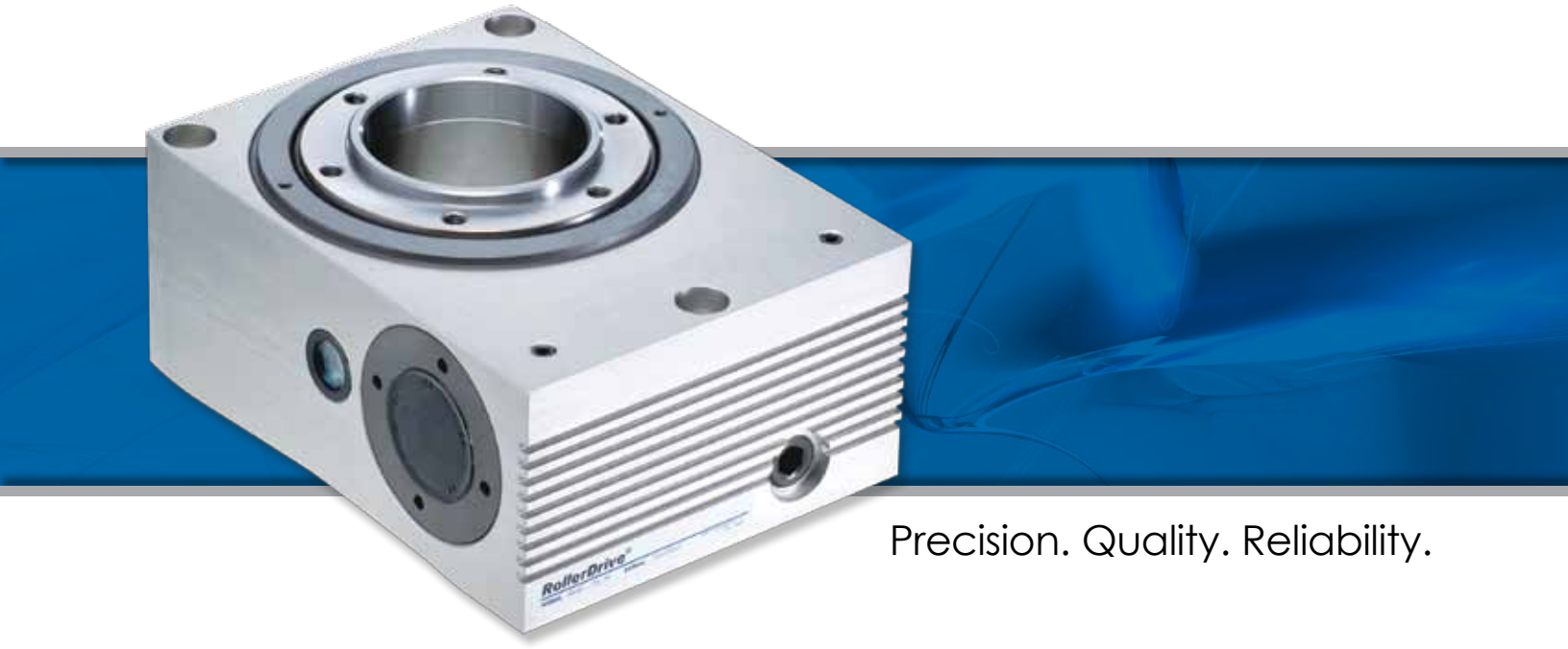
SANKYO
AMERICA, INC.

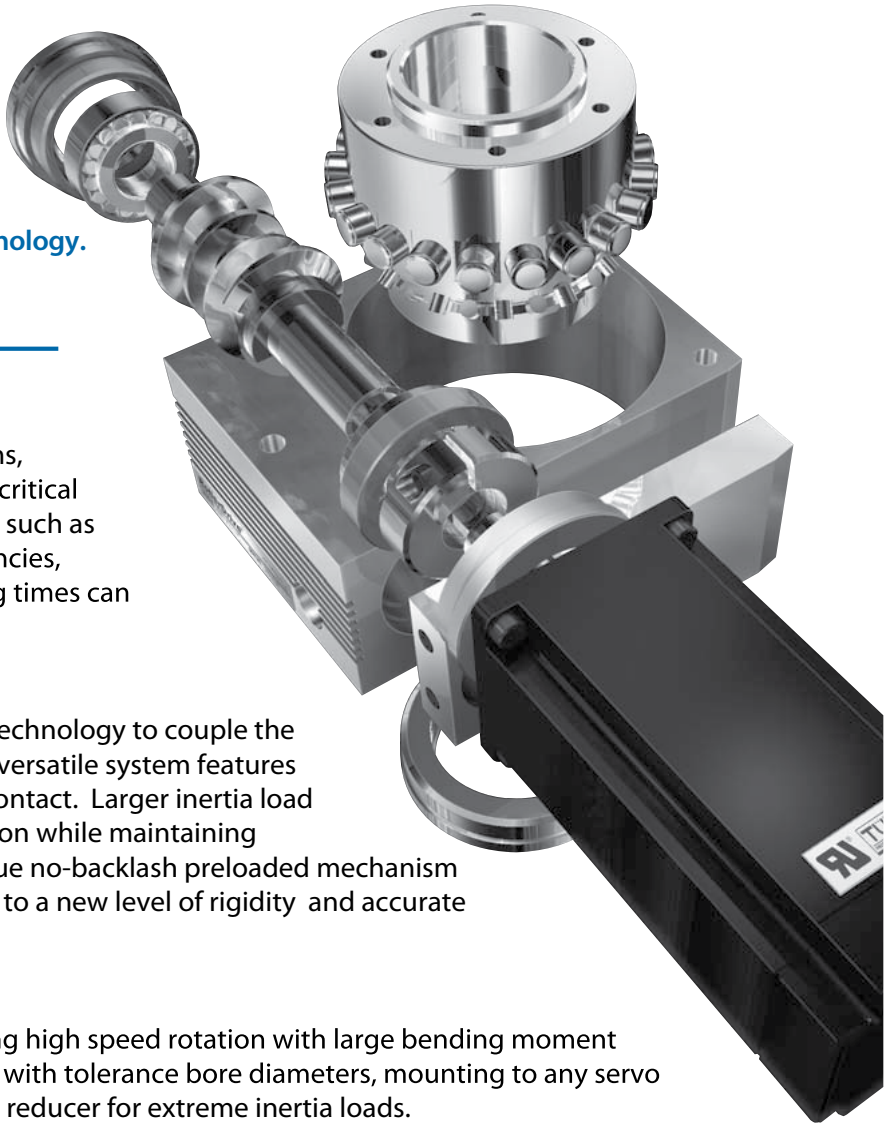


Precision. Quality. Reliability.

RollerDrive ® RA Series

The Zero-Backlash Reducer

A mechanism developed through the pursuit of outstanding functionality and performance.

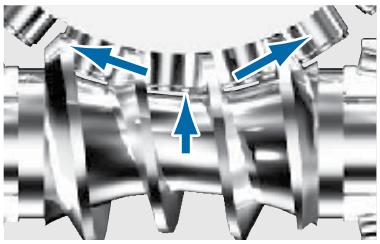


Superior movement achieved with Zero-Backlash Technology.

With factory automation equipment using servo systems, overall machine performance can be greatly affected if critical element are not considered during the design. Factors, such as backlash can cause premature wear, vibration, inefficiencies, insufficient rigidity and control instability. Long settling times can affect productivity and positioning accuracy.

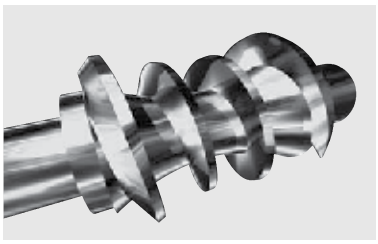
Sankyo's innovative RA Series utilizes ***RollerDrive®*** Technology to couple the servo electronics to proven mechanical reliability. This versatile system features programmable output motions with low-wear rolling contact. Larger inertia load transmission is achieved with internal cam ratio reduction while maintaining powerful torque with less motor horsepower. Our unique no-backlash preloaded mechanism improves the overall dynamics to force output motions to a new level of rigidity and accurate servo controller performace.

This compact design reduces the footprint while offering high speed rotation with large bending moment capacity. Standard units include hollow output flanges with tolerance bore diameters, mounting to any servo motor brand manufature and optional secondary inline reducer for extreme inertia loads.



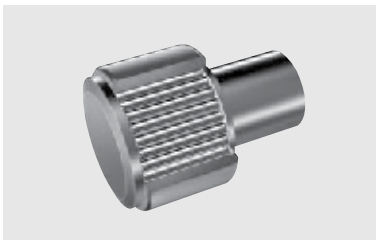
PRELOAD

Wedge-shaped input shaft ribs make contact with roller followers in a preloaded state to completely eliminates backlash. Preload is adjusted using an adjustment mechanism on the input shaft side.



INPUT SHAFT

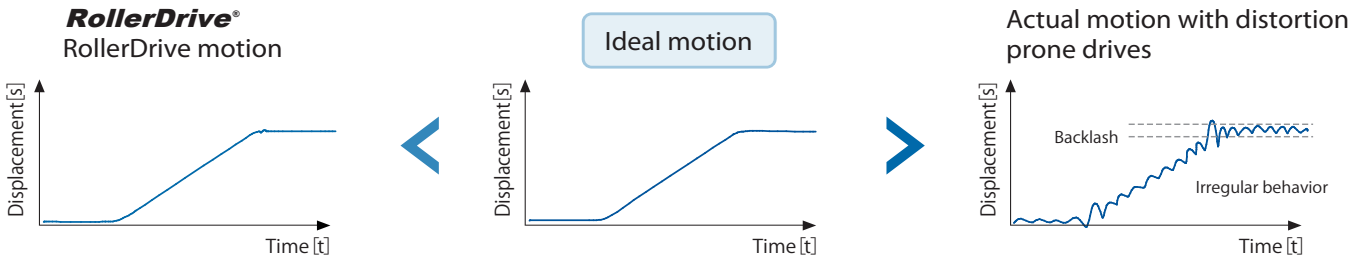
To meet stringent accuracy requirements, the alloy steel input shaft is manufactured using state-of-the-art machining equipment. Balancing is also done to control vibration during high-speed rotation.



ROLLER BEARING NEEDLES

Each cam follower needle bearing transmits torque during rotation. Rolling contact points initial accuracy even with long-term use. Larger diameters rotate less revolutions, increase surface contact, torque and life.

In Pursuit of True High-Quality Motion

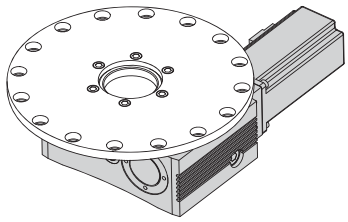


With previous motion equipment, the quality of motion was evaluated primarily based on accuracy and rigidity in the stationary state. These stationary characteristics are important, but in reality, accuracy and stability during movement have a large impact on the performance of factory automation equipment.

In motion equipment with backlash or inferior response, motion does not proceed in accordance with control commands due to deterioration of dynamic accuracy and irregular behavior, and thus it is difficult to attain the necessary performance. ***RollerDrive***® improves the performance of all FA equipment by employing zero-backlash technology to create output operation faithful to input control commands.

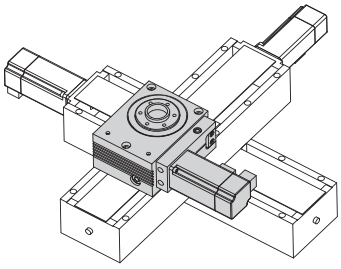
Improves Performance of all Factory Automation Equipment

High-Speed Precision Positioning



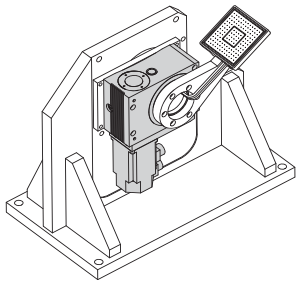
Settling time is short, and this enables precise positioning. Speed fluctuation during movement is extremely small, and high-accuracy synchronization is also possible. Almost no maintenance is necessary, and this helps control life-cycle costs of FA systems.

High-Accuracy 0-Axis Positioner

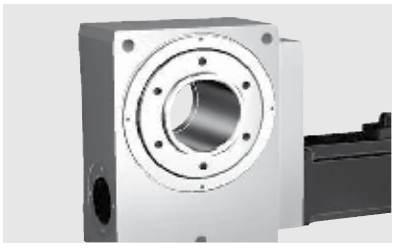


RollerDrive® has small output rotation deflection, and can be used as a high-accuracy, 0-axis positioner or as an alignment table. It is thin and compact, and ideal for use in combination with an X-Y stage etc.

Rotary/Pivot Arm Drive

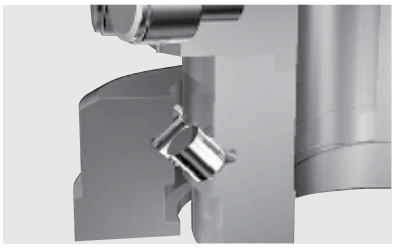


Speed and reciprocating repeat accuracy can be improved, and the drive section layout can be made th inner and more compact. Pipe and cable installation is easy using the large-diameter through hole for the output shaft.



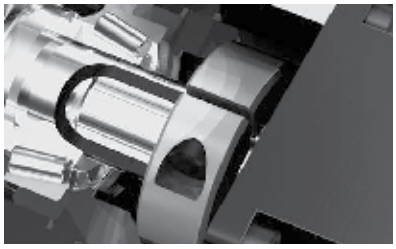
Large Diameter Hollow Output Shaft

This enables easy wiring and piping, and a broader range of design possibilities, such as passing the shaft of other equipment through the hole.



Cross Roller

A highly-rigid cross roller bearing with extremely small deflection is built into the output section.



Motor Shaft Coupling

The motor shaft is rigidly coupled with the reducer input shaft. Motor motion is transmitted directly. The motor base structure enables absorption of mounting error (PAT.P).

Specification Sheet

The RA series has two different lubrication options. Select the lubrication type by operation conditions.
Grease lubrication can be used when low maintenance is required. The grease should last for the life of the unit.
Oil lubrication should be selected when higher rated torque or higher speeds are required. To check that the service life of the ***RollerDrive***® will be satisfactory, please compare the specifications for each lubrication type.
On the dynamic rated output torque curve (see page 5), when the point (Torque and Speed) is below the curve, an expected life of over 12,000 is ensured.

Grease Lubrication Type

* Oil lubrication type is not standard product, special order items may affect delivery

Model		RA40	RA63	RA80		RA100		RA125	
Gear ratio		15	20	20	30 *	20	30 *	20	30 *
Upper limit torque at start/stop	N·m	57.7	129.3	202.3	147.9	564.8	250.3	938.6	637.5
Permissible max. input speed	rpm	3,000		2,500		2,000		1,600	
Permissible avg. input speed	rpm	900	800	700		600			
Angular transmission accuracy	arc·sec Max.	90	60	40					
Angular repeatability accuracy	arc·sec Max.	±10	±7	±5					
Surface runout	μm	10							
Permissible axial load	N	999	1,657	3,302		3,724		8,178	
Permissible radial load	N	669	1,359	2,819		3,109		7,452	
Permissible moment load	N·m	33	79	210		284		764	
Weight	kg	2 .5	5.6	11.6		21.5		36.3	

* Oil Lubrication Type

* Oil lubrication type is not standard product, special order items may affect delivery

Model		RA40	RA63	RA80		RA100		RA125	
Gear ratio		15	20	20	30	20	30	20	30
Upper limit torque at start/stop	N·m	71.0	159.2	249.0	182.1	695.4	308.2	1,155.6	784.8
Permissible max. input speed	rpm	3,000							
Permissible avg. input speed	rpm	1,300	1,100	1,000		900			
Angular transmission accuracy	arc·sec Max.	90	60	40					
Angular repeatability accuracy	arc·sec Max.	±10	±7	±5					
Surface runout	μm	10							
Permissible axial load	N	999	1,657	3,302		3,724		8,178	
Permissible radial load	N	669	1,359	2,819		3,109		7,452	
Permissible moment load	N·m	33	79	210		284		764	
Weight	kg	2.5	5.6	11.6		21.5		36.3	

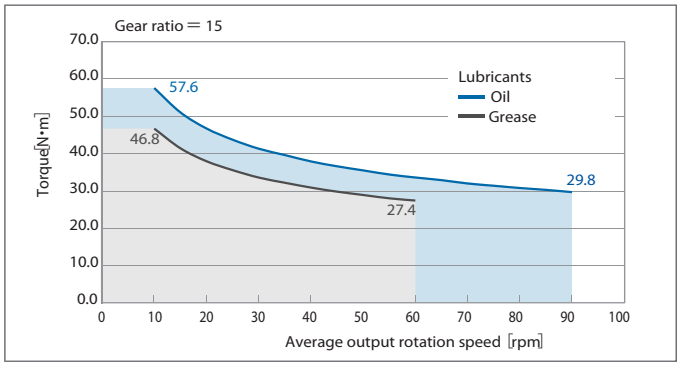
<< Operating Precautions >>

Please do not exceed 60°C operating temperature conditions of the RollerDrive. Operation at the high temperatures may lead to the degradation of lubricant performance.

