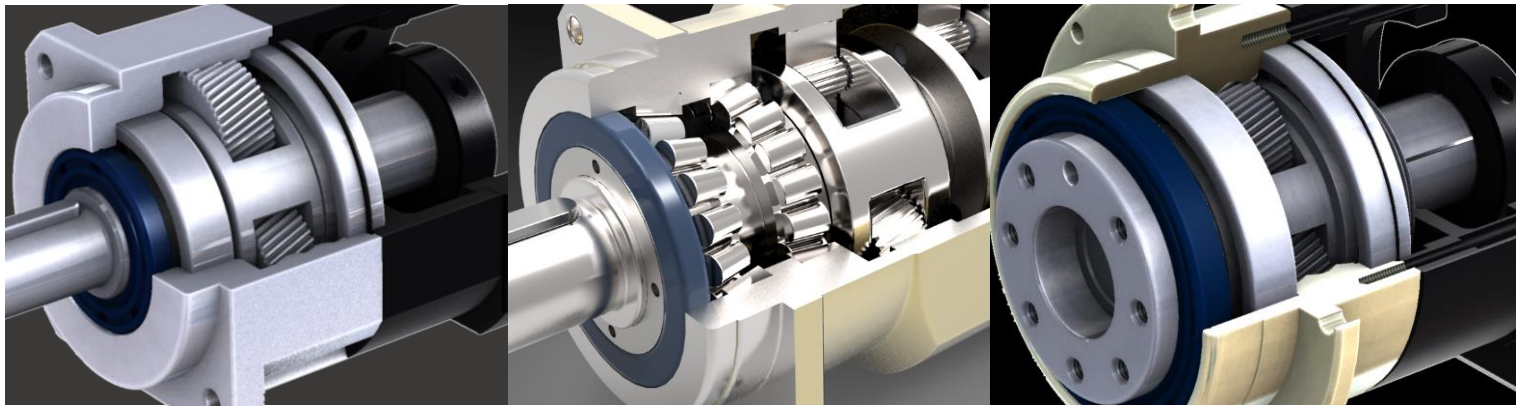


LDS
LEADERDRIVES

**PRECISION SERVO GEAR REDUCER
HIGH REPEATABILITY ACCURACY | IP65**



INLINE PRECISION SERVOBOX SERIES

FOR SERVO MOTOR RATING 50W TO 30KW

BENEFITS OF USING PRECISION SERVOBOX

- Enhances output torque level to achieve optimal performance.
- Energy-saving when smaller servo motor capacity is applied.
- Increases level of inertia output (reduces inertia mismatch).
- Absorbs higher radial or axial forces of the application.
- Achieves more stable operation at low-speed setting.

LDS SERVOBOX FEATURES

- Compatible with major servo motor makers globally : Mitsubishi, Nidec, Omron, OrientalMotor, Panasonic, Yaskawa, Allen Bradley, Beckhoff, B&R, Festo, Kuka, Siemens Simotics.
- Offer direct replacement for servobox : Apex Dynamics, Nidec Shimpo, Neugart, Wittenstein, ATG and ABB.
- Precision servobox design : Backlash : $1 \leq 12$ arcmin.
- Gear reduction ratio from 1/1 to 1/1000.
- Rated output torque up to 8790Nm.
- High repeatability accuracy.
- IP65 enclosure protection.
- Maintenance-free design.



DB | CSB Series
Helical Planetary Gear ServoBox



SE Series
Helical Planetary Gear ServoBox (Foot Mount)



LM ROBONIC Series
Compact Zero Backlash Strain Wave Gear ServoBox



LM CYKO DRIVE Series
Cyclo Gear ServoBox (High Shock-Load Capacity)



SD | CSD Series
Rotary Flange Helical Planetary Gear ServoBox



PE Series
Ultra Compact Helical Planetary Gear ServoBox



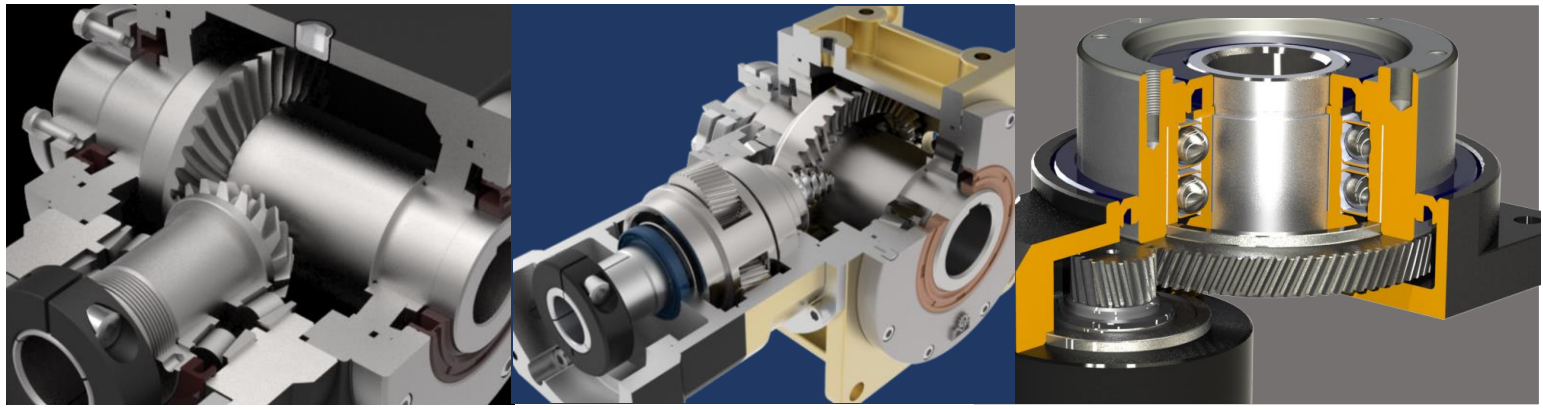
SN Series
Helical Planetary Gear ServoBox



FA Series
Helical Planetary Gear ServoBox

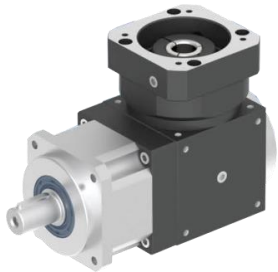


SF Series
High Radial & Axial Force ServoBox



RIGHT ANGLE PRECISION SERVOBOX SERIES

FOR SERVO MOTOR RATING 50W TO 30KW



PBT | CSBT Series
Helical Planetary and
Spiral Gear ServoBox



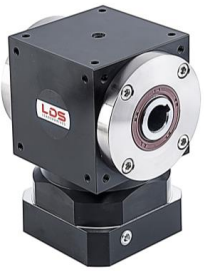
DBL | CSBL Series
Helical Planetary Gear
ServoBox



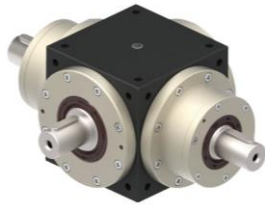
HY Series
Hypoid Gear ServoBox
(Alloy Steel Housing)



HY-DP Series
Hypoid Gear ServoBox
(for ball screw operation)



ST | CST Series
Spiral Bevel Gear ServoBox
(Hollow or Solid Output Shaft)



ST-YV Series
Spiral Bevel Gear ServoBox
with Multiple Axis



FT Series
Ultra Compact Spiral Bevel
Gear ServoBox



SDH Series
Rotary Output Flange
Helical Hypoid ServoBox



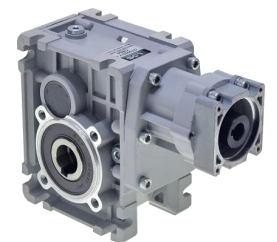
GT Series
Hollow Rotary Actuator
(Hollow Table) ServoBox



HK Series
Hollow Rotary Flange
(Hollow Table) ServoBox



DMRS-CM Series*
Worm Gearbox
(Non-Precision)



OTS-CM Series*
Helical Hypoid Gearbox
(Non-Precision)

No.	Content	Page No.
1	Index Page	4
2	ServoBox Glossary of Terms / Permissible Radial Load	5
3	ServoBox Mounting Instruction	6
4	DB and DB-A Series Inline Planetary Gear ServoBox	7
5	DB and DB-A Series Inline Planetary Gear ServoBox – Dimension	9
6	PBT Series Right Angle Planetary and Bevel Gear ServoBox	12
7	PBT Series Right Angle Planetary and Bevel Gear ServoBox – Dimension	13
8	DBL and DBL-A Series Right Angle Planetary Gear ServoBox	16
9	DBL and DBL-A Series Right Angle Planetary Gear ServoBox – Dimension	18
10	FE Series Inline Planetary Gear ServoBox	22
11	FE Series Inline Planetary Gear ServoBox – Dimension	23
12	PE Series Ultra Compact Inline Planetary Gear ServoBox	26
13	PE Series Ultra Compact Inline Planetary Gear ServoBox – Dimension	27
14	SF and SF-A Series Inline Planetary Gear ServoBox	28
15	SF and SF-A Series Inline Planetary Gear ServoBox – Dimension	30
16	ST Series Spiral Bevel Gear ServoBox (Right-angle / Multiple-Axis)	32
17	ST Series Spiral Bevel Gear ServoBox (Right-angle / Multiple-Axis) – Dimension	36
18	FT Series Ultra Compact Spiral Bevel Gear ServoBox (Right-angle)	40
19	FT Series Ultra Compact Spiral Bevel Gear ServoBox (Right-angle) – Dimension	41
20	HY Series Hypoid Gear ServoBox (Right-angle / Multiple-Axis)	43
21	HY Series Hypoid Gear ServoBox (Right-angle / Multiple-Axis) – Dimension	45
22	SD Series Inline Rotary Flange Planetary ServoBox	49
23	SD Series Inline Rotary Flange Planetary ServoBox – Dimension	50
24	SDH Series Right Angle Hollow Rotary Flange ServoBox (Hollow Rotary Table)	53
25	GT Series Hollow Rotary Actuator ServoBox (Hollow Rotary Table)	54
26	GT Series Hollow Rotary Actuator ServoBox (Hollow Rotary Table) – Dimension	55
27	WE Series Worm Gear ServoBox	60
28	WE Series Worm Gear ServoBox - Dimension	62
29	DMRS-CM Non-Precision Worm Gear Reducer (Servo Motor Compatible)	64
30	OTS-CM Non-Precision Helical Hypoid Gear Reducer (Servo Motor Compatible)	65
31	OTS-CM Non-Precision Helical Hypoid Gear Reducer – Dimension	66



ABOUT

SERVOBOX

GLOSSARY OF TERMS PERMISSIBLE RADIAL LOAD



Repetitive Positioning Accuracy [arcsec]

This is a value indicating the degree of error that generates when positioning is performed repeatedly to the same position in the same direction.

Runout of Output Table Surface [mm]

This is the max. value of runout of the installation surface of the output table when the output table is rotated under no load.

Runout of Output Table Inner / Outer Diameter [mm]

This is the max. value of runout of the inner diameter or outer diameter of the table when the output table is rotated under no load.

Speed (n) [rpm]

Two speeds are of relevance when selecting a gearbox: the maximum speed and the nominal speed at the input. The maximum permissible speed $n1B$ must not be exceeded because it serves as the basis at cyclic operation. The nominal speed $n1N$ must not be exceeded at continuous operation. The housing temperature limits the nominal speed, which must not exceed $90^{\circ}C$. The nominal input speed specified in the catalogue applies to an ambient temperature of $25^{\circ}C$.

Stage (1Stage / 2Stage / 3Stage)

The sun gear and planetary gear forms an independent speed reduction gear system. If there is only one gear system in the gear reducer, it is defined as one stage transmission. In order to achieve higher speed reduction ratio, multiple stages transmission is required. LDS's standard gear reducers are classified into one stage and two-stage transmission. Speed reduction ratio range is from 3 to 100. The modular construction combined with multiple stages transmission allows speed reduction ratio 100~100,000 and over.

Torsional Backlash (β) [arcmin]

Torsional backlash β is the maximum angle of torsion of the output shaft in relation to the input. Torsional backlash is measured with the input shaft locked. The output is then loaded with a defined test torque (2% rated output torque) in order to overcome the internal gearhead friction. The main factor affecting torsional backlash is the face clearance between the gear teeth.

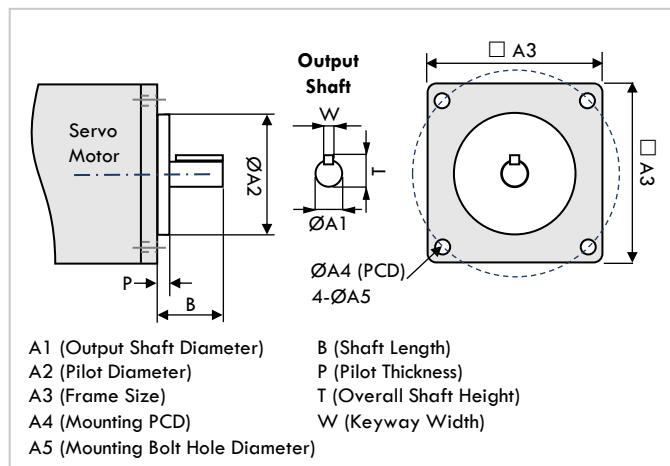
Torsional rigidity ($Ct21$) [Nm/Arcmin]

Torsional rigidity is defined as the quotient of applied torque and generated torsion angle. It consequently shows the torque required to turn the output shaft by one angular minute. The torsional rigidity can be determined from the hysteresis curve. Only the area between 50% and 100% of T2B is considered because this area of the curve profile can be considered linear.

Transmission efficiency η [%]

Efficiency (η) is the ratio of output power to input power. Power lost through friction reduces efficiency to less than 1 or 100%.

* SERVO MOTOR DIMENSION TO ATTACH TO SERVOBOX



PERMISSIBLE RADIAL LOADS ON OUTPUT SHAFT OF THE SERVOBOX

The gearbox will bear radial force while its output shaft connected with transmission machinery, such as chain wheel. The OHL formula of radial force is as below:

$$\text{Over Hung Load} = (T \times s \times f \times p) / R$$

T: Torque of transmission machinery

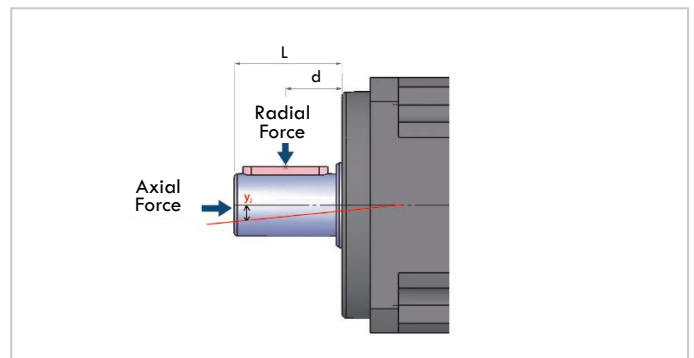
s: Service factor

f: Driven coefficient

p: Position Position less than d, $p=1$

Position larger than d, $p=1.5$

R: Radius of pulley or chain wheel



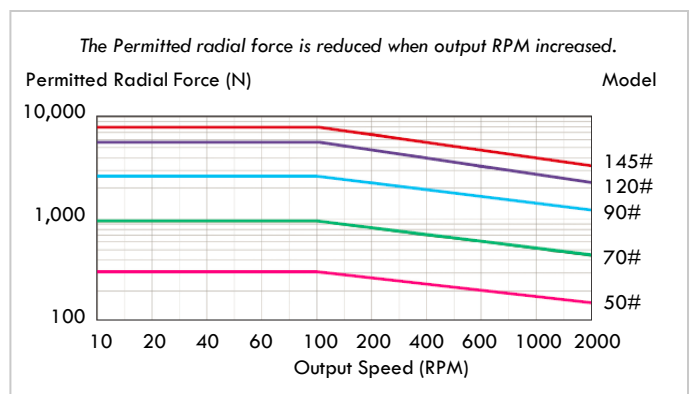
SERVICE FACTOR (sf)

Type of Load	Service factor			
	Operation Hour/Day			
Uniform	0.5Hr	2Hr	8~10Hr	10~24Hr
Medium shock	0.80	0.90	1.00	1.25
Heavy shock	0.90	1.00	1.25	1.50
	1.00	1.25	1.50	1.75

DRIVEN COEFFICIENT (f)

Driving Mode	Driven Coefficient (f)
Chain pulley	1.00
Gear	1.25
V-belt	1.50
Flat belt	2.50

FB Permitted Radial Force On Center Position of Shaft [N] FB

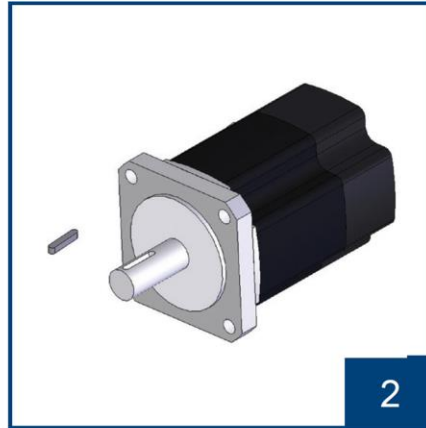


PRECISION SERVOBOX MOUNTING INSTRUCTION



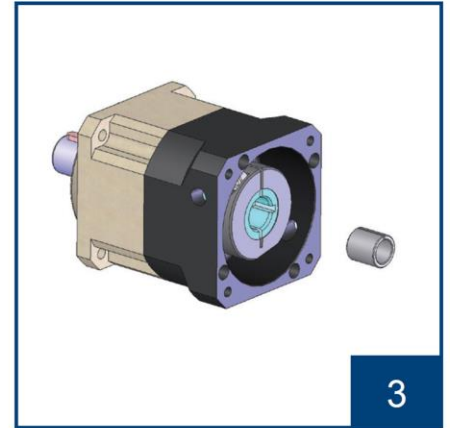
1

核對馬達型號與減速機規格是否正確。
並將配合面擦拭乾淨。
Confirm the motor, and gearbox size.
Clean up the mounting surface.



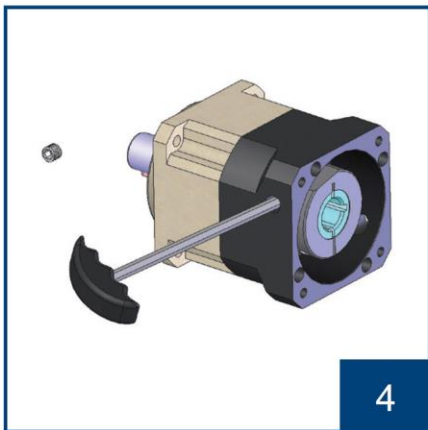
2

如馬達軸徑在 $\varphi 35$ 以下，請將馬達軸上的鍵拿掉。
Remove the motor key if the diameter of motor shaft is under $\varphi 35$.



3

檢查馬達出力軸尺寸，如需軸套，請先裝進入力孔內。
Check motor shaft size and insert bushing into input bore if necessary.



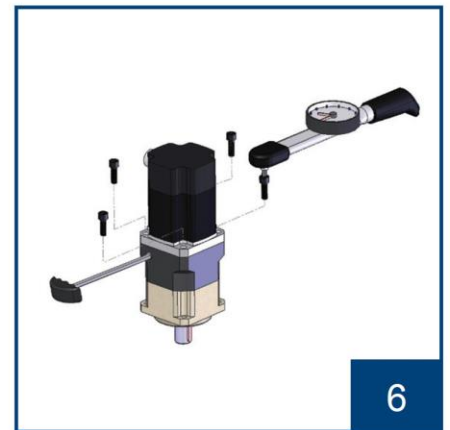
4

取出塞頭，使用六角板手將迫緊環螺絲鬆開。並將螺絲對準孔位。
Remove the plug on the adapter plate.
Rotate the set collar till the bolt is line up.



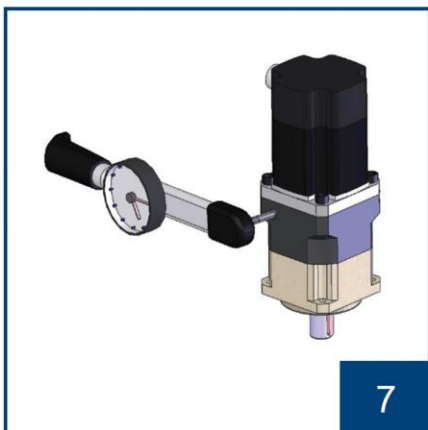
5

將馬達垂直裝入減速機。
Put the motor into the gearbox vertically.



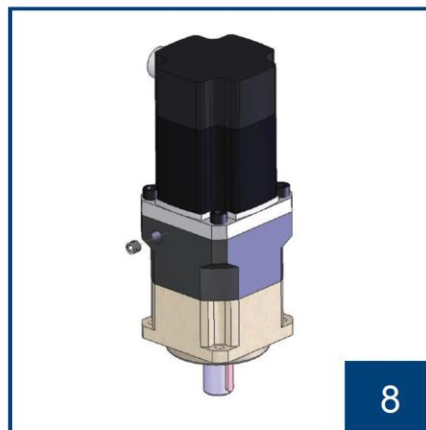
6

依序使用扭力板手鎖上外六角螺絲。
Tighten the mounting bolt in 1~4 order with torque wrench.



7

使用扭力板手將迫緊環螺絲鎖緊。
Tighten the set collar bolt with torque wrench.



8

裝回塞頭。
Tighten back the screw plug.

1. 務必先鎖緊馬達，才能鎖緊馬達軸心迫緊環。
To be sure to tighten motor first and then to tighten the set collar on motor shaft.
2. 請依步驟順序組裝，尤其步驟 6、7 不可顛倒。
Please assembly in order according to above steps, especially for step 6 and step 7.



PLANETARY SERVOBOX

DB SERIES UNIVERSAL DESIGN HIGH PRECISION



High Precision Planetary ServoBox in compact design and universal housing with precision bearings and planetary gearing provides high torque density while offering high positioning performance.

- DB Series 1-Stage Planetary ServoBox in Gear Reduction Ratio 1/3 to 1/10
- DB-A Series 2-Stage Planetary ServoBox in Gear Reduction Ratio 1/15 to 1/100
- DB Series 3-Stage Planetary ServoBox in Gear Reduction Ratio 1/125 to 1/1000

GENERAL SPECIFICATIONS	Unit	Ratio	Model : DB & DB-A Series								
			#44	#62	#90	#120	#142	#180	#220	#270	#330
Frame Size	MM	3~10	44x44	62x62	90x90	120x120	142x142	180x180	220x220	270x270	330x330
Mounting PCD	MM	3~10	∅50	∅70	∅100	∅130	∅165	∅215	∅250	∅300	∅380
Output Shaft Diameter	MM	3~10	∅13	∅16	∅22	∅32	∅40	∅55	∅75	∅85	∅100
Output Shaft Length	MM	3~10	20	28	36	50	74	82	104	130	140
Rated Output Torque Capacity (1-Stage ServoBox)		Nm	Ratio 3	19	59	165	335	625	1,206	2,030	4,770
	Ratio 4		16	51	146	300	555	1,069	1,804	4,730	8,730
	Ratio 5		16	48	160	333	618	1,189	2,010	4,680	8,660
	Ratio 6		15	45	151	311	583	1,118	1,911	--	--
	Ratio 7		15	45	149	309	573	1,108	1,870	4,570	8,520
	Ratio 8		14	43	143	298	553	1,070	1,824	--	--
	Ratio 9		13	44	145	278	516	993	1,694	--	--
	Ratio 10		14	43	141	294	549	1,059	1,779	4,420	8,310
Rated Output Torque Capacity (2-Stage ServoBox)	Nm	Ratio 15	19	59	165	335	625	1,206	2,030	4,770	8,790
		Ratio 20	16	51	146	300	555	1,069	1,804	4,730	8,730
		Ratio 25	16	48	160	333	618	1,189	2,010	4,680	8,660
		Ratio 30	15	45	151	311	583	1,118	1,911	4,620	8,610
		Ratio 35	15	45	149	309	573	1,108	1,870	4,570	8,520
		Ratio 40	14	43	143	298	553	1,070	1,824	4,520	8,440
		Ratio 50	16	48	160	333	618	1,189	2,010	4,680	8,660
		Ratio 60	15	45	151	311	583	1,118	1,911	--	--
		Ratio 70	15	45	149	309	573	1,108	1,870	4,570	8,520
		Ratio 80	14	43	143	298	553	1,070	1,824	--	--
Ratio 90	13	44	145	278	516	993	1,694	--	--		
Ratio 100	14	43	141	294	549	1,059	1,779	4,420	8,310		
Max. Acceleration Torque	Nm	3~100	1.8 Times of Rated Output Torque								
Max. Output Torque Emergency Stop Torque	Nm	3~100	3 Times of Rated Output Torque								
Rated Input Speed	RPM	3~100	3,000	3,000	3,000	3,000	3,000	3,000	2,000	2,000	2,000
Maximum Input Speed	RPM	3~100	6,000	6,000	6,000	6,000	6,000	6,000	4,000	3,000	3,000
Backlash (arcmin)	PS	3~100	-	-	≤ 1arcmin	≤ 1arcmin	≤ 1arcmin	≤ 1arcmin	≤ 1arcmin	≤ 3arcmin	≤ 3arcmin
	P0 / P1 / P2	3~100	P0 ≤ 3arcmin ▪ P1 ≤ 5arcmin ▪ P2 ≤ 7arcmin								
Torsional Rigidity	Nm/arcmin	3~100	3	6	14	27	60	140	240	140	220
Maximum Radial Force	N	3~100	380	1180	3,200	6,800	9,300	15,600	51,000	107,100	224,910
Maximum Axial Force	N	3~100	190	590	1,600	3,400	4,650	7,800	25,500	53,550	112,455
Service Life	Hr	3~100	Intermittent Periodic Duty S5 > 30,000 hours Continuous Duty S1 > 15,000 hours								
Efficiency	%	3~100	1-stage : ≥ 97% 2-stage : ≥ 94%								
Operating Temperature	°C	3~100	-25°C ~ +90°C								
Lubrication		3~100	Synthetic oil								
Degree of Protection		3~100	IP65								
Mounting Position		3~100	Any								
Noise Level	dB(A)	3~100	≤ 56	≤ 58	≤ 60	≤ 63	≤ 65	≤ 67	≤ 70	≤ 72	≤ 74



PLANETARY SERVOBOX

DB-A SERIES

**UNIVERSAL DESIGN
HIGH PRECISION**



Features :

- Most cost effective in-line planetary servobox design.
- Precise (low backlash between 1~12arcmin).
- High torque capability and torsional stiffness.
- Gear Reduction Ratio up to 1/1000 (3Stage).
- Universal housing and is suitable for all servo and stepper applications.

GENERAL SPECIFICATIONS	Unit	Ratio	Model : DB-A (2 Stage)						
			#44A	#62A	#90A	#120A	#142A	#180A	#220A
Frame Size	MM	15~100	44 x 44	62 x 62	90 x 90	120 x 120	142 x 142	180 x 180	220 x 220
Mounting PCD	MM	15~100	Ø50	Ø70	Ø100	Ø130	Ø165	Ø215	Ø250
Output Shaft Diameter	MM	15~100	Ø13	Ø16	Ø22	Ø32	Ø40	Ø55	Ø75
Output Shaft Length	MM	15~100	20	28	36	50	74	82	104
Rated Output Torque Capacity (2-Stage ServoBox)	Nm	Ratio 15	19	59	165	335	625	1,206	2,030
		Ratio 20	16	51	146	300	555	1,069	1,804
		Ratio 25	16	48	160	333	618	1,189	2,010
		Ratio 30	15	45	151	311	583	1,118	1,911
		Ratio 35	15	45	149	309	573	1,108	1,870
		Ratio 40	14	43	143	298	553	1,070	1,824
		Ratio 50	16	48	160	333	618	1,189	2,010
		Ratio 60	15	45	151	311	583	1,118	1,911
		Ratio 70	15	45	149	309	573	1,108	1,870
		Ratio 80	14	43	143	298	553	1,070	1,824
		Ratio 90	13	44	145	278	516	993	1,694
Ratio 100	14	43	141	294	549	1,059	1,779		
Max. Acceleration Torque	Nm	15~100	1.8 Times of Rated Output Torque						
Max. Output Torque Emergency Stop Torque	Nm	15~100	3 Times of Rated Output Torque						
Rated Input Speed	RPM	15~100	3,000	3,000	3,000	3,000	3,000	3,000	2,000
Maximum Input Speed	RPM	15~100	6,000	6,000	6,000	6,000	6,000	6,000	4,000
Backlash (arcmin)	PS	15~100	-	-	≤ 3arcmin	≤ 3arcmin	≤ 3arcmin	≤ 3arcmin	≤ 3arcmin
	P0 / P1 / P2	15~100	P0 ≤ 5arcmin ▪ P1 ≤ 7arcmin ▪ P2 ≤ 9arcmin						
Torsional Rigidity	Nm/arcmin	15~100	3	6	14	27	60	140	240
Maximum Radial Force	N	15~100	380	1180	3,200	6,800	9,300	15,600	51,000
Maximum Axial Force	N	15~100	190	590	1,600	3,400	4,650	7,800	25,500
Service Life	Hr	15~100	Intermittent Periodic Duty S5 > 30,000 hours Continuous Duty S1 > 15,000 hours						
Efficiency	%	15~100	≥ 94%						
Operating Temperature	°C	15~100	-25°C ~ +90°C						
Lubrication		15~100	Synthetic oil						
Degree of Protection		15~100	IP65						
Mounting Position		15~100	Any						
Noise Level	dB(A)	15~100	≤ 58	≤ 60	≤ 63	≤ 65	≤ 67	≤ 70	≤ 72
Weight ± 3%	Kg	15~100	0.9	2	5.5	11	21	42	59

DIMENSION – DB PLANETARY SERVOBOX

Fig. 1 DB44 DB44A

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	5 ~ 11
A2	Input Pilot Bore \varnothing	30 ~ 70
A3	Adapter Frame Size \square (Square dimension)	46, 55, 60, 70
A4	Mounting PCD \varnothing	46 ~ 90
A5	Mounting Bolt Size	M4xP0.7 M5xP0.8
L	DB Overall Length Gear Ratio 3~10	95
	DB-A Overall Length Gear Ratio 15~100	124

(Unit: mm)

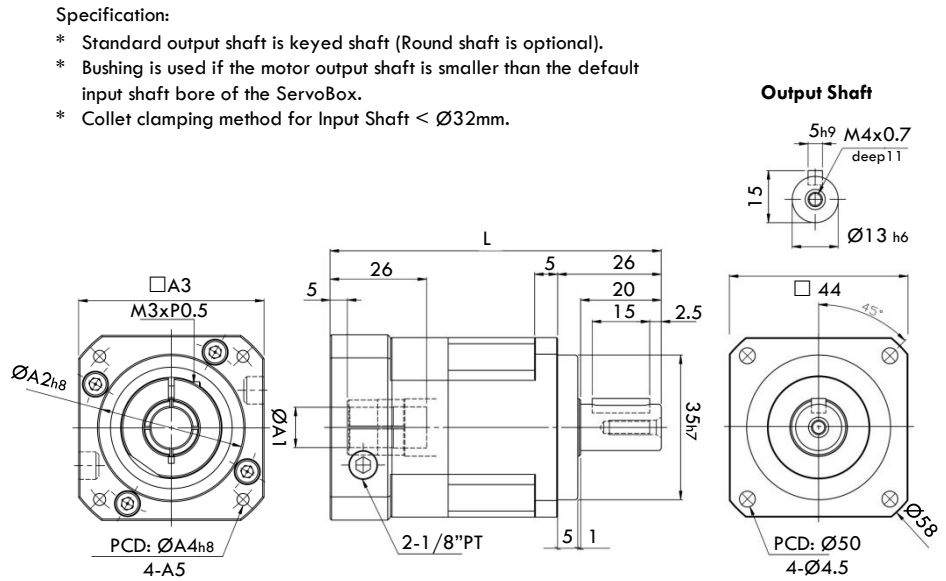


Fig. 2 DB62 DB62A

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	11 ~ 19
A2	Input Pilot Bore \varnothing	50 ~ 70
A3	Adapter Frame Size \square (Square dimension)	64, 70, 80
A4	Mounting PCD \varnothing	70 ~ 90
A5	Mounting Bolt Size	M4xP0.7 M5xP0.8 M6xP1.0
L	DB Overall Length Gear Ratio 3~10	115, 123
	DB-A Overall Length Gear Ratio 15~100	148, 157

(Unit: mm)

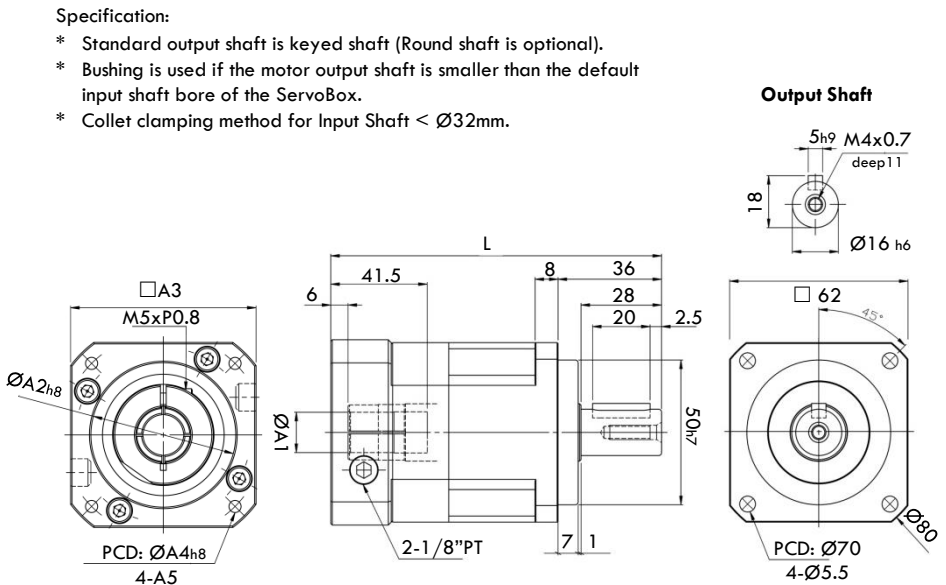
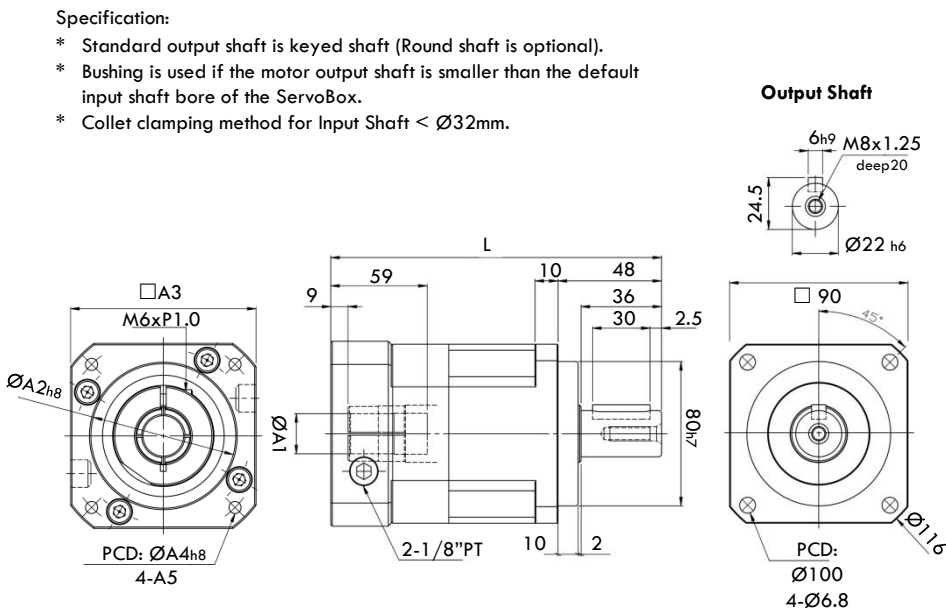


Fig. 3 DB90 DB90A

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	14 ~ 24
A2	Input Pilot Bore \varnothing	70 ~ 130
A3	Adapter Frame Size \square (Square dimension)	92, 110, 130, 142
A4	Mounting PCD \varnothing	90 ~ 145
A5	Mounting Bolt Size	M6xP1.0 M8xP1.25 M10xP1.5
L	DB Overall Length Gear Ratio 3~10	165, 179
	DB-A Overall Length Gear Ratio 15~100	208, 223

(Unit: mm)



Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.

DIMENSION – DB PLANETARY SERVOBOX

Fig. 4 DB120 DB120A

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	19 ~ 32
A2	Input Pilot Bore \varnothing	110 ~ 130
A3	Adapter Frame Size \square (Square dimension)	130, 150
A4	Mounting PCD \varnothing	145 ~ 165
A5	Mounting Bolt Size	M6xP1.0 M8xP1.25 M10xP1.5
L	DB Overall Length Gear Ratio 3~10	205, 215
	DB-A Overall Length Gear Ratio 15~100	261, 271

(Unit: mm)

Specification:
 * Standard output shaft is keyed shaft (Round shaft is optional).
 * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
 * Collet clamping method for Input Shaft < $\varnothing 32$ mm.

