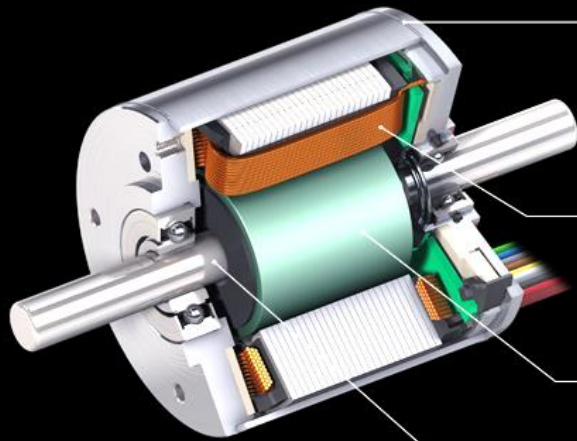


# maxon EC-i Cyclo Drive

## EC-i



The steel housing and flange ensure good heat dissipation and mechanical stability.

The stator with an iron winding is designed for high power at a low cogging torque.

The modular rotor delivers good dynamics and large torques.

Grooveless shaft ensures smooth running and extremely high torsional rigidity.

## Cycloid gear

It is a small and lightweight type of gear which is advantageous for dynamic movement.

The flange type output is suitable for use with robotic articulated actuators.

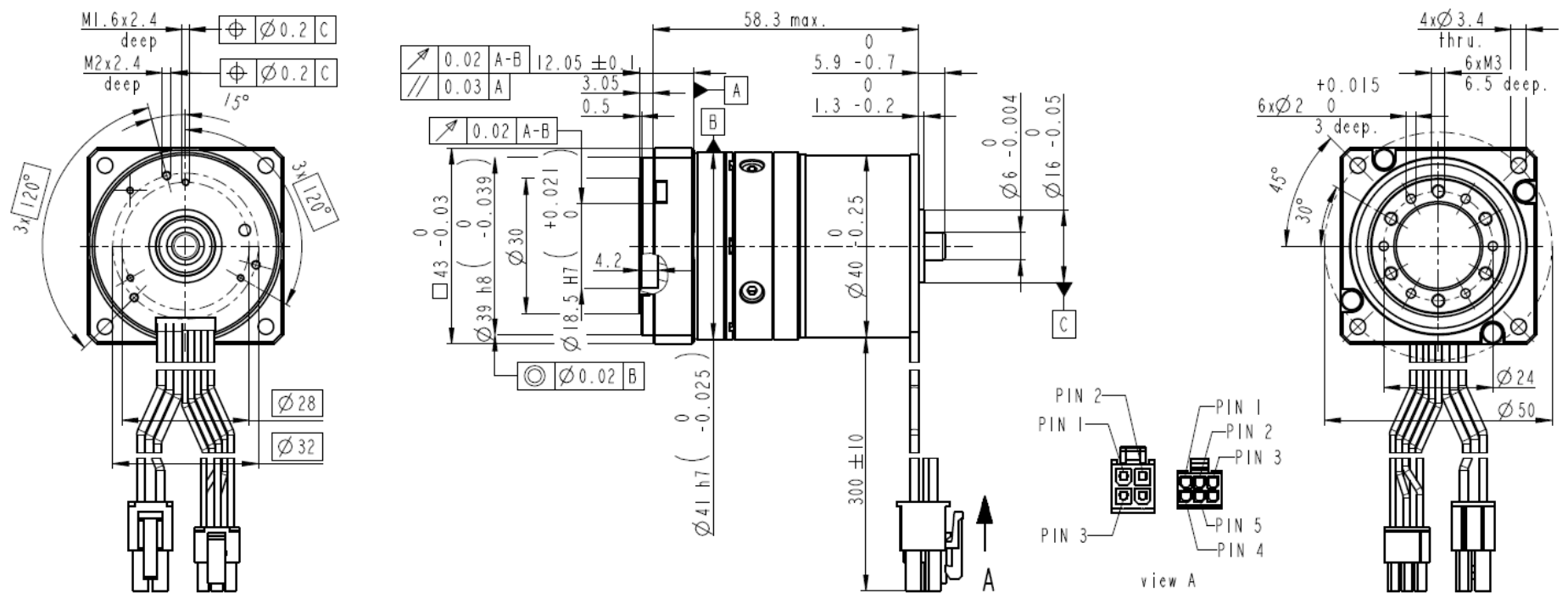
The impact resistance is far superior to that of the harmonic gear.