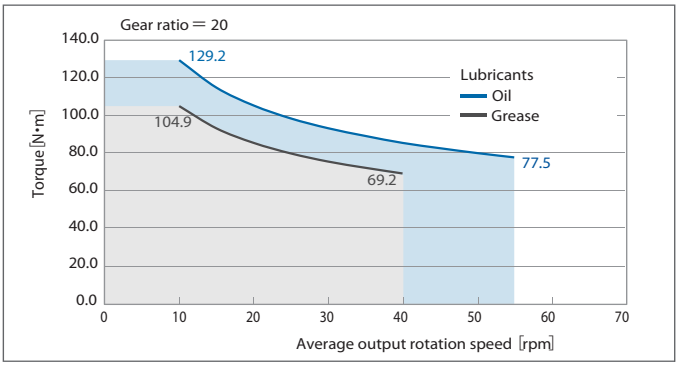
Dynamic Rated Output Torque

The dynamic rated output torque is value of load torque for which an expected service life of 12,000 hours or greater is ensured. The dynamic rated output torque is dependent on the average output rotation speed. Oil lubrication type units have more speed capacity than grease filled lubrication types. Note; oil filled units are special order & deliveries may be affected.

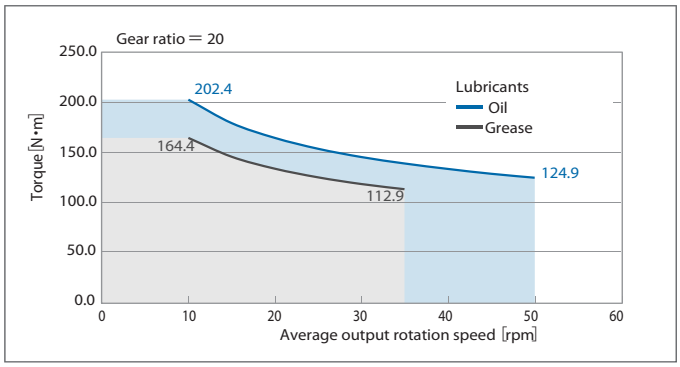
RA40



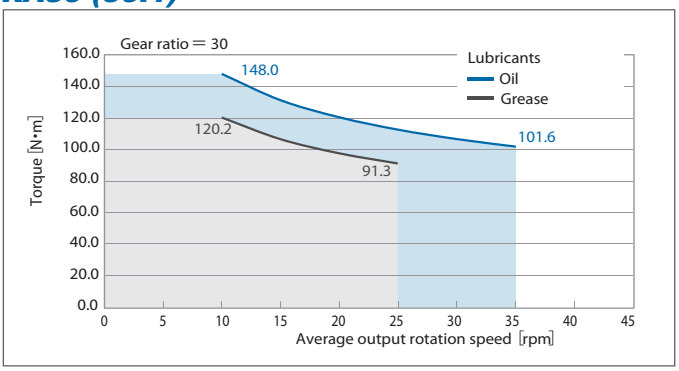
RA63



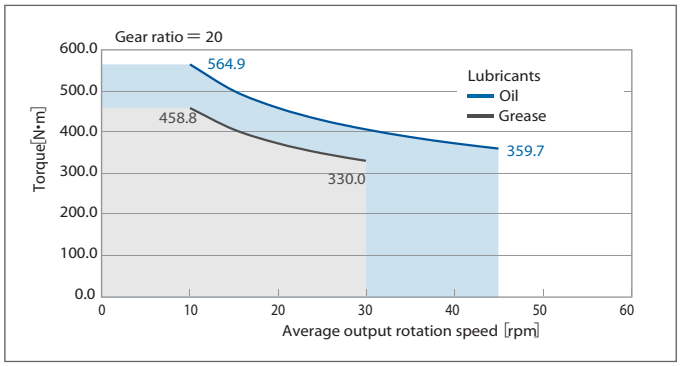
RA80



RA80 (30:1)



RA100



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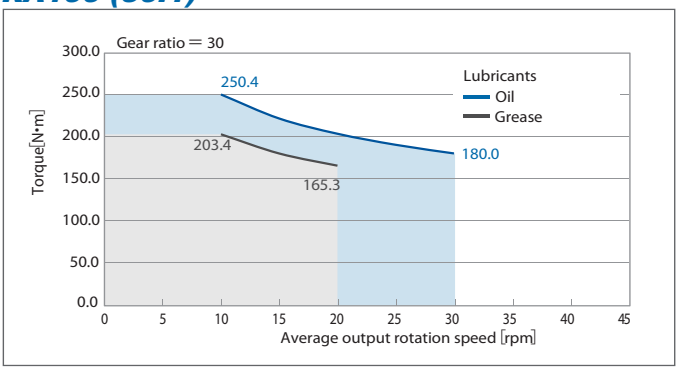
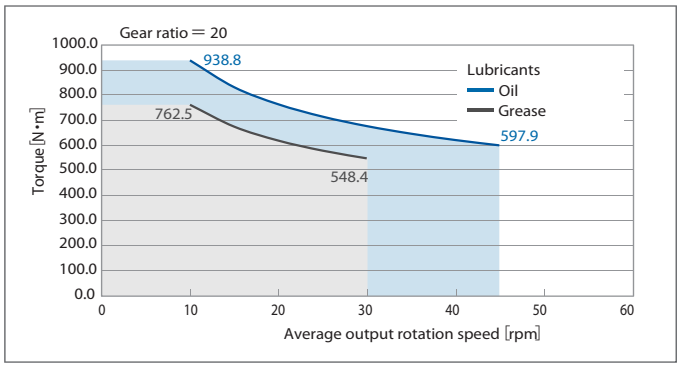


RA125



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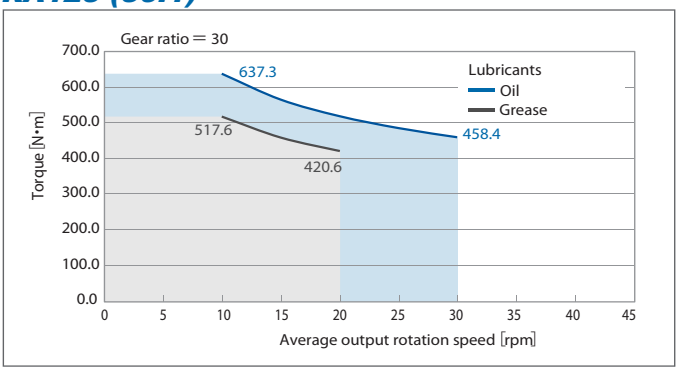
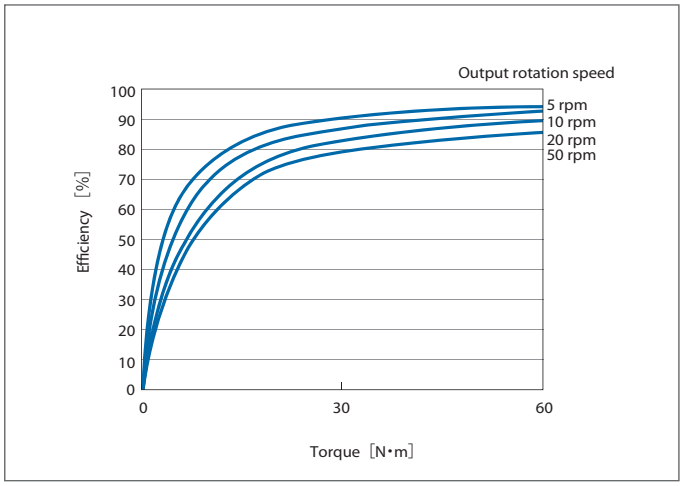


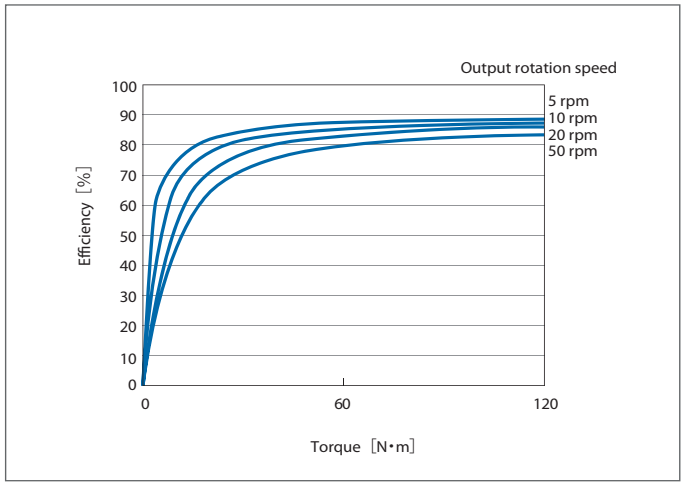
Efficiency

This indicates the percent of input power which is transmitted to the output. The ***RollerDrive***® motion mechanism has high efficiency because it employs rolling contact. Efficiency varies depending on conditions such as load torque, rotation speed and temperature.

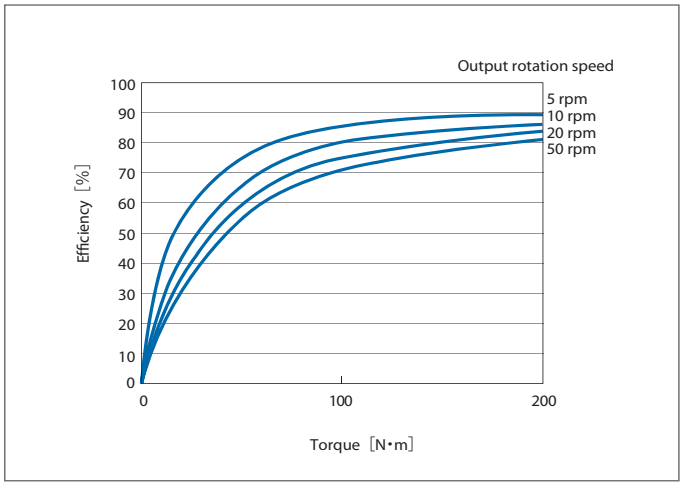
RA40



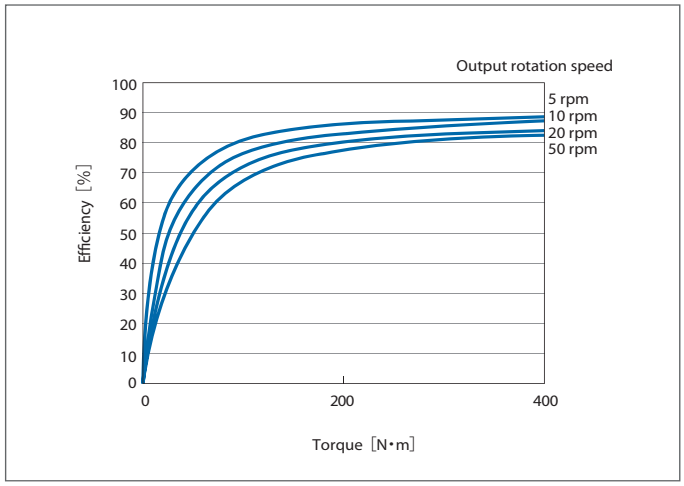
RA63



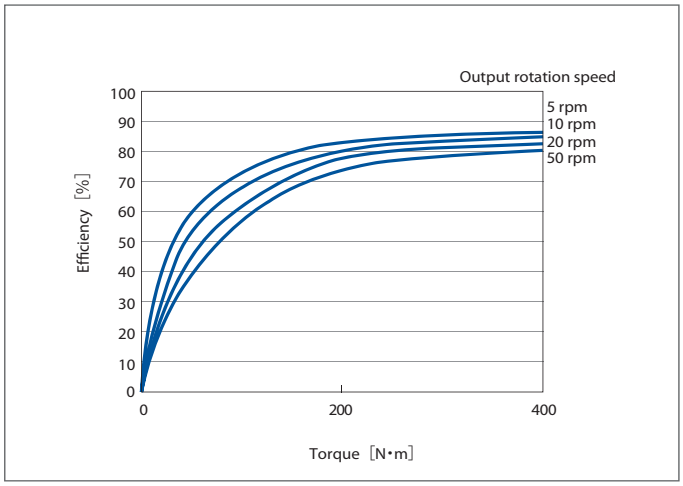
RA80



RA100



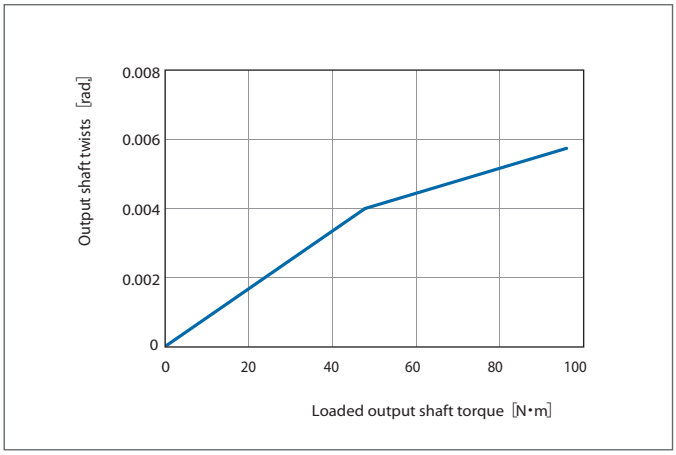
RA125



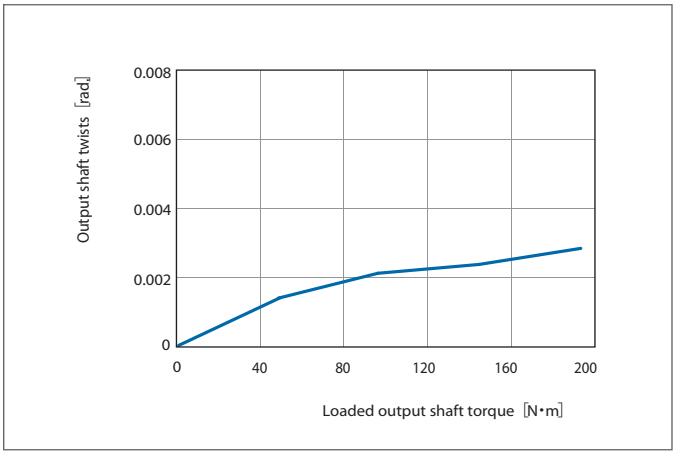
Torsional Rigidity

Torsional rigidity is the ease with which the shaft twists in response to output shaft torque, and is expressed as the slope of the line connecting the two points for 50% and 100% rated torque on the hysteresis curve (reference page 26). The higher the torsional rigidity, the smaller the deformation in response to torque, and the higher the natural frequency.

