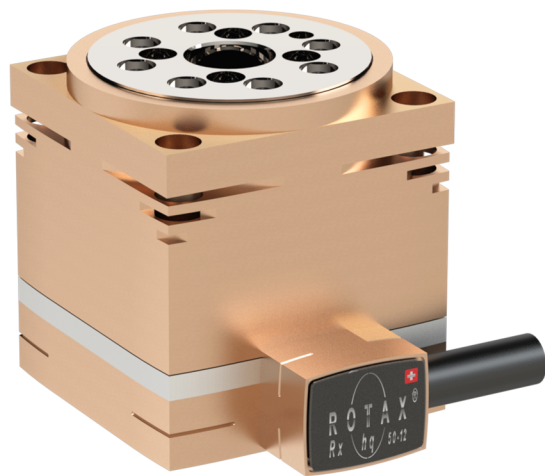


**Data Sheet**  
**ROTAX® Rxhq 50-12T0.3**

Edition March 2025

**Compact Hollow Shaft Motor**  
**ROTAX® Rxhq = high torque**



**Highlights**

Compact direct drive with high torque  
up to 1'020mNm (*9.03 lbf-in*)

Flexible positioning with a repeatability of  
down to  $\pm 1$  arcsec

Single-turn absolute encoder

Large hollow shaft with a diameter of  
12mm (*0.47"*)

No wear and tear, the direct drive ensures  
maximum precision over the entire service  
life

Variable one-cable connection to XENAX®  
in 90° grid orientation

Torque limitation and torque monitoring  
with XENAX® servo controller

### **General**

The self-developed direct drive servo motor is based on the magnetic flux technology of wind turbine generators.

This generates a high torque at low speed.

In figures this means a factor 2-3 higher torque with the same construction volume compared to a conventional direct drive of competitors.