- High torque density
- Compact size & lightweight
- High durability and strong rigidity
- High Efficiency & Low backlash
- High impact resistance

# EC-i Cyclo Drive 43 S

EC-i40 50W + DYD-11 / BLDC motor with cycloid gear & encoder(optional)



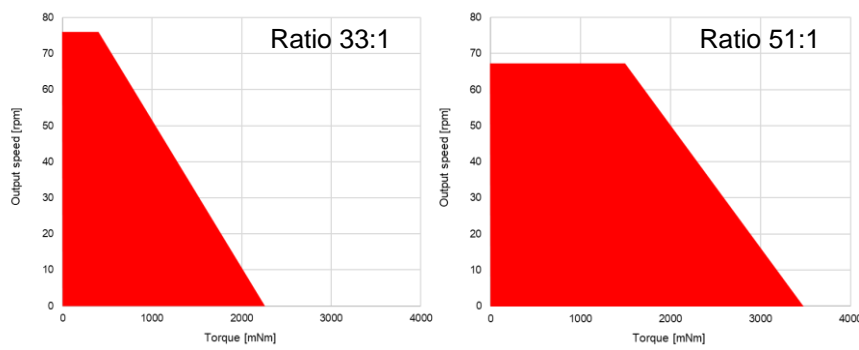
Drive output data								
1	Nominal voltage	V	12	18	24	12	18	24
2	No load speed	rpm	70	70	71.3	46	46	46.4
3	No load current	mA	500	326	229	415	272	221
4	Nominal speed	rpm	57.6	59.5	60.6	34.5	35.7	36.6
5	Nominal torque	Nm	0.85	0.802	0.775	2.321	2.278	2.248
6	Nominal current	A	1.314	0.837	0.579	1.551	1.018	0.757
7	Peak torque(1 s)	Nm	4.6	4.8	4.8	8	8.3	8.3
8	Terminal resistance phase to phase	Ω	1.59	2.99	4.9	1.59	2.99	4.9
9	Terminal inductance phase to phase	mH	1.09	2.49	4.35	1.09	2.49	4.35
10	Reduction		33:1	33:1	33:1	51:1	51:1	51:1

Mechanical data			
11	max input speed	rpm	8,500
12	Dynamic load rating	N	1,400
13	Backlash	arcmin	<3.0

Thermal data			
14	Ambient temperature	°C	-5 ~ +55
15	Max Winding temperature	°C	155
16	Max gear temperature	°C	60

Other specification			
17	Number of pole pairs		7
18	Number of phases		3
19	Weight of drive	g	780

## Operating Range



**Continuous operation**  
It is a continuous operating area where the gear max. temperature is reached at 25°C ambient.

## Pin allocation

Connection motor (Cable AWG 20)		
red	Motor winding 1	Pin 1
black	Motor winding 2	Pin 2
white	Motor winding 3	Pin 3
	N.C	Pin 4
Connector	Article number	
Molex	39-01-240	

Connection sensor (Cable AWG 26)		
yellow	Hall sensor 1	Pin 1
brown	Hall sensor 2	Pin 2
grey	Hall sensor 3	Pin 3
blue	GND	Pin 4
Green	V <sub>Hall</sub> 4.5...24 VDC	Pin 5
	N.C	Pin 6
Connector	Article number	
Molex	430-25-0600	