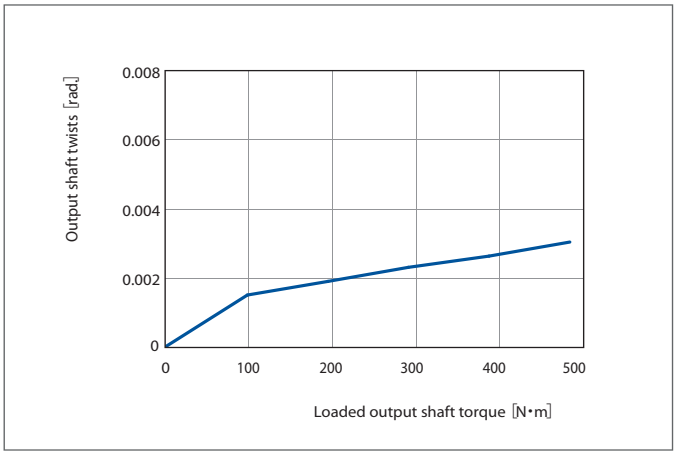
RA40



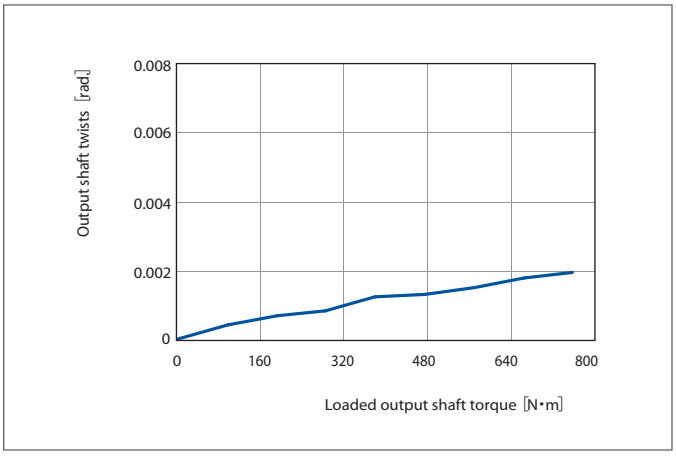
RA63



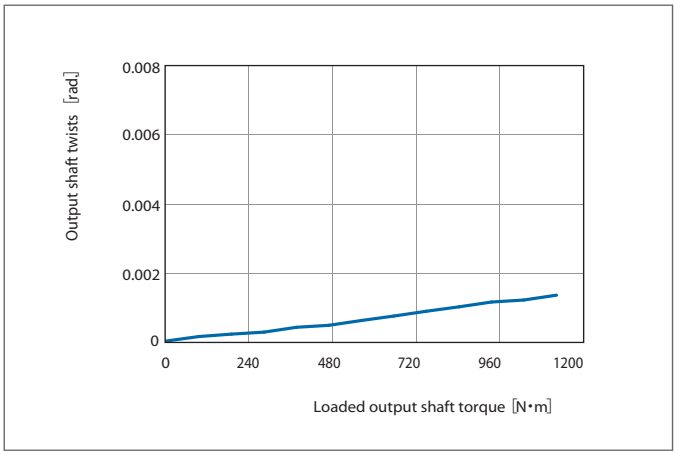
RA80



RA100



RA125



Model	Torsional rigidity [×10⁴N•m/rad]
RA40	2.8
RA63	9.0
RA80	24.5
RA100	43.9
RA125	74.4

Model Code

RA 63 - 20 G T - AB /X

① ② ③ ④ ⑤ ⑥ ⑦

① Model	② Size	③ Gear ratio	④ Lubrication and mounting position	⑤ Servomotor position	⑥ Servomotor fastener elements	⑦ Special Instructions
RA	40	15	**Grease** lubrication **G** : **All positions** are available	**T** : Mounted on **right side** as viewed from front	See list of moutable servomotors	Please **don't fill** if there are standard spec shown in this catalog.
	63	20				
	80 100 125	20 (30) *1	**Oil** lubrication 1 · 2 · 3 · 4 · 5 · 6 See list of "Mounting position" code ➡ **see fig. A below**	**U** : Mounted on **left side** as viewd from front	➡ pages 16~25	/X : **Special** instruction *1

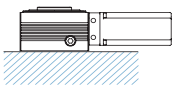
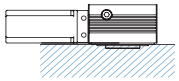
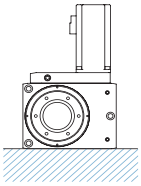
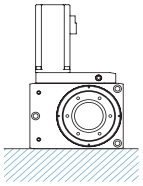
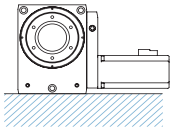
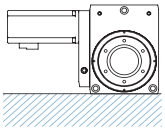
*1 Denotes non-standard option, please contact Sankyo sales for special ratio options, mouning or servo motor brands not listed.

About Installation of Servo Motor

Installing a servo motor to the RollerDrive should be done by the customer. The instruction manual is included with the product. Please read this manual carefully before installing a servo motor for a better understanding.

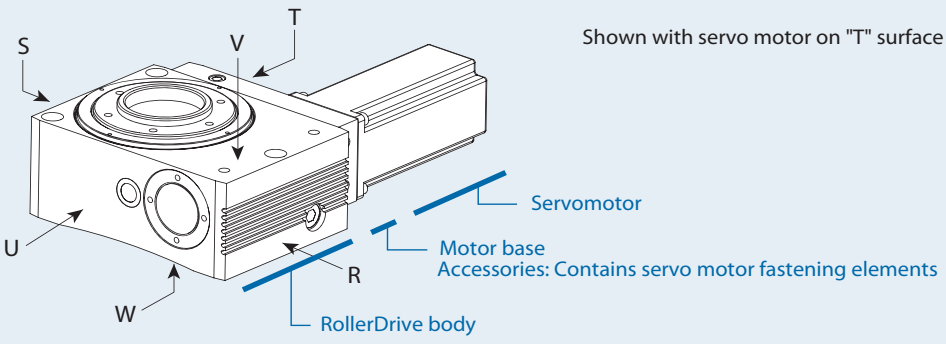
Mounting Position

fig.A

1	2	3	4	5	6
					
W surface on bottom	**V surface** on bottom	**U surface** on bottom	**T surface** on bottom	**R surface** on bottom	**S surface** on bottom

RollerDrive Surfaces

fig.B



Shown with servo motor on "T" surface

Compatible Servomotors

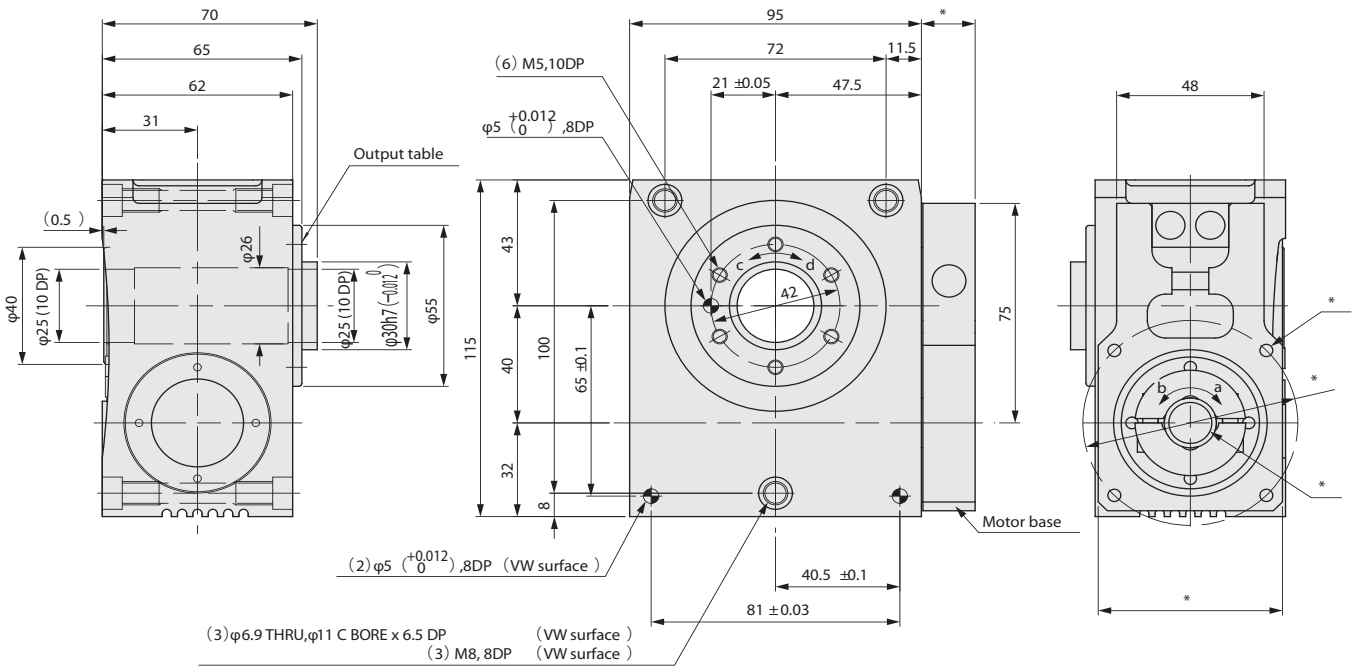
Manufacture	Servo Series	Motor	Rated output [kW]				
			RA4	RA63	RA80	RA100	RA125
Yaskawa Electric	Sigma-V	SGMAV	0.2/0.4	0.4/0.55	0.75/1		
		SGMGV		0.45	0.85/1.3	0.85/1.3/1.8	
		SGMJV	0.2/0.4	0.4			
		SGMSV			1.5/2/2.5	1.5/2/2.5/3/4	2.5/3/4
Mitsubishi Electric	J3	HF-KP	0.2/0.4	0.4	0.75		
		HF-MP	0.2/0.4	0.4	0.75		
		HF-SP			0.5/0.85/1/1.5		0.85/1/1.5
	J4	HG-KR	0.2/0.4	0.4	0.75		
		HG-MR	0.2/0.4	0.4	0.75		
		HG-SR			0.5/0.85/1/1.5		1/1.5
Panasonic	MINAS A5	MDME			1/1.5/2		
		MHMD	0.2/0.4	0.4			
		MSMD	0.2/0.4	0.4	0.75		
		MSME	0.2/0.4	0.4	0.75/1/1.5/2		
FANUC	αi	αiF		0.5/0.75	1.4/1.6	1.4/1.6	
		αiS		0.75	1/2.5	2.5/2.7	
	βi	βiS	0.35/0.5	0.5/0.75	0.75/1.2/1.8	1.2/1.8	
KEYENCE	SV	SV-M	0.2	0.4	0.75/0.85/1.3	0.85/1.3/1.8	0.85/1.3/1.8
SANYO DENKI	R2	R2AA	0.2/0.4	0.4	0.55/0.75/1/1.2/1.8	1.2/1.8	
	Q1	Q1AA			1/1.5/2	1.5/2/2.5/3/4/5	1.5/2/2.5/3/4/5
OMRON	G	R88M-G	0.2/0.4	0.4	0.75/1/1.5/2		
	G5	R88M-K	0.2/0.4	0.4	0.75/1/1.5/2		
Mounting dimensions, Mountable servomotors			➡ pages 16~17	➡ pages 18~19	➡ pages 20~21	➡ pages 22~23	➡ pages 24~25

Please prepare the servo motor with no keyway.

Dimensions

RA40

Unit：mm

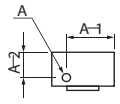
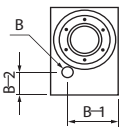
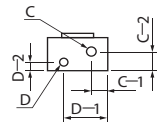
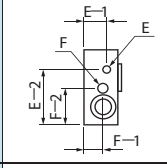
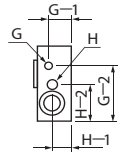


*see page 16

- The relationship of the input/output shaft rotation directions is a-d, b-c
- Dowel holes on output table surface are drilled with reference to outside diameter of output shaft flange (φ30h7) and M5 tapped hole.
- Dowel holes on surface V,W are drilled with reference to center of output shaft (φ30h7) and Surface R.

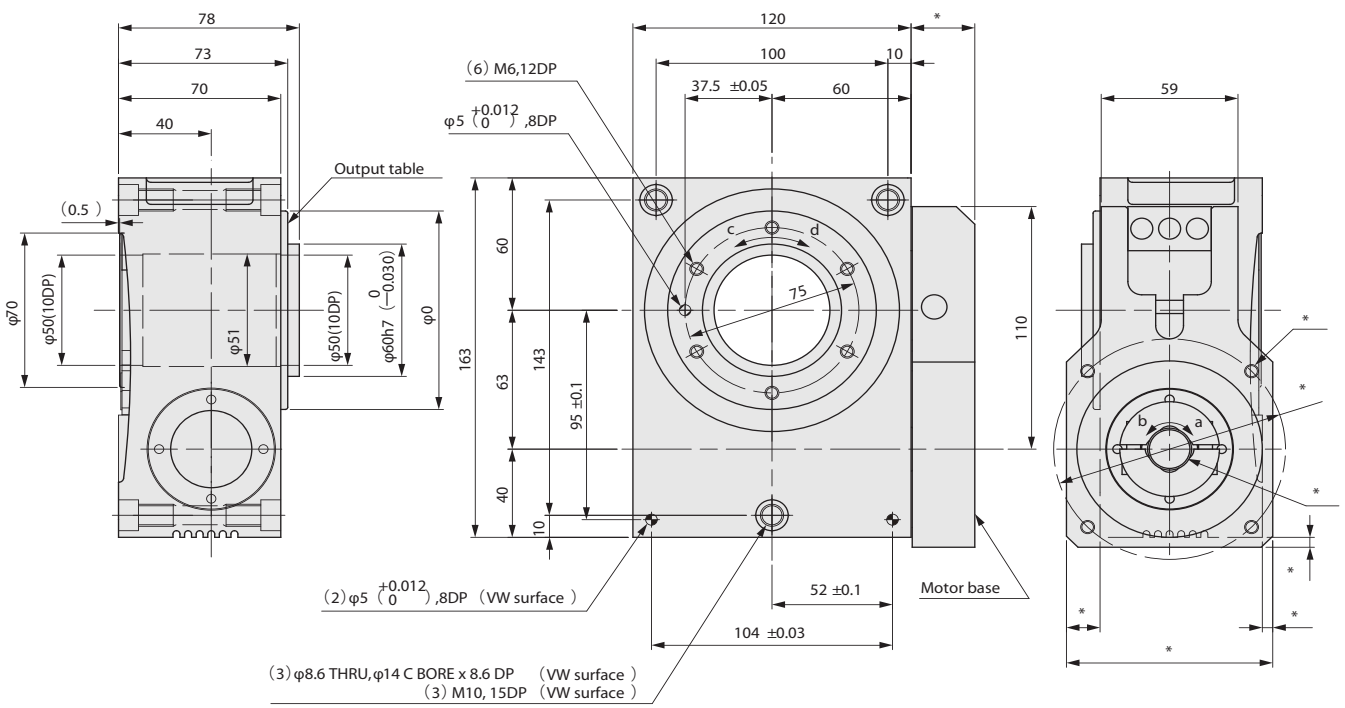
Position of Oil Level and Oil Plug and Drain (Oil Lubrication)

Unit：mm

View from	Mounting position / Servomotor position		1		2		3		4		5		6	
			T	U	T	U	T	U	T	U	T	U	T	U
S S surface side		A	Oil plug RC1/4	Oil plug RC1/4	Oil plug RC1/4	Drain RC1/4					Oil plug RC1/4	Oil plug RC1/4	Drain RC1/4	Drain RC1/4
		A-1	70	70	70	70					70	70	70	70
		A-2	46	46	46	46					46	46	46	46
V V surface side		B											Oil level (W surface only)	Oil level (W surface only)
		B-1											66	66
		B-2											22	22
R R surface side		C					Oil level	Oil level	Oil level	Oil level				
		C-1					29	29	66	66				
		C-2					31	31	31	31				
		D	Drain RC1/4	Drain RC1/4	Oil plug RC1/4	Oil plug RC1/4	Oil plug RC1/4	Oil plug RC1/4	Drain RC1/4	Drain RC1/4	Drain RC1/4	Drain RC1/4	Oil plug RC1/4	Oil plug RC1/4
		D-1	26	26	26	26	66.5	66.5	28.5	28.5	26	26	26	26
		D-2	14	14	14	14	14	14	14	14	14	14	14	14
U U surface side		E							Oil plug RC1/8	Oil plug RC1/8				
		E-1							37	37				
		E-2							69	69				
		F	Oil level		Oil level						Oil level			
		F-1	31		31						31			
		F-2	68		68						68			
T T surface side		G					Oil plug RC1/8	Oil plug RC1/8						
		G-1					37	37						
		G-2					69	69						
		H		Oil level		Oil level						Oil level		
		H-1		31		31						31		
		H-2		68		68						68		

RA63

Unit：mm

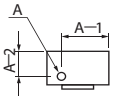
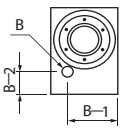
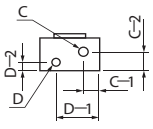
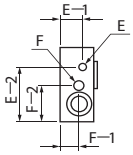
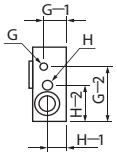


* see page 18

- The relationship of the input/output shaft rotation directions is a-d, b-c.
- Dowel holes on output table surface are drilled with reference to outside diameter of output shaft flange (φ60h7) and M6 tapped hole.
- Dowel holes on surface V,W are drilled with reference to center of output shaft (φ60h7) and Surface R.

