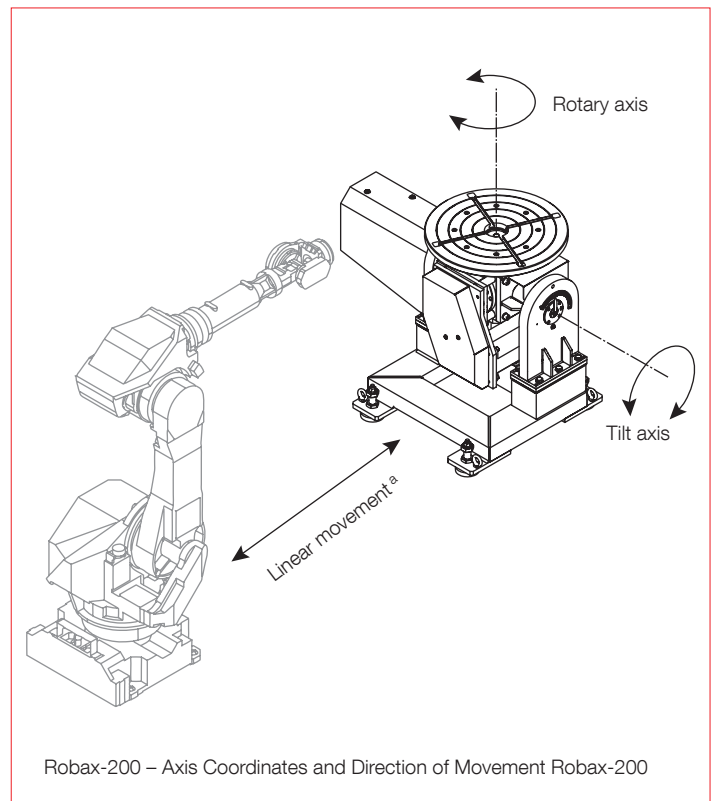
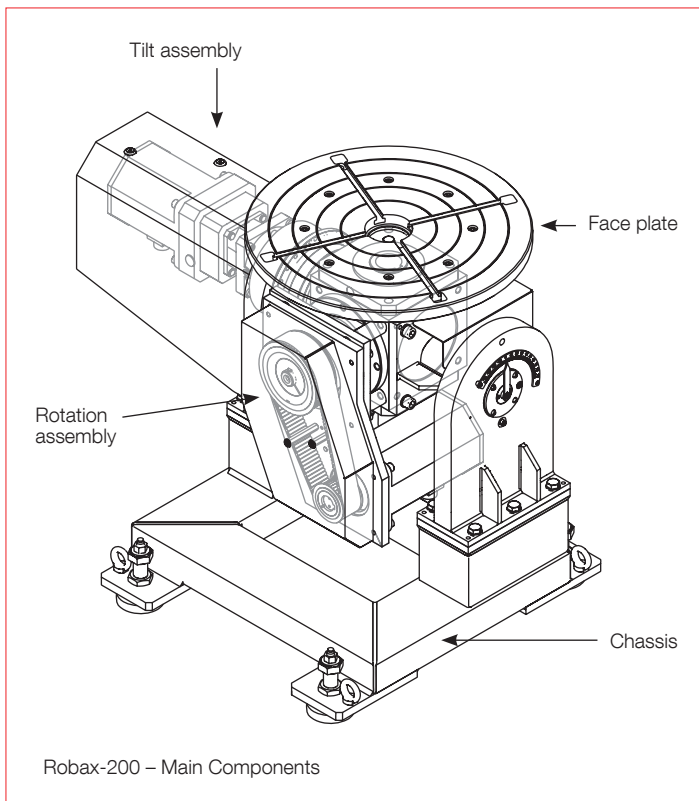
The standard face plate is made of aluminum and precision manufactured with DIN T-slots for holding the workpiece. Other face plate configurations are available on request.