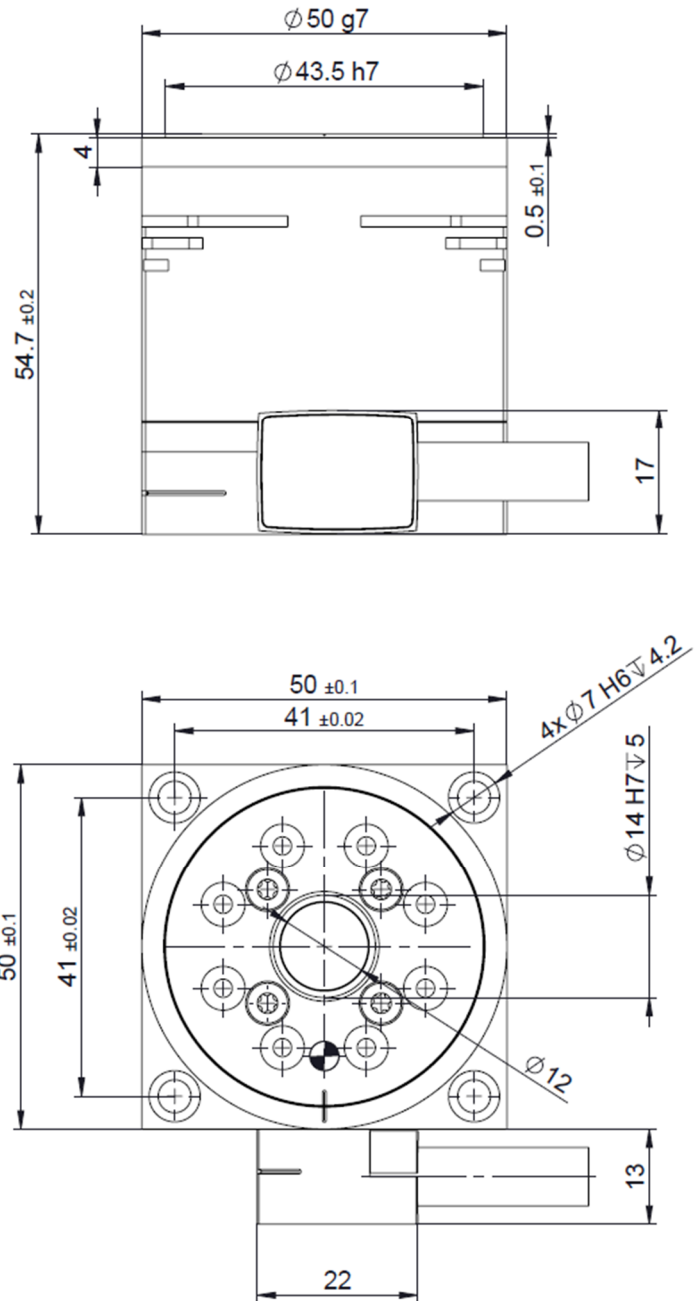
Alois Jenny  
Jenny Science AG

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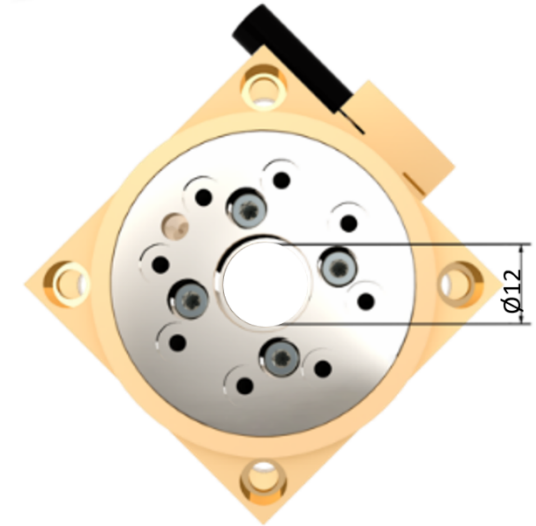
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### 1 Dimension ROTAX® Rxhq 50-12T0.3

