

Cam technology offers environmentally friendly benefits

SANDEX

ECO Series ED/ED-G

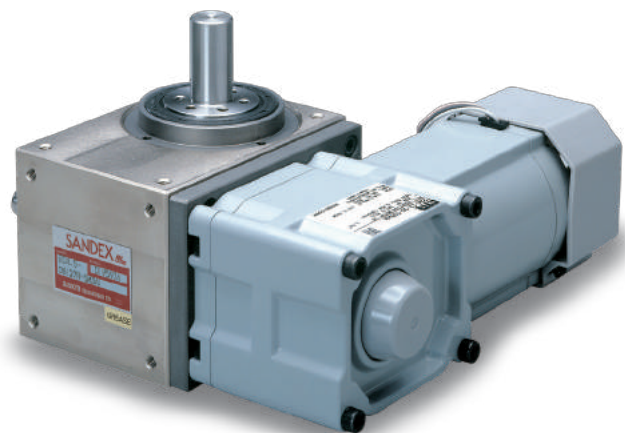


SANKYO
SEISAKUSHO CO.

High-performance index drive units from environmentally-friendly cam



Stand-alone cam unit
ED Series



Complete with geared motor
ED-G Series

The ED/ED-G Series is a precision cam-actuated indexing drive. The output shaft rotates and stops repeatedly to produce an intermittent indexing motion.

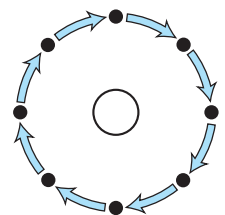
The housing is finished with electroless nickel plating to prevent rust and provide an easy to clean flat surface. The ED/ED-G Series is designed for clean-room applications and can be ordered with various shaft and flange arrangements to suit different applications.

Features

- Widely used cam indexing unit, easy to control, stable drive.
- High accuracy, rigidity, and long life.
- Grease-sealed for virtually no maintenance.
- Flat-machined housing discourages accumulation of dirt and particles.



Roller gear cam mechanism
delivers stable motions



Indexing drives

developed technology

[Overload protection system/torque limiter]

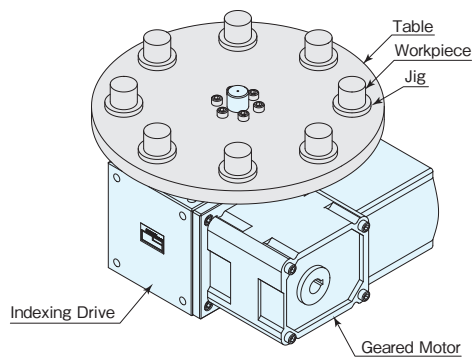
Sankyo's torque limiter uses a mechanical torque shutout mechanism that has a roller (ball) and a roller pocket. This system offers accurate shut off at a preset torque, and the torque level is easy to adjust. Also, this system meets all the requirements for safety devices on cam units. Many, many units have been sold, which is a testament to the highly reliable overload protection system.



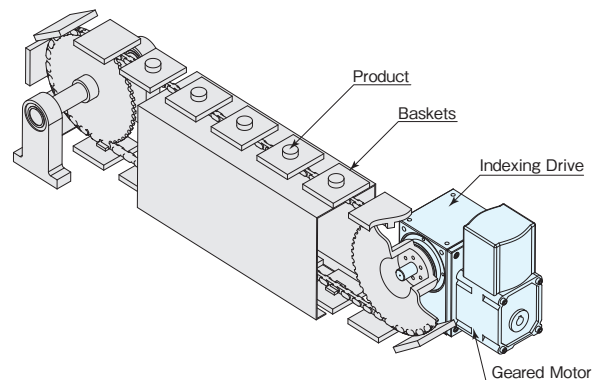
Torque Limiter

[Applications]

For Table/Dial Applications



Conveyor applications



PRODUCT SPECIFICATION

Product Specifications

Table 3-1

Item	Unit	ED2.8	ED3.8(G)	ED4.5(G)	ED6(G)	ED7(G)	ED8(G)	ED11(G)
Number of stops		2~10	2~12	2~24	2~24	2~48	2~48	2~48
Number of dwells		1	1	1, 2, 3	1, 2	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4
Output type		Shaft		Flange with shaft				
Indexing accuracy (one-dwell) ※1	sec	±72	±72	±60	±45	±30	±30	±30
Indexing accuracy (two-dwell) ※1	sec	—	—	±120	±90	±60	±60	±60
Repetitive accuracy	sec	36	36	30	20	15	15	15
Input shaft speed	rpm	max.200						
Housing surface		Electroless nickel plating						
Mount position		All position available						
Lubrication		Grease						

※1: Ask Sankyo for the indexing accuracy of 3- and 4-dwell cams.

Specifications

Table 3-2

Item	Unit	ED2.8	ED3.8(G)	ED4.5(G)	ED6(G)	ED7(G)	ED8(G)	ED11(G)
Output allowable axial load	N	245	490	1274	1372	2156	3234	5488
Output allowable radial load	N	245	490	1372	1392	2940	4116	6860
Output torsional rigidity	$\frac{\text{N}\cdot\text{m}}{\text{rad}}$	800	2.90×10^3	6.08×10^3	1.37×10^4	2.84×10^4	5.29×10^4	8.82×10^4
Output inertia	$\text{kg}\cdot\text{m}^2$	5×10^{-5}	1.2×10^{-4}	3.45×10^{-4}	8.22×10^{-4}	2.33×10^{-3}	5.60×10^{-3}	1.97×10^{-2}
Output allowable bending moment	$\text{N}\cdot\text{m}$	3.7	16	33	34.3	63.7	80.8	220
Input allowable axial load	N	196	343	833	980	1470	3430	4704
Input maximum repetitious bending force	N	196	343	1078	1070	1078	2548	4067
Input maximum repetitious allowable torque	$\text{N}\cdot\text{m}$	7.84	24.5	39.2	58.8	93.1	245	392
Input torsional rigidity	$\frac{\text{N}\cdot\text{m}}{\text{rad}}$	3.8×10^2	1.60×10^3	2.74×10^3	4.12×10^3	8.34×10^3	1.67×10^4	2.74×10^4
Input inertia ※3	$\text{kg}\cdot\text{m}^2$	3.75×10^{-5}	1.65×10^{-4}	8.0×10^{-5}	4.75×10^{-4}	1.5×10^{-3}	2.25×10^{-3}	7.0×10^{-3}
Product weight ※4	kg	About 1.25	About 3.6(7.6)	About 7.2(11)	About 13(19)	About 18(29)	About 33(48)	About 61(90)

※2: Specifications and dimensions are subject to change without notice. Always double check before ordering.

(1N≒0.102kgf)

※3: Input inertia is calculated in dwell. ※4: Figures in () are for the G type.

Option

Table 3-3

		ED2.8	ED3.8(G)	ED4.5(G)	ED6(G)	ED7(G)	ED8(G)	ED11(G)
Reamed holes(W surface)		—	—	○	○	○	○	○
Input shaft with key-way		—	—	○	○	○	○	○
Torque limiter installation	Flange type	4TF	5TF	6TF	6TF	6, 7TF	7, 8TF	7, 8, 11TF
	Coupling type	4TC	5TC	6TC	6TC	6, 7TC	7, 8TC	7, 8, 11TC
Overload detective sensor		(Contact us)	(Contact us)	○	○	○	○	○
Timing cam+sensor installation		Maximum of one sets	Maximum of two sets	Maximum of two sets	Maximum of two sets	Maximum of two sets	Maximum of two sets	Maximum of two sets

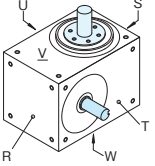
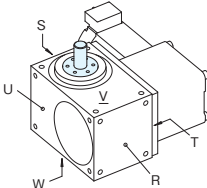
MODEL CODE

Product Code Example

ED 6 G – **08 27 7 R** – **S M3 P A 1** – **X**

a b c d e f g h i j k l n

a Model	b Size	c Motor	d Number of Stops (S)	e Index Period (θ)	f Cam curve	g Hand of Cam	h Output
ED Indexing Drive	6 Center distance 60mm	G Geared Motor	08 8 Stop	27 270°	7 SMS-3 Curve	R 1 Dwell Right Hand Cam	S Standard
Indicates the model name.	Shaft-to- shaft distance	☐ No motor (No symbol) G Geared motor	Number of stops of the Indexing Drive.	Cam rotation period during which the output moves (Total angle for two dwell cam.)	7 SMS-3 Curve (SANKYO Modified Sine) 9 Custom-made Cam Curve (Special order)	Indicates rotating direction of input and output shafts and number of dwells. 1 Dwell 2 Dwell Right Hand Cam R R2 Left Hand Cam L L2 CCW	S Standard F Shorten shaft L Torque limiter mounted • Specify either S or L for models ED2.8, ED3.8(G), and ME7(G)

i Input Shaft Projection	j Reamed Holes	k Mounting Holes	l Mounting Position	n Special Instruction
M3 Both T and U surface input extension and motor mounted	P Reamed Holes	A All surface	1 W side GL	X Special Order
ED series 1 Only T surface side 2 Only U surface side 3 Double-end input shaft K1 Open-end input shaft with keyway (side T) K2 Open-end input shaft with keyway (side U) K3 Double-end input shaft with keyways MK3 With keyway (optional) • Specify 1 , 2 , or 3 for models ED2.8, ED3.8 • Models ED3.8G is available only with M3	Indicates whether to provide reamed hole on side W. ☐ No hole (No symbol) P Reamed holes ED series 	A All surface(standard) (RSVW is standard for the ED2.8, ED3.8, ED3.8G.) ■ User-specified mounting hole positions is optional. ED-G series 	Mounting position as shown below. 1 W side GL 2 V side GL 3 U side GL 4 T side GL 5 R side GL 6 S side GL GL(Ground Level)	Include the symbol X in case of special orders. ☐ Standard (No Symbol) X Special Order

Timing cam-Photo switch (option)

Example **TC** – **A 1** – **ED6G**

a b c d

a Model	b Type	c Number	d Model size
TC Timing cam+ Photo switch	A Photo microsensor	1 1 set 2 2 set	Indicates the size and model of ECO series mounting timing cam.

Note:

- Please let us know the product code of the geared motor together with product code of the main housing.
- To find product code of a geared motor, see each product specification page for each product.
- If you want an optional torque limiter, timing cam, or sensor to be mounted on the main housing, please let us know product code for these items, together with the product code of the main housing.

Torque limiter (option)

Example **7 TF** – **40 B** – **LS**

a b c d f

a Torque limiter size	b Model	c Maximum tripping torque	d Type of spring	f Overload detective sensor
7	TF Flange type	40 Tmax 400N·m(40kgf·m)	B Heavy-duty Belleville springs	LS Sensor
Indicates the size of the torque limiter	TF Flange type TC Coupling type	Indicates the maximum tripping torque	A Light-duty coil springs B Heavy-duty coil springs C Coil springs <Note> Models 4TF/TC to 6TF/TC are supplied with coil springs Models 7TF/TC to 11TF/TC are supplied with Belleville springs	☐ Standard (No symbol) LS With sensor

※ See page 40 for product codes of torque limiters.

ED2.8

ED2.8 Dimensions

(Unit : mm)

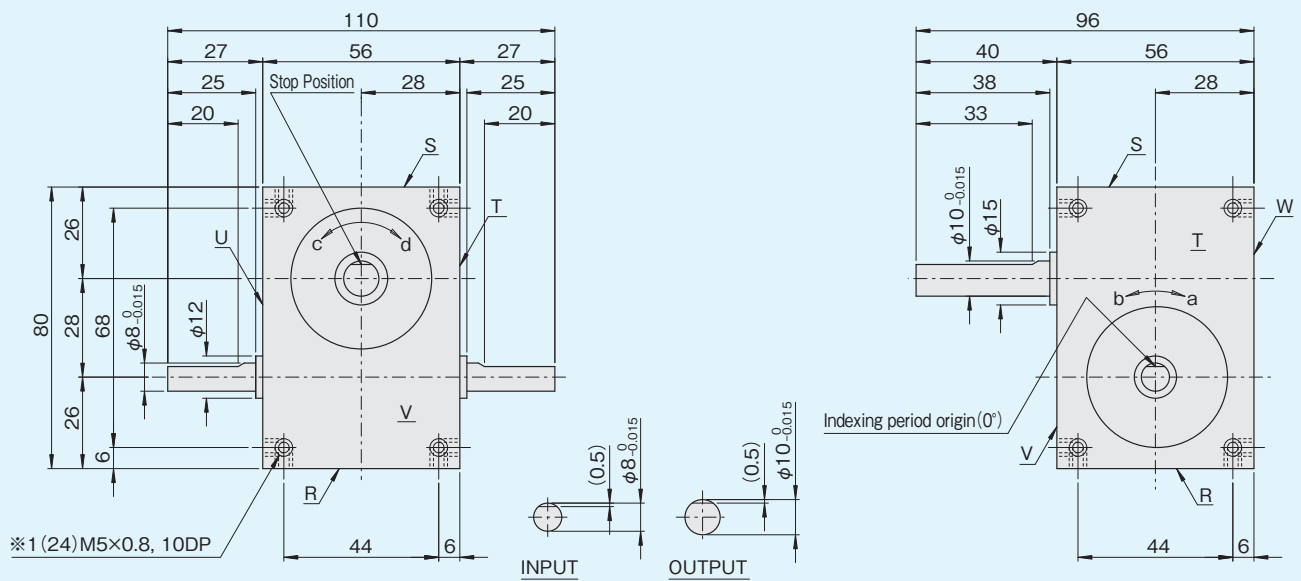


Figure ED2.8-1

Torque limiter mounting specifications (option)

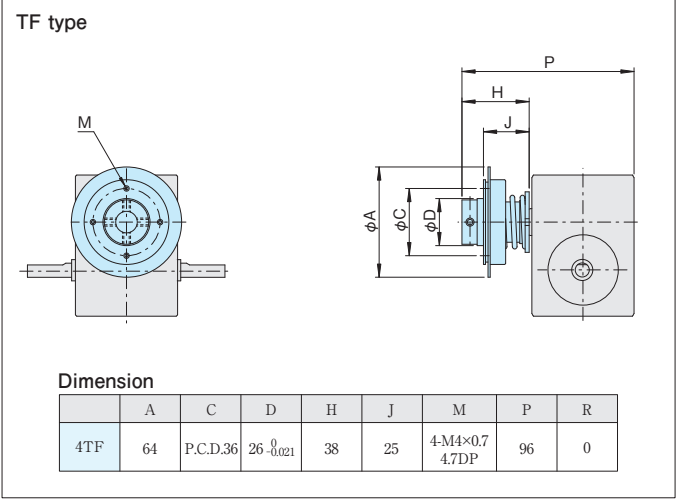
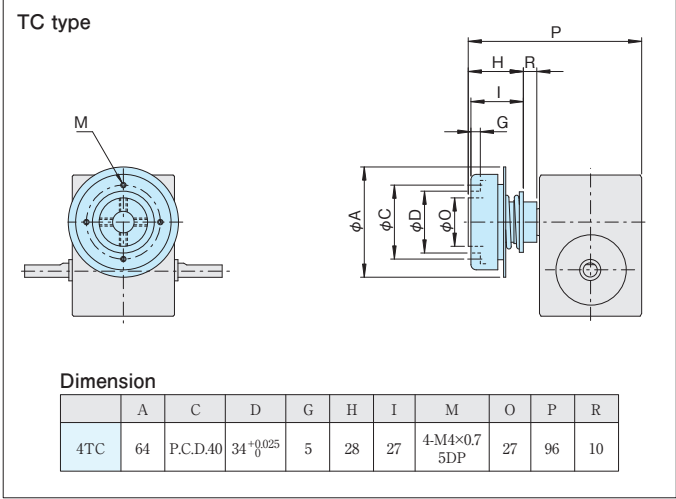
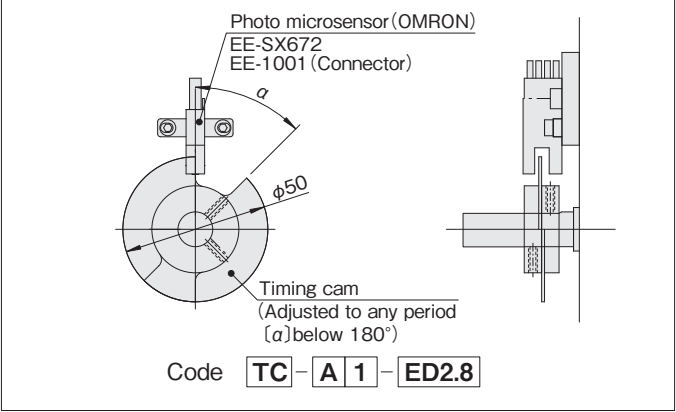


Figure ED2.8-2



Timing cam-Photo switch (option)

Figure ED2.8-3



ED3.8/ED3.8G

ED3.8 Dimensions

(Unit : mm)

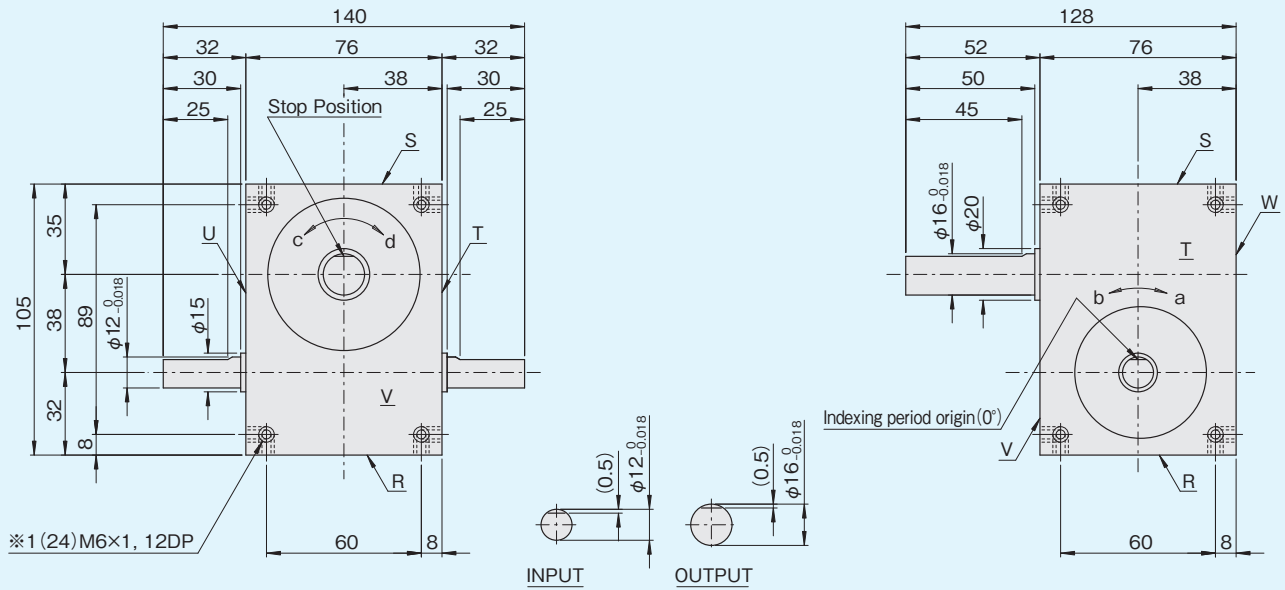


Figure ED3.8-1

※1: Mounting holes on sides R, S, V, and W are standard. Mounting holes on only a user-specified side is optional.

ED3.8G Dimensions

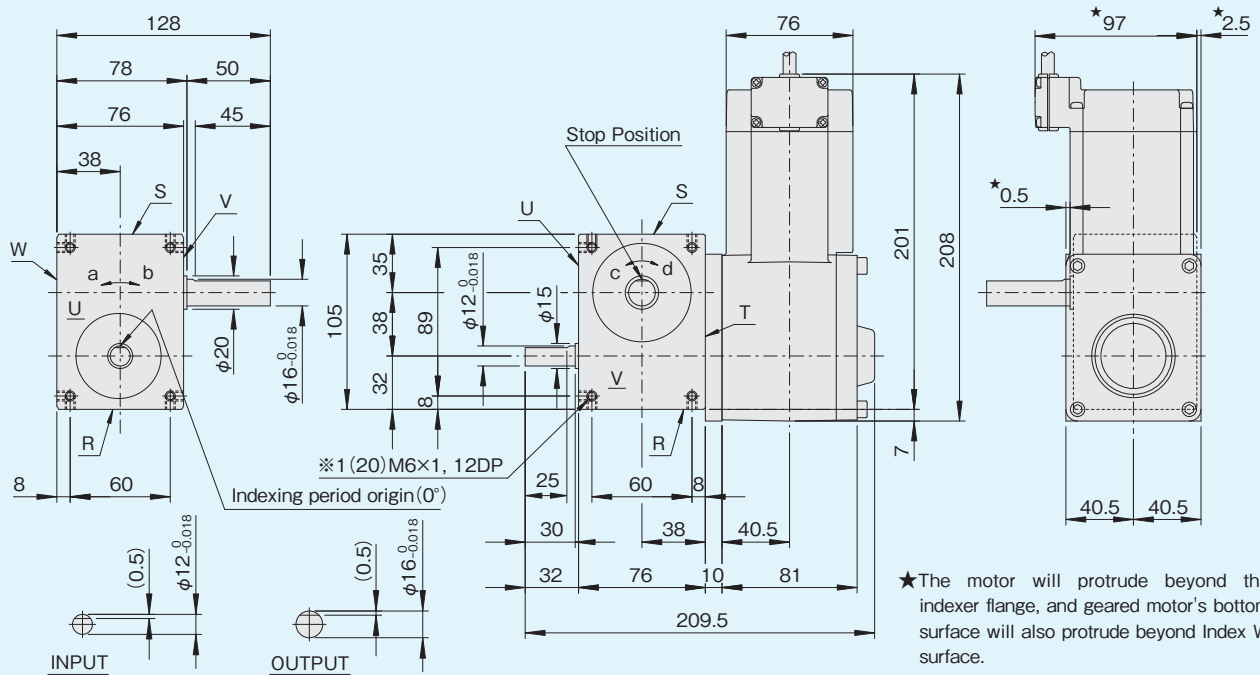


Figure ED3.8-2

※1: Mounting holes on sides R, S, V, and W are standard. Mounting holes on only a user-specified side is optional.

★The motor will protrude beyond the indexer flange, and geared motor's bottom surface will also protrude beyond Index W surface.

Specifications of geared motor

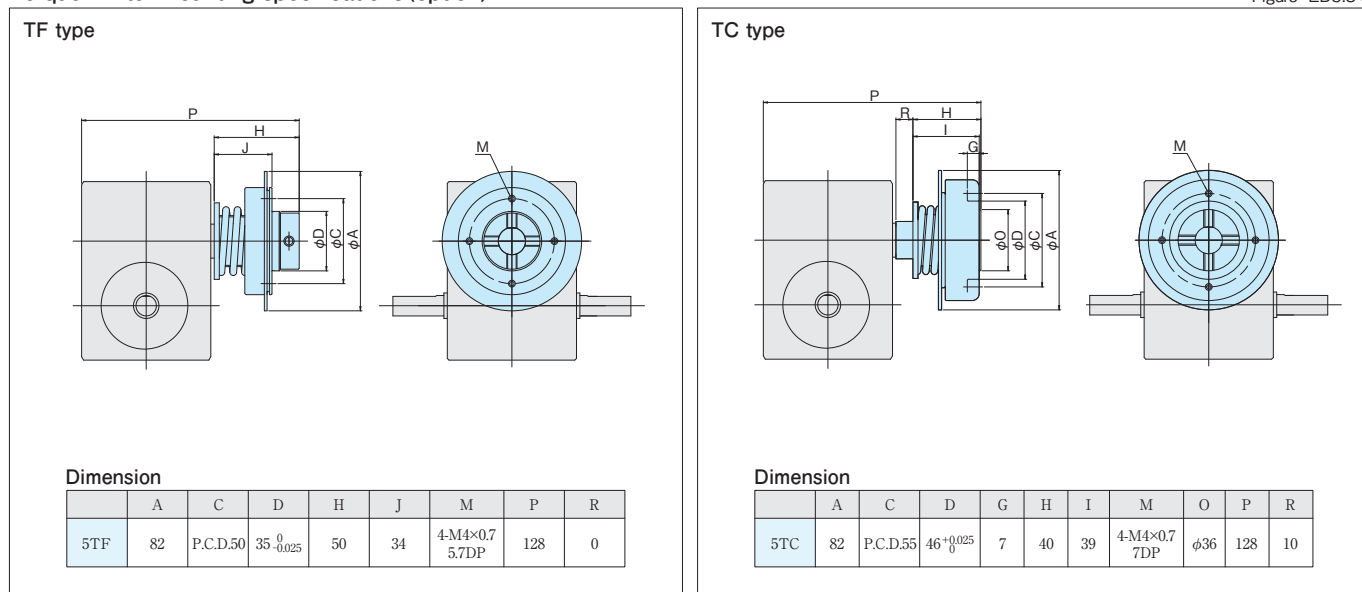
Table ED3.8-1

Code	Motor Power (W)	Voltage (V)	Actual Gear Ratio (i)	Output Shaft Speed N _M (rpm)		Output Allowable Torque T _R (N·m)		Moment of inertia J _M (kg·m ²)	Weight (kg)
Waterproof motor※				50Hz	60Hz	50Hz	60Hz		
GM25-10AS-ED3.8G-R	25	200	10	150	180	1.08		0.6×10 ⁻⁴	3.5
GM25-15AS-ED3.8G-R			15	100	120	1.67			
GM25-20AS-ED3.8G-R			20	75	90	2.25			
GM25-25AS-ED3.8G-R			25	60	72	2.74			
GM25-30AS-ED3.8G-R			30	50	60	3.33			
GM25-40AS-ED3.8G-R			40	37.5	45	4.41			
GM25-50AS-ED3.8G-R			50	30	36	5.49			
GM25-60AS-ED3.8G-R			60	25	30	6.66			

※ A waterproof motor is standard for model ED3.8G.

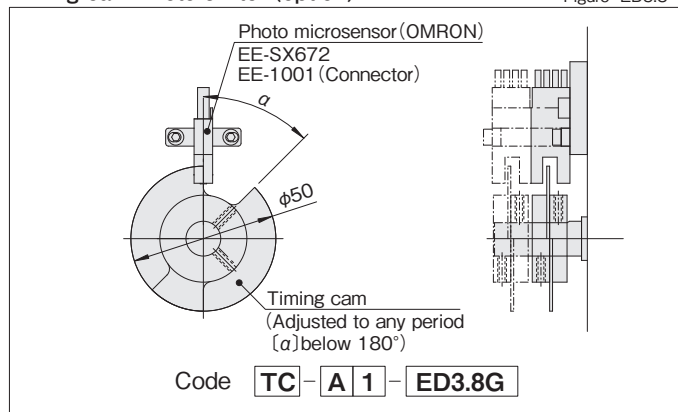
Torque limiter mounting specifications (option)

Figure ED3.8-3



Timing cam-Photo switch (option)

Figure ED3.8-4



Solid line shows 1 set mounted, dashed line shows 2 sets mounted.

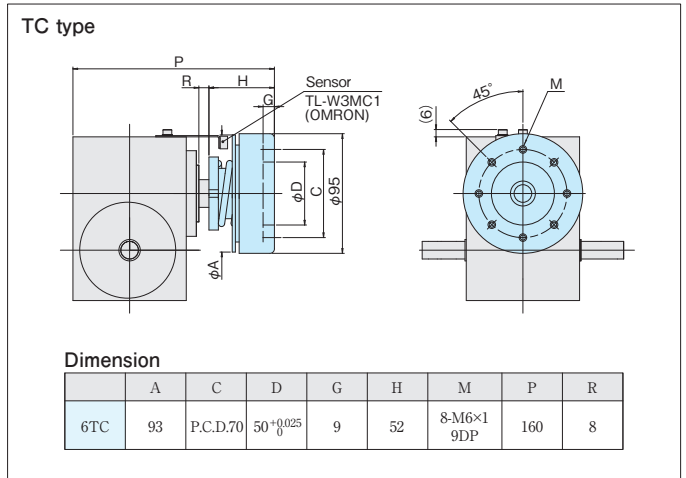
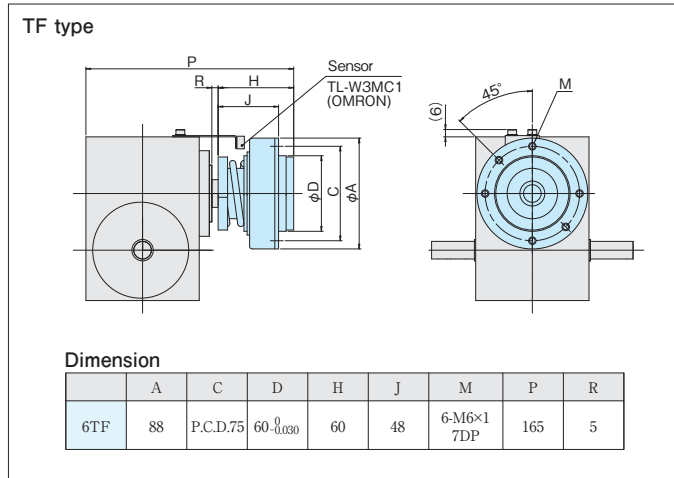
Specifications of geared motor

Table ED4.5-1

Code	Motor Power (W)	Voltage (V)	Actual Gear Ratio (i)	Output Shaft Speed N _M (rpm)		Output Allowable Torque T _R (N·m)		Moment of inertia J _M (kg·m ²)	Weight (kg)
Standard motor				50Hz	60Hz	50Hz	60Hz		
GM60-10AS-ED4.5G	60	200	10	150	180	2.74		0.8×10 ⁻⁴	3
GM60-15AS-ED4.5G			15	100	120	4.12			
GM60-20AS-ED4.5G			20	75	90	5.49			
GM60-25AS-ED4.5G			25	60	72	6.96			
GM60-30AS-ED4.5G			30	50	60	8.33			
GM60-40AS-ED4.5G			40	37.5	45	10.8			
GM60-50AS-ED4.5G			50	30	36	13.7			
GM60-60AS-ED4.5G			60	25	30	16.7			

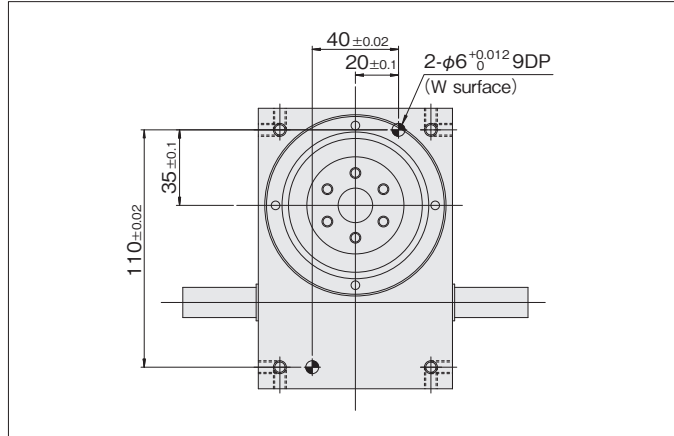
Torque limiter mounting specifications (option)

Figure ED4.5-3



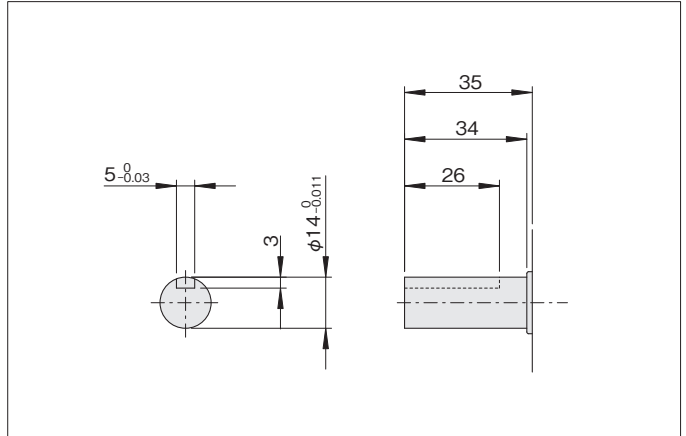
Reamed hole (option)

Figure ED4.5-4



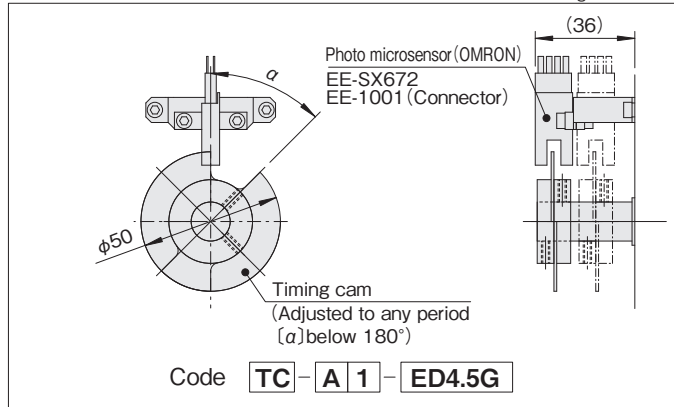
Input shaft with key-way (option)

Figure ED4.5-5



Timing cam-Photo switch (option)

Figure ED4.5-6



Solid line shows 1 set mounted, dashed line shows 2 sets mounted.

