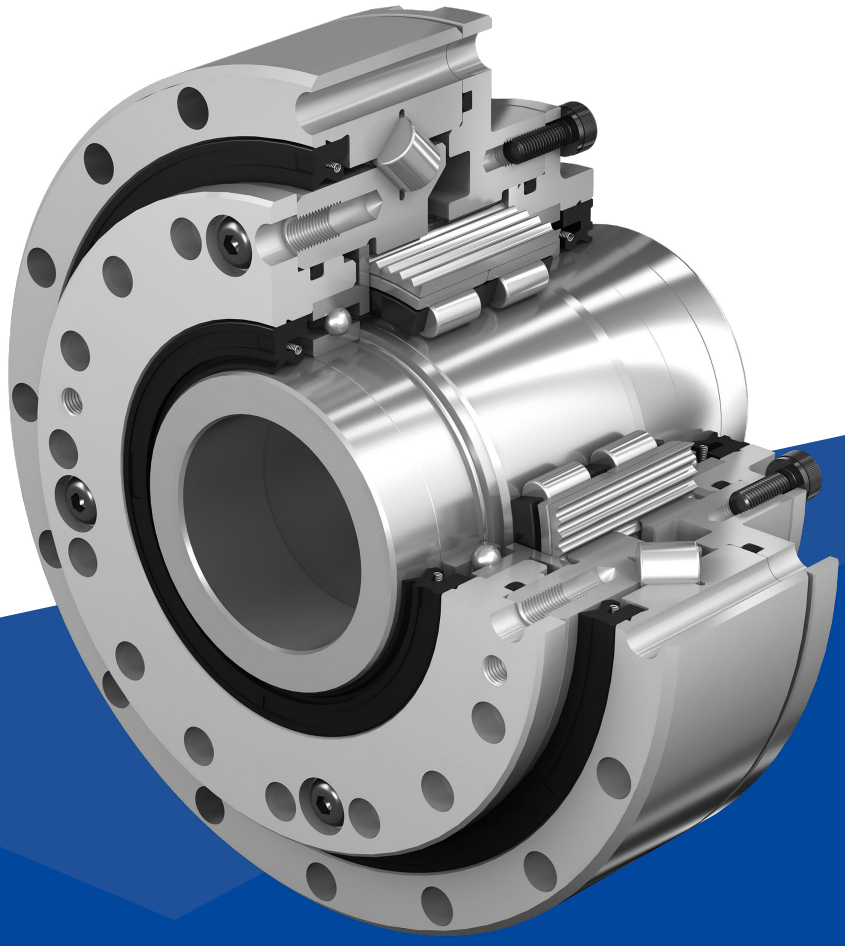
Sumitomo Drive Technologies

E CYCLO®
High Precision Gearboxes
ECY Series



Strain Wave Gear System × CYCLO Drive Gear

Compact Size, High Torque, and High Rigidity

Sumitomo Heavy Industries, Ltd.