Position of Oil Level and Oil Plug and Drain (Case of Oil Lubrication)

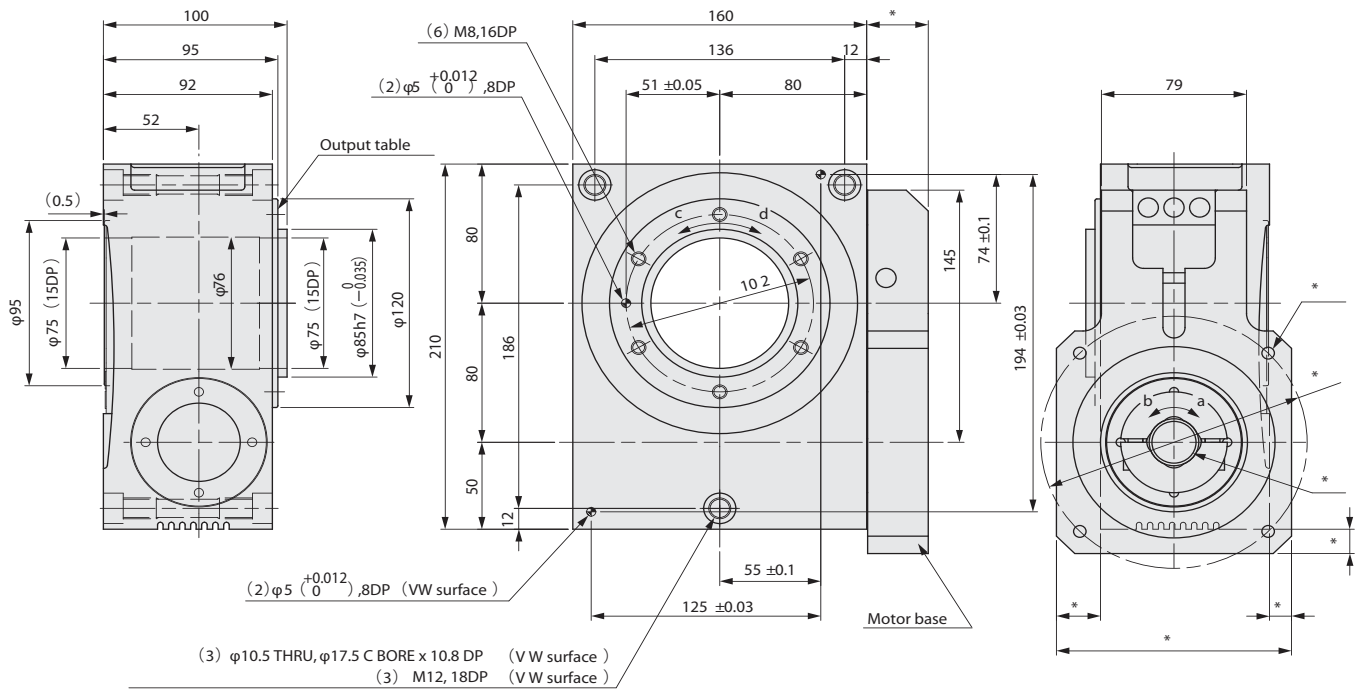
Unit：mm

View from	Mounting position / Servomotor position		1		2		3		4		5		6	
			T	U	T	U	T	U	T	U	T	U	T	U
S surface side		A	Oil plug RC3/8	Oil plug RC3/8	Oil plug RC3/8	Drain RC3/8					Oil plug RC3/8	Oil plug RC3/8	Drain RC3/8	Drain RC3/8
		A-1	92	92	92	92					92	92	92	92
		A-2	51	51	51	51					51	51	51	51
V surface side		B											Oil level (W surface only)	Oil level (W surface only)
		B-1											90	90
		B-2											42	42
R surface side		C					Oil level	Oil level	Oil level	Oil level				
		C-1					32	32	88	88				
		C-2					40	40	40	40				
		D	Drain RC3/8	Drain RC3/8	Oil plug RC3/8	Oil plug RC3/8	Oil plug RC3/8	Oil plug RC3/8	Drain RC3/8	Drain RC3/8	Drain RC3/8	Drain RC3/8	Oil plug RC3/8	Oil plug RC3/8
		D-1	32	32	32	32	88	88	32	32	32	32	32	32
		D-2	18	18	18	18	18	18	18	18	18	18	18	18
U surface side		E							Oil plug RC3/8	Oil plug RC3/8				
		E-1							48	48				
		E-2							120	120				
		F	Oil level		Oil level						Oil level			
		F-1	40		40						40			
		F-2	80		80						80			
T surface side		G					Oil plug RC3/8	Oil plug RC3/8						
		G-1					48	48						
		G-2					120	120						
		H		Oil level		Oil level						Oil level		
		H-1		38		38						40		
		H-2		80		80						80		

Dimensions

RA80

Unit：mm

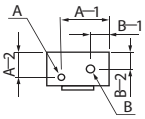
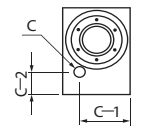
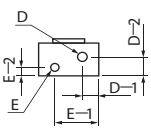
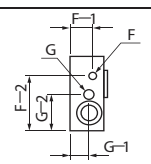
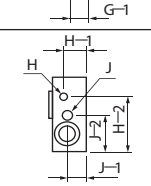


* see page 20

- The relationship of the input/output shaft rotation directions is a-d, b-c.
- Dowel holes on output table surface are drilled with reference to outside diameter of output shaft flange (φ85h7) and M8 tapped hole.
- Dowel holes on surface V,W are drilled with reference to center of output shaft (φ85h7) and Surface R.

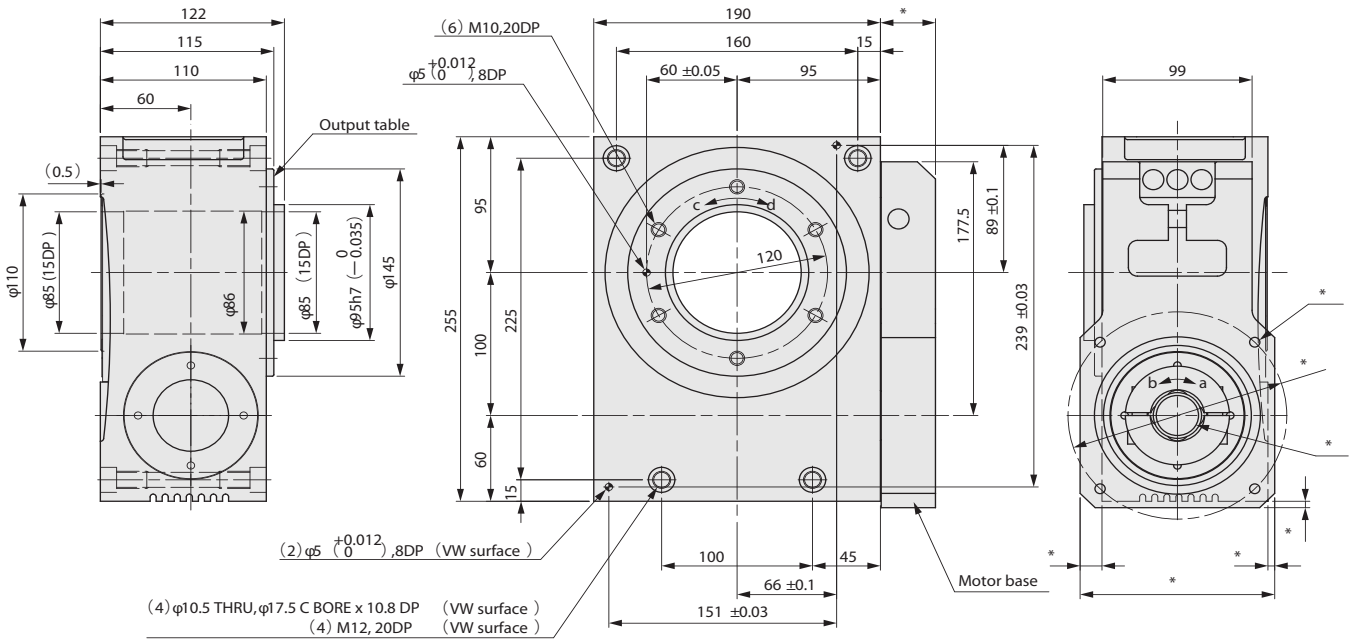
Position of Oil Level and Oil Plug and Drain (Oil Lubrication)

Unit ：mm

View from	Mounting position / Servomotor position		1		2		3		4		5		6	
			T	U	T	U	T	U	T	U	T	U	T	U
S S surface side		A	Oil plug RC1/2	Oil plug RC1/2	Drain RC1/2	Drain RC1/2	Drain RC1/2	Drain RC1/2	Drain RC1/2	Drain RC1/2	Oil plug RC1/2	Oil plug RC1/2	Drain RC1/2	Drain RC1/2
		A-1	120	120	120	120	127	127	33	33	120	120	120	120
		A-2	66	66	66	66	52	52	52	52	66	66	66	66
		B					Oil level	Oil level	Oil level	Oil level				
		B-1					40	40	120	120				
		B-2					52	52	52	52				
V V surface side		C											Oil level (W surface only)	Oil level (W surface only)
		C-1											115	115
		C-2											45	45
R R surface side		D												
		D-1												
		D-2												
		E	Drain RC1/2	Drain RC1/2	Oil plug RC1/2	Oil plug RC1/2					Drain RC1/2	Drain RC1/2	Oil plug RC1/2	Oil plug RC1/2
		E-1	45	45	45	45					45	45	45	45
		E-2	20	20	20	20					20	20	20	20
U U surface side		F							Oil plug RC1/4	Oil plug RC1/4				
		F-1							67	67				
		F-2							162	162				
		G	Oil level		Oil level						Oil level			
		G-1	52		52						52			
		G-2	104		104						104			
T T surface side		H					Oil plug RC1/4	Oil plug RC1/4						
		H-1					67	67						
		H-2					162	162						
		J		Oil level		Oil level						Oil level		
		J-1		52		52						52		
		J-2		104		104						104		

RA100

Unit:mm

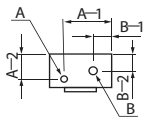
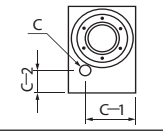
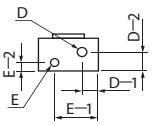
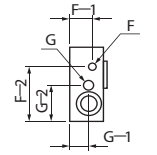
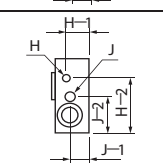


* see page 22

- The relationship of the input/output shaft rotation directions is a-d, b-c.
- Dowel holes on output table surface are drilled with reference to outside diameter of output shaft flang (φ95h7) and M10 tapped hole.
- Dowel holes on surface V,W are drilled with reference to center of output shaft (φ95h7) and Surface R.

Position of Oil Level and Oil Plug and Drain (Oil Lubrication)

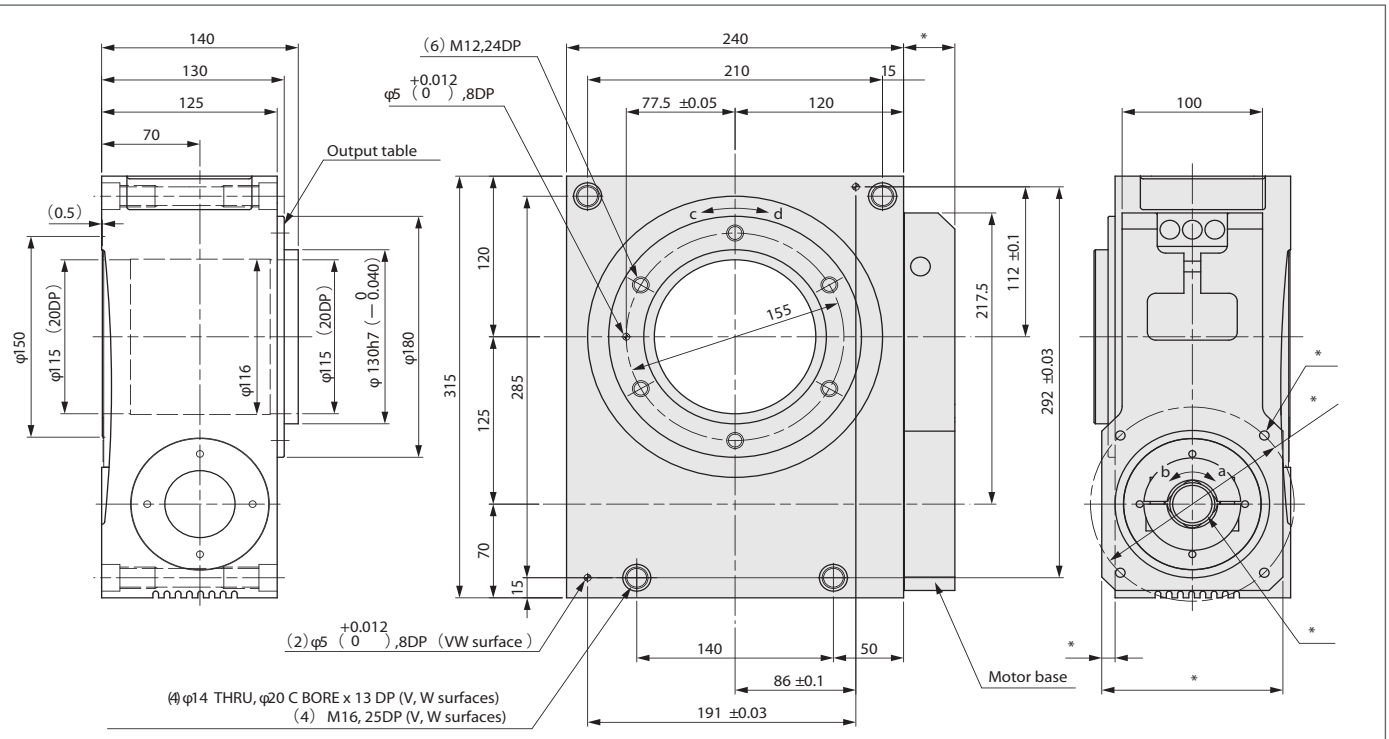
Unit:mm

View from	Mounting position / Servomotor position		1		2		3		4		5		6	
			T	U	T	U	T	U	T	U	T	U	T	U
S S surface side		A	Oil plug RC1/2	Oil plug RC1/2	Drain RC1/2	Drain RC1/2	Drain RC1/2	Drain RC1/2	Drain RC1/2	Drain RC1/2	Oil plug RC1/2	Oil plug RC1/2	Drain RC1/2	Drain RC1/2
		A-1	142	142	142	142	155	155	35	35	142	142	142	142
		A-2	85	85	85	85	68	68	68	68	85	85	85	85
		B					Oil level	Oil level	Oil level	Oil level				
		B-1					43	43	147	147				
		B-2					68	68	68	68				
V V surface side		C											Oil level (W surface only)	Oil level (W surface only)
		C-1											115	115
		C-2											45	45
R R surface side		D												
		D-1												
		D-2												
		E	Drain RC1/2	Drain RC1/2	Oil plug RC1/2	Oil plug RC1/2					Drain RC1/2	Drain RC1/2	Oil plug RC1/2	Oil plug RC1/2
		E-1	95	95	95	95					95	95	95	95
		E-2	24	24	24	24					24	24	24	24
U U surface side		F							Oil plug RC3/8	Oil plug RC3/8				
		F-1							80	80				
		F-2							170	170				
		G	Oil level		Oil level						Oil level			
		G-1	60		60						60			
		G-2	125		125						125			
T T surface side		H					Oil plug RC3/8	Oil plug RC3/8						
		H-1					80	80						
		H-2					170	170						
		J		Oil level		Oil level						Oil level		
		J-1		60		60						60		
		J-2		125		125						125		

Dimensions

RA125

Unit：mm

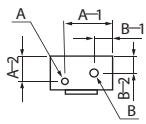
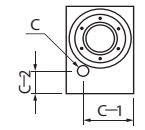
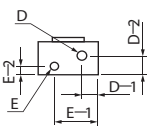
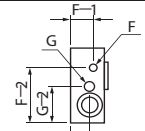
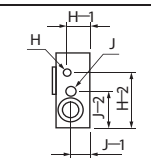


* see page 24

- The relationship of the input/output shaft rotation directions is a-d, b-c.
- Dowel holes on output table surface are drilled with reference to outside diameter of output shaft flange (φ130h7) and M12 tapped hole.
- Dowel holes on surface V,W are drilled with reference to center of output shaft (φ130h7) and Surface R.

Position of Oil Level and Oil Plug and Drain (Oil Lubrication)

Unit：mm

View from	Mounting position / Servomotor position		1		2		3		4		5		6	
			T	U	T	U	T	U	T	U	T	U	T	U
S S surface side		A	Oil plug RC1/2	Oil plug RC1/2	Drain RC1/2	Drain RC1/2	Drain RC1/2	Drain RC1/2	Drain RC1/2	Drain RC1/2	Oil plug RC1/2	Oil plug RC1/2	Drain RC1/2	Drain RC1/2
		A-1	180	180	180	180	200	200	40	40	180	180	180	180
		A-2	97	97	97	97	70	70	70	70	97	97	97	97
		B					Oil level	Oil level	Oil level	Oil level				
		B-1					60	60	180	180				
		B-2					70	70	70	70				
V V surface side		C											Oil level (W surface only)	Oil level (W surface only)
		C-1											180	180
		C-2											75	75
R R surface side		D												
		D-1												
		D-2												
		E	Drain RC1/2	Drain RC1/2	Oil plug RC1/2	Oil plug RC1/2					Drain RC1/2	Drain RC1/2	Oil plug RC1/2	Oil plug RC1/2
		E-1	120	120	120	120					120	120	120	120
		E-2	26	26	26	26					26	26	26	26
U U surface side		F							Oil plug RC1/2	Oil plug RC1/2				
		F-1							80	80				
		F-2							245	245				
		G	Oil level		Oil level						Oil level			
		G-1	70		70						70			
		G-2	140		140						140			
T T surface side		H					Oil plug RC1/2	Oil plug RC1/2						
		H-1					80	80						
		H-2					245	245						
		J		Oil level		Oil level						Oil level		
		J-1		70		70						70		
		J-2		140		140						140		

Installation

The product should be installed in a place satisfying the following conditions:

- Environment temperature from +5 to +40 °C
- Humidity under 85% (no condensation)
- Non vacuum or extreme pressure
- No exposure to water, oil, chemicals, dusts, etc.
- No existence of explosive gas, other hazardous gas, or radio active materials
- No direct sunlight
- Excessive shock or force does not act
- Grounded from electric current
- Minimum electro magnetic noise (be cautious on welding machines)
- Easy to carry out maintenance and check oil level and drain

Installing

Put the product with proper orientation on a flat and rigid surface. Fix a rotating table or a component on the output flange.