ED6/ED6G

ED6 Dimensions

(Unit : mm)

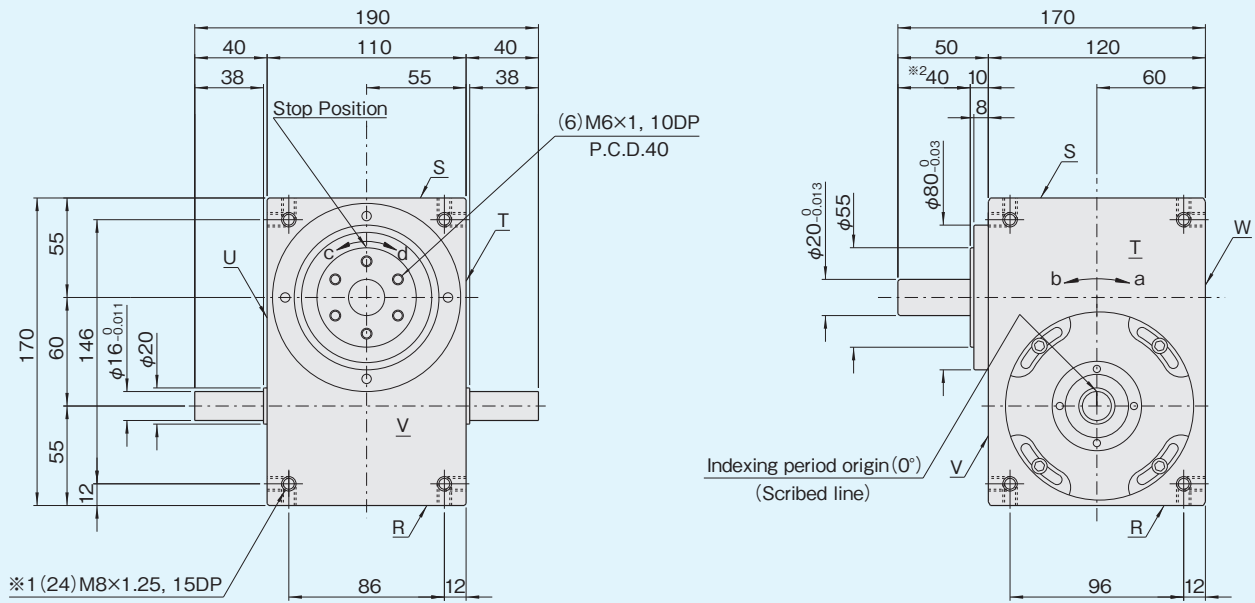


Figure ED6-1

※1:Tapped mounting holes on all surfaces come automatically. Mounting holes on only a user-specified side is optional. ※2:Output shaft available to shorten to 10mm height.

ED6G Dimensions

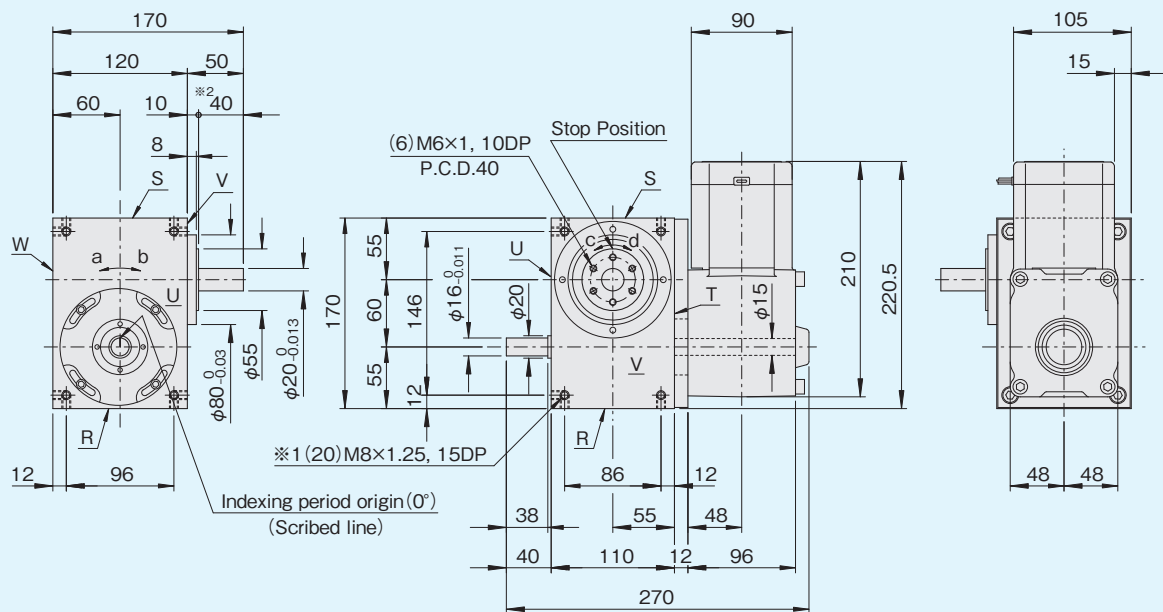


Figure ED6-2

※1:Tapped mounting holes on all surfaces come automatically. Mounting holes on only a user-specified side is optional. ※2:Output shaft available to shorten to 10mm height.

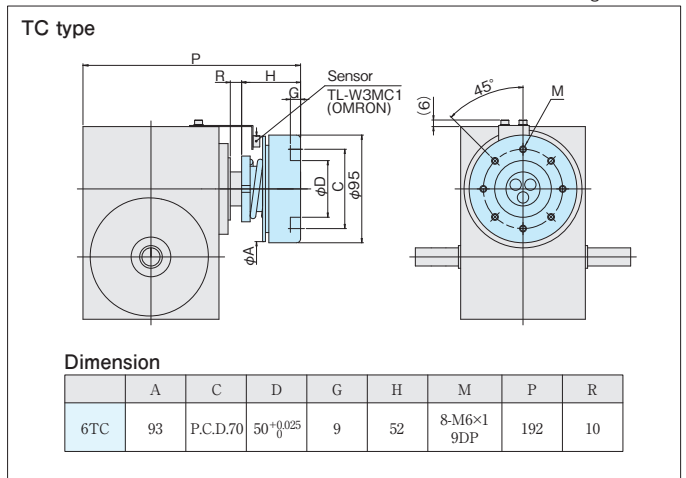
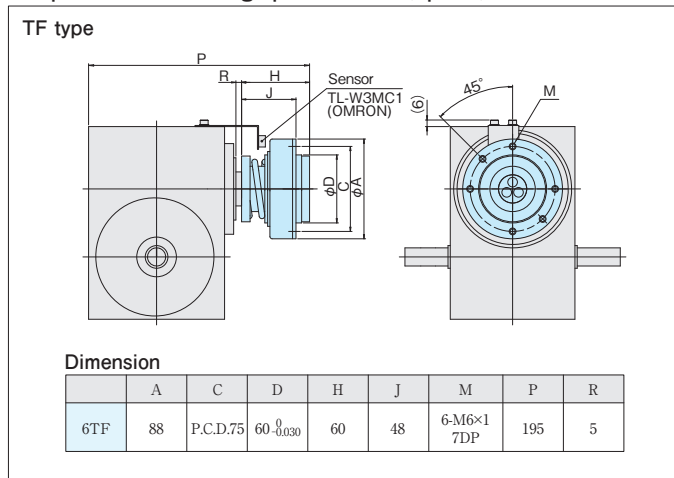
Specifications of geared motor

Table ED6-1

Code	Motor Power (W)	Voltage (V)	Actual Gear Ratio (i)	Output Shaft Speed N _M (rpm)		Output Allowable Torque T _R (N·m)		Moment of inertia J _M (kg·m ²)	Weight (kg)
Standard motor				50Hz	60Hz	50Hz	60Hz		
GM90-10AS-ED6G	90	200	10	150	180	4.12		1.2×10 ⁻⁴	4
GM90-15AS-ED6G			15	100	120	6.17			
GM90-20AS-ED6G			20	75	90	8.33			
GM90-25AS-ED6G			25	60	72	10.8			
GM90-30AS-ED6G			30	50	60	12.7			
GM90-40AS-ED6G			40	37.5	45	16.7			
GM90-50AS-ED6G			50	30	36	20.6			
GM90-60AS-ED6G			60	25	30	24.5			

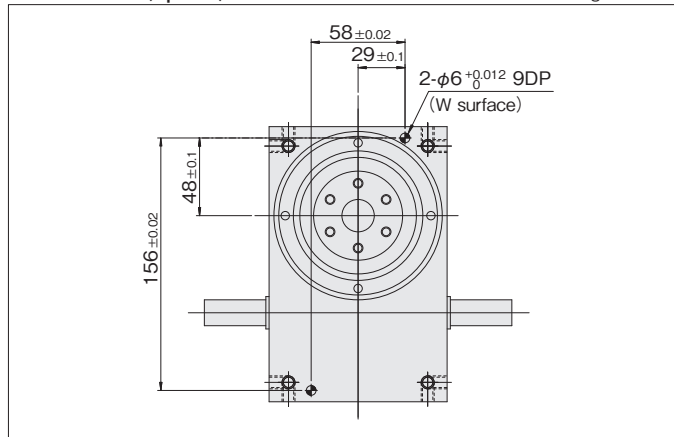
Torque limiter mounting specifications (option)

Figure ED6-3



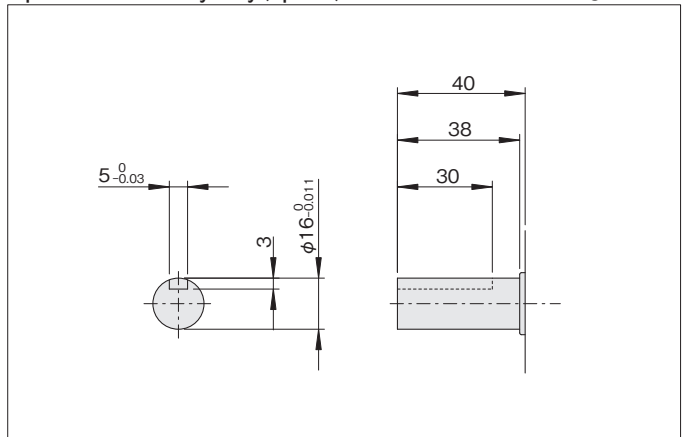
Reamed hole (option)

Figure ED6-4



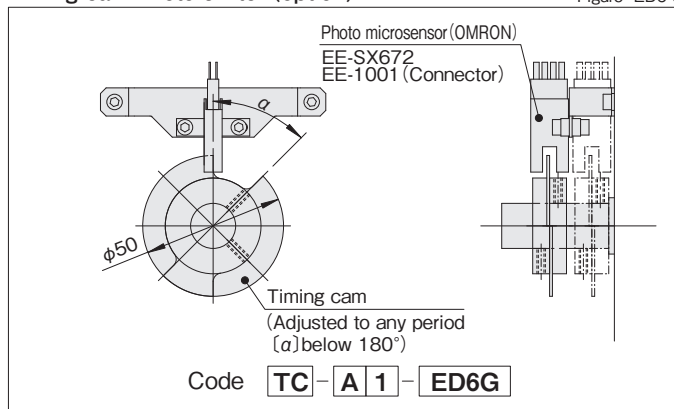
Input shaft with key-way (option)

Figure ED6-5



Timing cam-Photo switch (option)

Figure ED6-6



Solid line shows 1 set mounted, dashed line shows 2 sets mounted.

ED7/ED7G

ED7 Dimensions

(Unit : mm)

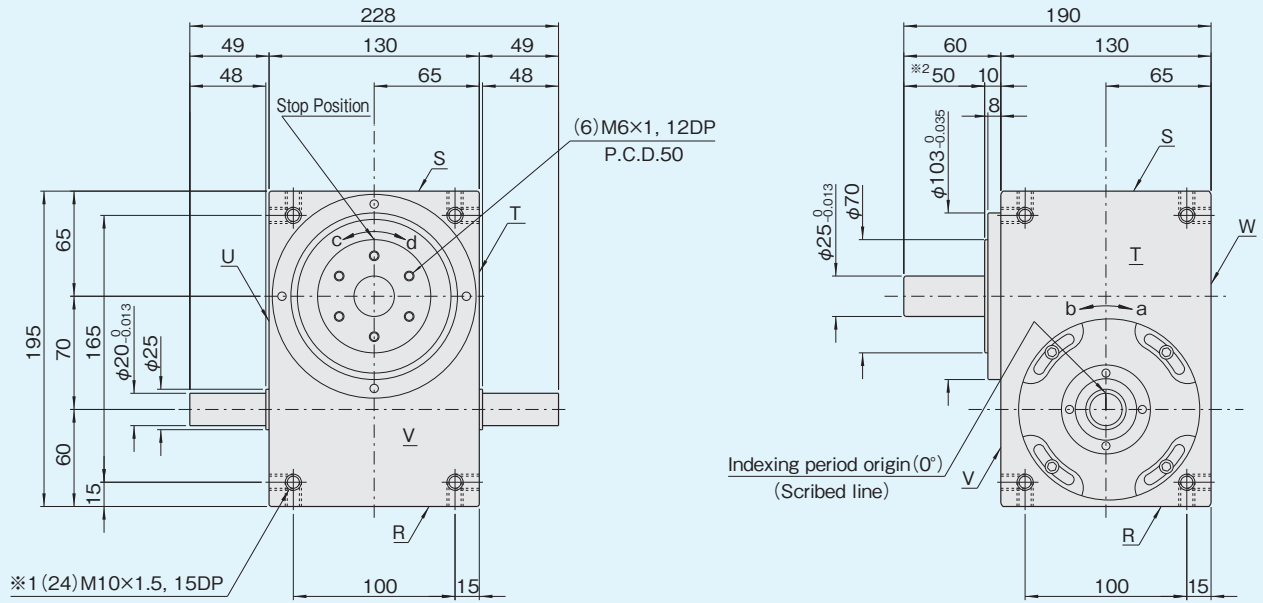


Figure ED7-1

※1:Tapped mounting holes on all surfaces come automatically. Mounting holes on only a user-specified side is optional. ※2:Output shaft available to shorten to 10mm height.

ED7G Dimensions

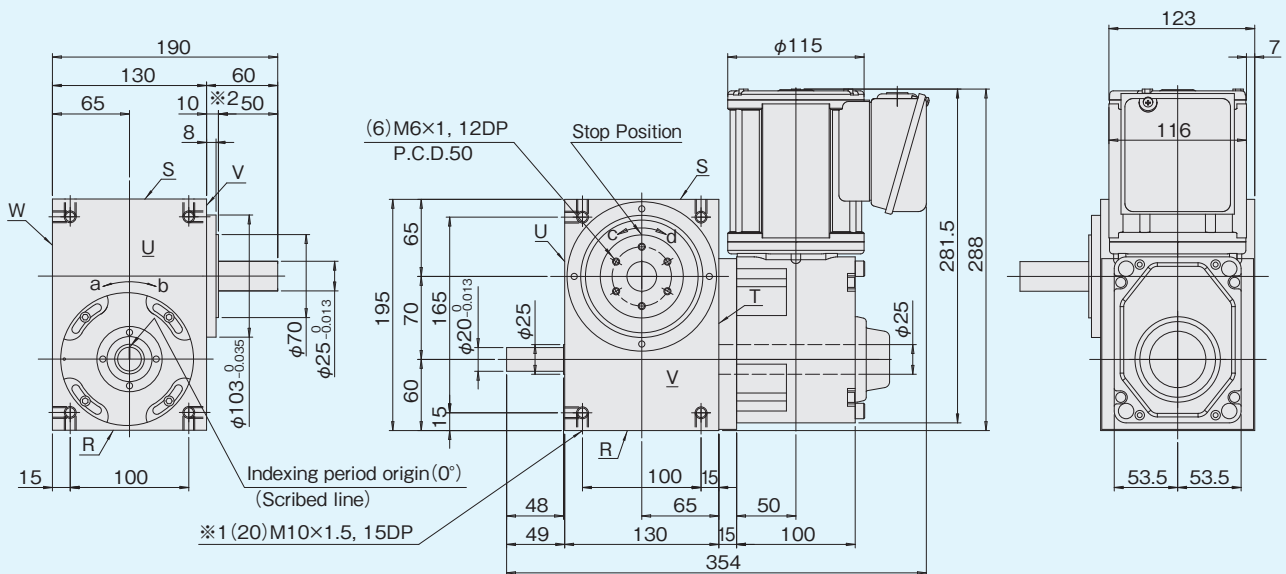


Figure ED7-2

※1:Tapped mounting holes on all surfaces come automatically. Mounting holes on only a user-specified side is optional. ※2:Output shaft available to shorten to 10mm height.

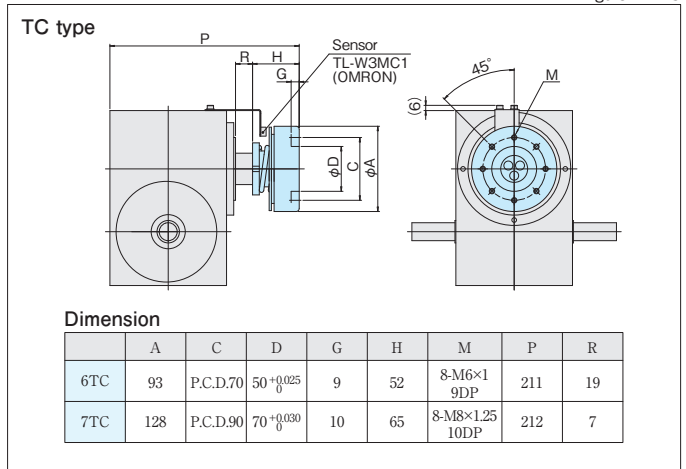
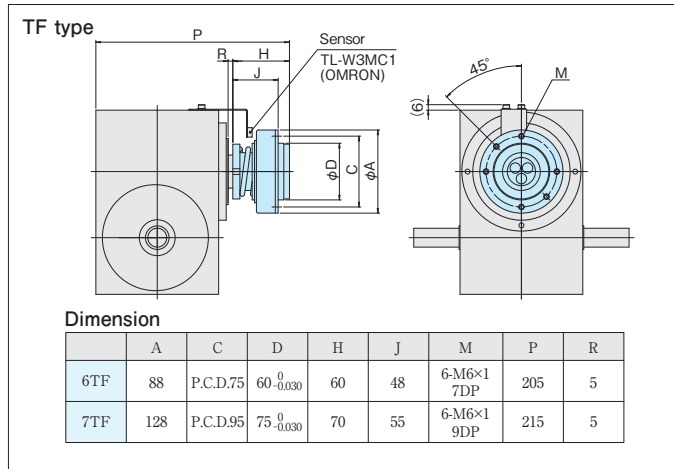
Specifications of geared motor

Table ED7-1

Code	Motor Power (W)	Voltage (V)	Actual Gear Ratio (i)	Output Shaft Speed N _M (rpm)		Output Allowable Torque T _R (N·m)		Moment of inertia J _M (kg·m ²)	Weight (kg)
				50Hz	60Hz	50Hz	60Hz		
Standard motor									
GM200-10AS-ED7G-01	200	200/220	10	150	180	11	9.2	10.0×10 ⁻⁴	8.5
GM200-12.5AS-ED7G-01			12.5	120	144	14	12		
GM200-15AS-ED7G-01			15	100	120	17	14		
GM200-20AS-ED7G-01			20	75	90	23	19		
GM200-25AS-ED7G-01			25	60	72	27	24		
GM200-30AS-ED7G-01			30	50	60	33	27		
GM200-40AS-ED7G-01			40	37.5	45	44	37		
GM200-50AS-ED7G-01			50	30	36	55	46		
GM200-60AS-ED7G-01			60	25	30	67	55		

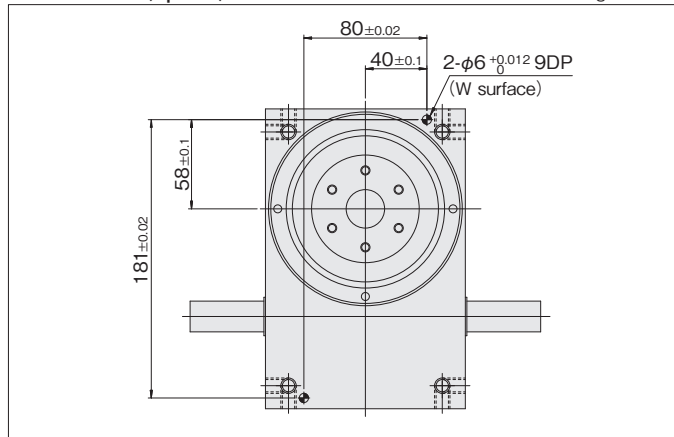
Torque limiter mounting specifications (option)

Figure ED7-3



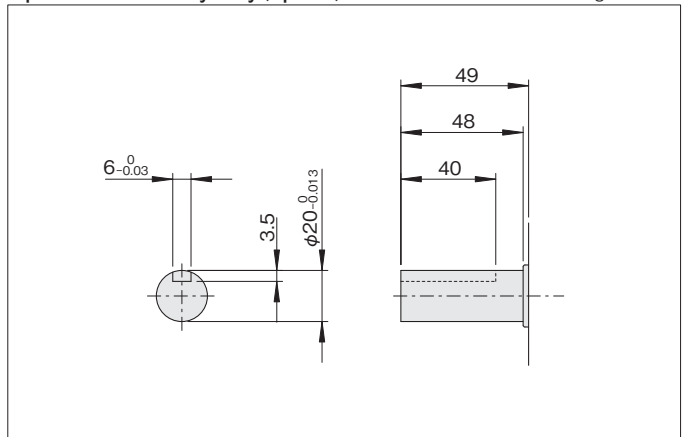
Reamed hole (option)

Figure ED7-4



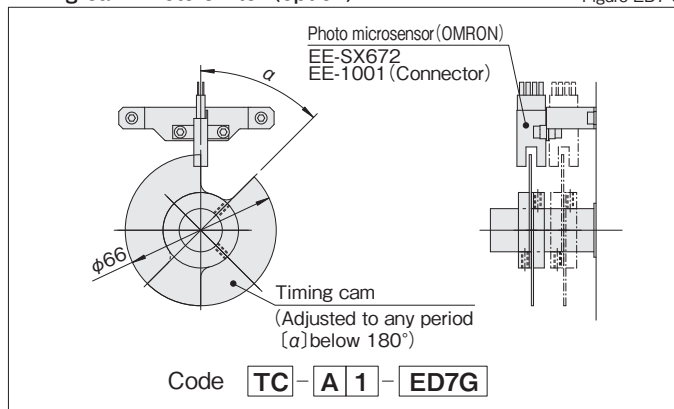
Input shaft with key-way (option)

Figure ED7-5



Timing cam-Photo switch (option)

Figure ED7-6



Solid line shows 1 set mounted, dashed line shows 2 sets mounted.

ED8/ED8G

ED8 Dimensions

(Unit : mm)

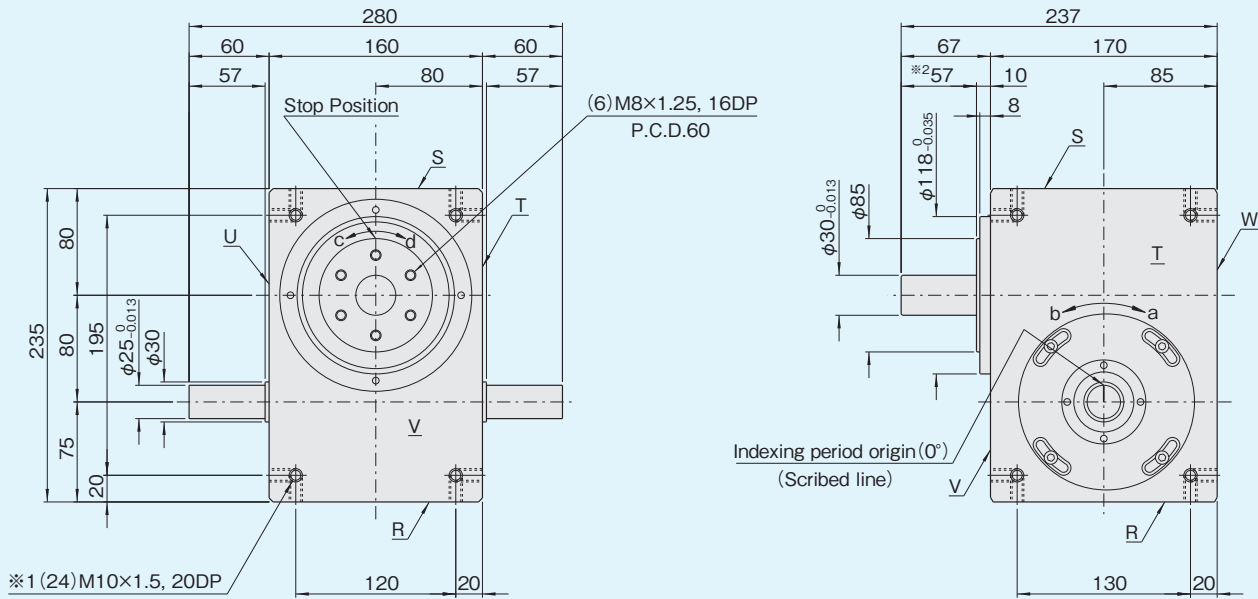


Figure ED8-1

※1: Tapped mounting holes on all surfaces come automatically. Mounting holes on only a user-specified side is optional. ※2: Output shaft available to shorten to 10mm height.

ED8G Dimensions

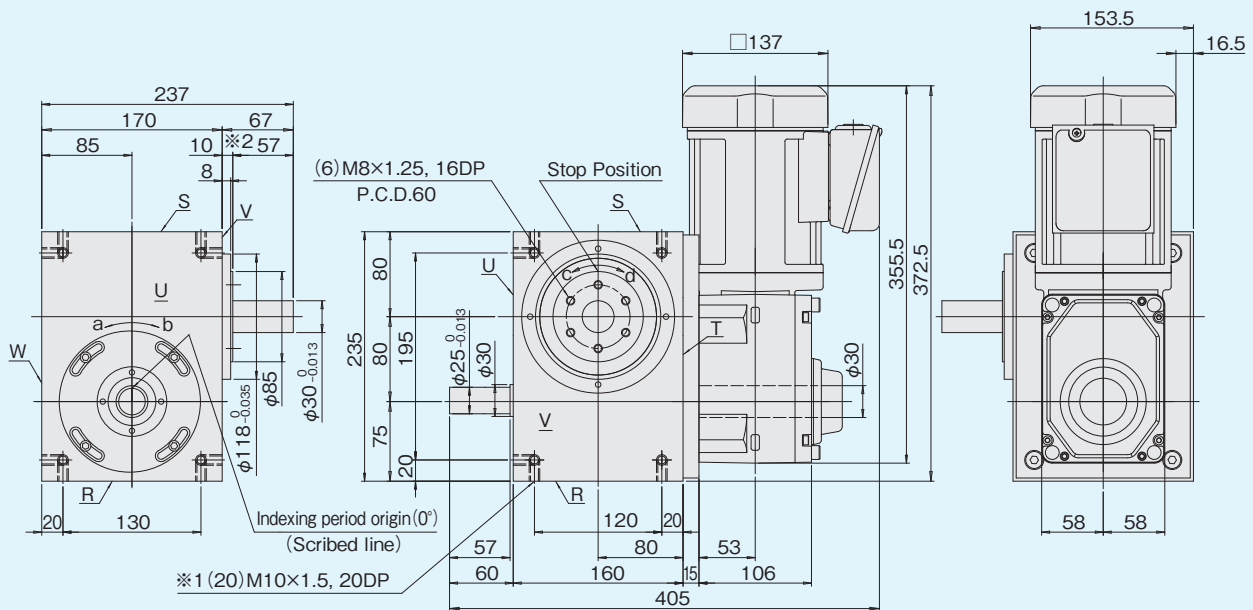


Figure ED8-2

※1: Tapped mounting holes on all surfaces come automatically. Mounting holes on only a user-specified side is optional. ※2: Output shaft available to shorten to 10mm height.