1.2 Operating Modes

The rotary and tilting axes are coordinated with the robot. The specific modes are:

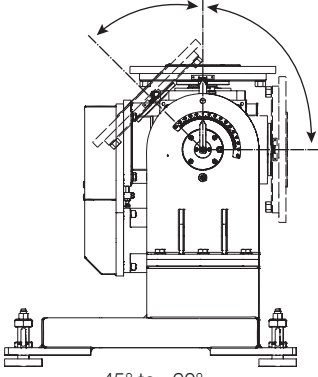
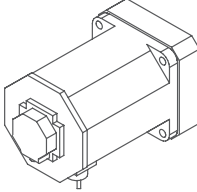
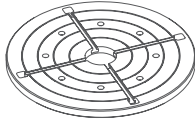
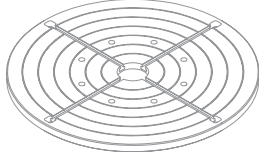
- Positioning at a predefined angle. The angle of the face plate is coordinated with the movement of the robot axes.
- The face plate rotated at a predefined speed. The robot controller starts the motion program at a predefined speed. The robot software allows a free choice of speeds.

The movement of the rotary and tilting axes can be programmed in either “teach” or off-line mode, depending on the control mode.



^a With optional linear track

1.3 Overview of Configuration Options

Tilt Range	Rotational Drive	Face Plates	
 <p data-bbox="209 748 320 770">-45° to +90°</p>	 <p data-bbox="512 667 778 770">Rotational and tilt drive motors for: ■ ABB Robots (Siemens drive) ■ FANUC Robots ■ Yasakawa Robots</p>	 <p data-bbox="863 667 1090 741">4 DIN T-Slots Ø 600 mm (23.6 in) Aluminum: 22 kg (48 lb)</p>	 <p data-bbox="1193 667 1433 741">4 DIN T-Slots Ø 800 mm (31.5 in) Aluminum: 60 kg (132 lb)</p>

Note: Weight of the face plate must be subtracted from the total load bearing capacity of the turntable to get the maximum allowable part weight.

2 Features and Benefits

Effective

- Stable rotational part handling for thermal spray systems
- Allows clockwise or counterclockwise rotation, indexing and tilt
- Dynamic positioning allows rapid change of rotation direction or speed
- Optional face plates available to suit specific part handling requirements

Efficient

- Accepts parts as heavy as 200 kg (440 lb)
- Positioning accuracy within $\pm 0.1^\circ$
- Maximum moment of inertia of $90 \text{ kg}\cdot\text{m}^2$ (2135.7 $\text{lb}\cdot\text{ft}^2$), depending on the control system used
- Tilt angle between -45° and $+90^\circ$ with accuracy of $\pm 0.1^\circ$
- Robot teaching tool allows quick set up of motion program and aids in calibration

Economical

- Long life parts require little to no maintenance with bearings designed to last for 16,000 hours
- Modular construction allows for simple and cost-effective upgrades and changes

Environmental

- Zero-speed monitoring warns operator if the motor is turning but the face plate is not turning
- Over-tilt monitor prevents the turntable from tilting beyond its specified range
- Heavy-duty anchor system prevents tipping and ensures perfect stability
- Full integration into the E-stop circuit of the thermal spray system ensures operator safety

3 Options and Accessories

Oerlikon Metco also offers a wide range of additional options and accessories, as well as customized features on request. Please refer to the product manual and the parts list for a complete list of spare parts.

Manual chuck attachment

The manual chuck attaches to the faceplate for easy mounting and coating of small, rotationally symmetrical workpieces.

Manual chuck

Chuck capacity	5 to 250 mm	0.19 to 9.84 in
max. workpiece mass	50 kg	110.23 lb
max. mass moment of inertia	0.75 kg·m ²	17.8 lb·ft ²

High-speed chuck attachment

The high-speed chuck attachment allows workpieces to be coated at higher rotational speeds.