No.L2054E-3

Sumitomo's compact High Precision Gearboxes

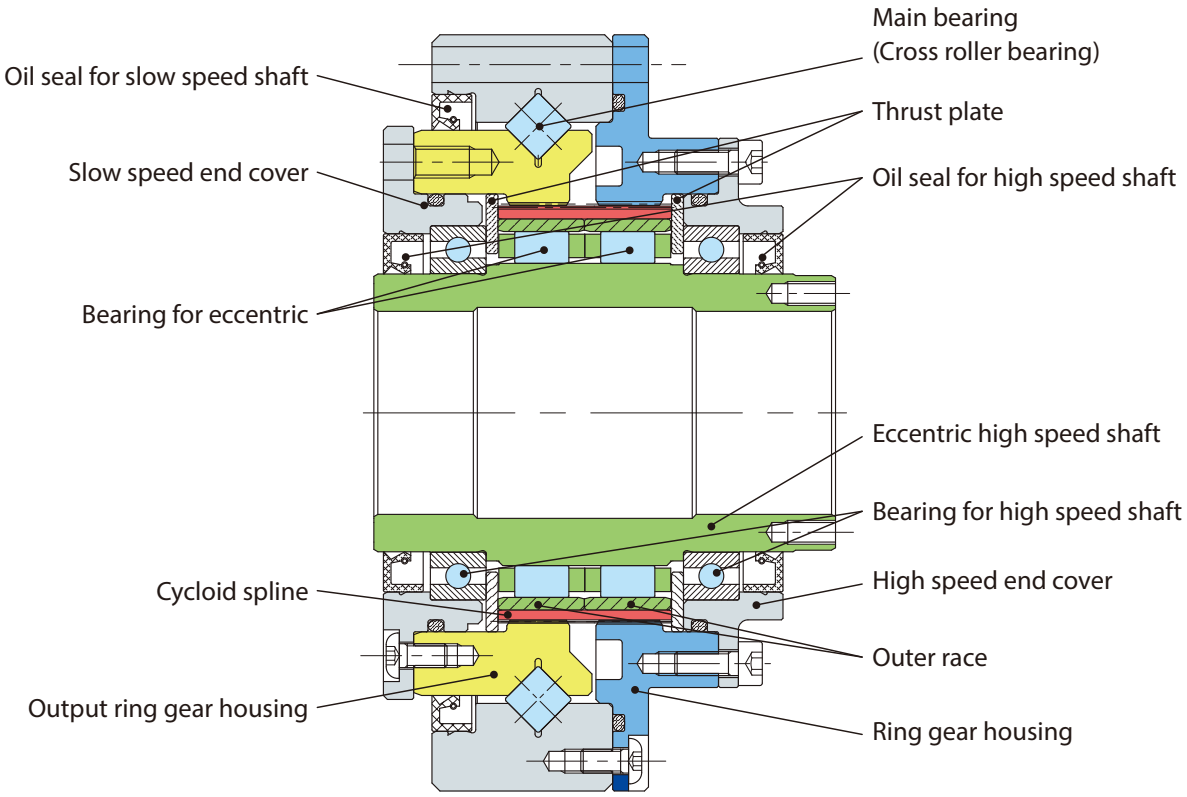
E CYCLO®
High Precision Gearboxes

ECY Series

CYCLO® Drives were created and developed by Sumitomo.
This unique reducer structure without teeth (trochoid tooth profile*) is being used in industrial robots and transfer devices all over the world.
The ECY Series, which was developed as a compact non-backlash reducer, integrates the strain wave gear with the engagement theory of the CYCLO Drives, thus realizing unprecedented high rigidity and a compact structure.

