Model selection

STEP 1 Model (series) selection

Check the actuator series to be selected.

	Max. rotation speed [rpm]	Index accuracy [sec]	Repeatability [sec]
AX1R Series	240	±15	±5
AX2R Series	300	±30	±5
AX4R Series	240	±30	±5

STEP 2 Confirming operating conditions

Check the required travel angle, travel time and cycle time.

STEP 3 Confirming load conditions

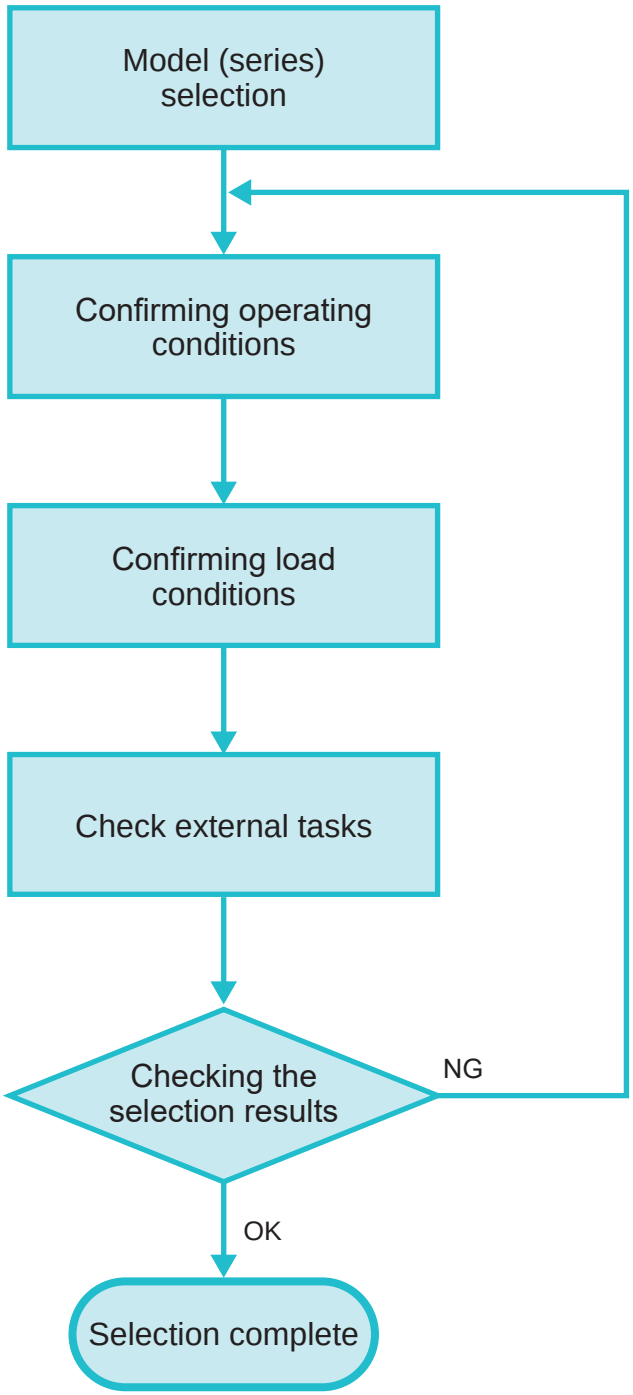
Check load conditions of table, workpiece, etc.

STEP 4 Check external tasks

When mounting the actuator vertically, check for an external load, etc., that works as the load on the output shaft.

Selection flow

Download the model selection software (Mechanical indexer/direct drive motor model selection system) from our website and select a model. If there are problems with the results of the model selection, review the operation conditions, load conditions, etc., and reconfirm the selection results.

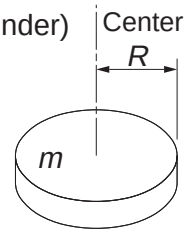


Formulas of moment of inertia

[m: Weight of body (kg)]

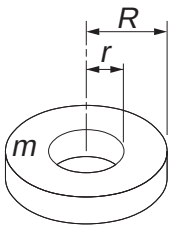
A When the center of rotation is the actuator's own axis

1. Disk (cylinder)



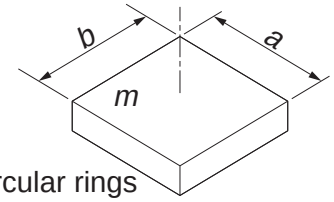
$$J = \frac{mR^2}{2}$$

2. Hollow disk (Hollow cylinder)



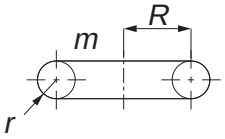
$$J = \frac{m(R^2 + r^2)}{2}$$

3. Rectangular parallelepiped



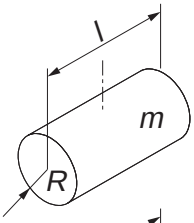
$$J = \frac{m(a^2 + b^2)}{12}$$

4. Circular rings



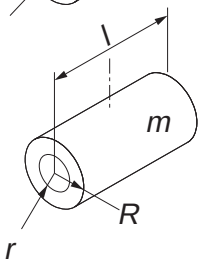
$$J = \frac{m(4R^2 + 3r^2)}{4}$$

5. Cylinder



$$J = \frac{m(3R^2 + l^2)}{12}$$

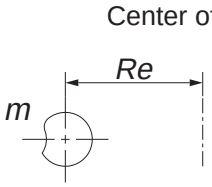
6. Hollow cylinder



$$J = \frac{m(R^2 + r^2 + l^2/3)}{4}$$

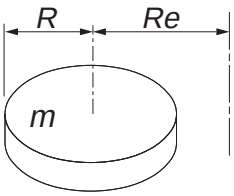
B When the center of rotation is not the actuator's own