High speed chuck attachment

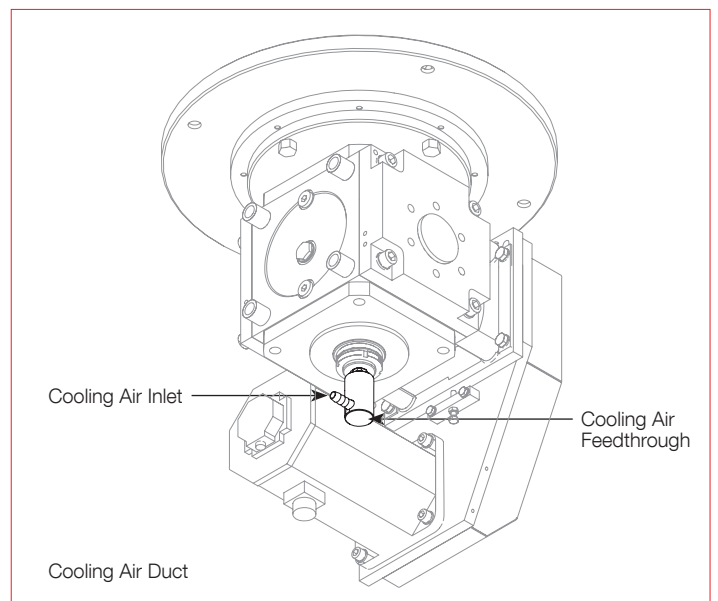
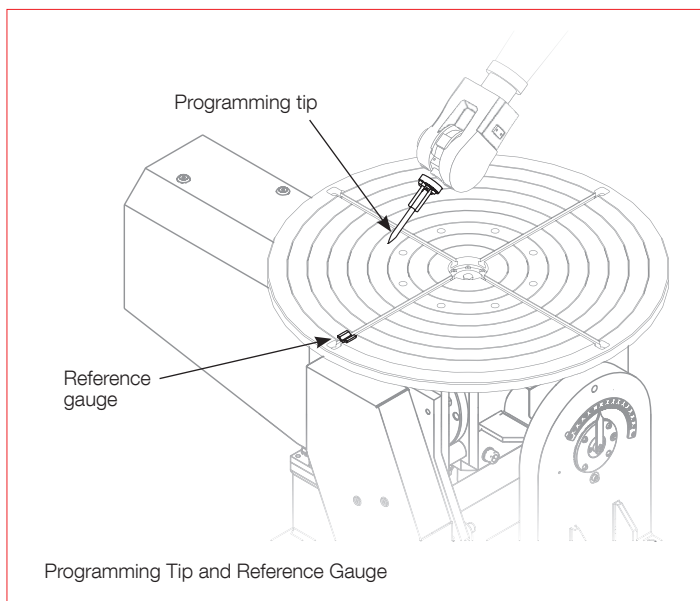
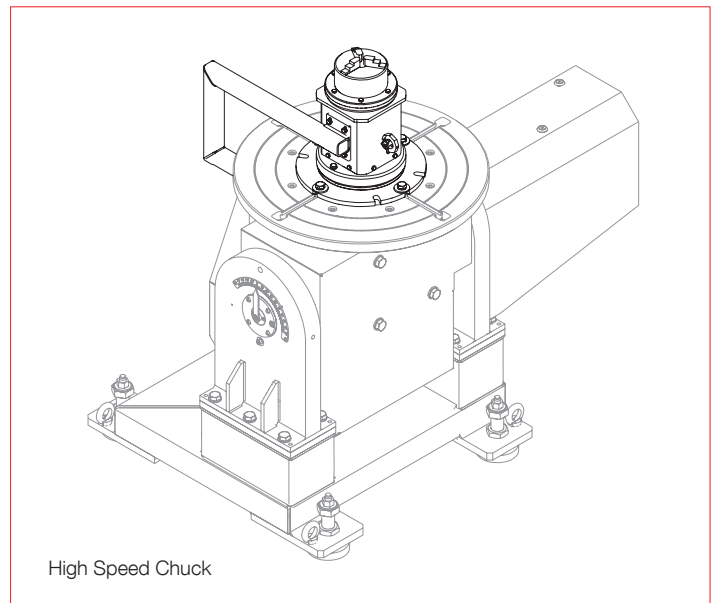
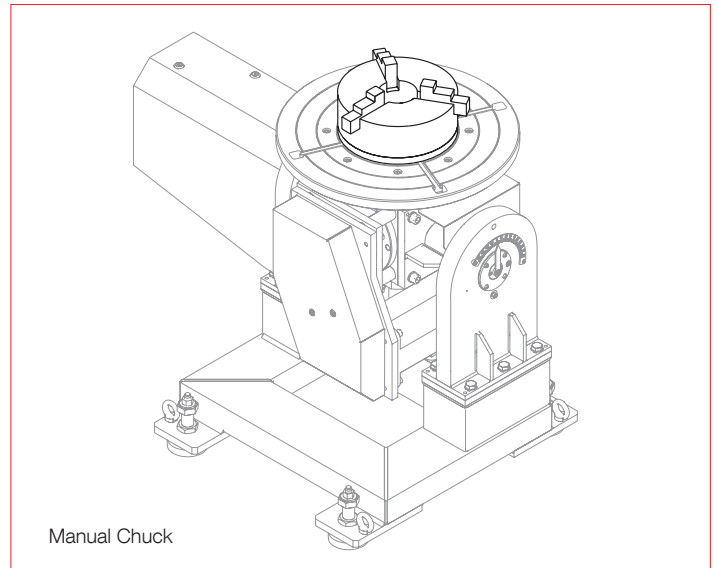
Rotational speed	35 to 2100 rpm	
Chuck capacity	3 to 125 mm	0.12 to 4.92 in
max. load (depending on rpm)	25 kg	55.12 lb
max. mass moment of inertia	0.075 kg·m ²	1.78 lb·ft ²

