

## PacDrive™

### Robot D2

ultra light and fast 3-axis Pick and Place Robot

The ultra light and fast 3-axis Pick and Place Robot PacDrive Robot D2 is the ideal supplementation for the PacDrive System.

As a reliable device for Pick and Place applications, it transports products with high precision from the pick-up point to the destination. At the same time, it is extremely quiet but still exceptionally dynamic. The PacDrive Robot D2 operates with 2 degrees of freedom. Optional, with a rotational axis on the Tool Center Point (TCP), 3 degrees of freedom are possible.

With the integration of the PacDrive Robot D2 into the PacDrive device family, a customized hardware solution for the Robotic Library is available.

The drives in service are SH-Motors. This way, all the required functions are provided via one combined controller. Even complex tasks are solvable with a clear and simple mechatronic concept.

The technical data at a glance:

- High Precision
- High Dynamic
- Standard components for the mechanics and drives
- Pre-Assembled and ready for connection
- Calibrated by the manufacturer
- Low maintenance with high power rating
- Compact form wall-mounted
- Protection class up to IP 55
- ISO flange



### **Corporate information**

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# 1 Technical Data

|  | Abbreviation<br>[unit] | D2   |
|--|------------------------|--|
| <b>General data</b>                                    |                        |  |
| Actual load  | [kg]                   | Max. 25<br>on the axis of rotation max. 10 |
| Max. speed   | [m/s]                  | 4  |
| Max. acceleration                                      | [m/s <sup>2</sup> ]    | 18   |
| Repetitive accuracy                                    |                        |  |
| - Position   | [mm]                   | ±0.5                                       |
| - Angle  | [°]                    | ±0.1                                       |
| Number of axes   |                        | 2 (3*)                                     |
| Angle range  |                        |  |
| - A1, A2   |                        | -32° to +95°                               |
| - A3*  |                        | ∞  |
| A3* maximum torque                                     | [Nm]                   | 22   |
| <b>Electrical data</b>                                 |                        |  |
| Mains voltage  | U [V]                  | 3AC 400                                    |
| Motor  |                        | SH100                                      |
| <b>Mechanical data</b>                                 |                        |  |
| Weight   | M [kg]                 | 85   |
| Mounting   |                        | 6 x M12 6.9                                |
| Work area  |                        |  |
| - Vertical   |                        | 342  |
| - Horizontal   |                        | 1000                                       |
| <b>Ambient conditions</b>                              |                        |  |
| Protection class                                       |                        | IP 55                                      |
| Ambient temperature                                    | T [°C]                 |  |
| - During operation                                     |                        | +5 to +45                                  |
| - During storage and transport                         |                        | -25 to +60                                 |
| Noise level  | [dB(a)]                | <70  |
| Relative humidity                                      | [%]                    | 90   |
| Approval (in preparation)                              |                        | CE, UL, cUL                                |
| * optional, rotational axis at Tool Center Point (TCP) |                        |  |

Table 1-1: Technical data

## 2 Model



*Figure 2-1: Model of the PacDrive D2*

## 3 Dimensions

### Mounting

Use 6 type M12 6.9 bolts in order to mount the robot. The exact length of the bolts used depends on the mounting location. The tightening torque of an M12 6.9 bolt is 71 Nm. The transparent area shown in figure 3-1 may be used to support the frame.

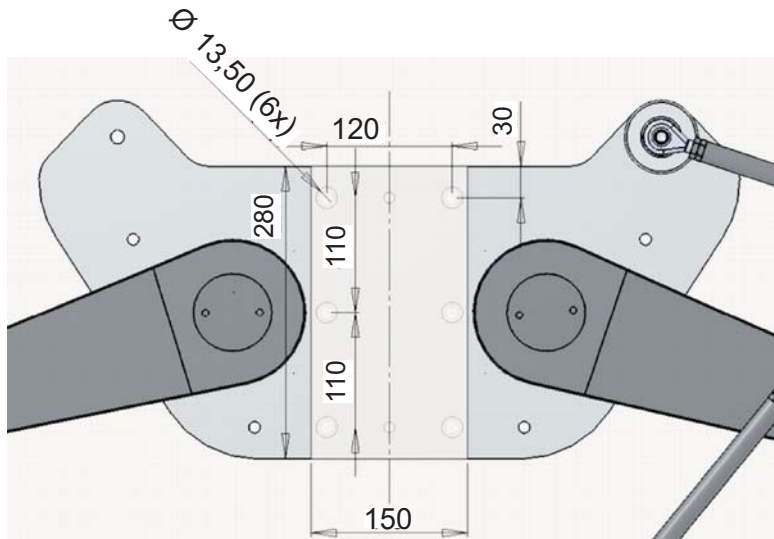


Figure 3-1: Mounting PacDrive Robot D2

### Installation

In order to prevent damage to the robot, you must maintain the minimum separation of 60 mm (as show in figure 3-2) when installing the robot.