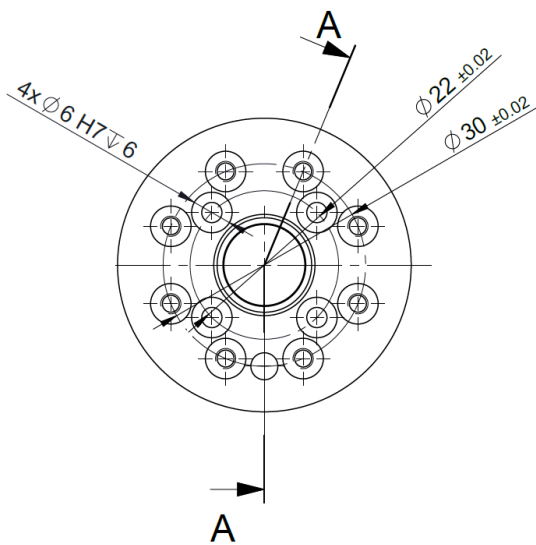
#### 1.1 Installation dimension



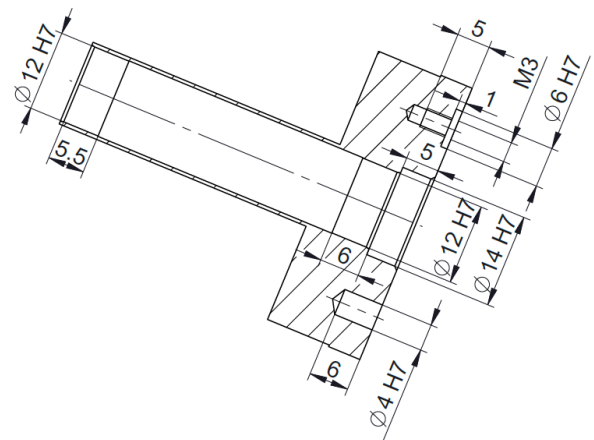
## 1.2 Hollow shaft



### 1.2.1 Front flange dimensions

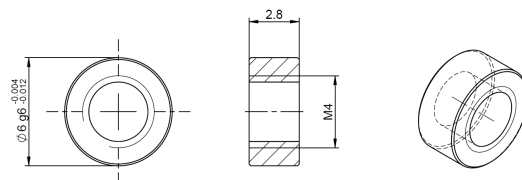


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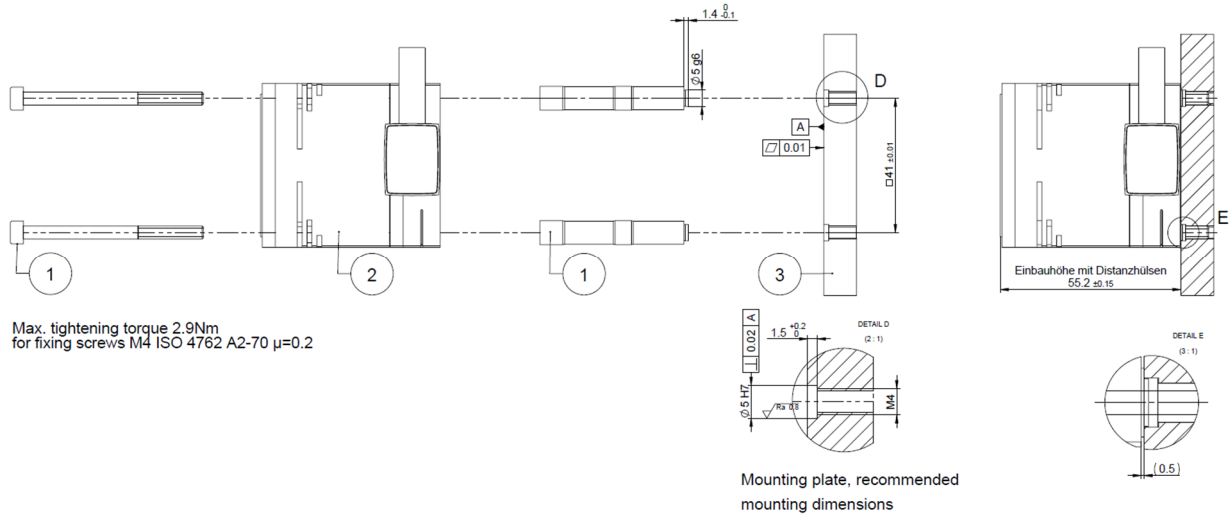
### 1.2.2 Centering rings

Centering rings for boreholes  $\text{Ø}6\text{H}7 \times 1$  in  
Pitch circle diameter 30



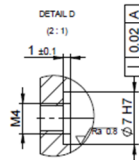
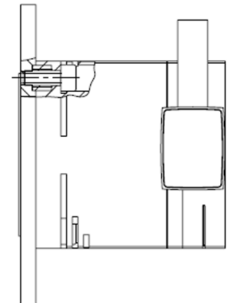
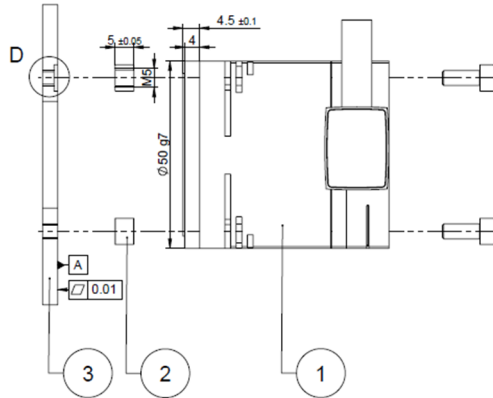
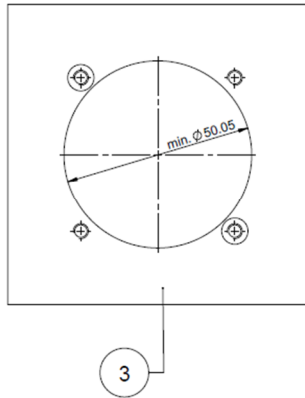
### 1.3 Installation options