* Epitrochoid parallel curves

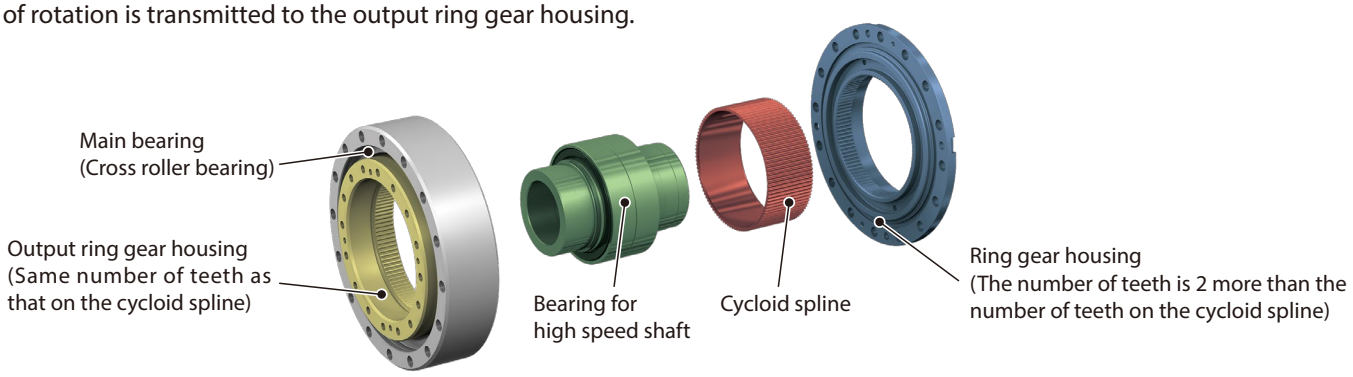
Structure

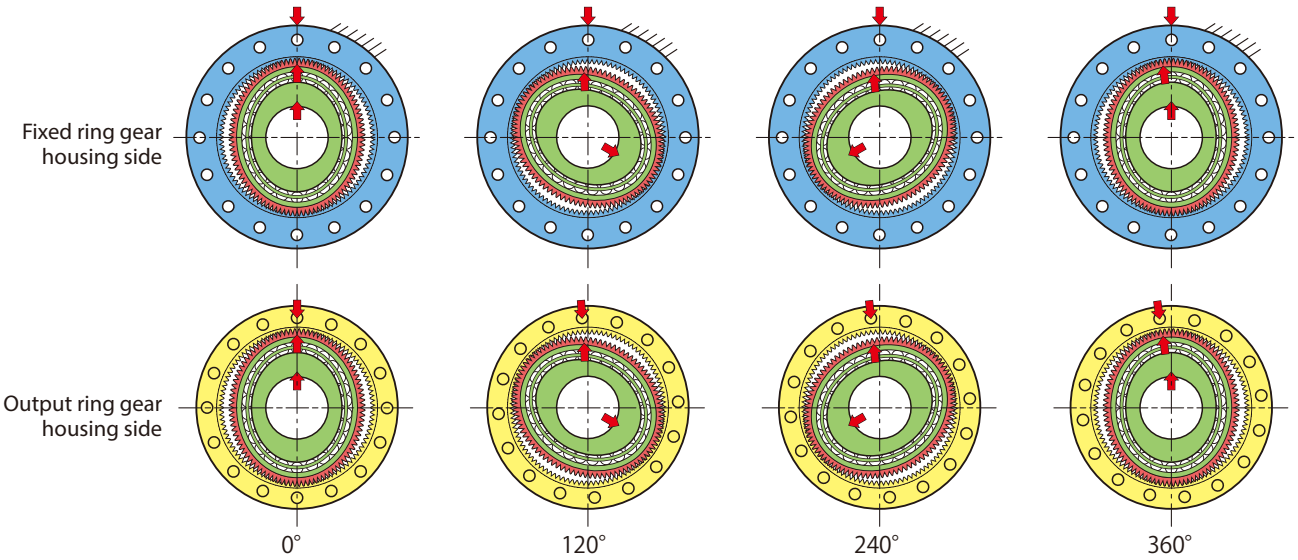


Operating Principle

As a principle rule, the ECY Series consists of 4 parts.

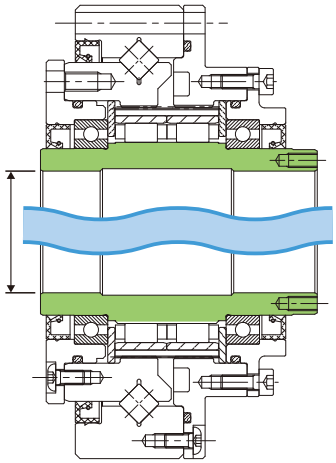
- The bearing for eccentric deforms the cycloid spline into an elliptical shape.
- The major axis of the cycloid spline that was deformed into an elliptical shape engages the fixed ring gear housing and the output ring gear housing.
- When the fixed ring gear housing is fixed and the bearing used for the eccentric body is turned 1 rotation in the clockwise direction, the cycloid spline rotates in the counterclockwise direction by an amount corresponding exactly to the difference in the number of teeth, while it is elastically deforming.
- This amount of rotation is transmitted to the output ring gear housing.