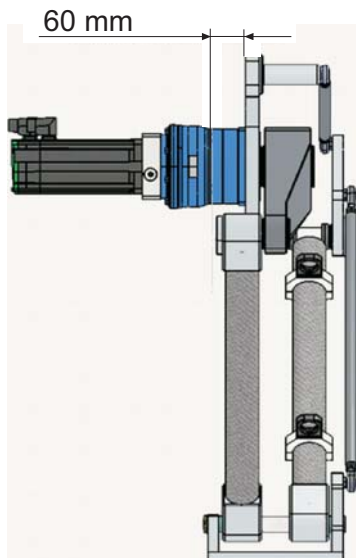


Figure 3-2: Minimum separation when installing the robot.

Workspace and collision zone

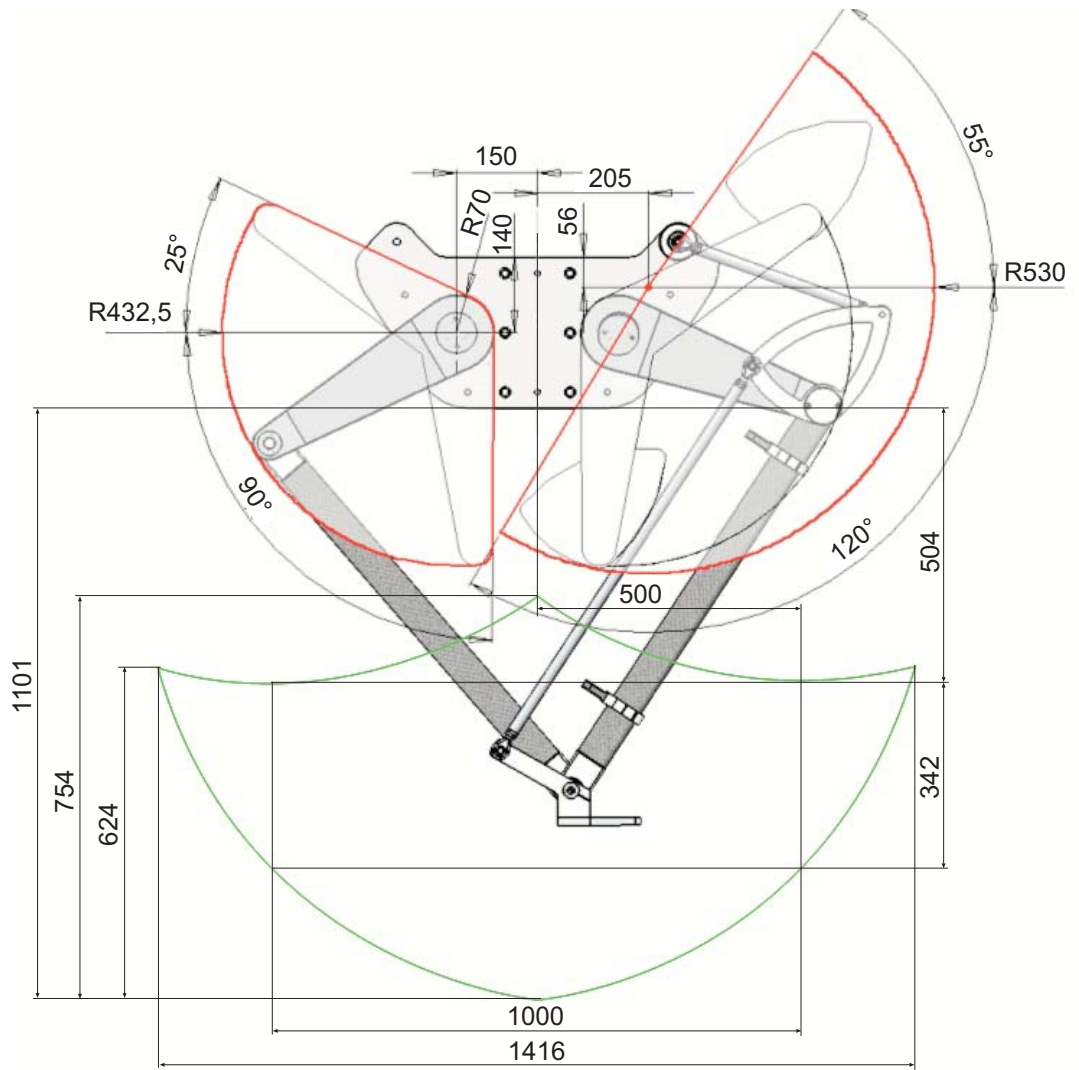