#### 1.3.1 Installation rear side with distance sleeves



Pos.	QTY	Designation
1	4	Fixing screws with distance bushings ROTAX® Rxhq 50-12
2	1	ROTAX® Rxhq 50-12
3	1	Mounting plate, customer

1.3.2 Installation flange side with centering ring



Max. tightening torque 2.9Nm  
for fixing screws M4 ISO 4762 A2-70  $\mu=0.2$

Mounting plate, recommended  
mounting dimensions

Pos.	QTY	Designation
1	1	ROTAX® Rxhq 50-12
2	4	Centering ring D7x5 ROTAX®
3	1	Mounting plate, customer

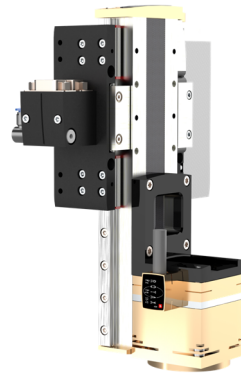
## 2 Modular System

### 2.1 Angle bracket to LINAX® Lxu F60

Mounting to LINAX® Lxu F60 base plate  
Grid 40 x 40mm (1.57" x 1.57")

2 x Dowel pin Ø4 x 8  
4 x Torx, M4 x 14

4 x Distance bushings with centering Rxhq 50-12  
4 x Hexagon socket screws, M4 x 55



### 2.2 Angle bracket to LINAX® Lxc F10/F40

Mounting to LINAX® Lxc F10/F40 slider  
Grid 33 x 28mm (1.30" x 1.10")

2 x Dowel pin Ø2.5 x 6  
4 x Torx, M3 x 12

4 x Distance bushings with centering Rxhq 50-12  
4 x Hexagon socket screws, M4 x 55

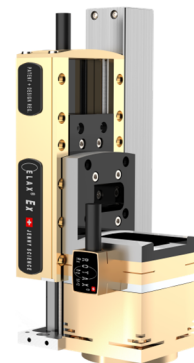


### 2.3 Angle bracket to ELAX® Ex F20

Mounting to ELAX® Ex F20 slider  
Grid 20 x 25mm (0.79" x 0.98")

2 x Centering ring Ø6  
4 x Torx, M3 x 12

4 x Distance bushings with centering Rxhq 50-12  
4 x Hexagon socket screws, M4 x 55

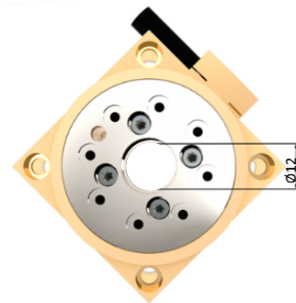




### 3 Smart Praxis Oriented Details

#### 3.1 Hollow shaft diameter

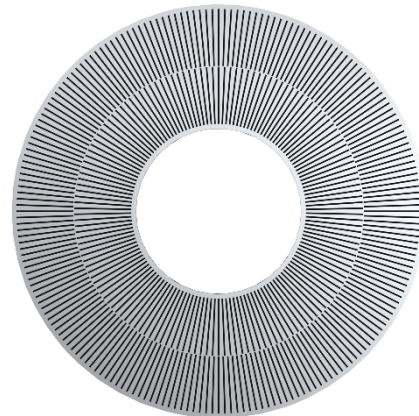
The large hollow shaft with a diameter of 12mm (0.47") offers generous space for cables, vacuum or compressed air lines, light and laser beams, glass fibres and other media.