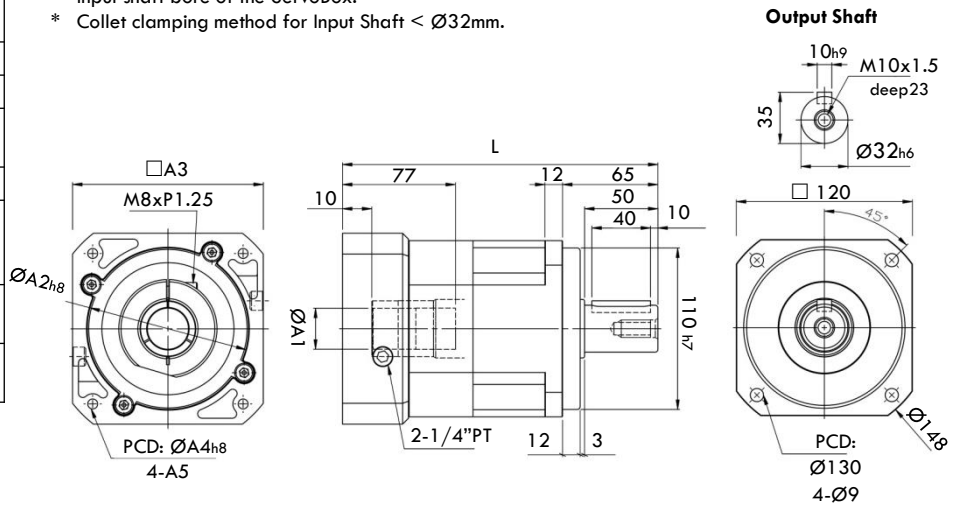


Fig. 5 DB142 DB142A

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	22 ~ 38
A2	Input Pilot Bore \varnothing	110 ~ 180
A3	Adapter Frame Size \square (Square dimension)	146, 180, 190
A4	Mounting PCD \varnothing	145 ~ 215
A5	Mounting Bolt Size	M8xP1.25 M10xP1.5 M12xP1.75
L	DB Overall Length Gear Ratio 3~10	261
	DB-A Overall Length Gear Ratio 15~100	327

(Unit: mm)

Specification:
 * Standard output shaft is keyed shaft (Round shaft is optional).
 * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
 * Collet clamping method for Input Shaft < $\varnothing 32$ mm.

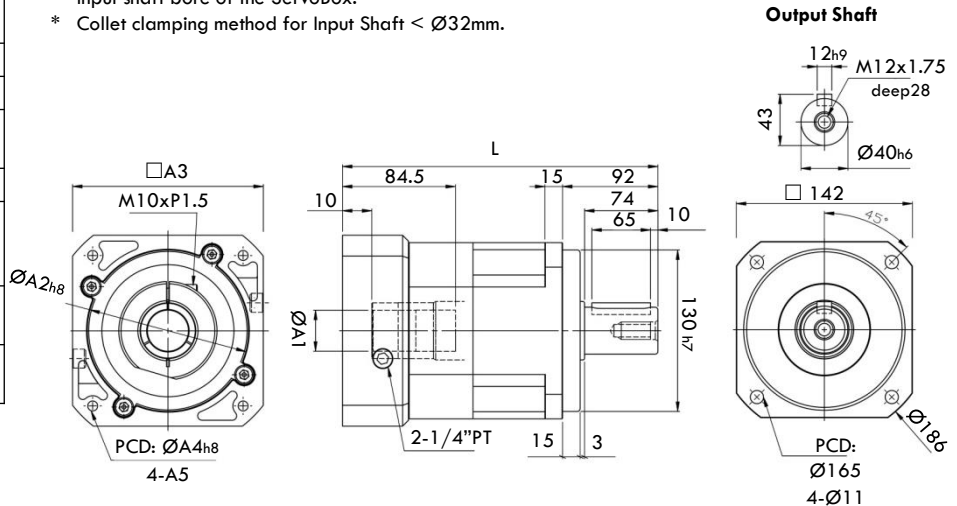
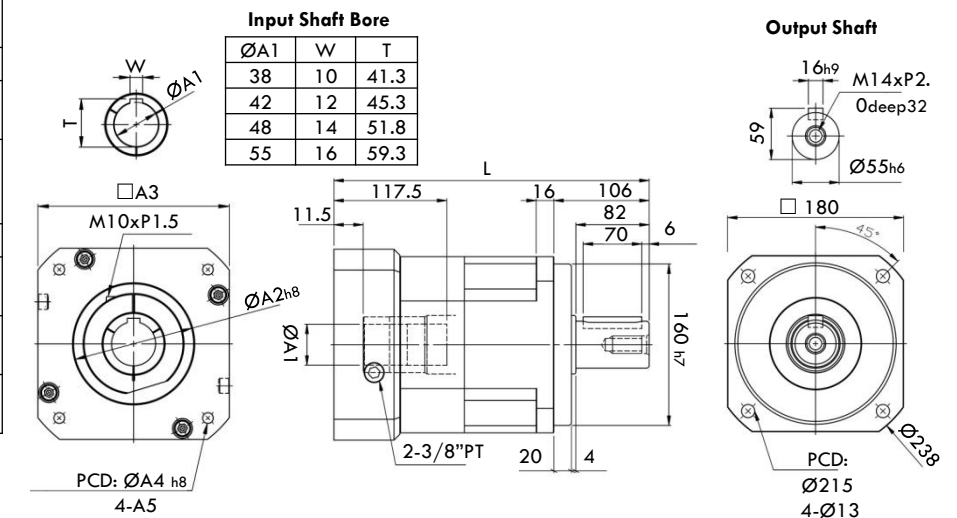


Fig. 6 DB180 DB180A

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	35 ~ 55
A2	Input Pilot Bore \varnothing	114.3 ~ 250
A3	Adapter Frame Size \square (Square dimension)	182, 200, 220, 250, 265
A4	Mounting PCD \varnothing	200 ~ 235
A5	Mounting Bolt Size	M12xP1.75 M16xP2.0
L	DB Overall Length Gear Ratio 3~10	324
	DB-A Overall Length Gear Ratio 15~100	405

(Unit: mm)

Specification:
 * Standard output shaft is keyed shaft (Round shaft is optional).



Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.

DIMENSION – DB PLANETARY SERVOBOX

Fig. 7 DB220 DB220A

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	42 ~ 55
A2	Input Pilot Bore \varnothing	114.3 ~ 250
A3	Adapter Frame Size \square (Square dimension)	222, 250, 265
A4	Mounting PCD \varnothing	200 ~ 300
A5	Mounting Bolt Size	M12xP1.75 M16xP2.0
L	DB Overall Length Gear Ratio 3~10	367.5
	DB-A Overall Length Gear Ratio 15~100	461

(Unit: mm)

Specification:

* Standard output shaft is keyed shaft (Round shaft is optional).

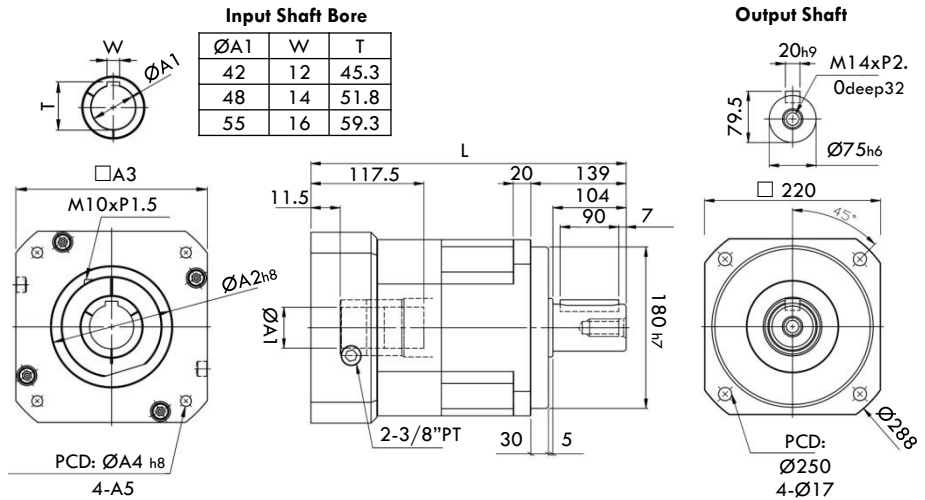


Fig. 8 DB270 SB270

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	48 ~ 60
A2	Input Pilot Bore \varnothing	250 ~ 300
A3	Adapter Frame Size \square (Square dimension)	300, 330
A4	Mounting PCD \varnothing	300, 350
A5	Mounting Bolt Size	M16xP2.0 M20xP2.5
L	DB/SB Overall Length Gear Ratio 3~10	464.5, 474.5
	DB-A Overall Length Gear Ratio 15~100	N/A

(Unit: mm)

Specification:

* Standard output shaft is keyed shaft (Round shaft is optional).

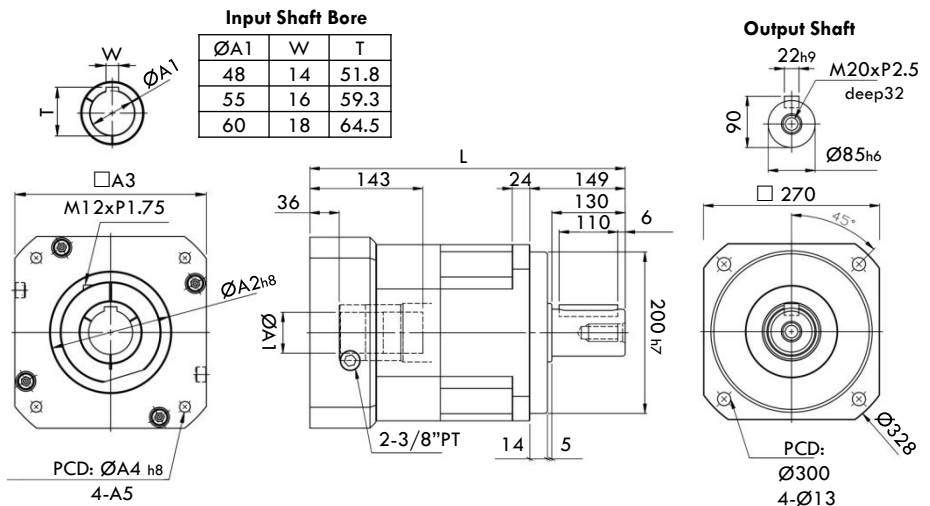


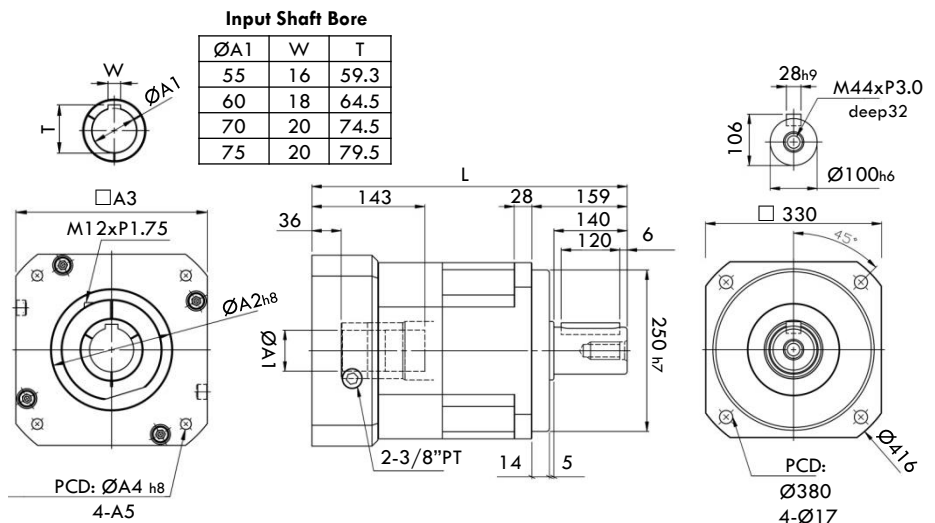
Fig. 9 DB330 SB330

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	55 ~ 75
A2	Input Pilot Bore \varnothing	250 ~ 300
A3	Adapter Frame Size \square (Square dimension)	300, 330
A4	Mounting PCD \varnothing	300, 350
A5	Mounting Bolt Size	M16xP2.0 M20xP2.5
L	DB/SB Overall Length Gear Ratio 3~10	492, 502
	DB-A Overall Length Gear Ratio 15~100	N/A

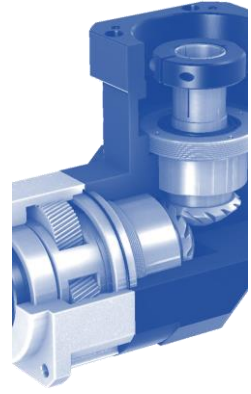
(Unit: mm)

Specification:

* Standard output shaft is keyed shaft (Round shaft is optional).



Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.

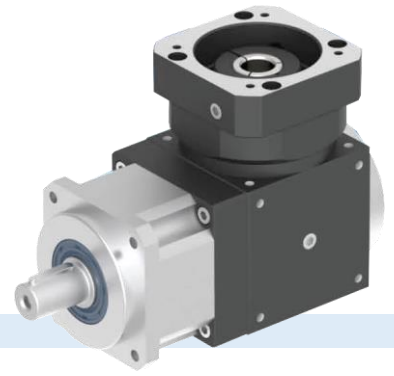


PLANETARY SERVOBOX

PBT

SERIES

RIGHT ANGLE PLANETARY SOLUTION HELICAL GEAR & SPIRAL BEVEL GEAR



Spiral Bevel Gear ServoBox offer more compact right-angle solution and universal housing with precision bearings planetary gearing provides high torque density while offering high positioning performance.

- PBT Series in Gear Reduction Ratio 1/3 to 1/50.

GENERAL SPECIFICATIONS	Unit	Ratio	Model : PBT (1 Stage)						
			#44	#62	#90	#120	#142	#180	#220
Frame Size	MM	3~50	44x44	62x62	90x90	120x120	142x142	180x180	220 x 220
Mounting PCD	MM	3~50	Ø50	Ø70	Ø100	Ø130	Ø165	Ø215	Ø250
Output Shaft Diameter	MM	3~50	Ø13	Ø16	Ø22	Ø32	Ø40	Ø55	Ø75
Output Shaft Length	MM	3~50	20	28	36	50	74	82	104
Rated Output Torque Capacity	Nm	Ratio 3	17	54	145	301	553	1,067	1,786
		Ratio 4	15	48	128	269	491	940	1,587
		Ratio 5	14	45	132	278	510	1,050	1,770
		Ratio 6	13	41	125	252	466	985	1,680
		Ratio 7	13	41	123	258	473	975	1,645
		Ratio 8	12	39	115	241	442	942	1,605
		Ratio 9	11	40	120	227	412	875	1,490
		Ratio 10	14	45	132	278	510	1,050	1,565
		Ratio 15	14	45	132	278	510	1,050	1,786
		Ratio 20	14	45	132	278	510	1,050	1,587
		Ratio 25	14	45	132	278	510	1,050	1,770
		Ratio 30	13	41	125	252	466	965	1,680
		Ratio 35	13	41	123	258	473	975	1,645
Ratio 40	12	39	115	241	442	942	1605		
Ratio 50	12	40	116	246	452	930	1,565		
Max. Acceleration Torque	Nm	3~50	1.8 Times of Rated Output Torque						
Max. Output Torque Emergency Stop Torque	Nm	3~50	3 Times of Rated Output Torque						
Rated Input Speed	RPM	3~50	3,000	3,000	3,000	2,500	2,500	2,000	2,000
Maximum Input Speed	RPM	3~50	6,000	6,000	5,000	4,500	3,500	3,000	3,000
Backlash (arcmin)	P2	3~50	P2 ≤ 10arcmin						
Torsional Rigidity	Nm/arcmin	3~50	3	6	14	27	60	140	240
Maximum Radial Force	N	3~50	360	1,120	3,040	6,460	8,830	14,820	48,450
Maximum Axial Force	N	3~50/180	180	560	1,520	3,230	4,410	7,410	24,225
Service Life	Hr	3~50	Intermittent Periodic Duty S5 > 20,000 hours Continuous Duty S1 > 10,000 hours						
Efficiency	%	3~50	≥ 95%						
Operating Temperature	°C	3~50	-25°C ~ +90°C						
Lubrication		3~50	Synthetic oil						
Degree of Protection		3~50	IP65						
Mounting Position		3~50	Any						
Noise Level	dB(A)	3~50	≤ 65	≤ 68	≤ 70	≤ 72	≤ 74	≤ 76	≤ 76
Weight ± 3%	Kg	3~50	1.4	2.2	7.1	13	24	48	78

DIMENSION – PBT SPIRAL BEVEL GEAR SERVOBOX

Fig. 10 PBT44

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	5 ~ 11
A2	Input Pilot Bore \varnothing	30 ~ 70
A3	Adapter Frame Size □ (Square dimension)	46, 55, 60, 70
A4	Mounting PCD \varnothing	46 ~ 90
A5	Mounting Bolt Size	M4xP0.7 M5xP0.8

(Unit: mm)

Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32$ mm (round input shaft bore).

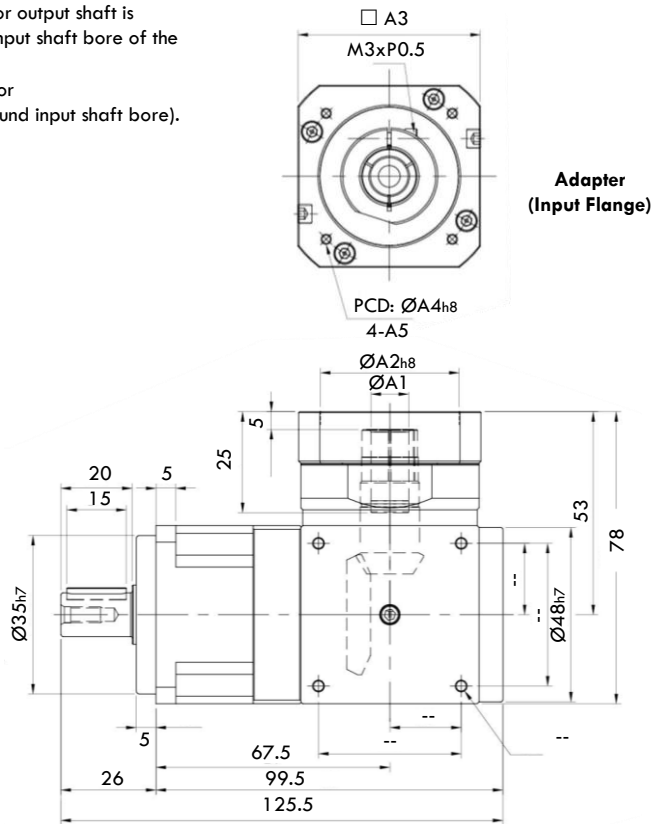
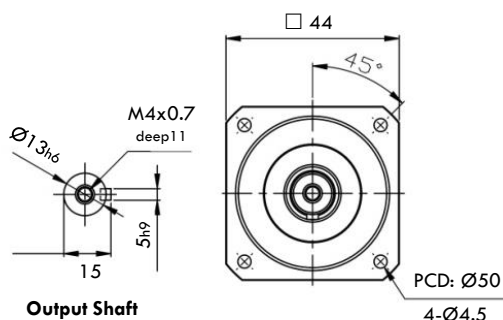


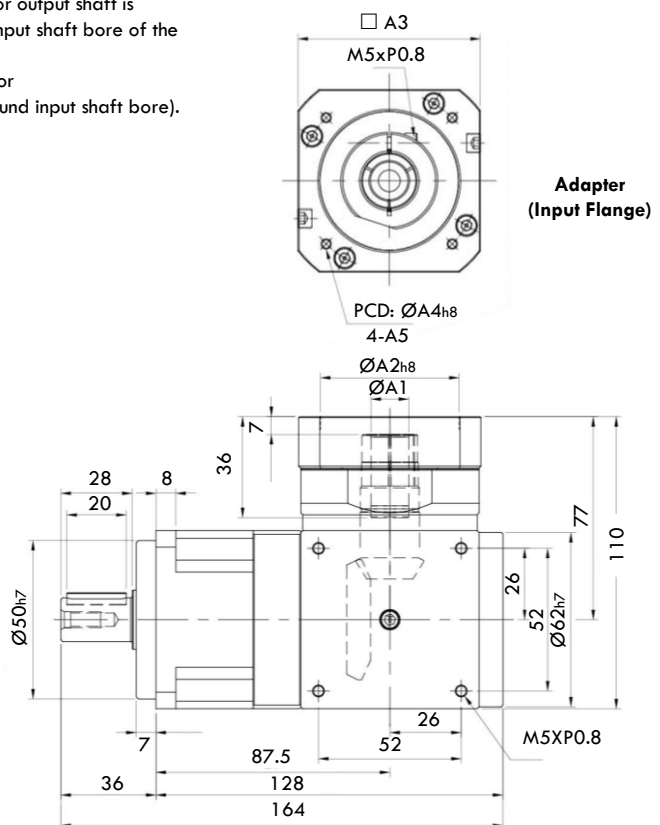
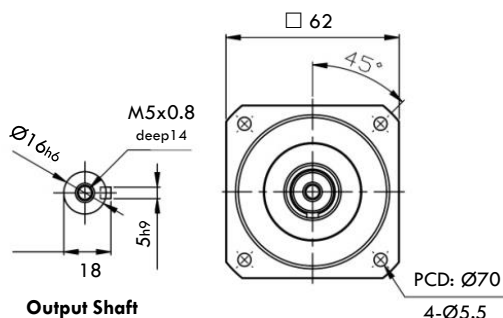
Fig. 11 PBT62

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	11 ~ 19
A2	Input Pilot Bore \varnothing	50 ~ 70
A3	Adapter Frame Size □ (Square dimension)	64, 70, 80
A4	Mounting PCD \varnothing	70 ~ 90
A5	Mounting Bolt Size	M4xP0.7 M5xP0.8 M6xP1.0

(Unit: mm)

Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32$ mm (round input shaft bore).



Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.

DIMENSION – PBT SPIRAL BEVEL GEAR SERVOBOX

Fig. 14 PBT142

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	22 ~ 38
A2	Input Pilot Bore \varnothing	110 ~ 180
A3	Adapter Frame Size □ (Square dimension)	146, 180, 190
A4	Mounting PCD \varnothing	145 ~ 215
A5	Mounting Bolt Size	M8xP1.25 M10xP1.5 M12xP1.75

(Unit: mm)

Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft $< \varnothing 32\text{mm}$ (round input shaft bore).
- * Input Shaft $\geq \varnothing 32\text{mm}$ (Optional : input shaft bore with keyslot).

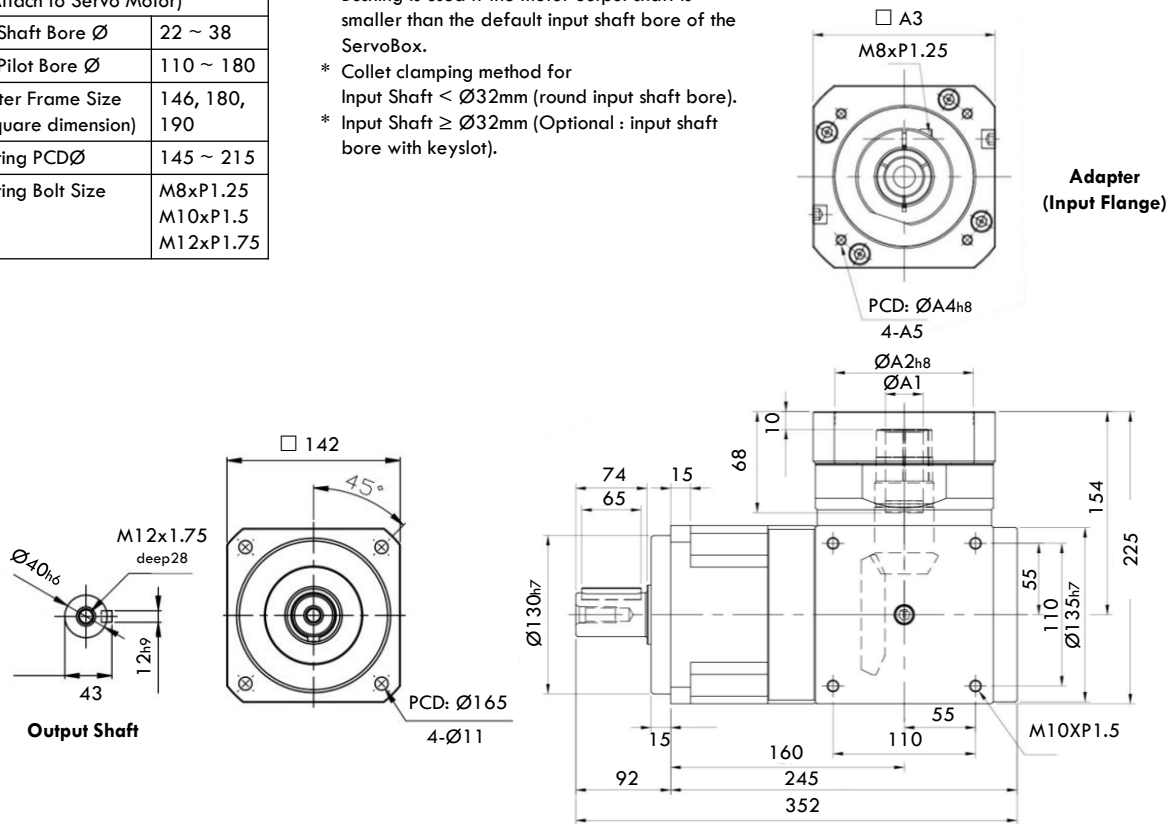


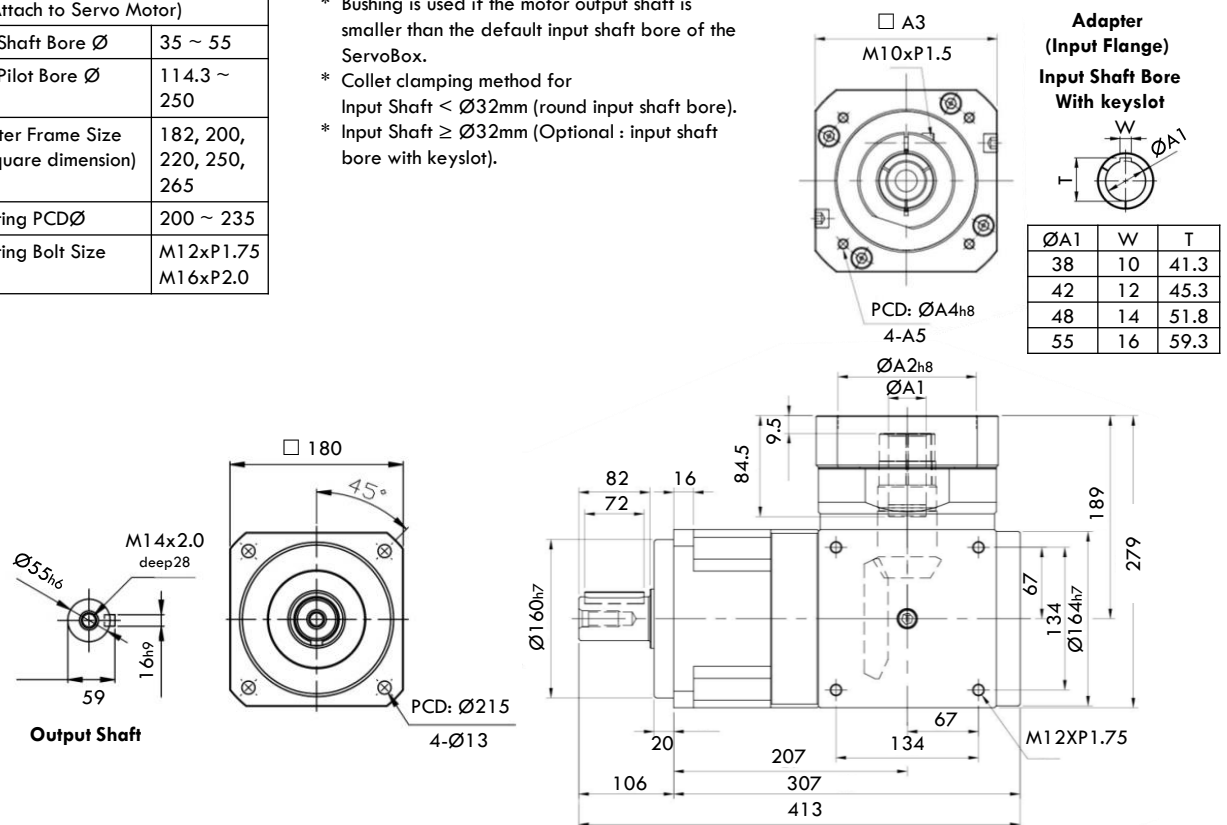
Fig. 15 PBT180

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	35 ~ 55
A2	Input Pilot Bore \varnothing	114.3 ~ 250
A3	Adapter Frame Size □ (Square dimension)	182, 200, 220, 250, 265
A4	Mounting PCD \varnothing	200 ~ 235
A5	Mounting Bolt Size	M12xP1.75 M16xP2.0

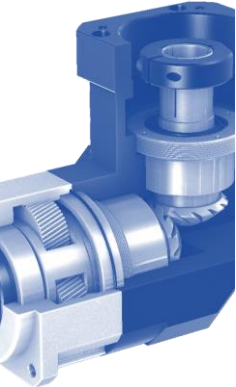
(Unit: mm)

Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft $< \varnothing 32\text{mm}$ (round input shaft bore).
- * Input Shaft $\geq \varnothing 32\text{mm}$ (Optional : input shaft bore with keyslot).



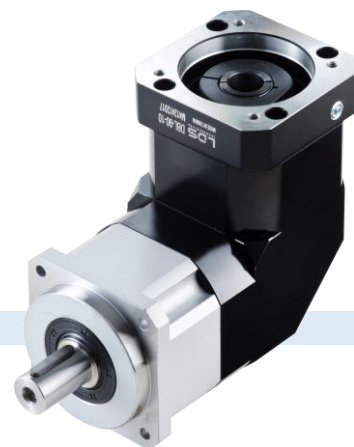
Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.



PLANETARY SERVOBOX

DBL SERIES

RIGHT ANGLE PLANETARY SOLUTION UNIVERSAL DESIGN

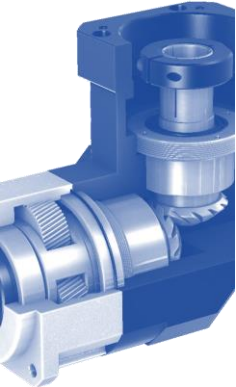


High Precision Planetary ServoBox in right-angle solution and universal housing with precision bearings planetary gearing provides high torque density while offering high positioning performance.

- DBL Series 1-Stage Planetary ServoBox in Gear Reduction Ratio 3 ~ 20.
- DBL-A Series 2-Stage Planetary ServoBox in Gear Reduction Ratio 25 ~ 200.

GENERAL SPECIFICATIONS	Unit	Ratio	Model : DBL (1 Stage)						
			#44	#62	#90	#120	#142	#180	#220
Frame Size	MM	3~20	44 x 44	62 x 62	90 x 90	120 x 120	142 x 142	180 x 180	220 x 220
Mounting PCD	MM	3~20	Ø50	Ø70	Ø100	Ø130	Ø165	Ø215	Ø250
Output Shaft Diameter	MM	3~20	Ø13	Ø16	Ø22	Ø32	Ø40	Ø55	Ø75
Output Shaft Length	MM	3~20	20	28	36	50	74	82	104
Rated Output Torque Capacity (1-Stage ServoBox)	Nm	Ratio 3	19	59	165	335	625	1,206	2,030
		Ratio 4	16	51	146	300	555	1,069	1,804
		Ratio 5	16	48	160	333	618	1,189	2,010
		Ratio 6	15	45	151	311	583	1,118	1,911
		Ratio 7	15	45	149	309	573	1,108	1,870
		Ratio 8	14	43	143	298	553	1,070	1,824
		Ratio 9	13	44	145	278	516	993	1,694
		Ratio 10	13	43	141	294	549	1,059	1,179
		Ratio 12	15	45	151	311	583	1,118	1,911
		Ratio 14	15	45	149	309	573	1,108	1,870
		Ratio 16	14	43	143	298	553	1,070	1,824
		Ratio 18	13	44	145	278	516	993	1,694
Ratio 20	14	43	141	294	549	1,059	1,779		
Max. Acceleration Torque	Nm	3~20	1.8 Times of Rated Output Torque						
Max. Output Torque Emergency Stop Torque	Nm	3~20	3 Times of Rated Output Torque						
Rated Input Speed	RPM	3~20	3,000	3,000	3,000	3,000	3,000	3,000	2,000
Maximum Input Speed	RPM	3~20	6,000	6,000	6,000	5,000	5,000	4,000	3,000
Backlash (arcmin)	PS	3~20	-	-	≤ 2arcmin	≤ 2arcmin	≤ 2arcmin	≤ 2arcmin	≤ 2arcmin
	P0 / P1 / P2	3~20	P0 ≤ 4arcmin ▪ P1 ≤ 6arcmin ▪ P2 ≤ 8arcmin						
Torsional Rigidity	Nm/arcmin	3~20	3	6	14	27	60	140	240
Maximum Radial Force	N	3~20	360	1,120	3,040	6,460	8,830	14,820	48,450
Maximum Axial Force	N	3~20	180	560	1,520	3,230	4,410	7,410	24,225
Service Life	Hr	3~20	Intermittent Periodic Duty S5 > 30,000 hours Continuous Duty S1 > 15,000 hours						
Efficiency	%	3~20	≥ 94%						
Operating Temperature	°C	3~20	-25°C ~ +90°C						
Lubrication		3~20	Synthetic oil						
Degree of Protection		3~20	IP65						
Mounting Position		3~20	Any						
Noise Level	dB(A)	3~20	≤ 65	≤ 68	≤ 70	≤ 72	≤ 74	≤ 76	≤ 78
Weight ± 3%	Kg	3~20	1	2.3	6.6	13.8	52.8	--	--

Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.



PLANETARY SERVOBOX

DBL-A SERIES

RIGHT ANGLE PLANETARY SOLUTION UNIVERSAL DESIGN



High Precision Planetary ServoBox in right-angle solution and universal housing with precision bearings planetary gearing provides high torque density while offering high positioning performance.

- DBL Series 1-Stage Planetary ServoBox in Gear Reduction Ratio 3 ~ 20.
- DBL-A Series 2-Stage Planetary ServoBox in Gear Reduction Ratio 25 ~ 200.

GENERAL SPECIFICATIONS	Unit	Ratio	Model : DBL (2 Stage)						
			#44A	#62A	#90A	#120A	#142A	#180A	#220A
Frame Size	MM	15~200	44 x 44	62 x 62	90 x 90	120 x 120	142 x 142	180 x 180	220 x 220
Mounting PCD	MM	15~200	Ø50	Ø70	Ø100	Ø130	Ø165	Ø215	Ø250
Output Shaft Diameter	MM	15~200	Ø13	Ø16	Ø22	Ø32	Ø40	Ø55	Ø75
Output Shaft Length	MM	15~200	20	28	36	50	74	82	104
Rated Output Torque Capacity (2-Stage ServoBox)	Nm	Ratio 15	19	59	165	335	625	1,206	2,030
		Ratio 20	16	51	146	300	555	1,069	1,804
		Ratio 25	16	48	160	333	618	1,189	2,010
		Ratio 30	15	45	151	311	583	1,118	1,911
		Ratio 35	15	45	149	309	573	1,108	1,870
		Ratio 40	14	43	143	298	553	1,070	1,824
		Ratio 50	16	48	160	278	516	993	2,010
		Ratio 60	15	45	151	294	549	1,059	1,911
		Ratio 70	15	45	149	311	583	1,118	1,870
		Ratio 80	14	43	143	309	573	1,108	1,824
		Ratio 90	13	44	145	298	553	1,070	1,694
		Ratio 100	14	43	141	278	516	993	1,179
		Ratio 120	15	45	151	311	549	1,059	1,911
		Ratio 140	15	45	149	309	583	1,118	1,870
Ratio 160	14	43	143	298	573	1,108	1,824		
Ratio 180	13	44	145	278	553	1,070	1,694		
Ratio 200	14	43	141	294	516	993	1,779		
Max. Acceleration Torque	Nm	15~200	1.8 Times of Rated Output Torque						
Max. Output Torque Emergency Stop Torque	Nm	15~200	3 Times of Rated Output Torque						
Rated Input Speed	RPM	15~200	3,000	3,000	3,000	3,000	3,000	3,000	2,000
Maximum Input Speed	RPM	15~200	6,000	6,000	6,000	5,000	5,000	4,000	3,000
Backlash (arcmin)	PS	15~200	-	-	≤ 4arcmin	≤ 4arcmin	≤ 4arcmin	≤ 4arcmin	≤ 4arcmin
	P0 / P1 / P2	15~200	P0 ≤ 7arcmin ▪ P1 ≤ 9arcmin ▪ P2 ≤ 12arcmin						
Torsional Rigidity	Nm/arcmin	15~200	3	6	14	27	60	140	240
Maximum Radial Force	N	15~200	380	1180	3,200	6,800	9,300	15,600	51,000
Maximum Axial Force	N	15~200	190	590	1,600	3,400	4,650	7,800	25,500
Service Life	Hr	15~200	Intermittent Periodic Duty S5 > 30,000 hours Continuous Duty S1 > 15,000 hours						
Efficiency	%	15~200	≥ 92%						
Operating Temperature	°C	15~200	-25°C ~ +90°C						
Lubrication		15~200	Synthetic oil						
Degree of Protection		15~200	IP65						
Mounting Position		15~200	Any						
Noise Level	dB(A)	15~200	≤ 65	≤ 68	≤ 70	≤ 72	≤ 74	≤ 76	≤ 78
Weight ± 3%	Kg	15~200	1	3	8.2	13.8	23.5	--	--

Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.