Figure 3-3: The robot's workspace (green) and collision zone (red)

## Gripper

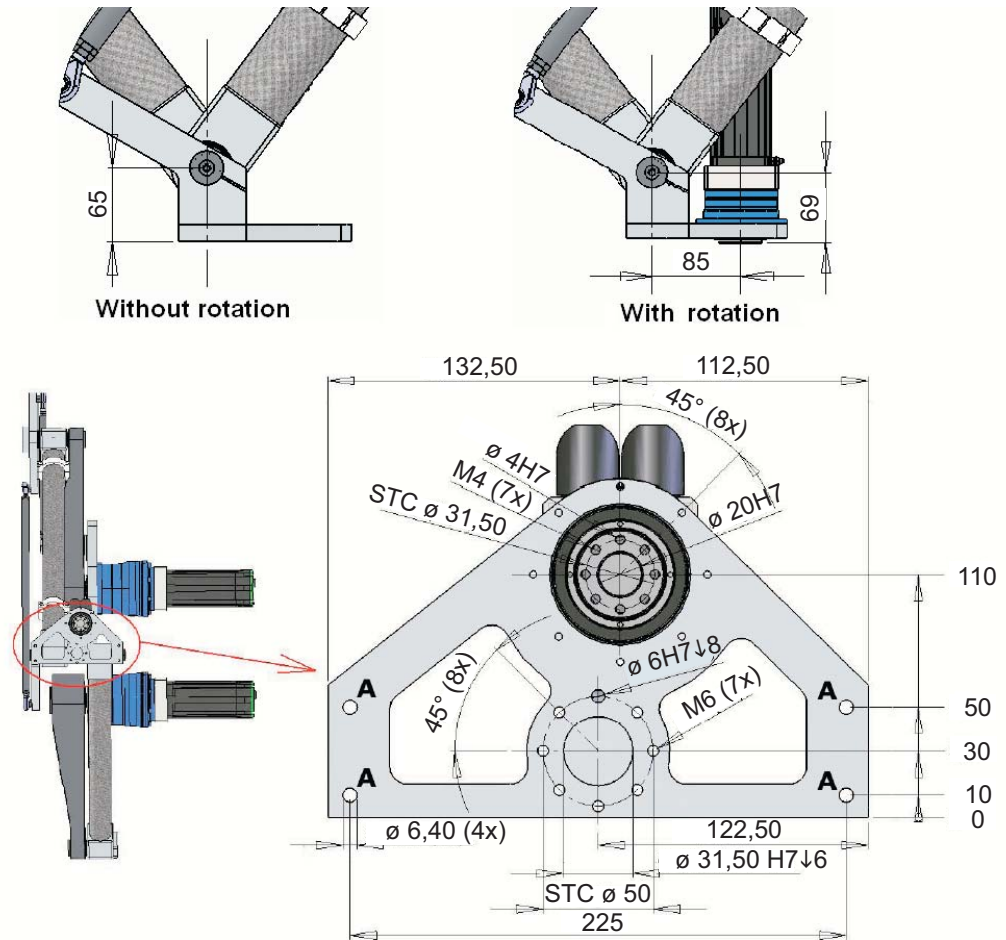
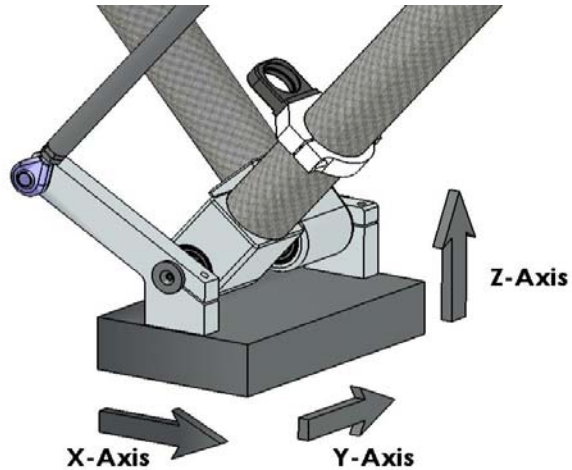