1. Any form (when small enough)



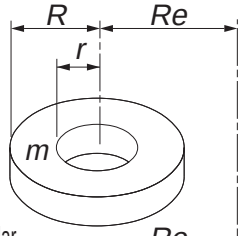
$$J = mRe^2$$

2. Disk (cylinder)



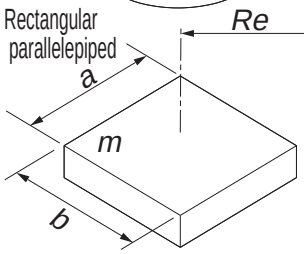
$$J = m\left(\frac{R^2}{2} + Re^2\right)$$

3. Hollow disk (Hollow cylinder)



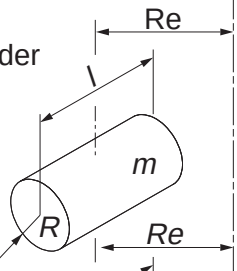
$$J = m\left(\frac{R^2 + r^2}{2} + Re^2\right)$$

4. Rectangular parallelepiped



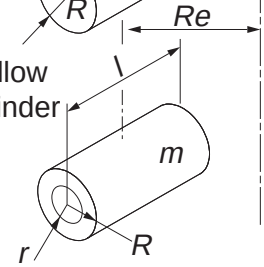
$$J = m\left(\frac{a^2 + b^2}{12} + Re^2\right)$$

5. Cylinder



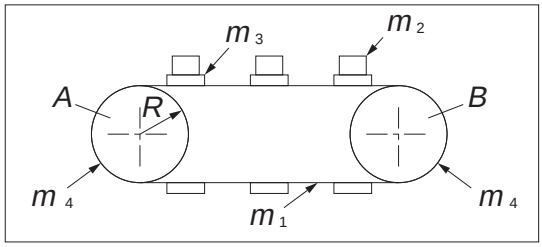
$$J = m\left(\frac{3R^2 + l^2}{12} + Re^2\right)$$

6. Hollow cylinder



$$J = m\left(\frac{R^2 + r^2 + l^2/3}{4} + Re\right.$$

For conveyor



m_1 : Chain weight
m_2 : Workpiece total weight
m_3 : Jig (pallet) total weight
m_4 : Sprocket A (drive) + B total weight
R : Sprocket radius on the drive side

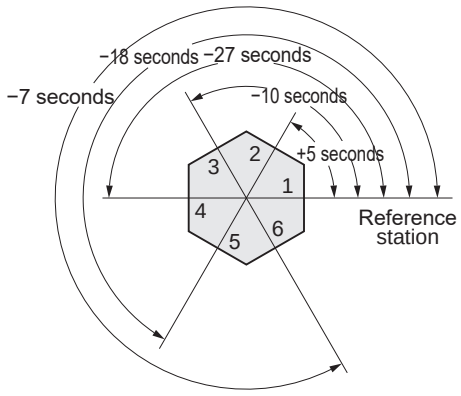
$$J = \left(m_1 + m_2 + m_3 + \frac{m_4}{2}\right) \cdot R^2$$

Glossary

Index accuracy

The ABSODEX index accuracy is the difference between the target position set by the NC program and the actual stop position. The target position is the angle (seconds) from the reference station (origin return position). Index accuracy is calculated from the maximum and minimum values of the difference between each target position and the actual stopped position as shown in the right figure. The value expresses the width in terms of ± seconds, as shown on the right. A high precision encoder is used for angular measurement.

Index accuracy measurement example



Measurement position	Measured value
1	0
2	+5 seconds
3	−10 seconds
4	−27 seconds
5	−18 seconds
6	−7 seconds

Index accuracy ±16 seconds

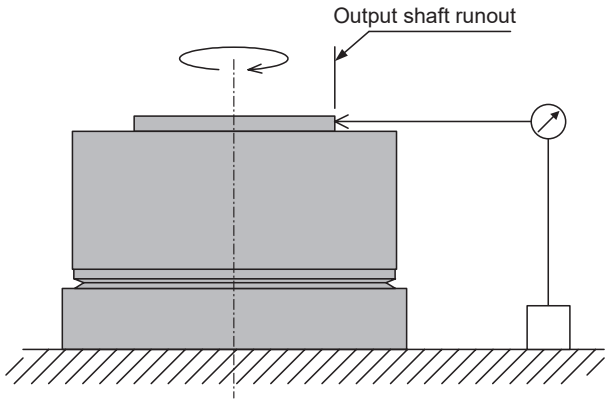
Repeatability

The repeatability expressed by angle (seconds) is the maximum value of angle irregularities of the repeat stop positions when reciprocating operation is performed for a certain target position under the same conditions. Depending on the accuracy characteristics required by the equipment, it is necessary to differentiate repeat accuracy and index accuracy.

*Angle (seconds) Unit to express angle in degrees, minutes, and seconds. 1 degree = 60 minutes = 3600 seconds

Output shaft runout

Runout accuracy of the inlay side of the table mounting part.



Output shaft surface runout

Runout accuracy of the inlay side of the table mounting surface.
*Measured at the periphery of the screw hole for mounting the table.