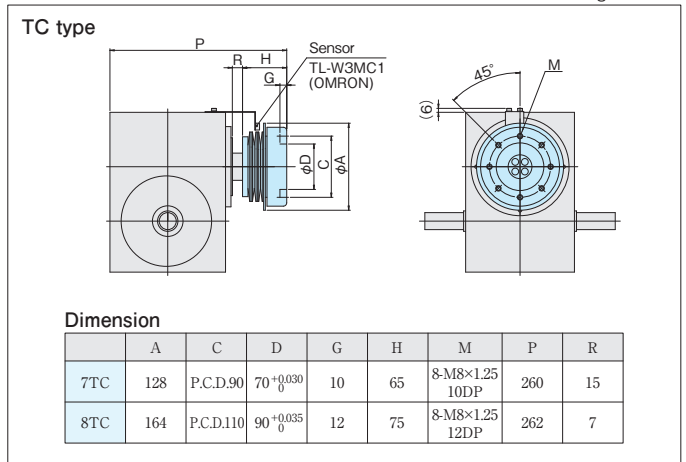
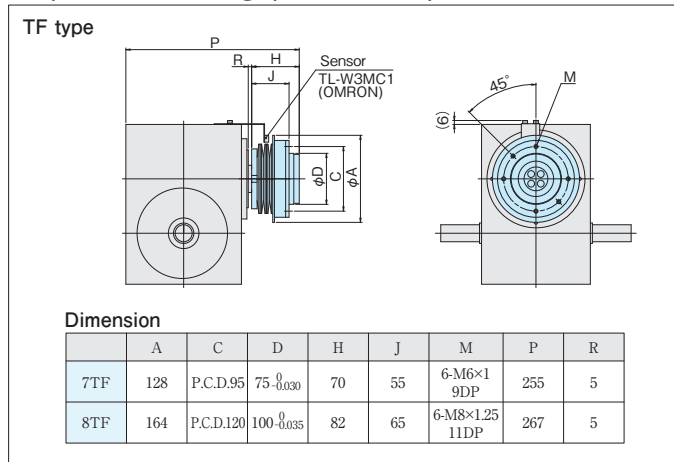
Specifications of geared motor

Table ED8-1

Code	Motor Power (W)	Voltage (V)	Actual Gear Ratio (i)	Output Shaft Speed N _M (rpm)		Output Allowable Torque T _R (N·m)		Moment of inertia J _M (kg·m ²)	Weight (kg)
				50Hz	60Hz	50Hz	60Hz		
Standard motor									
GM400-10AS-ED8G-01	400	200/220	10	150	180	23	19	15.0×10 ⁻⁴	11.5
GM400-12.5AS-ED8G-01			12.5	120	144	27	24		
GM400-15AS-ED8G-01			15	100	120	33	27		
GM400-20AS-ED8G-01			20	75	90	44	37		
GM400-25AS-ED8G-01			25	60	72	55	46		
GM400-30AS-ED8G-01			30	50	60	67	55		
GM400-40AS-ED8G-01			40	37.5	45	88	74		
GM400-50AS-ED8G-01			50	30	36	111	92		
GM400-60AS-ED8G-01			60	25	30	133	111		

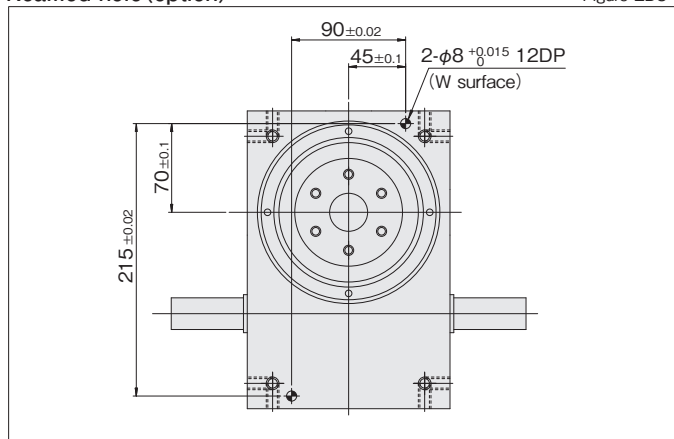
Torque limiter mounting specifications (option)

Figure ED8-3



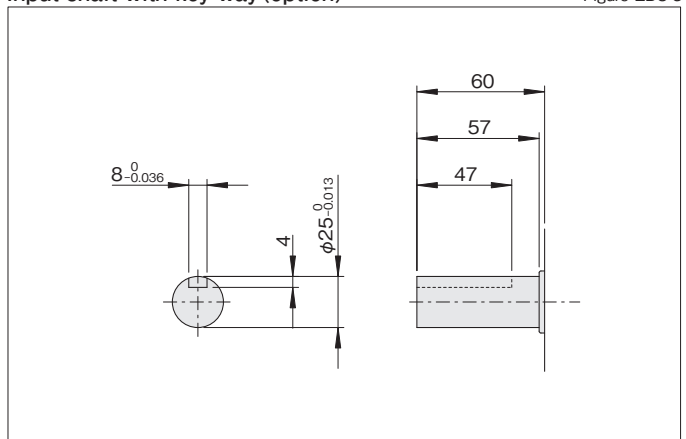
Reamed hole (option)

Figure ED8-4



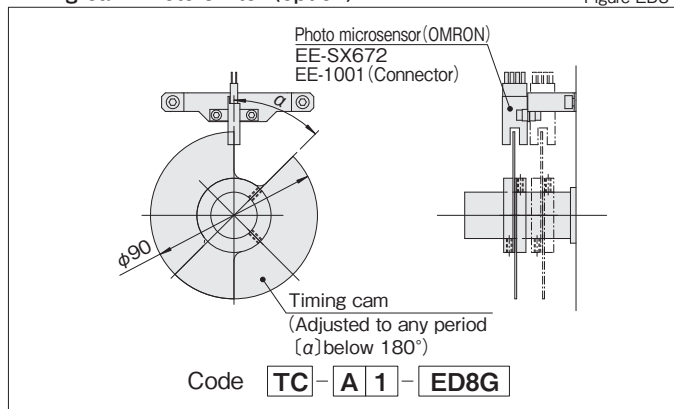
Input shaft with key-way (option)

Figure ED8-5



Timing cam-Photo switch (option)

Figure ED8-6



Solid line shows 1 set mounted, dashed line shows 2 sets mounted.

ED11/ED11G

ED11 Dimensions

(Unit : mm)

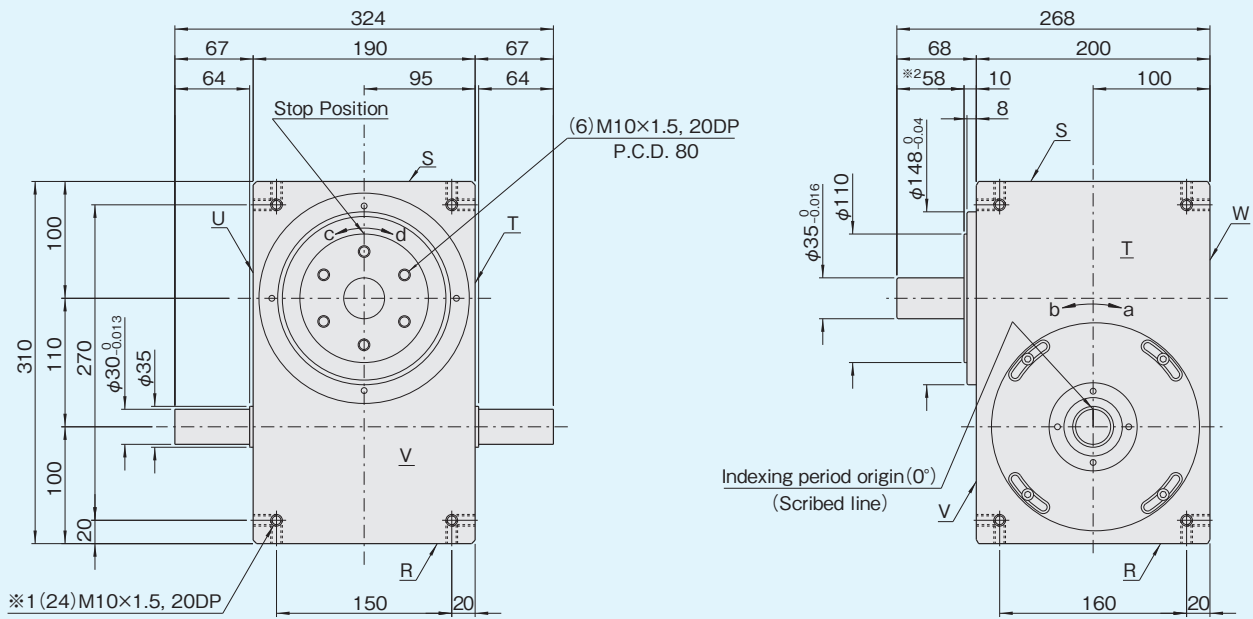


Figure ED11-1

※1: Tapped mounting holes on all surfaces come automatically. Mounting holes on only a user-specified side is optional. ※2: Output shaft available to shorten to 10mm height.

ED11G Dimensions

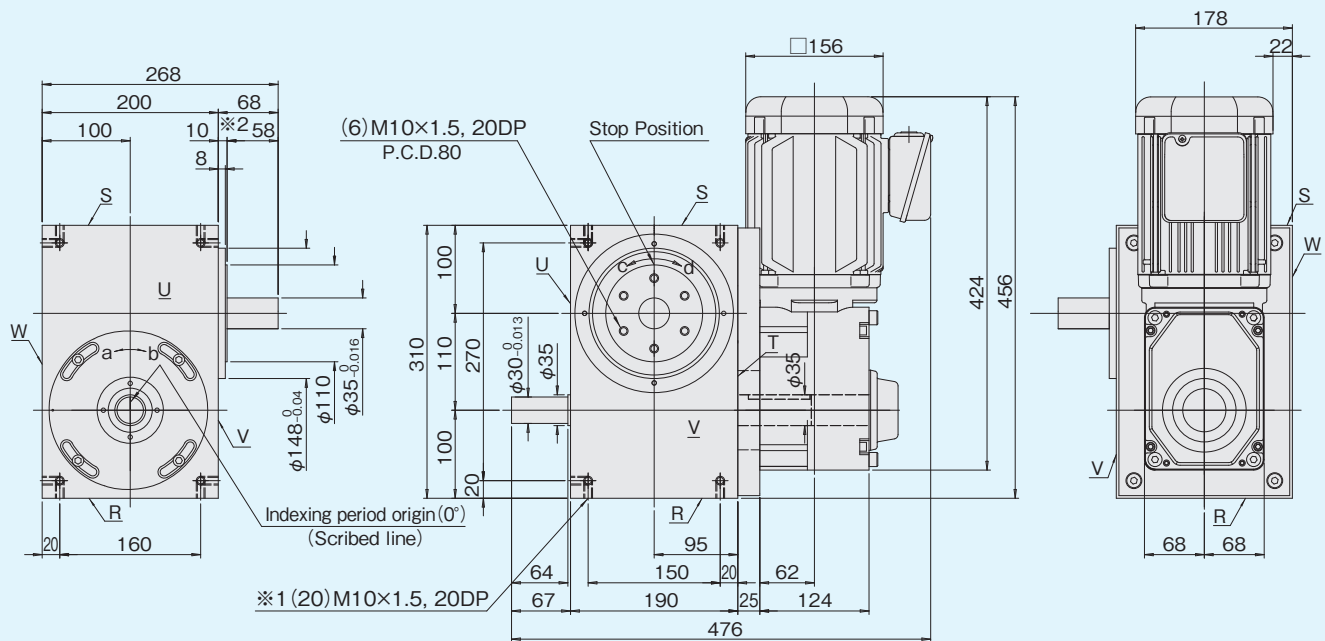


Figure ED11-2

※1: Tapped mounting holes on all surfaces come automatically. Mounting holes on only a user-specified side is optional. ※2: Output shaft available to shorten to 10mm height.

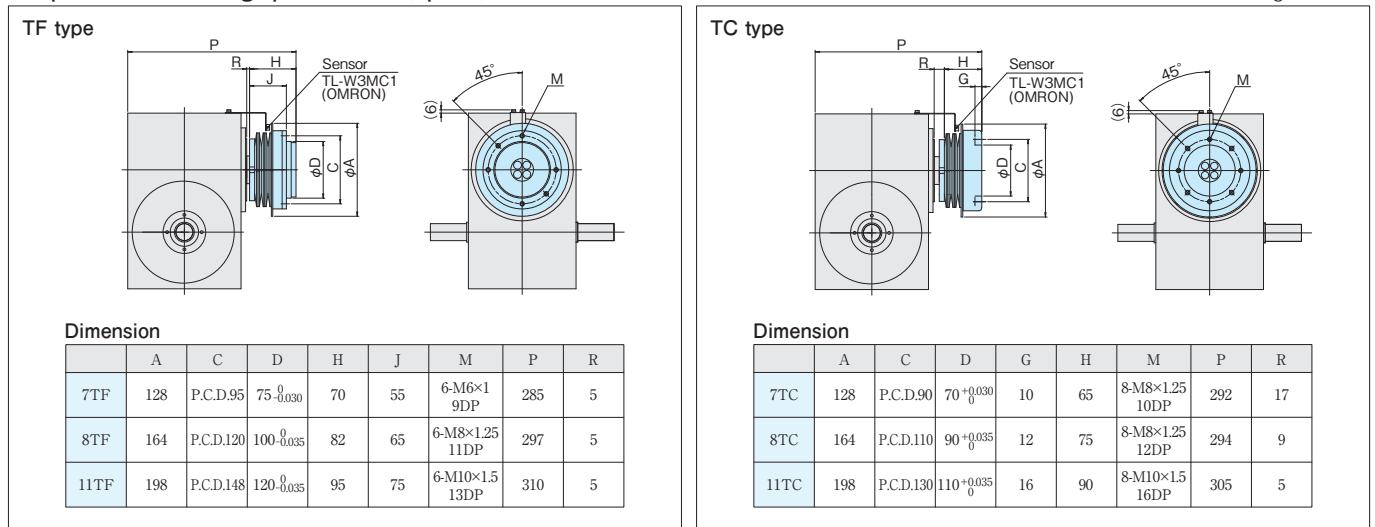
Specifications of geared motor

Table ED11-1

Code	Motor Power (W)	Voltage (V)	Actual Gear Ratio (i)	Output Shaft Speed N _M (rpm)		Output Allowable Torque T _R (N·m)		Moment of inertia J _M (kg·m ²)	Weight (kg)
				50Hz	60Hz	50Hz	60Hz		
Standard motor									
GM750-10AS-ED11G-02	750	200/220	10	150	180	41	34	30.0×10 ⁻⁴	21
GM750-12.5AS-ED11G-02			12.5	120	144	52	43		
GM750-15AS-ED11G-02			15	100	120	63	52		
GM750-20AS-ED11G-02			20	75	90	83	70		
GM750-25AS-ED11G-02			25	60	72	104	86		
GM750-30AS-ED11G-02			30	50	60	124	104		
GM750-40AS-ED11G-02			40	37.5	45	166	138		
GM750-50AS-ED11G-02			50	30	36	208	173		
GM750-60AS-ED11G-02			60	25	30	249	208		

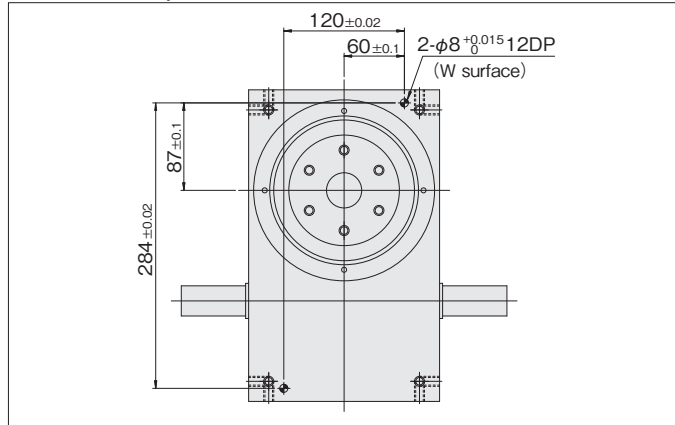
Torque limiter mounting specifications (option)

Figure ED11-3



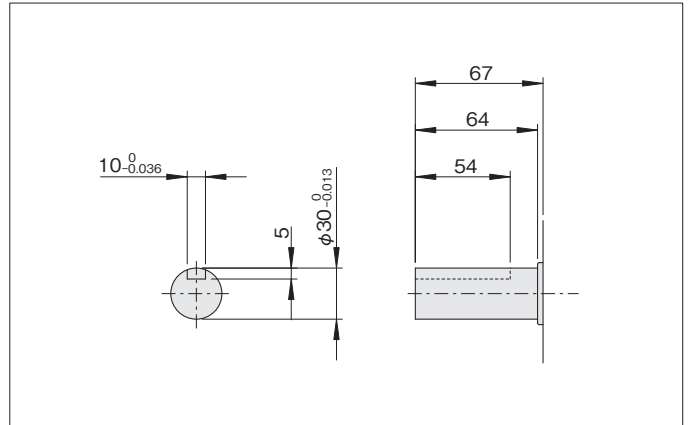
Reamed hole (option)

Figure ED11-4



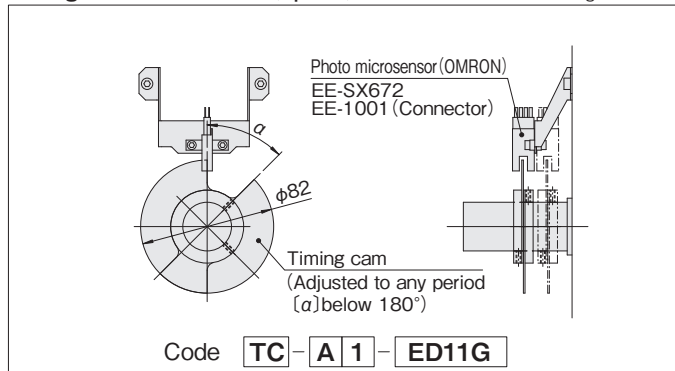
Input shaft with key-way (option)

Figure ED11-5



Timing cam-Photo switch (option)

Figure ED11-6



Solid line shows 1 set mounted, dashed line shows 2 sets mounted.

Reading the torque transmission capacity table for Indexing drives

The torque transmission capacity table gives the values for internal inertia load torque T_{oi} and dynamic-rated output torque T_{op} .

This table was calculated based on an indexing drive that has been mounted and lubricated according to specifications and is being operated under normal conditions. Adverse operating conditions and poor maintenance can effect the transmission capacities

and life of the indexing drive.

Note, when selecting models, it is important that the torque transmission capacity table be read correctly in order to make the proper selection. Always make sure to read and understand the following explanations carefully.

Selection data

- Number of stops (S).....2
- Index period (θ).....270deg
- Cam curve.....SMS-3 (Cam curve code 7)
- Indexes per minute.....20 (Input shaft speed N x number of dwells m)

ED2.8~ED11 1dwell												2, 3 stop	
Number of Stops S	Index Period θ (deg)	C O D E	Static-rated Output Torque T_s (N·m)	Dynamic-rated Output Torque Internal Inertia Load Torque Top (N·m) Toi (N·m)								Camshaft Frictional Torque T_x (N·m)	Sankyo Cam Follower SCF (mm)
				Input Shaft Speed (Index/min)									
				20	40	60	80	100	120	200	300		
2	270	ED2.8 0227 7R	2.2	1	0.8	0.8	0.7	0.6	0.6	0.5	0.5	0.5	6
		ED3.8 0227 7R	6.5	2.8	2.4	2.2	2	1.9	1.8	1.5	1.3	0.9	8
		ED4.5 0227 7R	12.0	6.1	4.8	4.4	4.0	3.8	3.6	3.0	2.7	1.2	12
				14.2	13.0	11.9	11.2	10.6	9.1	8.0		2.7	14

When making sudden starts and stops

Select a model where starting and stopping torque T_d is less than the static-rated output torque T_s .

Cam Shaft Speed (N)

Divide the number of indexes per minute by the number of dwells.

Example) For a 2-dwell cam

$$\text{Input shaft speed (N)} = \frac{\text{Indexes per minute}}{2 \text{ (number of dwells)}}$$

When selecting gear reducers and motors

First, you must obtain cam shaft torque T_c . To obtain T_c , you will need the value for cam shaft frictional torque T_x .

For other cams

Please consult Sankyo.

1dwell Cam Curve SMS-3(Curve Code 7)ED2.8~ED11

ED2.8~ED11 1dwell

2, 3 stop

Number of Stops S	Index Period θ (deg)	C O D E	Static-rated Output Torque Ts (N·m)	Dynamic-rated Output Torque Internal Inertia Load Torque								Top (N·m) Toi (N·m)	Camshaft Frictional Torque Tx (N·m)	Sankyo Cam Follower SCF (mm)
				20	40	60	80	100	120	200	300			
2	270	ED2.8 0227 7R	2.2	1	0.8	0.8	0.7	0.6	0.6	0.5	0.5	0.5	6	
		ED3.8 0227 7R	6.5	2.8	2.4	2.2	2	1.9	1.8	1.5	1.3	0.9	8	
		ED4.5 0227 7R	12.0	6.1	4.8	4.4	4.0	3.8	3.6	3.0 0.1	2.7 0.2	1.2	12	
		ED6 0227 7R	41.9	18.1	14.2	13.0	11.9	11.2 0.1	10.6 0.1	9.1 0.2	8.0 0.5	2.7	14	
		ED7 0227 7R	108.9	55.3	43.3	39.8 0.1	36.5 0.1	34.1 0.2	32.3 0.2	27.7 0.7	24.5 1.5	4.7	19	
		ED8 0227 7R	194.8	99.8	78.2 0.1	71.7 0.1	65.8 0.3	61.6 0.4	58.3 0.6	50.0 1.6	44.3 3.6	8.4	22	
		ED11 0227 7R	478.3	242.7 0.1	190.3 0.2	174.6 0.5	160.2 0.9	149.8 1.3	141.8 1.9	121.7 5.4	107.7 12.1	15.6	30	
	300	ED2.8 0230 7R	2.4	1	0.8	0.8	0.7	0.6	0.6	0.5	0.5	0.4	6	
		ED3.8 0230 7R	7	2.8	2.4	2.2	2	1.9	1.8	1.5	1.3	0.9	8	
		ED4.5 0230 7R	12.8	6.1	4.8	4.4	4.0	3.8	3.6	3.1 0.1	2.7 0.2	1.1	12	
		ED6 0230 7R	44.0	18.0	14.1	12.9	11.9	11.1	10.5 0.1	9.0 0.2	8.0 0.4	2.6	14	
		ED7 0230 7R	116.3	55.4	43.4	39.8	36.5 0.1	34.2 0.1	32.3 0.2	27.7 0.5	24.6 1.2	4.4	19	
		ED8 0230 7R	208.1	99.9	78.3 0.1	71.9 0.1	65.9 0.2	61.6 0.3	58.4 0.5	50.1 1.3	44.3 2.9	8.1	22	
		ED11 0230 7R	510.7	243.0	190.5 0.2	174.8 0.4	160.3 0.7	150.0 1.1	142.0 1.6	121.8 4.4	107.9 9.8	14.9	30	
	330	ED2.8 0233 7R	2.5	1	0.8	0.8	0.7	0.6	0.6	0.5	0.5	0.4	6	
		ED3.8 0233 7R	7.4	2.8	2.4	2.2	2	1.9	1.8	1.5	1.3	0.8	8	
		ED4.5 0233 7R	13.5	6.1	4.8	4.4	4.0	3.8	3.6	3.1 0.1	2.7 0.1	1.1	12	
		ED6 0233 7R	45.8	17.8	14.0	12.8	11.8	11.0	10.4 0.1	8.9 0.2	7.9 0.4	2.5	14	
		ED7 0233 7R	122.9	55.3	43.3	39.8	36.5 0.1	34.1 0.1	32.3 0.2	27.7 0.4	24.5 1.0	4.3	19	
		ED8 0233 7R	220.0	99.8	78.3	71.8 0.1	65.9 0.2	61.6 0.3	58.3 0.4	50.0 1.1	44.3 2.4	7.8	22	
		ED11 0233 7R	539.4	242.7	190.3 0.1	174.6 0.3	160.1 0.6	149.8 0.9	141.8 1.3	121.6 3.6	107.7 8.1	14.3	30	
3	180	ED2.8 0318 7R	2.2	1.2	1	0.9	0.8	0.8	0.7	0.6	0.6	0.5	6	
		ED3.8 0318 7R	6.5	3.4	2.9	2.6	2.4	2.2	2.1	1.8	1.6	0.9	8	
		ED4.5 0318 7R	12.0	7.3	5.7	5.2	4.8	4.5	4.3 0.1	3.7 0.1	3.2 0.3	1.2	12	
		ED6 0318 7R	41.9	21.7	17.0	15.6	14.3 0.1	13.4 0.1	12.7 0.1	10.9 0.3	9.6 0.8	2.7	14	
		ED7 0318 7R	108.9	66.3	52.0	47.7 0.1	43.8 0.2	40.9 0.2	38.8 0.4	33.3 1.0	29.4 2.2	4.7	19	
		ED8 0318 7R	194.8	119.7	93.9 0.1	86.1 0.2	79.0 0.4	73.9 0.6	69.9 0.9	60.0 2.4	53.1 5.4	8.4	22	
		ED11 0318 7R	478.3	291.3 0.1	228.4 0.3	209.5 0.7	192.2 1.3	179.8 2.0	170.2 2.9	146.0 8.1	129.3 18.2	15.6	30	
	210	ED2.8 0321 7R	2.5	1.2	1	0.9	0.8	0.8	0.7	0.6	0.6	0.4	6	
		ED3.8 0321 7R	7.2	3.4	2.9	2.6	2.4	2.2	2.1	1.8	1.6	0.8	8	
		ED4.5 0321 7R	13.2	7.3	5.7	5.3	4.8	4.5	4.3	3.7 0.1	3.2 0.2	1.1	12	
		ED6 0321 7R	45.0	21.5	16.8	15.4	14.2	13.3 0.1	12.5 0.1	10.8 0.3	9.5 0.6	2.6	14	
		ED7 0321 7R	131.0	77.4	60.7	55.7 0.1	51.1 0.1	47.8 0.2	45.2 0.3	38.8 0.8	34.4 1.7	4.8	22	
		ED8 0321 7R	214.2	119.9	94.0 0.1	86.2 0.2	79.1 0.3	74.0 0.4	70.0 0.6	60.1 1.8	53.2 4.0	7.9	22	
		ED11 0321 7R	525.5	291.6 0.1	228.6 0.2	209.7 0.5	192.4 1.0	179.9 1.5	170.3 2.1	146.1 5.9	129.4 13.4	14.6	30	

Note : The Torque Transmission Capacity is the same whether the rotating direction of the input/output shafts are indicated as right hand cams (R), or left hand cams (L). The figures in the Torque Transmission Capacity Table are indicated as R.