## Modular system

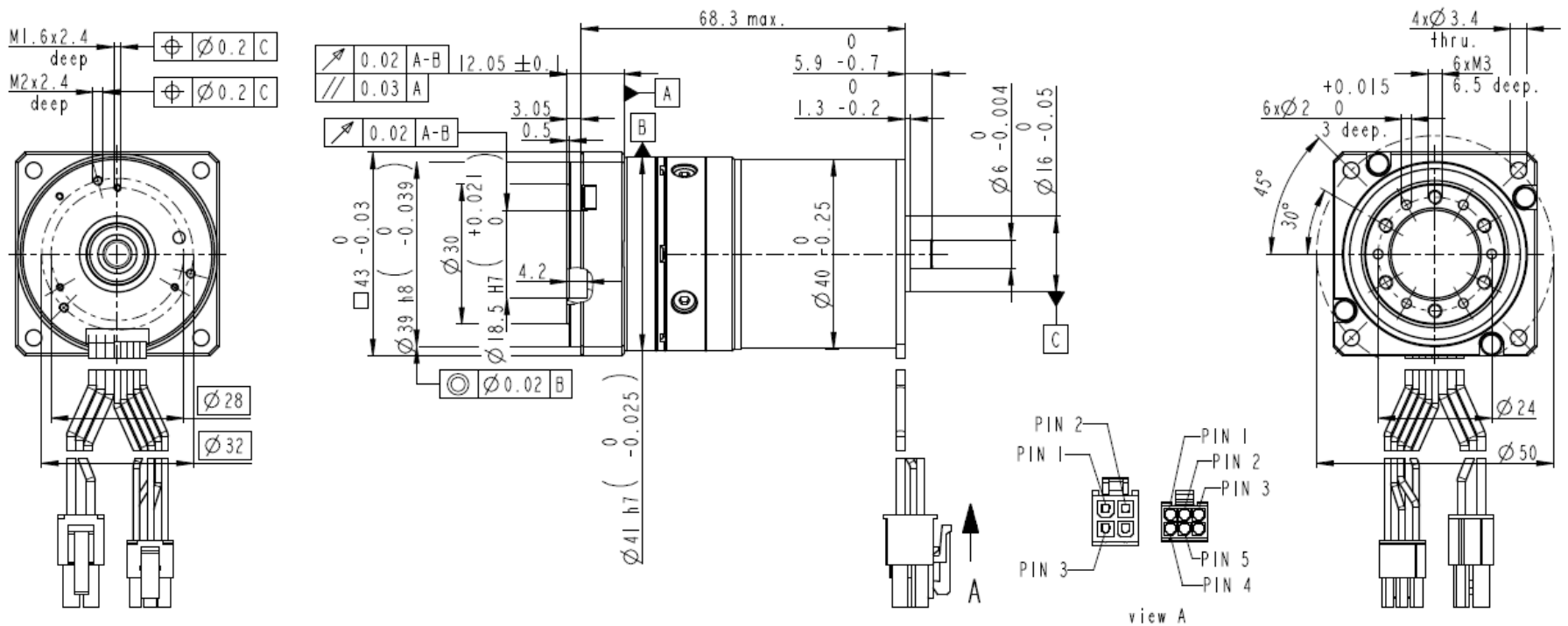
Sensor	
497_Encoder 16 EASY	
499_Encoder 16 EASY XT	
501_Encoder 16 EASY Absolute	
503_Encoder 16 EASY Absolute XT	
514_Encoder 16 RIO	
517_Encoder AEDL 5810	
524_Encoder HEDL 5540	

Motor Control	
533_ESCON 36/3 EC	
533_ESCON Module 50/4 EC-S	
533_ESCON Module 50/5	
535_ESCON 50/5	
537_DEC Module 50/5	
541_EPOS4 Micro 24/5	
542_EPOS4 Module 50/5	
543_EPOS4 Compact 24/5 3-axes	
545_EPOS4 Compact 50/5	
547_EPOS4 50/5	
548_EPOS4 Disk 60/8	
549_EPOS4 Disk 60/12	

Sensor and controller information can be found on the corresponding page in maxon catalog 22/23

# EC-i Cyclo Drive 43 M

EC-i40 70W + DYD-11 / BLDC motor with cycloid gear & encoder(optional)