Tighten screws with proper tightening torque by using torque wrench. Apply LOCTITE 242 (recommended) or equivalent agent when tightening screws to avoid being loosened during operation. Tightening torque should follow tables show below.

Tightening torque table A
Housing screws (Aluminium alloy)

Screw size	Tightening torque (DIN6.8)
M8	18.5 Nm
M10	36.0 Nm
M12	63.0 Nm
M16	158.0 Nm

Tightening torque table B
Output flange (Steel alloy)

Screw size	Tightening torque (DIN10.9)
M5	8.5 Nm
M6	14.0 Nm
M8	35.0 Nm
M10	69.0 Nm
M12	120.0 Nm

Lubricants

For oil lubrication although high quality and long life lubricant is used for RollerDrive RA series, it should be refilled every 3,000 hours of operation. Condition of a lubricant can be checked from the oil level gauge. Checking should be carried out when the product is stopped. Check color and amount, and if there are significant changes, refill the lubricant no matter the operation hours. Small bubbles, which can appear in oil during operation, do not affect its lubrication property.

Use lubricant for refill: Standard lubricant: Mobil SHC629 (VG150)
Usage of different oil can cause wearing or other problems.

For Grease Lubrication (Special Requirement)

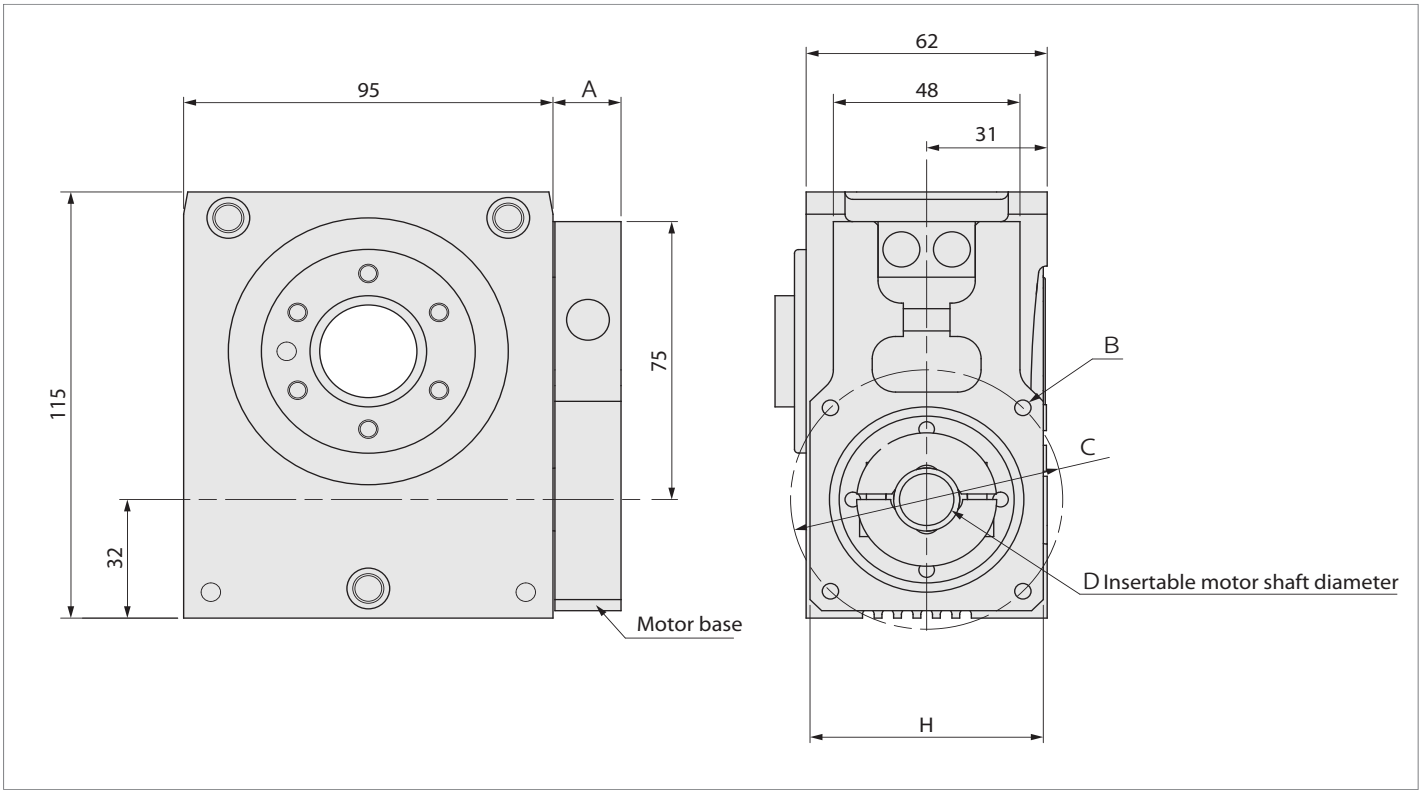
Type of grease is specified in the specification drawing. Generally, no refilling is required for grease lubrication. If there is a need for refilling grease, please contact Sankyo.

It is not possible to replace oil with grease or vise versa.

RA40 List of Mountable Servomotors

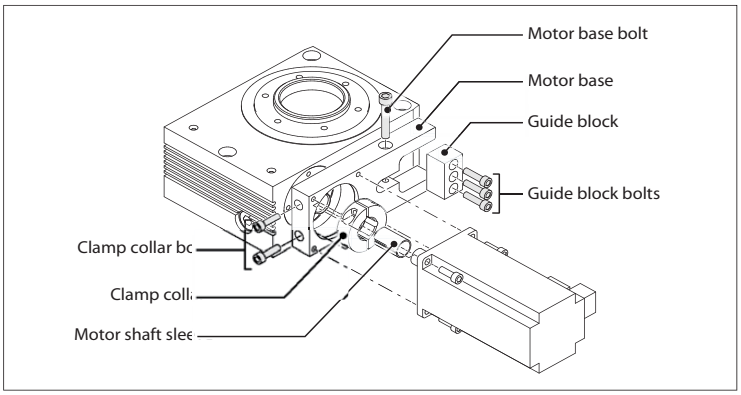
Mounting Dimensions

Unit：mm



Servomotor fastener elements	A	B	C	D	H
AB	19.5	(4)M5, 10DP	φ 70	φ 9	60 sq.
AN				φ 14	
BA		(4)M4, 8DP		φ 11	
BN				φ 14	

Servomotor Installation Schematic



Accessories	Servomotor fastener elements	
	AN	Other All
Motor base	O	O
Guide block	O	O
Clamp collar	O	O
Motor shaft sleeve		O
Motor base bolt	M6x35 (1)	
Clamp collar bolts	M5x15 (2)	
Guide block bolts	M5x20 (2)	

Compatible Servomotors

RA40 Input conversion moment of inertia : 0.292×10^{-4}[kg·m^2]

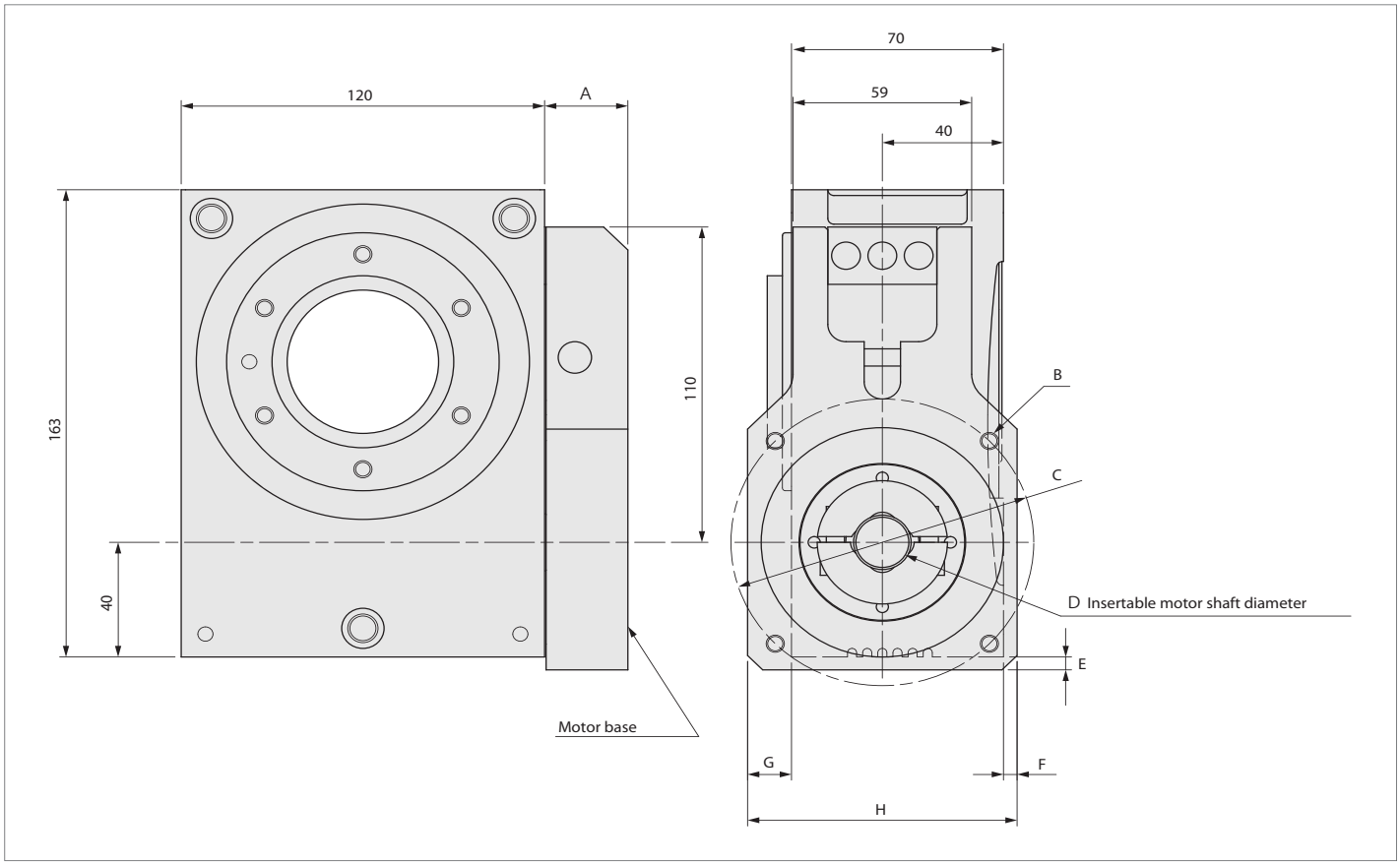
Manufacture	Servo series	Motor	Rated output [kW]	Rated torque [N·m]	Rated rotation speed [rpm]	Motor rotor inertia [$\times 10^{-4}$kg·m^2]	Servomotor fastener elements
Yaskawa Electric	Sigma-V	SGMAV-02A	0.2	0.64	3,000	0.116	AN
		SGMAV-04A	0.4	1.27	3,000	0.19	AN
		SGMJV-02A	0.2	0.64	3,000	0.259	AN
		SGMJV-04A	0.4	1.27	3,000	0.442	AN
Mitsubishi Electric	J3	HF-KP23	0.2	0.64	3,000	0.24	AN
		HF-KP43	0.4	1.30	3,000	0.42	AN
		HF-MP23	0.2	0.64	3,000	0.088	AN
		HF-MP43	0.4	1.30	3,000	0.15	AN
	J4	HG-KR23	0.2	0.64	3,000	0.221	AN
		HG-KR43	0.4	1.30	3,000	0.371	AN
		HG-MR23	0.2	0.64	3,000	0.0865	AN
		HG-MR43	0.4	1.30	3,000	0.142	AN
Panasonic	MINAS A5	MSMD02	0.2	0.64	3,000	0.14	BA
		MSME02	0.2	0.64	3,000	0.14	BA
		MSMD04	0.4	1.30	3,000	0.26	BN
		MSME04	0.4	1.30	3,000	0.26	BN
		MHMD02	0.2	0.64	3,000	0.42	BA
		MHMD04	0.4	1.30	3,000	0.67	BN
FANUC	β	βiS0.5/6000	0.35	0.65	4,000	0.18	AB
		βiS1/6000	0.5	1.20	4,000	0.34	AN
KEYENCE	SV	SV-M020	0.2	0.64	3,000	0.259	AN
SANYO DENKI	R2	R2AA06020F	0.2	0.64	3,000	0.219	AN
		R2AA06040H	0.4	1.27	3,000	0.412	AN
		R2AA06040F	0.4	1.27	3,000	0.412	AN
OMRON	G5	R88M-K20030	0.2	0.64	3,000	0.14	BA
		R88M-K40030	0.4	1.30	3,000	0.26	BN
	G	R88M-G20030	0.2	0.64	3,000	0.14	BA
		R88M-G40030	0.4	1.30	3,000	0.26	BN

* Please prepare the servo motor with no keyway.

RA63 List of Mountable Servomotors

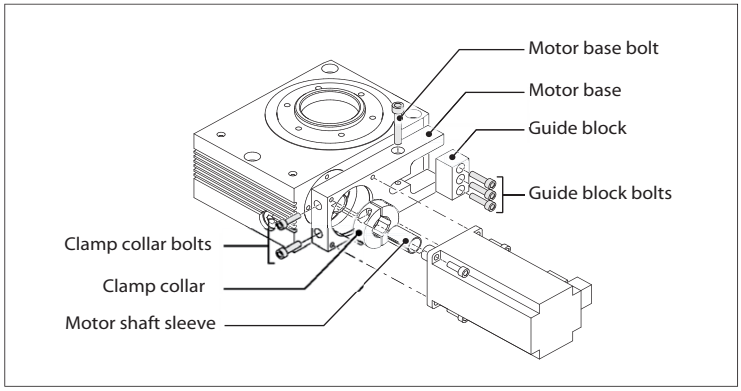
Mounting Dimensions

Unit:mm



Servomotor fastener elements	A	B	C	D	E	F	G	H
AB	20.5	(4)M5, 10DP	φ 70	φ 14				59 sq.
BB		(4)M4, 10DP						
CA	27.5	(4)M6, 12DP	φ 100	φ 10	3.5	4.5	14.5	89 sq.
CB				φ 14				
CN				φ 16				

Servomotor Installation Schematic



Accessories	Servomotor fastener elements	
	CN	Other All
Motor base	O	O
Guide block	O	O
Clamp collar	O	O
Motor shaft sleeve		O
Motor base bolt	M6x40 (1)	
Clamp collar bolts	M6x18 (2)	
Guide block bolts	M5x20 (3)	

Compatible Servomotors

RA63 Input conversion moment of inertia : 0.862×10^{-4}[kg•m^2]