DIMENSION – DBL PLANETARY SERVOBOX

Fig. 16 DBL44 DBL44A

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	5 ~ 11
A2	Input Pilot Bore \varnothing	30 ~ 70
A3	Adapter Frame Size □ (Square dimension)	46, 55, 60, 70
A4	Mounting PCD \varnothing	46 ~ 90
A5	Mounting Bolt Size	M4xP0.7 M5xP0.8
L1	DBL44	124
L2	Gear Ratio 3~20	98
C1		76
L1	DBL44A	150
L2	Gear Ratio 15~10	124
C1		102

(Unit: mm)

Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32$ mm.

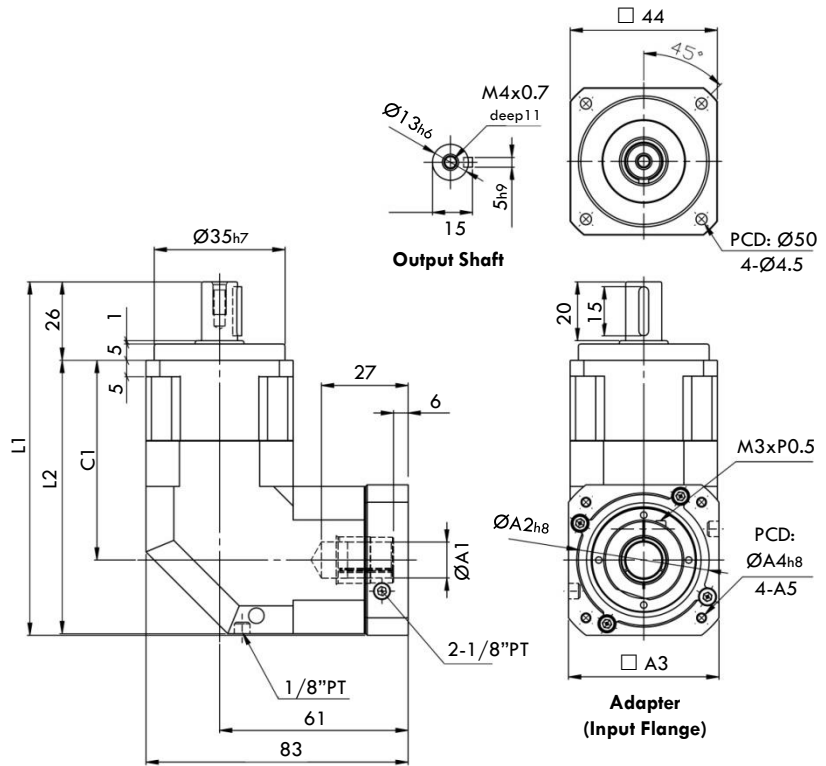


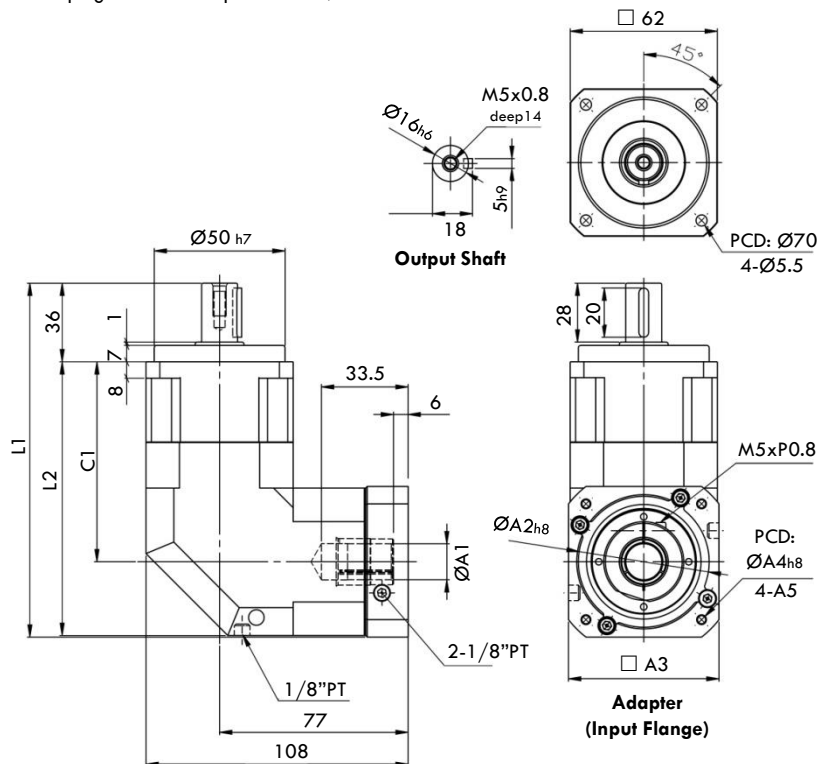
Fig. 17 DBL62 DBL62A

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	11 ~ 19
A2	Input Pilot Bore \varnothing	50 ~ 70
A3	Adapter Frame Size □ (Square dimension)	64, 70, 80
A4	Mounting PCD \varnothing	70 ~ 90
A5	Mounting Bolt Size	M4xP0.7 M5xP0.8 M6xP1.0
L1	DBL62	152
L2	Gear Ratio 3~20	115.5
C1		84.5
L1	DBL62A	185.3
L2	Gear Ratio 15~10	149.3
C1		118.3

(Unit: mm)

Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32$ mm.



Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.

DIMENSION – DBL PLANETARY SERVOBOX

Fig. 18 DBL90 DBL90A

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	14 ~ 24
A2	Input Pilot Bore \varnothing	70 ~ 130
A3	Adapter Frame Size □ (Square dimension)	92, 110, 130, 142
A4	Mounting PCD \varnothing	90 ~ 145
A5	Mounting Bolt Size	M6xP1.0 M8xP1.25 M10xP1.5
L1	DBL90 Gear Ratio 3~20	215
L2		167.1
L3		160.3, 174.8
C1	DBL90A Gear Ratio 15~10	122.1
C2		115.3, 129.8
L1	DBL90A Gear Ratio 15~10	258.6
L2		210.6
L3		160.3, 174.8
C1	DBL90A Gear Ratio 15~10	165.6
C2		115.3, 129.8

(Unit: mm)

Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32$ mm.

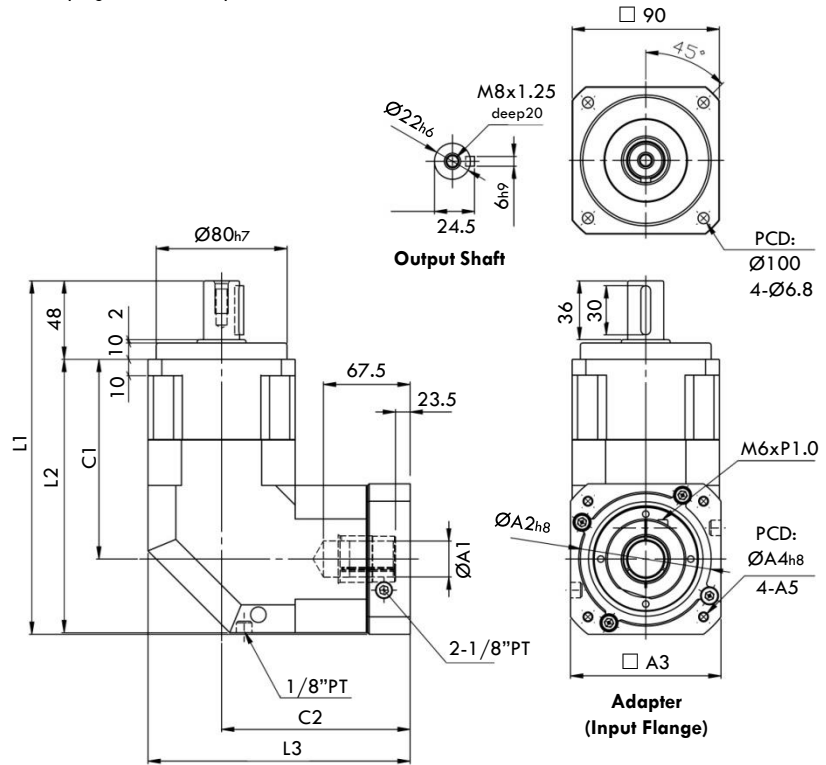


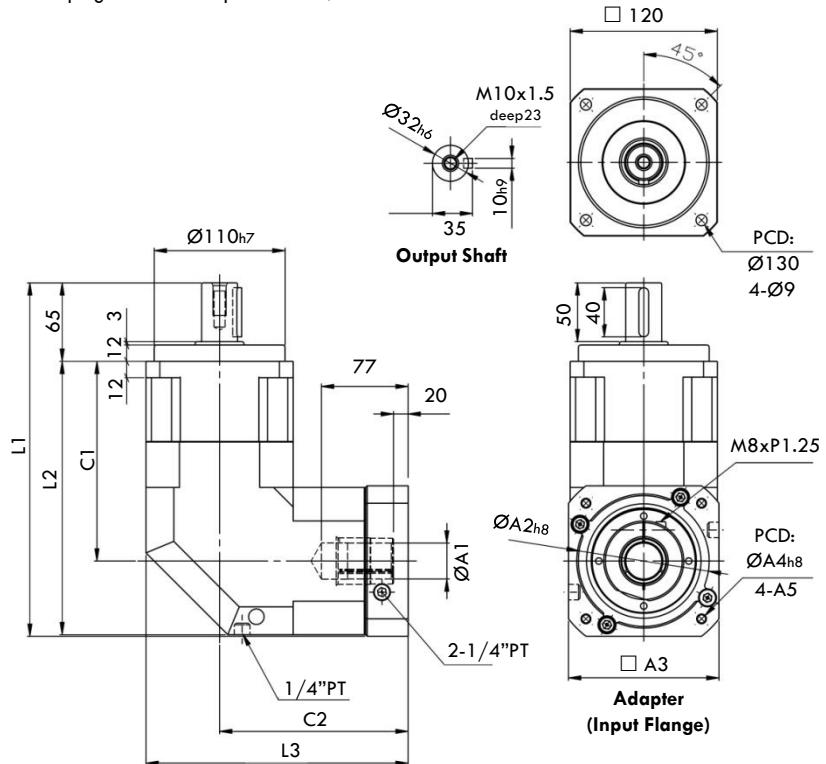
Fig. 19 DBL120 DBL120A

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	19 ~ 32
A2	Input Pilot Bore \varnothing	110 ~ 130
A3	Adapter Frame Size □ (Square dimension)	130, 150
A4	Mounting PCD \varnothing	145 ~ 165
A5	Mounting Bolt Size	M6xP1.0 M8xP1.25 M10xP1.5
L1	DBL120 Gear Ratio 3~20	273
L2		208
L3		201, 211
C1	DBL120A Gear Ratio 15~10	148
C2		141, 151
L1	DBL120A Gear Ratio 15~10	329
L2		264
L3		201, 211
C1	DBL120A Gear Ratio 15~10	204
C2		141, 151

(Unit: mm)

Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32$ mm.



Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.

DIMENSION – DBL PLANETARY SERVOBOX

Fig. 20 DBL142 DBL142A

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	22 ~ 38
A2	Input Pilot Bore \varnothing	110 ~ 180
A3	Adapter Frame Size \square (Square dimension)	146, 180, 190
A4	Mounting PCD \varnothing	145 ~ 215
A5	Mounting Bolt Size	M8xP1.25 M10xP1.5 M12xP1.75
L1	DBL142	328.5
L2	Gear Ratio 3~20	236.5
C1		165.5
L1	DBL142A	395
L2	Gear Ratio 15~10	303
C1		232

(Unit: mm)

Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32$ mm.

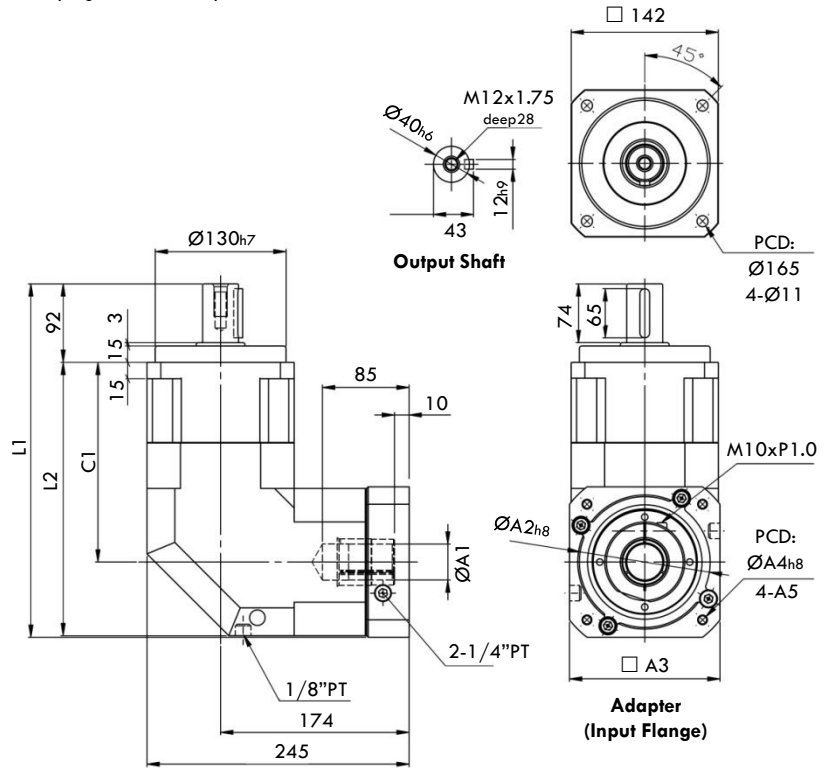


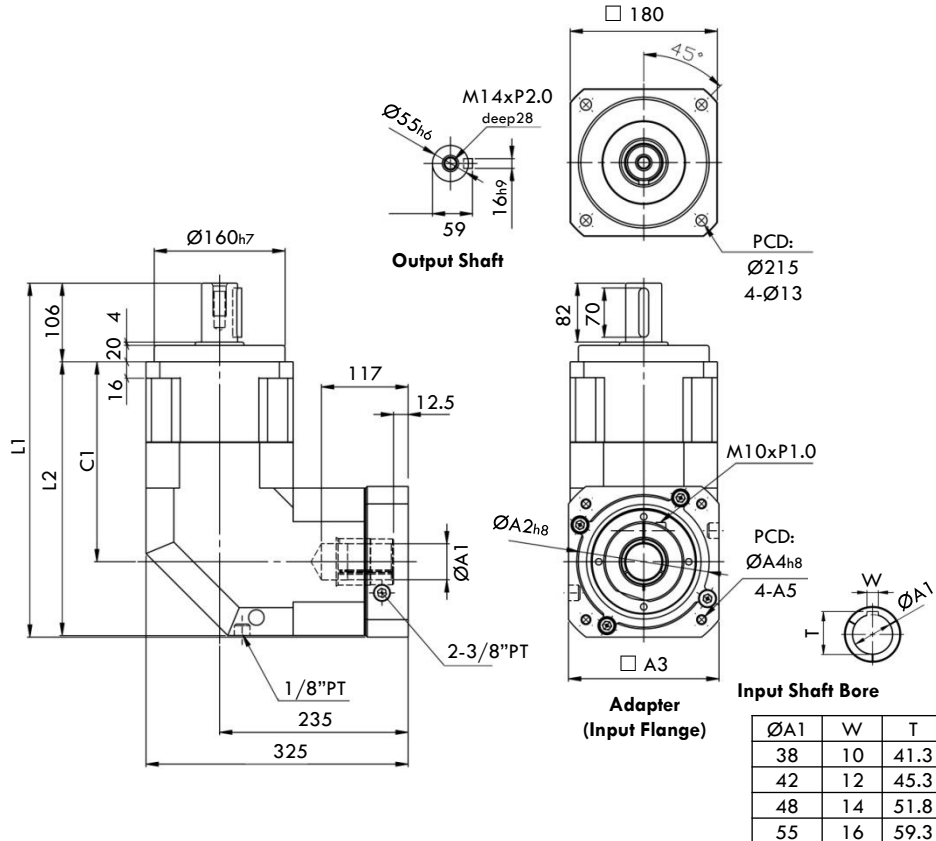
Fig. 21 DBL180 DBL180A

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	35 ~ 55
A2	Input Pilot Bore \varnothing	114.3 ~ 250
A3	Adapter Frame Size \square (Square dimension)	182, 200, 220, 250, 265
A4	Mounting PCD \varnothing	200 ~ 235
A5	Mounting Bolt Size	M12xP1.75 M16xP2.0
L1	DBL180	419.6
L2	Gear Ratio 3~20	313.6
C1		223.6
L1	DBL180A	500.6
L2	Gear Ratio 15~10	394.6
C1		304.6

(Unit: mm)

Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).



Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.

DIMENSION – DBL PLANETARY SERVOBOX

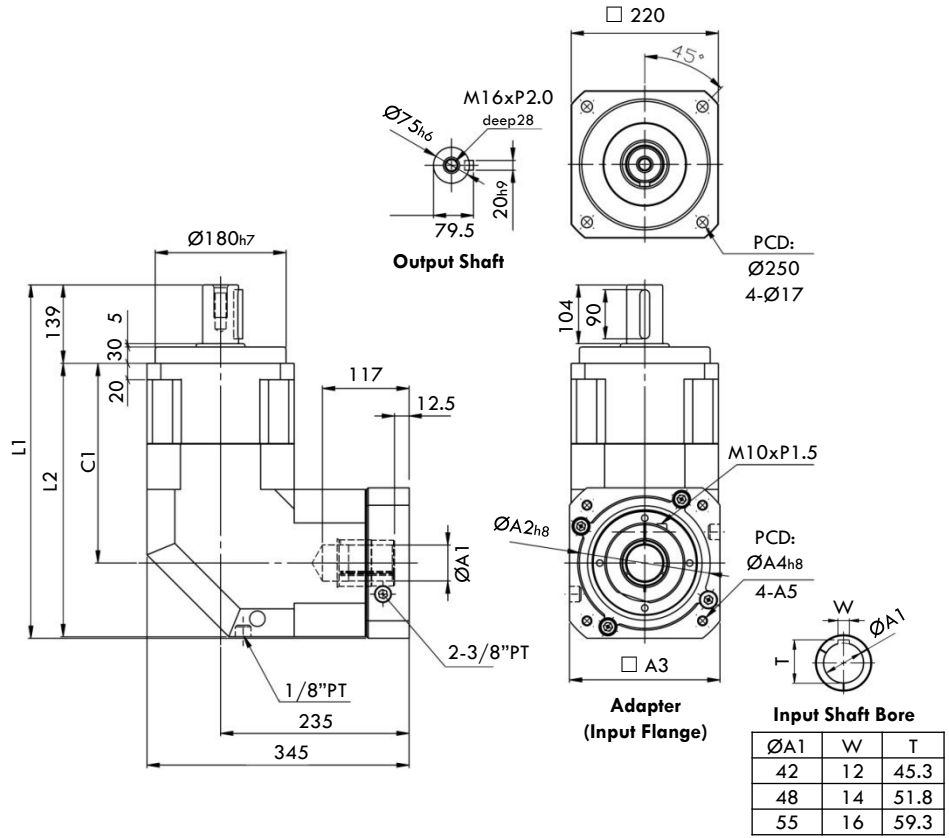
Fig. 22 DBL220 DBL220A

Specification:

* Standard output shaft is keyed shaft (Round shaft is optional).

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	42 ~ 55
A2	Input Pilot Bore \varnothing	114.3 ~ 250
A3	Adapter Frame Size \square (Square dimension)	222, 250, 265
A4	Mounting PCD \varnothing	200 ~ 300
A5	Mounting Bolt Size	M12xP1.75 M16xP2.0
L1	DBL220	480.6
L2	Gear Ratio 3~20	341.6
C1		231.6
L1	DBL220A	573.6
L2	Gear Ratio 15~10	434.6
C1		324.6

(Unit: mm)



Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.



PLANETARY SERVOBOX

FE SERIES E-SERIES DESIGN HIGH PRECISION



E-Series ServoBox

FE Series 1-Stage ServoBox in Gear Ratio 3, 4, 5, 7 and 10

FE Series 2-Stage ServoBox in Gear Ratio 20, 25, 35, 40, 50, 70 and 100

GENERAL SPECIFICATION	Unit	Ratio	Model : FE (1 Stage) / (2 Stage)						
			#50	#70	#90	#120	#145	#180	#220
Output Flange Frame Size	MM	3~100	Ø50	Ø70	Ø93	Ø122	Ø148	Ø205	Ø242
Mounting PCD	MM	3~100	Ø42	Ø60	Ø80	Ø105	Ø130	Ø184	Ø218
Output Shaft Diameter	MM	3~100	Ø13	Ø16	Ø22	Ø32	Ø40	Ø55	Ø75
Output Shaft Length	MM	3~100	20	28	36	50	74	82	104
Rated Output Torque Capacity (1-Stage ServoBox)	Nm	Ratio 3	17	50	125	268	482	940	1,420
		Ratio 4	15	45	111	238	426	860	1,300
		Ratio 5	14	42	104	223	401	835	1,270
		Ratio 7	13	39	98	208	373	790	1,180
		Ratio 10	12	37	92	198	356	760	1,140
Rated Output Torque Capacity (2-Stage ServoBox)	Nm	Ratio 15	17	50	125	268	482	940	1,420
		Ratio 20	15	45	111	238	426	860	1,300
		Ratio 25	14	42	104	223	401	835	1,270
		Ratio 35	13	39	98	208	373	790	1,180
		Ratio 40	15	45	111	238	427	860	1,300
		Ratio 50	14	42	104	223	402	835	1,270
		Ratio 70	13	40	98	208	373	790	1,180
		Ratio 100	12	37	92	198	357	760	1,100
Max. Acceleration Torque	Nm	3~100	1.8 Times of Rated Output Torque						
Max. Output Torque Emergency Stop Torque	Nm	3~100	3 Times of Rated Output Torque						
Rated Input Speed	RPM	3~100	3,000	3,000	3,000	3,000	3,000	2,000	2,000
Maximum Input Speed	RPM	3~100	5,000	5,000	5,000	5,000	5,000	3,000	3,000
Backlash	Arcmin	3~100	≤ 8arcmin						
		3~100	≤ 12arcmin						
Torsional Rigidity	Nm/arcmin	3~100	2.3	5	15	45	69	140	220
Maximum Radial Force	N	3~100	750	1,180	3,000	6,500	9,100	11,150	35,000
Maximum Axial Force	N	3~100	325	590	1,500	3,250	4,550	5,575	17,500
Service Life	Hr	3~100	Intermittent Periodic Duty S5 > 20,000 hours Continuous Duty S1 > 10,000 hours						
Efficiency	%	3~10	≥ 97%						
		15~100	≥ 94%						
Operating Temperature	°C	3~100	-25°C ~ +90°C						
Lubrication		3~100	Synthetic Grease						
Degree of Protection		3~100	IP65						
Mounting Position		3~100	Any						
Noise Level	dB(A)	3~10	≤ 62	≤ 62	≤ 65	≤ 68	≤ 70	≤ 70	≤ 70
		15~100	≤ 65	≤ 65	≤ 68	≤ 70	≤ 72	≤ 72	≤ 72
Weight ± 3%	Kg	3~10	0.63	1.57	3.22	8	16	33	54
		15~100	0.9	2.24	4.59	11.2	22.5	46.4	75

* The contents of this data sheet are subject to change without notice in advance for the purpose of continuous product improvement.

* Please contact us for customized model.

DIMENSION – FE PLANETARY SERVOBOX

Fig. 23 FE50

Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	8 ~ 11
A2	Input Pilot Bore \varnothing	30 ~ 50
A3	Adapter Frame Size \square (Square dimension)	46, 55
A4	Mounting PCD \varnothing	46 ~ 63
A5	Mounting Bolt Size	M3xP0.5 M4xP0.7 M5xP0.8
L	FE Overall Length Gear Ratio 3~10	101
	FE Overall Length Gear Ratio 25~100	127

(Unit: mm)

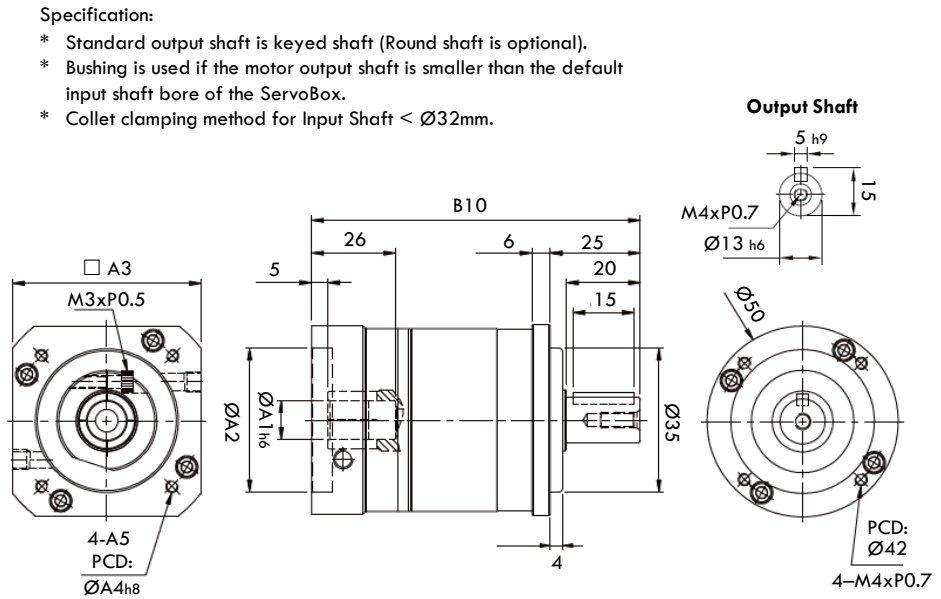


Fig. 24 FE70

Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	14 ~ 19
A2	Input Pilot Bore \varnothing	40 ~ 60
A3	Adapter Frame Size \square (Square dimension)	64, 70, 80
A4	Mounting PCD \varnothing	70 ~ 90
A5	Mounting Bolt Size	M4xP0.7 M5xP0.8 M6xP1.0
L	FE Overall Length Gear Ratio 3~10	131, 141
	FE Overall Length Gear Ratio 15~100	167

(Unit: mm)

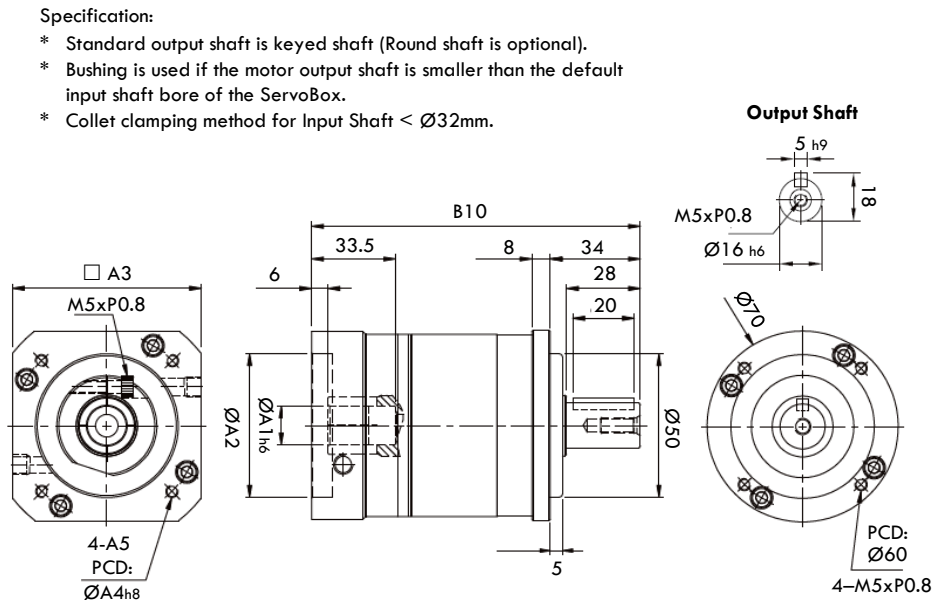
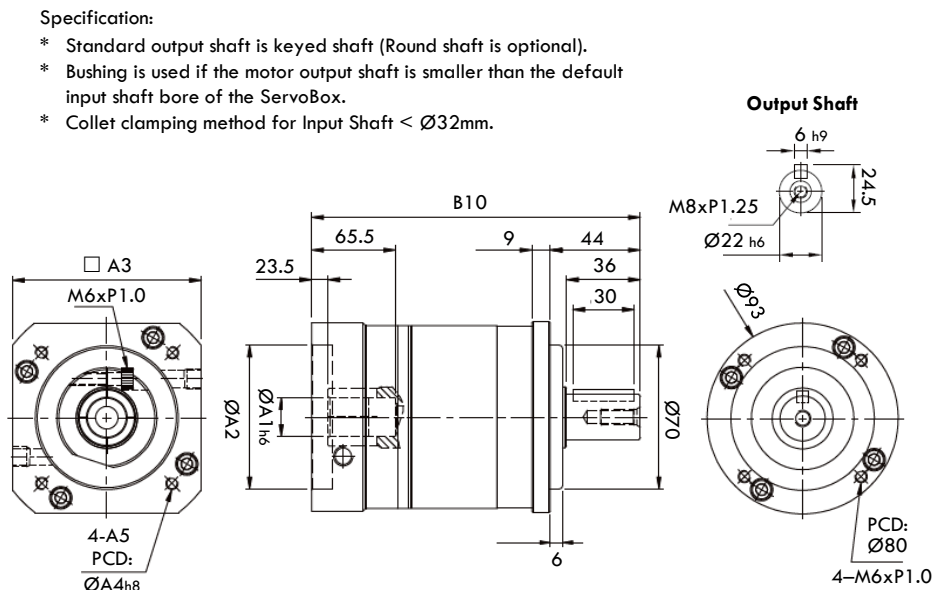


Fig. 25 FE90

Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	19 ~ 24
A2	Input Pilot Bore \varnothing	70 ~ 110
A3	Adapter Frame Size \square (Square dimension)	92, 110, 130, 142
A4	Mounting PCD \varnothing	90 ~ 145
A5	Mounting Bolt Size	M5xP0.8 M6xP1.0 M8xP1.25
L	FE Overall Length Gear Ratio 3~10	171, 185
	FE Overall Length Gear Ratio 15~100	210, 225

(Unit: mm)



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DIMENSION – FE PLANETARY SERVOBOX

Fig. 26 FE120

Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	19 ~ 32
A2	Input Pilot Bore \varnothing	95 ~ 130
A3	Adapter Frame Size \square (Square dimension)	95, 110, 130, 150
A4	Mounting PCD \varnothing	115 ~ 165
A5	Mounting Bolt Size	M6xP1.0 M8xP1.25 M10xP1.5
L	FE Overall Length Gear Ratio 3~10	228, 238
	FE Overall Length Gear Ratio 15~100	282, 292

(Unit: mm)

Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32$ mm.

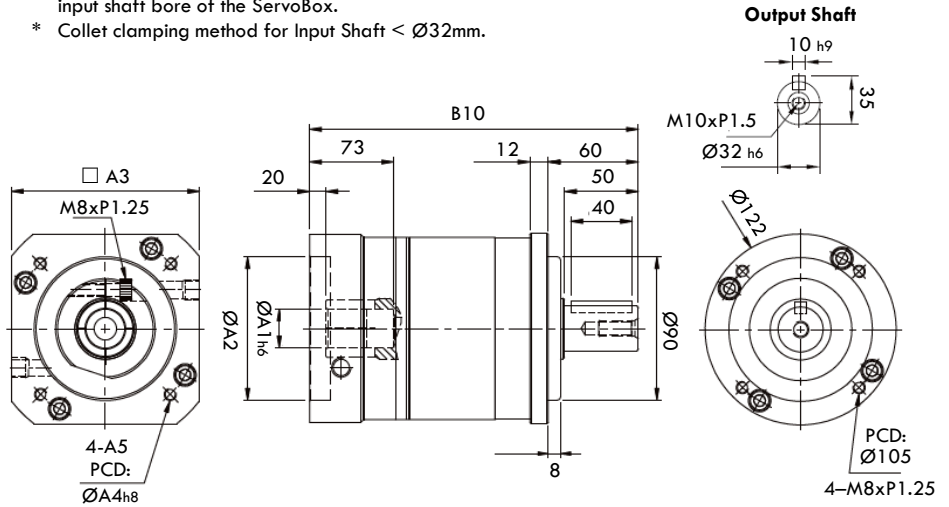


Fig. 27 FE145

Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	32 ~ 38
A2	Input Pilot Bore \varnothing	110 ~ 180
A3	Adapter Frame Size \square (Square dimension)	146, 180, 190
A4	Mounting PCD \varnothing	145 ~ 200
A5	Mounting Bolt Size	M8xP1.25 M10xP1.5 M12xP1.75
L	FE Overall Length Gear Ratio 3~10	291
	FE Overall Length Gear Ratio 15~100	355

(Unit: mm)

Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32$ mm.

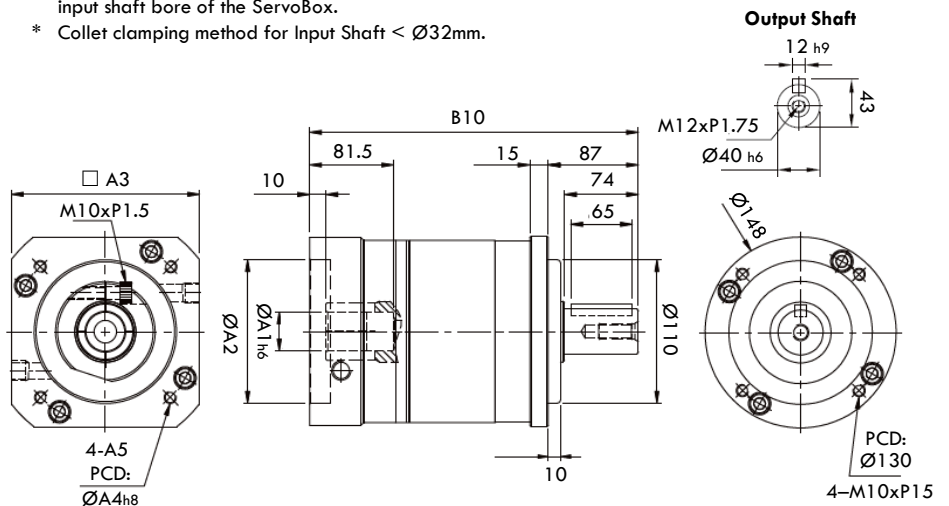


Fig. 28 FE180

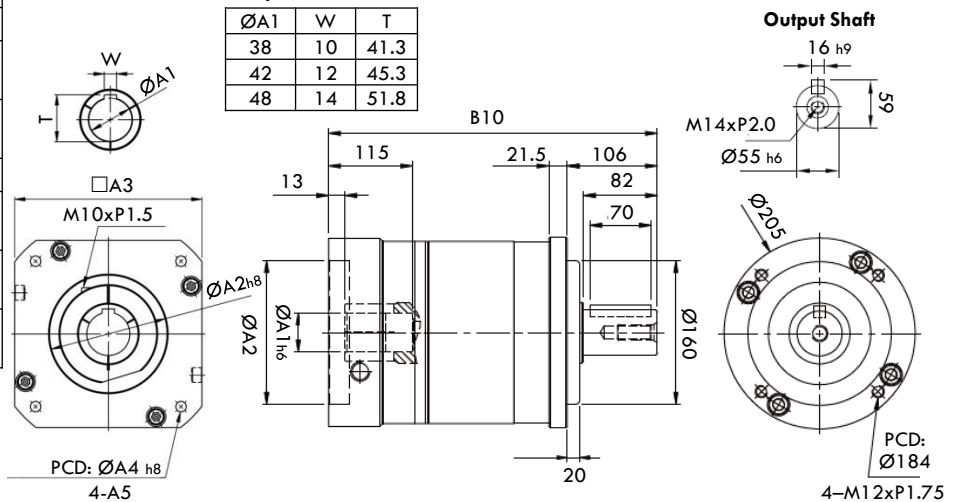
Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	35 ~ 48
A2	Input Pilot Bore \varnothing	114.3 ~ 230, 250
A3	Adapter Frame Size \square (Square dimension)	182, 200, 220, 250
A4	Mounting PCD \varnothing	200 ~ 265
A5	Mounting Bolt Size	M10xP1.5 M12xP1.75
L	FE Overall Length Gear Ratio 3~10	325
	FE Overall Length Gear Ratio 15~100	395

(Unit: mm)

Input Shaft Bore		
$\varnothing A1$	W	T
38	10	41.3
42	12	45.3
48	14	51.8

Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).



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DIMENSION – FE PLANETARY SERVOBOX

Fig. 29 FE220

Specification:

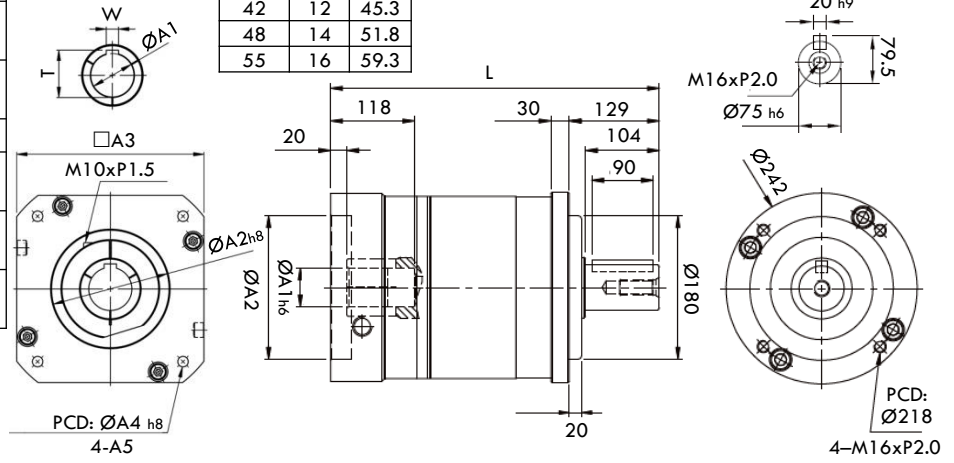
* Standard output shaft is keyed shaft (Round shaft is optional).

Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	38 ~ 55
A2	Input Pilot Bore \varnothing	114.3 ~ 250
A3	Adapter Frame Size □ (Square dimension)	222, 250, 265
A4	Mounting PCD \varnothing	200 ~ 300
A5	Mounting Bolt Size	M12xP1.75 M16xP2.0
L	FE Overall Length Gear Ratio 3~10	377
	FE Overall Length Gear Ratio 15~100	464

(Unit: mm)

Input Shaft Bore

$\varnothing A1$	W	T
38	10	41.3
42	12	45.3
48	14	51.8
55	16	59.3



* The contents of this data sheet are subject to change without notice in advance for the purpose of continuous product improvement.



PLANETARY SERVOBOX

PE SERIES E-SERIES DESIGN PRECISION SERVOBOX



E-Series ServoBox

PE Series 1-Stage ServoBox in Gear Ratio 3 ~ 10

PE Series 2-Stage ServoBox in Gear Ratio 12 ~ 64

GENERAL SPECIFICATION	Unit	Ratio	PE#32	PE#40	PE#60	PE#80
Output Flange Frame Size	MM	3~64	Ø32	Ø40	Ø60	Ø122
Mounting PCD	MM	3~64	Ø26	Ø32	Ø52	Ø105
Output Shaft Diameter	MM	3~64	Ø8	Ø10	Ø14	Ø32
Output Shaft Length	MM	3~64	16	23	29.5	50
Rated Output Torque Capacity (1-Stage ServoBox)	Nm	Ratio 3	8	12	30	90
		Ratio 4	10	16	38	120
		Ratio 5	11	17	41	130
		Ratio 7	9		32	110
		Ratio 8		12		
		Ratio 9	7			
		Ratio 10		10	25	80
Rated Output Torque Capacity (2-Stage ServoBox)	Nm	Ratio 12		11	30	90
		Ratio 15	8	11	30	90
		Ratio 20	10	16	38	120
		Ratio 25	11	17	41	130
		Ratio 32		16		
		Ratio 35	9		32	110
		Ratio 40		16	38	120
		Ratio 45	7			
		Ratio 50			41	130
		Ratio 63	9			
Ratio 64		17				
Max. Acceleration Torque	Nm	3~63	1.8 Times of Rated Output Torque			
Max. Output Torque Emergency Stop Torque	Nm	3~63	3 Times of Rated Output Torque			
Rated Input Speed	RPM	3~63	3,000	3,000	3,000	3,000
Maximum Input Speed	RPM	3~63	5,000	5,000	5,000	5,000
Backlash	Arcmin	3~9	≤ 12arcmin			
		12~64	≤ 20arcmin			
Torsional Rigidity	Nm/arcmin	3~64	0.8	1	2.3	6
Maximum Radial Force	N	3~64	130	300	689	1,750
Maximum Axial Force	N	3~64	65	150	340	875
Service Life	Hr	3~64	Intermittent Periodic Duty S5 > 20,000 hours Continuous Duty S1 > 10,000 hours			
Efficiency	%	3~9	≥ 96%			
		12~64	≥ 94%			
Operating Temperature	°C	3~64	-25°C ~ +90°C			
Lubrication		3~64	Synthetic Grease			
Degree of Protection		3~64	IP54			
Mounting Position		3~64	Any			
Noise Level	dB(A)	3~10	≤ 56	≤ 58	≤ 58	≤ 60
		12~64	≤ 58	≤ 60	≤ 60	≤ 62
Weight ± 3%	Kg	3~10	0.2	0.35	0.9	2.1
		12~64	0.3	0.45	1.1	2.6

* The contents of this data sheet are subject to change without notice in advance for the purpose of continuous product improvement.

* Please contact us for customized model.

DIMENSION – PE PLANETARY SERVOBOX

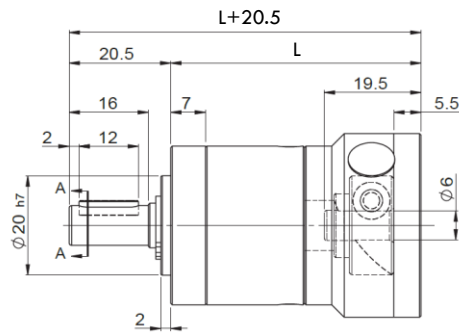
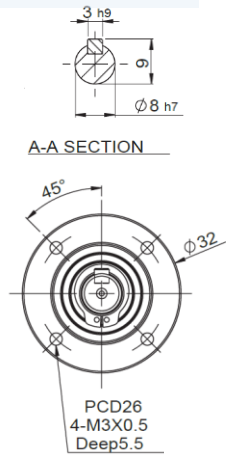


Fig. 30 : PE#32

L	PE Overall Length Gear Ratio 3~9	50.5
	FPE Overall Length Gear Ratio 15~63	65.5

(Unit: mm)

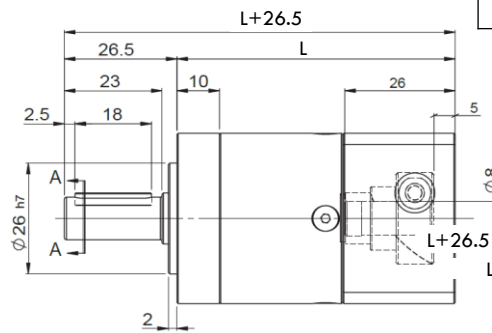
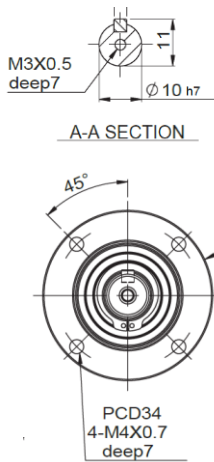
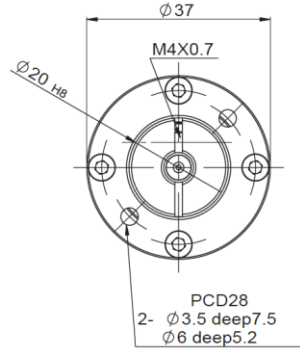


Fig. 31 : PE#40

L	PE Overall Length Gear Ratio 3~10	65.5
	PE Overall Length Gear Ratio 12~64	83.5

(Unit: mm)

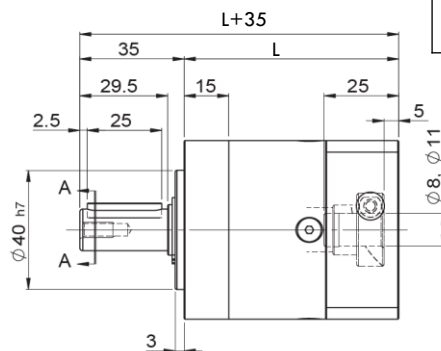
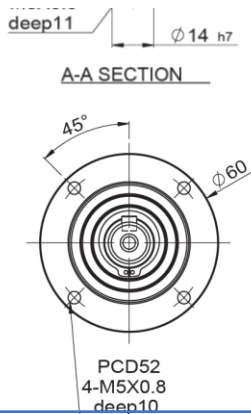
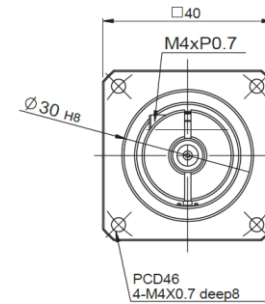
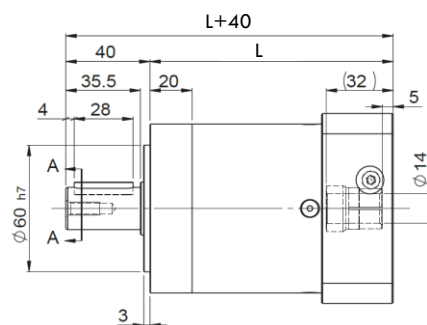
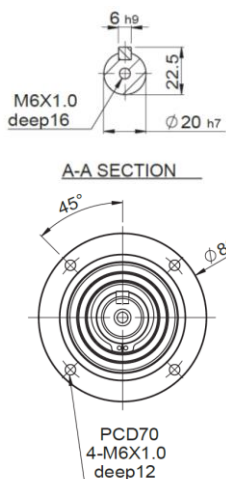
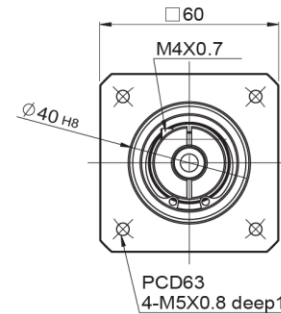


Fig. 32 : PE#60

L	PE Overall Length Gear Ratio 3~10	72
	PE Overall Length Gear Ratio 12~50	90.5

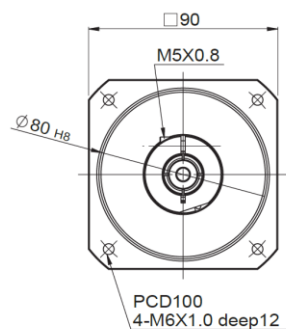
(Unit: mm)



PE#60

L	PE Overall Length Gear Ratio 3~10	94
	PE Overall Length Gear Ratio 12~50	115.5

(Unit: mm)





PLANETARY SERVOBOX

SF SERIES

HIGH RADIAL AND AXIAL FORCE DOUBLE TAPER BEARING DESIGN



Features :

- SF Series 1-Stage Planetary ServoBox in Gear Reduction Ratio 3 ~ 10.
- SF-A Series 2-Stage Planetary ServoBox in Gear Reduction Ratio 15 ~ 100.

GENERAL SPECIFICATIONS	Unit	Ratio	Model : SF (1 Stage)				
			#62	#75	#100	#142	#180
Frame Size	MM	3~10	62 x 62	76 x 76	106 x 106	142 x 142	180 x 180
Mounting PCD	MM	3~10	Ø68	Ø85	Ø120	Ø165	Ø215
Output Shaft Diameter	MM	3~10	Ø16	Ø22	Ø32	Ø40	Ø55
Output Shaft Length	MM	3~10	28	36	58	82	82
Rated Output Torque Capacity (1-Stage ServoBox)	Nm	Ratio 3	59	165	216	625	1,206
		Ratio 4	51	146	208	555	1,069
		Ratio 5	48	155	333	618	1,189
		Ratio 6	45	150	315	583	1,118
		Ratio 7	45	142	309	573	1,108
		Ratio 8	44	141	305	553	1,070
		Ratio 9	44	140	293	551	1,060
Ratio 10	43	136	294	549	1,059		
Max. Acceleration Torque	Nm	3~10	1.8 Times of Rated Output Torque				
Max. Output Torque Emergency Stop Torque	Nm	3~10	3 Times of Rated Output Torque				
Rated Input Speed	RPM	3~10	3,000	3,000	3,000	3,000	3,000
Maximum Input Speed	RPM	3~10	6,000	6,000	6,000	6,000	6,000
Backlash (arcmin)	PS	3~10	≤ 1 arcmin	≤ 1 arcmin	≤ 1 arcmin	≤ 1 arcmin	≤ 1 arcmin
	P0 / P1 / P2	3~10	P0 ≤ 3 arcmin ▪ P1 ≤ 5 arcmin ▪ P2 ≤ 7 arcmin				
Torsional Rigidity	Nm/arcmin	3~10	8	15	27	60	150
Maximum Radial Force	N	3~10	2,240	4,150	8,760	12,750	17,860
Maximum Axial Force	N	3~10	1,920	3,780	7,500	10,840	15,180
Service Life	Hr	3~10	Intermittent Periodic Duty S5 > 30,000 hours Continuous Duty S1 > 15,000 hours				
Efficiency	%	3~10	≥ 97%				
Operating Temperature	°C	3~10	-25°C ~ +90°C				
Lubrication		3~10	Synthetic Grease				
Degree of Protection		3~10	IP65				
Mounting Position		3~10	Any				
Noise Level	dB(A)	3~10	≤ 58	≤ 60	≤ 63	≤ 65	≤ 67
Weight ± 3%	Kg	3~10	0.6	1.28	3.6	8	--
Mass Moments Of Inertia (Kg .cm ²)		3	0.15	0.60	3.21	9.18	28.82
		4	0.14	0.51	2.80	7.51	23.56
		5	0.13	0.45	2.71	7.40	23.74
		6	0.13	0.45	2.65	7.15	22.65
		7	0.12	0.42	2.54	7.15	22.40
		8	0.12	0.42	2.51	7.01	22.35
		9	0.12	0.42	2.51	7.01	22.35
	10	0.12	0.42	2.51	7.01	22.35	



PLANETARY SERVOBOX

SF-A SERIES

HIGH RADIAL AND AXIAL FORCE DOUBLE TAPER BEARING DESIGN



Features :

- Higher radial and axial load capacity.
- Double taper bearing design with full needle roller bearings without retainer.
- One-piece constructed planetary arm bracket.
- Universal housing and is suitable for all servo and stepper applications.

GENERAL SPECIFICATIONS	Unit	Ratio	Model : SF (2 Stage)				
			#62A	#75A	#100A	#142A	#180A
Frame Size	MM	15~100	62 x 62	76 x 76	106 x 106	142 x 142	180 x 180
Mounting PCD	MM	15~100	Ø68	Ø85	Ø120	Ø165	Ø215
Output Shaft Diameter	MM	15~100	Ø16	Ø22	Ø32	Ø40	Ø55
Output Shaft Length	MM	15~100	28	36	58	82	82
Rated Output Torque Capacity (2-Stage ServoBox)	Nm	Ratio 15	59	142	298	625	1,206
		Ratio 20	51	126	267	555	1,069
		Ratio 25	48	158	296	618	1,189
		Ratio 30	45	130	278	583	1,118
		Ratio 35	45	128	275	573	1,108
		Ratio 40	43	123	265	553	1,070
		Ratio 50	48	138	296	618	1,189
		Ratio 60	45	130	277	583	1,118
		Ratio 70	45	128	275	573	1,108
		Ratio 80	43	123	265	553	1,070
		Ratio 90	44	125	247	516	993
		Ratio 100	43	121	262	549	1,059
Max. Acceleration Torque	Nm	15~100	1.8 Times of Rated Output Torque				
Max. Output Torque Emergency Stop Torque	Nm	15~100	3 Times of Rated Output Torque				
Rated Input Speed	RPM	15~100	3,000	3,000	3,000	3,000	3,000
Maximum Input Speed	RPM	15~100	6,000	6,000	6,000	6,000	6,000
Backlash (arcmin)	PS	15~100	≤ 3arcmin	≤ 3arcmin	≤ 3arcmin	≤ 3arcmin	≤ 3arcmin
	P0 / P1 / P2	15~100	P0 ≤ 5arcmin ▪ P1 ≤ 7arcmin ▪ P2 ≤ 9arcmin				
Torsional Rigidity	Nm/arcmin	15~100	8	15	27	60	150
Maximum Radial Force	N	15~100	2,240	4,150	8,760	12,750	17,860
Maximum Axial Force	N	15~100	1,920	3,780	7,500	10,840	15,180
Service Life	Hr	15~100	Intermittent Periodic Duty S5 > 30,000 hours Continuous Duty S1 > 15,000 hours				
Efficiency	%	15~100	≥ 94%				
Operating Temperature	°C	15~100	-25°C ~ +90°C				
Lubrication		15~100	Synthetic Grease				
Degree of Protection		15~100	IP65				
Mounting Position		15~100	Any				
Noise Level	dB(A)	15~100	≤ 58	≤ 60	≤ 63	≤ 65	≤ 67
Weight ± 3%	Kg	15~100	0.6	1.28	3.6	8	--

DIMENSION – SF PLANETARY SERVOBOX

Fig. 33 SF62 SF62A

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	8 ~ 19
A2	Input Pilot Bore \varnothing	50 ~ 70
A3	Adapter Frame Size \square (Square dimension)	64, 70, 80
A4	Mounting PCD \varnothing	70 ~ 90
A5	Mounting Bolt Size	M4xP0.7 M5xP0.8 M6xP1.0
L	SF Overall Length Gear Ratio 3~10	140
	SF-A Overall Length Gear Ratio 15~100	174

(Unit: mm)

Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < \varnothing 32mm.

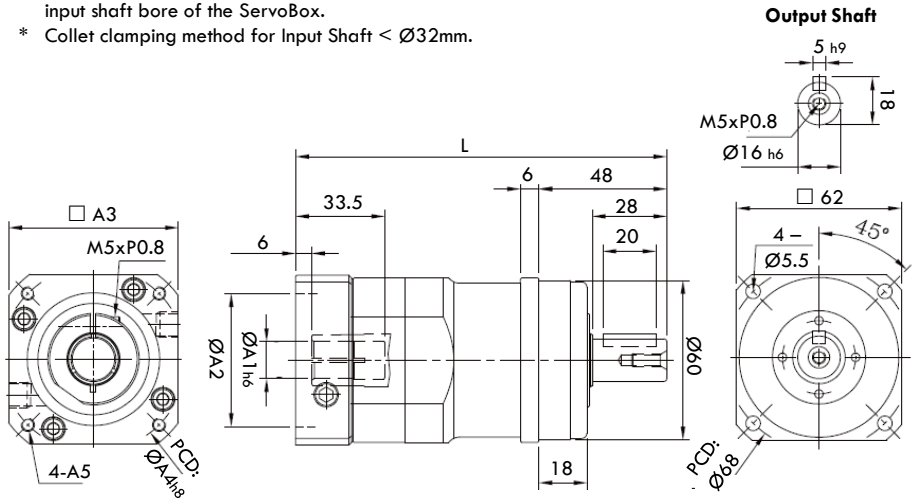


Fig. 34 SF75 SF75A

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	14 ~ 24
A2	Input Pilot Bore \varnothing	70 ~ 130
A3	Adapter Frame Size \square (Square dimension)	92, 110, 130, 142
A4	Mounting PCD \varnothing	90 ~ 145
A5	Mounting Bolt Size	M5xP0.8 M6xP1.0 M8xP1.25
L	SF Overall Length Gear Ratio 3~10	191
	SF-A Overall Length Gear Ratio 15~100	214

(Unit: mm)

Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < \varnothing 32mm.

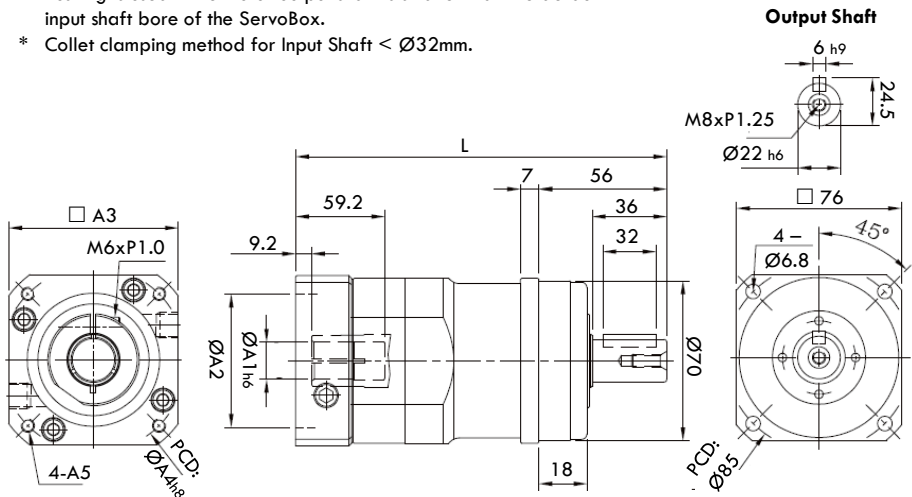


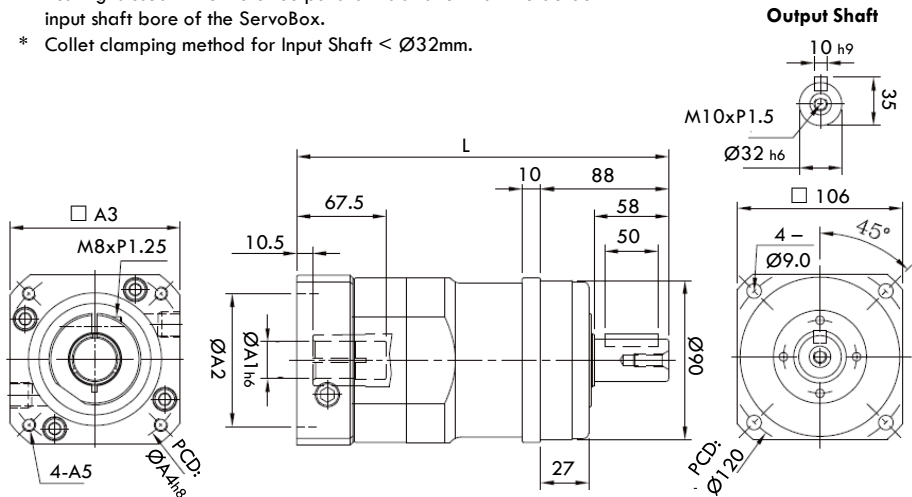
Fig. 35 SF90 SF90A

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	19 ~ 32
A2	Input Pilot Bore \varnothing	110 ~ 130
A3	Adapter Frame Size \square (Square dimension)	122, 130, 150
A4	Mounting PCD \varnothing	115 ~ 165
A5	Mounting Bolt Size	M6xP1.0 M8xP1.25 M10xP1.5
L	SF Overall Length Gear Ratio 3~10	243
	SF-A Overall Length Gear Ratio 15~100	283

(Unit: mm)

Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < \varnothing 32mm.



DIMENSION – SF PLANETARY SERVOBOX

Fig. 36 SF142 SF142A

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	22 ~ 42
A2	Input Pilot Bore \varnothing	110 ~ 180
A3	Adapter Frame Size □ (Square dimension)	146, 180, 190
A4	Mounting PCD \varnothing	145 ~ 215
A5	Mounting Bolt Size	M8xP1.25 M10xP1.5 M12xP1.75
L	SF Overall Length Gear Ratio 3~10	306
	SF-A Overall Length Gear Ratio 15~100	373

(Unit: mm)

Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32$ mm.

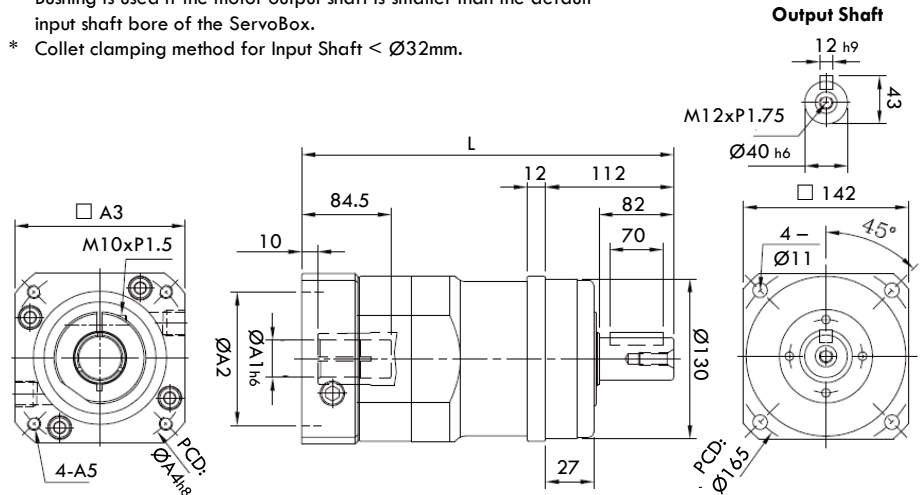


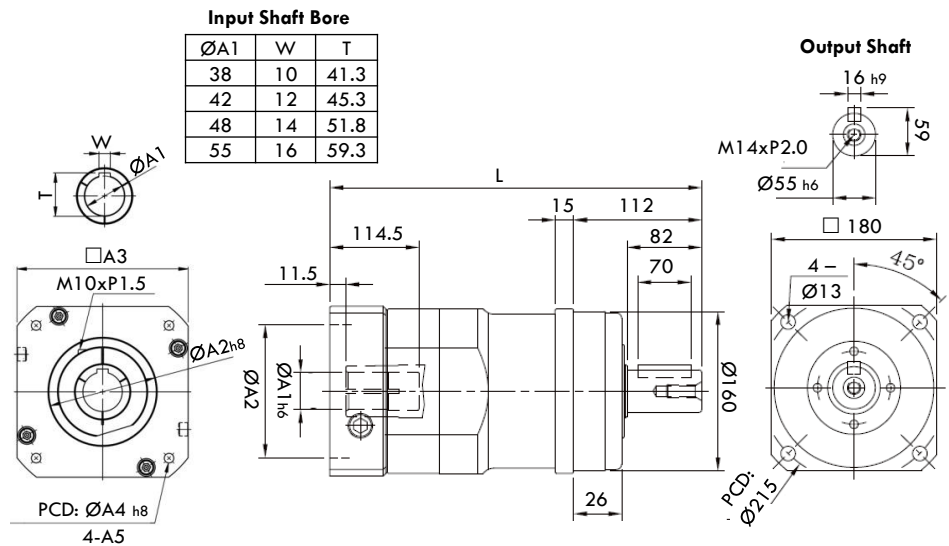
Fig. 37 SF180 SF180A

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	35 ~ 55
A2	Input Pilot Bore \varnothing	114.3 ~ 250
A3	Adapter Frame Size □ (Square dimension)	182, 200, 220, 250, 265
A4	Mounting PCD \varnothing	200 ~ 265
A5	Mounting Bolt Size	M10xP1.5 M12xP1.75 M16xP2.0
L	SF Overall Length Gear Ratio 3~10	360
	SF-A Overall Length Gear Ratio 15~100	441

(Unit: mm)

Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).



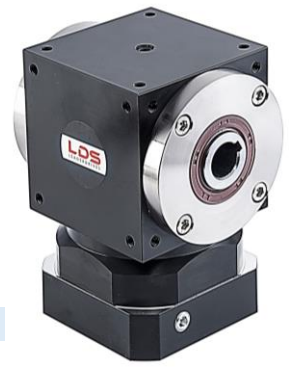
Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.



SPIRAL BEVEL GEAR SERVOBOX

ST-FO/RO SERIES

**COMPACT RIGHT ANGLE SOLUTION
HIGHEST EFFICIENCY DESIGN**



FT-FO SERIES

Ultra Compact Design Series

Features :

- Employ high precision grinded and carburized spiral bevel gears to meet standard AGMA12.
- High efficiency design ($\geq 98\%$) to transmit rotational motion at right angles
- Max gear reduction ratio up to 1/500.
- Hollow output shaft / single output shaft / double outputs shaft and multiple shaft configurations are available.

Ball Bearing Design (ST-FO-B / ST-RO-B) / Taper Bearing Design (ST-FO-T / ST-RO-T)

- ST-FO: 1-Stage ServoBox in Gear Ratio 1, 2, 3, 4 and 5.
- ST-RO: 2-Stage ServoBox in Gear Ratio 10, 15, 20, 25, 30, 40 and 50.

* FT-FO/RO – Ultra Compact Spiral Bevel Gear ServoBox

GENERAL SPECIFICATIONS	Unit	Ratio	Model : ST (1 Stage) / (2 Stage)						
			#65	#75	#90	#110	#140	#170	#210
Frame Size	MM	1~50	65 x 65	75 x 75	90 x 90	110 x 100	140 x 140	170 x 170	210 x 210
Mounting Dimension	MM	1~50	52 x 52	60 x 60	72 x 72	88 x 88	110 x 110	134 x 134	170 x 170
Hollow Output Shaft Bore Diameter	MM	1~50	Ø14	Ø14	Ø18	Ø22	Ø32	Ø40	Ø50
Rated Output Torque Capacity (1-Stage ServoBox)	Nm	Ratio 1	25	45	78	150	360	585	1,300
		Ratio 2	24	42	68	150	330	544	1,220
		Ratio 3	18	33	54	120	270	450	1,020
		Ratio 4	13	28	52	100	224	376	860
		Ratio 5	12	25	40	85	196	320	740
Rated Output Torque Capacity (2-Stage ServoBox)	Nm	Ratio 10	24	42	68	150	330	544	1,220
		Ratio 15	18	33	54	120	270	450	1,020
		Ratio 20	13	28	48	100	224	376	860
		Ratio 25	12	25	40	85	196	320	740
		Ratio 30	18	33	54	120	270	450	1,020
		Ratio 40	13	28	52	100	224	376	860
		Ratio 50	12	25	40	85	196	320	740
Max. Acceleration Torque	Nm	1~50	1.5 Times of Rated Output Torque						
Max. Output Torque Emergency Stop Torque	Nm	1~50	3 Times of Rated Output Torque						
Rated Input Speed	RPM	1~5	3,000	3,000	3,000	2,500	2,500	2,000	2,000
		10~50	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Maximum Input Speed	RPM	1~5	6,000	6,000	5,500	4,500	3,500	3,000	3,000
		10~50	6,000	6,000	6,000	6,000	6,000	5,000	5,000
Backlash (arcmin)	Arcmin	1~5	P0 ≤ 2 arcmin / P1 ≤ 5 arcmin / P2 ≤ 9 arcmin						
		10~50	P0 ≤ 4 arcmin / P1 ≤ 7 arcmin / P2 ≤ 10 arcmin						
Maximum Radial Force	N (Ball Bearing)	1~50	700	1,050	1,500	2,360	3,080	4,800	6,400
	N (Taper Bearing)	1~50	--	2,400	3,200	5,000	6,500	9,100	13,000
Maximum Axial Force	N (Ball Bearing)	1~50	350	525	750	1,180	1,540	2,400	3,200
	N (Taper Bearing)	1~50	--	1,200	1,600	2,500	3,250	4,550	6,500
Service Life	Hr	1~50	Intermittent Periodic Duty S5 > 20,000 hours Continuous Duty S1 > 10,000 hours						
Efficiency	%	1~5	$\geq 98\%$						
		10~50	$\geq 94\%$						
Operating Temperature	°C	1~50	-30°C ~ +100°C						
Lubrication		1~50	Synthetic oil						
Degree of Protection		1~50	IP65						
Mounting Position		1~50	Any						
Noise Level	dB(A)	1~5	≤ 65	≤ 67	≤ 71	≤ 73	≤ 74	≤ 75	≤ 77
		10~50	≤ 68	≤ 69	≤ 73	≤ 74	≤ 75	≤ 76	≤ 78

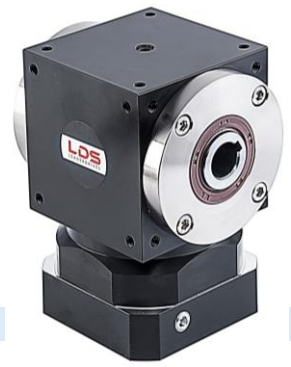


SPIRAL BEVEL GEAR SERVOBOX

ST

SERIES

SPIRAL BEVEL GEAR SERVOBOX DESIGN SELECTION



INPUT TYPE

F
Input Flange
Ratio 1 ~ 5

R
Input Flange
Ratio 10 ~ 50

D
Single Input Shaft

Y
Double Input Shaft

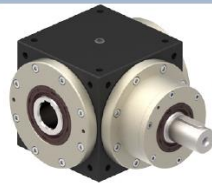
O
Hollow Output
Shaft



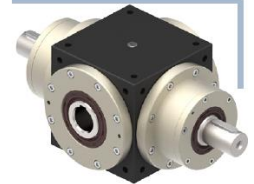
FO



RO



DO



YO

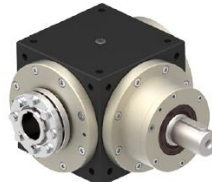
N
Hollow Output
Shaft with
Single Clamping



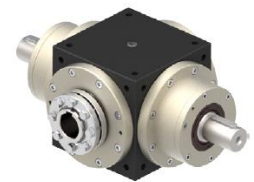
FN



RN



DN



YN

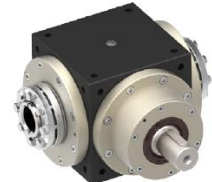
M
Hollow Output
Shaft with
Double Clamping



FM



RM



DM

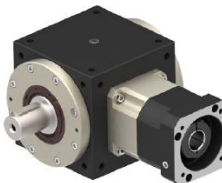


YM

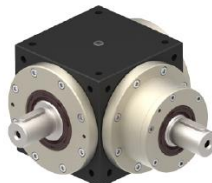
S
Single Output
Shaft



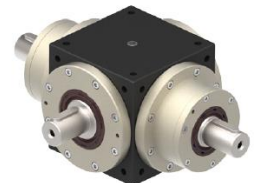
FS



RS



DS



YS

V
Double Output
Shaft



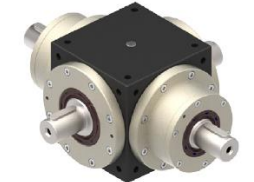
FV



RV



DV



YV

P
For Ball Screw



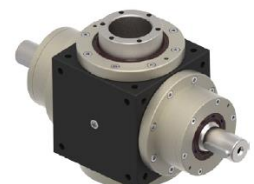
FP



RP



DP



YP

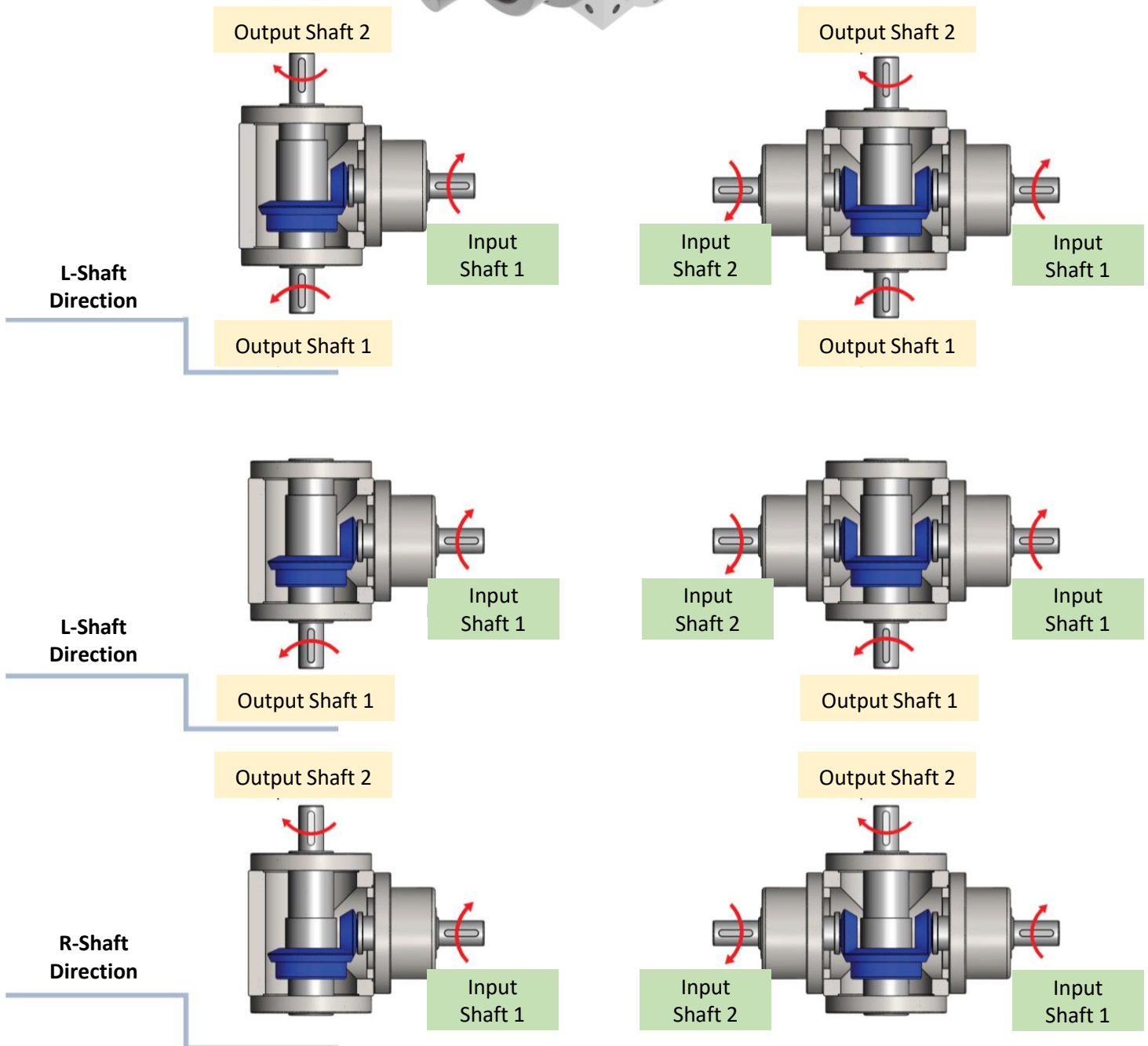
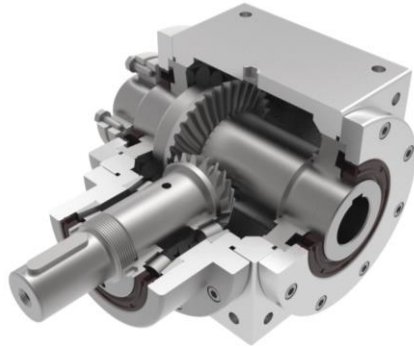
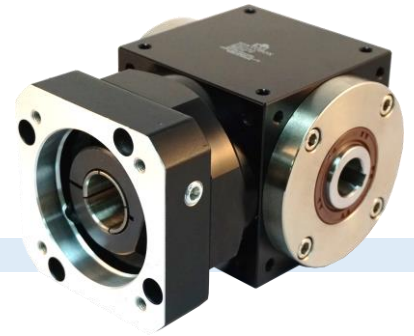
OUTPUT TYPE



SPIRAL BEVEL GEAR SERVOBOX

ST SERIES

SPIRAL BEVEL GEAR SERVOBOX SHAFT ROTATION DIRECTION



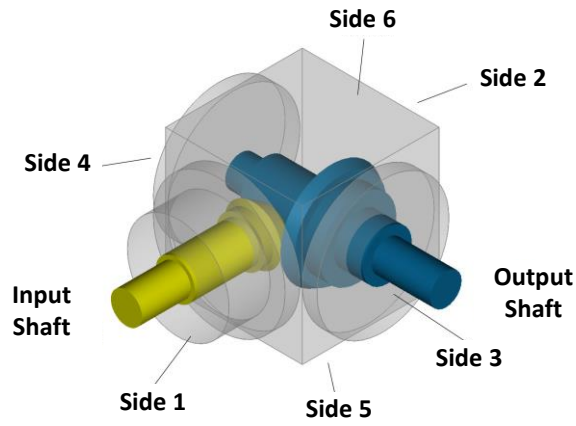
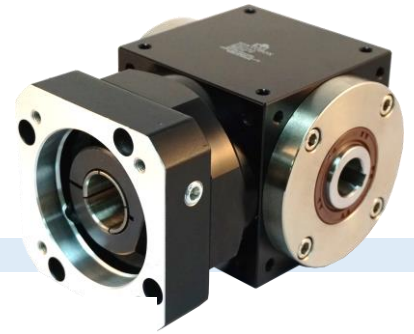


ST SERIES

ST

SERIES

SPIRAL BEVEL GEAR SERVOBOX MOUNTING DIRECTION



	<p>Please avoid installation of shaft direction like this (Side 4)</p>

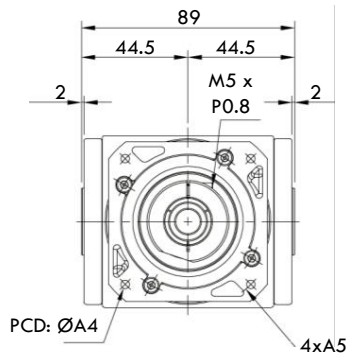
Note 1 Please avoid installation of shaft direction like this (Side 4)

DIMENSION – ST SPIRAL BEVEL GEAR SERVOBOX

Fig. 38 **ST-65-FO-B**
Gear Ratio 1

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	11 ~ 19
A2	Input Pilot Bore \varnothing	50 ~ 70
A3	Adapter Frame Size \square (Square dimension)	64, 70, 80
A4	Mounting PCD \varnothing	70 ~ 90
A5	Mounting Bolt Size	M4xP0.7 M5xP0.8 M6xP1.0

(Unit: mm)



Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32$ mm.
- * Solid output shaft option is available.