#### 3.2 Single-Turn Absolut Encoder

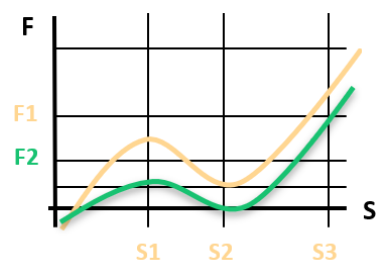
Thanks to the integrated absolute encoder with a resolution of 120'000Inc., 162'000Inc. or 2'592'000Inc. per revolution, repeatability of up to  $\pm 1$  arcsec can be achieved.

Due to the absolute position, the ROTAX® Rxhq is immediately ready for operation after power-on, no reference drive is necessary.



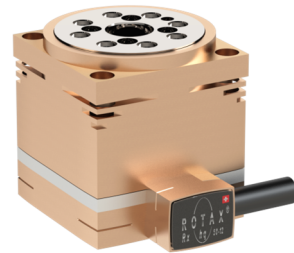
#### 3.3 Record and Limit Forces

The patented function „Force Calibration“ is able to compensate the magnetic cogging forces, the load and the friction forces of the Rotax® direct drive in a very simple way. This is how it becomes possible to control, to limit and to monitor forces in process. Together with the XENAX® servo controller it is also possible to record complete force/way diagrams. No need for an additional force sensor.



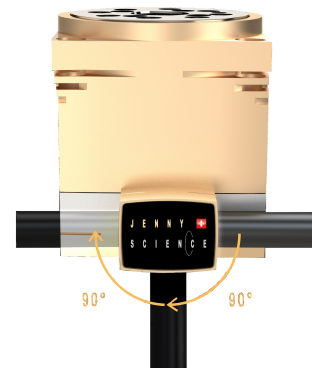
### 3.4 One-Cable connection reduces cabling requirements

The one-cable connection from Jenny Science simplifies the whole machine cabling complexity. In addition, the cable chains are more compact and lighter, need less room and achieve higher dynamics.



### 3.5 Cabel connection 90° pattern

The cable connection can be selected to the right, left and downwards. The corresponding article number must be specified when ordering. The cable outlet cannot be turned by yourself.



## 4 Performance data

### 4.1 Techniscal specification

Supply voltage				24V DC	48V DC
Nominal speed <sup>(1)</sup> 120'000 Inc.	$n_N$	rpm		500	1'500
Nominal speed <sup>(1)</sup> 162'000 Inc.	$n_N$	rpm		500	1'300
Nominal speed <sup>(1)</sup> 2'592'000 Inc.	$n_N$	rpm		200	200
Stall torque	$M_0$	Nm (lbf·in)		0.32 (2.83)	0.32 (2.83)
Nominal torque <sup>(1)</sup>	$M_N$	Nm (lbf·in)		0.30 (2.66)	0.29 (2.57)
Peak torque <sup>(2)</sup>	$M_P$	Nm (lbf·in)		1.02 (9.03)	1.02 (9.03)
Nominal current <sup>(1)</sup>	$I_N$	A		2.30	2.28
Peak current <sup>(2)</sup>	$I_P$	A		7.85	7.85

### Mechanical Data

Max. axial load <sup>(3)</sup>		N (lbf)		1750 (393.4)
Max. moment load <sup>(3)</sup>		Nm (lbf·in)		5 (44.25)
Rotor moment of inertia	$J_{Rot}$	$g \cdot cm^2$ (lbf·in <sup>2</sup> )		400 (0.137)
Total weight	$m$	g (lbs)		440 (0.970)

(1) continuous operation with 25C° (77°F) ambient temperature and convection cooling (ambient air)