Programming Tip and Reference Gauge

The programming tip and reference gauge locate the position of the turntable face plate within the coordinate system of the robot.

Cooling Air Duct

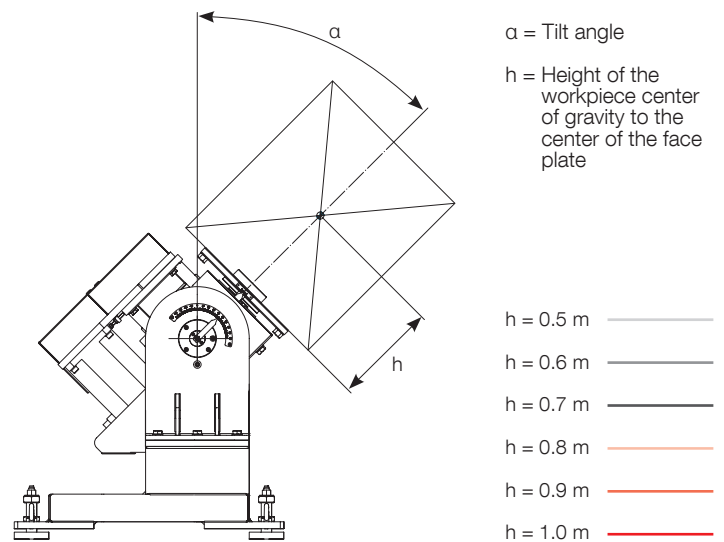