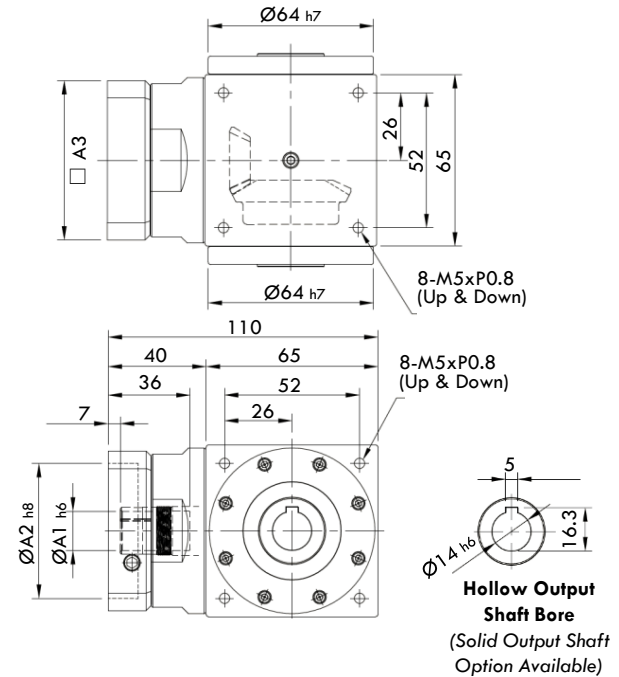
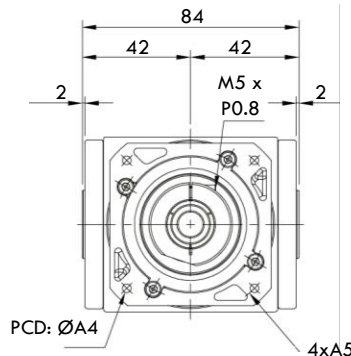


Fig. 39

ST-65-(FO/RO)-B
ST-65-(FO/RO)-T
Gear Ratio 2 ~ 5
Gear Ratio 10 ~ 50

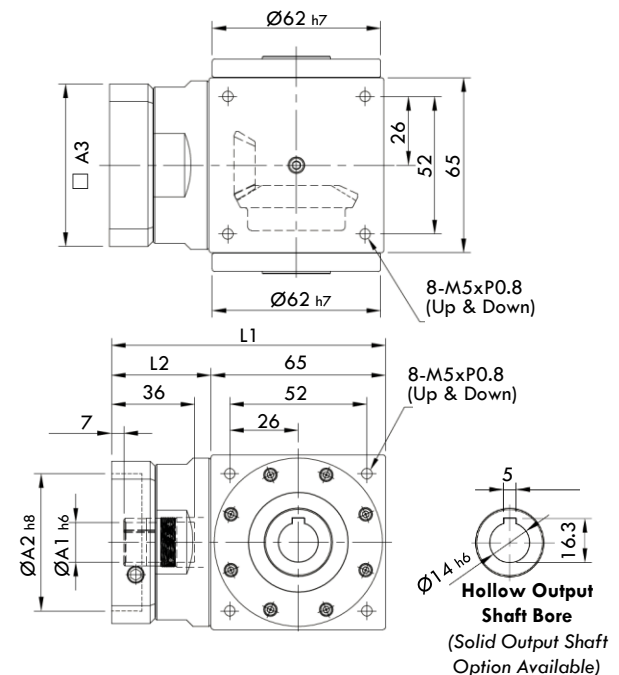
Modular Adapter Dimension (Attach to Servo Motor)	Gear Ratio	
	2~5	10~50
A1	Input Shaft Bore \varnothing	11 ~ 19 6 ~ 11
A2	Input Pilot Bore \varnothing	50 ~ 70 30 ~ 50
A3	Adapter Frame Size \square (Square dimension)	64, 70, 80 46, 55
A4	Mounting PCD \varnothing	70 ~ 90 46 ~ 63
A5	Mounting Bolt Size	M4xP0.7 M3xP0.5 M5xP0.8 M4xP0.7 M6xP1.0 M5xP0.8
L1	ST Overall Length	110 132
L2	Body Length	45 67

(Unit: mm)



Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32$ mm.
- * Solid output shaft option is available.
- * ST-RO Series Ratio 10~50 is fitted with Planetary ServoBox.



Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.

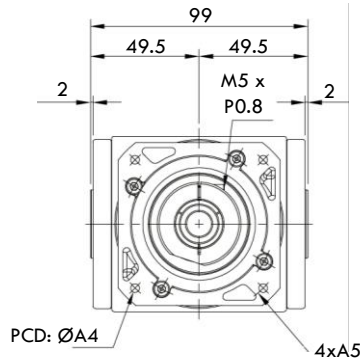
DIMENSION – ST SPIRAL BEVEL GEAR SERVOBOX

Fig. 40

ST-75-(FO/RO)-B ST-75-(FO/RO)-T

Modular Adapter Dimension (Attach to Servo Motor)		Gear Ratio 1~5	Gear Ratio 10~50
A1	Input Shaft Bore \varnothing	11 ~ 19	6 ~ 11
A2	Input Pilot Bore \varnothing	50 ~ 70	30 ~ 50
A3	Adapter Frame Size \square (Square dimension)	64, 70, 80	46, 55
A4	Mounting PCD \varnothing	70 ~ 90	50 ~ 63
A5	Mounting Bolt Size	M4xP0.7 M5xP0.8 M6xP1.0	M3xP0.5 M4xP0.7 M5xP0.8
L1	ST Overall Length	115	137
L2	Body Length	40	62

(Unit: mm)



Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32$ mm.
- * Solid output shaft option is available.
- * ST-RO Series Ratio 10~50 is fitted with Planetary ServoBox.

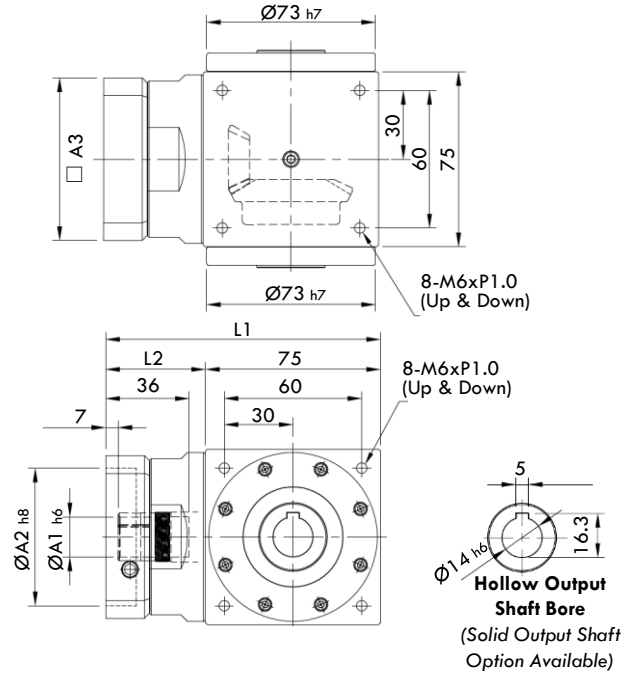
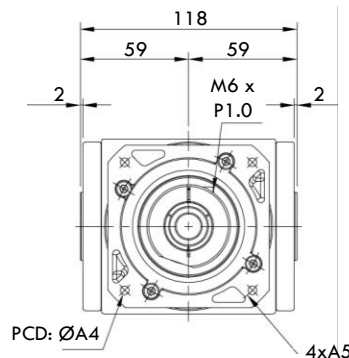


Fig. 41

ST-90-(FO/RO)-B ST-90-(FO/RO)-T

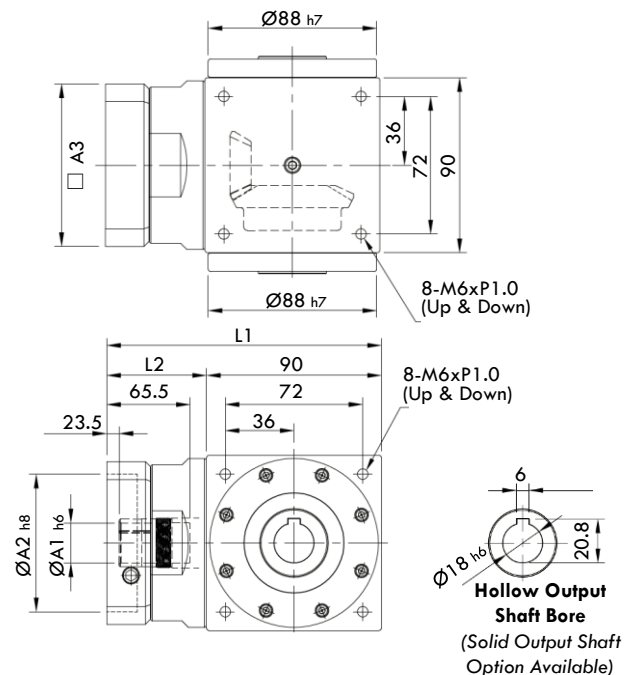
Modular Adapter Dimension (Attach to Servo Motor)		Gear Ratio 1~5	Gear Ratio 10~50
A1	Input Shaft Bore \varnothing	14 ~ 24	11 ~ 19
A2	Input Pilot Bore \varnothing	70 ~ 130	50 ~ 70
A3	Adapter Frame Size \square (Square dimension)	92, 110, 130, 142	64, 70, 80
A4	Mounting PCD \varnothing	90 ~ 145	70 ~ 90
A5	Mounting Bolt Size	M5xP0.8 M6xP1.0 M8xP1.25	M4xP0.7 M5xP0.8 M6xP1.0
L1	ST Overall Length	148, 162	165
L2	Body Length	58, 72	75

(Unit: mm)



Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32$ mm.
- * Solid output shaft option is available.
- * ST-RO Series Ratio 10~50 is fitted with Planetary ServoBox.



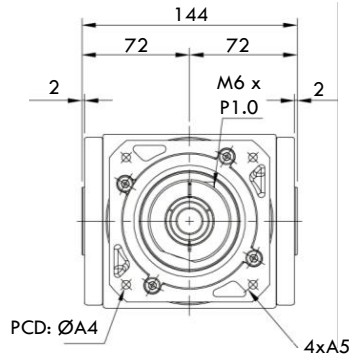
Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.

DIMENSION – ST SPIRAL BEVEL GEAR SERVOBOX

Fig. 42 ST-110-(FO/RO)-B
ST-110-(FO/RO)-T

Modular Adapter Dimension (Attach to Servo Motor)		Gear Ratio 1~5	Gear Ratio 10~50
A1	Input Shaft Bore \varnothing	14 ~ 24	11 ~ 19
A2	Input Pilot Bore \varnothing	70 ~ 130	50 ~ 70
A3	Adapter Frame Size \square (Square dimension)	92, 110, 130, 142	64, 70, 80
A4	Mounting PCD \varnothing	90 ~ 145	64 ~ 90
A5	Mounting Bolt Size	M5xP0.8 M6xP1.0 M8xP1.25	M4xP0.7 M5xP0.8 M6xP1.0
L1	ST Overall Length	177, 191	191
L2	Body Length	67, 81	81

(Unit: mm)



Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32$ mm.
- * ST-RO Series Ratio 10~50 is fitted with Planetary ServoBox.

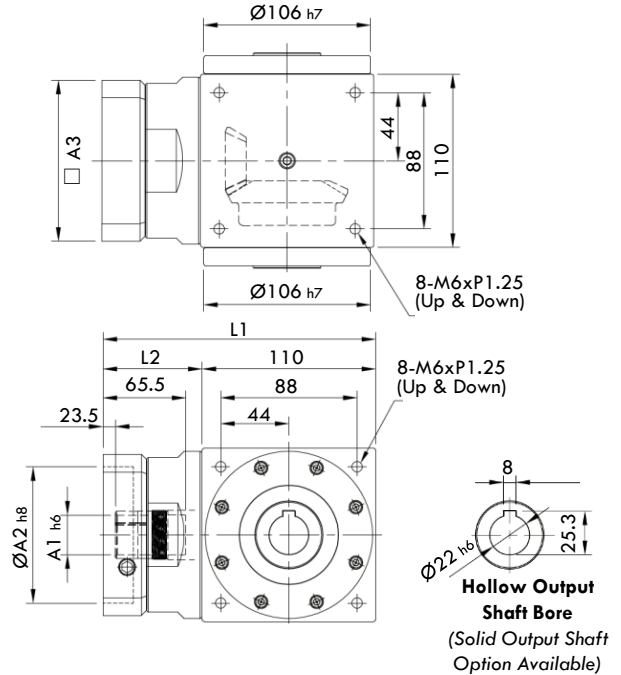
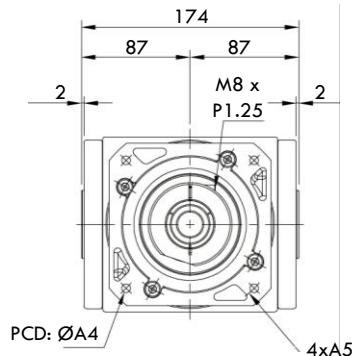


Fig. 43 ST-140-(FO/RO)-B
ST-140-(FO/RO)-T

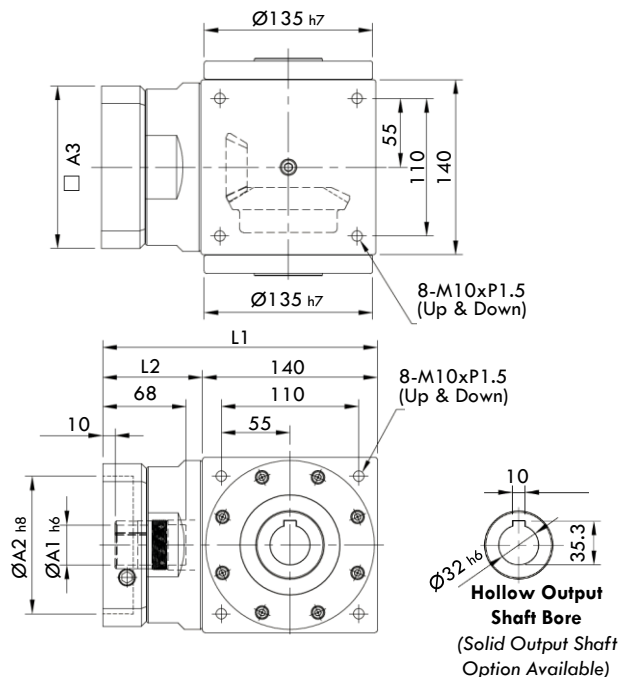
Modular Adapter Dimension (Attach to Servo Motor)		Gear Ratio 1~5	Gear Ratio 10~50
A1	Input Shaft Bore \varnothing	19 ~ 32	14 ~ 24
A2	Input Pilot Bore \varnothing	110 ~ 130	70 ~ 130
A3	Adapter Frame Size \square (Square dimension)	130, 150	92, 110, 130, 142
A4	Mounting PCD \varnothing	145 ~ 165	90 ~ 145
A5	Mounting Bolt Size	M6xP1.0 M8xP1.25 M10xP1.5	M5xP0.8 M6xP1.0 M8xP1.25
L1	ST Overall Length	224	260
L2	Body Length	84	120

(Unit: mm)



Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32$ mm.
- * Solid output shaft option is available.
- * ST-RO Series Ratio 10~50 is fitted with Planetary ServoBox.



Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.

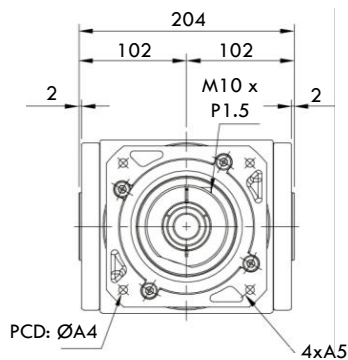
DIMENSION – ST SPIRAL BEVEL GEAR SERVOBOX

Fig. 44

ST-170-(FO/RO)-B ST-170-(FO/RO)-T

Modular Adapter Dimension (Attach to Servo Motor)	Gear Ratio 1~5	Gear Ratio 10~50
A1 Input Shaft Bore \varnothing	22 ~ 38	19 ~ 32
A2 Input Pilot Bore \varnothing	110 ~ 180	110 ~ 130
A3 Adapter Frame Size \square (Square dimension)	146, 180, 190	130, 150
A4 Mounting PCD \varnothing	145 ~ 215	145 ~ 165
A5 Mounting Bolt Size	M8xP1.25 M10xP1.5 M12xP1.75	M6xP1.0 M8xP1.25 M10xP1.5
L1 ST Overall Length	274	313
L2 Body Length	104	143

(Unit: mm)



Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < \varnothing 32mm.
- * Solid output shaft option is available.
- * ST-RO Series Ratio 10~50 is fitted with Planetary ServoBox.

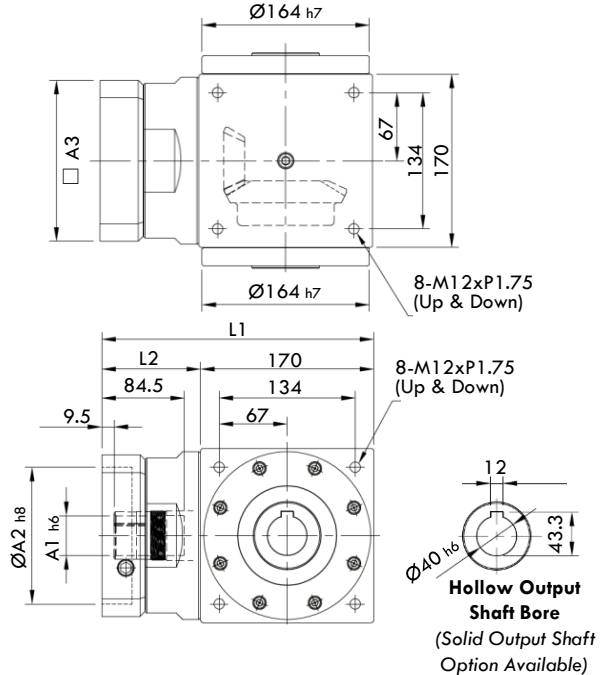
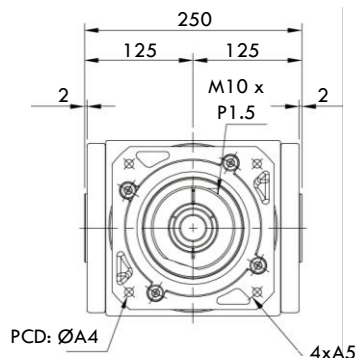


Fig. 45

ST-210-(FO/RO)-B ST-210-(FO/RO)-T

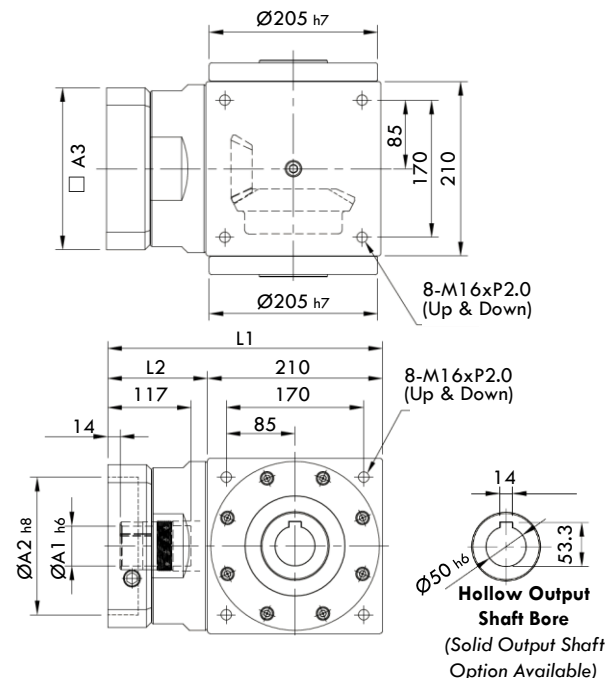
Modular Adapter Dimension (Attach to Servo Motor)	Gear Ratio 1~5	Gear Ratio 10~50
A1 Input Shaft Bore \varnothing	35 ~ 55	24 ~ 35
A2 Input Pilot Bore \varnothing	114.3 ~ 250	110 ~ 180
A3 Adapter Frame Size \square (Square dimension)	182, 200, 220, 250, 265	146, 180, 190
A4 Mounting PCD \varnothing	200 ~ 235	145 ~ 215
A5 Mounting Bolt Size	M12xP1.75 M16xP2.0	M8xP1.25 M10xP1.5 M12xP1.75
L1 ST Overall Length	357	394
L2 Body Length	147	184

(Unit: mm)



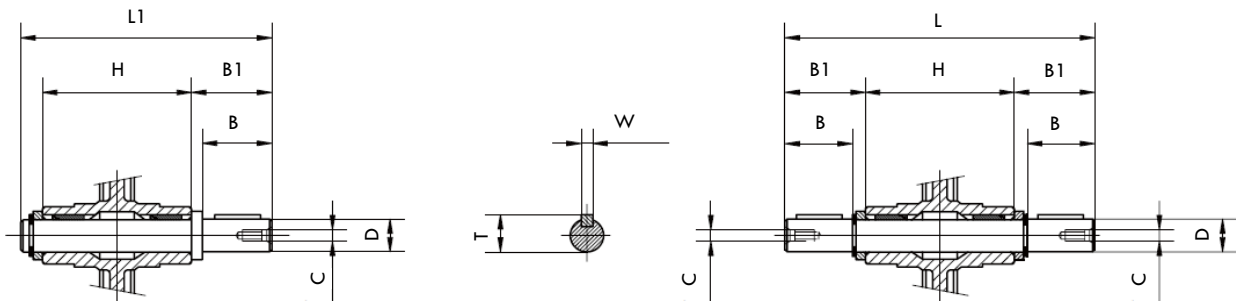
Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < \varnothing 32mm.
- * Solid output shaft option is available.
- * ST-RO Series Ratio 10~50 is fitted with Planetary ServoBox.



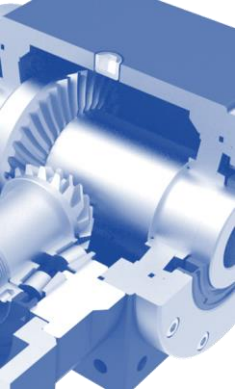
DIMENSION – ST SPIRAL BEVEL GEAR SERVOBOX

Fig. 46 **ST SERVOBOX
OUTPUT SHAFT OPTION**



(unit : mm)	D	W	T	B	B1	H	L1	L	C
#65	14	5	16	20	22	98	104	124	M6xP1.0
#75	16	5	18	32	34	122	128	160	M5xP0.8
#90	18	6	20.5	35	37	147	153	188	M8xP1.25
#110	22	6	24.5	40	42	178	184	224	M8xP1.25
#140	32	10	35	50	52	218	224	274	M10xP1.5
#170	40	12	43	60	62	258	264	324	M12xP1.75
#210	50	14	53.5	75	77	319	325	400	M12xP1.75

Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.

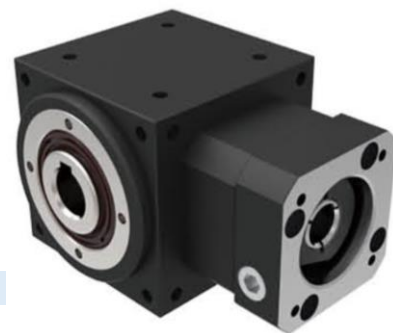


SPIRAL BEVEL GEAR SERVOBOX

FT-FO/RO

SERIES

ULTRA COMPACT RIGHT ANGLE SOLUTION
HIGHEST EFFICIENCY DESIGN



Features :

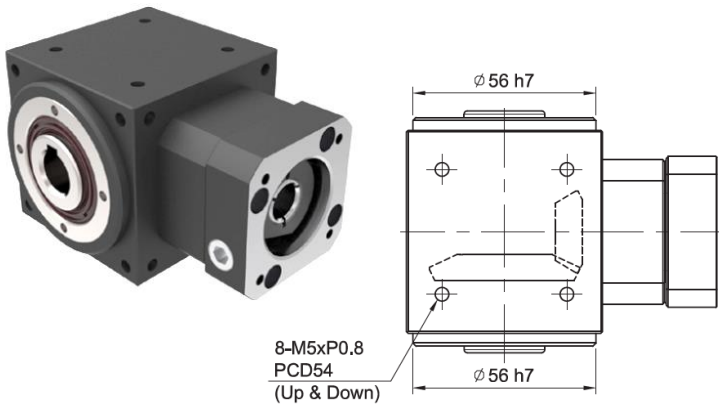
- Employ high precision grinded and carburized spiral bevel gears to meet standard AGMA12.
- High efficiency design ($\geq 98\%$) to transmit rotational motion at right angles
- Hollow output shaft / single output shaft / double outputs shaft and multiple shaft configurations are available.
- Ball Bearing Design
- ST-FO: 1-Stage ServoBox in Gear Ratio 2, 3, 4 and 5.
- ST-RO: 2-Stage ServoBox in Gear Ratio 10, 15, 20, 25, 30, 40 and 50.

GENERAL SPECIFICATIONS	Unit	Ratio	FT60	FT70
Frame Size	MM	2~50	60 x 60	75 x 75
Hollow Output Shaft Bore Diameter	MM	2~50	Ø14	Ø14
Rated Output Torque	Nm (1Stage)	2	15	22
		3	13	18
		4	13	18
		5	12	16
	Nm (2Stage)	10	15	22
		15	13	18
		20	13	18
		25	12	16
		30	13	18
		40	13	18
50	12	16		
Max. Output Torque Emergency Stop Torque	Nm	2~50	2 Times of Rated Output Torque	
Rated Input Speed	RPM	2~50	3,000	3,000
Maximum Input Speed	RPM	2~50	7,000	7,000
Backlash (arcmin)	Arcmin	2~5	≤ 10 arcmin	≤ 10 arcmin
		10~50	≤ 12 arcmin	≤ 12 arcmin
Maximum Radial Force	N	2~5	600	800
		10~50	600	800
Maximum Axial Force	N	2~5	300	400
		10~50	300	400
Service Life	Hr	2~50	Intermittent Periodic Duty S5 > 20,000 hours Continuous Duty S1 > 10,000 hours	
Efficiency	%	1~5	$\geq 98\%$	$\geq 98\%$
		10~50	$\geq 94\%$	$\geq 94\%$
Operating Temperature	°C	1~50	-10°C ~ +90°C	
Lubrication		1~50	Synthetic oil	
Degree of Protection	IP	1~50	IP65	
Mounting Position		1~50	Any	
Noise Level	dB(A)	1~5	≤ 68	≤ 70
		10~50	≤ 70	≤ 72

Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.

DIMENSION – FT COMPACT SPIRAL BEVEL GEAR SERVBOX

Fig. 47 : FT-60-(FO/RO)-B



Modular Adapter Dimension (Attach to Servo Motor)		Gear Ratio 2~5	Gear Ratio 10~50
A1	Input Shaft Bore \varnothing	8, 11	8, 11
A2	Input Pilot Bore \varnothing	30, 40, 50	30, 40, 50
A3	Adapter Frame Size \square (Square dimension)	46, 55	46, 55
A4	Mounting PCD \varnothing	46, 60, 63	46, 60, 63
L1	FT Overall Length	95	127
L2	Body Length	35	67

(Unit: mm)

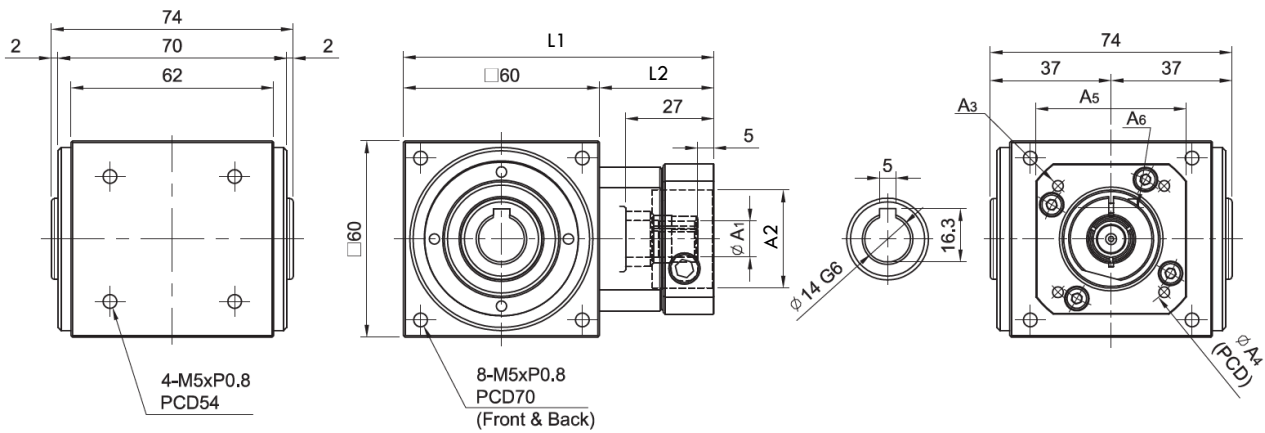
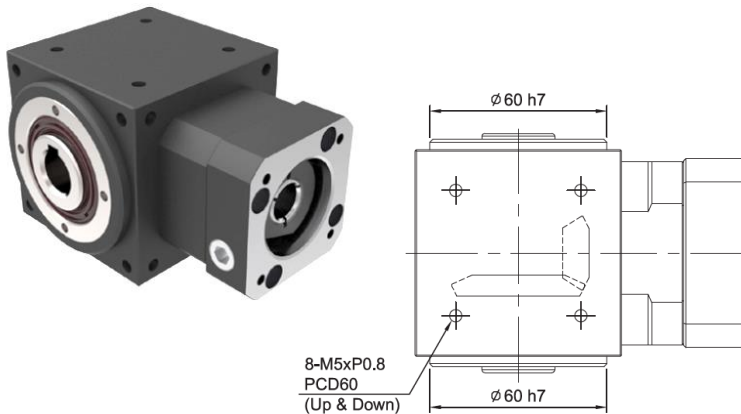
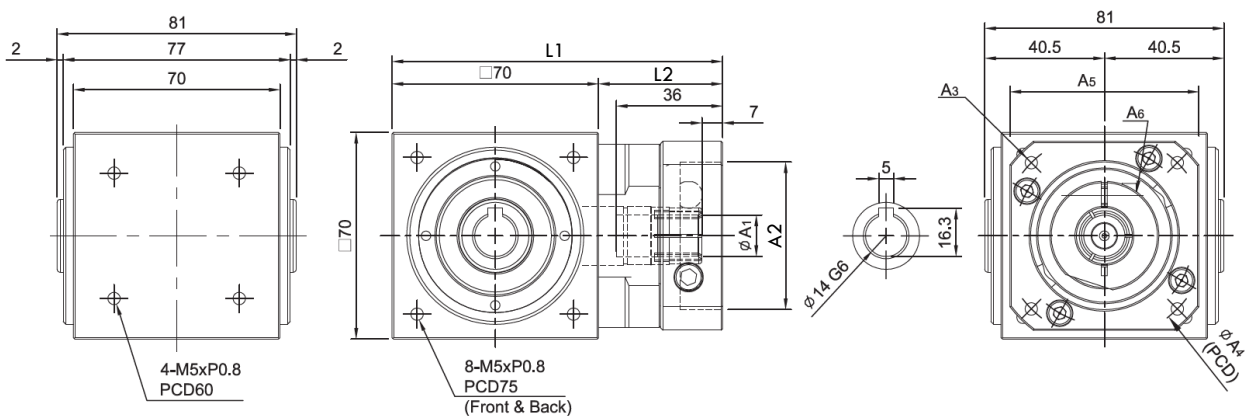


Fig. 48 : FT-70-(FO/RO)-B



Modular Adapter Dimension (Attach to Servo Motor)		Gear Ratio 2~5	Gear Ratio 10~50
A1	Input Shaft Bore \varnothing	11, 14	11, 14
A2	Input Pilot Bore \varnothing	50, 60, 70	50, 60, 70
A3	Adapter Frame Size \square (Square dimension)	64, 70, 80	64, 70, 80
A4	Mounting PCD \varnothing	70, 75, 90	70, 75, 90
L1	FT Overall Length	112	146
L2	Body Length	42	76

(Unit: mm)



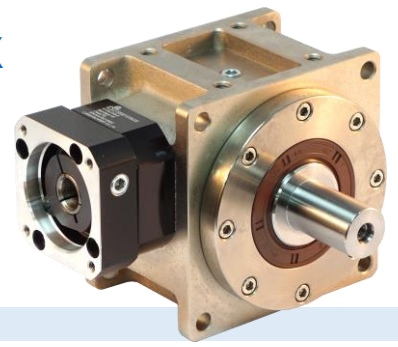
Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.



SPIRAL BEVEL GEAR SERVOBOX

HY-FV/RV SERIES

**HYPOID BEVEL GEAR DESIGN
ALUMINIUM DIE-CAST ALLOY HOUSING**



Features :

- Compact design to transmit rotational motion at right angles with higher torque capability
- Ball bearing and taper bearing option
- Heavy duty housing in aluminium die-cast alloy to withstand highest operating temperature
- Single stage gear ratio 1/20 ~ 1/60 available upon request.
- Hollow output shaft / single output shaft / double outputs shaft and multiple shaft configurations are available.

Ball Bearing Design (HY-FV/RV-B) / Taper Bearing Design (HY-FV/RV-T)

- 1-Stage ServoBox in Gear Ratio 1/5, 1/10 and 1/15.
- 2-Stage ServoBox in Gear Ratio 1/25, 1/50, 1/75, 1/100 and 1/150.