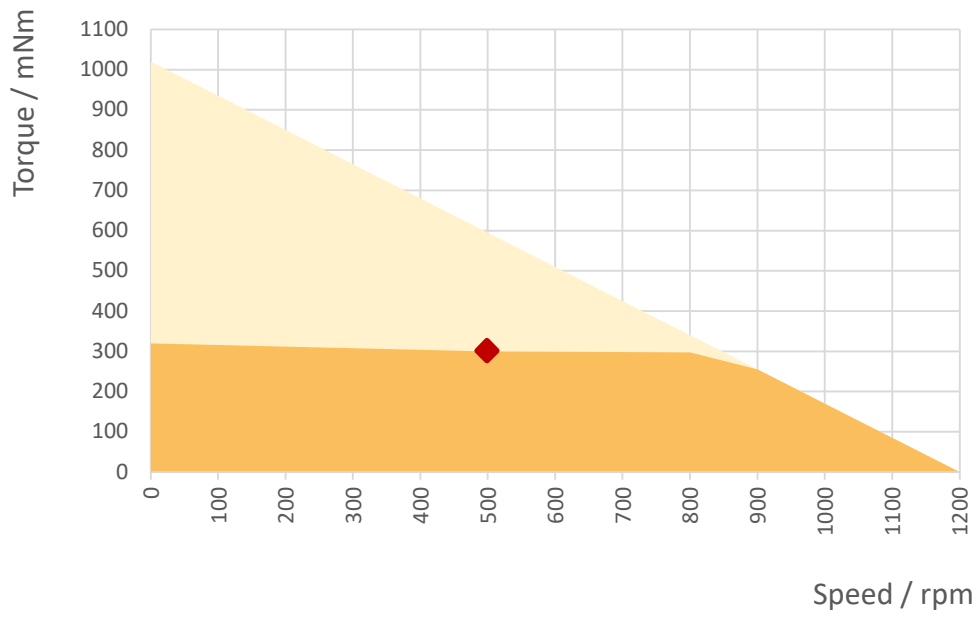
(2) peak operation (duty 10%)

(3) maximum load only with prescribed mounting according to point 1.3

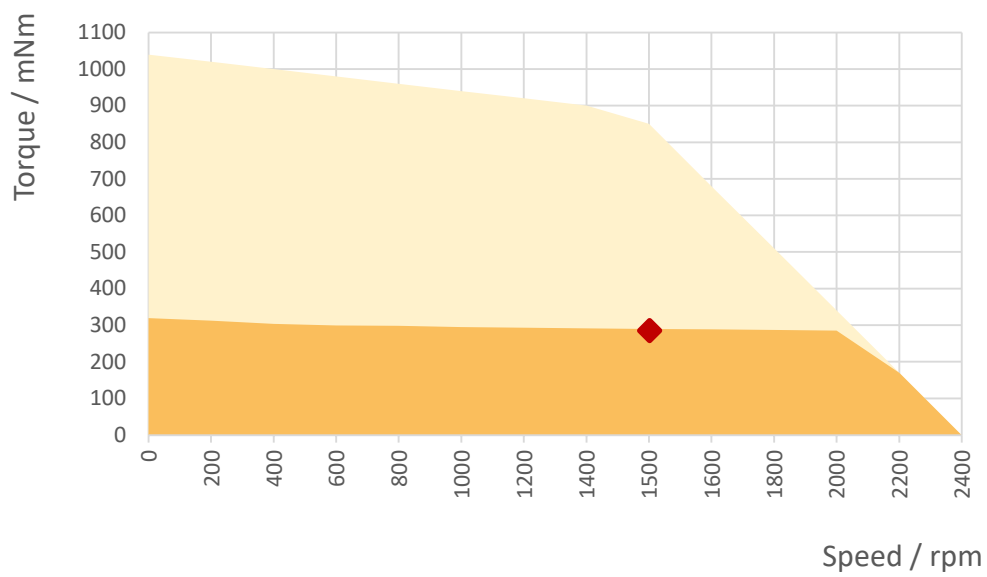
### 4.2 Torque/Speed curve



Supply voltage  $U_s = 24\text{VDC}$  (120'000Inc. encoder)



Supply voltage  $U_s = 48\text{VDC}$  (120'000Inc. encoder)