ED2.8~ED11 1dwell

3, 4 stop

Number of Stops S	Index Period θ (deg)	C O D E	Static-rated Output Torque Ts (N·m)	Dynamic-rated Output Torque Internal Inertia Load Torque						Top (N·m) Toi (N·m)		Camshaft Frictional Torque Tx (N·m)	Sankyo Cam Follower SCF (mm)
				20	40	Input Shaft Speed (Index/min)				200	300		
3	240	ED2.8 0324 7R	5.6	2.9	2.4	2.2	2	1.9	1.8	1.5	1.4	0.5	8
		ED3.8 0324 7R	13	6.9	5.8	5.3	4.9	4.6	4.3	3.7	3.3	1.1	10
		ED4.5 0324 7R	28.3	15.4	12.1	11.1	10.2	9.5	9.0	7.7 0.1	6.8 0.2	1.2	14
		ED6 0324 7R	47.3	21.2	16.6	15.2	14.0	13.1	12.4 0.1	10.6 0.2	9.4 0.4	2.4	14
		ED7 0324 7R	141.1	77.2	60.5	55.5 0.1	50.9 0.1	47.6 0.1	45.1 0.2	38.7 0.6	34.3 1.3	4.5	22
		ED8 0324 7R	230.5	119.5	93.7 0.1	85.9 0.1	78.8 0.2	73.7 0.3	69.8 0.5	59.9 1.3	53.0 3.0	7.5	22
		ED11 0324 7R	564.8	290.4	227.7 0.2	208.9 0.4	191.6 0.7	179.2 1.1	169.6 1.6	145.5 4.5	128.9 10.2	13.8	30
	270	ED2.8 0327 7R	6	2.8	2.4	2.2	2	1.9	1.8	1.5	1.4	0.4	8
		ED3.8 0327 7R	14	6.9	5.8	5.3	4.9	4.6	4.3	3.7	3.3	1	10
		ED4.5 0327 7R	30.0	15.3	12.0	11.0	10.1	9.4	8.9	7.7 0.1	6.8 0.1	1.2	14
		ED6 0327 7R	114.6	50.8	39.9	36.6	33.5	31.4	29.7 0.1	25.5 0.2	22.6 0.4	2.6	16
		ED7 0327 7R	149.6	76.7	60.2	55.2	50.6 0.1	47.4 0.1	44.8 0.2	38.5 0.5	34.1 1.1	4.3	22
		ED8 0327 7R	244.1	118.7	93.0	85.3 0.1	78.3 0.2	73.2 0.3	69.3 0.4	59.5 1.1	52.7 2.4	7.2	22
		ED11 0327 7R	597.4	288.3	226.1 0.1	207.4 0.3	190.2 0.6	177.9 0.9	168.4 1.3	144.5 3.6	127.9 8.1	13.1	30
	300	ED2.8 0330 7R	6.3	2.8	2.4	2.2	2	1.9	1.8	1.5	1.3	0.4	8
		ED3.8 0330 7R	14.9	6.9	5.8	5.3	4.9	4.6	4.3	3.7	3.3	0.9	10
		ED4.5 0330 7R	31.4	15.2	11.9	10.9	10.0	9.4	8.9	7.6 0.1	6.7 0.1	1.1	14
		ED6 0330 7R	118.1	50.0	39.2	36.0	33.0	30.9	29.2	25.1 0.1	22.2 0.3	2.5	16
		ED7 0330 7R	156.6	76.1	59.7	54.7	50.2 0.1	47.0 0.1	44.5 0.1	38.1 0.4	33.8 0.9	4.2	22
		ED8 0330 7R	255.4	117.6	92.2	84.6 0.1	77.6 0.1	72.6 0.2	68.7 0.3	58.9 0.9	52.2 1.9	6.9	22
		ED11 0330 7R	624.6	285.6	223.9 0.1	205.4 0.3	188.4 0.5	176.2 0.7	166.9 1.0	143.2 2.9	126.8 6.5	12.6	30
	330	ED2.8 0333 7R	6.6	2.8	2.4	2.2	2	1.9	1.8	1.5	1.3	0.4	8
		ED3.8 0333 7R	15.7	6.9	5.8	5.3	4.9	4.6	4.3	3.7	3.3	0.9	10
		ED4.5 0333 7R	32.6	15.0	11.8	10.8	9.9	9.3	8.8	7.5	6.7 0.1	1.1	14
		ED6 0333 7R	120.8	49.2	38.5	35.4	32.4	30.3	28.7	24.6 0.1	21.8 0.2	2.4	16
		ED7 0333 7R	162.6	75.3	59.1	54.2	49.7 0.1	46.5 0.1	44.0 0.1	37.8 0.3	33.4 0.7	4.0	22
		ED8 0333 7R	264.8	116.4	91.3	83.7 0.1	76.8 0.1	71.8 0.2	68.0 0.3	58.3 0.7	51.7 1.6	6.7	22
		ED11 0333 7R	647.3	282.6	221.6 0.1	203.2 0.2	186.4 0.4	174.4 0.6	165.1 0.9	141.6 2.4	125.4 5.4	12.2	30
4	120	ED7 0412 7R	35.4	24.5	19.2 0.1	17.6 0.1	16.2 0.3	15.1 0.4	14.3 0.6	12.3 1.6	10.9 3.6	3.3	14
		ED8 0412 7R	56.5	39.5	30.9 0.2	28.4 0.4	26.0 0.6	24.4 1.0	23.1 1.4	19.8 3.9		4.0	14
		ED11 0412 7R	227.7	130.1 0.1	122.7 0.5	112.6 1.2	103.3 2.1	96.6 3.2	91.4 4.7	78.5 13.0	69.5 29.1	10.3	19
	150	ED6 0415 7R	18.6	10.7	8.4	7.7	7.0 0.1	6.6 0.1	6.2 0.1	5.3 0.4	4.7 0.8	2.3	12
		ED7 0415 7R	40.3	24.4	19.2	17.6 0.1	16.1 0.2	15.1 0.3	14.3 0.4	12.2 1.0	10.8 2.3	3.0	14
		ED8 0415 7R	175.0	74.6	74.6 0.1	74.6 0.2	74.6 0.4	73.1 0.6	69.2 0.9	59.4 2.6	52.6 5.8	7.0	16
		ED11 0415 7R	287.4	182.1 0.1	142.8 0.3	131.0 0.8	120.2 1.4	112.4 2.1	106.4 3.1	91.3 8.5	80.8 19.1	10.2	22
	180	ED2.8 0418 7R	2.6	1.5	1.3	1.2	1.1	1	1	0.8	0.7	0.4	6

Note : The Torque Transmission Capacity is the same whether the rotating direction of the input/output shafts are indicated as right hand cams (R), or left hand cams (L). The figures in the Torque Transmission Capacity Table are indicated as R.

ED2.8~ED11 1dwell

4 stop

Number of Stops S	Index Period θ (deg)	C O D E	Static-rated Output Torque T_s (N·m)	Dynamic-rated Output Torque Internal Inertia Load Torque						Top (N·m) Toi (N·m)		Camshaft Frictional Torque T_x (N·m)	Sankyo Cam Follower SCF (mm)
				Input Shaft Speed (Index/min)						200	300		
4	180	ED3.8 0418 7R	7.7	4.2	3.5	3.2	3	2.8	2.6	2.3	2	0.8	8
		ED4.5 0418 7R	11.3	6.7	5.3	4.8	4.4	4.1	3.9	3.4 0.1	3.0 0.2	0.9	10
		ED6 0418 7R	20.0	10.5	8.2	7.5	6.9	6.5 0.1	6.1 0.1	5.2 0.3	4.6 0.6	2.2	12
		ED7 0418 7R	121.4	67.8	57.9	53.1 0.1	48.7 0.1	45.6 0.2	43.2 0.3	37.0 0.7	32.8 1.7	3.9	16
		ED8 0418 7R	207.4	110.3	104.5 0.1	95.8 0.2	87.9 0.3	82.2 0.5	77.8 0.7	66.8 1.9	59.1 4.2	6.9	19
		ED11 0418 7R	465.4	285.0 0.1	223.4 0.2	205.0 0.6	188.0 1.0	175.8 1.5	166.5 2.2	142.8 6.1	126.5 13.8	11.7	26
	210	ED2.8 0421 7R	2.8	1.5	1.3	1.2	1.1	1	1	0.8	0.7	0.4	6
		ED3.8 0421 7R	8.3	4.2	3.5	3.2	2.9	2.8	2.6	2.2	2	0.7	8
		ED4.5 0421 7R	15.3	9.0	7.0	6.5	5.9	5.5	5.3	4.5 0.1	4.0 0.2	1.0	12
		ED6 0421 7R	21.0	10.2	8.0	7.4	6.8	6.3	6.0 0.1	5.1 0.2	4.5 0.4	2.1	12
		ED7 0421 7R	130.8	70.4	57.4	52.7	48.3 0.1	45.2 0.1	42.8 0.2	36.7 0.5	32.5 1.2	3.7	16
		ED8 0421 7R	225.4	115.0	104.0 0.1	95.4 0.1	87.5 0.2	81.8 0.3	77.5 0.5	66.5 1.4	58.9 3.1	6.5	19
		ED11 0421 7R	500.9	282.3	221.3 0.2	203.0 0.4	186.2 0.7	174.2 1.1	164.9 1.6	141.5 4.5	125.3 10.1	11.0	26
	240	ED2.8 0424 7R	3	1.5	1.3	1.2	1.1	1	0.9	0.8	0.7	0.4	6
		ED3.8 0424 7R	8.8	4.1	3.5	3.2	2.9	2.7	2.6	2.2	2	0.7	8
		ED4.5 0424 7R	16.1	8.9	7.0	6.4	5.9	5.5	5.2	4.4 0.1	3.9 0.1	1.0	12
		ED6 0424 7R	51.5	24.9	19.6	17.9	16.5	15.4	14.6 0.1	12.5 0.2	11.1 0.3	2.2	14
		ED7 0424 7R	138.3	72.3	56.7	52.0	47.7 0.1	44.6 0.1	42.3 0.1	36.3 0.4	32.1 0.9	3.5	16
		ED8 0424 7R	239.9	118.6	103.1	94.5 0.1	86.7 0.2	81.1 0.3	76.8 0.4	65.9 1.0	58.3 2.3	6.2	19
		ED11 0424 7R	528.9	278.7	218.5 0.1	200.4 0.3	183.9 0.6	172.0 0.9	162.8 1.2	139.7 3.4	123.7 7.8	10.5	26
	270	ED2.8 0427 7R	3.2	1.5	1.3	1.1	1.1	1	0.9	0.8	0.7	0.4	6
		ED3.8 0427 7R	9.1	4.1	3.4	3.1	2.9	2.7	2.5	2.2	1.9	0.6	8
		ED4.5 0427 7R	16.8	8.7	6.9	6.3	5.8	5.4	5.1	4.4	3.9 0.1	1.0	12
		ED6 0427 7R	52.9	24.4	19.1	17.5	16.1	15.1	14.2	12.2 0.1	10.8 0.3	2.2	14
		ED7 0427 7R	144.2	71.3	55.9	51.3	47.0 0.1	44.0 0.1	41.7 0.1	35.7 0.3	31.6 0.7	3.4	16
		ED8 0427 7R	251.7	121.5	101.9	93.5 0.1	85.7 0.1	80.2 0.2	75.9 0.3	65.1 0.8	57.7 1.9	6.0	19
		ED11 0427 7R	551.0	274.6	215.3 0.1	197.5 0.2	181.2 0.4	169.4 0.7	160.4 1.0	137.6 2.7	121.9 6.1	10.2	26
	300	ED2.8 0430 7R	3.3	1.5	1.2	1.1	1	1	0.9	0.8	0.7	0.3	6
		ED3.8 0430 7R	9.4	4	3.3	3.1	2.8	2.6	2.5	2.1	1.9	0.6	8
		ED4.5 0430 7R	17.3	8.6	6.8	6.2	5.7	5.3	5.0	4.3	3.8 0.1	0.9	12
		ED6 0430 7R	53.9	23.9	18.7	17.2	15.7	14.7	13.9	12.0 0.1	10.6 0.2	2.1	14
		ED7 0430 7R	148.9	70.2	55.0	50.5	46.3	43.3 0.1	41.0 0.1	35.2 0.3	31.2 0.6	3.3	16
		ED8 0430 7R	261.2	123.8	100.6	92.3 0.1	84.6 0.1	79.2 0.2	74.9 0.2	64.3 0.7	56.9 1.5	5.8	19
		ED11 0430 7R	568.6	270.3	211.9 0.1	194.4 0.2	178.3 0.4	166.8 0.6	157.9 0.8	135.4 2.2	119.9 5.0	9.8	26
	330	ED2.8 0433 7R	3.4	1.5	1.2	1.1	1	1	0.9	0.8	0.7	0.3	6
		ED3.8 0433 7R	9.6	3.9	3.3	3	2.8	2.6	2.5	2.1	1.9	0.6	8

Note : The Torque Transmission Capacity is the same whether the rotating direction of the input/output shafts are indicated as right hand cams (R), or left hand cams (L). The figures in the Torque Transmission Capacity Table are indicated as R.

ED2.8~ED11 1dwell

4, 5 stop

Number of Stops S	Index Period θ (deg)	C O D E	Static-rated Output Torque Ts (N·m)	Dynamic-rated Output Torque Internal Inertia Load Torque								Top (N·m) Toi (N·m)	Camshaft Frictional Torque Tx (N·m)	Sankyo Cam Follower SCF (mm)
				20	40	60	80	100	120	200	300			
4	330	ED4.5 0433 7R	17.8	8.5	6.6	6.1	5.6	5.2	5.0	4.2	3.8 0.1	0.9	12	
		ED6 0433 7R	54.7	23.4	18.3	16.8	15.4	14.4	13.6	11.7 0.1	10.4 0.2	2.1	14	
		ED7 0433 7R	152.7	69.1	54.2	49.7	45.6	42.6 0.1	40.4 0.1	34.6 0.2	30.7 0.5	3.2	16	
		ED8 0433 7R	269.0	125.6	99.2	91.0	83.5 0.1	78.1 0.1	73.9 0.2	63.4 0.6	56.1 1.2	5.7	19	
		ED11 0433 7R	582.8	265.9	208.5 0.1	191.2 0.2	175.4 0.3	164.1 0.5	155.3 0.7	133.3 1.8	118.0 4.1	9.6	26	
5	180	ED3.8 0518 7R	8.3	5.5	4.6	4.2	3.8	3.6	3.4	2.9	2.6	0.8	8	
		ED4.5 0518 7R	10.1	5.5	4.6	4.2	3.9	3.6	3.4	2.9 0.1	2.6 0.2	0.8	8	
		ED6 0518 7R	17.1	8.9	6.9	6.4	5.8	5.5 0.1	5.2 0.1	4.4 0.2	3.9 0.5	1.7	10	
		ED7 0518 7R	48.0	27.6	21.6	19.8 0.1	18.2 0.1	17.0 0.1	16.1 0.2	13.8 0.6	12.2 1.3	2.7	14	
		ED8 0518 7R	220.2	83.7	83.7 0.1	83.7 0.1	83.7 0.2	83.7 0.4	80.7 0.5	69.2 1.5	61.3 3.3	6.1	16	
		ED11 0518 7R	352.1	217.0 0.1	170.2 0.2	156.1 0.5	143.2 0.8	133.9 1.3	126.8 1.8	108.8 5.0	96.3 11.3	8.8	22	
	210	ED3.8 0521 7R	9.1	5.4	4.6	4.2	3.8	3.6	3.4	2.9	2.6	0.8	8	
		ED4.5 0521 7R	10.7	5.4	4.5	4.2	3.8	3.6	3.4	2.9 0.1	2.6 0.1	0.7	8	
		ED6 0521 7R	22.2	11.4	9.0	8.2	7.6	7.1	6.7 0.1	5.7 0.2	5.1 0.3	2.0	12	
		ED7 0521 7R	50.3	26.9	21.1	19.4	17.8 0.1	16.6 0.1	15.7 0.2	13.5 0.4	11.9 0.9	2.6	14	
		ED8 0521 7R	235.2	86.5	86.5	86.5 0.1	86.5 0.2	84.1 0.3	79.6 0.4	68.3 1.1	60.5 2.4	5.8	16	
		ED11 0521 7R	374.7	213.8	167.6 0.1	153.7 0.3	141.0 0.6	131.9 0.9	124.9 1.3	107.1 3.7	94.9 8.3	8.4	22	
	240	ED3.8 0524 7R	9.7	5.4	4.5	4.1	3.8	3.6	3.4	2.9	2.6	0.7	8	
		ED4.5 0524 7R	11.2	5.3	4.4	4.1	3.7	3.5	3.3	2.8	2.5 0.1	0.7	8	
		ED6 0524 7R	22.8	11.1	8.7	8.0	7.3	6.9	6.5	5.6 0.1	4.9 0.3	1.9	12	
		ED7 0524 7R	51.9	26.3	20.6	18.9	17.3 0.1	16.2 0.1	15.4 0.1	13.2 0.3	11.7 0.7	2.5	14	
		ED8 0524 7R	246.8	88.6	88.6	88.6 0.1	88.5 0.1	82.8 0.2	78.4 0.3	67.2 0.8	59.5 1.9	5.6	16	
		ED11 0524 7R	392.0	210.1	164.7 0.1	151.1 0.3	138.6 0.5	129.6 0.7	122.7 1.0	105.3 2.8	93.2 6.4	8.1	22	
	270	ED3.8 0527 7R	10.1	5.3	4.5	4.1	3.8	3.5	3.3	2.9	2.5	0.7	8	
		ED4.5 0527 7R	11.5	5.2	4.4	4.0	3.7	3.4	3.2	2.8	2.5 0.1	0.7	8	
		ED6 0527 7R	23.2	10.8	8.5	7.8	7.2	6.7	6.3	5.4 0.1	4.8 0.2	1.9	12	
		ED7 0527 7R	53.2	25.7	20.1	18.5	16.9	15.8 0.1	15.0 0.1	12.9 0.3	11.4 0.6	2.4	14	
		ED8 0527 7R	255.8	90.3	90.3	90.3 0.1	87.0 0.1	81.3 0.2	77.0 0.2	66.1 0.7	58.5 1.5	5.4	16	
		ED11 0527 7R	405.3	206.2	161.6 0.1	148.3 0.2	136.0 0.4	127.2 0.6	120.4 0.8	103.3 2.2	91.5 5.0	7.8	22	
	300	ED3.8 0530 7R	10.5	5.3	4.4	4	3.7	3.5	3.3	2.8	2.5	0.6	8	
		ED4.5 0530 7R	11.8	5.1	4.3	3.9	3.6	3.4	3.2	2.7	2.4 0.1	0.7	8	
		ED6 0530 7R	23.5	10.6	8.3	7.6	7.0	6.5	6.2	5.3 0.1	4.7 0.2	1.9	12	
		ED7 0530 7R	54.1	25.1	19.7	18.0	16.6	15.5 0.1	14.7 0.1	12.6 0.2	11.1 0.5	2.4	14	
		ED8 0530 7R	262.9	91.5	91.5	91.5	85.4 0.1	79.9 0.1	75.6 0.2	64.9 0.5	57.5 1.2	5.3	16	
		ED11 0530 7R	415.7	202.3	158.6 0.1	145.5 0.2	133.5 0.3	124.8 0.5	118.2 0.7	101.4 1.8	89.8 4.1	7.6	22	
	330	ED3.8 0533 7R	10.9	5.2	4.3	4	3.7	3.4	3.2	2.8	2.5	0.6	8	

Note : The Torque Transmission Capacity is the same whether the rotating direction of the input/output shafts are indicated as right hand cams (R), or left hand cams (L). The figures in the Torque Transmission Capacity Table are indicated as R.

ED2.8~ED11 1dwell

5, 6 stop

Number of Stops	Index Period	C O D E	Static-rated Output Torque Ts (N·m)	Dynamic-rated Output Torque Internal Inertia Load Torque								Top (N·m) Toi (N·m)	Camshaft Frictional Torque Tx (N·m)	Sankyo Cam Follower SCF (mm)
				Input Shaft Speed (Index/min)										
				20	40	60	80	100	120	200	300			
S	θ (deg)													
5	330	ED4.5 0533 7R	12.0	5.0	4.2	3.8	3.5	3.3	3.1	2.7	2.4 0.1	0.7	8	
		ED6 0533 7R	23.7	10.3	8.1	7.4	6.8	6.4	6.0	5.2 0.1	4.6 0.1	1.8	12	
		ED7 0533 7R	54.8	24.6	19.3	17.7	16.2	15.1	14.3 0.1	12.3 0.2	10.9 0.4	2.3	14	
		ED8 0533 7R	268.5	92.5	92.5	91.5	83.9 0.1	78.5 0.1	74.3 0.2	63.7 0.4	56.4 1.0	5.2	16	
		ED11 0533 7R	423.9	198.5	155.7 0.1	142.8 0.1	131.0 0.2	122.5 0.4	116.0 0.5	99.5 1.5	88.1 3.4	7.5	22	
6	90	ED2.8 0609 7R	2.2	1.6	1.4	1.2	1.1	1.1	1	0.9	0.8	0.5	6	
		ED3.8 0609 7R	6.5	4.6	3.9	3.6	3.3	3.1	2.9	2.5	2.2	0.9	8	
		ED4.5 0609 7R	12.0	10.0	7.8	7.2	6.6	6.2 0.1	5.8 0.1	5.0 0.3	4.4 0.6	1.2	12	
		ED6 0609 7R	41.9	29.7	23.3	21.3 0.1	19.6 0.1	18.3 0.2	17.3 0.3	14.9 0.7	13.2 1.6	2.7	14	
		ED7 0609 7R	108.9	86.6	71.1 0.1	65.2 0.2	59.8 0.3	55.9 0.5	52.9 0.7	45.4 2.0	40.2 4.4	4.7	19	
		ED8 0609 7R	172.3	100.5	100.5 0.2	100.5 0.4	95.3 0.8	89.2 1.2	84.4 1.7	72.4 4.8	64.1 10.8	7.7	19	
		ED11 0609 7R	478.3	398.0 0.2	312.0 0.6	286.2 1.5	262.6 2.6	245.6 4.0	232.5 5.8	199.5 16.2	176.6 36.4	15.6	30	
	120	ED2.8 0612 7R	5.6	3.9	3.3	3	2.8	2.6	2.4	2.1	1.9	0.5	8	
		ED3.8 0612 7R	13	9.4	7.9	7.3	6.7	6.2	5.9	5.1	4.5 0.1	1.1	10	
		ED4.5 0612 7R	28.3	21.0	16.5	15.1	13.9	13.0	12.3 0.1	10.5 0.2	9.3 0.4	1.2	14	
		ED6 0612 7R	113.0	56.2	56.2	54.8	50.3 0.1	47.0 0.1	44.5 0.2	38.2 0.4	33.8 0.9	2.7	16	
		ED7 0612 7R	141.1	105.5	82.7	75.9 0.1	69.6 0.2	65.1 0.3	61.6 0.4	52.9 1.2	46.8 2.7	4.5	22	
		ED8 0612 7R	337.4	258.1	202.4 0.1	185.6 0.3	170.3 0.5	159.2 0.7	150.8 1.0	129.3 2.8	114.5 6.4	9.2	26	
		ED11 0612 7R	585.9	421.2 0.1	330.3 0.4	303.0 0.8	277.9 1.5	259.9 2.3	246.1 3.3	211.1 9.3	186.9 20.9	14.3	32	
	150	ED2.8 0615 7R	6.3	3.9	3.2	3	2.7	2.6	2.4	2.1	1.8	0.4	8	
		ED3.8 0615 7R	14.9	9.5	7.9	7.3	6.7	6.2	5.9	5.1	4.5 0.1	0.9	10	
		ED4.5 0615 7R	31.4	20.7	16.3	14.9	13.7	12.8	12.1	10.4 0.1	9.2 0.2	1.1	14	
		ED6 0615 7R	123.5	58.7	58.4	53.6	49.1	46.0 0.1	43.5 0.1	37.3 0.3	33.1 0.6	2.5	16	
		ED7 0615 7R	156.6	103.9	81.5	74.8 0.1	68.6 0.1	64.1 0.2	60.7 0.3	52.1 0.8	46.1 1.7	4.2	22	
		ED8 0615 7R	375.9	254.8	199.8 0.1	183.2 0.2	168.1 0.3	157.2 0.5	148.8 0.7	127.7 1.8	113.1 4.1	8.5	26	
		ED11 0615 7R	648.0	414.3 0.1	324.8 0.2	298.0 0.5	273.3 1.0	255.6 1.5	242.0 2.1	207.6 5.9	183.9 13.4	13.2	32	
	180	ED2.8 0618 7R	6.8	3.8	3.2	2.9	2.7	2.5	2.4	2	1.8	0.4	8	
		ED3.8 0618 7R	18.6	11	9.2	8.5	7.8	7.3	6.9	5.9	5.2	0.8	12	
		ED4.5 0618 7R	33.6	20.3	15.9	14.6	13.4	12.5	11.9	10.2 0.1	9.0 0.2	1.1	14	
		ED6 0618 7R	130.5	60.4	56.9	52.2	47.8	44.7	42.4 0.1	36.3 0.2	32.2 0.4	2.3	16	
		ED7 0618 7R	167.6	101.8	79.8	73.2	67.2 0.1	62.8 0.1	59.5 0.2	51.0 0.5	45.2 1.2	3.9	22	
		ED8 0618 7R	403.2	249.8	195.9 0.1	179.7 0.1	164.8 0.2	154.2 0.3	146.0 0.5	125.2 1.3	110.9 2.8	8.0	26	
		ED11 0618 7R	843.9	521.9	409.2 0.2	375.3 0.4	344.3 0.7	322.0 1.1	304.9 1.6	261.6 4.4	231.6 10.0	14.2	35	
	210	ED2.8 0621 7R	7.2	3.7	3.1	2.9	2.6	2.5	2.3	2	1.8	0.3	8	
		ED3.8 0621 7R	19.7	10.8	9.1	8.3	7.6	7.2	6.8	5.8	5.1	0.7	12	
		ED4.5 0621 7R	35.1	19.8	15.5	14.3	13.1	12.2	11.6	9.9 0.1	8.8 0.1	1.0	14	

Note : The Torque Transmission Capacity is the same whether the rotating direction of the input/output shafts are indicated as right hand cams (R), or left hand cams (L). The figures in the Torque Transmission Capacity Table are indicated as R.

ED2.8~ED11 1dwell

6, 8 stop

Number of Stops S	Index Period θ (deg)	C O D E	Static-rated Output Torque T_s (N·m)	Dynamic-rated Output Torque						Top (N·m) Toi (N·m)		Camshaft Frictional Torque T_x (N·m)	Sankyo Cam Follower SCF (mm)
				Internal Inertia Load Torque									
				Input Shaft Speed (Index/min)									
				20	40	60	80	100	120	200	300		
6	210	ED6 0621 7R	135.5	61.5	55.3	50.7	46.5	43.5	41.2	35.3 0.1	31.3 0.3	2.2	16
		ED7 0621 7R	175.4	99.4	78.0	71.5	65.6 0.1	61.3 0.1	58.1 0.1	49.8 0.4	44.1 0.9	3.7	22
		ED8 0621 7R	422.9	244.3	191.5	175.7 0.1	161.2 0.1	150.7 0.2	142.7 0.3	122.4 0.9	108.4 2.1	7.7	26
		ED11 0621 7R	886.6	510.7	400.4 0.1	367.3 0.3	337.0 0.5	315.1 0.8	298.4 1.2	256.0 3.3	226.7 7.4	13.6	35
	240	ED2.8 0624 7R	7.4	3.6	3	2.8	2.6	2.4	2.3	1.9	1.7	0.3	8
		ED3.8 0624 7R	20.5	10.6	8.9	8.2	7.5	7	6.6	5.7	5	0.7	12
		ED4.5 0624 7R	36.3	19.3	15.2	13.9	12.8	11.9	11.3	9.7	8.6 0.1	1.0	14
		ED6 0624 7R	139.0	62.3	53.8	49.4	45.3	42.3	40.1	34.4 0.1	30.5 0.2	2.2	16
		ED7 0624 7R	181.1	97.1	76.1	69.8	64.0	59.9 0.1	56.7 0.1	48.6 0.3	43.1 0.7	3.6	22
		ED8 0624 7R	437.4	238.7	187.1	171.7 0.1	157.5 0.1	147.3 0.2	139.4 0.3	119.6 0.7	105.9 1.6	7.4	26
		ED11 0624 7R	918.0	499.3	391.5 0.1	359.1 0.2	329.4 0.4	308.1 0.6	291.7 0.9	250.2 2.5	221.6 5.6	13.1	35
	270	ED2.8 0627 7R	7.6	3.6	3	2.7	2.5	2.3	2.2	1.9	1.7	0.3	8
		ED3.8 0627 7R	21.1	10.4	8.7	8	7.4	6.9	6.5	5.6	4.9	0.6	12
		ED4.5 0627 7R	37.1	18.9	14.8	13.6	12.5	11.7	11.0	9.5	8.4 0.1	1.0	14
		ED6 0627 7R	141.5	62.9	52.4	48.1	44.1	41.3	39.1	33.5 0.1	29.7 0.2	2.1	16
		ED7 0627 7R	185.3	94.8	74.3	68.2	62.5	58.5 0.1	55.4 0.1	47.5 0.2	42.1 0.5	3.5	22
		ED8 0627 7R	448.2	233.2	182.9	167.7 0.1	153.9 0.1	143.9 0.1	136.2 0.2	116.9 0.6	103.5 1.3	7.2	26
		ED11 0627 7R	941.6	488.1	382.7 0.1	351.1 0.2	322.0 0.3	301.2 0.5	285.2 0.7	244.6 2.0	216.6 4.4	12.7	35
	300	ED2.8 0630 7R	7.8	3.5	2.9	2.7	2.5	2.3	2.2	1.9	1.7	0.3	8
		ED3.8 0630 7R	21.6	10.2	8.6	7.9	7.2	6.7	6.4	5.5	4.8	0.6	12
		ED4.5 0630 7R	37.7	18.4	14.5	13.3	12.2	11.4	10.8	9.2	8.2 0.1	0.9	14
		ED6 0630 7R	143.5	63.3	51.1	46.9	43.0	40.2	38.1	32.7 0.1	28.9 0.2	2.1	16
		ED7 0630 7R	188.6	92.6	72.6	66.6	61.1	57.2	54.1 0.1	46.4 0.2	41.1 0.4	3.4	22
		ED8 0630 7R	456.4	228.0	178.8	164.0	150.4 0.1	140.7 0.1	133.2 0.2	114.3 0.5	101.2 1.0	7.0	26
		ED11 0630 7R	959.7	477.4	374.3 0.1	343.4 0.1	315.0 0.3	294.6 0.4	278.9 0.6	239.3 1.6	211.9 3.6	12.4	35
	330	ED2.8 0633 7R	7.9	3.4	2.9	2.6	2.4	2.2	2.1	1.8	1.6	0.3	8
		ED3.8 0633 7R	22	10	8.4	7.7	7.1	6.6	6.3	5.4	4.8	0.6	12
		ED4.5 0633 7R	38.2	18.0	14.1	13.0	11.9	11.1	10.5	9.0	8.0 0.1	0.9	14
		ED6 0633 7R	144.9	63.6	49.9	45.8	42.0	39.3	37.2	31.9 0.1	28.3 0.1	2.0	16
		ED7 0633 7R	191.1	90.6	71.0	65.2	59.8	55.9	52.9 0.1	45.4 0.2	40.2 0.4	3.4	22
		ED8 0633 7R	462.8	223.1	175.0	160.5	147.2 0.1	137.7 0.1	130.4 0.1	111.8 0.4	99.0 0.8	6.9	26
		ED11 0633 7R	973.7	467.4	366.4 0.1	336.1 0.1	308.3 0.2	288.4 0.3	273.0 0.5	234.2 1.3	207.4 3.0	12.1	35
8	90	ED2.8 0809 7R	2.6	2.1	1.7	1.6	1.5	1.4	1.3	1.1	1	0.4	6
		ED3.8 0809 7R	7.7	5.8	4.8	4.4	4.1	3.8	3.6	3.1	2.7 0.1	0.8	8
		ED4.5 0809 7R	14.6	11.8	9.2	8.5	7.8	7.3 0.1	6.9 0.1	5.9 0.2	5.2 0.5	0.9	10
		ED6 0809 7R	20.0	14.3	11.2	10.3	9.4 0.1	8.8 0.1	8.3 0.2	7.2 0.5	6.3 1.2	2.2	12

Note : The Torque Transmission Capacity is the same whether the rotating direction of the input/output shafts are indicated as right hand cams (R), or left hand cams (L). The figures in the Torque Transmission Capacity Table are indicated as R.