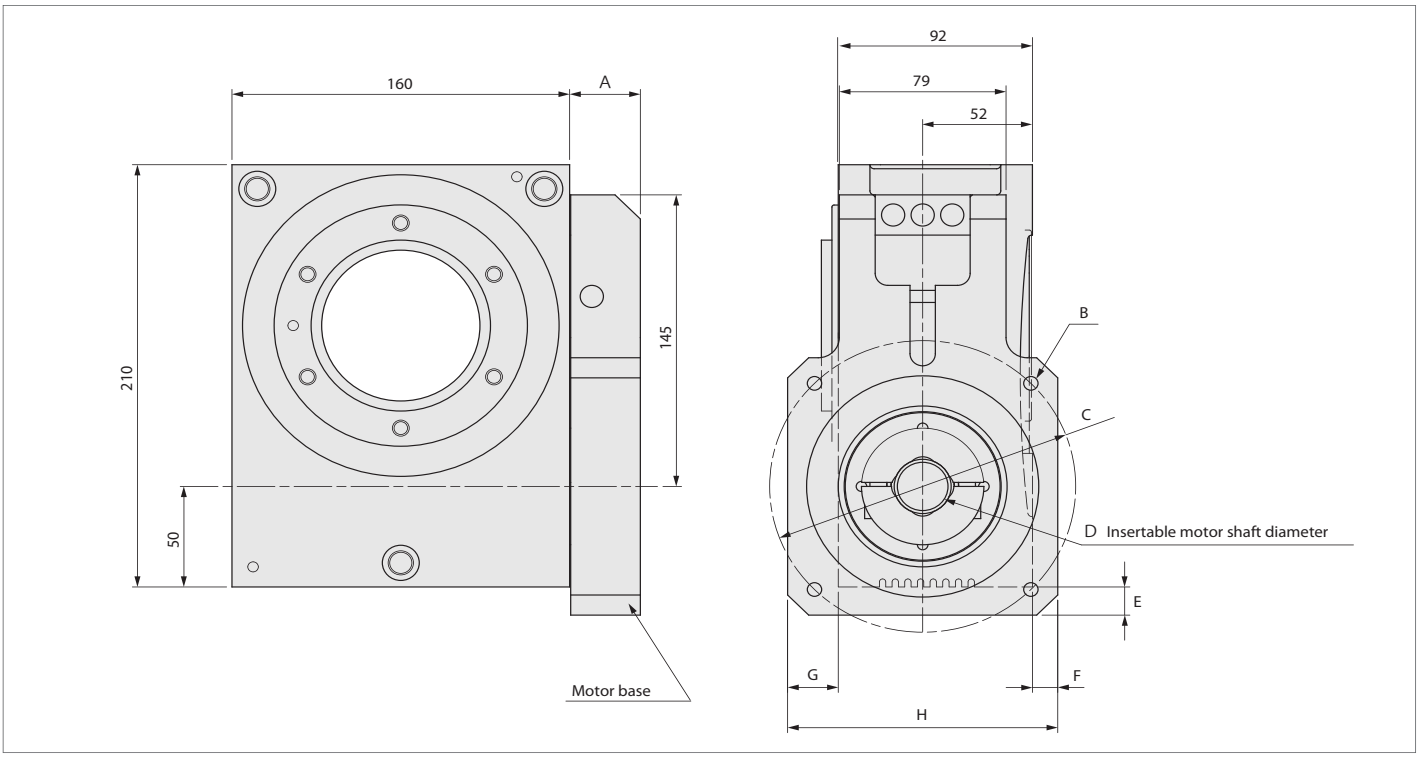
Manufacture	Servo series	Motor	Rated output [kW]	Rated torque [N•m]	Rated rotation speed [rpm]	Motor rotor inertia [$\times 10^{-4}$ kg•m^2]	Servomotor fastener elements
Yaskawa Electric	Σ-V	SGMAV-04A	0.4	1.27	3,000	0.19	AB
		SGMAV-06A	0.55	1.75	3,000	0.326	AB
		SGMGV-05A	0.45	2.86	1,500	3.33	CN
		SGMJV-04A	0.4	1.27	3,000	0.442	AB
Mitsubishi Electric	J3	HF-KP43	0.4	1.30	3,000	0.42	AB
		HF-MP43	0.4	1.30	3,000	0.15	AB
	J4	HG-KR43	0.4	1.30	3,000	0.371	AB
		HG-MR43	0.4	1.30	3,000	0.142	AB
Panasonic	MINAS A5	MSMD04	0.4	1.30	3,000	0.26	BB
		MSME04	0.4	1.30	3,000	0.26	BB
		MHMD04	0.4	1.30	3,000	0.67	BB
FANUC	α	αiS2/5000	0.75	2.00	4,000	2.91	CA
		αiF1/5000	0.5	1.00	5,000	3.05	CA
		αiF2/5000	0.75	2.00	4,000	5.26	CA
	β	βiS1/6000	0.5	1.20	4,000	0.34	AB
		βiS2/4000	0.5	2.00	4,000	2.91	CA
		βiS4/4000	0.75	3.50	4,000	5.15	CB
KEYENCE	SV	SV-M040	0.4	1.27	3,000	0.442	AB
SANYO DENKI	R2	R2AA06040H	0.4	1.27	3,000	0.412	AB
	R2	R2AA06040F	0.4	1.27	3,000	0.412	AB
OMRON	G5	R88M-K40030	0.4	1.30	3,000	0.26	BB
	G	R88M-G40030	0.4	1.30	3,000	0.26	BB

* Please prepare the servo motor with no keyway.

RA80 List of Mountable Servomotors

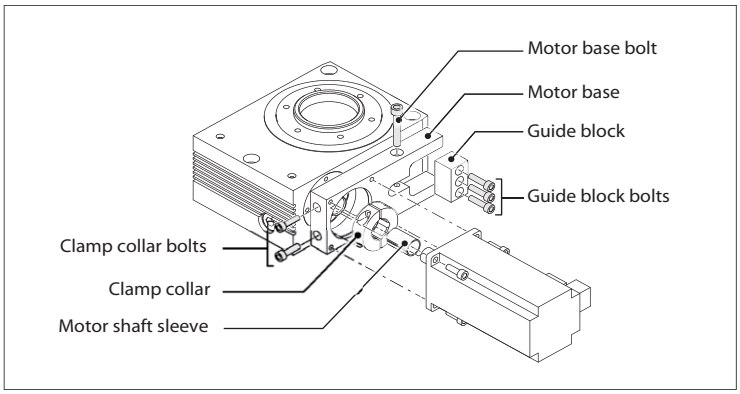
Mounting Dimensions

Unit:mm



Servomotor fastener elements	A	B	C	D	E	F	G	H
AB	21.5	(4)M6, 13DP	ϕ90	ϕ19				79 sq.
AD				ϕ16				
BA	28.5		ϕ100	ϕ14			4.5	89 sq.
CN	22.5		ϕ115	ϕ24			9	98 sq.
DB	25.5	(4)M8, 16DP		ϕ19				
DC				ϕ22				
EB	34.5		ϕ145	ϕ19	14	12	24	128 sq.
EC				ϕ22				
EN				ϕ24				
FB	21.5	(4)M5, 10DP	ϕ90	ϕ19				79 sq.

Servomotor Installation Schematic



Accessories	Servomotor fastener elements	
	CN, EN	Other All
Motor base	O	O
Guide block	O	O
Clamp collar	O	O
Motor shaft sleeve		O
Motor base bolt	M6x50 (1)	
Clamp collar bolts	M8x20 (2)	
Guide block bolts	M6x25 (2)	

Compatible Servomotors

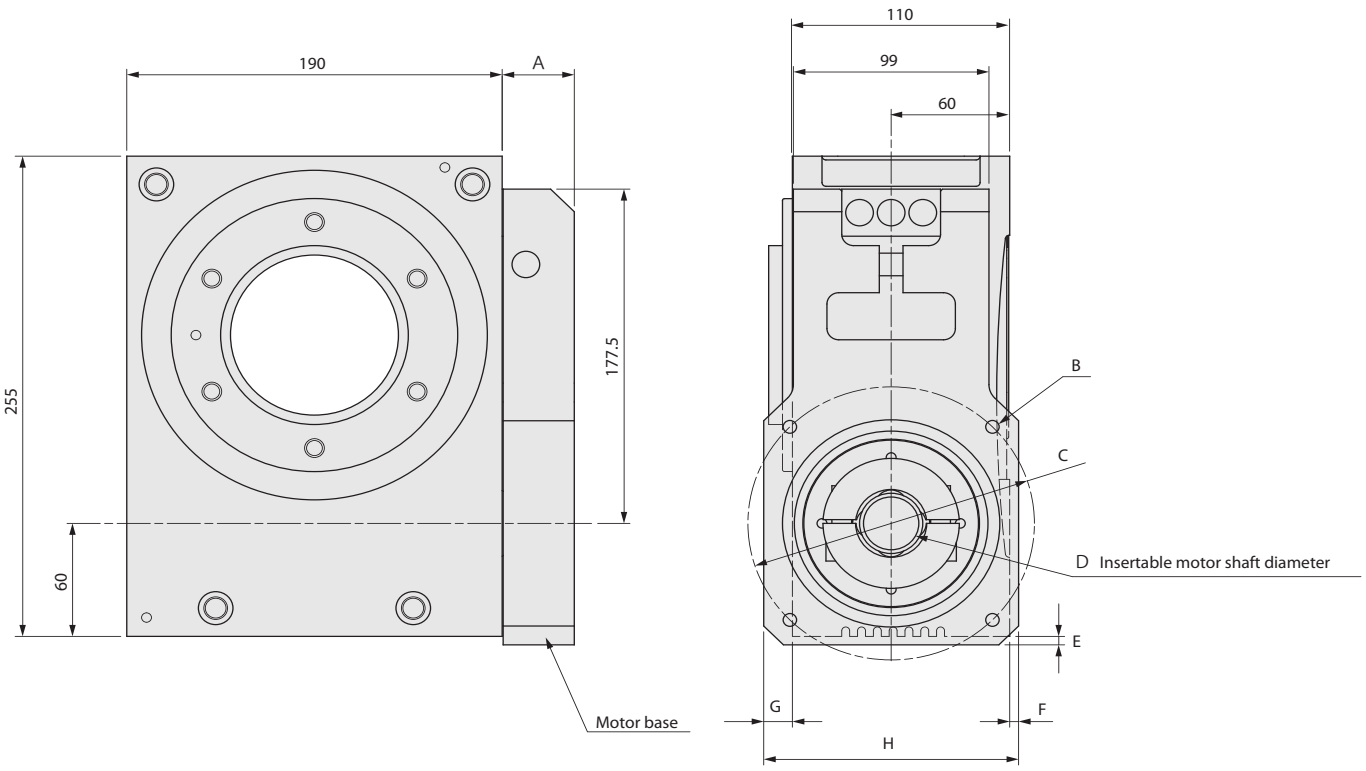
RA80 Moment of inertia (Input conversion) : 3.066 x 10^{-4} [kg•m^2] (Gear ratio : 20)
RA80 Moment of inertia (Input conversion) : 2.748 x 10^{-4} [kg•m^2] (Gear ratio : 30)

Manufacture	Servo series	Motor	Rated output [kW]	Rated torque [N•m]	Rated rotation speed [rpm]	Motor rotor inertia [x10^{-4}kg•m^2]	Servomotor fastener elements
Yaskawa Electric	Sigma-V	SGMAV-08A	0.75	2.39	3,000	0.769	AB
		SGMAV-10A	1	3.18	3,000	1.2	AB
		SGMSV-15A	1.5	4.90	3,000	2	CN
		SGMSV-20A	2	6.36	3,000	2.47	CN
		SGMSV-25A	2.5	7.96	3,000	3.19	CN
		SGMJV-08A	0.75	2.39	3,000	1.57	AB
		SGMGV-09A	0.85	5.39	1,500	13.9	EB
		SGMGV-13A	1.3	8.34	1,500	19.9	EC
Mitsubishi Electric	J3	HF-KP73	0.75	2.40	3,000	1.43	AB
		HF-MP73	0.75	2.40	3,000	0.6	AB
		HF-SP51	0.5	4.77	1,000	11.9	EN
		HF-SP52	0.5	2.39	2,000	6.1	EN
		HF-SP524	0.5	2.39	2,000	6.1	EN
		HF-SP81	0.85	8.12	1,000	17.8	EN
		HF-SP102	1	4.77	2,000	11.9	EN
		HF-SP1024	1	4.77	2,000	11.9	EN
		HF-SP152	1.5	7.16	2,000	17.8	EN
		HF-SP1524	1.5	7.16	2,000	17.8	EN
	J4	HG-KR73	0.75	2.40	3,000	1.26	AB
		HG-MR73	0.75	2.40	3,000	0.586	AB
		HG-SR51	0.5	4.80	1,000	11.6	EN
		HG-SR52	0.5	2.40	2,000	7.26	EN
		HG-SR81	0.85	8.10	1,000	16	EN
		HG-SR102	1	4.80	2,000	11.6	EN
		HG-SR152	1.5	7.20	2,000	16	EN
Panasonic	MINAS A5	MSMD08	0.75	2.40	3,000	0.87	FB
		MSME08	0.75	2.40	3,000	0.87	FB
		MSME10	1	3.18	3,000	2.03	DB
		MSME15	1.5	4.77	3,000	2.84	DB
		MSME20	2	6.37	3,000	3.68	DB
		MDME10	1	4.77	2,000	4.6	EC
		MDME15	1.5	7.16	2,000	6.7	EC
		MDME20	2	9.55	2,000	8.72	EC
FANUC	α	αiS4/5000	1	4.00	4,000	5.15	BA
		αiS8/4000	2.5	8.00	4,000	11.7	EB
		αiF4/4000	1.4	4.00	4,000	13.5	EB
		αiF8/3000	1.6	8.00	3,000	25.7	EB
	β	βiS4/4000	0.75	3.50	4,000	5.15	BA
		βiS8/3000	1.2	7.00	2,000	11.7	EB
		βiS12/3000	1.8	11.00	2,000	22.8	EN
KEYENCE	SV	SV-M075	0.75	2.39	3,000	1.57	AB
		SV-M100A	0.85	5.39	1,500	13.9	EB
		SV-M150A	1.3	8.34	1,500	19.9	EC
SANYO DENKI	R2	R2AA08075F	0.75	2.39	3,000	1.82	AD
		R2AA10075F	0.75	2.39	3,000	2	DC
		R2AA10100F	1	3.18	3,000	3.5	DC
		R2AA13050H	0.55	2.60	2,000	3.1	EC
		R2AA13050D	0.55	2.60	2,000	3.1	EC
		R2AA13120B	1.2	5.70	2,000	6	EC
		R2AA13120L	1.2	5.70	2,000	6	EC
		R2AA13120D	1.2	5.70	2,000	6	EC
		R2AA13180H	1.8	8.60	2,000	9	EC
		R2AA13180D	1.8	8.60	2,000	9	EC
	Q1	Q1AA10100D	1	3.19	3,000	1.29	DC
		Q1AA10150D	1.5	4.79	3,000	1.61	DC
		Q1AA10200D	2	6.37	3,000	2.15	CD
OMRON	G	R88M-G75030	0.75	2.40	3,000	0.87	FB
		R88M-G1K530T	1.5	4.77	3,000	2.59	DB
		R88M-G2K030T	2	6.36	3,000	3.46	DB
		R88M-G1K020T	1	4.80	2,000	6.17	EC
		R88M-G1K520T	1.5	7.15	2,000	11.2	EC
		R88M-G2K020T	2	9.54	2,000	15.2	EC
	G5	R88M-K75030	0.75	2.40	3,000	0.87	FB
		R88M-K1K030	1	3.18	3,000	2.03	DB
		R88M-K1K530	1.5	4.77	3,000	2.84	DB
		R88M-K2K030	2	6.37	3,000	3.68	DB
		R88M-K1K020	1	4.77	2,000	4.6	EC
		R88M-K1K520	1.5	7.16	2,000	6.7	EC
		R88M-K2K020	2	9.55	2,000	8.72	EC

* Please prepare the servo motor with no keyway.