GENERAL SPECIFICATIONS

GENERAL SPECIFICATIONS	Unit	Ratio	Model : HY (1 Stage) / (2 Stage)							
			#55	#75	#90	#115	#130	#140	#160	#190
Frame Size	MM	5~150	90 x 90	115 x 115	140 x 140	170 x 170	192 x 192	215 x 215	240 x 240	264 x 264
Mounting Dimension	MM	5~150	78 x 78	98 x 98	118 x 118	144 x 144	164 x 164	182 x 182	206 x 206	224 x 224
Output Shaft Diameter	MM	5~150	Ø20	Ø24	Ø32	Ø40	Ø48	Ø55	Ø60	Ø70
Output Shaft Length	MM	5~150	35	35	50	60	70	80	100	110
Rated Output Torque Capacity (1-Stage ServoBox)	Nm	Ratio 5	35	70	140	260	430	720	1,100	1,440
		Ratio 10	30	60	117	220	365	615	957	1,230
		Ratio 15	25	50	95	180	300	510	815	1,020
Rated Output Torque Capacity (2-Stage ServoBox)	Nm	Ratio 25	35	70	140	260	430	720	1,100	1,440
		Ratio 50	35	70	140	260	430	720	1,100	1,440
		Ratio 75	25	50	95	180	300	510	815	1,020
		Ratio 100	30	60	117	220	365	615	957	1,230
		Ratio 150	25	50	95	180	300	510	815	1,020
Max. Acceleration Torque	Nm	5~150	1.5 Times of Rated Output Torque							
Max. Output Torque Emergency Stop Torque	Nm	5~150	3 Times of Rated Output Torque							
Rated Input Speed	RPM	5~15	3,000	3,000	3,000	3,000	2,500	2,500	2,000	2,000
		25~150	3,000	3,000	3,000	3,000	2,500	2,500	2,000	2,000
Maximum Input Speed	RPM	5~15	6,000	6,000	6,000	6,000	5,000	5,000	4,000	4,000
		25~150	6,000	6,000	6,000	6,000	5,000	5,000	4,000	4,000
Backlash (arcmin)	Arcmin	5~15	P0 ≤ 2 arcmin / P1 ≤ 5 arcmin / P2 ≤ 8 arcmin							
		25~150	P0 ≤ 3 arcmin / P1 ≤ 6 arcmin / P2 ≤ 9 arcmin							
Maximum Radial Force	N (Ball Bearing)	5~15	1,150	1,820	2,080	3,700	4,500	5,400	7,300	9,450
		25~150	1,820	2,700	3,960	5,500	6,930	8,250	9,900	12,375
	N (Taper Bearing)	5~15	--	9,450	8,000	12,700	16,500	20,400	27,200	34,500
		25~150	3,300	4,900	7,200	10,000	12,600	15,000	18,000	22,500
Maximum Axial Force	N (Ball Bearing)	5~15	575	910	1,040	1,850	2,250	2,700	3,650	4,725
		25~150	910	1,350	1,980	2,750	3,810	4,540	5,450	6,190
	N (Taper Bearing)	5~15	--	4,725	4,000	6,350	8,250	10,200	13,600	17,250
		25~150	1,650	2,450	3,600	5,000	6,300	7,500	9,000	11,250
Service Life	Hr	5~150	Intermittent Periodic Duty S5 > 30,000 hours Continuous Duty S1 > 15,000 hours							
Efficiency	%	5~15	≥ 92%							
		25~150	≥ 90%							
Operating Temperature	°C	5~150	-10°C ~ +90°C							
		Lubrication	5~150	Synthetic oil						
Degree of Protection		5~150	IP65							
Mounting Position		5~150	Any							
Noise Level	dB(A)	5 / 25 / 75	≤ 67	≤ 67	≤ 69	≤ 69	≤ 71	≤ 71	≤ 72	≤ 72
		10~15 / 100~150	≤ 66	≤ 66	≤ 68	≤ 68	≤ 70	≤ 70	≤ 71	≤ 71

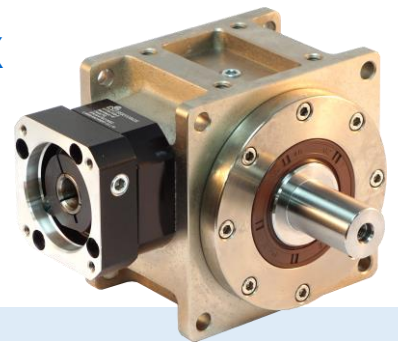


SPIRAL BEVEL GEAR SERVOBOX

HY

SERIES

HYPOID BEVEL GEAR SERVOBOX DESIGN SELECTION



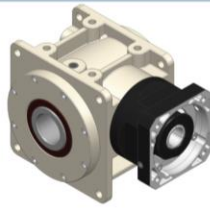
INPUT TYPE

F
Input Flange
Ratio 3 ~ 15

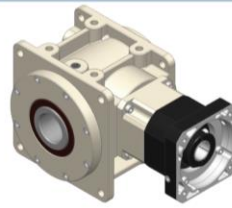
R
Input Flange
Ratio 20 ~ 150

D
Single Input Shaft

O
Hollow Output
Shaft



FO

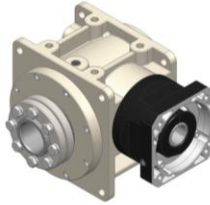


RO

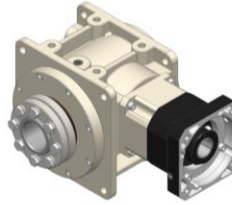


DO

N
Hollow Output
Shaft with
Single Clamping



FN

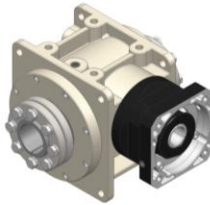


RN

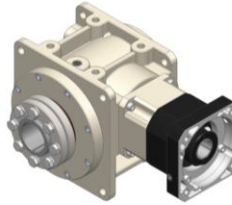


DN

M
Hollow Output
Shaft with
Double Clamping



FM

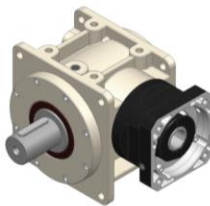


RM

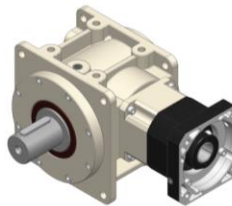


DM

S
Single Output
Shaft



FS

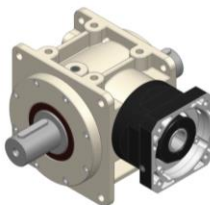


RS

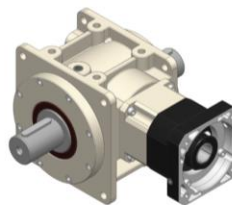


DS

V
Double Output
Shaft



FV

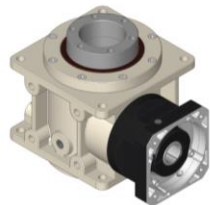


RV



DV

P
For Ball Screw



FP



RP



DP

OUTPUT TYPE

DIMENSION – HY HYPOID BEVEL GEAR SERVOBOX

Fig. 49

HY-55-(FV/RV)-B HY-55-(FV/RV)-T

Modular Adapter Dimension (Attach to Servo Motor)		Gear Ratio 3~15	Gear Ratio 20~150
A1	Input Shaft Bore \varnothing	5 ~ 11	
A2	Input Pilot Bore \varnothing	30 ~ 70	
A3	Adapter Frame Size \square (Square dimension)	46, 55, 60, 70	
A4	Mounting PCD \varnothing	46 ~ 90	
A5	Mounting Bolt Size	M4xP0.7, M5xP0.8	
L1	ST Overall Length	123	151
L2	Body Length	33	67

(Unit: mm)

Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32$ mm.
- * Solid output shaft option is available.
- * HY-RV Series Ratio 20~150 is fitted with Planetary ServoBox.

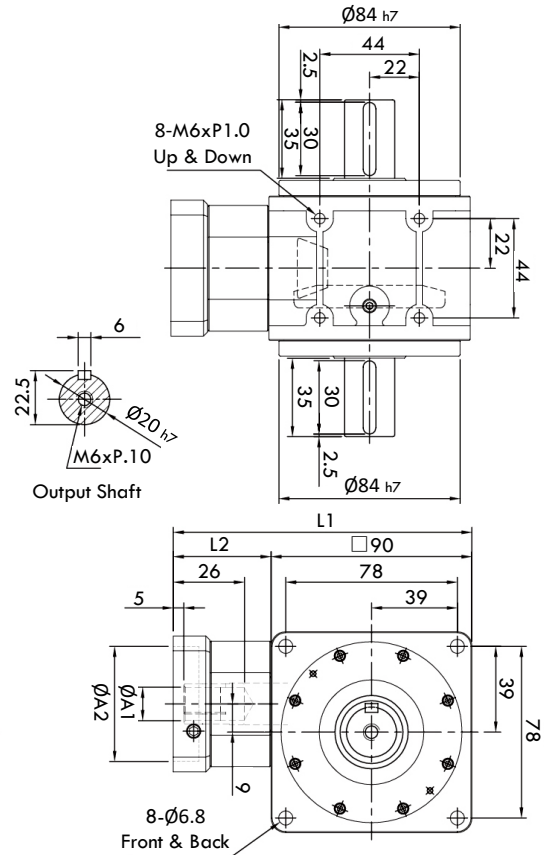
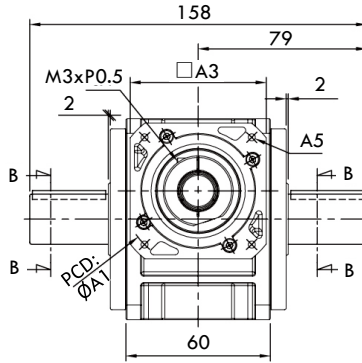


Fig. 50

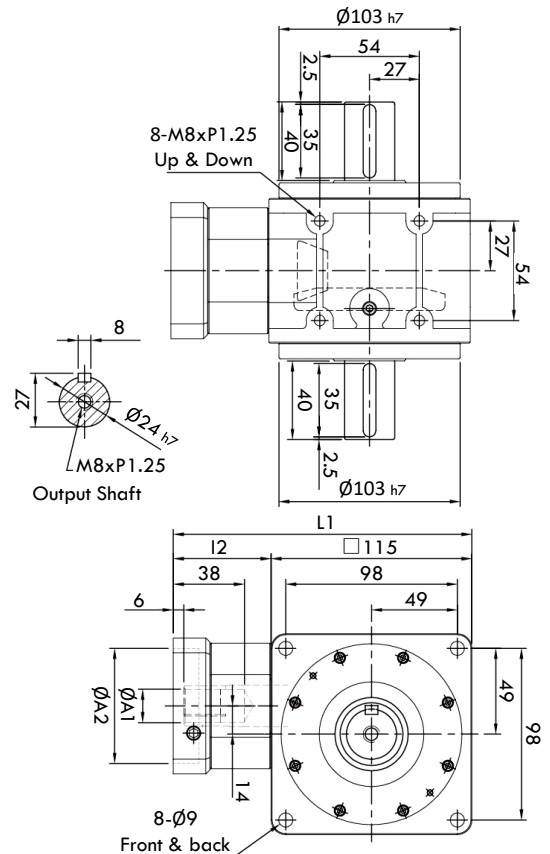
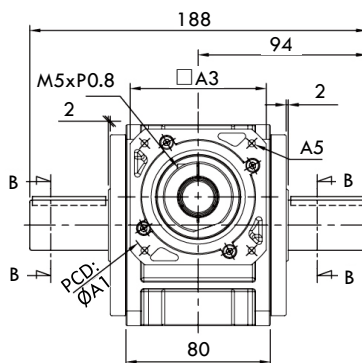
HY-75-(FV/RV)-B HY-75-(FV/RV)-T

Modular Adapter Dimension (Attach to Servo Motor)		Gear Ratio 3~15	Gear Ratio 20~150
A1	Input Shaft Bore \varnothing	11 ~ 19	
A2	Input Pilot Bore \varnothing	50 ~ 70	
A3	Adapter Frame Size \square (Square dimension)	64, 70, 80	
A4	Mounting PCD \varnothing	70 ~ 90	
A5	Mounting Bolt Size	M4xP0.7, M5xP0.8, M6xP1.0	
L1	ST Overall Length	158	201
L2	Body Length	43	86

(Unit: mm)

Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32$ mm.
- * Solid output shaft option is available.
- * HY-RV Series Ratio 20~150 is fitted with Planetary ServoBox.



Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.

DIMENSION – HY HYPOID BEVEL GEAR SERVOBOX

Fig. 51

HY-90-(FV/RV)-B HY-90-(FV/RV)-T

Modular Adapter Dimension (Attach to Servo Motor)		Gear Ratio 3~15	Gear Ratio 20~150
A1	Input Shaft Bore \varnothing	14 ~ 24	
A2	Input Pilot Bore \varnothing	70 ~ 130	
A3	Adapter Frame Size \square (Square dimension)	92, 110, 130, 142	
A4	Mounting PCD \varnothing	90 ~ 145	
A5	Mounting Bolt Size	M6xP1.0, M8xP1.25, M10xP1.5	
L1	ST Overall Length	202	237
L2	Body Length	62	97

(Unit: mm)

Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32$ mm.
- * Solid output shaft option is available.
- * HY-RV Series Ratio 20~150 is fitted with Planetary ServoBox.

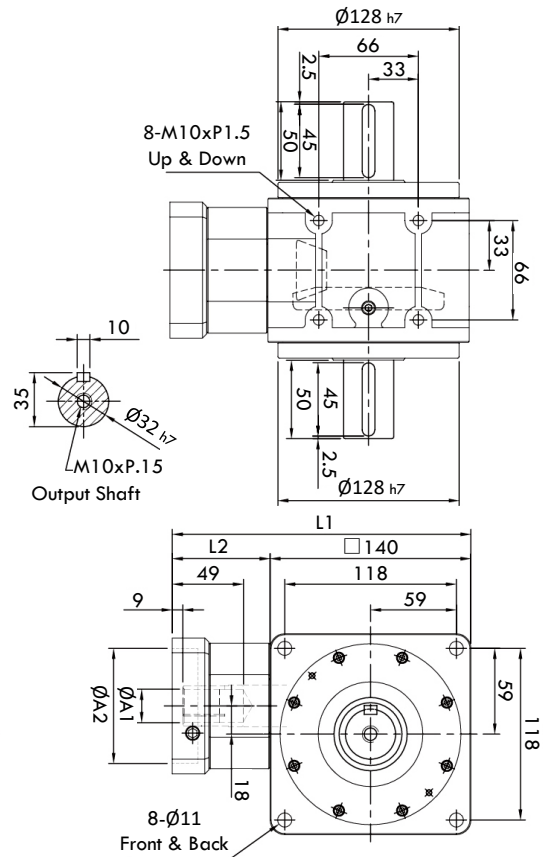
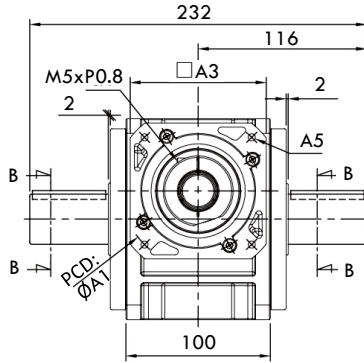


Fig. 52

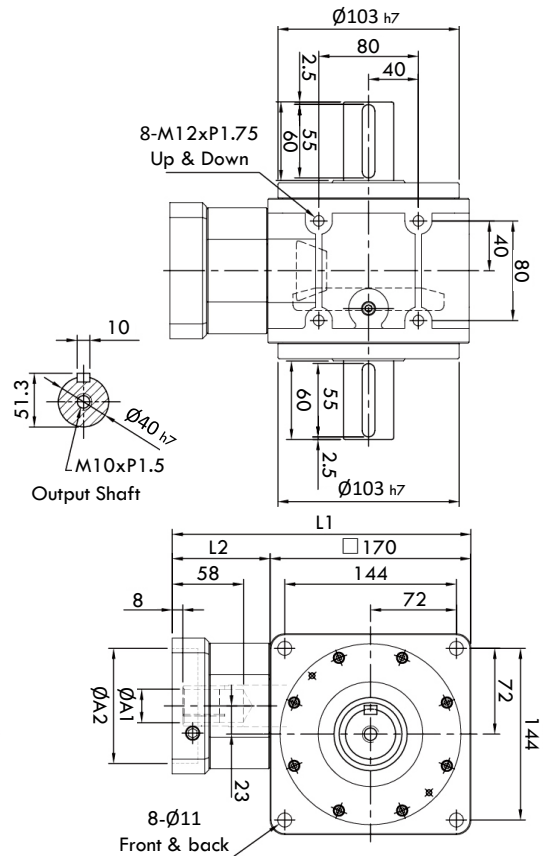
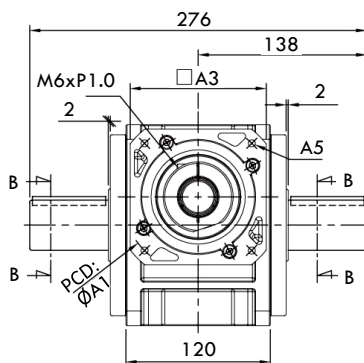
HY-115-(FV/RV)-B HY-115-(FV/RV)-T

Modular Adapter Dimension (Attach to Servo Motor)		Gear Ratio 3~15	Gear Ratio 20~150
A1	Input Shaft Bore \varnothing	14 ~ 24	
A2	Input Pilot Bore \varnothing	70 ~ 130	
A3	Adapter Frame Size \square (Square dimension)	92, 110, 130, 142	
A4	Mounting PCD \varnothing	90 ~ 145	
A5	Mounting Bolt Size	M6xP1.0, M8xP1.25, M10xP1.5	
L1	ST Overall Length	241	287
L2	Body Length	71	117

(Unit: mm)

Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32$ mm.
- * Solid output shaft option is available.
- * HY-RV Series Ratio 20~150 is fitted with Planetary ServoBox.



Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.

DIMENSION – HY HYPOID BEVEL GEAR SERVOBOX

Fig. 53

HY-130-(FV/RV)-B HY-130-(FV/RV)-T

Modular Adapter Dimension (Attach to Servo Motor)		Gear Ratio 3~15	Gear Ratio 20~150
A1	Input Shaft Bore \varnothing	19 ~ 32	
A2	Input Pilot Bore \varnothing	110 ~ 130	
A3	Adapter Frame Size \square (Square dimension)	130, 150	
A4	Mounting PCD \varnothing	145 ~ 165	
A5	Mounting Bolt Size	M6xP1.0, M8xP1.25, M10xP1.5	
L1	ST Overall Length	286	340
L2	Body Length	94	148

(Unit: mm)

Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < \varnothing 32mm.
- * Solid output shaft option is available.
- * HY-RV Series Ratio 20~150 is fitted with Planetary ServoBox.

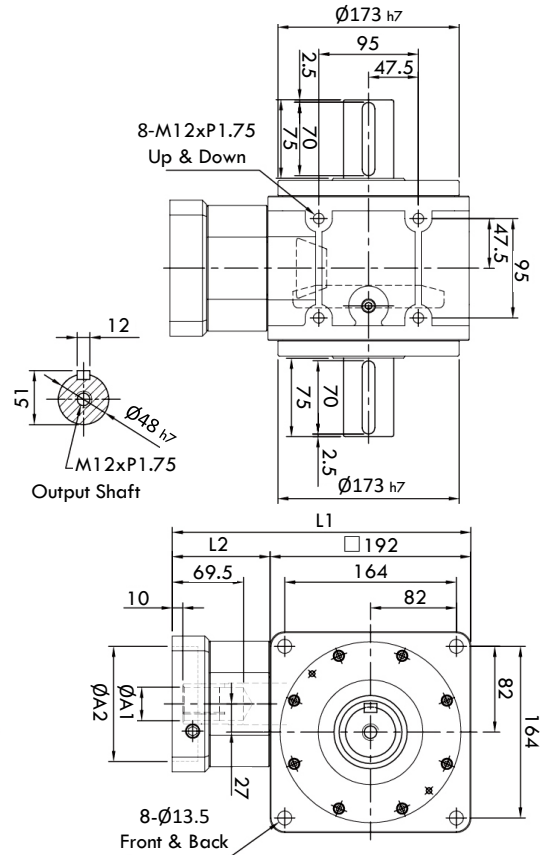
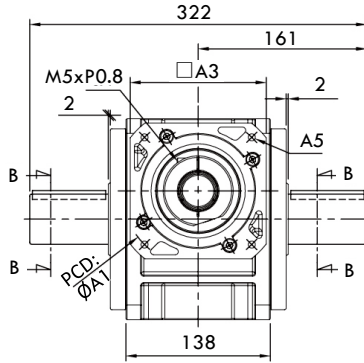


Fig. 54

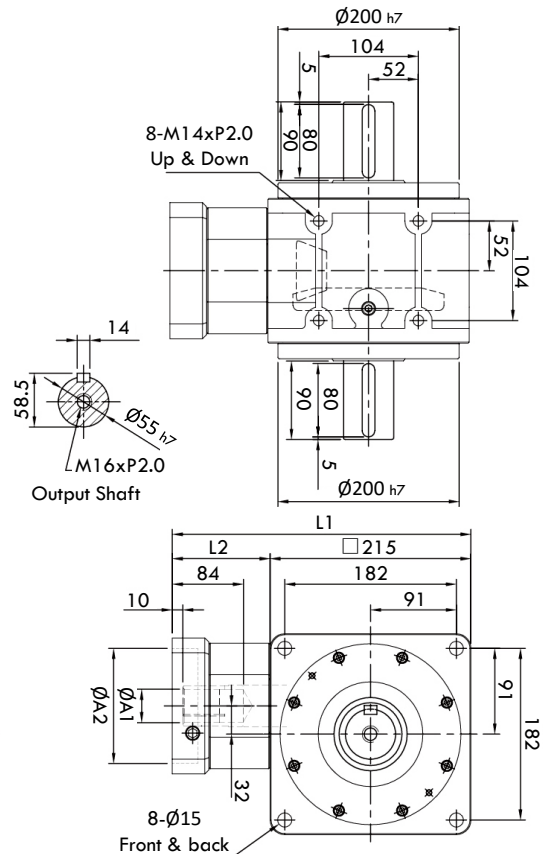
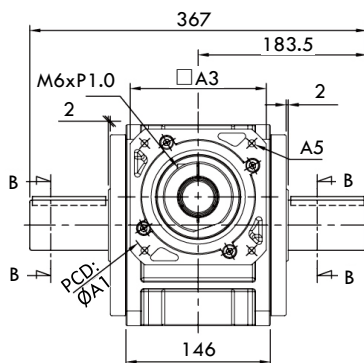
HY-140-(FV/RV)-B HY-140-(FV/RV)-T

Modular Adapter Dimension (Attach to Servo Motor)		Gear Ratio 3~15	Gear Ratio 20~150
A1	Input Shaft Bore \varnothing	22 ~ 38	
A2	Input Pilot Bore \varnothing	110 ~ 180	
A3	Adapter Frame Size \square (Square dimension)	146, 180, 190	
A4	Mounting PCD \varnothing	145 ~ 215	
A5	Mounting Bolt Size	M8xP1.25 M10xP1.5 M12xP1.75	
L1	ST Overall Length	336	405
L2	Body Length	121	190

(Unit: mm)

Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < \varnothing 32mm.
- * Solid output shaft option is available.
- * HY-RV Series Ratio 20~150 is fitted with Planetary ServoBox.



Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.

DIMENSION – HY HYPOID BEVEL GEAR SERVOBOX

Fig. 55

HY-160-(FV/RV)-B HY-160-(FV/RV)-T

Modular Adapter Dimension (Attach to Servo Motor)		Gear Ratio 3~15	Gear Ratio 20~150
A1	Input Shaft Bore \varnothing	22 ~ 38	
A2	Input Pilot Bore \varnothing	110 ~ 180	
A3	Adapter Frame Size \square (Square dimension)	146, 180, 190	
A4	Mounting PCD \varnothing	145 ~ 215	
A5	Mounting Bolt Size	M8xP1.25 M10xP1.5 M12xP1.75	
L1	ST Overall Length	358	430
L2	Body Length	118	190

(Unit: mm)

Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < \varnothing 32mm.
- * Solid output shaft option is available.
- * HY-RV Series Ratio 20~150 is fitted with Planetary ServoBox.

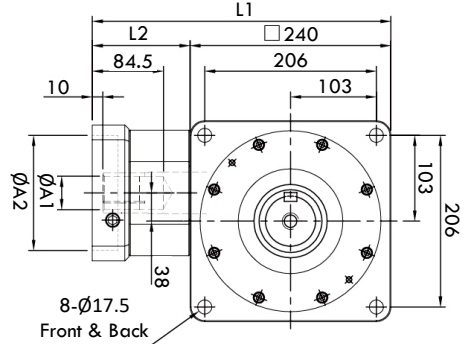
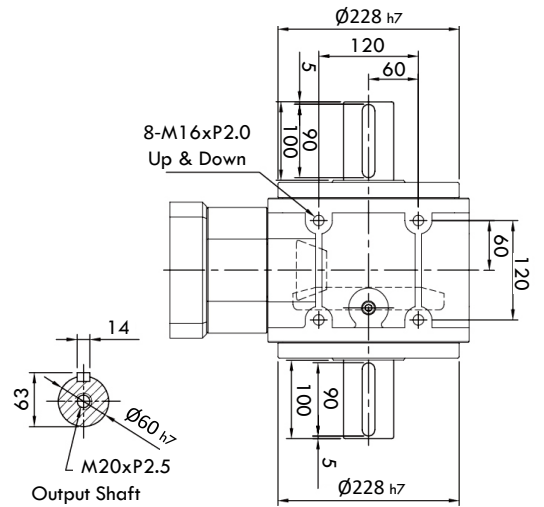
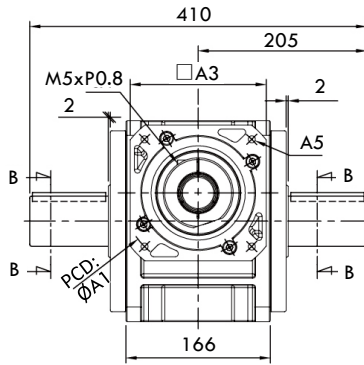


Fig. 56

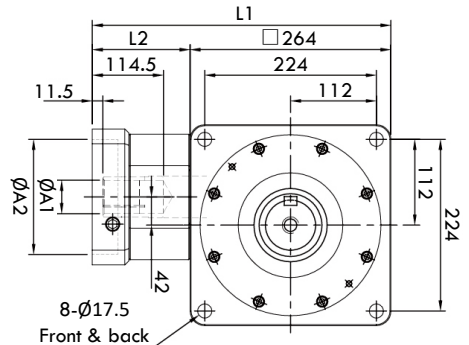
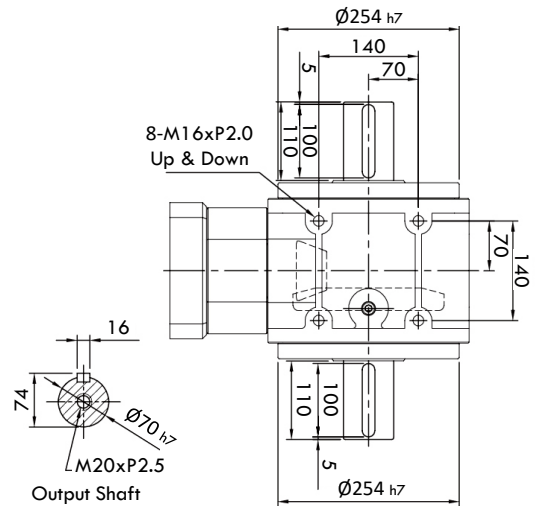
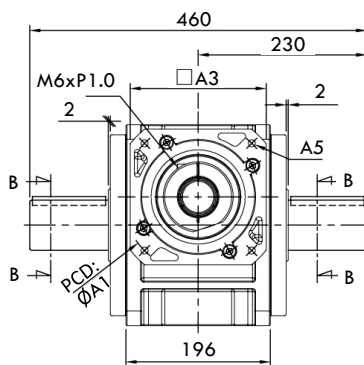
HY-190-(FV/RV)-B HY-190-(FV/RV)-T

Modular Adapter Dimension (Attach to Servo Motor)		Gear Ratio 3~15	Gear Ratio 20~150
A1	Input Shaft Bore \varnothing	35 ~ 55	
A2	Input Pilot Bore \varnothing	114.3 ~ 250	
A3	Adapter Frame Size \square (Square dimension)	182, 200, 220, 250, 265	
A4	Mounting PCD \varnothing	200 ~ 235	
A5	Mounting Bolt Size	M12xP1.75, M16xP2.0	
L1	ST Overall Length	417	508
L2	Body Length	153	244

(Unit: mm)

Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < \varnothing 32mm.
- * Solid output shaft option is available.
- * HY-RV Series Ratio 20~150 is fitted with Planetary ServoBox.



Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.



PLANETARY SERVOBOX

SD

SERIES

HIGH PRECISION ROTARY OUTPUT FLANGE
OPTIMUM RADIAL LOAD



SDH Series

Features :

- Precise in-line planetary system with rotary flange design.
- Low backlash between 1~12arcmin.
- Ball bearing and taper bearing option.
- Universal housing and is suitable for rotary and turntable applications.

Ball Gearing Design (SD-B) / Taper Bearing Design (SD-T)

- 1-Stage ServoBox in Gear Ratio 1/4, 1/5, 1/7 and 1/10.
- 2-Stage ServoBox in Gear Ratio 1/20, 1/25, 1/35, 1/40, 1/50, 1/70 and 1/100.

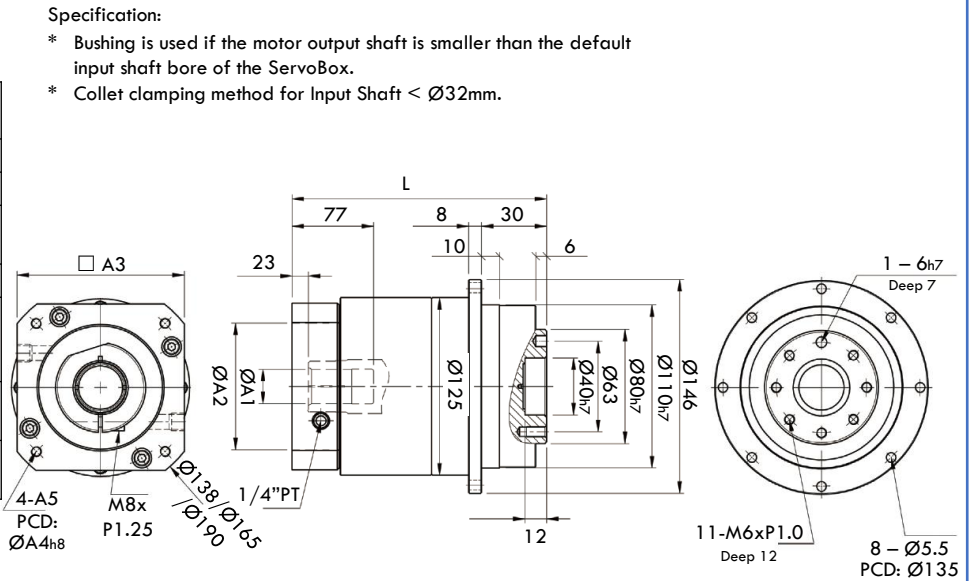
GENERAL SPECIFICATIONS	Unit	Ratio	Model : SD (1 Stage) / (2 Stage)						
			#47	#64	#90	#110	#140	#200	#255
Frame Size Ø	MM	4~100	Ø72	Ø86	Ø118	Ø146	Ø179	Ø248	Ø300
Mounting PCD	MM	4~100	Ø67	Ø79	Ø109	Ø135	Ø168	Ø233	Ø280
Rotary Mounting PCD	MM	4~100	Ø20	Ø31.5	Ø50	Ø63	Ø80	Ø125	Ø140
Rated Output Torque Capacity (1-Stage ServoBox)	Nm	Ratio 4	22	60	160	335	650	1,200	2,020
		Ratio 5	20	50	155	333	618	1,189	2,010
		Ratio 7	19	47	142	309	573	1,108	1,870
		Ratio 10	16	43	136	294	549	1,059	1,779
Rated Output Torque Capacity (2-Stage ServoBox)	Nm	Ratio 20	22	60	160	335	650	1,200	2,020
		Ratio 25	20	50	155	333	618	1,189	2,010
		Ratio 35	19	47	142	309	573	1,108	1,870
		Ratio 40	22	60	160	335	650	1,200	2,020
		Ratio 50	20	50	155	333	618	1,189	2,010
		Ratio 70	19	47	142	309	573	1,108	1,870
Ratio 100	16	43	136	294	549	1,059	1,779		
Max. Acceleration Torque	Nm	4~100	1.8 Times of Rated Output Torque						
Max. Output Torque Emergency Stop Torque	Nm	4~100	3 Times of Rated Output Torque						
Rated Input Speed	RPM	4~100	3,000	3,000	3,000	3,000	3,000	3,000	2,000
Maximum Input Speed	RPM	4~100	6,000	6,000	6,000	6,000	5,000	4,000	3,000
Backlash	Arcmin	4~10	Ps ≤ 1arcmin ▪ PO ≤ 3arcmin ▪ P1 ≤ 5arcmin ▪ P2 ≤ 7arcmin						
		20~100	Ps ≤ 3arcmin ▪ PO ≤ 5arcmin ▪ P1 ≤ 7arcmin ▪ P2 ≤ 9arcmin						
Torsional Rigidity	Nm/arcmin	4~100	6	14	30	86	155	450	1,126
Maximum Axial Force	N (Ball Bearing)	4~100	1,020	1,260	4,230	6,360	7,035	17,600	19,800
	N (Taper Bearing)	4~100	--	--	7,330	11,500	18,600	36,800	53,600
Maximum Radial Force	N (Ball Bearing)	4~100	2,040	2,520	8,460	12,720	14,070	35,200	39,600
	N (Taper Bearing)	4~100	--	--	14,660	23,000	37,200	73,600	107,200
Service Life	Hr	15~200	Intermittent Periodic Duty S5 > 30,000 hours Continuous Duty S1 > 15,000 hours						
Efficiency	%	4~10	≥ 97%						
		20~100	≥ 94%						
Operating Temperature	°C	15~200	-25°C ~ +90°C						
Lubrication		15~200	Synthetic Grease						
Degree of Protection		15~200	IP65						
Mounting Position		15~200	Any						
Noise Level	dB(A)	4~10	≤ 56	≤ 58	≤ 60	≤ 63	≤ 65	≤ 67	≤ 70
		20~100	≤ 58	≤ 60	≤ 63	≤ 65	≤ 67	≤ 70	≤ 72

DIMENSION – SD PLANETARY SERVOBOX

**Fig. 60 SD-110-B
SD-110-T**

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	19 ~ 32
A2	Input Pilot Bore \varnothing	110 ~ 130
A3	Adapter Frame Size \square (Square dimension)	130, 150
A4	Mounting PCD \varnothing	145 ~ 165
A5	Mounting Bolt Size	M6xP1.0 M8xP1.25 M10xP1.5
L	SD Overall Length Gear Ratio 4~10	153, 163
	SD Overall Length Gear Ratio 20~100	189, 204

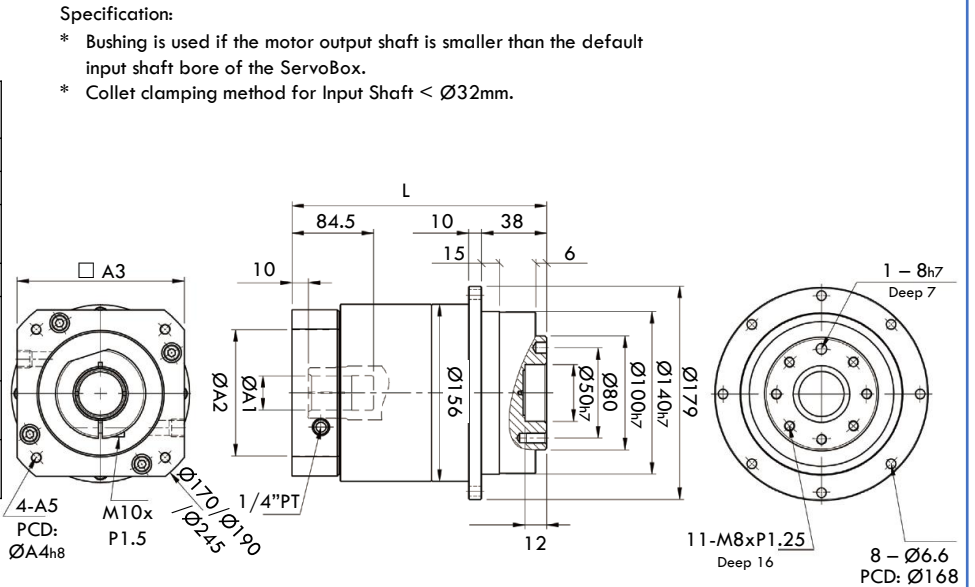
(Unit: mm)



**Fig. 61 SD-140-B
SD-140-T**

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	22 ~ 38
A2	Input Pilot Bore \varnothing	110 ~ 180
A3	Adapter Frame Size \square (Square dimension)	146, 180, 190
A4	Mounting PCD \varnothing	145 ~ 215
A5	Mounting Bolt Size	M8xP1.25 M10xP1.5 M12xP1.75
L	SD Overall Length Gear Ratio 4~10	187
	SD Overall Length Gear Ratio 20~100	235

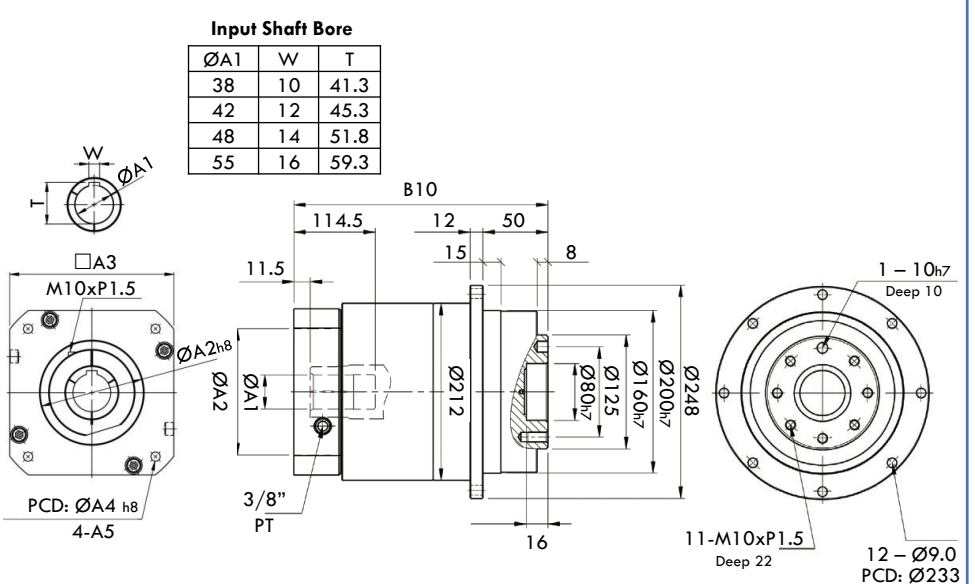
(Unit: mm)



**Fig. 62 SD-200-B
SD-200-T**

Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	35 ~ 55
A2	Input Pilot Bore \varnothing	114.3 ~ 250
A3	Adapter Frame Size \square (Square dimension)	182, 200, 220, 250, 265
A4	Mounting PCD \varnothing	200 ~ 235
A5	Mounting Bolt Size	M12xP1.75 M16xP2.0
L	SD Overall Length Gear Ratio 4~10	251
	SD Overall Length Gear Ratio 20~100	291

(Unit: mm)



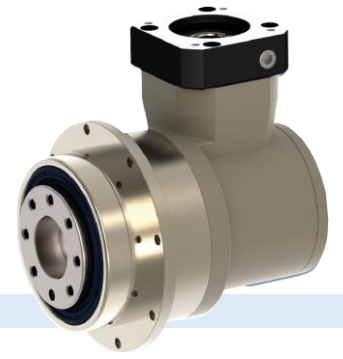
Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.