ED2.8~ED11 1dwell

8 stop

Number of Stops S	Index Period θ (deg)	C O D E	Static-rated Output Torque Ts (N·m)	Dynamic-rated Output Torque Internal Inertia Load Torque								Top (N·m) Toi (N·m)	Camshaft Frictional Torque Tx (N·m)	Sankyo Cam Follower SCF (mm)
				20	40	60	80	100	120	200	300			
8	90	ED7 0809 7R	121.4	67.8	67.8 0.1	67.8 0.1	66.6 0.2	62.3 0.4	59.0 0.5	50.6 1.5	44.8 3.3	3.9	16	
		ED8 0809 7R	207.4	110.3	110.3 0.1	110.3 0.3	110.3 0.6	110.3 0.9	106.3 1.3	91.2 3.7	80.8 8.4	6.9	19	
		ED11 0809 7R	465.4	353.6 0.1	305.2 0.5	280.0 1.1	256.8 2.0	240.2 3.1	227.4 4.4	195.1 12.3	172.8 27.6	11.7	26	
	120	ED2.8 0812 7R	3	2.1	1.7	1.6	1.5	1.4	1.3	1.1	1	0.4	6	
		ED3.8 0812 7R	8.8	5.6	4.7	4.3	4	3.7	3.5	3	2.7	0.7	8	
		ED4.5 0812 7R	20.7	15.6	12.2	11.2	10.3	9.6	9.1	7.8 0.1	6.9 0.3	1.0	12	
		ED6 0812 7R	51.5	34.1	26.7	24.5	22.5	21.0 0.1	19.9 0.1	17.1 0.3	15.1 0.7	2.2	14	
		ED7 0812 7R	138.3	72.4	72.4	71.1 0.1	65.2 0.1	61.0 0.2	57.7 0.3	49.5 0.8	43.9 1.9	3.5	16	
		ED8 0812 7R	239.9	118.6	118.6 0.1	118.6 0.2	118.5 0.3	110.8 0.5	104.9 0.8	90.0 2.1	79.7 4.7	6.2	19	
		ED11 0812 7R	528.9	377.0 0.1	298.5 0.3	273.8 0.6	251.2 1.1	234.9 1.7	222.4 2.5	190.8 6.9	168.9 15.5	10.5	26	
	150	ED2.8 0815 7R	3.3	2	1.7	1.6	1.4	1.3	1.3	1.1	1	0.3	6	
		ED3.8 0815 7R	9.4	5.5	4.6	4.2	3.8	3.6	3.4	2.9	2.6	0.6	8	
		ED4.50815 7R	22.3	15.1	11.9	10.9	10.0	9.3	8.8	7.6 0.1	6.7 0.2	0.9	12	
		ED6 0815 7R	53.9	32.6	25.6	23.4	21.5	20.1	19.0 0.1	16.3 0.2	14.5 0.4	2.1	14	
		ED7 0815 7R	148.9	75.1	75.1	69.0	63.3 0.1	59.2 0.1	56.0 0.2	48.1 0.5	42.6 1.2	3.3	16	
		ED8 0815 7R	261.2	123.8	123.8 0.1	123.8 0.1	115.6 0.2	108.1 0.3	102.4 0.5	87.8 1.3	77.8 3.0	5.8	19	
		ED11 0815 7R	568.6	369.2	289.5 0.2	265.5 0.4	243.6 0.7	227.8 1.1	215.7 1.6	185.0 4.4	163.8 9.9	9.8	26	
	180	ED2.8 0818 7R	3.5	2	1.6	1.5	1.4	1.3	1.2	1.1	0.9	0.3	6	
		ED3.8 0818 7R	18.3	11.5	9.6	8.8	8.1	7.6	7.2	6.2	5.4	0.7	10	
		ED4.5 0818 7R	23.3	14.6	11.5	10.5	9.7	9.0	8.6	7.3 0.1	6.5 0.1	0.9	12	
		ED6 0818 7R	55.3	31.3	24.5	22.5	20.6	19.3	18.3	15.7 0.1	13.9 0.3	2.0	14	
		ED7 0818 7R	163.7	103.0	80.8	74.1	68.0 0.1	63.6 0.1	60.2 0.1	51.6 0.4	45.7 0.9	3.3	19	
		ED8 0818 7R	294.2	186.4	146.2	134.1 0.1	123.0 0.1	115.0 0.2	108.9 0.3	93.4 0.9	82.7 2.1	6.1	22	
		ED11 0818 7R	717.4	451.8	354.2 0.1	324.9 0.3	298.1 0.5	278.8 0.8	263.9 1.1	226.4 3.1	200.5 7.0	10.9	30	
	210	ED2.8 0821 7R	7.7	4.4	3.7	3.4	3.1	2.9	2.8	2.4	2.1	0.3	8	
		ED3.8 0821 7R	19.2	11.2	9.4	8.6	7.9	7.4	7	6	5.3	0.6	10	
		ED4.5 0821 7R	24.0	14.2	11.1	10.2	9.4	8.7	8.3	7.1	6.3 0.1	0.9	12	
		ED6 0821 7R	56.2	30.1	23.6	21.6	19.9	18.6	17.6	15.1 0.1	13.4 0.2	2.0	14	
		ED7 0821 7R	168.4	99.8	78.2	71.8	65.8	61.6 0.1	58.3 0.1	50.0 0.3	44.3 0.6	3.2	19	
		ED8 0821 7R	302.7	180.6	141.6	129.9 0.1	119.1 0.1	111.4 0.2	105.5 0.2	90.5 0.7	80.1 1.5	5.9	22	
		ED11 0821 7R	737.6	437.4	343.0 0.1	314.6 0.2	288.6 0.4	269.9 0.6	255.5 0.8	219.2 2.3	194.1 5.2	10.5	30	
	240	ED2.8 0824 7R	7.8	4.3	3.6	3.3	3	2.8	2.7	2.3	2	0.3	8	
		ED3.8 0824 7R	19.8	10.9	9.2	8.4	7.7	7.2	6.8	5.9	5.2	0.6	10	
		ED4.5 0824 7R	24.5	13.8	10.8	9.9	9.1	8.5	8.0	6.9	6.1 0.1	0.8	12	
		ED6 0824 7R	56.8	29.1	22.8	20.9	19.2	17.9	17.0	14.6 0.1	12.9 0.2	2.0	14	
		ED7 0824 7R	171.6	96.8	75.9	69.6	63.8	59.7 0.1	56.5 0.1	48.5 0.2	42.9 0.5	3.1	19	

Note : The Torque Transmission Capacity is the same whether the rotating direction of the input/output shafts are indicated as right hand cams (R), or left hand cams (L). The figures in the Torque Transmission Capacity Table are indicated as R.

ED2.8~ED11 1dwell

8, 10 stop

Number of Stops S	Index Period θ (deg)	C O D E	Static-rated Output Torque Ts (N·m)	Dynamic-rated Output Torque Internal Inertia Load Torque						Top (N·m) Toi (N·m)		Camshaft Frictional Torque Tx (N·m)	Sankyo Cam Follower SCF (mm)
				20	40	60	80	100	120	200	300		
8	240	ED8 0824 7R	308.7	175.2	137.4	126.0	115.6 0.1	108.1 0.1	102.3 0.2	87.8 0.5	77.7 1.2	5.7	22
		ED11 0824 7R	751.8	424.3	332.6 0.1	305.1 0.2	279.9 0.3	261.8 0.4	247.8 0.6	212.6 1.8	188.3 4.0	10.2	30
	270	ED2.8 0827 7R	8	4.2	3.5	3.2	2.9	2.8	2.6	2.2	2	0.3	8
		ED3.8 0827 7R	20.3	10.7	9	8.2	7.5	7.1	6.7	5.7	5.1	0.5	10
		ED4.5 0827 7R	24.8	13.4	10.5	9.6	8.8	8.3	7.8	6.7	5.9 0.1	0.8	12
		ED6 0827 7R	57.3	28.2	22.1	20.3	18.6	17.4	16.5	14.1 0.1	12.5 0.1	1.9	14
		ED7 0827 7R	174.0	94.0	73.7	67.6	62.0	58.0	54.9 0.1	47.1 0.2	41.7 0.4	3.0	19
		ED8 0827 7R	313.0	170.3	133.5	122.5	112.3 0.1	105.1 0.1	99.5 0.1	85.3 0.4	75.6 0.9	5.6	22
		ED11 0827 7R	761.9	412.3	323.3 0.1	296.5 0.1	272.0 0.2	254.4 0.3	240.9 0.5	206.6 1.4	183.0 3.1	10.0	30
		300	ED2.8 0830 7R	8.1	4.1	3.4	3.1	2.9	2.7	2.5	2.2	1.9	0.3
	ED3.8 0830 7R		20.6	10.4	8.8	8	7.4	6.9	6.5	5.6	5	0.5	10
	ED4.5 0830 7R		25.1	13.0	10.2	9.4	8.6	8.0	7.6	6.5	5.8 0.1	0.8	12
	ED6 0830 7R		57.6	27.4	21.5	19.7	18.1	16.9	16.0	13.7	12.1 0.1	1.9	14
	ED7 0830 7R		175.7	91.6	71.8	65.9	60.4	56.5	53.5 0.1	45.9 0.1	40.6 0.3	3.0	19
	ED8 0830 7R		316.2	165.8	130.0	119.3	109.4 0.1	102.3 0.1	96.9 0.1	83.1 0.3	73.6 0.7	5.5	22
	ED11 0830 7R		769.5	401.4	314.7	288.7 0.1	264.8 0.2	247.7 0.3	234.5 0.4	201.2 1.1	178.1 2.5	9.8	30
	330	ED2.8 0833 7R	8.1	4	3.3	3.1	2.8	2.6	2.5	2.1	1.9	0.3	8
		ED3.8 0833 7R	20.9	10.2	8.6	7.9	7.2	6.7	6.4	5.5	4.8	0.5	10
		ED4.5 0833 7R	25.3	12.7	10.0	9.1	8.4	7.8	7.4	6.4	5.6 0.1	0.8	12
		ED6 0833 7R	57.8	26.7	20.9	19.2	17.6	16.4	15.6	13.4	11.8 0.1	1.9	14
		ED7 0833 7R	177.0	89.3	70.0	64.2	58.9	55.1	52.2	44.8 0.1	39.6 0.3	2.9	19
		ED8 0833 7R	318.6	161.8	126.8	116.3	106.7	99.8 0.1	94.5 0.1	81.1 0.3	71.8 0.6	5.4	22
		ED11 0833 7R	775.2	391.6	307.0	281.6 0.1	258.3 0.1	241.6 0.2	228.7 0.3	196.2 0.9	173.8 2.1	9.7	30
10	90	ED3.8 1009 7R	8.3	7.5	6.2	5.7	5.3	4.9	4.7	4	3.5 0.1	0.8	8
		ED4.5 1009 7R	10.1	7.5	6.3	5.8	5.3	5.0	4.7 0.1	4.0 0.2	3.6 0.4	0.8	8
		ED6 1009 7R	17.1	12.1	9.5	8.7	8.0 0.1	7.5 0.1	7.1 0.1	6.1 0.4	5.4 0.9	1.7	10
		ED7 1009 7R	48.0	37.6	29.5	27.1 0.1	24.8 0.2	23.2 0.3	22.0 0.4	18.9 1.1	16.7 2.6	2.7	14
		ED8 1009 7R	220.2	83.7	83.7 0.1	83.7 0.3	83.7 0.5	83.7 0.7	83.7 1.1	83.7 2.9	83.7 6.6	6.1	16
		ED11 1009 7R	352.1	271.3 0.1	232.4 0.4	213.2 0.9	195.6 1.6	182.9 2.5	173.2 3.6	148.6 10.1	131.6 22.7	8.8	22
	120	ED2.8 1012 7R	3.3	2.3	1.9	1.8	1.6	1.5	1.4	1.2	1.1	0.3	6
		ED3.8 1012 7R	9.7	7.4	6.2	5.7	5.2	4.9	4.6	3.9	3.5	0.7	8
		ED4.5 1012 7R	19.6	13.5	11.3	10.4	9.5	8.9	8.4	7.2 0.1	6.4 0.2	0.9	10
		ED6 1012 7R	22.8	15.2	11.9	10.9	10.0	9.4 0.1	8.9 0.1	7.6 0.2	6.8 0.5	1.9	12
		ED7 1012 7R	51.9	35.9	28.2	25.8 0.1	23.7 0.1	22.2 0.2	21.0 0.2	18.0 0.6	15.9 1.4	2.5	14
		ED8 1012 7R	246.8	88.6	88.6 0.1	88.6 0.1	88.6 0.3	88.6 0.4	88.6 0.6	88.6 1.6	81.3 3.7	5.6	16
		ED11 1012 7R	392.0	286.3 0.1	225.0 0.2	206.4 0.5	189.3 0.9	177.1 1.4	167.6 2.0	143.8 5.7	127.3 12.8	8.1	22

Note : The Torque Transmission Capacity is the same whether the rotating direction of the input/output shafts are indicated as right hand cams (R), or left hand cams (L). The figures in the Torque Transmission Capacity Table are indicated as R.

ED2.8~ED11 1dwell

10 stop

Number of Stops S	Index Period θ (deg)	C O D E	Static-rated Output Torque Ts (N·m)	Dynamic-rated Output Torque Internal Inertia Load Torque						Top (N·m) Toi (N·m)		Camshaft Frictional Torque Tx (N·m)	Sankyo Cam Follower SCF (mm)
				20	40	Input Shaft Speed (Index/min)				200	300		
10	150	ED2.8 1015 7R	3.5	2.2	1.9	1.7	1.6	1.5	1.4	1.2	1.1	0.3	6
		ED3.8 1015 7R	10.5	7.2	6	5.5	5.1	4.7	4.5	3.8	3.4	0.6	8
		ED4.5 1015 7R	20.6	12.9	10.9	10.0	9.1	8.5	8.1	6.9 0.1	6.1 0.1	0.9	10
		ED6 1015 7R	23.5	14.4	11.3	10.4	9.5	8.9	8.4 0.1	7.2 0.2	6.4 0.3	1.9	12
		ED7 1015 7R	54.1	34.3	26.9	24.7	22.6 0.1	21.2 0.1	20.0 0.1	17.2 0.4	15.2 0.9	2.4	14
		ED8 1015 7R	262.9	91.5	91.5	91.5 0.1	91.5 0.2	91.5 0.3	91.5 0.4	88.6 1.1	78.5 2.4	5.3	16
		ED11 1015 7R	415.7	276.4	216.7 0.1	198.8 0.3	182.3 0.6	170.5 0.9	161.4 1.3	138.5 3.6	122.6 8.2	7.6	22
	180	ED2.8 1018 7R	3.6	2.1	1.8	1.6	1.5	1.4	1.3	1.1	1	0.3	6
		ED3.8 1018 7R	11.1	7	5.9	5.4	4.9	4.6	4.4	3.7	3.3	0.6	8
		ED4.5 1018 7R	21.2	12.4	10.4	9.6	8.8	8.2	7.8	6.7	5.9 0.1	0.8	10
		ED6 1018 7R	23.9	13.8	10.8	9.9	9.1	8.5	8.1	6.9 0.1	6.1 0.2	1.8	12
		ED7 1018 7R	55.4	32.8	25.8	23.6	21.7	20.3 0.1	19.2 0.1	16.5 0.3	14.6 0.6	2.3	14
		ED8 1018 7R	273.0	93.2	93.2	93.2 0.1	93.2 0.1	93.2 0.2	93.2 0.3	85.5 0.7	75.7 1.6	5.1	16
		ED11 1018 7R	430.5	266.3	208.8 0.1	191.5 0.2	175.7 0.4	164.3 0.6	155.5 0.9	133.4 2.5	118.2 5.7	7.4	22
	210	ED2.8 1021 7R	3.7	2.1	1.7	1.6	1.5	1.4	1.3	1.1	1	0.3	6
		ED3.8 1021 7R	11.5	6.8	5.7	5.2	4.8	4.5	4.2	3.6	3.2	0.5	8
		ED4.5 1021 7R	21.6	12.0	10.0	9.2	8.5	7.9	7.5	6.4	5.7 0.1	0.8	10
		ED6 1021 7R	24.2	13.2	10.4	9.5	8.7	8.2	7.7	6.6 0.1	5.9 0.2	1.8	12
		ED7 1021 7R	56.2	31.6	24.8	22.7	20.8 0.1	19.5 0.1	18.5 0.1	15.8 0.3	14.0	2.3	14
		ED8 1021 7R	279.8	94.4	94.4	94.4	94.4 0.1	94.4 0.1	94.4 0.2	82.7 0.5	73.2 1.2	5.0	16
		ED11 1021 7R	440.2	257.1	201.6 0.1	184.9 0.2	169.6 0.3	158.6 0.5	150.2 0.7	128.9 1.9	114.1 4.2	7.1	22
	240	ED2.8 1024 7R	3.7	2	1.7	1.5	1.4	1.3	1.2	1.1	0.9	0.3	6
		ED3.8 1024 7R	11.8	6.6	5.5	5.1	4.7	4.4	4.1	3.5	3.1	0.5	8
		ED4.5 1024 7R	21.9	11.6	9.7	8.9	8.2	7.6	7.2	6.2	5.5 0.1	0.8	10
		ED6 1024 7R	24.3	12.8	10.0	9.2	8.4	7.9	7.5	6.4 0.1	5.7 0.1	1.7	12
		ED7 1024 7R	56.8	30.5	23.9	21.9	20.1	18.8	17.8 0.1	15.3 0.2	13.5 0.4	2.2	14
		ED8 1024 7R	284.4	95.2	95.2	95.2	95.2 0.1	95.2 0.1	93.3 0.1	80.1 0.4	70.9 0.9	4.8	16
		ED11 1024 7R	446.9	248.9	195.1 0.1	179.0 0.1	164.2 0.2	153.6 0.4	145.4 0.5	124.7 1.4	110.4 3.2	7.0	22
	270	ED2.8 1027 7R	3.8	1.9	1.6	1.5	1.4	1.3	1.2	1	0.9	0.3	6
		ED3.8 1027 7R	12	6.4	5.4	4.9	4.5	4.2	4	3.4	3.1	0.5	8
		ED4.5 1027 7R	22.1	11.2	9.4	8.6	7.9	7.4	7.0	6.0	5.3	0.8	10
		ED6 1027 7R	24.5	12.4	9.7	8.9	8.2	7.6	7.2	6.2	5.5 0.1	1.7	12
		ED7 1027 7R	57.2	29.6	23.2	21.3	19.5	18.2	17.3	14.8 0.1	13.1 0.3	2.2	14
		ED8 1027 7R	287.8	95.7	95.7	95.7	95.7 0.1	95.7 0.1	90.6 0.1	77.8 0.3	68.8 0.7	4.8	16
		ED11 1027 7R	451.7	241.5	189.3	173.7 0.1	159.3 0.2	149.0 0.3	141.1 0.4	121.0 1.1	107.2 2.5	6.9	22
	300	ED2.8 1030 7R	3.8	1.9	1.6	1.5	1.3	1.2	1.2	1	0.9	0.2	6

Note : The Torque Transmission Capacity is the same whether the rotating direction of the input/output shafts are indicated as right hand cams (R), or left hand cams (L). The figures in the Torque Transmission Capacity Table are indicated as R.

ED2.8~ED11 1dwell

10, 12 stop

Number of Stops S	Index Period θ (deg)	C O D E	Static-rated Output Torque Ts (N·m)	Dynamic-rated Output Torque Internal Inertia Load Torque								Top (N·m) Toi (N·m)	Camshaft Frictional Torque Tx (N·m)	Sankyo Cam Follower SCF (mm)
				20	40	Input Shaft Speed (Index/min)				200	300			
10	300	ED3.8 1030 7R	12.2	6.3	5.3	4.8	4.4	4.1	3.9	3.4	3	0.5	8	
		ED4.5 1030 7R	22.2	10.9	9.1	8.4	7.7	7.2	6.8	5.8	5.2	0.8	10	
		ED6 1030 7R	24.6	12.0	9.4	8.6	7.9	7.4	7.0	6.0	5.3 0.1	1.7	12	
		ED7 1030 7R	57.5	28.7	22.5	20.6	18.9	17.7	16.8	14.4 0.1	12.7 0.2	2.2	14	
		ED8 1030 7R	290.2	96.1	96.1	96.1	96.1	93.1 0.1	88.2 0.1	75.7 0.3	67.0 0.6	4.7	16	
		ED11 1030 7R	455.2	234.9	184.2	168.9 0.1	155.0 0.1	144.9 0.2	137.2 0.3	117.7 0.9	104.2 2.0	6.8	22	
	330	ED2.8 1033 7R	3.8	1.8	1.5	1.4	1.3	1.2	1.1	1	0.9	0.2	6	
		ED3.8 1033 7R	12.3	6.1	5.1	4.7	4.3	4	3.8	3.3	2.9	0.4	8	
		ED4.5 1033 7R	22.3	10.6	8.9	8.2	7.5	7.0	6.6	5.7	5.0	0.8	10	
		ED6 1033 7R	24.6	11.7	9.2	8.4	7.7	7.2	6.8	5.9	5.2 0.1	1.7	12	
		ED7 1033 7R	57.7	27.9	21.9	20.1	18.4	17.2	16.3	14.0 0.1	12.4 0.2	2.1	14	
		ED8 1033 7R	292.1	96.4	96.4	96.4	96.4	90.8 0.1	86.0 0.1	73.8 0.2	65.3 0.5	4.7	16	
		ED11 1033 7R	457.8	228.9	179.5	164.7 0.1	151.0 0.1	141.3 0.2	133.7 0.3	114.7 0.7	101.6 1.7	6.7	22	
12	90	ED3.8 1209 7R	4.2	3.6	3	2.8	2.5	2.4	2.3	1.9	1.7 0.1	0.7	6	
		ED6 1209 7R	9.2	6.3	5.0	4.5	4.2 0.1	3.9 0.1	3.7 0.1	3.2 0.3	2.8 0.8	1.9	8	
		ED7 1209 7R	25.3	19.6	15.4	14.1 0.1	12.9 0.2	12.1 0.2	11.5 0.3	9.8 0.9	8.7 2.1	2.0	12	
		ED8 1209 7R	237.8	87.0	87.0 0.1	87.0 0.2	87.0 0.4	87.0 0.6	87.0 0.9	87.0 2.5	87.0 5.5	5.7	16	
		ED11 1209 7R	344.1	164.0 0.1	164.0 0.3	164.0 0.7	164.0 1.3	164.0 2.1	164.0 3.0	142.1 8.3	125.8 18.6	7.6	19	
	120	ED3.8 1212 7R	10.3	8.7	7.3	6.7	6.1	5.7	5.4	4.6	4.1 0.1	0.7	8	
		ED6 1212 7R	18.7	12.4	9.7	8.9	8.2	7.6	7.2 0.1	6.2 0.2	5.5 0.4	1.9	10	
		ED7 1212 7R	26.9	18.5	14.5	13.3	12.2 0.1	11.4 0.1	10.8 0.2	9.3 0.5	8.2 1.2	2.0	12	
		ED8 1212 7R	260.2	91.0	91.0 0.1	91.0 0.1	91.0 0.2	91.0 0.3	91.0 0.5	91.0 1.4	89.5 3.1	5.3	16	
		ED11 1212 7R	373.5	170.9	170.9 0.2	170.9 0.4	170.9 0.7	167.2 1.2	158.3 1.7	135.8 4.6	120.3 10.5	7.1	19	
	150	ED3.8 1215 7R	11.3	8.5	7.1	6.5	6	5.6	5.3	4.5	4	0.6	8	
		ED6 1215 7R	19.1	11.7	9.2	8.4	7.7	7.2	6.8	5.9 0.1	5.2 0.3	1.8	10	
		ED7 1215 7R	27.7	17.6	13.8	12.7	11.6 0.1	10.9 0.1	10.3 0.1	8.8 0.3	7.8 0.8	2.0	12	
		ED8 1215 7R	273.0	93.2	93.2	93.2 0.1	93.2 0.1	93.2 0.2	93.2 0.3	93.2 0.9	85.8 2.0	5.1	16	
		ED11 1215 7R	389.9	174.6	174.6 0.1	174.6 0.3	170.8 0.5	159.8 0.7	151.3 1.1	129.8 3.0	114.9 6.7	6.8	19	
	180	ED3.8 1218 7R	11.9	8.2	6.9	6.3	5.8	5.4	5.1	4.4	3.9	0.6	8	
		ED6 1218 7R	19.3	11.1	8.7	8.0	7.3	6.9	6.5	5.6 0.1	4.9 0.2	1.8	10	
		ED7 1218 7R	28.2	16.8	13.2	12.1	11.1	10.4 0.1	9.8 0.1	8.4 0.2	7.5 0.5	2.0	12	
		ED8 1218 7R	280.8	94.6	94.6	94.6 0.1	94.6 0.1	94.6 0.2	94.6 0.2	93.0 0.6	82.3 1.4	4.9	16	
		ED11 1218 7R	399.8	176.8	176.8 0.1	176.8 0.2	163.8 0.3	153.2 0.5	145.0 0.7	124.4 2.1	110.2 4.6	6.6	19	
	210	ED3.8 1221 7R	12.3	8	6.7	6.1	5.6	5.3	5	4.3	3.8	0.5	8	
		ED6 1221 7R	19.5	10.7	8.4	7.7	7.0	6.6	6.2	5.3 0.1	4.7 0.1	1.7	10	
		ED7 1221 7R	28.5	16.1	12.7	11.6	10.7	10.0	9.4 0.1	8.1 0.2	7.2 0.4	2.0	12	

Note : The Torque Transmission Capacity is the same whether the rotating direction of the input/output shafts are indicated as right hand cams (R), or left hand cams (L). The figures in the Torque Transmission Capacity Table are indicated as R.

ED2.8~ED11 1dwell

12, 16 stop

Number of Stops S	Index Period θ (deg)	C O D E	Static-rated Output Torque Ts (N·m)	Dynamic-rated Output Torque						Top (N·m) Toi (N·m)		Camshaft Frictional Torque Tx (N·m)	Sankyo Cam Follower SCF (mm)
				Internal Inertia Load Torque									
				Input Shaft Speed (Index/min)						200	300		
				20	40	60	80	100	120	200	300		
12	210	ED81221 7R	285.9	95.4	95.4	95.4	95.4 0.1	95.4 0.1	95.4 0.2	89.6 0.5	79.3 1.0	4.8	16
		ED11 1221 7R	406.1	178.2	178.2 0.1	171.8 0.1	157.6 0.2	147.4 0.4	139.6 0.5	119.7 1.5	106.0 3.4	6.4	19
	240	ED3.8 1224 7R	12.6	7.8	6.5	6	5.5	5.1	4.8	4.2	3.7	0.5	8
		ED6 1224 7R	19.6	10.3	8.1	7.4	6.8	6.3	6.0	5.2	4.6 0.1	1.7	10
		ED7 1224 7R	28.7	15.6	12.2	11.2	10.3	9.6	9.1	7.8 0.1	6.9 0.3	2.0	12
		ED8 1224 7R	289.3	96.0	96.0	96.0	96.0 0.1	96.0 0.1	96.0 0.1	86.6 0.3	76.7 0.8	4.7	16
		ED11 1224 7R	410.4	179.2	179.2	166.0 0.1	152.2 0.2	142.4 0.3	134.8 0.4	115.6 1.2	102.4 2.6	6.3	19
		ED3.8 1227 7R	12.8	7.6	6.3	5.8	5.3	5	4.7	4	3.6	0.5	8
	270	ED6 1227 7R	19.6	9.9	7.8	7.1	6.6	6.1	5.8	5.0	4.4 0.1	1.7	10
		ED7 1227 7R	28.8	15.1	11.8	10.8	9.9	9.3	8.8	7.5 0.1	6.7 0.2	2.0	12
		ED8 1227 7R	291.7	96.4	96.4	96.4	96.4	96.4 0.1	96.4 0.1	83.9 0.3	74.3 0.6	4.7	16
		ED11 1227 7R	457.3	260.3	204.1	187.2 0.1	171.7 0.2	160.6 0.2	152.1 0.3	130.5 0.9	115.5 2.1	6.7	22
		ED3.8 1230 7R	13	7.4	6.2	5.7	5.2	4.9	4.6	3.9	3.5	0.5	8
	300	ED6 1230 7R	19.7	9.6	7.6	6.9	6.4	6.0	5.6	4.8	4.3 0.1	1.7	10
		ED7 1230 7R	28.9	14.6	11.5	10.5	9.6	9.0	8.5	7.3 0.1	6.5 0.2	2.0	12
		ED8 1230 7R	293.5	96.7	96.7	96.7	96.7	96.7 0.1	95.1 0.1	81.6 0.2	72.2 0.5	4.6	16
		ED11 1230 7R	459.9	252.9	198.3	181.9 0.1	166.8 0.1	156.0 0.2	147.7 0.3	126.7 0.8	112.2 1.7	6.6	22
		ED3.8 1233 7R	13.1	7.2	6	5.5	5.1	4.7	4.5	3.9	3.4	0.4	8
	330	ED6 1233 7R	19.7	9.4	7.4	6.7	6.2	5.8	5.5	4.7	4.2 0.1	1.7	10
		ED7 1233 7R	29.0	14.2	11.2	10.2	9.4	8.8	8.3	7.1 0.1	6.3 0.2	2.0	12
		ED8 1233 7R	294.8	96.9	96.9	96.9	96.9	96.9	92.6 0.1	79.4 0.2	70.3 0.4	4.6	16
		ED11 1233 7R	461.8	246.3	193.1	177.1 0.1	162.5 0.1	151.9 0.2	143.9 0.2	123.4 0.6	109.3 1.4	6.6	22
16		90	ED8 1609 7R	45.9	37.8	29.7 0.1	27.2 0.2	25.0 0.3	23.3 0.4	22.1 0.6	19.0 1.8	16.8 4.0	2.8
	ED11 1609 7R		352.8	122.4 0.1	122.4 0.2	122.4 0.6	122.4 1.0	122.4 1.5	122.4 2.2	122.4 6.1	122.4 13.8	6.8	16
	120	ED8 1612 7R	48.2	35.5	27.9	25.6 0.1	23.5 0.2	21.9 0.3	20.8 0.4	17.8 1.0	15.8 2.3	2.7	12
		ED11 1612 7R	372.0	125.7	125.7 0.1	125.7 0.3	125.7 0.6	125.7 0.9	125.7 1.2	125.7 3.4	122.0 7.8	6.4	16
	180	ED8 1618 7R	50.0	32.1	25.1	23.1	21.2 0.1	19.8 0.1	18.7 0.2	16.1 0.4	14.2 1.0	2.6	12
		ED11 1618 7R	387.7	128.3	128.3 0.1	128.3 0.1	128.3 0.2	128.3 0.4	128.3 0.6	124.6 1.5	110.3 3.4	6.0	16
	240	ED8 1624 7R	50.7	29.6	23.2	21.3	19.5 0.1	18.3 0.1	17.3 0.1	14.8 0.4	13.1	2.5	12
		ED11 1624 7R	393.7	129.3	129.3	129.3 0.1	129.3 0.1	129.3 0.2	129.3 0.3	115.2 0.9	102.0 1.9	5.9	16
	270	ED8 1627 7R	50.9	28.6	22.5	20.6	18.9	17.7	16.7 0.1	14.4 0.2	12.7 0.4	2.5	12
		ED11 1627 7R	395.4	129.6	129.6	129.6 0.1	129.6 0.1	129.6 0.2	129.6 0.2	111.4 0.7	98.6 1.5	5.8	16
	300	ED8 1630 7R	51.1	27.8	21.8	20.0	18.3	17.2 0.1	16.2 0.1	13.9 0.3	12.3	2.5	12
		ED11 1630 7R	396.6	129.8	129.8	129.8	129.8 0.1	129.8 0.1	126.0 0.2	108.1 0.6	95.7 1.2	5.7	16
	330	ED8 1633 7R	51.2	27.0	21.2	19.4	17.8	16.7	15.8	13.6 0.1	12.0 0.3	2.5	12
		ED11 1633 7R	397.5	129.9	129.9	129.9	129.9 0.1	129.5 0.1	122.6 0.2	105.2 0.5	93.1 1.0	5.7	16

Note : The Torque Transmission Capacity is the same whether the rotating direction of the input/output shafts are indicated as right hand cams (R), or left hand cams (L). The figures in the Torque Transmission Capacity Table are indicated as R.