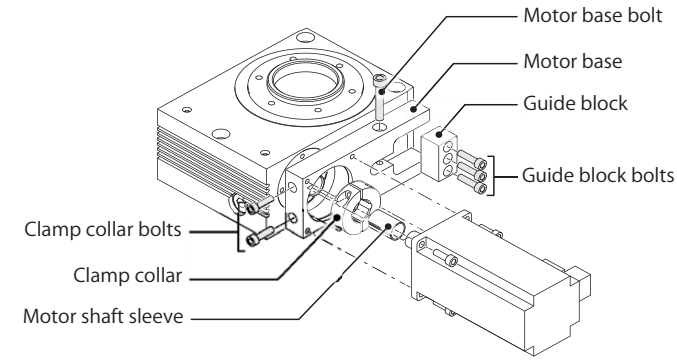
Mounting Dimensions

Unit:mm



Servomotor fastener elements	A	B	C	D	E	F	G	H
BC	24.5	(4)M6, 10DP	φ 115	φ 24				99 sq.
CB		(4)M8, 16DP		φ 22				
DA	37.5		φ 145	φ 19	14.5	4.5	14.5	129 sq.
DB				φ 22				
DC				φ 24				
DN				φ 28				

Servomotor Installation Schematic



Accessories	Servomotor fastener elements	
	DN	Other All
Motor base	O	O
Guide block	O	O
Clamp collar	O	O
Motor shaft sleeve		O
Motor base bolt	M8x60 (1)	
Clamp collar bolts	M10x30 (2)	
Guide block bolts	M8x30 (2)	

Compatible Servomotors

RA100 Moment of inertia (Input conversion) : 8.687 x 10_{-4} [kg • m_2] (Gear ratio : 20)
RA100 Moment of inertia (Input conversion) : 7.598 x 10^{-4} [kg • m^2] (Gear ratio : 30)

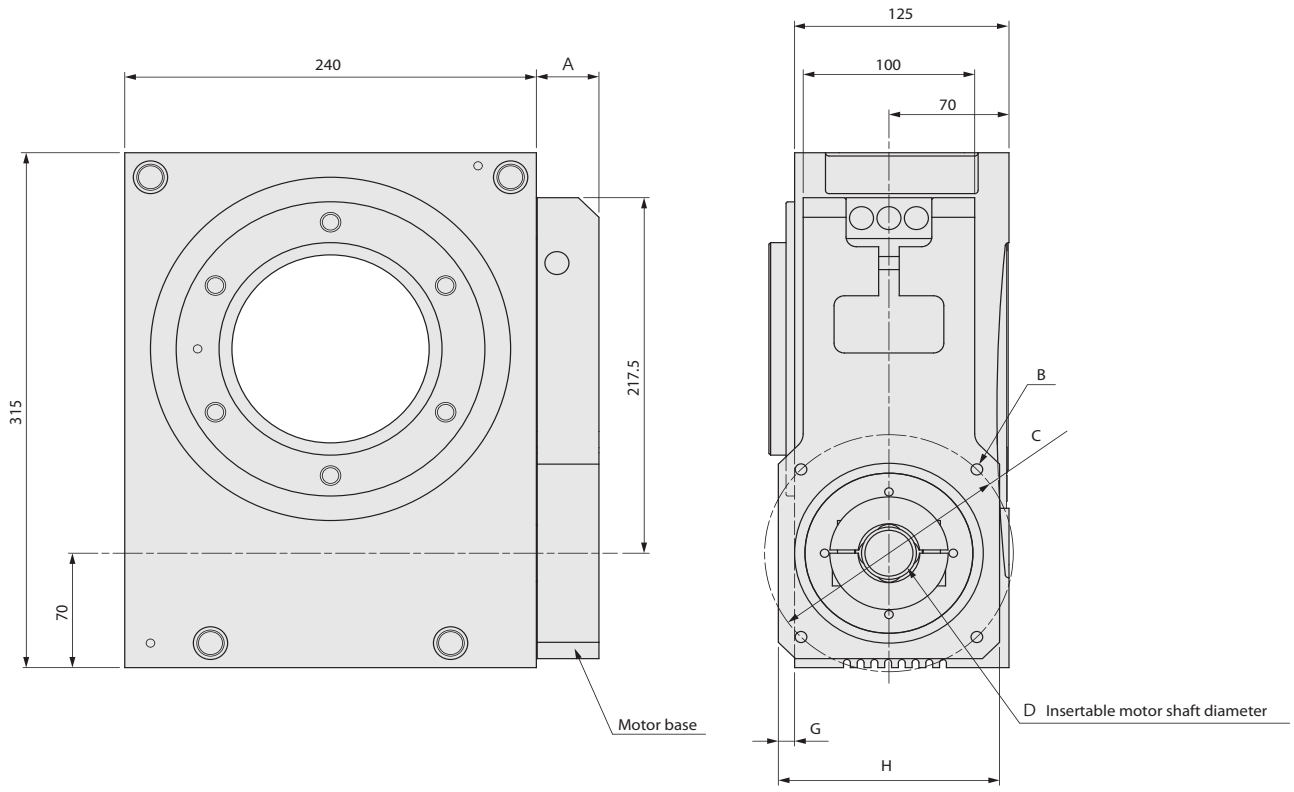
Manufacture	Servo series	Motor	Rated output [kW]	Rated torque [N·m]	Rated rotation speed [rpm]	Motor rotor inertia [$x10^{-4}kg \cdot m^2$]	Servomotor fastener elements
Yaskawa Electric	Sigma-V	SGMSV-15A	1.5	4.90	3,000	2	BC
		SGMSV-20A	2	6.36	3,000	2.47	BC
		SGMSV-25A	2.5	7.96	3,000	3.19	BC
		SGMSV-30A	3	9.80	3,000	7	DN
		SGMSV-40A	4	12.60	3,000	9.6	DN
		SGMGV-09A	0.85	5.39	1,500	13.9	DA
		SGMGV-13A	1.3	8.34	1,500	19.9	DB
		SGMGV-20A	1.8	11.50	1,500	26	DC
Mitsubishi Electric	J3	HF-SP51	0.5	4.77	1,000	11.9	DC
		HF-SP81	0.85	8.12	1,000	17.8	DC
		HF-SP102	1	4.77	2,000	11.9	DC
		HF-SP1024	1	4.77	2,000	11.9	DC
		HF-SP152	1.5	7.16	2,000	17.8	DC
		HF-SP1524	1.5	7.16	2,000	17.8	DC
	J4	HG-SR51	0.5	4.80	1,000	11.6	DC
		HG-SR81	0.85	8.10	1,000	16	DC
		HG-SR102	1	4.80	2,000	11.6	DC
		HG-SR152	1.5	7.20	2,000	16	DC
FANUC	α	αiS8/4000	2.5	8.00	4,000	11.7	DA
		αiS12/4000	2.7	12.00	3,000	22.8	DC
		αiF4/4000	1.4	4.00	4,000	13.5	DA
		αiF8/3000	1.6	8.00	3,000	25.7	DA
	β	βiS8/3000	1.2	7.00	2,000	11.7	DA
		βiS12/3000	1.8	11.00	2,000	22.8	DC
KEYENCE	SV	SV-M100A	0.85	5.39	1,500	13.9	DA
		SV-M150A	1.3	8.34	1,500	19.9	DB
		SV-M200A	1.8	11.50	1,500	26	DC
SANYO DENKI	R2	R2AA13120B	1.2	5.70	2,000	6	DB
		R2AA13120L	1.2	5.70	2,000	6	DB
		R2AA13120D	1.2	5.70	2,000	6	DB
		R2AA13180H	1.8	8.60	2,000	9	DB
		R2AA13180D	1.8	8.60	2,000	9	DB
	Q1	Q1AA10150D	1.5	4.79	3,000	1.61	CB
		Q1AA10200D	2	6.37	3,000	2.15	CB
		Q1AA10250D	2.5	7.97	3,000	2.65	CB
		Q1AA13300D	3	9.50	3,000	4.92	DN
		Q1AA13400D	4	12.70	3,000	6.43	DN
		Q1AA13500D	5	15.70	3,000	8.47	DN

* Please prepare the servo motor with no keyway.

RA125 List of Mountable Servomotors

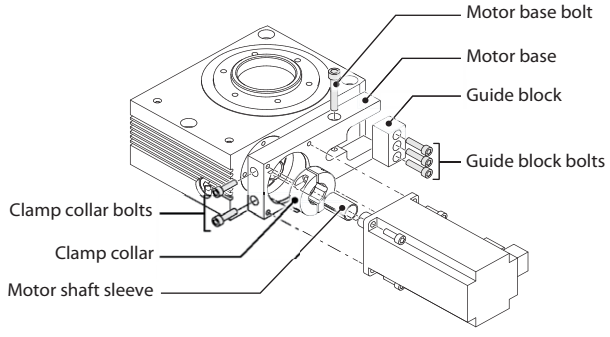
Mounting Dimensions

Unit：mm



Servomotor fastener elements	A	B	C	D	G	H
AC	24.5	(4)M6, 12DP	ϕ115	ϕ24		100 sq.
BB		(4)M8, 16DP		ϕ22		
BN				ϕ28		
CA	37.5		ϕ145	ϕ19	9.5	129 sq.
CB				ϕ22		
CC				ϕ24		
CN				ϕ28		

Servomotor Installation Schematic



Accessories	Servomotor fastener elements	
	BN, CN	Other All
Motor base	O	O
Guide block	O	O
Clamp collar	O	O
Motor shaft sleeve		O
Motor base bolt	M8x60 (1)	
Clamp collar bolts	M10x30 (2)	
Guide block bolts	M8x30 (3)	

Compatible Servomotors

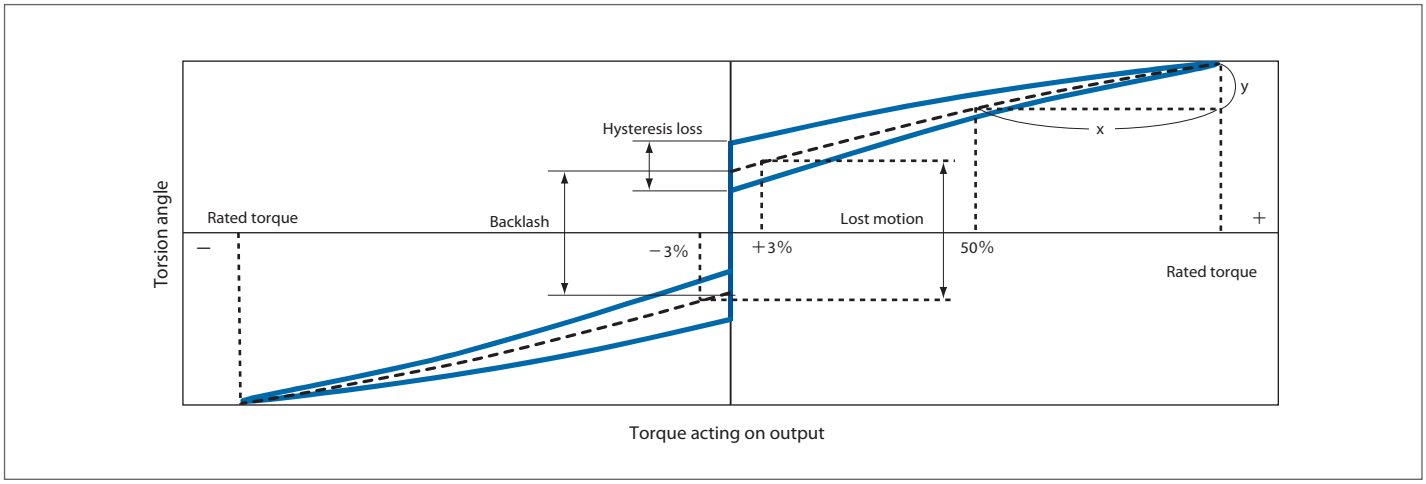
RA125 Moment of inertia (Input conversion) : 14.853 x 10^{-4} [kg•m^2] (Gear ratio: 20)
RA125 Moment of inertia (Input conversion) : 11.539 x 10^{-4} [kg•m^2] (Gear ratio: 30)

Manufacture	Servo series	Motor	Rated output [kW]	Rated torque [N·m]	Rated rotation speed [rpm]	Motor rotor inertia [x10^{-4}kg·m^2]	Servomotor fastener elements
Yaskawa Electric	Sigma-V	SGMSV-25A	2.5	7.96	3,000	3.19	AC
		SGMSV-30A	3	9.80	3,000	7	CN
		SGMSV-40A	4	12.60	3,000	9.6	CN
		SGMGV-09A	0.85	5.39	1,500	13.9	CA
		SGMGV-13A	1.3	8.34	1,500	19.9	CB
		SGMGV-20A	1.8	11.50	1,500	26	CC
Mitsubishi Electric	J3	HF-SP81	0.85	8.12	1,000	17.8	CC
		HF-SP102	1	4.77	2,000	11.9	CC
		HF-SP1024	1	4.77	2,000	11.9	CC
		HF-SP152	1.5	7.16	2,000	17.8	CC
		HF-SP1524	1.5	7.16	2,000	17.8	CC
	J4	HG-SR81	1.5	8.10	1,000	16	CC
		HG-SR102	1	4.80	2,000	11.6	CC
		HG-SR152	1.5	7.20	2,000	16	CC
FANUC	α	αiS8/4000	2.5	8.00	4,000	11.7	CA
		αiS12/4000	2.7	12.00	3,000	22.8	CC
		αiF4/4000	1.4	4.00	4,000	13.5	CA
		αiF8/3000	1.6	8.00	3,000	25.7	CA
	β	βiS8/3000	1.2	7.00	2,000	11.7	CA
		βiS12/3000	1.8	11.00	2,000	22.8	CC
KEYENCE	SV	SV-M100A	0.85	5.39	1,500	13.9	CA
		SV-M150A	1.3	8.34	1,500	19.9	CB
		SV-M200A	1.8	11.50	1,500	26	CC
SANYO DENKI	R2	R2AA13120B	1.2	5.70	2,000	6	CB
		R2AA13120L	1.2	5.70	2,000	6	CB
		R2AA13120D	1.2	5.70	2,000	6	CB
		R2AA13180H	1.8	8.60	2,000	9	CB
		R2AA13180D	1.8	8.60	2,000	9	CB
	Q1	Q1AA10150D	1.5	4.79	3,000	1.61	BB
		Q1AA10200D	2	6.37	3,000	2.15	BB
		Q1AA10250D	2.5	7.97	3,000	2.65	BB
		Q1AA13300D	3	9.50	3,000	4.92	CN
		Q1AA13400D	4	12.70	3,000	6.43	CN
		Q1AA13500D	5	15.70	3,000	8.47	CN

* Please prepare the servo motor with no keyway.

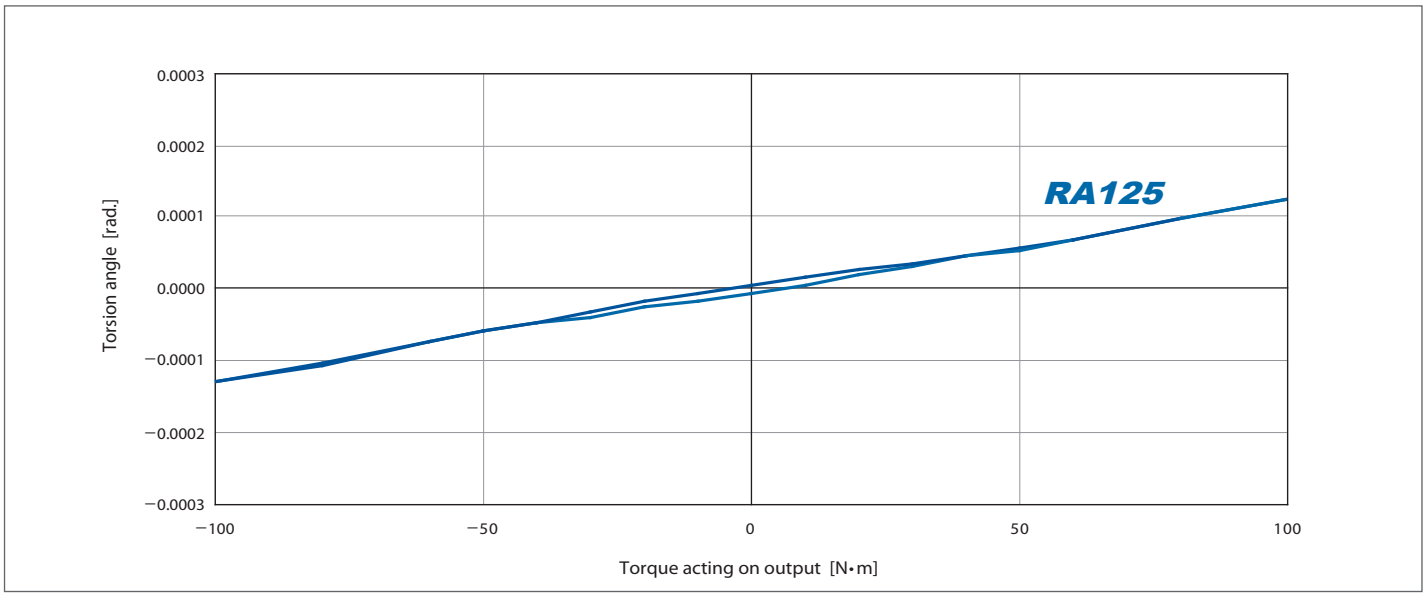
Backlash, Lost Motion & Hysteresis Loss

General Hysteresis Graph



* **Backlash:** Rotation angle which can arise even with zero torque (looseness).
  Lost motion: Torsion angle of the midpoint of the hysteresis curve width which arises when applying ±3% rated torque.
  Hysteresis loss: Torsion angle where there is no complete return, when torque is applied in both forward and reverse directions.

RollerDrive® Hysteresis Graph



For a general reducer, the hysteresis graph can be obtained by applying torque to the output shaft, and plotting the generated torsion angle.