HELICAL HYPOID SERVOBOX

SDH SERIES

HIGH PRECISION ROTARY OUTPUT FLANGE



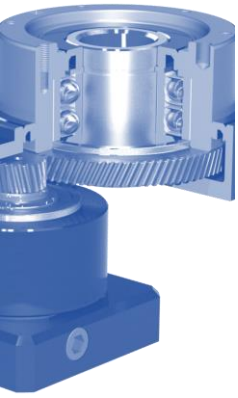
Features :

- Precise right angle helical hypoid gear system with rotary flange design.
- Low backlash between 4~10arcmin.
- Ball bearing and taper bearing option.
- Universal housing and is suitable for rotary and turntable applications.

Ball Gearing Design (SDH-B) / Taper Bearing Design (SDH-T)

- 2-Stage ServoBox in Gear Ratio 1/20, 1/25, 1/35, 1/40, 1/50, 1/70, 1/100 and 1/150.

GENERAL SPECIFICATIONS	Unit	Ratio	Model : SDH (2 Stage)						
			#47	#64	#90	#110	#140	#200	#255
Frame Size Ø	MM	20~150	--	Ø86	Ø118	Ø146	Ø179	Ø248	Ø300
Mounting PCD	MM	20~150	--	Ø79	Ø109	Ø135	Ø168	Ø233	Ø280
Rotary Mounting PCD	MM	20~150	--	Ø31.5	Ø50	Ø63	Ø80	Ø125	Ø140
Rated Output Torque Capacity (2-Stage ServoBox)	Nm	Ratio 20	--	60	160	335	650	1,200	2,020
		Ratio 25	--	50	155	333	618	1,189	2,010
		Ratio 35	--	47	142	309	573	1,108	1,870
		Ratio 40	--	60	160	335	650	1,200	2,020
		Ratio 50	--	50	155	333	618	1,189	2,010
		Ratio 70	--	47	142	309	573	1,108	1,870
		Ratio 100	--	43	136	294	549	1,059	1,779
		Ratio 150	--	43	136	294	549	1,059	1,779
Max. Acceleration Torque	Nm	20~150	1.8 Times of Rated Output Torque						
Max. Output Torque Emergency Stop Torque	Nm	20~150	3 Times of Rated Output Torque						
Rated Input Speed	RPM	20~150	--	3,000	3,000	3,000	3,000	3,000	2,000
Maximum Input Speed	RPM	20~150	--	6,000	6,000	6,000	5,000	4,000	3,000
Backlash	Arcmin	20~150	P0 ≤ 4arcmin ▪ P1 ≤ 7arcmin ▪ P2 ≤ 10arcmin						
Torsional Rigidity	Nm/arcmin	20~150	--	14	30	86	155	450	1,126
Maximum Axial Force	N (Ball Bearing)	20~150	--	1,260	4,230	6,360	7,035	17,600	19,800
	N (Taper Bearing)	20~150	--	--	7,330	11,500	18,600	36,900	53,600
Maximum Radial Force	N (Ball Bearing)	20~150	--	2,520	8,460	12,720	14,070	35,200	39,600
	N (Taper Bearing)	20~150	--	--	14,660	23,000	37,200	73,600	107,200
Service Life	Hr	20~150	Intermittent Periodic Duty S5 > 30,000 hours Continuous Duty S1 > 15,000 hours						
Efficiency	%	20~150	≥ 95%						
Operating Temperature	°C	20~150	-25°C ~ +90°C						
Lubrication		20~150	Synthetic Grease						
Degree of Protection		20~150	IP65						
Mounting Position		20~150	Any						
Noise Level	dB(A)	20~150	--	≤ 68	≤ 70	≤ 72	≤ 74	≤ 76	≤ 78



HOLLOW ROTARY ACTUATOR SERVOBOX

GT SERIES

HOLLOW ROTARY TABLE PRECISE POSITIONING AND REPEATABILITY



Features :

- Solid hollow output table that allows simple wiring and piping on your equipment design.
- Ball bearing and crossed roller bearing option.
- Repetitive Positioning Accuracy ± 10 arcsec (0.0028°).
- Lost Motion 2arcmin (0.033°).
- Torsional Backlash ≤ 2 arcmin.

Ball Bearing Design (GT-B) / Crossed Roller Bearing Design (GT-C)

- 1-Stage ServoBox in Gear Ratio 5, 10 and 18.
- 2-Stage ServoBox in Gear Ratio 25, 50 and 100 (fitted with planetary gear).



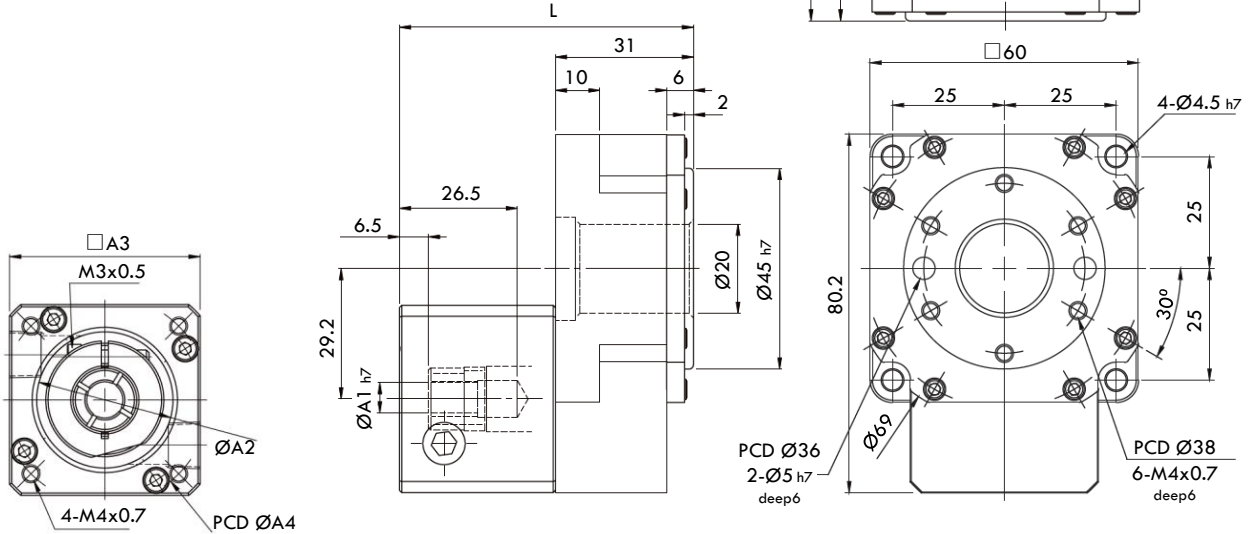
GENERAL SPECIFICATIONS	Unit	Bearing Type (Ratio 5, 10, 18) (Ratio 25, 50, 100)	Model : GT (1 Stage) / (2 Stage)				
			#60	#85	#110	#135	#200
Frame Size	MM	Ball / Crossed Roller	60 x 60	85 x 85	110 x 110	135 x 135	200 x 200
Mounting Dimension	MM	Ball / Crossed Roller	50 x 50	70 x 70	90 x 90	110 x 110	170 x 170
Rotary Flange Diameter	MM	Ball / Crossed Roller	Ø45	Ø70	Ø95	Ø115	Ø170
Hollow Rotary Flange Dia.	MM	Ball / Crossed Roller	Ø20	Ø22	Ø30	Ø50	Ø75
Rated Output Torque Capacity (1-Stage ServoBox) (Ball & Crossed Roller Type)	Nm	Ratio 5	5	18	33	43	142
		Ratio 10	4	14	26	34	112
		Ratio 18	3	10	19	25	85
Rated Output Torque Capacity (1-Stage ServoBox) (Ball & Crossed Roller Type)	Nm	Ratio 25	5	18	33	43	142
		Ratio 50	4	14	26	34	112
		Ratio 100	4	14	26	34	112
Max. Acceleration Torque	Nm	Ball / Crossed Roller	1.5 Times of Rated Output Torque				
Max. Output Torque Emergency Stop Torque	Nm	Ball / Crossed Roller	2 Times of Rated Output Torque				
Inertia Moment	Kg.m ²	Ball	777×10^{-7}	1268×10^{-6}	1562×10^{-6}	2918×10^{-6}	29072×10^{-6}
		Crossed Roller	735×10^{-7}	1203×10^{-6}	1483×10^{-6}	2772×10^{-6}	27619×10^{-6}
Permissible Output Speed	RPM	Ball	300				
		Crossed Roller	200				
Torsional Backlash	Arcmin	Ball / Crossed Roller	Ratio 5, 10, 18 : ≤ 1 arcmin Ratio 25, 50, 100 : ≤ 3 arcmin				
Lost Motion	Arcmin	Ball / Crossed Roller	2 (0.033°)				
Repetitive Positioning Accuracy	Arcsec	Ball / Crossed Roller	± 10 (0.0028°)				
Permissible Trust Load	N	Ball Bearing	350	600	800	1,450	2,500
		Crossed Roller Bearing	500	900	1,200	2,200	4,000
Permissible Moment Load	Nm	Ball Bearing	7	12	16	30	50
	Nm	Crossed Roller Bearing	10	18	24	45	80
Runout of Output Table Surface	MM	Ball / Crossed	0.01	0.01	0.015	0.015	0.02
Runout of Output Table Inner / Outer Diameter	MM	Ball / Crossed	0.01	0.01	0.015	0.015	0.02
Parallelism of Output Table	MM	Ball / Crossed	0.02	0.02	0.025	0.025	0.03
Protection Class		Ball / Crossed	IP 65				

DIMENSION – GT HOLLOW ROTARY ACTUATOR SERVOBOX

Fig. 65 GT-60-B

Modular Adapter Dimension (Attach to Servo Motor)		Gear Ratio 5, 10, 18	Gear Ratio 25, 50, 100
A1	Input Shaft Bore \varnothing	6 ~ 11	
A2	Input Pilot Bore \varnothing	30 ~ 50	
A3	Adapter Frame Size \square (Square dimension)	46, 55	
A4	Mounting PCD \varnothing	46 ~ 63	
A5	Mounting Bolt Size	M3xP0.5, M4xP0.7, M5xP0.8	
L1	GT Overall Length	66	103

(Unit: mm)



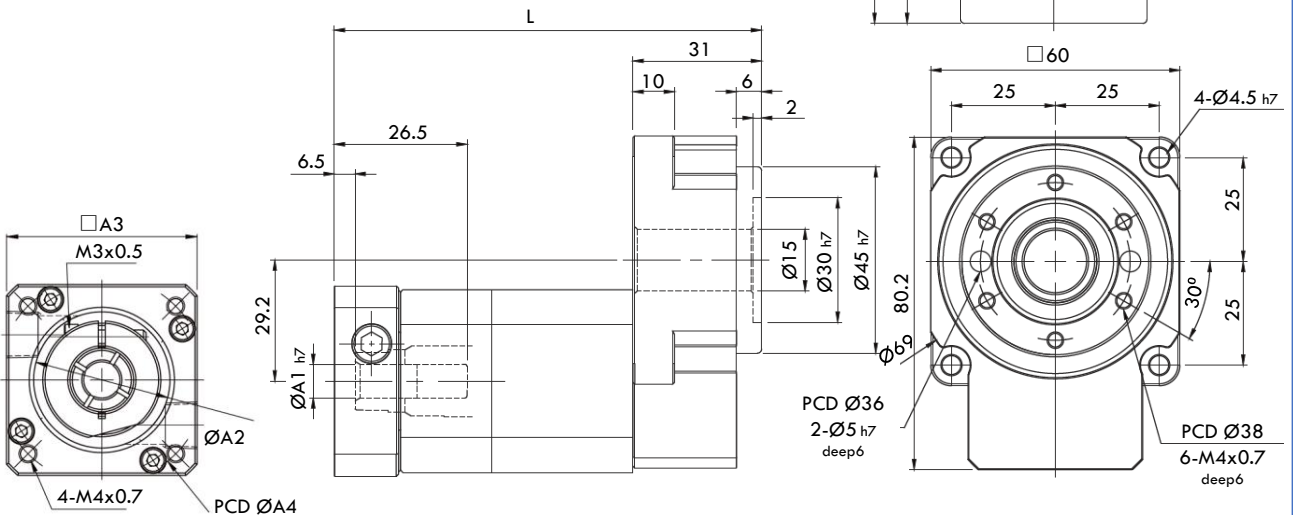
Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32$ mm.

Fig. 66 GT-60-C

Modular Adapter Dimension (Attach to Servo Motor)		Gear Ratio 5, 10, 18	Gear Ratio 25, 50, 100
A1	Input Shaft Bore \varnothing	6 ~ 11	
A2	Input Pilot Bore \varnothing	30 ~ 50	
A3	Adapter Frame Size \square (Square dimension)	46, 55	
A4	Mounting PCD \varnothing	46 ~ 63	
A5	Mounting Bolt Size	M3xP0.5, M4xP0.7, M5xP0.8	
L1	GT Overall Length	66	103

(Unit: mm)



Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32$ mm.

Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.

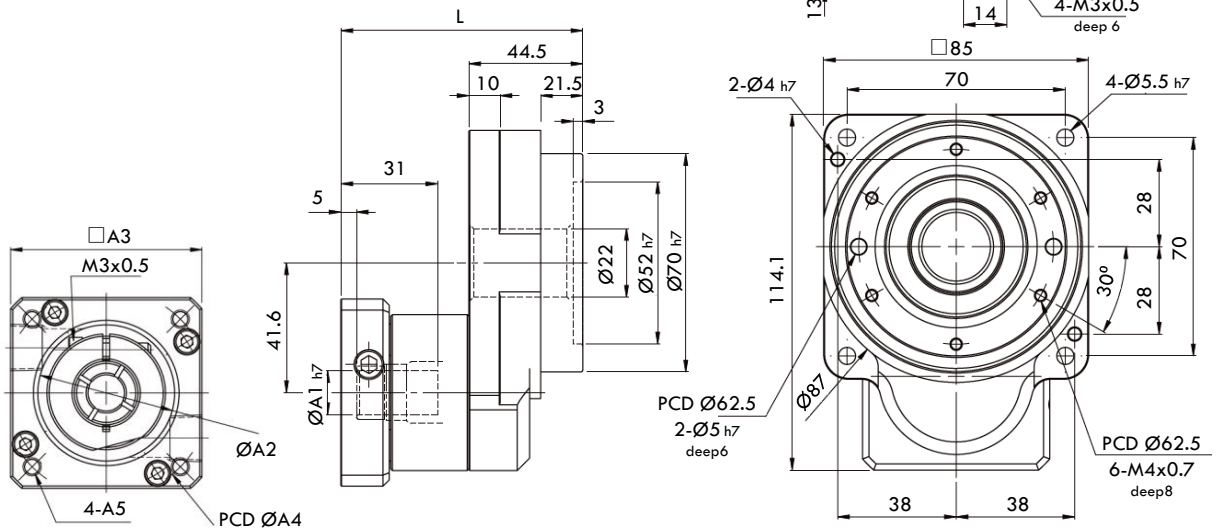
DIMENSION – GT HOLLOW ROTARY ACTUATOR SERVOBOX

Fig. 67 GT-85-B

SERVOBOX P.21

Modular Adapter Dimension (Attach to Servo Motor)		Gear Ratio 5, 10, 18	Gear Ratio 25, 50, 100
A1	Input Shaft Bore \varnothing	9 ~ 14	
A2	Input Pilot Bore \varnothing	40 ~ 70	
A3	Adapter Frame Size \square (Square dimension)	46, 55, 70	
A4	Mounting PCD \varnothing	60 ~ 90	
A5	Mounting Bolt Size	M3xP0.5, M4xP0.7, M5xP0.8	
L1	GT Overall Length	85.5	116.5

(Unit: mm)



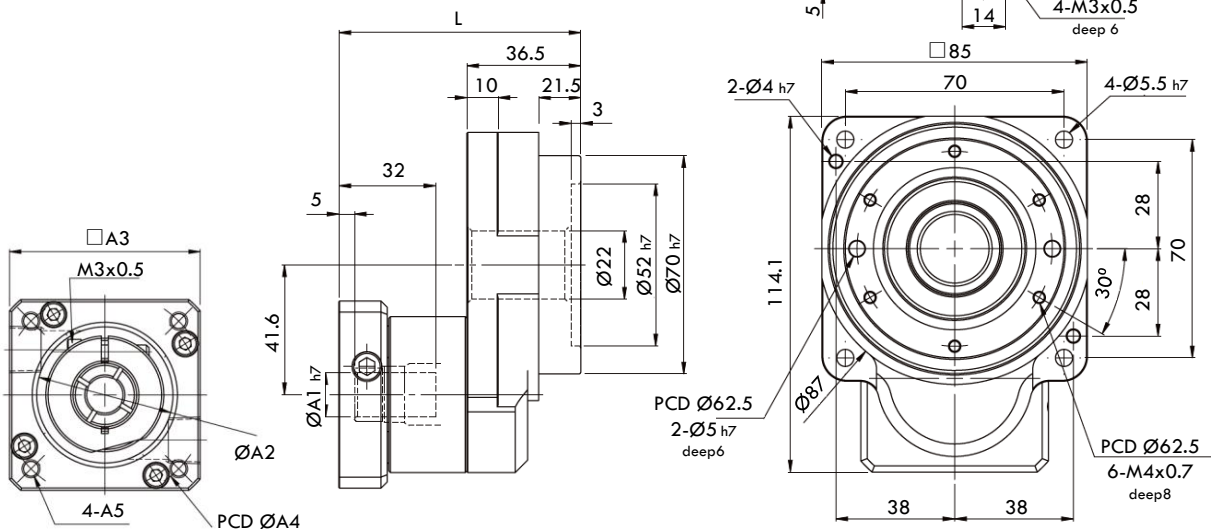
Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32$ mm.

Fig. 68 GT-85-C

Modular Adapter Dimension (Attach to Servo Motor)		Gear Ratio 5, 10, 18	Gear Ratio 25, 50, 100
A1	Input Shaft Bore \varnothing	9 ~ 14	
A2	Input Pilot Bore \varnothing	40 ~ 70	
A3	Adapter Frame Size \square (Square dimension)	46, 55, 70	
A4	Mounting PCD \varnothing	60 ~ 90	
A5	Mounting Bolt Size	M3xP0.5, M4xP0.7, M5xP0.8	
L1	GT Overall Length	77.5	108.5

(Unit: mm)



Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32$ mm.

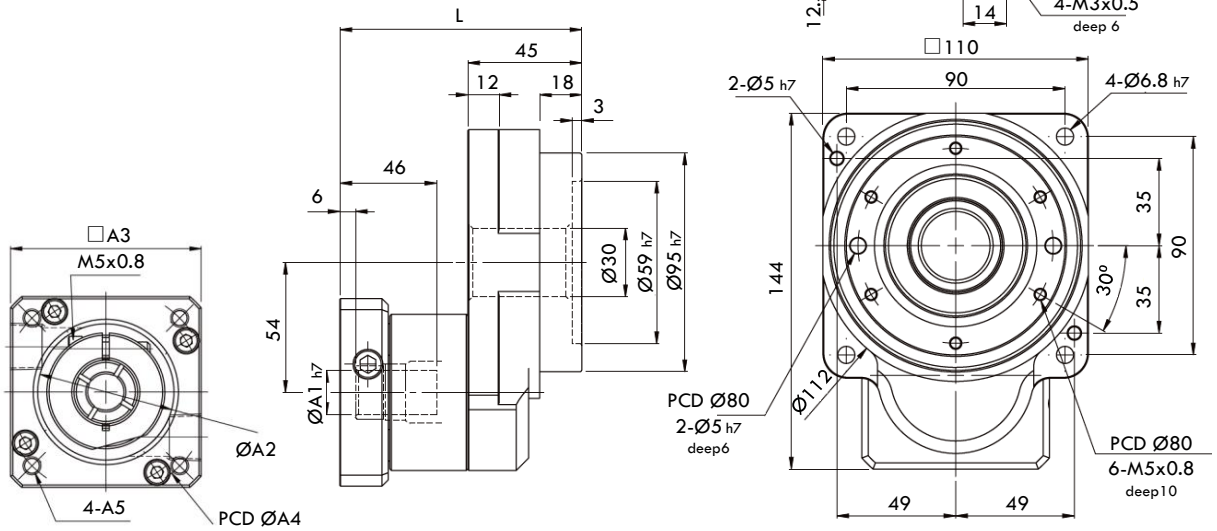
Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.

DIMENSION – GT HOLLOW ROTARY ACTUATOR SERVOBOX

Fig. 69 GT-110-B

Modular Adapter Dimension (Attach to Servo Motor)		Gear Ratio 5, 10, 18	Gear Ratio 25, 50, 100
A1	Input Shaft Bore \varnothing	11 ~ 19	
A2	Input Pilot Bore \varnothing	50 ~ 70	
A3	Adapter Frame Size \square (Square dimension)	64, 70, 80	
A4	Mounting PCD \varnothing	70 ~ 90	
A5	Mounting Bolt Size	M4xP0.7, M5xP0.8, M6xP1.0	
L1	GT Overall Length	88.5	131

(Unit: mm)



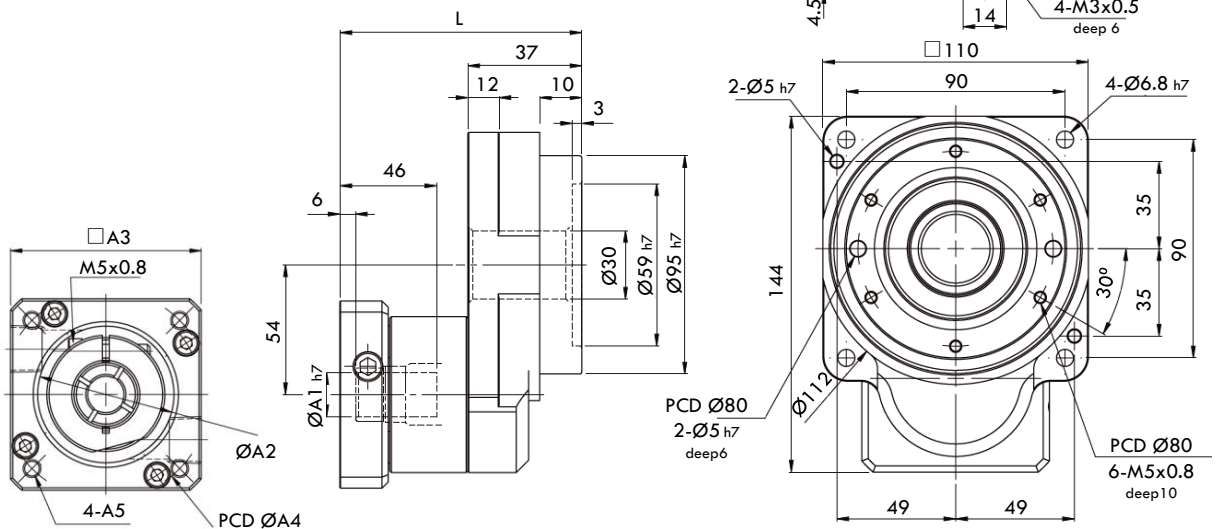
Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < \varnothing 32mm.

Fig. 70 GT-110-C

Modular Adapter Dimension (Attach to Servo Motor)		Gear Ratio 5, 10, 18	Gear Ratio 25, 50, 100
A1	Input Shaft Bore \varnothing	11 ~ 19	
A2	Input Pilot Bore \varnothing	50 ~ 70	
A3	Adapter Frame Size \square (Square dimension)	64, 70, 80	
A4	Mounting PCD \varnothing	70 ~ 90	
A5	Mounting Bolt Size	M4xP0.7, M5xP0.8, M6xP1.0	
L1	GT Overall Length	80.5	123

(Unit: mm)



Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < \varnothing 32mm.

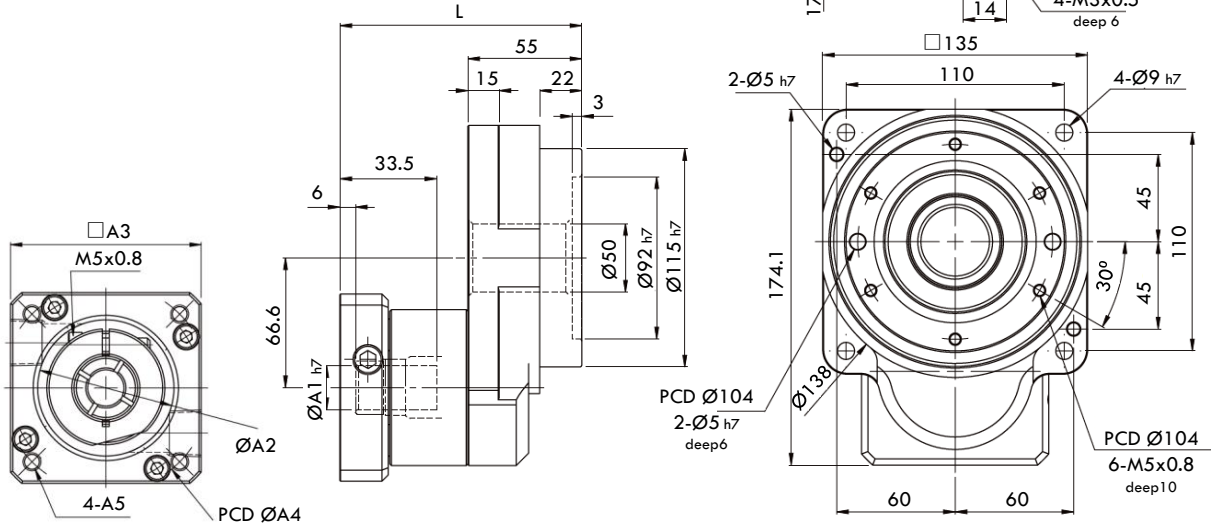
Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.

DIMENSION – GT HOLLOW ROTARY ACTUATOR SERVOBOX

Fig. 71 GT-135-B

Modular Adapter Dimension (Attach to Servo Motor)		Gear Ratio 5, 10, 18	Gear Ratio 25, 50, 100
A1	Input Shaft Bore \varnothing	11 ~ 19	
A2	Input Pilot Bore \varnothing	50 ~ 70	
A3	Adapter Frame Size \square (Square dimension)	64, 70, 80	
A4	Mounting PCD \varnothing	70 ~ 90	
A5	Mounting Bolt Size	M4xP0.7, M5xP0.8, M6xP1.0	
L1	GT Overall Length	108	149

(Unit: mm)



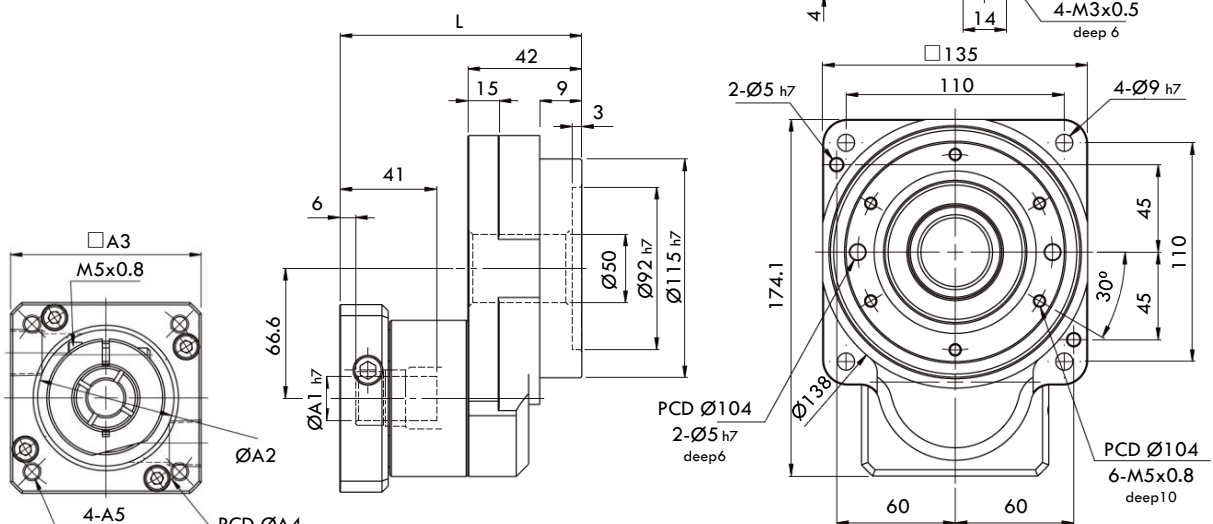
Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32$ mm.

Fig. 72 GT-135-C

Modular Adapter Dimension (Attach to Servo Motor)		Gear Ratio 5, 10, 18	Gear Ratio 25, 50, 100
A1	Input Shaft Bore \varnothing	11 ~ 19	
A2	Input Pilot Bore \varnothing	50 ~ 70	
A3	Adapter Frame Size \square (Square dimension)	64, 70, 80	
A4	Mounting PCD \varnothing	70 ~ 90	
A5	Mounting Bolt Size	M4xP0.7, M5xP0.8, M6xP1.0	
L1	GT Overall Length	95	136

(Unit: mm)



Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32$ mm.

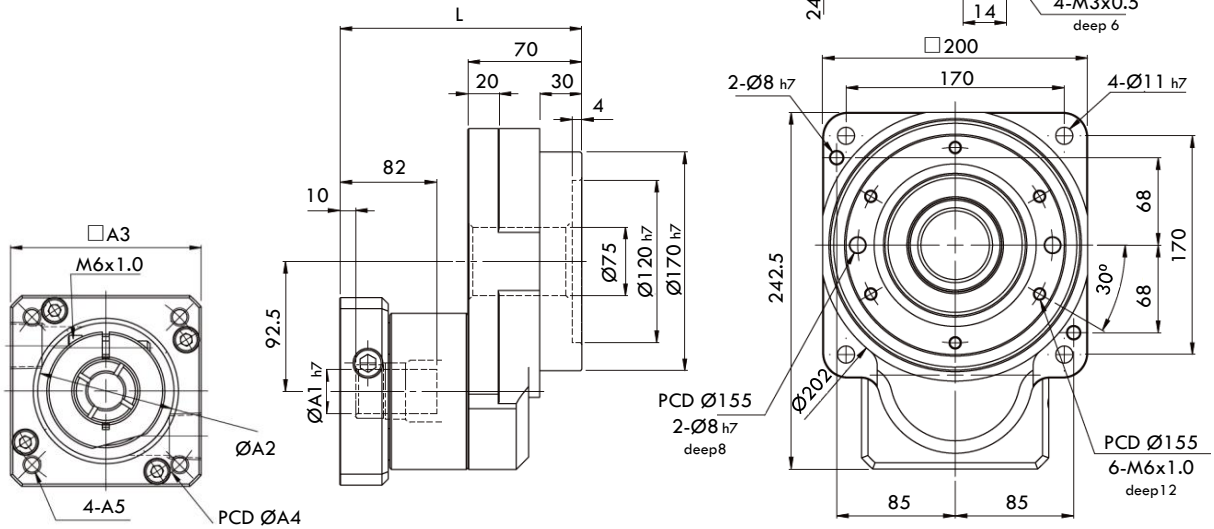
Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.

DIMENSION – GT HOLLOW ROTARY ACTUATOR SERVOBOX

Fig. 73 GT-200-B

Modular Adapter Dimension (Attach to Servo Motor)		Gear Ratio 5, 10, 18	Gear Ratio 25, 50, 100
A1	Input Shaft Bore \varnothing	14 ~ 24	
A2	Input Pilot Bore \varnothing	70 ~ 130	
A3	Adapter Frame Size \square (Square dimension)	80, 92, 110, 130, 142	
A4	Mounting PCD \varnothing	90 ~ 145	
A5	Mounting Bolt Size	M6xP1.0, M8xP1.25, M10xP1.5	
L1	GT Overall Length	125.5	166.5

(Unit: mm)



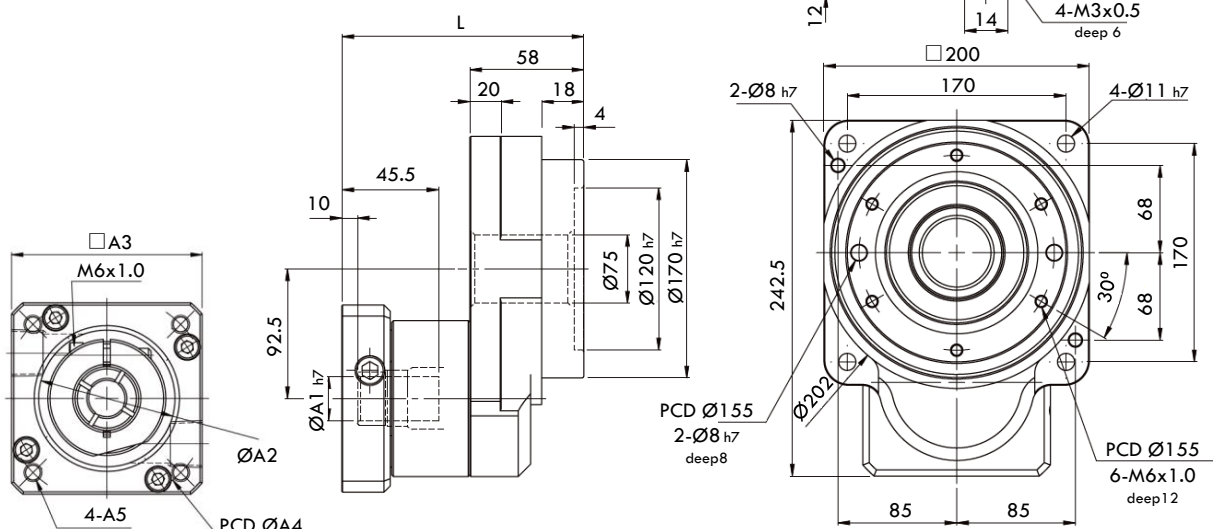
Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32\text{mm}$.

Fig. 74 GT-200-C

Modular Adapter Dimension (Attach to Servo Motor)		Gear Ratio 5, 10, 18	Gear Ratio 25, 50, 100
A1	Input Shaft Bore \varnothing	14 ~ 24	
A2	Input Pilot Bore \varnothing	70 ~ 130	
A3	Adapter Frame Size \square (Square dimension)	80, 92, 110, 130, 142	
A4	Mounting PCD \varnothing	90 ~ 145	
A5	Mounting Bolt Size	M6xP1.0, M8xP1.25, M10xP1.5	
L1	GT Overall Length	113.5	154.5

(Unit: mm)



Specification:

- * Standard output shaft is keyed shaft (Round shaft is optional).
- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < $\varnothing 32\text{mm}$.

Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.



WORM GEAR SERVOBOX

WE-O SERIES

**ALUMINIUM DIE-CAST ALLOY DESIGN
AN INHERENT SAFETY MECHANISM SOLUTION**



Features :

- An optimized worm gear tooth design with backlash less than 8 arc-minutes.
- The modular aluminium alloy housing offers solid design with excellent heat dissipation.
- An inherent safety mechanism design as it cannot function in the reverse order.
- Hollow, single and double output shafts configurations are available.