2, 3, 4dwell Cam Curve SMS-3(Curve Code 7)ED2.8~ED11

ED2.8~ED11 2dwell

12, 16 stop

Number of Stops S	Index Period θ (deg)	C O D E	Static-rated Output Torque Ts (N·m)	Dynamic-rated Output Torque Internal Inertia Load Torque								Top (N·m) Toi (N·m)	Camshaft Frictional Torque Tx (N·m)	Sankyo Cam Follower SCF (mm)
				20	40	Input Shaft Speed (Index/min) 60 80 100 120				200	300			
12	120	ED4.5 1212 7R2	28.3	22.9	22.9	18.6	17.1	16.0	15.1	13.0 0.1	11.5 0.2	1.2	14	
		ED6 1212 7R2	113.0	56.2	56.2	56.2	56.2	56.2 0.1	54.8 0.1	47.0 0.2	41.6 0.5	2.7	16	
		ED7 1212 7R2	141.1	115.0	115.0	93.4 0.1	85.7 0.1	80.1 0.1	75.9 0.2	65.1 0.6	57.6 1.3	4.5	22	
	150	ED4.5 1215 7R2	31.4	22.6	22.6	18.4	16.8	15.7	14.9	12.8 0.1	11.3 0.1	1.1	14	
		ED6 1215 7R2	123.5	58.7	58.7	58.7	58.7	56.6	53.6	46.0 0.1	40.7 0.3	2.5	16	
		ED7 1215 7R2	156.6	113.3	113.3	92.0	84.4 0.1	79.0 0.1	74.8 0.1	64.1 0.4	56.8 0.9	4.2	22	
	180	ED4.5 1218 7R2	33.6	22.1	22.1	18.0	16.5	15.4	14.6	12.5	11.1 0.1	1.1	14	
		ED6 1218 7R2	130.5	60.4	60.4	60.4	58.9	55.1	52.2	44.7 0.1	39.6 0.2	2.3	16	
		ED7 1218 7R2	167.6	111.0	111.0	90.1	82.7	77.3 0.1	73.2 0.1	62.8 0.3	55.6 0.6	3.9	22	
	210	ED4.5 1221 7R2	35.1	21.6	21.6	17.5	16.1	15.1	14.3	12.2	10.8 0.1	1.0	14	
		ED6 1221 7R2	135.5	61.5	61.5	61.5	57.3	53.6	50.7	43.5 0.1	38.5 0.2	2.2	16	
		ED7 1221 7R2	175.4	108.4	108.4	88.0	80.8	75.5	71.5 0.1	61.3 0.2	54.3 0.4	3.7	22	
	240	ED4.5 1224 7R2	36.3	21.1	21.1	17.1	15.7	14.7	13.9	11.9	10.6	1.0	14	
		ED6 1224 7R2	139.0	62.3	62.3	60.8	55.7	52.1	49.4	42.3 0.1	37.5 0.1	2.2	16	
		ED7 1224 7R2	181.1	105.8	105.8	85.9	78.8	73.7	69.8 0.1	59.9 0.1	53.0 0.3	3.6	22	
	270	ED4.5 1227 7R2	37.1	20.6	20.6	16.7	15.3	14.3	13.6	11.7	10.3	1.0	14	
		ED6 1227 7R2	141.5	62.9	62.9	59.2	54.3	50.8	48.1	41.3	36.5 0.1	2.1	16	
		ED7 1227 7R2	185.3	103.3	103.3	83.9	77.0	72.0	68.2	58.5 0.1	51.8 0.3	3.5	22	
	300	ED4.5 1230 7R2	37.7	20.1	20.1	16.3	15.0	14.0	13.3	11.4	10.1	0.9	14	
		ED6 1230 7R2	143.5	63.3	63.3	57.7	53.0	49.5	46.9	40.2	35.6 0.1	2.1	16	
		ED7 1230 7R2	188.6	101.0	101.0	82.0	75.2	70.4	66.6	57.2 0.1	50.6 0.2	3.4	22	
	330	ED4.5 1233 7R2	38.2	19.7	19.7	16.0	14.7	13.7	13.0	11.1	9.9	0.9	14	
		ED6 1233 7R2	144.9	63.6	63.6	56.4	51.7	48.4	45.8	39.3	34.8 0.1	2.0	16	
		ED7 1233 7R2	191.1	98.8	98.8	80.2	73.6	68.8	65.2	55.9 0.1	49.5 0.2	3.4	22	
16	90	ED6 1609 7R2	23.7	18.4	18.4	15.0	13.7	12.8 0.1	12.2 0.1	10.4 0.3	9.2 0.6	2.2	12	
		ED7 1609 7R2	121.4	67.8	67.8	67.8 0.1	67.8 0.1	67.8 0.2	67.8 0.3	62.3 0.7	55.1 1.7	3.9	16	
		ED8 1609 7R2	207.4	110.3 0.1	110.3 0.2	110.3 0.3	110.3 0.5	110.3 0.7	110.3 1.9	99.5 4.2	6.9	19		
	120	ED4.5 1612 7R2	16.1	13.2	13.2	10.7	9.8	9.2	8.7	7.5 0.1	6.6 0.1	1.0	12	
		ED6 1612 7R2	51.5	37.2	37.2	30.2	27.7	25.9	24.5 0.1	21.0 0.2	18.6 0.3	2.2	14	
		ED7 1612 7R2	138.3	72.4	72.4	72.4 0.1	72.4 0.1	72.4 0.1	71.1 0.2	61.0 0.4	54.0 0.9	3.5	16	
		ED8 1612 7R2	239.9	118.6 0.1	118.6 0.2	118.6 0.3	118.6 0.3	118.6 0.4	110.8 1.0	98.1 2.3	6.2	19		
	150	ED4.5 1615 7R2	17.3	12.8	12.8	10.4	9.6	8.9	8.5	7.3	6.4 0.1	0.9	12	
		ED6 1615 7R2	53.9	35.5	35.5	28.9	26.5	24.8	23.4	20.1 0.1	17.8 0.2	2.1	14	
		ED7 1615 7R2	148.9	75.1	75.1	75.1	75.1	72.8 0.1	69.0 0.1	59.2 0.3	52.4 0.6	3.3	16	
		ED8 1615 7R2	261.2	123.8	123.8	123.8 0.1	123.8 0.1	123.8 0.2	123.8 0.2	108.1 0.7	95.7 1.5	5.8	19	

Note: A 2-dwell cam performs 2 indexes and 2 dwells per 1 turn of the input shaft. A 3-dwell cam performs 3 of each, and a 4-dwell cam performs 4 of each. The indexing angle θ given in the capacity table represents the total index period per 1 turn of the input shaft.

ED2.8~ED11 2dwell

16, 20 stop

Number of Stops S	Index Period θ (deg)	C O D E	Static-rated Output Torque Ts (N·m)	Dynamic-rated Output Torque Internal Inertia Load Torque								Top (N·m) Toi (N·m)	Camshaft Frictional Torque Tx (N·m)	Sankyo Cam Follower SCF (mm)
				Input Shaft Speed (Index/min)										
				20	40	60	80	100	120	200	300			
16	180	ED4.5 1618 7R2	18.1	12.4	12.4	10.1	9.3	8.7	8.2	7.0	6.2 0.1	0.9	12	
		ED6 1618 7R2	55.3	34.1	34.1	27.7	25.4	23.7	22.5	19.3 0.1	17.1 0.2	2.0	14	
		ED7 1618 7R2	163.7	106.2	106.2	91.2	83.7	78.3	74.1 0.1	63.6 0.2	56.3 0.4	3.3	19	
		ED8 1618 7R2	294.2	203.2	203.2	165.1	151.4 0.1	141.6 0.1	134.1 0.2	115.0 0.5	101.9 1.0	6.1	22	
	210	ED4.5 1621 7R2	18.7	12.0	12.0	9.8	9.0	8.4	7.9	6.8	6.0	0.9	12	
		ED6 1621 7R2	56.2	32.8	32.8	26.6	24.4	22.9	21.6	18.6	16.4 0.1	2.0	14	
		ED7 1621 7R2	168.4	107.7	107.7	88.3	81.0	75.8	71.8 0.1	61.6 0.1	54.5 0.3	3.2	19	
		ED8 1621 7R2	302.7	196.8	196.8	159.9	146.7 0.1	137.2 0.1	129.9 0.1	111.4 0.3	98.7 0.8	5.9	22	
	240	ED4.5 1624 7R2	19.0	11.7	11.7	9.5	8.7	8.1	7.7	6.6	5.8	0.8	12	
		ED6 1624 7R2	56.8	31.7	31.7	25.7	23.6	22.1	20.9	17.9	15.9 0.1	2.0	14	
		ED7 1624 7R2	171.6	105.5	105.5	85.7	78.6	73.5	69.6	59.7 0.1	52.9 0.2	3.1	19	
		ED8 1624 7R2	308.7	191.0	191.0	155.1	142.3	133.1 0.1	126.0 0.1	108.1 0.3	95.7 0.6	5.7	22	
	270	ED4.5 1627 7R2	19.3	11.3	11.3	9.2	8.5	7.9	7.5	6.4	5.7	0.8	12	
		ED6 1627 7R2	57.3	30.7	30.7	24.9	22.9	21.4	20.3	17.4	15.4 0.1	1.9	14	
		ED7 1627 7R2	174.0	102.5	102.5	83.3	76.4	71.4	67.6	58.0 0.1	51.4 0.2	3.0	19	
		ED8 1627 7R2	313.0	185.6	185.6	150.8	138.3	129.3 0.1	122.5 0.1	105.1 0.2	93.0 0.5	5.6	22	
	300	ED4.5 1630 7R2	19.5	11.0	11.0	9.0	8.2	7.7	7.3	6.3	5.5	0.8	12	
		ED6 1630 7R2	57.6	29.8	29.8	24.2	22.2	20.8	19.7	16.9	15.0 0.1	1.9	14	
		ED7 1630 7R2	175.7	99.8	99.8	81.1	74.4	69.6	65.9	56.5 0.1	50.0 0.2	3.0	19	
		ED8 1630 7R2	316.2	180.8	180.8	146.8	134.7	126.0	119.3 0.1	102.3 0.2	90.6 0.4	5.5	22	
	330	ED4.5 1633 7R2	19.7	10.8	10.8	8.8	8.0	7.5	7.1	6.1	5.4	0.8	12	
		ED6 1633 7R2	57.8	29.1	29.1	23.6	21.6	20.2	19.2	16.4	14.6	1.9	14	
		ED7 1633 7R2	177.0	97.4	97.4	79.1	72.6	67.9	64.2	55.1 0.1	48.8 0.1	2.9	19	
		ED8 1633 7R2	318.6	176.3	176.3	143.2	131.4	122.9	116.3	99.8 0.1	88.4 0.3	5.4	22	
20	90	ED6 2009 7R2	17.1	13.2	13.2	10.7	9.8	9.2 0.1	8.7 0.1	7.5 0.2	6.6 0.5	2.2	10	
		ED7 2009 7R2	48.0	41.0	41.0	33.3 0.1	30.6 0.1	28.6 0.1	27.1 0.2	23.2 0.6	20.6 1.3	2.7	14	
		ED8 2009 7R2	220.2	83.7	83.7 0.1	83.7 0.1	83.7 0.2	83.7 0.4	83.7 0.5	83.7 1.5	83.7 3.3	6.1	16	
		ED11 2009 7R2	352.1	271.3 0.1	271.3 0.2	262.5 0.5	240.8 0.8	225.2 1.3	213.2 1.8	182.9 5.0	162.0 11.3	8.8	22	
	120	ED6 2012 7R2	22.8	16.6	16.6	13.5	12.4	11.6	10.9	9.4 0.1	8.3 0.3	2.3	12	
		ED7 2012 7R2	51.9	39.1	39.1	31.8	29.2 0.1	27.3 0.1	25.8 0.1	22.2 0.3	19.6 0.7	2.5	14	
		ED8 2012 7R2	246.8	88.6	88.6	88.6 0.1	88.6 0.1	88.6 0.2	88.6 0.3	88.6 0.8	88.6 1.9	5.6	16	
		ED11 2012 7R2	392.0	286.3 0.1	286.3 0.1	254.1 0.3	233.1 0.5	218.0 0.7	206.4 1.0	177.1 2.8	156.8 6.4	8.1	22	
	150	ED6 2015 7R2	23.5	15.7	15.7	12.8	11.7	11.0	10.4	8.9 0.1	7.9 0.2	2.2	12	
		ED7 2015 7R2	54.1	37.4	37.4	30.4	27.8	26.0 0.1	24.7 0.1	21.2 0.2	18.7 0.5	2.4	14	
		ED8 2015 7R2	262.9	91.5	91.5	91.5	91.5 0.1	91.5 0.1	91.5 0.2	91.5 0.5	91.5 1.2	5.3	16	
		ED11 2015 7R2	415.7	294.8 0.1	294.8 0.1	244.7 0.2	224.5 0.3	209.9 0.5	198.8 0.7	170.5 1.8	151.0 4.1	7.6	22	

Note: A 2-dwell cam performs 2 indexes and 2 dwells per 1 turn of the input shaft. A 3-dwell cam performs 3 of each, and a 4-dwell cam performs 4 of each. The indexing angle θ given in the capacity table represents the total index period per 1 turn of the input shaft.

ED2.8~ED11 2, 3 dwell

20, 24 stop

Number of Stops S	Index Period θ (deg)	C O D E	Static-rated Output Torque Ts (N·m)	Dynamic-rated Output Torque Internal Inertia Load Torque						Top (N·m) Toi (N·m)		Camshaft Frictional Torque Tx (N·m)	Sankyo Cam Follower SCF (mm)
				20	40	60	80	100	120	200	300		
20	180	ED6 2018 7R2	23.9	15.0	15.0	12.2	11.2	10.5	9.9	8.5 0.1	7.5 0.1	2.2	12
		ED7 2018 7R2	55.4	35.8	35.8	29.1	26.7	25.0	23.6 0.1	20.3 0.1	17.9 0.3	2.3	14
		ED8 2018 7R2	273.0	93.2	93.2	93.2	93.2 0.1	93.2 0.1	93.2 0.1	93.2 0.4	93.2 0.8	5.1	16
		ED11 2018 7R2	430.5	290.3	290.3 0.1	235.8 0.1	216.3 0.2	202.3 0.3	191.5 0.5	164.3 1.3	145.5 2.8	7.4	22
	210	ED6 2021 7R2	24.2	14.4	14.4	11.7	10.8	10.1	9.5	8.2	7.2 0.1	2.1	12
		ED7 2021 7R2	56.2	34.4	34.4	28.0	25.7	24.0	22.7	19.5 0.1	17.3 0.2	2.3	14
		ED8 2021 7R2	279.8	94.4	94.4	94.4	94.4	94.4 0.1	94.4 0.1	94.4 0.3	90.1 0.6	5.0	16
		ED11 2021 7R2	440.2	280.3	280.3	227.6 0.1	208.8 0.1	195.3 0.2	184.9 0.3	158.6 0.9	140.5 2.1	7.1	22
	240	ED6 2024 7R2	24.3	13.9	13.9	11.3	10.4	9.7	9.2	7.9	7.0 0.1	2.1	12
		ED7 2024 7R2	56.8	33.3	33.3	27.0	24.8	23.2	21.9	18.8 0.1	16.7 0.2	2.2	14
		ED8 2024 7R2	284.4	95.2	95.2	95.2	95.2	95.2 0.1	95.2 0.1	95.2 0.2	87.3 0.5	4.8	16
		ED11 2024 7R2	446.9	271.3	271.3	220.4 0.1	202.1 0.1	189.1 0.2	179.0 0.3	153.6 0.7	136.0 1.6	7.0	22
	270	ED6 2027 7R2	24.5	13.5	13.5	10.9	10.0	9.4	8.9	7.6	6.8 0.1	2.0	12
		ED7 2027 7R2	57.2	32.2	32.2	26.2	24.0	22.4	21.3	18.2 0.1	16.1 0.1	2.2	14
		ED8 2027 7R2	287.8	95.7	95.7	95.7	95.7	95.7	95.7 0.1	95.7 0.2	84.8 0.4	4.8	16
		ED11 2027 7R2	451.7	263.3	263.3	213.8 0.1	196.2 0.1	183.5 0.1	173.7 0.2	149.0 0.6	131.9 1.3	6.9	22
	300	ED6 2030 7R2	24.6	13.1	13.1	10.6	9.7	9.1	8.6	7.4	6.6	2.0	12
		ED7 2030 7R2	57.5	31.3	31.3	25.4	23.3	21.8	20.6	17.7 0.1	15.7 0.1	2.2	14
		ED8 2030 7R2	290.2	96.1	96.1	96.1	96.1	96.1	96.1	93.1 0.1	82.5 0.3	4.7	16
		ED11 2030 7R2	455.2	256.1	256.1	208.0	190.8 0.1	178.4 0.1	168.9 0.2	144.9 0.5	128.3 1.0	6.8	22
	330	ED6 2033 7R2	24.6	12.7	12.7	10.3	9.5	8.9	8.4	7.2	6.4	2.0	12
		ED7 2033 7R2	57.7	30.5	30.5	24.7	22.7	21.2	20.1	17.2	15.3 0.1	2.1	14
		ED8 2033 7R2	292.1	96.4	96.4	96.4	96.4	96.4	96.4	90.8 0.1	80.4 0.2	4.7	16
		ED11 2033 7R2	457.8	249.6	249.6	202.7	186.0 0.1	173.9 0.1	164.7 0.1	141.3 0.4	125.1 0.8	6.7	22
24	90	ED6 2409 7R2	9.2	6.9	6.9	5.6	5.1	4.8	4.5 0.1	3.9 0.2	3.5 0.4	2.0	8
		ED7 2409 7R2	25.3	21.4	21.4	17.4	15.9 0.1	14.9 0.1	14.1 0.2	12.1 0.5	10.7 1.1	2.0	12
		ED8 2409 7R2	237.8	87.0	87.0	87.0 0.1	87.0 0.2	87.0 0.3	87.0 0.4	87.0 1.2	87.0 2.7	5.7	16
		ED11 2409 7R2	344.1	164.0	164.0 0.2	164.0 0.4	164.0 0.7	164.0 1.0	164.0 1.5	164.0 4.1	154.9 9.3	7.6	19
	120	ED6 2412 7R2	9.6	6.5	6.5	5.2	4.8	4.5	4.3	3.7 0.1	3.2 0.2	1.9	8
		ED7 2412 7R2	26.9	20.2	20.2	16.4	15.1	14.1 0.1	13.3 0.1	11.4 0.3	10.1 0.6	2.0	12
		ED8 2412 7R2	260.2	91.0	91.0	91.0 0.1	91.0 0.1	91.0 0.2	91.0 0.2	91.0 0.7	91.0 1.5	5.3	16
		ED11 2412 7R2	373.5	170.9	170.9 0.1	170.9 0.2	170.9 0.4	170.9 0.6	170.9 0.8	167.2 2.3	148.1 5.2	7.1	19
	150	ED4.5 2415 7R3	17.3	14.5	14.5	14.5	10.8	10.1	9.6	8.2	7.3 0.1	0.9	12
		ED6 2415 7R2	19.1	12.7	12.7	10.3	9.5	8.9	8.4	7.2 0.1	6.4 0.1	2.0	10
		ED7 2415 7R2	27.7	19.2	19.2	15.6	14.3	13.4	12.7 0.1	10.9 0.2	9.6 0.4	2.0	12
		ED8 2415 7R2	273.0	93.2	93.2	93.2	93.2 0.1	93.2 0.1	93.2 0.2	93.2 0.4	93.2 1.0	5.1	16

Note: A 2-dwell cam performs 2 indexes and 2 dwells per 1 turn of the input shaft. A 3-dwell cam performs 3 of each, and a 4-dwell cam performs 4 of each. The indexing angle θ given in the capacity table represents the total index period per 1 turn of the input shaft.

ED2.8~ED11 2, 3 dwell

24, 30 stop

Number of Stops S	Index Period θ (deg)	C O D E	Static-rated Output Torque Ts (N·m)	Dynamic-rated Output Torque Internal Inertia Load Torque						Top (N·m) Toi (N·m)		Camshaft Frictional Torque Tx (N·m)	Sankyo Cam Follower SCF (mm)
				20	40	Input Shaft Speed (Index/min)				200	300		
24	150	ED11 2415 7R2	389.9	174.6	174.6 0.1	174.6 0.1	174.6 0.2	174.6 0.4	174.6 0.5	159.8 1.5	141.5 3.3	6.8	19
	180	ED4.5 2418 7R3	18.1	14.0	14.0	14.0	10.4	9.8	9.3	7.9	7.0	0.9	12
		ED6 2418 7R2	19.3	12.1	12.1	9.9	9.0	8.5	8.0	6.9	6.1 0.1	1.9	10
		ED7 2418 7R2	28.2	18.3	18.3	14.9	13.7	12.8	12.1	10.4 0.1	9.2 0.3	2.0	12
		ED8 2418 7R2	280.8	94.6	94.6	94.6	94.6	94.6 0.1	94.6 0.1	94.6 0.3	94.6 0.7	4.9	16
		ED11 2418 7R2	399.8	176.8	176.8	176.8 0.1	176.8 0.2	176.8 0.3	176.8 0.4	153.2 1.0	135.6 2.3	6.6	19
	210	ED4.5 2421 7R3	18.7	13.6	13.6	13.6	10.1	9.5	9.0	7.7	6.8	0.9	12
		ED6 2421 7R2	19.5	11.6	11.6	9.5	8.7	8.1	7.7	6.6	5.8 0.1	1.9	10
		ED7 2421 7R2	28.5	17.6	17.6	14.3	13.1	12.3	11.6	10.0 0.1	8.8 0.2	2.0	12
		ED8 2421 7R2	285.9	95.4	95.4	95.4	95.4	95.4 0.1	95.4 0.1	95.4 0.2	95.4 0.5	4.8	16
		ED11 2421 7R2	406.1	178.2	178.2	178.2 0.1	178.2 0.1	178.2 0.2	171.8 0.3	147.4 0.8	130.5 1.7	6.4	19
	240	ED4.5 2424 7R3	19.0	13.2	13.2	13.2	9.8	9.2	8.7	7.5	6.6	0.8	12
		ED6 2424 7R2	19.6	11.2	11.2	9.1	8.4	7.8	7.4	6.3	5.6 0.1	1.9	10
		ED7 2424 7R2	28.7	17.0	17.0	13.8	12.6	11.8	11.2	9.6 0.1	8.5 0.1	2.0	12
		ED8 2424 7R2	289.3	96.0	96.0	96.0	96.0	96.0	96.0 0.1	96.0 0.2	94.4 0.4	4.7	16
		ED11 2424 7R2	410.4	179.2	179.2	179.2 0.1	179.2 0.1	175.3 0.1	166.0 0.2	142.4 0.6	126.1 1.3	6.3	19
	270	ED4.5 2427 7R3	19.3	12.8	12.8	12.8	9.5	8.9	8.5	7.3	6.4	0.8	12
		ED6 2427 7R2	19.6	10.8	10.8	8.8	8.1	7.6	7.1	6.1	5.4	1.8	10
		ED7 2427 7R2	28.8	16.4	16.4	13.3	12.2	11.4	10.8	9.3 0.1	8.2 0.1	2.0	12
		ED8 2427 7R2	291.7	96.4	96.4	96.4	96.4	96.4	96.4	96.4 0.1	91.5 0.3	4.7	16
		ED11 2427 7R2	413.4	179.8	179.8	179.8	179.8 0.1	169.8 0.1	160.8 0.2	137.9 0.5	122.1 1.0	6.2	19
	300	ED4.5 2430 7R3	19.5	12.5	12.5	12.5	9.3	8.7	8.2	7.1	6.3	0.8	12
		ED6 2430 7R2	19.7	10.5	10.5	8.5	7.8	7.3	6.9	6.0	5.3	1.8	10
		ED7 2430 7R2	28.9	15.9	15.9	12.9	11.9	11.1	10.5	9.0	8.0 0.1	2.0	12
		ED8 2430 7R2	293.5	96.7	96.7	96.7	96.7	96.7	96.7	96.7 0.1	88.9 0.2	4.6	16
		ED11 2430 7R2	415.6	180.3	180.3	180.3	176.4 0.1	165.0 0.1	156.2 0.1	134.0 0.4	118.6 0.8	6.1	19
	330	ED4.5 2433 7R3	19.7	12.2	12.2	12.2	9.1	8.5	8.0	6.9	6.1	0.8	12
		ED6 2433 7R2	19.7	10.2	10.2	8.3	7.6	7.1	6.7	5.8	5.1	1.8	10
		ED7 2433 7R2	29.0	15.5	15.5	12.6	11.6	10.8	10.2	8.8	7.8 0.1	2.0	12
		ED8 2433 7R2	294.8	96.9	96.9	96.9	96.9	96.9	96.9	96.9 0.1	86.6 0.2	4.6	16
		ED11 2433 7R2	417.3	180.7	180.7	180.7	171.8	160.6 0.1	152.1 0.1	130.5 0.3	115.5 0.7	6.1	19
30	90	ED11 3009 7R2	347.4	121.4	121.4 0.1	121.4 0.3	121.4 0.5	121.4 0.8	121.4 1.2	121.4 3.3	121.4 7.3	6.9	16
	120	ED7 3012 7R3	51.9	44.2	44.2	44.2	32.9	30.8 0.1	29.2 0.1	25.0 0.2	22.2 0.5	2.5	14
		ED8 3012 7R3	246.8	88.6	88.6	88.6	88.6 0.1	88.6 0.1	88.6 0.2	88.6 0.5	88.6 1.2	5.6	16
		ED11 3012 7R2	368.3	125.1	125.1 0.1	125.1 0.2	125.1 0.3	125.1 0.5	125.1 0.7	125.1 1.8	125.1 4.1	6.5	16
	150	ED7 3015 7R3	54.1	42.2	42.2	42.2	31.4	29.4	27.8	23.9 0.1	21.2 0.3	2.4	14

Note: A 2-dwell cam performs 2 indexes and 2 dwells per 1 turn of the input shaft. A 3-dwell cam performs 3 of each, and a 4-dwell cam performs 4 of each. The indexing angle θ given in the capacity table represents the total index period per 1 turn of the input shaft.