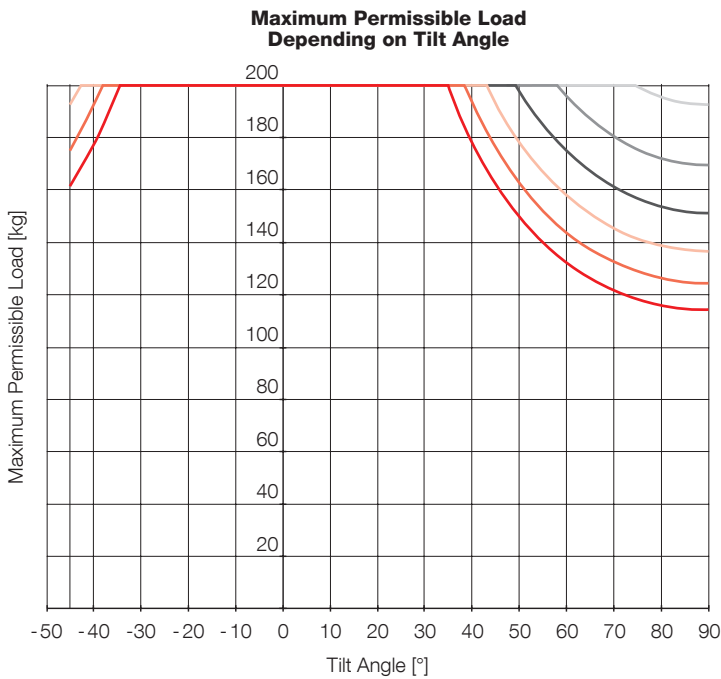
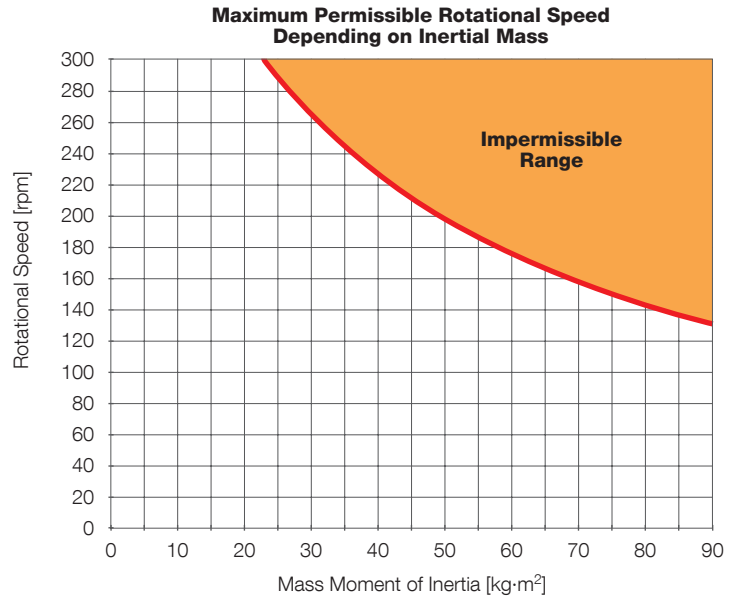
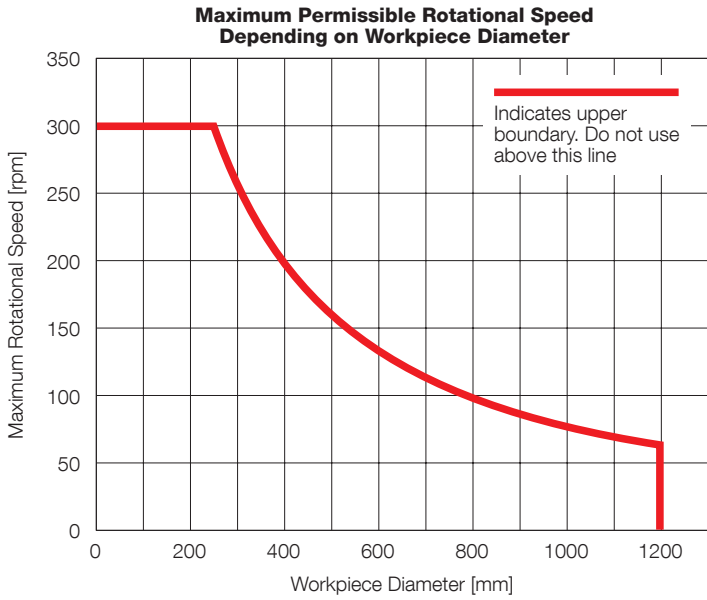
The optionally available cooling air duct provides inner workpiece cooling.