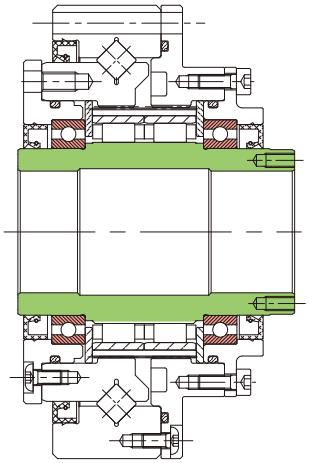
Features

Large diameter of high speed hollow shaft



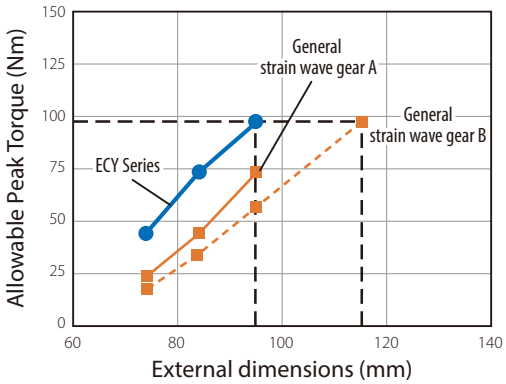
The diameter of high speed hollow shaft is large, which enables effective use of its space; for passing the cable, as the space for the shaft, etc.

Reduction of customer's assembly steps



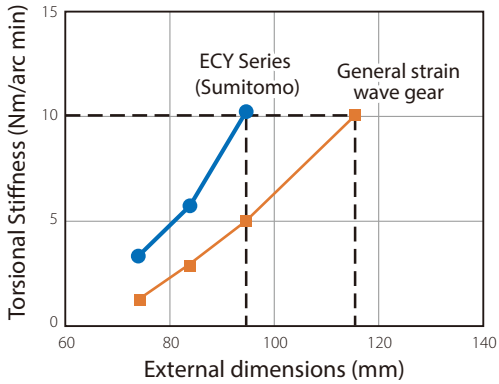
Because the high speed shaft is supported by the reducer and the grease is packed in a sealed structure, it is easy to mount the shaft on the device or on the motor.

Compact and high torque



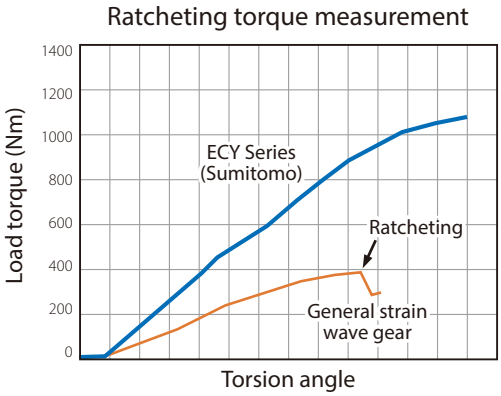
It has high torque compared to that of a general wave gear (equivalent size), contributing to make the device more compact.

High rigidity



The torsional stiffness is larger than that of a general strain wave gear (equivalent size).Thus it can increase the device's strength and reduce vibration, etc.

Ratcheting resistence (safety under overload)



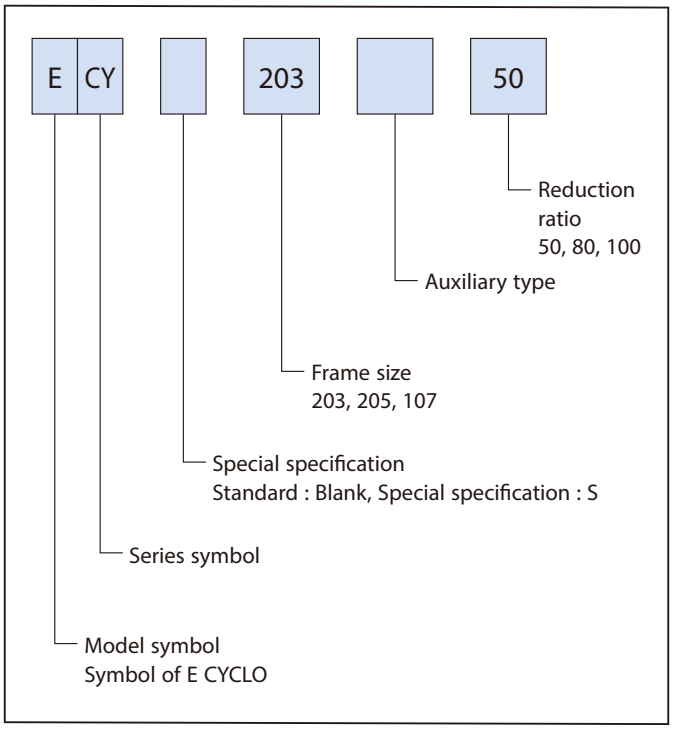
The structure suppressing ratcheting (situation where teeth do not engage smoothly) realizes high safety under overload.