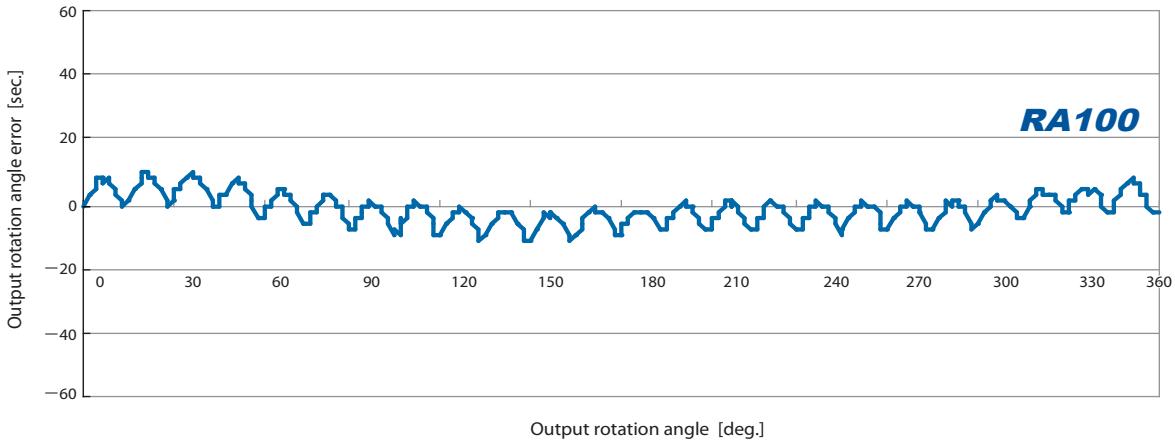
Backlash, lost motion and hysteresis loss can each be defined from the hysteresis graph, as indicated above.

Lost motion and hysteresis loss depend on the material characteristics, and occur in all types of structures. Backlash, on the other hand, occurs only when there are gaps or looseness in the structure. Backlash has a major effect on accuracy, servo gain and similar factors, and must be minimized.

With ***RollerDrive***®, backlash is completely eliminated using our unique preload structure, and lost motion and hysteresis loss are controlled to extremely small values due to the results of research on optimizing materials and structures.

Angular Transmission Accuracy

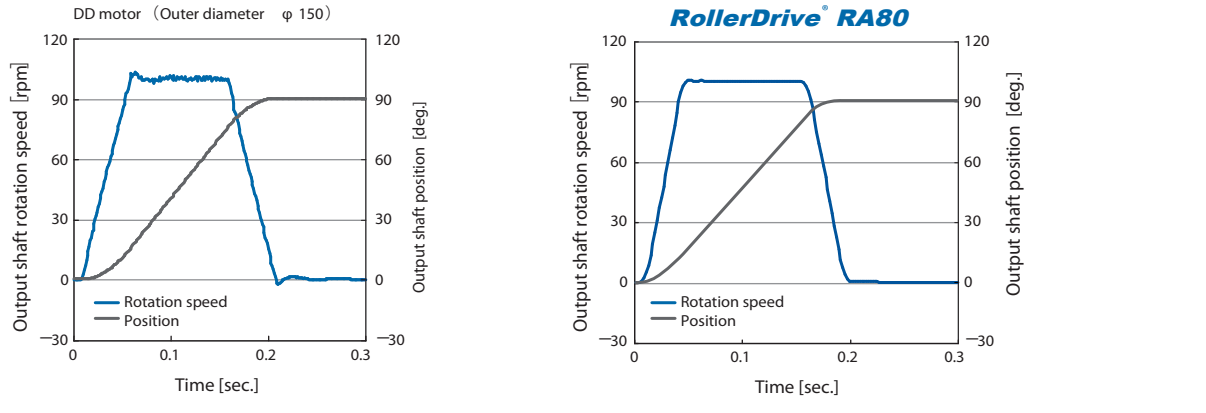
RollerDrive® Angular Transmission Accuracy



Angular transmission accuracy is the difference between the oretical output angle and actual output angle-in response to an input rotation angle-and is primarily determined by the machining precision of the input/output shafts. Angular transmission accuracy with RA Series standard specifications is 40~90 [arc.sec.] or less.

Dynamic Characteristics

Comparison of Output Motion Characteristics During a 90° Rotation



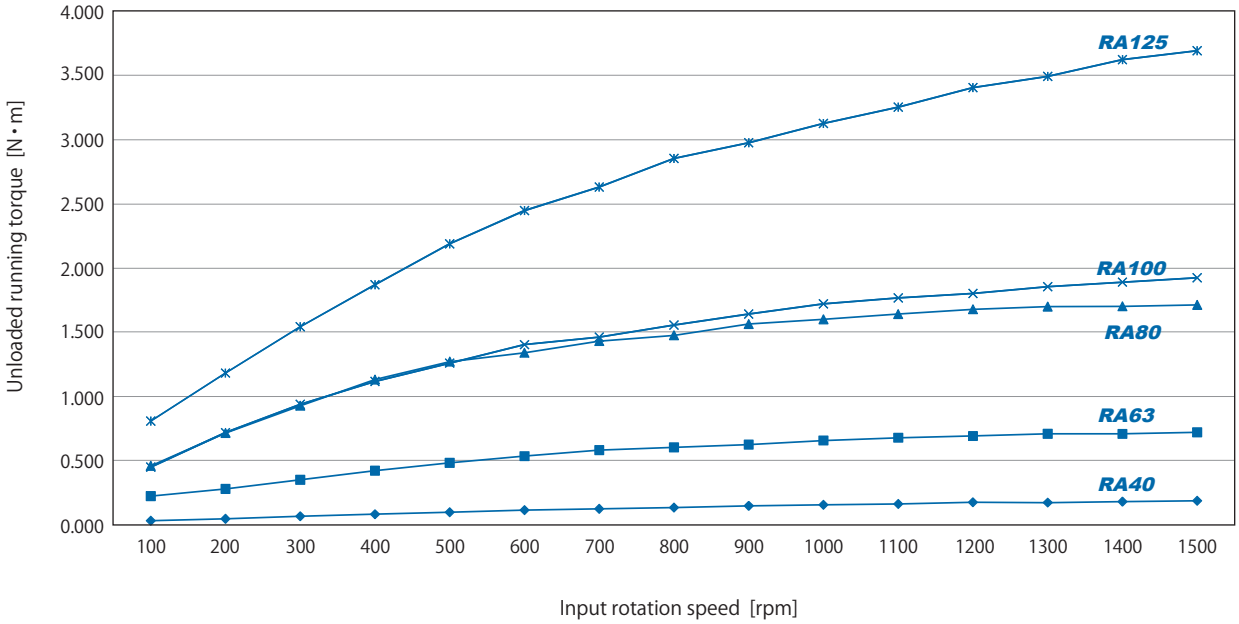
When evaluating the performance of conventional motion equipment, the focus has been accuracy and rigidity in the stationary state, but the ***RollerDrive***®, zero-backlash technology provides superior static and dynamic characteristics.

For example, in a comparison between a direct motor and ***RollerDrive***® under the same load and operation conditions, stop accuracy at the final position takes almost the same value. But looking at rotation speed during operation, the direct drive exhibits disturbance and irregularity due to control delay, but the ***RollerDrive***® there is almost no irregularity, and the output motion is faithful to the input control signal.

This is the reason why ***RollerDrive***® can provide high quality and accuracy in dynamic applications such as transferring (liquid crystal etc.), continuous measurement and continuous processing.

Unloaded Running Torque

RollerDrive® Unloaded Running Torque



This is the drive torque necessary at the input shaft, in the state where no load torque is applied to the output shaft. It increases in proportion with speed, depending on the viscous resistance of lubricating oil.

Protective Structure, Compatibility with Clean Rooms etc.

The protective structure codes for dust and water are as indicated in the following table below.

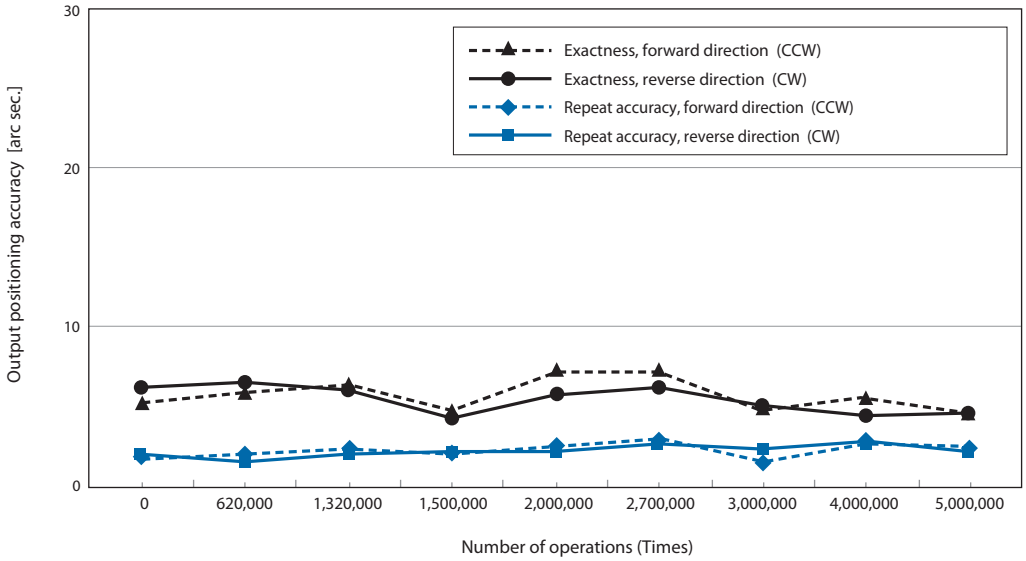
The indicated codes are guidelines to the grade of protection against infiltration of dust and water, and are not a guarantee of protective performance against dust, water or corrosion.

When using this equipment in an environment where it may be exposed to water, covering or anti-corrosion treatment may be needed to suit the situation.

RA Series main unit protection code	IP54 equivalent

Durability

RollerDrive® Test of Changes in RollerDrive Positioning Accuracy Over Time



Test Conditions	
RollerDrive size	RA125 class test machine
Output load weight	152 kg (φ500mm)
Output load moment of inertia	4.69 kg•m ^{2}
Output rotation angle	0-345 degree (Reciprocating)
Output maximum rotation speed	100 rpm
Acceleration time	0.100 sec
Uniform speed time	0.475 sec.
Deceleration time	0.100 sec.

In the ***RollerDrive***®, all rotating elements operate in a state of rolling contact, and thus there is almost no wear, or degradation in accuracy over time.

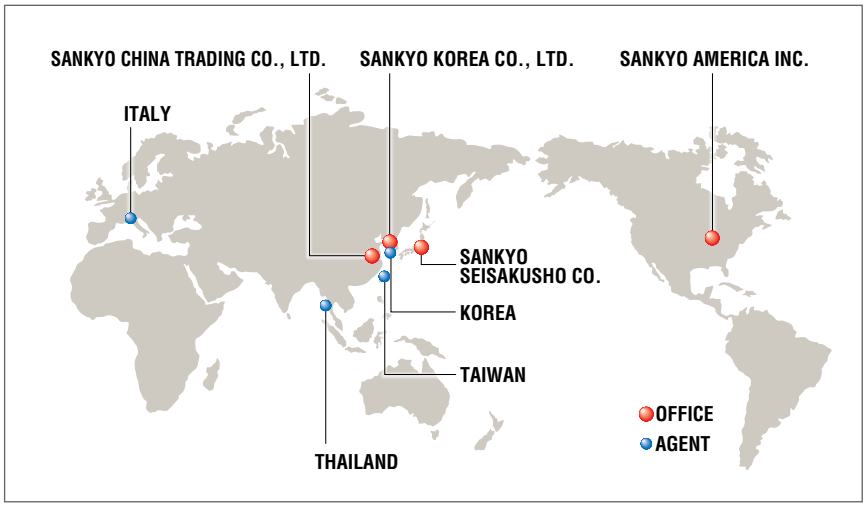
There is almost no change in positioning accuracy after testing operation 5 million times, and this shows that the outstanding accuracy of the ***RollerDrive***® can be maintained over the long term.

Rated Service Life

The rated service life of the ***RollerDrive***® RA Series is determined by the rolling life of the roller followers. "Rolling life" refers to the time until a fatigue breakdown phenomenon called "flaking" occurs due to repetitive operation, and is a concept which is also used for calculating service life of roller bearings.

Rated torque of the ***RollerDrive***® RA Series is based on a rated service life of 12,000 hours and a reliability of 95%, and the actual service life time is found by multiplying the reference time of 12,000 hours by the ratio of load torque to rated torque raised to the power of 3.33. Roller followers affecting service life are made by Sankyo, have a unique high-rigidity structure, and use only steel which clears stringent quality standards, so they can be used anxiety-free over the long term.

Service Network



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⚠ Limitations on the Use of This Product

* This product cannot be used in applications where operation of the product has a direct impact in human life, or can cause bodily harm to people. The scope of these use limitations includes the following applications:
  1. Medical equipment
  2. Nuclear power related equipment
  3. Aerospace equipment
  4. Equipment for handling explosive, corrosive or toxic substances etc.
* Please consult with our company if you are considering use in one of the above applications.
* If there is a possibility that this product will be used in a final use location outside Japan, in weapons or equipment for weapon manufacture, then it may be subject to regulation due to the Foreign Exchange and Foreign Trade Control Law. Please take extra care with regard to the application and region of use, and properly submit applications and follow procedures if necessary.

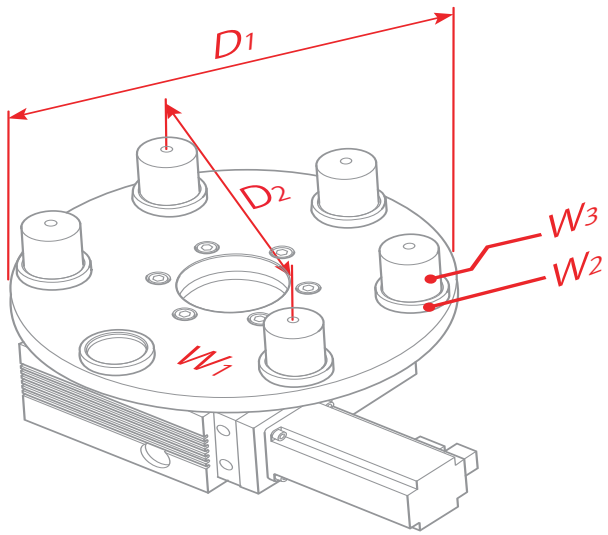
  The permissible range of working ambient temperature for the RA Series is 5 to 40 degrees C (41 to 104 degrees F).
* The information in this catalog is current as of August 2013.

RollerDrive® RA Series Programmable Motion Indexer

COMPANY	TEL
ADDRESS	FAX
CITY STATE ZIP CODE	CONTACT NAME

A) LONGEST OUTPUT MOTION IN DEGREES & INCLUDE DESIRED TIME TO COMPLETE THIS MOTION

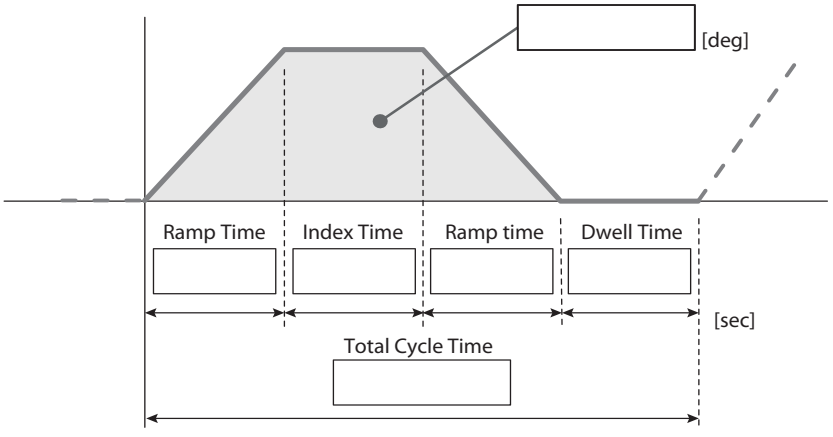
B) INDEXING DIAL PLATE LOADING WITH STATION WEIGHTS & QUANTITY



DIAL PLATE DIAMETER: D_1 [mm]	
DIAL PLATE WEIGHT: W_1 [kg]	
STATION DIAMETER: D_2 [mm]	
STATION FIXTURE WEIGHT: W_2 [kg]	
STATION PART WEIGHT: W_3 [kg]	

Axial Load or Additional Forces from the Process [N]	Bending Moment from Unbalanced Loading [N·m]	

C) MOTION



D) OPTIONS

* Dowel Pin Holes: Housing _____ Output Flange _____

* Required Accuracy: Arc Seconds _____ Distance@Radius _____

E) MOTOR INFORMATION

MOTOR SHAFT DIAMETER

_____

OUTPUT SHAFT LENGTH

_____

MOTOR POWER

_____ [kW]

F) MOTOR MOUNTING ORIENTATION

INDEXER SIDE - T _____

INDEXER SIDE - U _____

(model code drawings for details)

G) MOTOR MOUNTING CODE
(SEE MOTOR MOUNTING CODES)

_____

RA-2013

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