Figure 3-4: Measurements of the robot

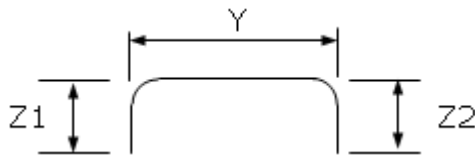
## 4 Performance depending on the flange design

The following figures show the capacity of the robot mechanics.



### Maximum cycle capacity of the robot mechanics

| Path motion Z1-Y-Z2 *) | Actual load < 5 kg | Actual load < 10 kg | Actual load < 25 kg |
|------------------------|--------------------|---------------------|---------------------|
| 50 x 300 x 100         | 50 cycles/min.     | 35 cycles/min.      | 30 cycles/min.      |
| 150 x 400 x 250        | 45 cycles/min.     | 30 cycles/min.      | 25 cycles/min.      |
| 200 x 500 x 300        | 35 cycles/min.     | 25 cycles/min.      | 22 cycles/min.      |

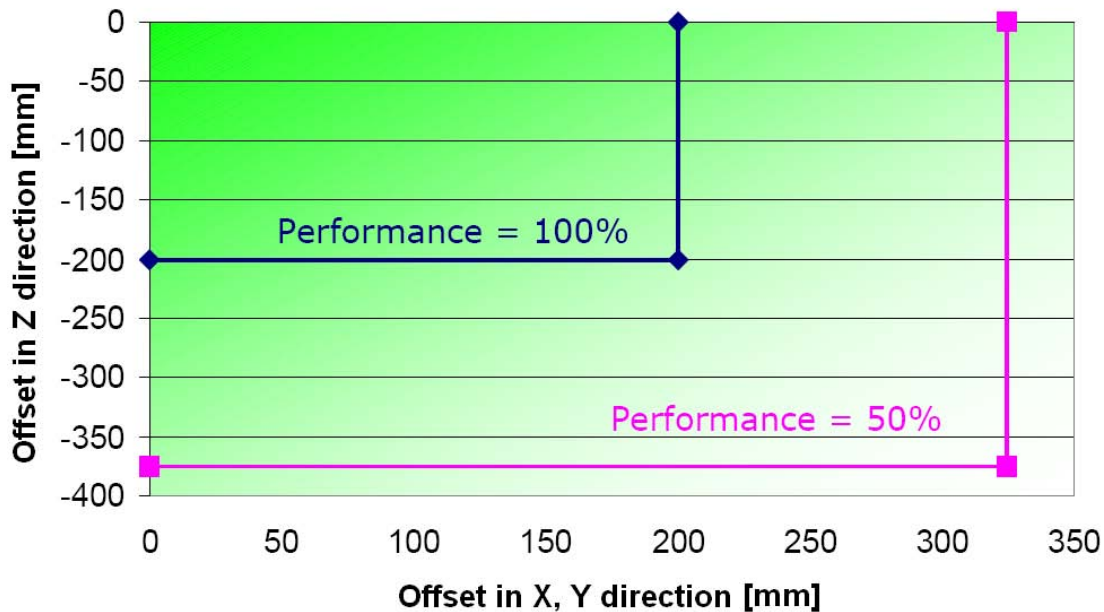


\*) The path motion refers to a complete cycle: Pick- Place - Pick.

Table 4-1: Cycles/minute

### Capacity depending on the distance of the mass center of gravity of the actual load from the flange

As the separation of the actual load's center of gravity from the center of the flange increases, the cycle capacity at the same actual load decreases.



**Rotating axis**

There are a number of additional limitations related to the options for attaching or retrofitting a robot with a rotating axis. When doing so, observe the limitation of the weight depending on the deviation of the mass center of gravity, as is shown in the diagram. The rated output torque of the servo gear combination is 22 Nm.

The figure shows the maximum separation of the mass center of gravity from the center of the flange at the given loads. The values that are shown apply for an acceleration of 1G. Additional maximum deviations can be derived from the graphic.