Reasons for exceptional strength

	Examples of general strain wave gears	ECY Series
External gear profile	Cup type/Hat type	Cylindrical type
Tooth contact in the tooth trace direction	Partly gear meshing (30-50%)	Fully gear meshing (≒100%)
Elliptical bearing structure	Ball bearing	Roller bearing

The structure differs from a general strain wave gear, realizing high strength.

Nomenclature



Rating

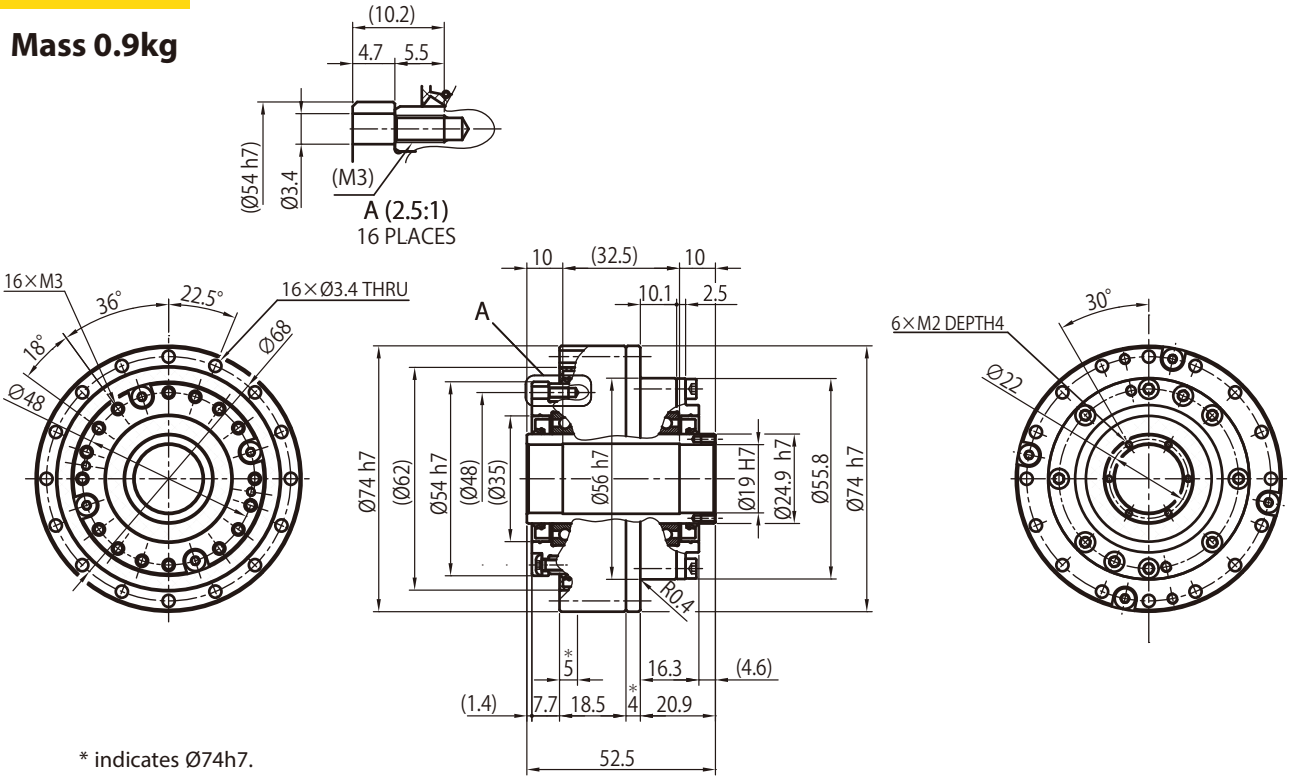
Frame size	Reduction ratio	Note 1 Rated output torque		Note 2 Allowable peak torque at acceleration and deceleration		Note 3 Lost motion
		Nm	kgf・m	Nm	kgf・m	arc min
203	50	21	2.1	44	4.5	1
	80	29	3.0	56	5.7	
	100	31	3.2	70	7.1	
205	50	33	3.4	73	7.4	1
	80	44	4.5	96	9.8	
	100	52	5.3	107	10.9	
107	50	39	4.0	98	10.0	1
	80	63	6.4	137	14.0	
	100	67	6.8	157	16.0	