## Drive output data

1	Nominal volage	V	12	18	24	12	18	24
2	No load speed	rpm	72.3	73.7	72.1	46.9	47.9	46.7
3	No load current	mA	507	349	258	480	334	237
4	Nominal speed	rpm	64.9	66.0	65.1	40.6	41.5	41.2
5	Nominal torque	Nm	1.407	1.368	1.4	2.942	2.888	2.9
6	Nominal current	A	1.641	1.102	0.828	1.871	1.277	0.926
7	Peak torque(1 s)	Nm	9.9	10	10	17.0	17.2	17.2
8	Terminal resistance phase to phase	Ω	0.603	1.21	2.28	0.603	1.21	2.28
9	Terminal inductance phase to phase	mH	0.512	1.11	2.05	0.512	1.11	2.05
10	Reduction		33:1	33:1	33:1	51:1	51:1	51:1

## Mechanical data

11	max input speed	rpm	8,500
12	Dynamic load rating	N	1,400
13	Backlash	arcmin	<3.0

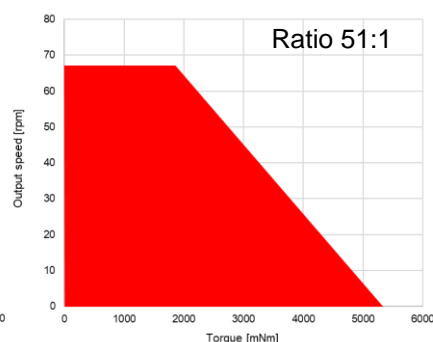
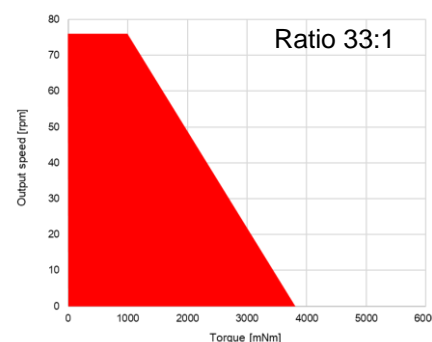
## Thermal data

14	Ambient temperature	°C	-5 ~ +55
15	Max Winding temperature	°C	155
16	Max gear temperature	°C	60

## Other specification

17	Number of pole pairs		7
18	Number of phases		3
19	Weight of drive	g	850

## Operating Range



### Continuous operation

It is a continuous operating area where the gear max. temperature is reached at 25°C ambient.

## Pin allocation

### Connection motor (Cable AWG 20)

red	Motor winding 1	Pin 1
black	Motor winding 2	Pin 2
white	Motor winding 3	Pin 3
	N.C	Pin 4
Connector	Article number	
Molex	39-01-240	

### Connection sensor (Cable AWG 26)

yellow	Hall sensor 1	Pin 1
brown	Hall sensor 2	Pin 2
grey	Hall sensor 3	Pin 3
blue	GND	Pin 4
Green	V <sub>Hall</sub> 4.5...24 VDC	Pin 5
	N.C	Pin 6
Connector	Article number	
Molex	430-25-0600	

## Modular system

### Sensor

497_Encoder 16 EASY
499_Encoder 16 EASY XT
501_Encoder 16 EASY Absolute
503_Encoder 16 EASY Absolute XT
514_Encoder 16 RIO
517_Encoder AEDL 5810
524_Encoder HEDL 5540