ED2.8~ED11 2, 3, 4 dwell

30, 32 stop

Number of Stops S	Index Period θ (deg)	C O D E	Static-rated Output Torque Ts (N·m)	Dynamic-rated Output Torque Internal Inertia Load Torque								Top (N·m) Toi (N·m)		Camshaft Frictional Torque Tx (N·m)	Sankyo Cam Follower SCF (mm)
				Input Shaft Speed (Index/min)								200	300		
				20	40	60	80	100	120	200	300				
30	150	ED8 3015 7R3	262.9	91.5	91.5	91.5	91.5 0.1	91.5 0.1	91.5 0.1	91.5 0.4	91.5 0.8	5.3	16		
		ED11 3015 7R2	379.4	126.9	126.9	126.9 0.1	126.9 0.2	126.9 0.3	126.9 0.4	126.9 1.2	126.9 2.6	6.3	16		
	180	ED7 3018 7R3	55.4	40.4	40.4	40.4	30.1	28.2	26.7	22.9 0.1	20.3 0.2	2.3	14		
		ED8 3018 7R3	273.0	93.2	93.2	93.2	93.2	93.2 0.1	93.2 0.1	93.2 0.2	93.2 0.5	5.1	16		
		ED11 3018 7R2	385.9	128.0	128.0	128.0 0.1	128.0 0.1	128.0 0.2	128.0 0.3	128.0 0.8	128.0 1.8	6.1	16		
	210	ED7 3021 7R3	56.2	38.9	38.9	38.9	29.0	27.1	25.7	22.0 0.1	19.5 0.2	2.3	14		
		ED8 3021 7R3	279.8	94.4	94.4	94.4	94.4	94.4	94.4 0.1	94.4 0.2	94.4 0.4	5.0	16		
		ED11 3021 7R2	389.9	128.7	128.7	128.7 0.1	128.7 0.1	128.7 0.1	128.7 0.2	128.7 0.6	127.2 1.3	6.0	16		
	240	ED7 3024 7R3	56.8	37.6	37.6	37.6	28.0	26.2	24.8	21.3 0.1	18.8 0.1	2.2	14		
		ED8 3024 7R3	284.4	95.2	95.2	95.2	95.2	95.2	95.2	95.2 0.1	95.2 0.3	4.8	16		
		ED11 3024 7R2	392.6	129.1	129.1	129.1	129.1 0.1	129.1 0.1	129.1 0.2	129.1 0.5	122.6 1.0	5.9	16		
	270	ED7 3027 7R3	57.2	36.4	36.4	36.4	27.1	25.4	24.0	20.6	18.2 0.1	2.2	14		
		ED8 3027 7R3	287.8	95.7	95.7	95.7	95.7	95.7	95.7	95.7 0.1	95.7 0.2	4.8	16		
		ED11 3027 7R2	394.5	129.4	129.4	129.4	129.4 0.1	129.4 0.1	129.4 0.1	129.4 0.4	118.7 0.8	5.8	16		
	300	ED7 3030 7R3	57.5	35.3	35.3	35.3	26.3	24.6	23.3	20.0	17.7 0.1	2.2	14		
		ED8 3030 7R3	290.2	96.1	96.1	96.1	96.1	96.1	96.1	96.1 0.1	93.1 0.2	4.7	16		
		ED11 3030 7R2	395.9	129.6	129.6	129.6	129.6	129.6 0.1	129.6 0.1	129.6 0.3	115.2 0.7	5.8	16		
	330	ED7 3033 7R3	57.7	34.4	34.4	34.4	25.6	24.0	22.7	19.5	17.2 0.1	2.1	14		
		ED8 3033 7R3	292.1	96.4	96.4	96.4	96.4	96.4	96.4	96.4 0.1	90.8 0.2	4.7	16		
		ED11 3033 7R2	396.9	129.8	129.8	129.8	129.8	129.8 0.1	129.8 0.1	126.6 0.2	112.1 0.5	5.7	16		
32	90	ED11 3209 7R2	352.8	122.4	122.4 0.1	122.4 0.3	122.4 0.5	122.4 0.8	122.4 1.1	122.4 3.1	122.4 6.9	6.8	16		
	120	ED8 3212 7R4	239.9	118.6	118.6	118.6	118.6 0.1	118.6 0.1	118.6 0.2	118.6 0.5	118.6 1.2	6.2	19		
		ED11 3212 7R2	372.0	125.7	125.7 0.1	125.7 0.2	125.7 0.3	125.7 0.4	125.7 0.6	125.7 1.7	125.7 3.9	6.4	16		
	150	ED8 3215 7R4	281.5	203.3	203.3	203.3	203.3 0.1	180.1 0.1	170.6 0.1	146.3 0.3	129.6 0.7	6.3	22		
		ED11 3215 7R2	381.9	127.3	127.3	127.3 0.1	127.3 0.2	127.3 0.3	127.3 0.4	127.3 1.1	127.3 2.5	6.2	16		
	180	ED8 3218 7R4	294.2	207.9	207.9	207.9	207.9	174.4 0.1	165.1 0.1	141.6 0.2	125.4 0.5	6.1	22		
		ED11 3218 7R2	387.7	128.3	128.3	128.3 0.1	128.3 0.1	128.3 0.2	128.3 0.3	128.3 0.8	128.3 1.7	6.0	16		
	210	ED8 3221 7R4	302.7	210.9	210.9	210.9	210.9	168.9	159.9 0.1	137.2 0.2	121.5 0.4	5.9	22		
		ED11 3221 7R2	391.3	128.9	128.9	128.9 0.1	128.9 0.1	128.9 0.1	128.9 0.2	128.9 0.6	128.9 1.3	5.9	16		
	240	ED8 3224 7R4	308.7	212.9	212.9	212.9	212.9	163.8	155.1	133.1 0.1	117.8 0.3	5.7	22		
		ED11 3224 7R2	393.7	129.3	129.3	129.3	129.3 0.1	129.3 0.1	129.3 0.2	129.3 0.4	125.5 1.0	5.9	16		
	270	ED8 3227 7R4	313.0	214.4	214.4	214.4	214.4	159.2	150.8	129.3 0.1	114.5 0.2	5.6	22		
		ED11 3227 7R2	395.4	129.6	129.6	129.6	129.6 0.1	129.6 0.1	129.6 0.1	129.6 0.3	121.4 0.8	5.8	16		
	300	ED8 3230 7R4	316.2	215.5	215.5	215.5	215.5	155.1	146.8	126.0 0.1	111.5 0.2	5.5	22		
		ED11 3230 7R2	396.6	129.8	129.8	129.8	129.8	129.8 0.1	129.8 0.1	129.8 0.3	117.8 0.6	5.7	16		
	330	ED8 3233 7R4	318.6	216.3	216.3	216.3	216.3	151.3	143.2	122.9 0.1	108.8 0.2	5.4	22		

Note: A 2-dwell cam performs 2 indexes and 2 dwells per 1 turn of the input shaft. A 3-dwell cam performs 3 of each, and a 4-dwell cam performs 4 of each. The indexing angle θ given in the capacity table represents the total index period per 1 turn of the input shaft.

ED2.8~ED11 2, 3, 4 dwell

32, 36, 40 stop

Number of Stops S	Index Period θ (deg)	C O D E	Static-rated Output Torque Ts (N·m)	Dynamic-rated Output Torque Internal Inertia Load Torque								Top (N·m) Toi (N·m)	Camshaft Frictional Torque Tx (N·m)	Sankyo Cam Follower SCF (mm)
				Input Shaft Speed (Index/min)								200		
20	40	60	80	100	120	200	300							
32	330	ED11 3233 7R2	397.5	129.9	129.9	129.9	129.9	129.9 0.1	129.9 0.1	129.5 0.2	114.6 0.5	5.7	16	
36	90	ED8 3609 7R3	237.8	87.0	87.0	87.0 0.1	87.0 0.1	87.0 0.2	87.0 0.3	87.0 0.8	87.0 1.8	5.7	16	
		ED11 3609 7R3	344.1	164.0	164.0 0.1	164.0 0.2	164.0 0.4	164.0 0.7	164.0 1.0	164.0 2.8	164.0 6.2	7.6	19	
	120	ED7 3612 7R3	26.9	22.8	22.8	22.8	17.0	15.9	15.1 0.1	12.9 0.2	11.4 0.4	2.0	12	
		ED8 3612 7R3	260.2	91.0	91.0	91.0	91.0 0.1	91.0 0.1	91.0 0.2	91.0 0.5	91.0 1.0	5.3	16	
		ED11 3612 7R3	373.5	170.9	170.9 0.1	170.9 0.1	170.9 0.2	170.9 0.4	170.9 0.6	170.9 1.5	167.2 3.5	7.1	19	
	150	ED7 3615 7R3	27.7	21.7	21.7	21.7	16.2	15.1	14.3	12.3 0.1	10.9 0.3	2.0	12	
		ED8 3615 7R3	273.0	93.2	93.2	93.2	93.2	93.2 0.1	93.2 0.1	93.2 0.3	93.2 0.7	5.1	16	
		ED11 3615 7R3	389.9	174.6	174.6	174.6 0.1	174.6 0.2	174.6 0.2	174.6 0.4	174.6 1.0	159.8 2.2	6.8	19	
	180	ED7 3618 7R3	28.2	20.7	20.7	20.7	15.4	14.4	13.7	11.7 0.1	10.4 0.2	2.0	12	
		ED8 3618 7R3	280.8	94.6	94.6	94.6	94.6	94.6 0.1	94.6 0.1	94.6 0.2	94.6 0.5	4.9	16	
		ED11 3618 7R3	399.8	176.8	176.8	176.8 0.1	176.8 0.1	176.8 0.2	176.8 0.2	173.0 0.7	153.2 1.5	6.6	19	
	210	ED7 3621 7R3	28.5	19.9	19.9	19.9	14.8	13.9	13.1	11.3 0.1	10.0 0.1	2.0	12	
		ED8 3621 7R3	285.9	95.4	95.4	95.4	95.4	95.4	95.4 0.1	95.4 0.1	95.4 0.3	4.8	16	
		ED11 3621 7R3	406.1	178.2	178.2	178.2	178.2 0.1	178.2 0.1	178.2 0.2	166.5 0.5	147.4 1.1	6.4	19	
	240	ED7 3624 7R3	28.7	19.2	19.2	19.2	14.3	13.4	12.6	10.8	9.6 0.1	2.0	12	
		ED8 3624 7R3	289.3	96.0	96.0	96.0	96.0	96.0	96.0	96.0 0.1	96.0 0.3	4.7	16	
		ED11 3624 7R3	410.4	179.2	179.2	179.2	179.2 0.1	179.2 0.1	179.2 0.1	160.8 0.4	142.4 0.9	6.3	19	
	270	ED7 3627 7R3	28.8	18.5	18.5	18.5	13.8	12.9	12.2	10.5	9.3 0.1	2.0	12	
		ED8 3627 7R3	291.7	96.4	96.4	96.4	96.4	96.4	96.4	96.4 0.1	96.4 0.2	4.7	16	
		ED11 3627 7R3	413.4	179.8	179.8	179.8	179.8	179.8 0.1	179.8 0.1	155.8 0.3	137.9 0.7	6.2	19	
	300	ED7 3630 7R3	28.9	18.0	18.0	18.0	13.4	12.5	11.9	10.2	9.0 0.1	2.0	12	
		ED8 3630 7R3	293.5	96.7	96.7	96.7	96.7	96.7	96.7	96.7 0.1	96.7 0.2	4.6	16	
		ED11 3630 7R3	415.6	180.3	180.3	180.3	180.3	180.3 0.1	176.4 0.1	151.3 0.2	134.0 0.6	6.1	19	
	330	ED7 3633 7R3	29.0	17.5	17.5	17.5	13.1	12.2	11.6	9.9	8.8 0.1	2.0	12	
		ED8 3633 7R3	294.8	96.9	96.9	96.9	96.9	96.9	96.9	96.9 0.1	96.9 0.1	4.6	16	
		ED11 3633 7R3	417.3	180.7	180.7	180.7	180.7	180.7 0.1	171.8 0.1	147.4 0.2	130.5 0.5	6.1	19	
40	120	ED7 4012 7R4	51.9	46.7	46.7	46.7	46.7	33.6	31.8 0.1	27.3 0.2	24.2 0.4	2.5	14	
		ED8 4012 7R4	246.8	88.6	88.6	88.6	88.6 0.1	88.6 0.1	88.6 0.1	88.6 0.4	88.6 0.9	5.6	16	
		ED11 4012 7R4	392.0	286.3	286.3 0.1	286.3 0.1	286.3 0.2	268.4 0.4	254.1 0.5	218.0 1.4	193.0 3.2	8.1	22	
	150	ED7 4015 7R4	54.1	46.0	46.0	46.0	46.0	32.1	30.4	26.0 0.1	23.1 0.2	2.4	14	
		ED8 4015 7R4	262.9	91.5	91.5	91.5	91.5	91.5 0.1	91.5 0.1	91.5 0.3	91.5 0.6	5.3	16	
		ED11 4015 7R4	415.7	294.8	294.8	294.8 0.1	294.8 0.1	258.5 0.2	244.7 0.3	209.9 0.9	185.9 2.0	7.6	22	
	180	ED7 4018 7R4	55.4	44.1	44.1	44.1	44.1	30.7	29.1	25.0 0.1	22.1 0.2	2.3	14	
		ED8 4018 7R4	273.0	93.2	93.2	93.2	93.2	93.2	93.2 0.1	93.2 0.2	93.2 0.4	5.1	16	
		ED11 4018 7R4	430.5	300.0	300.0	300.0 0.1	300.0 0.1	249.0 0.2	235.8 0.2	202.3 0.6	179.1 1.4	7.4	22	

Note: A 2-dwell cam performs 2 indexes and 2 dwells per 1 turn of the input shaft. A 3-dwell cam performs 3 of each, and a 4-dwell cam performs 4 of each. The indexing angle θ given in the capacity table represents the total index period per 1 turn of the input shaft.

ED2.8~ED11 3, 4 dwell

40, 48 stop

Number of Stops S	Index Period θ (deg)	C O D E	Static-rated Output Torque Ts (N·m)	Dynamic-rated Output Torque Internal Inertia Load Torque						Top (N·m) Toi (N·m)		Camshaft Frictional Torque Tx (N·m)	Sankyo Cam Follower SCF (mm)
				20	40	60	80	100	120	200	300		
40	210	ED7 4021 7R4	56.2	42.4	42.4	42.4	42.4	29.6	28.0	24.0 0.1	21.3 0.1	2.3	14
		ED8 4021 7R4	279.8	94.4	94.4	94.4	94.4	94.4	94.4	94.4 0.1	94.4 0.3	5.0	16
		ED11 4021 7R4	440.2	303.4	303.4	303.4	303.4 0.1	240.4 0.1	227.6 0.2	195.3 0.5	172.9 1.0	7.1	22
	240	ED7 4024 7R4	56.8	40.9	40.9	40.9	40.9	28.5	27.0	23.2	20.5 0.1	2.2	14
		ED8 4024 7R4	284.4	95.2	95.2	95.2	95.2	95.2	95.2	95.2 0.1	95.2 0.2	4.8	16
		ED11 4024 7R4	446.9	305.7	305.7	305.7	305.7 0.1	232.7 0.1	220.4 0.1	189.1 0.4	167.4 0.8	7.0	22
	270	ED7 4027 7R4	57.2	39.7	39.7	39.7	39.7	27.6	26.2	22.4	19.9 0.1	2.2	14
		ED8 4027 7R4	287.8	95.7	95.7	95.7	95.7	95.7	95.7	95.7 0.1	95.7 0.2	4.8	16
		ED11 4027 7R4	451.7	307.3	307.3	307.3	307.3	225.9 0.1	213.8 0.1	183.5 0.3	162.4 0.6	6.9	22
	300	ED7 4030 7R4	57.5	38.5	38.5	38.5	38.5	26.8	25.4	21.8	19.3 0.1	2.2	14
		ED8 4030 7R4	290.2	96.1	96.1	96.1	96.1	96.1	96.1	96.1 0.1	96.1 0.1	4.7	16
		ED11 4030 7R4	455.2	308.5	308.5	308.5	308.5	219.7 0.1	208.0 0.1	178.4 0.2	158.0 0.5	6.8	22
	330	ED7 4033 7R4	57.7	37.5	37.5	37.5	37.5	26.1	24.7	21.2	18.8	2.1	14
		ED8 4033 7R4	292.1	96.4	96.4	96.4	96.4	96.4	96.4	96.4 0.1	96.4 0.1	4.7	16
		ED11 4033 7R4	457.8	307.3	307.3	307.3	307.3	214.1	202.7 0.1	173.9 0.2	154.0 0.4	6.7	22
48	90	ED11 4809 7R3	352.8	122.4	122.4 0.1	122.4 0.2	122.4 0.3	122.4 0.5	122.4 0.7	122.4 2.0	122.4 4.6	6.8	16
	120	ED7 4812 7R4	26.9	24.2	24.2	24.2	24.2	17.3	16.4	14.1 0.1	12.5 0.3	2.0	12
		ED8 4812 7R4	260.2	91.0	91.0	91.0	91.0 0.1	91.0 0.1	91.0 0.1	91.0 0.3	91.0 0.8	5.3	16
		ED11 4812 7R3	372.0	125.7	125.7 0.1	125.7 0.2	125.7 0.3	125.7 0.4	125.7 1.1	125.7 2.6		6.4	16
	150	ED7 4815 7R4	27.7	23.6	23.6	23.6	23.6	16.5	15.6	13.4 0.1	11.8 0.2	2.0	12
		ED8 4815 7R4	273.0	93.2	93.2	93.2	93.2	93.2 0.1	93.2 0.1	93.2 0.2	93.2 0.5	5.1	16
		ED11 4815 7R3	381.9	127.3	127.3 0.1	127.3 0.1	127.3 0.2	127.3 0.3	127.3 0.3	127.3 0.7	127.3 1.7	6.2	16
	180	ED7 4818 7R4	28.2	22.6	22.6	22.6	22.6	15.7	14.9	12.8 0.1	11.3 0.1	2.0	12
		ED8 4818 7R4	280.8	94.6	94.6	94.6	94.6	94.6	94.6 0.1	94.6 0.2	94.6 0.3	4.9	16
		ED11 4818 7R3	387.7	128.3	128.3	128.3	128.3 0.1	128.3 0.1	128.3 0.2	128.3 0.5	128.3 1.1	6.0	16
	210	ED7 4821 7R4	28.5	21.7	21.7	21.7	21.7	15.1	14.3	12.3	10.9 0.1	2.0	12
		ED8 4821 7R4	285.9	95.4	95.4	95.4	95.4	95.4	95.4	95.4 0.1	95.4 0.3	4.8	16
		ED11 4821 7R3	391.3	128.9	128.9	128.9	128.9 0.1	128.9 0.1	128.9 0.1	128.9 0.4	128.9 0.8	5.9	16
	240	ED7 4824 7R4	28.7	20.9	20.9	20.9	20.9	14.6	13.8	11.8	10.5 0.1	2.0	12
		ED8 4824 7R4	289.3	96.0	96.0	96.0	96.0	96.0	96.0	96.0 0.1	96.0 0.2	4.7	16
		ED11 4824 7R3	393.7	129.3	129.3	129.3	129.3	129.3 0.1	129.3 0.1	129.3 0.3	129.3 0.6	5.9	16
	270	ED7 4827 7R4	28.8	20.2	20.2	20.2	20.2	14.1	13.3	11.4	10.1 0.1	2.0	12
		ED8 4827 7R4	291.7	96.4	96.4	96.4	96.4	96.4	96.4	96.4 0.1	96.4 0.2	4.7	16
		ED11 4827 7R3	395.4	129.6	129.6	129.6	129.6	129.6 0.1	129.6 0.1	129.6 0.2	129.6 0.5	5.8	16
	300	ED7 4830 7R4	28.9	19.6	19.6	19.6	19.6	13.7	12.9	11.1	9.8	2.0	12
		ED8 4830 7R4	293.5	96.7	96.7	96.7	96.7	96.7	96.7	96.7 0.1	96.7 0.1	4.6	16

Note: A 2-dwell cam performs 2 indexes and 2 dwells per 1 turn of the input shaft. A 3-dwell cam performs 3 of each, and a 4-dwell cam performs 4 of each. The indexing angle θ given in the capacity table represents the total index period per 1 turn of the input shaft.

ED2.8~ED11 3, 4 dwell

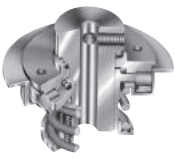
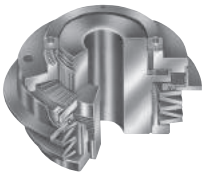
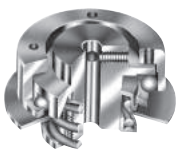
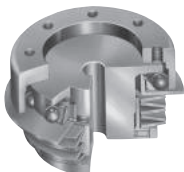
48 stop

Number of Stops S	Index Period θ (deg)	C O D E	Static-rated Output Torque Ts (N·m)	Dynamic-rated Output Torque Internal Inertia Load Torque								Top (N·m) Toi (N·m)	Camshaft Frictional Torque Tx (N·m)	Sankyo Cam Follower SCF (mm)
				Input Shaft Speed (Index/min)										
				20	40	60	80	100	120	200	300			
48	300	ED11 4830 7R3	396.6	129.8	129.8	129.8	129.8	129.8	129.8 0.1	129.8 0.2	129.8 0.4	5.7	16	
	330	ED7 4833 7R4	29.0	19.1	19.1	19.1	19.1	13.3	12.6	10.8	9.6	2.0	12	
		ED8 4833 7R4	294.8	96.9	96.9	96.9	96.9	96.9	96.9	96.9	96.9 0.1	4.6	16	
		ED11 4833 7R3	397.5	129.9	129.9	129.9	129.9	129.9	129.9 0.1	129.9 0.2	129.5 0.3	5.7	16	

Note: A 2-dwell cam performs 2 indexes and 2 dwells per 1 turn of the input shaft. A 3-dwell cam performs 3 of each, and a 4-dwell cam performs 4 of each. The indexing angle θ given in the capacity table represents the total index period per 1 turn of the input shaft.

Torque Limiter Production Lineup

Table 45-1

Performance/Model		Compact Flange	Flange	Compact Coupling	Coupling
Model					
Functions	Sizes	2models, 8types	4models, 16types	2models, 8types	4models, 16types
	Trip torque adjustment range	0.3~18N·m	2~1200N·m	0.3~18N·m	2~1000N·m
	Tripping mechanism	Separate roller and roller pocket		Separate ball and ball pocket	
	Automatic	Yes		Yes	
	Trip torque adjustment method	Turn the torque adjustment nut		Turn the torque adjustment nut	
	One-point setting	Yes		Yes	
	Coupling function	No		Yes	
	Overload detection	Yes		Yes	
Loading Capacity	Torsional rigidity	Fair	Excellent	Fair	Good
	Radial loads	Good	Excellent	Poor	Poor
	Thrust loads	Good	Excellent	Poor	Poor
	Bending moment	Good	Excellent	Poor	Poor
	Allowable speeds	Max 1600 to 2000 rpms	Max 300 to 800 rpms	Max 1600 to 2000 rpms	Max 300 to 800 rpms
Accuracy	Backlash in rotating direction	1 to 2 minutes	30 seconds	1 to 2 minutes	30 seconds
	Reset accuracy	±30 seconds	±15 seconds	±30 seconds	±15 seconds
	Trip torque variation	±15%	±10%	±15%	±10%

These models are particularly suitable with the ECO Series. Read our TorqueLimiters General Catalog for other models.

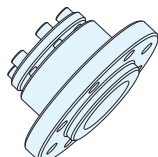
Product Code Example

7 TF - 40 B - LS

a b c d f

a Size of Torque Limiter	b Model	c Max Tripping Torque	d Spring Type	f Overload Detection Sensor
7	TF Flange	40 Tmax 400N·m(40kgf·m)	B Belleville springs for heavy loads	LS With sensor
This indicates the size of the TorqueLimiter.	TF Flange TC Coupling	This indicates the maximum tripping torque.	A Belleville springs for light loads B Belleville springs for heavy loads C Coil springs (Caution) Sizes 4TF/4TC to 6TF/6TC use coil springs. Sizes 7TF/7TC to 11TF/11TC use Belleville springs.	☐ No sensor (leave blank) LS With sensor

Shaft-mounting Flange (optional)



This flange allows you to mount the hub of the TC to a shaft.
(See drawings below)

Product Code Example

07

TC

C

20

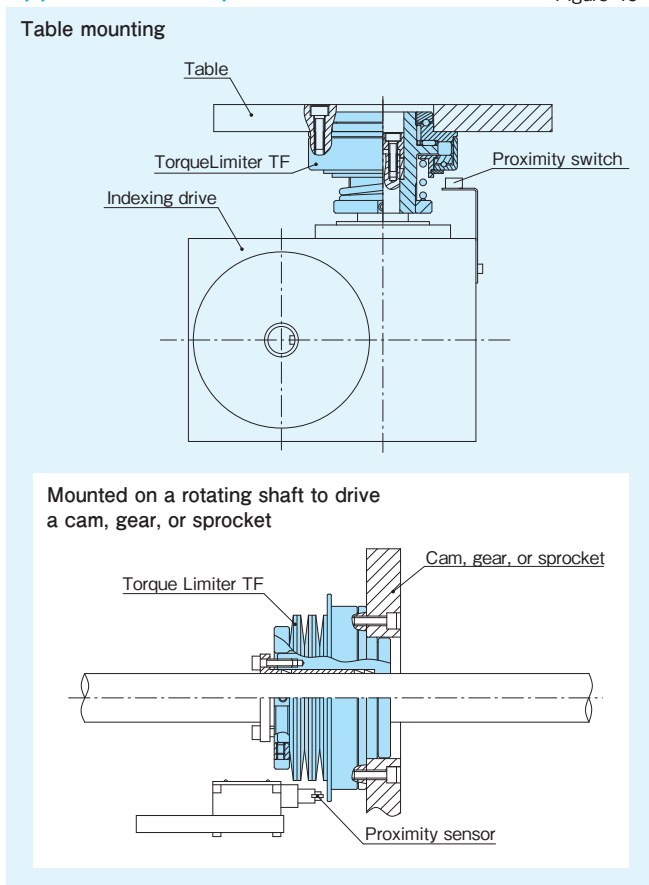
0

Size of Torque Limiter	Shaft diameter (mm)
This indicates the size of the Torque Limiter.	This indicates the diameter of the bore to machine in the flange. (See table on the right)

Model	Standard Shaft Diameters (mm)
4TC	12, 14, 15, 16
5TC	12, 14, 15, 16
6TC	16, 20, 25
7TC	20, 25, 30, 35, 40
8TC	30, 35, 40, 45
11TC	40, 45, 50, 55, 60

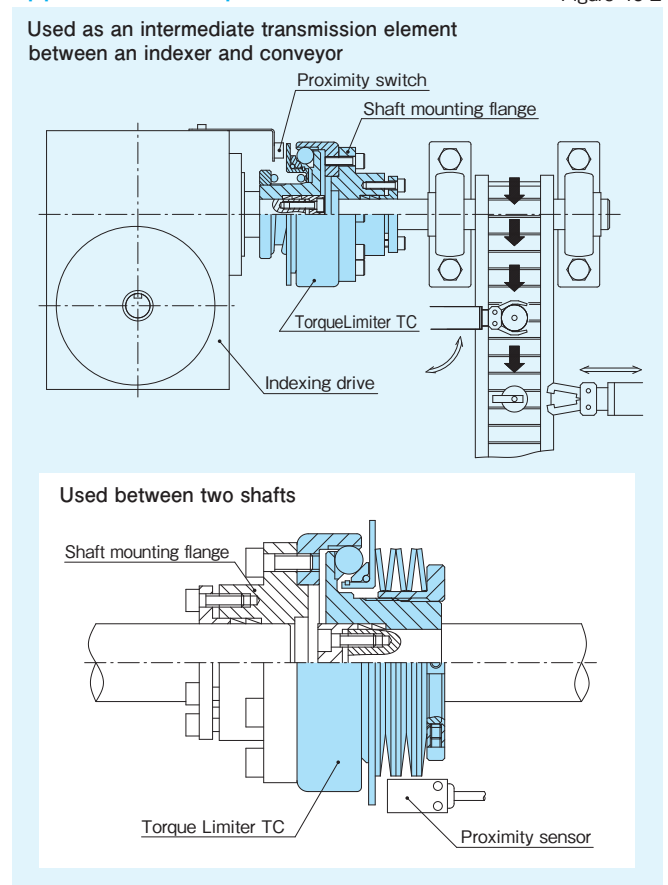
Application Examples of the TF Series

Figure 40-1



Application Examples of the TC Series

Figure 40-2



Torque Limiter TF/ Flange Output



Features

- Roller and roller pocket torque tripping mechanism
- Minimal backlash
- Minimal motion loss
- Easy to adjust trip torque setting
- Overload detection
- One-point setting
- Ready for mounting tables, pulleys, etc

The Torque Limiter TF provides protection against overloads only in the rotating direction. The torque tripping mechanism is based on a roller and roller pocket. When an overload in the rotating direction occurs on the following side, the roller emerges from the roller pocket in the flange and stops the transmission of torque between the flange (on the following side) and boss (on the driving side).

Torque is transmitted from the driving side to the following side via the boss and roller. This simple construction allows for a compact design that offers rigidity and accurate torque transmission, while providing reliable operation and ease of use. The flanged surface on the output allows you to directly mount a table, gear, or sprocket. This model is available in optional clean room packages.