Note : 1. The rated torque indicates the allowable output torque at the output flange at an input speed of 2000 r/min.
2. This is the peak torque allowed during normal acceleration and deceleration.
3. This is torsion angle (representative value) under the load of the rated torque × ±3%.
4. Please inquire us for specifications other than the above.

Outline Drawing

ECY-203

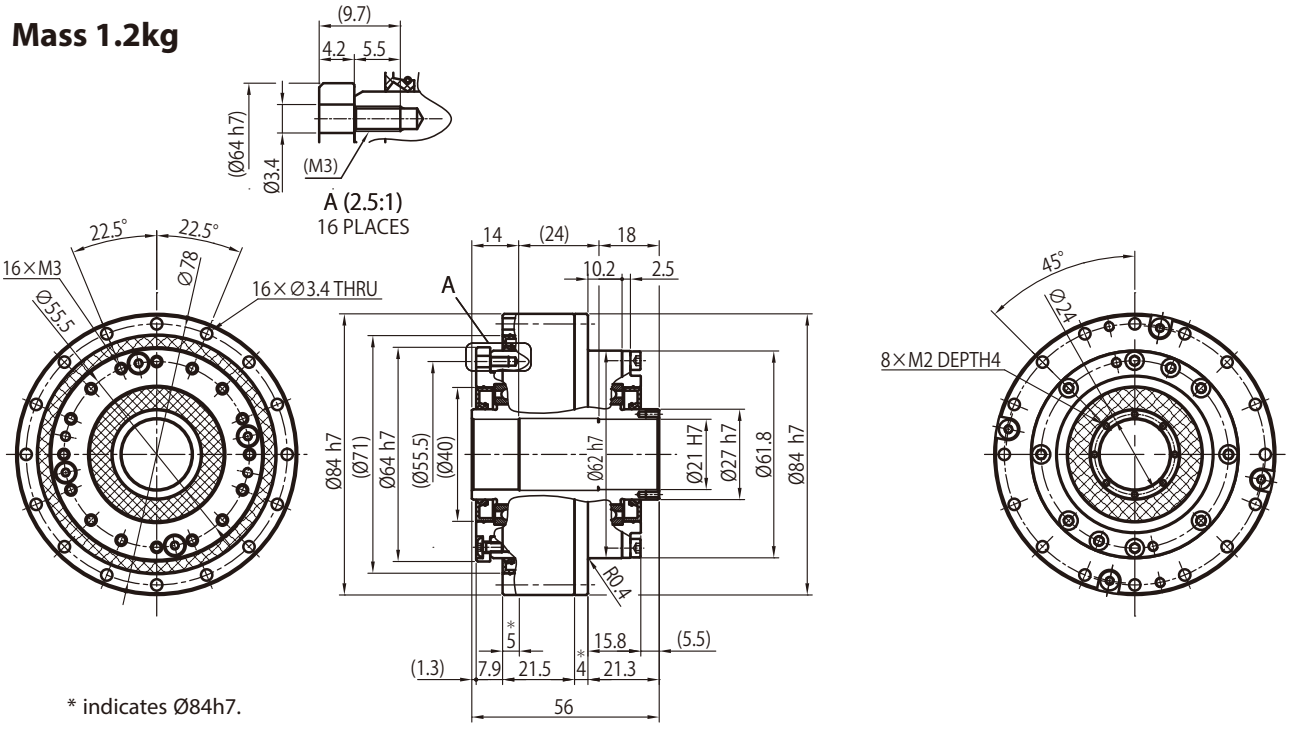
Mass 0.9kg



* indicates Ø74h7.

ECY-205

Mass 1.2kg

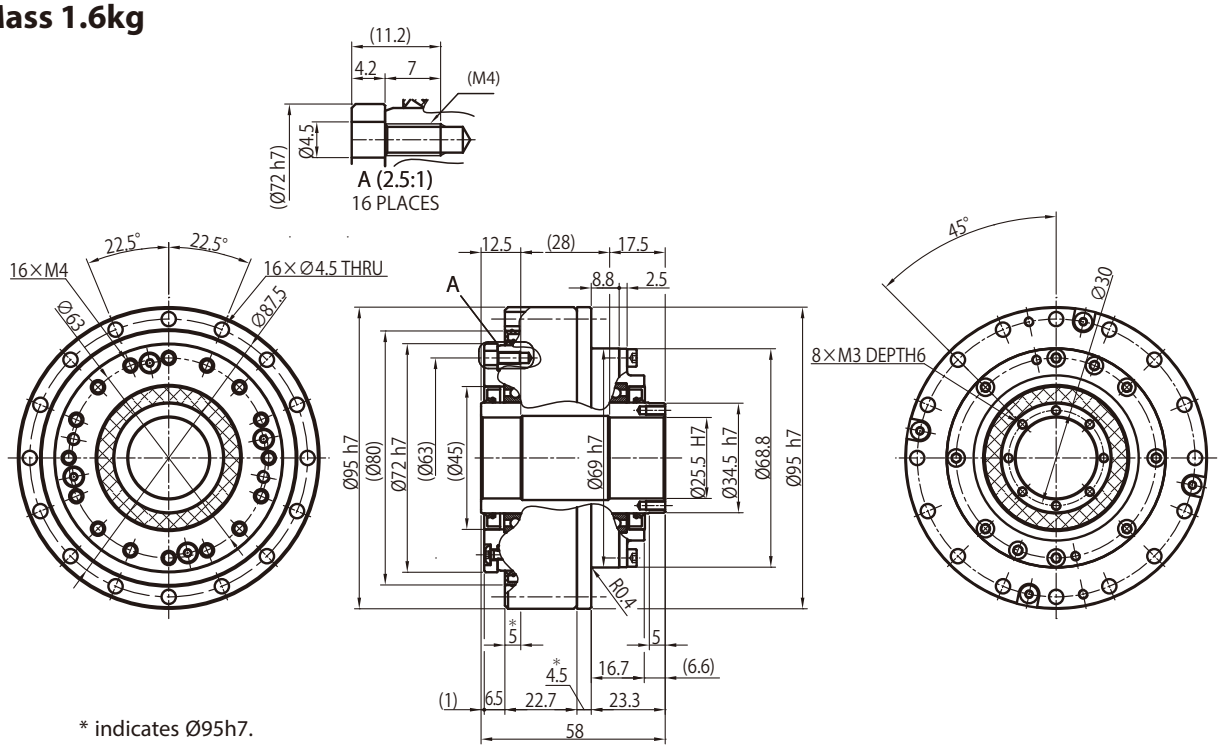


* indicates Ø84h7.

Outline Drawing

ECY-107

Mass 1.6kg



* indicates Ø95h7.

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