## 5 Accuracy

### 5.1 Positioning

Optical encoder resolution 120'000 Ink., Vmax 1'500 rpm  
 Bi-directional repeatability ± 11 arcsec  
 Absolute position accuracy ± 32 arcsec

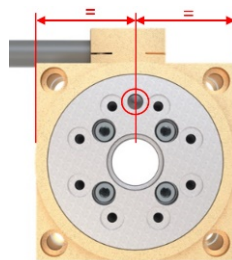
Optical encoder resolution 162'000 Ink., Vmax 1'300 rpm  
 Bi-directional repeatability ± 10 arcsec  
 Absolute position accuracy ± 12 arcsec

Optical encoder resolution 2'592'000 Ink., Vmax 200 rpm  
 Bi-directional repeatability ± 1 arcsec  
 Absolute position accuracy ± 12 arcsec

#### Reference drive

With the single-turn absolute encoder the position is available immediately after power-on. Therefore no reference drive is necessary.

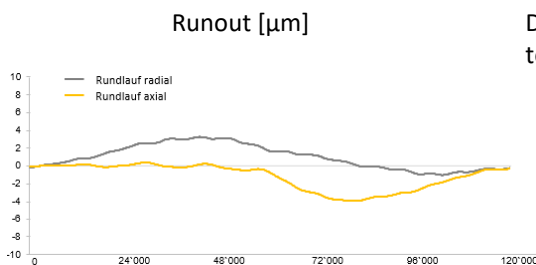
#### Zero point absolut



For the alignment of the rotor flange a single hole  $\varnothing 4H7$  is provided. With centric alignment of this hole on the side of the connector housing, the absolute zero point can be found.

### 5.2 Mechanical accuracy

Der ROTAX® Rxhq is delivered with the following tolerances as standard.



Runout radial 10µm

Runout axial<sup>(2)</sup> 10µm

(2) Measuring point 20mm radial from the centre of the front flange

## 6 Maintenance, Life time

### 6.1 Lubrication

The double row angular contact ball bearing of the ROTAX® Rxhq is maintenance-free and cannot be relubricated.

### 6.2 Life time

The ROTAX® Rxhq is a direct drive. This means no wear and tear and therefore highest precision over the whole lifetime.

Basically, the preloaded double row angular contact ball bearing is the life-determining element.

Actions with which life time can be extended:

- Trajectories with curve profiles instead of trapezoidal profiles (XENAX® Servo controller, default value S-curve profile = 20%).
- Dynamics not higher than needed.
- Completing non cycle time critical motions slower.
- Avoid pollution in the guides.

## 7 Safety, Environment

### 7.1 Safety with XENAX® Servo Controller

**EN 61000-6-2:2005**  
Electromagnetic compatibility (EMC),  
Immunity for industrial environments

EMC Immunity Testing, Industrial Class A

EN 61326-3-1  
IFA:2012  
EN 61326-1, EN 61800-3, EN 50370-1

Immunity for Functional Safety  
Functional safety of power drive systems  
Electrostatic discharges ESD, Electromagnetic Fields,  
Fast electric transients Bursts, radio frequency common  
mode

**EN 61000-6-3:2001**  
Electromagnetic compatibility (EMC),  
Emission standard for residential,  
commercial and light-industrial  
environments

EMC Emissions Testing, Residential Class B

EN 61326-1, EN61800-3, EN50370-1  
IFA:2012

Radiated EM Field, Interference voltage  
Functional safety of power drive systems

### 7.1 Environmental Conditions

Storage and transport

No outdoor storage. Storage rooms have to be well vented  
and dry. Storage temperature -25°C up to +55°C  
(-13°F up to 131°F).

Operational temperature

5°C - 50°C (41°F - 122°F) Environment, reduction in  
performance at 40°C (104°F).

Operational humidity  
Cooling

10-90% non-condensing.  
No need of external cooling.  
The mechanical mounting to a flange allows additional  
heat dissipation thanks to thermal conduction. This allows  
a higher performance.

Protection category

IP 40

## 8 Note

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