Table TF-1

Item Model	Trip Torque Adjustment Range N·m	Torque Adjustment Nut Thread Pitch mm	Max Allowable Radial Load N	Max Allowable Thrust Load N	Max Allowable Moment N·m	Max Allowable Rotation Speed r.p.m.	Inertia Moment kg·m ²	Mass kg
4TF-007C	0.3~0.7	1	69	392	3.4	2000	0.5×10 ⁻⁴	0.24
4TF-010C	0.4~1.0							
4TF-030C	1.0~3.0							
4TF-045C	1.5~4.5							
5TF-030C	0.8~3.0	1.5	108	569	6.9	1600	2.4×10 ⁻⁴	0.5
5TF-060C	1.5~6.0							
5TF-100C	2.0~10.0							
5TF-180C	4.0~18.0							
6TF-07C	2~7	1.5	3822	7938	118	800	1.3×10 ⁻³	1.5
6TF-1C	3~10							
6TF-3C	10~30							
6TF-5C	15~50							
7TF-7A	22~70	2	7154	10780	196	600	4.8×10 ⁻³	3.4
7TF-12A	40~120							
7TF-25B	80~250							
7TF-40B	120~400							
8TF-12A	50~120	2	10290	14700	372	400	1.5×10 ⁻²	6.2
8TF-20A	70~200							
8TF-40B	120~400							
8TF-60B	200~600							
11TF-25A	80~250	2	14700	22050	666	300	3.5×10 ⁻²	11.4
11TF-35A	120~350							
11TF-85B	220~850							
11TF-120B	350~1200							

4TF-5TF

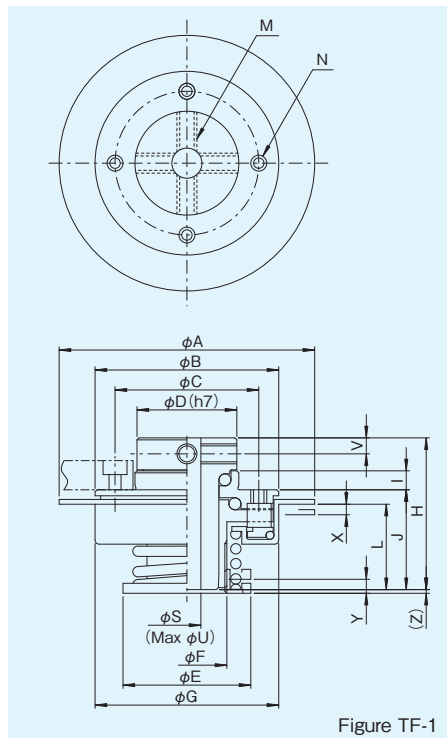


Figure TF-1

6TF

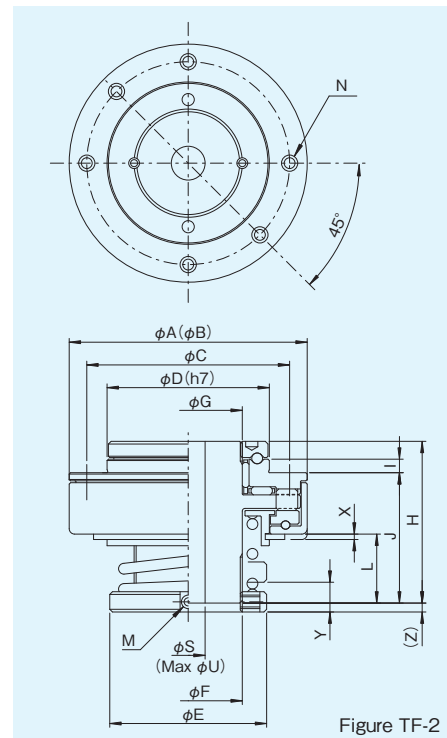


Figure TF-2

7~11TF

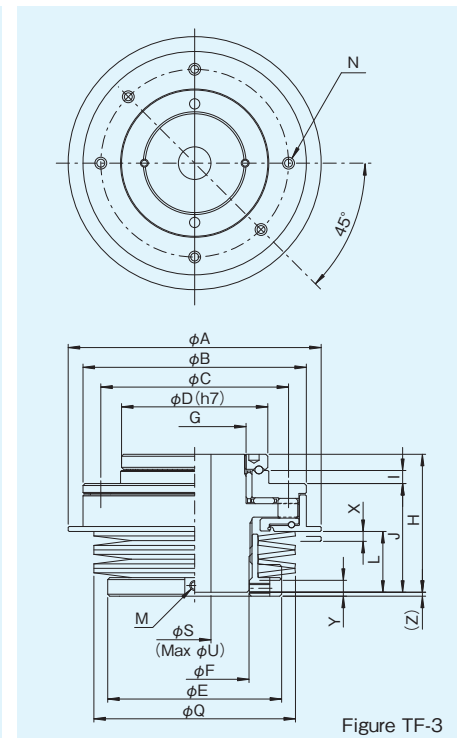


Figure TF-3

TF Series Dimensions Drawings

[Unit : mm] Table TF-2

Model	A	B	C	D	E	F	G	H	I	J	L	M	N	Q	S	U	V	X	Ymax	(Z)
4TF-007C											21.2							1.1	2.2	0.7
4TF-010C	64	46	36	26	32	M20 ×1	46	38	4.7	25	21.4	4-M5 ×0.8	4-M4 ×0.7 4.7DP		7	12	4	1.3	2.4	0.5
4TF-030C											21.2							1.1	2.5	0.7
4TF-045C											21.4							1.3	3.3	0.5
5TF-030C											29.0							0.9	5.6	1.3
5TF-060C	82	63	50	35	45	M30 ×1.5	63	50	4.7	34	29.5	4-M6 ×1	4-M4 ×0.7 5.7DP		9	20	6	1.4	5.0	0.8
5TF-100C											29.0							0.9	7.5	1.3
5TF-180C											29.5							1.4	6.4	0.8
6TF-07C											25.0							1.3	9.0	3.9
6TF-1C	88	88	75	60	58	M40 ×1.5	M40 ×1.5	60	5	48	25.5	2-M5 ×0.8	6-M6 ×1 7DP		12.5	30		2.0	7.6	3.2
6TF-3C											25.0							1.3	9.5	3.9
6TF-5C											25.5							2.0	9.8	3.2
7TF-7A											30.0							1.6	5.3	1.7
7TF-12A	128	113	95	75	88	55	M52 ×1.5	70	6.6	55	31.0	2-M5 ×0.8	6-M6 ×1 9DP	102	16.5	40		2.5	4.9	0.9
7TF-25B											30.0							1.6	6.2	1.4
7TF-40B											31.0							2.5	6.2	0.6
8TF-12A											37.5							1.6	6.2	0
8TF-20A	164	138	120	100	108	75	M72 ×1.5	82	7.6	65	38.5	2-M5 ×0.8	6-M8 ×1.25 11DP	130	16.5	52		2.5	6.2	-0.8
8TF-40B											37.5							1.6	7.5	-0.7
8TF-60B											38.5							2.5	7.0	-1.5
11TF-25A											42.0							2.0	7.3	2.0
11TF-35A	198	170	148	120	134	96	M90 ×1.5	95	9.6	75	43.0	2-M5 ×0.8	6-M10 ×1.5 13DP	160	27	68		3.0	5.0	1.0
11TF-85B											42.0							2.0	7.7	-0.5
11TF-120B											43.0							3.0	7.4	-1.5

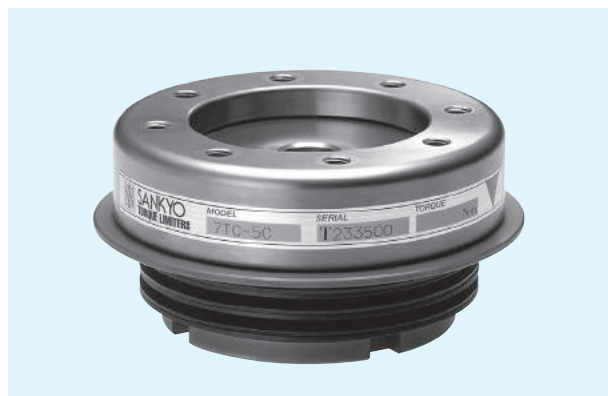
X : When an overload occurs, the overload detection panel moves X mm. This movement can be used with a detection device to control operation.

(Z): Since this dimension is the reference value for the amount the torque adjustment nut protrudes when the spring height is at its maximum (free), please pay attention to any possible interference with peripheral equipment or material when installing the part. In addition, the actual (Z) dimension may fluctuate due to variations in the free spring height. *For negative dimensions, the boss side will protrude.

Y : This dimension is the amount of deflection of the spring from the free height of the spring. Read the spring deflection Y from the cutoff torque of the characteristic diagram described in the "cutoff torque adjustment method" and "operation manual". Then set the cutoff torque by tightening the torque adjustment nut to the appropriate Y value in the characteristic diagram.

*Since any value above the Ymax value shown in the dimension table will disable the mechanism, do not tighten the nut beyond this value.

Torque Limiter TC/Coupling Package



Features

- Ball and ball pocket torque tripping mechanism
- Minimal backlash
- Minimal motion loss
- Easy to adjust trip torque setting
- Overload detection
- One-point setting
- Absorbs misalignment (coupling function)

The Torque Limiter TC is designed to couple two shafts, such as the output of a cam indexer and an intermediate shaft, and provide protection against overloads only in the rotating direction. The torque tripping mechanism is based on a ball and ball pocket. When an overload in the rotating direction occurs on the following side, the ball emerges from the ball pocket in the hub and stops the transmission of torque between the hub (on the following side) and boss (on the driving side).

The basic structure consists of a boss (on the driving side) and a hub, ball, and taper thrust ring and spring (on the following side). This simple construction allows for a compact design that offers rigidity and accurate torque transmission, while providing reliable operation and ease of use. This also allows the TC to absorb misalignment (angular error, clearance error, and parallelism error) between two shafts. This model is available in optional clean room package.

Table TC-1

Item Model	Trip Torque Adjustment Range N·m	Torque Adjustment Nut Thread Pitch mm	Max Allowable Angular Error deg	Max Allowable Clearance Error mm	Max Allowable Parallelism Error mm	Max Allowable Rotation Speed r.p.m.	Inertia Moment kg·m ²	Mass kg
4TC-007C	0.3~0.7	1	1	±1.0	0.05	2000	0.9×10 ⁻⁴	0.25
4TC-010C	0.4~1.0							
4TC-030C	1.0~3.0							
4TC-045C	1.5~4.5							
5TC-030C	0.8~3.0	1.5	1	±1.0	0.05	1600	4.0×10 ⁻⁴	0.68
5TC-060C	1.5~6.0							
5TC-100C	2.0~10.0							
5TC-180C	4.0~18.0							
6TC-06C	2~6	1.5	1.5	±1.5	0.05	1000	1.7×10 ⁻³	1.5
6TC-1C	3~10							
6TC-3C	8~30							
6TC-5C	15~50							
7TC-6A	20~60	2	1.2	±1.8	0.1	700	5.8×10 ⁻³	3.2
7TC-10A	30~100							
7TC-20B	60~200							
7TC-35B	100~350							
8TC-12A	40~120	2	1.2	±2.0	0.1	500	1.4×10 ⁻²	5.3
8TC-15A	60~150							
8TC-35B	100~350							
8TC-45B	120~450							
11TC-20A	70~200	2	1	±2.5	0.1	400	3.5×10 ⁻²	10.8
11TC-35A	100~350							
11TC-65B	200~650							
11TC-100B	300~1000							

4TC·5TC

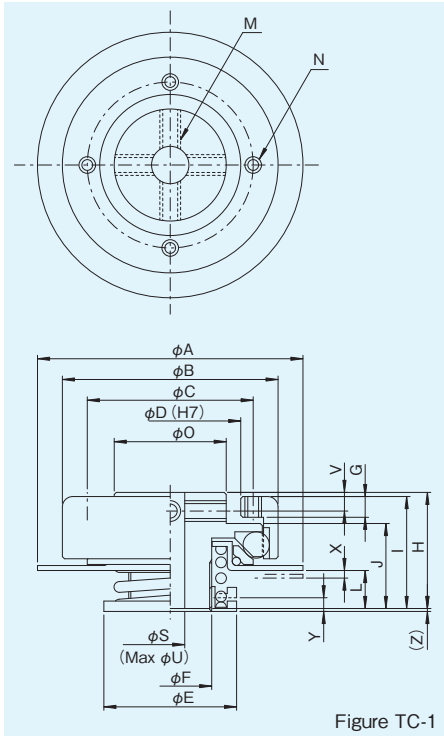


Figure TC-1

6TC

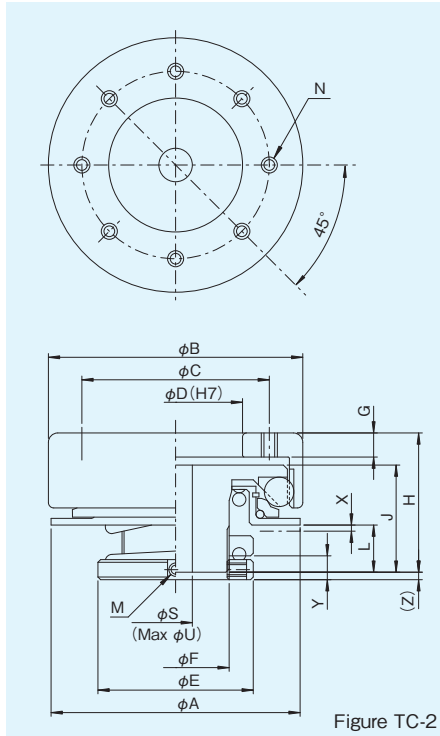


Figure TC-2

7~11TC

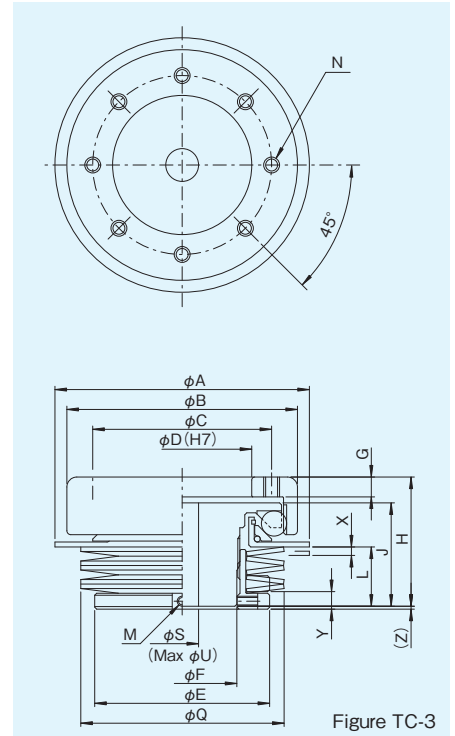


Figure TC-3

TC Series Dimensions Drawings

[Unit : mm] Table TC-2

Model	A	B	C	D	E	F	G	H	I	J	L	M	N	Q	S	U	O	V	X	Ymax	(Z)
4TC-007C											7.6								0.7	2.7	0.6
4TC-010C	64	52	40	34	32	M20 ×1	5	28	27	20.5	8.0	4-M5 ×0.8	4-M4 ×0.7 5DP	—	7	15	27	4.5	1.1	3.0	0.2
4TC-030C											7.6								0.7	3.3	0.6
4TC-045C											8.0								1.1	4.0	0.2
5TC-030C											13.1								0.6	5.4	0.3
5TC-060C	82	71	55	46	45	M30 ×1.5	7	40	39	30	13.7	4-M6 ×1	4-M4 ×0.7 7DP	—	9	22	36	5.5	1.2	6.5	-0.3
5TC-100C											13.1								0.6	7.6	0.3
5TC-180C											13.7								1.2	8.0	-0.3
6TC-06C											18.5								1.4	8.7	3.2
6TC-1C	93	95	70	50	58	M40 ×1.5	9	52	—	40	19.0	2-M5 ×0.8	8-M6 ×1 9DP	—	12.5	30	—	—	2.2	5.7	2.8
6TC-3C											18.5								1.4	10.0	3.2
6TC-5C											19.0								2.2	9.6	2.8
7TC-6A											30.0								1.6	6.4	2.0
7TC-10A	128	116	90	70	88	55	10	65	—	52	31.0	2-M5 ×0.8	8-M8 ×1.25 10DP	102	16.5	40	—	—	2.6	7.1	0.9
7TC-20B											30.0								1.6	6.4	1.7
7TC-35B											31.0								2.6	6.2	0.6
8TC-12A											35.0								1.7	10.8	2.5
8TC-15A	164	142	110	90	108	75	12	75	—	60	36.0	2-M5 ×0.8	8-M8 ×1.25 12DP	130	16.5	52	—	—	2.7	5.9	1.6
8TC-35B											35.0								1.7	6.9	1.8
8TC-45B											36.0								2.7	5.7	0.9
11TC-20A											41.5								2.0	10.8	2.4
11TC-35A	198	176	130	110	134	96	16	90	—	70	43.0	2-M5 ×0.8	8-M10 ×1.5 16DP	160	27	68	—	—	3.2	11.2	1.0
11TC-65B											41.5								2.0	7.4	-0.1
11TC-100B											43.0								3.2	6.7	-1.5

X : When an overload occurs, the overload detection panel moves X mm. This movement can be used with a detection device to control operation.

(Z): Since this dimension is the reference value for the amount the torque adjustment nut protrudes when the spring height is at its maximum (free), please pay attention to any possible interference with peripheral equipment or material when installing the part. In addition, the actual (Z) dimension may fluctuate due to variations in the free spring height. *For negative dimensions, the boss side will protrude.

Y : This dimension is the amount of deflection of the spring from the free height of the spring. Read the spring deflection Y from the cutoff torque of the characteristic diagram described in the "cutoff torque adjustment method" and "operation manual". Then set the cutoff torque by tightening the torque adjustment nut to the appropriate Y value in the characteristic diagram.

*Since any value above the Ymax value shown in the dimension table will disable the mechanism, do not tighten the nut beyond this value.

Sizing an ED or ED-G

Sizing Advice

When sizing a Sankyo ECO Series, make sure to follow these guidelines to ensure best performance and to prevent premature breakage.

The conditions for driving the input and the loads on the output shaft are also important factors. Make sure you know these conditions before sizing your indexer.

Feel free to consult with your Sankyo representative as these calculations involve unique index-related formulas and symbols. Sankyo can also size an indexer for you by performing the necessary torque calculations. Use the <FAX Sheet> at the end of this brochure for prompt service.

Sizing Procedure

I. Establishing the conditions

●Calculate the selection criteria [Formula (A)]

Calculate the moment of inertia (J) of the loads on the output shaft, such as the table, fixtures, and workpieces.

●Determine the number of stops (S)

Select the number of stops that best suits the usage conditions.

Indexing stops: Number of times the output shaft stops during one revolution.
Where the number of stops is S, the output shaft rotates 360 °/S per index.

●Determine the indexing angle (θ)

Calculate a temporary indexing angle based on the ratio of stopping time versus indexing time. Then find the closest indexing angle with the number of stops determined in the previous section.

$$t_1 : t_2 = (360^\circ - \theta) : \theta$$

●Calculate the input speed (N)

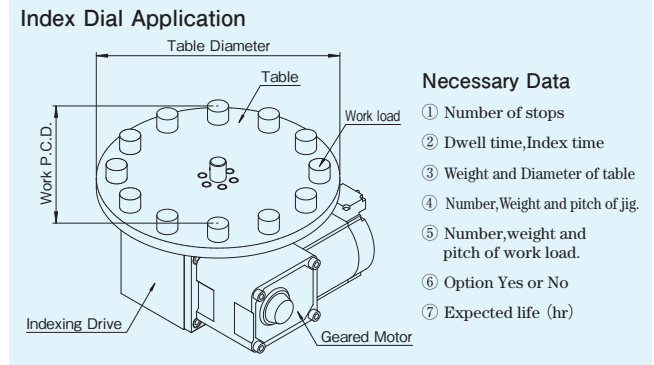
$$N = \frac{60}{t_2} \cdot \frac{\theta}{360 \times m}$$

	Symbol	Units	Meaning
Inertia torque	Ti	N·m	Inertia torque is the torque used to accelerate or decelerate a body of mass mounted on the output shaft during an indexing motion. It is the product of the moment of inertia and acceleration.
Friction torque	Tf	N·m	Friction torque is the torque that acts upon the output shaft due to slippage and other frictional effects. It is the product of the load weight, friction coefficient, and radius of gyration.
Working load torque	Tw	N·m	Working load torque is the load torque that occurs in addition to the inertia torque and friction torque. Working load torque occurs when the output is subject to an offset load that moves opposite gravity, or when there is a spring force.
Required torque	Tt	N·m	The required torque Tt is the total sum of the Ti, Tf, and Tw during an index motion.
Cam shaft torque	Tc	N·m	This is the torque that acts upon the cam shaft, and is represented as a function of the required torque, number of stops, and indexing angle. The product of the cam shaft torque and rotating speed gives the required drive power.
Service life	Lh	h	This is the total time until flaking occurs on the cam followers, and is calculated from the basic dynamic rated load.

Symbols and the meanings

a ₄ : Backlash factor	m : Number of dwells	Tf : Frictional torque (N·m)	V _m : Non-dimensional maximum velocity
A _m : Non-dimensional maximum acceleration	M : Mass (kg)	Ti : Inertial torque (N·m)	W : Weight (N)
Ba : Backlash calculated for output shaft	N : Camshaft rotating speed (rpm)	Toi : Internal inertia torque (kgf·m)	β : Working angle (deg)
E : Inverter regenerative braking efficiency	P : Feed pitch (m)	Top : Dynamic-rated output torque (N·m)	γ : Speed Ratio γ > 1
i : Gear ratio	Q _m : Maximum cam shaft torque coefficient	TR : Geared motor output allowable torque	θ : Index period (deg)
J : Output moment of inertia (kg·m ²)	R : Rotating radius of pitch (m)	Ts : Static-rated output torque (N·m)	μ : Frictional coefficient
K : Radius of gyration (m)	S : Number of stops	Tt : Necessary torque (N·m)	ε : Rate of inertia load
Lf : Life coefficient	t ₁ : Requesting dwell time	Tw : Working torque (N·m)	
Lh : Expected life (hr)	t ₂ : Index time	Tx : Cam shaft frictional torque (N·m)	

Figure 45-1



II. Confirming the capacity

Calculate the required torque from the load conditions and select a model from the capacity table.

●Calculate the required torque (Tt) [Formulas (B), (C), (D), and (E)]

Calculate the inertia torque (Ti), friction torque (Tf), and working load torque (Tw). Then, calculate the required torque (Tt).

A_m = 4.848 : SMS-3 curve

●Calculate the cam shaft torque (Tc) [Formula (F)]

Q_m = 1.178 : SMS-3 curve

●Calculate the required motor power (Ps) [Formula (G)]

●Determine the model

1. Check the dynamic rated output torque (Top) for the input shaft speed (N) in the capacity table, and select a size where Top > Tt.
2. On each product specifications page, check the motor output (P), allowable output torque (TR), and make sure that P > Ps (Pa) and TR > Tc.

III. Calculating the expected service life

The capacity values used in the foregoing selection process are designed based on an expected service life of 12,000 hours of under normal operating conditions. Do the following calculations to determine the expected service life hours for the selection criteria used in this sizing procedure.

●Calculate the backlash factor (a₄)

1. Calculate the equivalent backlash (Ba) in output shaft

$$Ba = \frac{Bi \times V_m \times 360}{S \cdot \theta}$$

Bi = 0.6 : Total backlash, twisting, and deflection in the input shaft (deg)
V_m = 1.818 : SMS-3 curve

2. Calculate the inertia load factor (ε)

$$\epsilon = \frac{Ti + Toi - Tf}{Ts} \times 100$$

3. Determine the backlash factor (a₄)

Based on the equivalent backlash (Ba) of the output shaft and the inertia load factor (ε), find the backlash factor by referring to Table 46-4.

●Check the expected service life hours (Lh) [Formula (B), (C), (D), and (H)]

Calculate the life factor (Lf), and then calculate the expected service life (Lh).

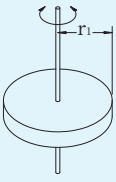
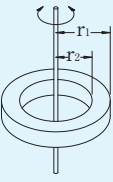
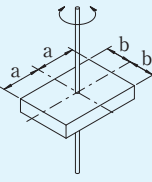
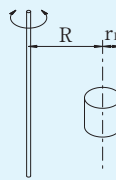
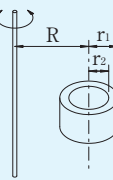
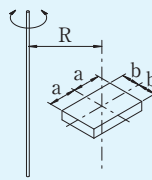
Formulas

Table 46-1

	Rotary Motion	Linear Motion
(A) Moment of inertia J	$J = MK^2$ (kg·m ²)	$J = M \left(\frac{S \cdot P}{2\pi} \right)^2$ (kg·m ²)
(B) Inertia torque Ti	$T_i = 226.2 A m \frac{J \cdot N^2}{S \cdot (\theta/m)^2}$ (N·m)	$T_i = 5.73 A m \frac{M \cdot S \cdot P^2 \cdot N^2}{(\theta/m)^2}$ (N·m)
(C) Frictional torque Tf	$T_f = W \cdot \mu \cdot R$ (N·m)	$T_f = \frac{W \cdot \mu \cdot S \cdot P}{2\pi}$ (N·m)
(D) Working torque Tw	$T_w = R \cdot F \cdot \cos \beta$ (N·m)	$T_w = \frac{F \cdot S \cdot P}{2\pi} \cos \beta$ (N·m)
(E) Necessary torque Tt	$T_t = T_i + T_f + T_w$ (N·m)	
(F) Cam shaft torque Tc	$T_c = 500 Q m \frac{1}{S \cdot \theta} (T_t + T_{oi}) + T_x$ (N·m)	
(G) Peak motor power Ps	$P_s = \frac{T_c \cdot N}{9550}$ (kW)	Motor power for an average load [where $T_i > (T_f + T_w)$] $P_a = \frac{1}{2} P_s$ (kW)
(H) Expected life Lh	$L_h = 12000 L_f^{10/3}$ (hr) where, $L_f = \frac{T_{op}}{a_4 (T_i + T_{oi}) + T_f + T_w}$	

Radius of gyration K

Table 46-2

			
K ²	$\frac{r_1^2}{2}$	$\frac{r_1^2 + r_2^2}{2}$	$\frac{a^2 + b^2}{3}$
			
K ²	$\frac{r_1^2}{2} + R^2$	$\frac{r_1^2 + r_2^2}{2} + R^2$	$\frac{a^2 + b^2}{3} + R^2$

Life factor (Lf) and expected life (Lh)

Table 46-3

Lh (hr)	Lf	Lh (hr)	Lf	Lh (hr)	Lf
2000	0.584	16000	1.09	50000	1.53
3000	0.660	18000	1.13	55000	1.58
4000	0.719	20000	1.17	60000	1.62
5000	0.769	22000	1.20	65000	1.66
6000	0.812	24000	1.23	70000	1.70
7000	0.851	26000	1.26	75000	1.73
8000	0.885	28000	1.29	80000	1.77
9000	0.917	30000	1.32	90000	1.83
10000	0.947	35000	1.38	100000	1.89
12000	1.00	40000	1.44	110000	1.94
14000	1.05	45000	1.49	120000	2.00

Backlash factor a4

Table 46-4

ϵ \ Ba	0.05	0.1	0.2	0.3	0.4	0.5	0.6	0.8	1.0	1.2	1.5	2.0	2.5	3.0	4.0	5.0	6.0	8.0	10.0
-5	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
-3	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.01	1.01	1.03	1.05
-2	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.02	1.06	1.07	1.08	1.10	1.12	1.15	1.17	1.19
-1	1.00	1.00	1.00	1.04	1.05	1.06	1.08	1.09	1.10	1.11	1.13	1.17	1.19	1.20	1.26	1.28	1.30	1.36	1.42
0	1.00	1.02	1.06	1.08	1.10	1.12	1.16	1.18	1.19	1.22	1.23	1.29	1.33	1.34	1.42	1.46	1.49	1.59	1.70
1	1.02	1.04	1.09	1.12	1.15	1.18	1.24	1.27	1.30	1.33	1.36	1.42	1.48	1.51	1.60	1.66	1.72	1.84	1.96
2	1.03	1.06	1.12	1.16	1.20	1.24	1.32	1.36	1.40	1.44	1.48	1.56	1.64	1.68	1.80	1.88	1.96	2.12	2.28
3	1.04	1.08	1.15	1.20	1.25	1.30	1.40	1.45	1.50	1.55	1.60	1.70	1.80	1.85	2.00	2.10	2.20	2.40	2.60
4	1.05	1.09	1.18	1.24	1.30	1.36	1.48	1.54	1.60	1.66	1.72	1.84	1.96	2.02	2.20	2.32	2.44	2.68	2.92
5	1.05	1.11	1.21	1.28	1.35	1.42	1.56	1.63	1.70	1.77	1.84	1.98	2.12	2.19	2.40	2.54	2.68	2.96	3.24
6	1.06	1.12	1.24	1.32	1.40	1.48	1.64	1.72	1.80	1.88	1.96	2.12	2.28	2.36	2.60	2.76	2.92	3.24	3.56
8	1.07	1.14	1.27	1.36	1.45	1.54	1.72	1.81	1.90	1.99	2.08	2.26	2.44	2.53	2.80	2.98	3.16	3.52	3.88
10	1.07	1.15	1.30	1.40	1.50	1.60	1.80	1.90	2.00	2.10	2.20	2.40	2.60	2.70	3.00	3.20	3.40	3.80	4.20
12	1.08	1.17	1.33	1.44	1.55	1.66	1.88	1.99	2.10	2.21	2.32	2.54	2.76	2.87	3.20	3.42	3.64	4.08	4.52
15	1.09	1.18	1.36	1.48	1.60	1.72	1.96	2.08	2.20	2.32	2.44	2.68	2.92	3.04	3.40	3.64	3.88	4.36	4.84
20	1.10	1.21	1.42	1.56	1.70	1.84	2.12	2.26	2.40	2.54	2.68	2.96	3.24	3.38	3.80	4.08	4.36	4.92	5.48
25	1.12	1.24	1.48	1.64	1.80	1.96	2.28	2.44	2.60	2.76	2.92	3.24	3.56	3.72	4.20	4.52	4.84	5.48	6.12
30	1.12	1.26	1.51	1.68	1.85	2.02	2.36	2.53	2.70	2.87	3.04	3.38	3.72	3.89	4.40	4.74	5.08	5.76	6.44
35	1.13	1.27	1.54	1.72	1.90	2.08	2.44	2.62	2.80	2.98	3.16	3.52	3.88	4.06	4.60	4.96	5.32	6.04	6.76
40	1.14	1.29	1.57	1.76	1.95	2.14	2.52	2.71	2.90	3.09	3.28	3.66	4.04	4.23	4.80	5.18	5.56	6.32	7.08

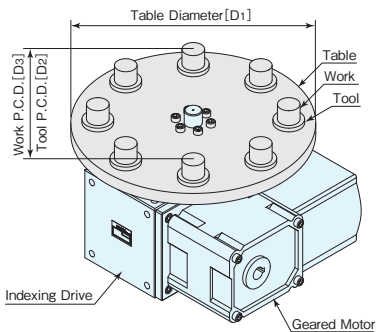
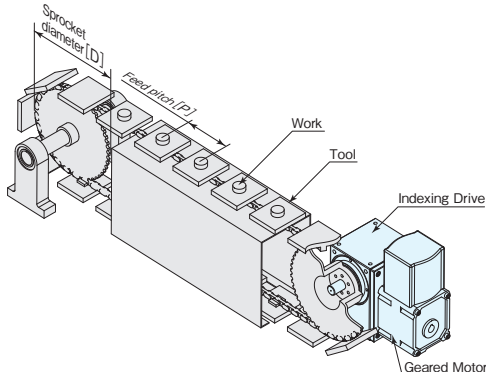
ϵ : Rate of inertia load

Ba: Backlash calculated for output shaft

Attention: _____

Date _____

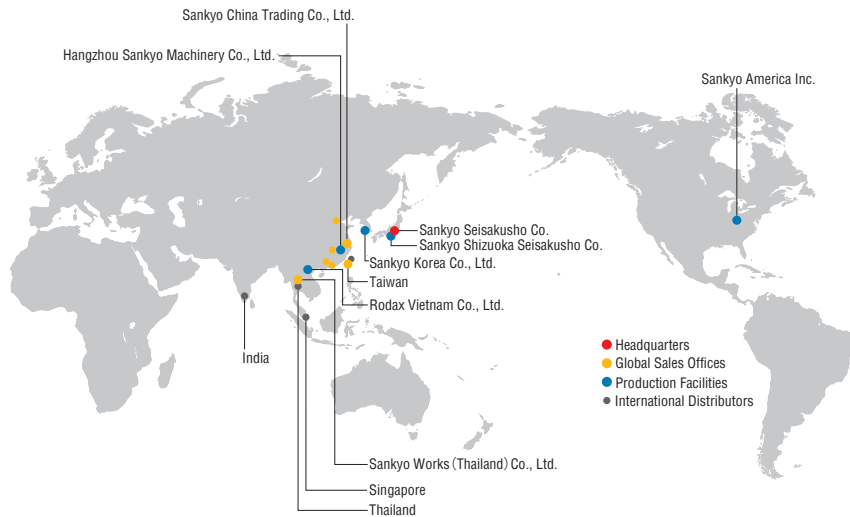
Our contact person: _____

Model Sizing Form for the SANDEX ECO (ED/ED-G) series			
Customer's Company, Department			TEL
Address			FAX
Name		Email	
Application			
Number of stops	Working time : t ₁ [sec]	Index time : t ₂ [sec]	
Index Dial Application			Table diameter : D₁ [mm] Table weight : M₁ [kg] Jig P.C.D. : D₂ [mm] Weight per tool : M₂ [kg] Number of tool : n₂ Work P.C.D. : D₃ [mm] Weight per work : M₃ [kg] Number of work : n₃
			
Conveyor Application			Feed pitch : P [mm] Weight of chain with attachment : M₁ [kg] Weight of tool : M₂ [kg] Weight of work : M₃ [kg] Sprocket diameter : D [mm] Weight per sprocket : M₄ [kg] Number of sprocket : n₄ Coefficient of friction : μ
			
Geared Motor ☐ Yes ☐ No		Torque Limiter ☐ Yes ☐ No	
Timing Cam - Sensor ☐ Yes ☐ No			
MEMO			

MEMO

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Global network



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