### Motor Control

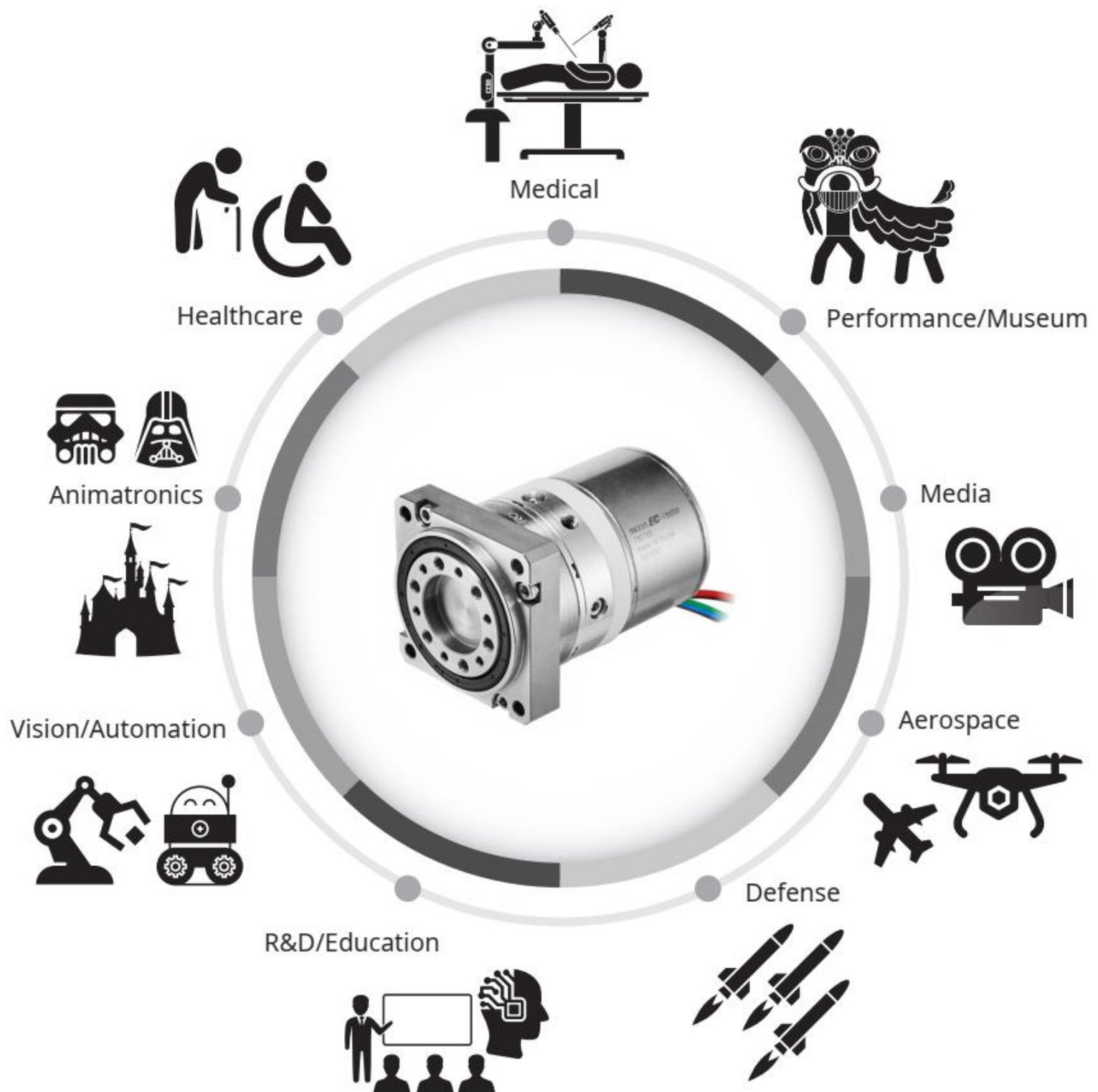
533_ESCON 36/3 EC
533_ESCON Module 50/4 EC-S
533_ESCON Module 50/5
535_ESCON 50/5
537_DEC Module 50/5
541_EPOS4 Micro 24/5
542_EPOS4 Module 50/5
543_EPOS4 Compact 24/5 3-axes
545_EPOS4 Compact 50/5
547_EPOS4 50/5
548_EPOS4 Disk 60/8
549_EPOS4 Disk 60/12

Sensor and controller information can be found on the corresponding page in maxon catalog 22/23



# EC-i Cyclo Drive Applications

EC-i Cycloid drive products can be used in a variety of applications.



## Cycloid gear characteristic

EC-i cycloid drive has high impact resistance while realizing high torque, high efficiency, and light weight. It was developed in cooperation with ROBOTIS(product number is DYD-11).

	Characteristic	DYD	Strain wave Gear	Planetary gear
1	Efficiency	◎	△	◎
2	Increase starting torque (back drive)	○	△	◎
3	Precision(back drive)	◎	◎	△
4	Impact resistance	◎	△	○
5	Life under overload conditions	◎	△	○

Note [◎: Best ○: Great △: good]