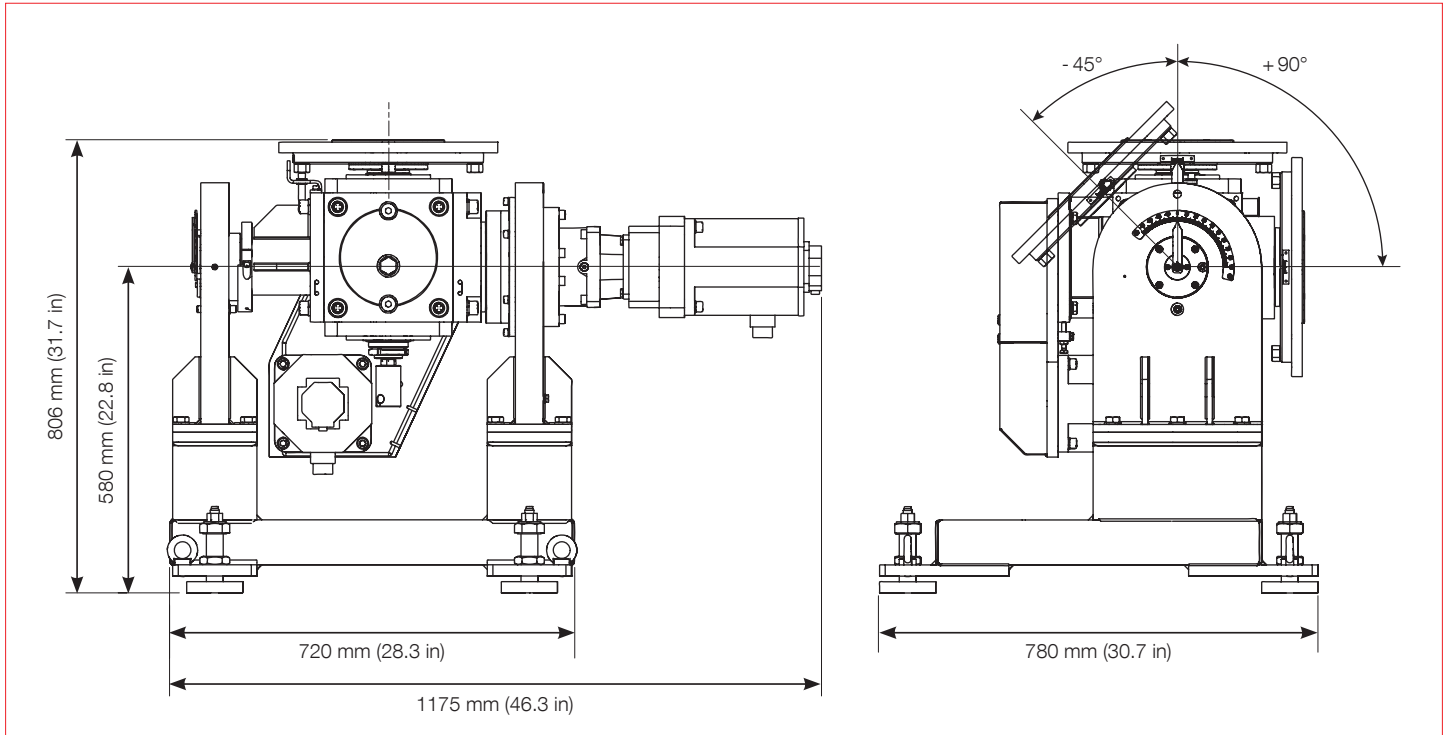
4 Technical Data

4.1 Operating Regions

These diagrams indicate maximum permissible operating conditions.



4.2 Dimensions



4.3 Specifications

Weight and Payload

Total Weight	490 kg	1080 lb
Max. Payload ^a	200 kg	440 lb
Max. Moment of Inertia About the Rotational Axis ^b	90 kg·m ²	2135.7 lb·ft ²
Installation Type	heavy duty ground anchors	

Axes

Rotational		
Min. Face Plate Rotational Speed ^b	5 rpm	
Max. Face Plate Rotational Speed ^{b, c}	300 rpm	
Rotational Speed Precision ^b	± 1°/min	
Max. Acceleration ^b	19 rpm/s	
Positioning Precision ^b	± 0.1°	
Indexing Precision ^b	± 0.1°	
Max. Allowable Motor Axis Torque	35 N·m	25.8 lbf·ft
Tilt Motion		
Tilt Range	- 45° to + 90°	
Tilt Speed ^b	10°/s	
Max. Allowable Tilt Axis Torque	1600 N·m	1180 lbf·ft
Tilt Positioning Accuracy ^b	± 0.1°	
Tilt Positioning Repeatability ^b	± 0.1°	
Max. Allowable Motor Axis Torque	5 N·m	3.7 lbf·ft
Drive Data ^d		
Nominal Face Plate Rotational Drive Torque	26.4 N·m	19.5 lbf·ft
Nominal Face Plate Tilt Drive Torque	5.5 N·m	3.3 lbf·ft
Power Consumption	5.5 kW	
Environmental Conditions		
Temperature	+10 to +40 °C	+50 to +104 °F
Humidity	< 75 %; non-condensing	

^a See section 4.1 Operating Regions for limitations

^b Depending on the control system

^c Applicable for ABB IRB 4600, IRB 6620 and IRB 6700 series robots. For ABB IRB 1600 and ABB IRB 2600 series robots, the maximum rotational speed is limited to 250 rpm; please contact Oerlikon Metco for the maximum rotational speed using other robotic systems

^d With FANUC motors