GENERAL SPECIFICATIONS	Unit	Ratio	Model : WE				
			#30	#40	#50	#60	#70
Frame Size L x H x W	mm	5~60	80x98x65	102x122x88	120x145x100	146x180x104	170x200x128
Flange Mounting PCD	mm	5~60	Ø65	Ø77	Ø95	Ø120	Ø140
Hollow Output Shaft Bore Diameter x Length	mm	5~60	Ø14 x 65	Ø20 x 88	Ø25 x 98	Ø25 x 108	Ø30 x 128
Rated Output Torque (Efficiency %)	Nm (%)	Ratio 5	8.3	22.3	30.6	41.2	70.6
		Eff. (%)	90.3%	92.3%	92.6%	92.6%	93.6%
		Ratio 10	8.	20.7	41.9	65.9	92.0
		Eff. (%)	83.7%	86.6%	89.6%	90.1%	90.5%
		Ratio 15	11.4	26.2	40.9	64.5	90.0
		Eff. (%)	81.9%	83.7%	85.3%	86.1%	86.6%
		Ratio 20	9.52	22.6	40.7	63.5	106
		Eff. (%)	72.3%	76.6%	81.7%	82.4%	85.1%
		Ratio 30	12.1	27.4	43.2	67.9	95.0
		Eff. (%)	69.6%	72.3%	74.5%	75.9%	76.7%
		Ratio 40	9.20	24.3	43.8	69.1	111
		Eff. (%)	56.8%	66.3%	69.2%	70.3%	74.3%
Ratio 50	10.4	24.0	43.6	69.2	105.6		
Eff. (%)	58.7%	64.6%	67.7%	68.9%	71.2%		
Ratio 60	9.60	20.5	36.1	58.3	100.5		
Eff. (%)	54.6%	56.8%	59.3%	61.3%	68.8%		
Max. Output Torque	Nm	5~60	2 Times of Rated Output Torque				
Rated Input Speed	RPM	5~60	1,500				
Maximum Input Speed	RPM	5~60	1,500				
Backlash	Arcmin	5~60	≤ 20arcmin				
Maximum Radial Force	N	5~60	1,830	3,490	4,840	6,270	7,380
Maximum Axial Force	N	5~60	915	1,745	2,420	3,135	3,690
Service Life	Hr	5~60	Intermittent Periodic Duty S5 > 8,000 hours Continuous Duty S1 > 4,000 hours				
Efficiency	%	5~60	Maximum 93.6% / Minimum 54.6%				
Operating Temperature	°C	5~60	-5°C ~ +40°C				
Lubrication		5~60	Synthetic Oil				
Degree of Protection		5~60	IP65				
Mounting Position		5~60	Any				

* The contents of this data sheet are subject to change without notice in advance for the purpose of continuous product improvement.
* Please contact us for customized model.

DESIGN OPTION

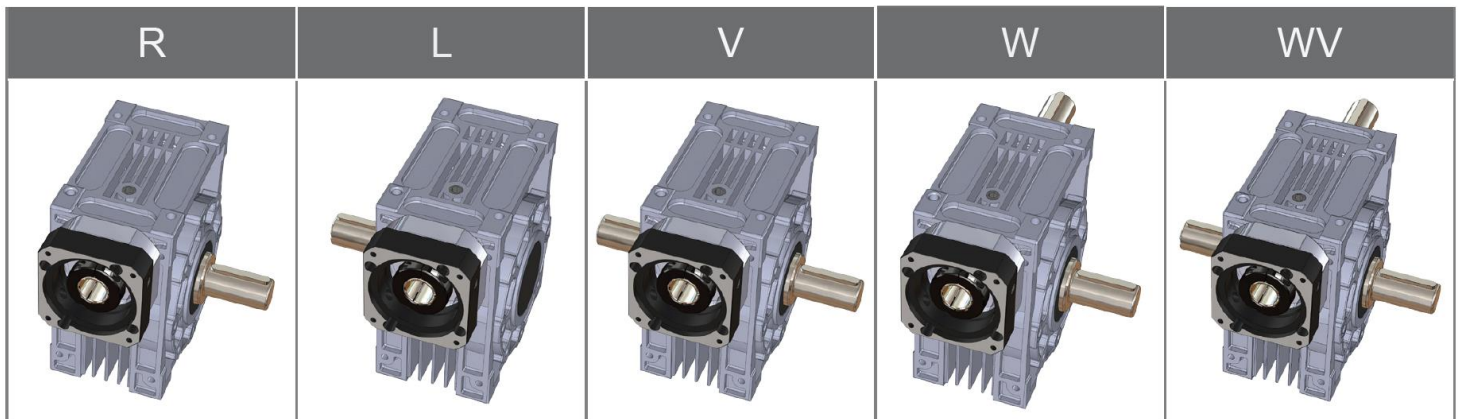


WEO	WENF	WEOF
Hollow Output Shaft	Hollow Output Shaft with Clamping	Hollow Output Shaft with Output Flange

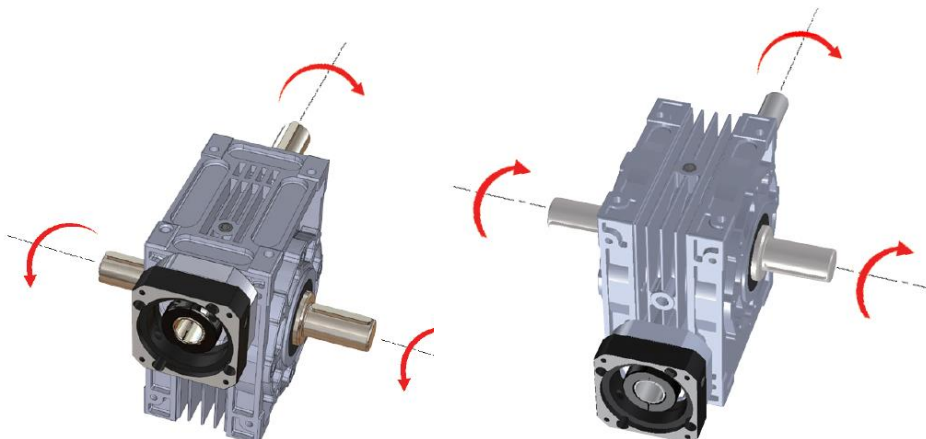


WESF	WES
With Solid Output Shaft and Output Flange	With Solid Output Shaft

OUTPUT SHAFT DIRECTION



OUTPUT SHAFT ROTATION DIRECTION



DIMENSION – WE WORM GEAR SERVOBOX

Fig. 75 WE-O#30

Modular Adapter Dimension (Attach to Servo Motor)			Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	6 ~ 8	A4	Mounting PCD \varnothing	46 ~ 70
A2	Input Pilot Bore \varnothing	30 ~ 50	A5	Mounting Bolt Size	M4xP0.7 M5xP0.8
A3	Adapter Frame Size \square (Square dimension)	46, 55, 60	(Unit: mm)		

Specification:

- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < \varnothing 32mm.
- * Solid Output Shaft Option is available.

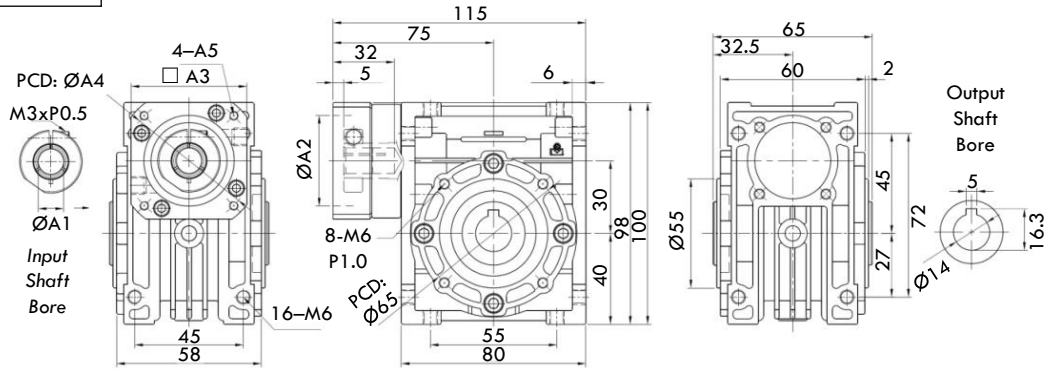


Fig. 76 WE-O#40

Modular Adapter Dimension (Attach to Servo Motor)			Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	11 ~ 19	A4	Mounting PCD \varnothing	70 ~ 90
A2	Input Pilot Bore \varnothing	50 ~ 70	A5	Mounting Bolt Size	M4xP0.7 M5xP0.8 M6xP1.0
A3	Adapter Frame Size \square (Square dimension)	64, 70, 80	(Unit: mm)		

Specification:

- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < \varnothing 32mm.
- * Solid Output Shaft Option is available.

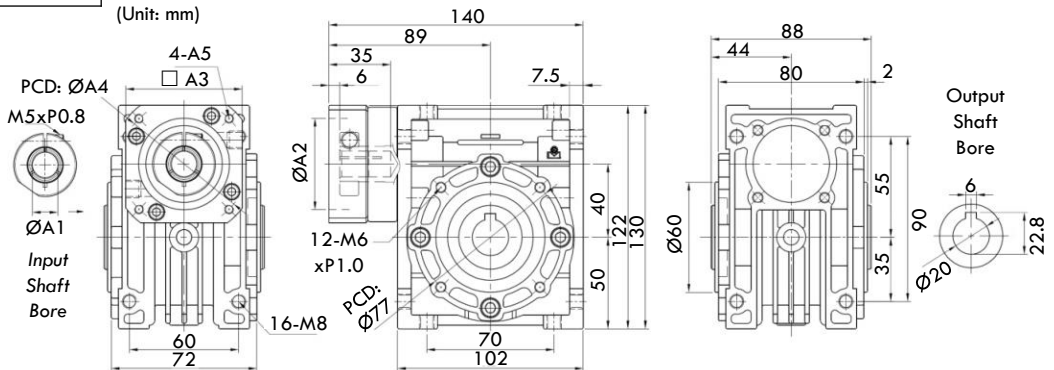
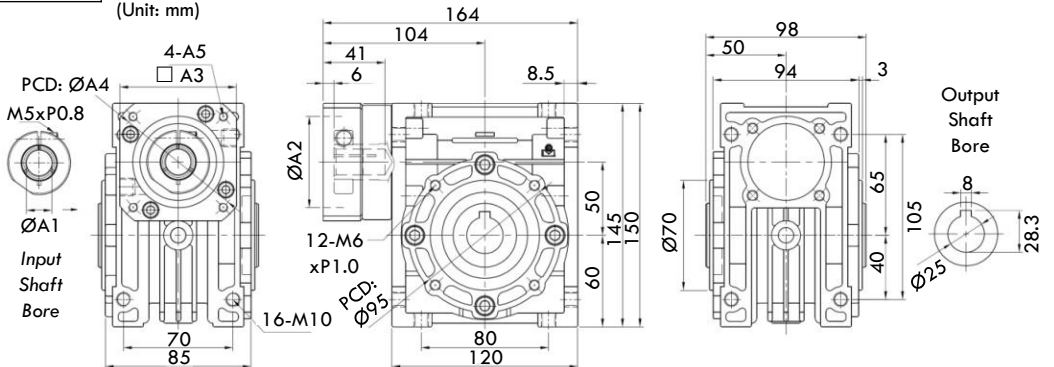


Fig. 77 WE-O#50

Modular Adapter Dimension (Attach to Servo Motor)			Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	11 ~ 19	A4	Mounting PCD \varnothing	70 ~ 90
A2	Input Pilot Bore \varnothing	50 ~ 70	A5	Mounting Bolt Size	M4xP0.7 M5xP0.8 M6xP1.0
A3	Adapter Frame Size \square (Square dimension)	64, 70, 80	(Unit: mm)		

Specification:

- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < \varnothing 32mm.
- * Solid Output Shaft Option is available.



Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.

DIMENSION – WE WORM GEAR SERVOBOX

Fig. 78 WE-O#60

Modular Adapter Dimension (Attach to Servo Motor)			Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	14 ~ 24	A4	Mounting PCD \varnothing	90 ~ 145
A2	Input Pilot Bore \varnothing	70 ~ 130	A5	Mounting Bolt Size	M6xP1.0 M8xP1.25 M10xP1.5
A3	Adapter Frame Size \square (Square dimension)	92, 110, 130, 142			

Specification:

- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < \varnothing 32mm.
- * Solid Output Shaft Option is available.

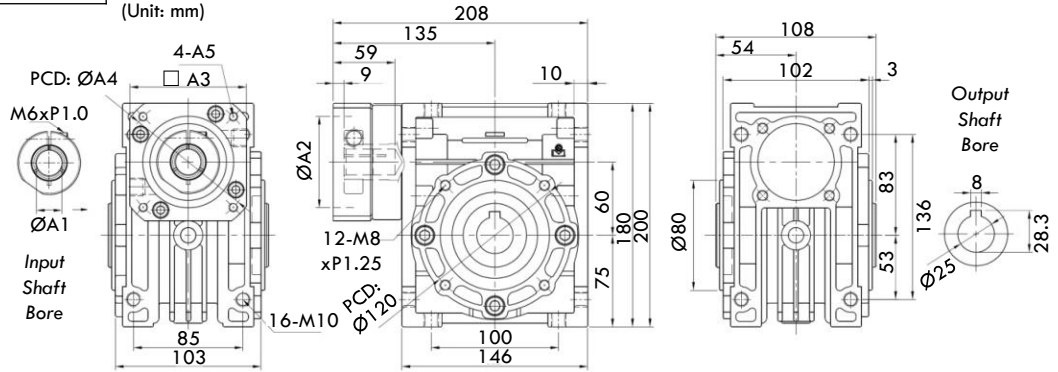


Fig. 79 WE-O#70

Modular Adapter Dimension (Attach to Servo Motor)			Modular Adapter Dimension (Attach to Servo Motor)		
A1	Input Shaft Bore \varnothing	14 ~ 24	A4	Mounting PCD \varnothing	70 ~ 90
A2	Input Pilot Bore \varnothing	70 ~ 130	A5	Mounting Bolt Size	M4xP0.7 M5xP0.8 M6xP1.0
A3	Adapter Frame Size \square (Square dimension)	92, 110, 130, 142			

Specification:

- * Bushing is used if the motor output shaft is smaller than the default input shaft bore of the ServoBox.
- * Collet clamping method for Input Shaft < \varnothing 32mm.
- * Solid Output Shaft Option is available.

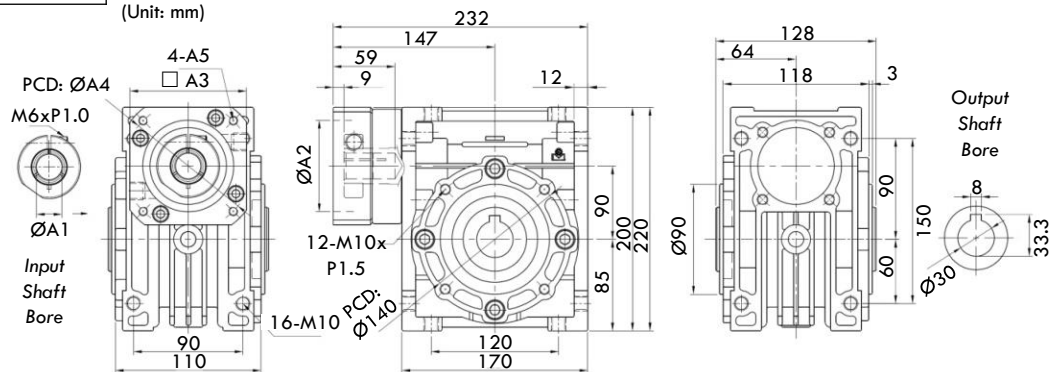
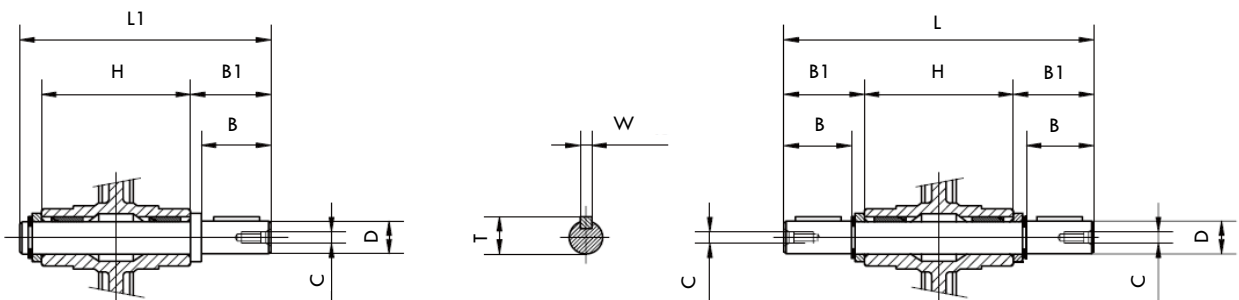


Fig. 80 WE SERVOBOX BUILT-IN OUTPUT SHAFT OPTION



(unit : mm)	D	W	T	B	B1	H	L1	L	C
#30	16h6 (14h6*)	5	18 (16*)	33	35	64.5	99.5	132.5	M6xP1.0
#40	20h6	6	22.5	37	40	87	127	164	M5xP0.8
#50	25h6	8	28	47	50	100	150	197	M8xP1.25
#60	25h6	8	28	47	50	109	159	206	M8xP1.25
#70	30h6	8	33	56	60	127	187	243	M10xP1.5

* Separated Low Speed Output Shaft (separate installation)

Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.



NON PRECISION

DMRS-CM SERIES

**WORM GEAR REDUCER
SERVO MOTOR COMPATIBLE**



The Worm Gear Reducer is designed with high thermal capacity die-cast aluminium housings for exceptional heat dissipation. It uses high efficiency gear design to create maximum torque output in a highly compact package. The housings come with a rust-free powder coat paint finishing.

General Specification

Backlash :	Non-precision
Max. Output Torque (Emergency Stop Torque) :	2 Times of Rated Output Torque
Rated Input Speed :	Servo motor speed < 1400rpm
Service Life :	Continuous Duty S1 > 3,000 hours; Intermittent Periodic Duty S5 > 6,000 hours
Efficiency :	55% ~ 85%
Degree of Protection :	IP54
PAM (Servo Motor Power) :	0.2kW to 3kW

Worm Gear Reducer Ratio and Rated Output Torque

Model No	DMRS 040	DMRS 050	DMRS 063
Hollow Output Shaft Size	Ø18 x 78mmL	Ø25 x 92mmL	Ø25 x 112mmL
Gear Reduction Ratio (1/X)	Output Torque (Nm)	Output Torque (Nm)	Output Torque (Nm)
5	28	51	77
7.5	32	60	108
10	33	59	111
15	14	63	116
20	27	61	111
25	21	72	110
30	35 (SSL)	83 (SSL)	139 (SSL)
40	33 (SSL)	62 (SSL)	119 (SSL)
50	31 (SSL)	60 (SSL)	127 (SSL)
60	14 (SSL)	29 (SSL)	59 (SSL)
80	11 (FSL)	28 (FSL)	52 (FSL)
100	-	25 (FSL)	45 (FSL)

Model No	DMRS 075	DMRS 090	DMRS 110	DMRS 130
Hollow Output Shaft Size	Ø28 x 120mmL	Ø35 x 140mmL	Ø42 x 165mmL	Ø42 x 170mmL
Gear Reduction Ratio (1/X)	Output Torque (Nm)	Output Torque (Nm)	Output Torque (Nm)	Output Torque (Nm)
5	-	-	-	-
7.5	152	245	374	611
10	165	263	417	683
15	174	293	565	779
20	182	305	479	733
25	171	280	478	806
30	194 (SSL)	359	593	900
40	180 (SSL)	281 (SSL)	532 (SSL)	878 (SSL)
50	175 (SSL)	276 (SSL)	511 (SSL)	1036 (SSL)
60	182 (SSL)	283 (SSL)	486 (SSL)	786 (SSL)
80	141 (FSL)	237 (SSL)	411 (SSL)	680 (SSL)
100	137 (FSL)	227 (FSL)	394 (SSL)	805 (FSL)



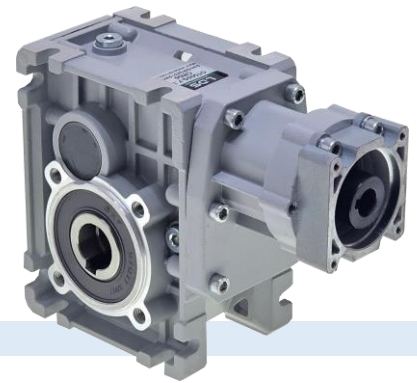
Remark :
SSL (Semi-self-locking)
FSL (Full-self-locking)



NON PRECISION

OTS-CM SERIES

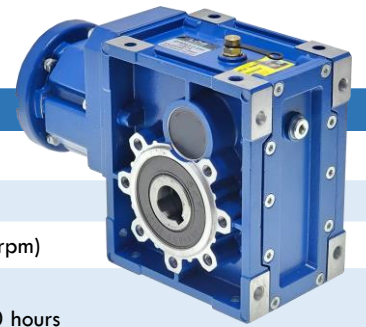
HELICAL HYPOID GEAR REDUCER SERVO MOTOR COMPATIBLE



The Helical Hypoid Gear Reducer offers higher transmission efficiency and longer lifespan compared to conventional IEC worm gear reducer. Having compactible design with IEC Worm Gear Reducer, it comes with high thermal capacity die-cast aluminium housings and offers gear reduction ratio up to 1/300.

Features:

- Helical Hypoid Gear design offer higher higher transmission efficiency and longer lifespan compared to conventional worm gear reducer.
- Higher Gear Reduction Ratio from 1/7.5 ~ 1/300.
- More energy-saving and lower operating temperature.
- Smooth running operation with lower noise compared to worm gear reducer.



General Specification

Backlash :	Non-precision
Max. Output Torque (Emergency Stop Torque) :	2 Times of Rated Output Torque
Rated Input Speed :	Servo motor speed < 2000rpm (2500rpm)
Service Life :	Continuous Duty S1 > 6,000 hours; Intermittent Periodic Duty S5 > 12,000 hours
Efficiency :	80% ~ 90%
Degree of Protection :	IP54
PAM (Servo Motor Power) :	0.2kW to 3kW

Helical Hypoid Gear Reducer Ratio and Permissible Output Torque

	Model No	OTS 050(2)		OTS 063(2)		OTS 075(2)		OTS 090(2)		OTS 110(2)	
2-stage Helical Hypoid Gear	Hollow Output Shaft Size	Ø25 x 92mmL (Ø20 Customised)		Ø25 x 112mmL		Ø28 x 120mmL		Ø35 x 140mmL		Ø42 x 155mmL	
	Nominal Gear Ratio (1/X)	Actual Gear Ratio (1/X)	Output Torque (Nm)	Actual Gear Ratio (1/X)	Output Torque (Nm)	Actual Gear Ratio (1/X)	Output Torque (Nm)	Actual Gear Ratio (1/X)	Output Torque (Nm)	Actual Gear Ratio (1/X)	Output Torque (Nm)
	7.5	7.73	40	7.6	55	7.48	100	7.48	150	7.49	260
	10	10.47	50	10.5	75	9.84	120	9.84	190	10.27	325
	12.5	12.47	65	12.67	90	12.49	150	12.49	240	12.84	375
	15	14.92	40	14.67	55	15.09	100	15.09	150	15.11	260
	20	20.21	50	20.25	75	19.84	120	19.84	190	20.73	325
	25	24.07	65	24.44	90	25.19	150	25.19	240	25.90	375
	30	29.33	65	30.31	100	30.24	175	30.24	250	30.67	375
	40	40.09	65	39.29	90	40.13	150	40.13	240	41.26	375
50	48.86	65	48.71	100	48.18	175	48.18	250	48.86	375	
60	58.36	65	60.50	100	59.44	175	59.04	250	59.22	375	

	Model No	OTS 050(3)		OTS 063(3)		OTS 075(3)		OTS 090(3)		OTS 110(3)	
3-stage Helical Hypoid Gear	Hollow Output Shaft Size	Ø25 x 92mmL (Ø20 Customised)		Ø25 x 112mmL		Ø28 x 120mmL		Ø35 x 140mmL		Ø42 x 155mmL	
	Nominal Gear Ratio (1/X)	Actual Gear Ratio (1/X)	Output Torque (Nm)	Actual Gear Ratio (1/X)	Output Torque (Nm)	Actual Gear Ratio (1/X)	Output Torque (Nm)	Actual Gear Ratio (1/X)	Output Torque (Nm)	Actual Gear Ratio (1/X)	Output Torque (Nm)
	75	74.62	40	73.33	55	75.45	100	75.45	150	75.55	260
	100	101.04	50	101.27	75	99.22	120	99.22	190	103.64	325
	125	120.34	65	122.22	75	125.95	150	125.95	240	129.48	375
	150	146.67	65	151.56	100	151.20	175	151.20	250	153.33	375
	200	200.44	65	196.43	90	200.66	150	200.66	240	206.29	375
	250			243.57	100	240.89	175	240.89	250	244.29	375
300					297.21	175	295.18	250	296.10	375	

DIMENSION – OTS HELICAL HYPOID GEAR REDUCER

Fig. 80 **OTS0502-CM**

Gear Reduction Ratio (1/X)	2Stage : 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60
Output Shaft Size Ø	Hollow Ø25 x 92mmL

	Input Adapter Type	CM06	CM08	CM12
A1	Input Shaft Bore Ø	11 or 16	19 or 22	--
A2	Input Pilot Bore Ø	50	70	--
A3	Adapter Frame Size	60x60	80x80	--
A4	Mounting PCD Ø	70	90	--
A5	Mounting Bolt Size	M4	M5	--
A6	Total Length	193/243	193/243	--
A7	Total Height	155	157	--

Unit : mm

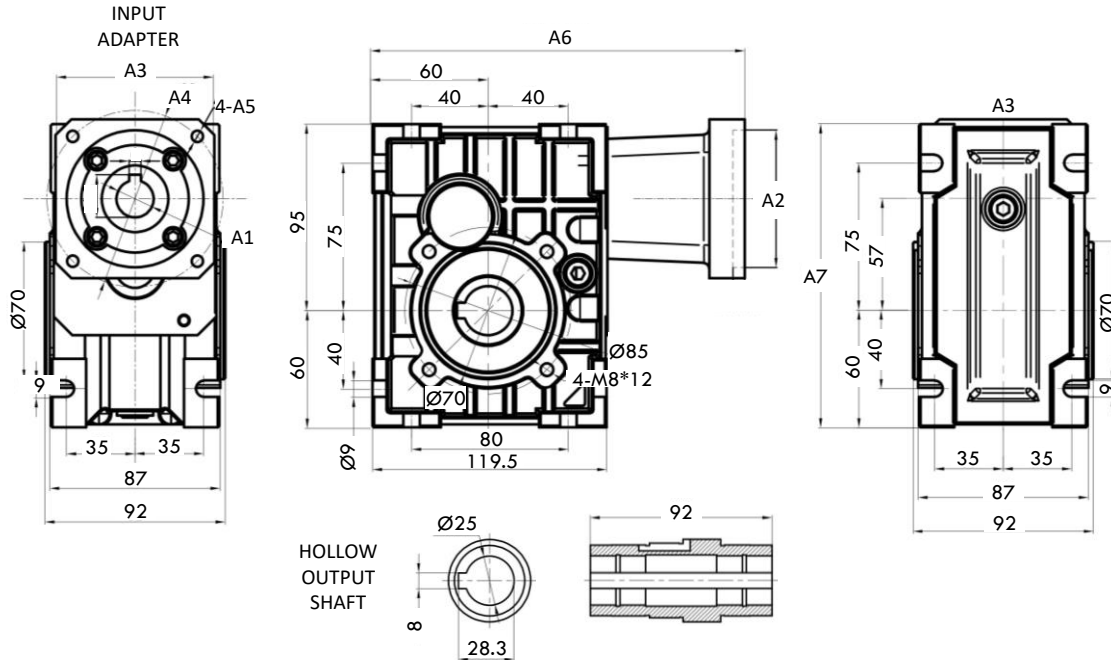
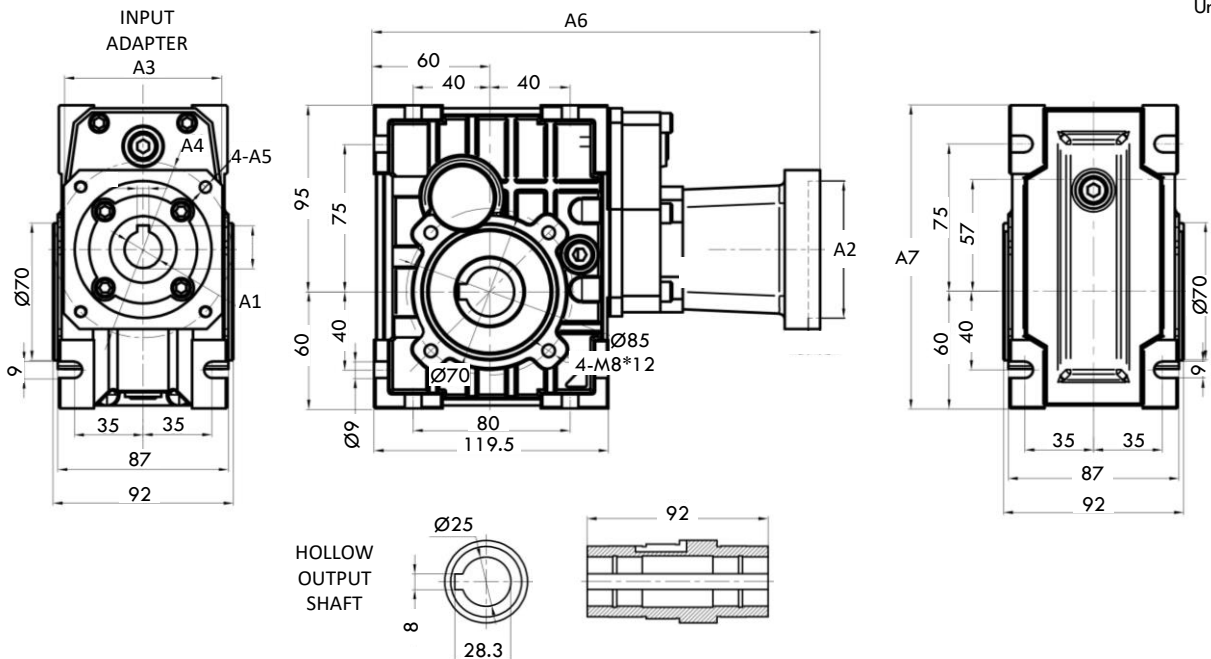


Fig. 81 **OTS0503-CM**

Gear Reduction Ratio (1/X)	3Stage : 75, 100, 125, 150, 200
Output Shaft Size Ø	Hollow Ø25 x 92mmL

	Input Adapter Type	CM06	CM08	CM12
A1	Input Shaft Bore Ø	11 or 16	19 or 22	--
A2	Input Pilot Bore Ø	50	70	--
A3	Adapter Frame Size	60x60	80x80	--
A4	Mounting PCD Ø	70	90	--
A5	Mounting Bolt Size	M4	M5	--
A6	Total Length	210/260	210/260	--
A7	Total Height	155	155	--

Unit : mm



Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.

DIMENSION – OTS HELICAL HYPOID GEAR REDUCER

Fig. 82 OTS0632-CM

Gear Reduction Ratio (1/X)	2Stage : 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60
Output Shaft Size \varnothing	Hollow $\varnothing 25 \times 112\text{mmL}$

	Input Adapter Type	CM06	CM08	CM12
A1	Input Shaft Bore \varnothing	11 or 16	19 or 22	19 ~ 24
A2	Input Pilot Bore \varnothing	50	70	110
A3	Adapter Frame Size	60x60	80x80	130x130
A4	Mounting PCD \varnothing	70	90	145
A5	Mounting Bolt Size	M4	M5	M8
A6	Total Length	216/266	216/266	216/296
A7	Total Height	174	176.5	201.5

Unit : mm

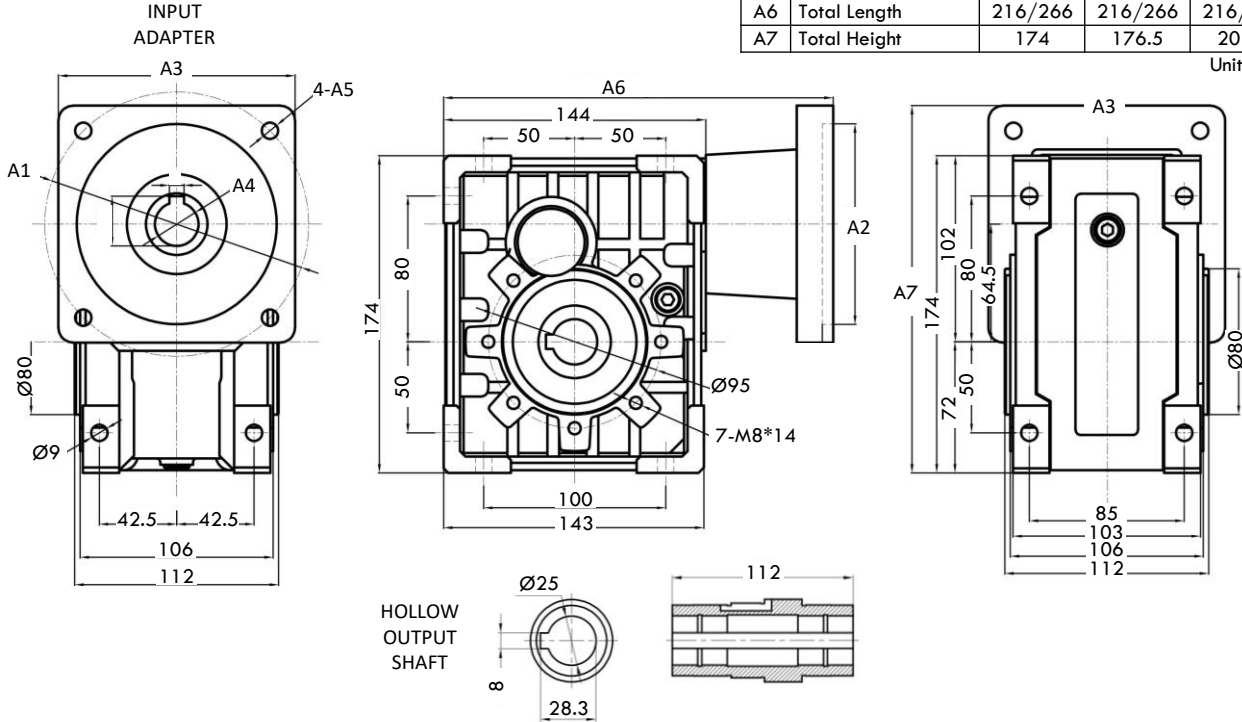
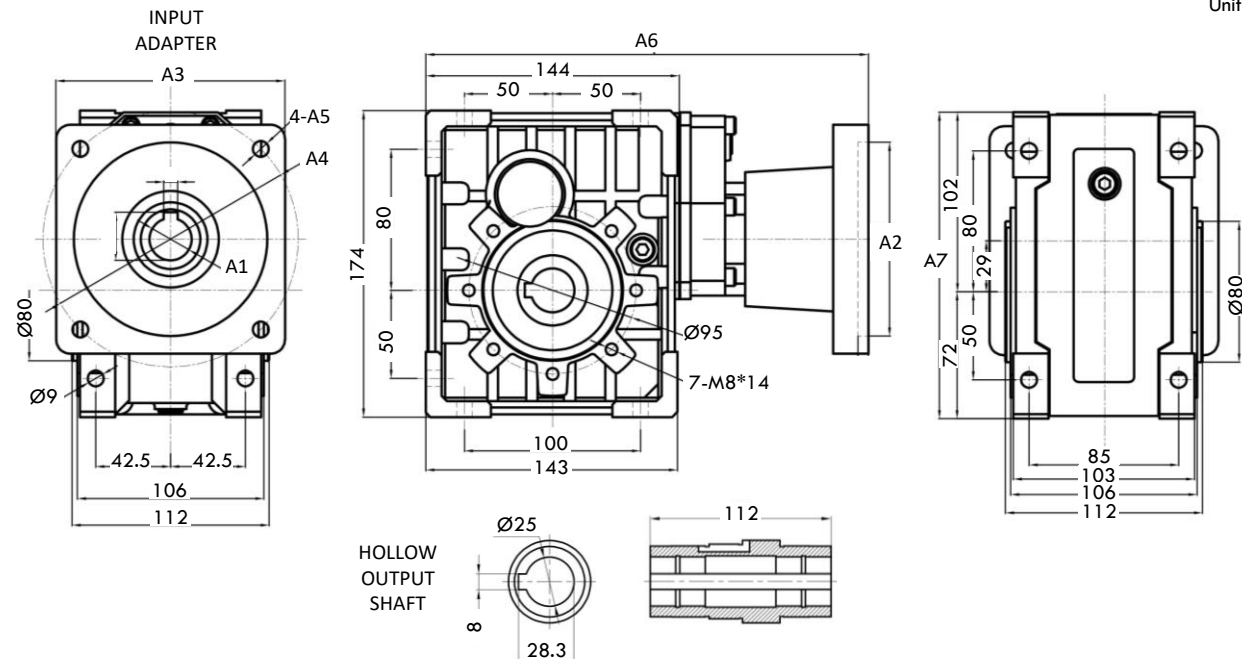


Fig. 83 OTS0633-CM

Gear Reduction Ratio (1/X)	3Stage : 75, 100, 125, 150, 200, 250
Output Shaft Size \varnothing	Hollow $\varnothing 25 \times 112\text{mmL}$

	Input Adapter Type	CM06	CM08	CM12
A1	Input Shaft Bore \varnothing	11 or 16	19 or 22	19 ~ 24
A2	Input Pilot Bore \varnothing	50	70	110
A3	Adapter Frame Size	60x60	80x80	130x130
A4	Mounting PCD \varnothing	70	90	145
A5	Mounting Bolt Size	M4	M5	M8
A6	Total Length	232/282	232/282	232/312
A7	Total Height	174	174	174

Unit : mm



Note: The contents of this data sheet are subject to change without prior notice for the purpose of continuous product improvement.

DIMENSION – OTS HELICAL HYPOID GEAR REDUCER

Fig. 84 OTS0752-CM

Gear Reduction Ratio (1/X)	2Stage : 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60
Output Shaft Size \varnothing	Hollow $\varnothing 28 \times 120\text{mmL}$

	Input Adapter Type	CM06	CM08	CM12
A1	Input Shaft Bore \varnothing	11 or 16	19 or 22	19 ~ 24
A2	Input Pilot Bore \varnothing	50	70	110
A3	Adapter Frame Size	60x60	80x80	130x130
A4	Mounting PCD \varnothing	70	90	145
A5	Mounting Bolt Size	M4	M5	M8
A6	Total Length	--	260/310	260/340
A7	Total Height	--	205	225.5

Unit : mm

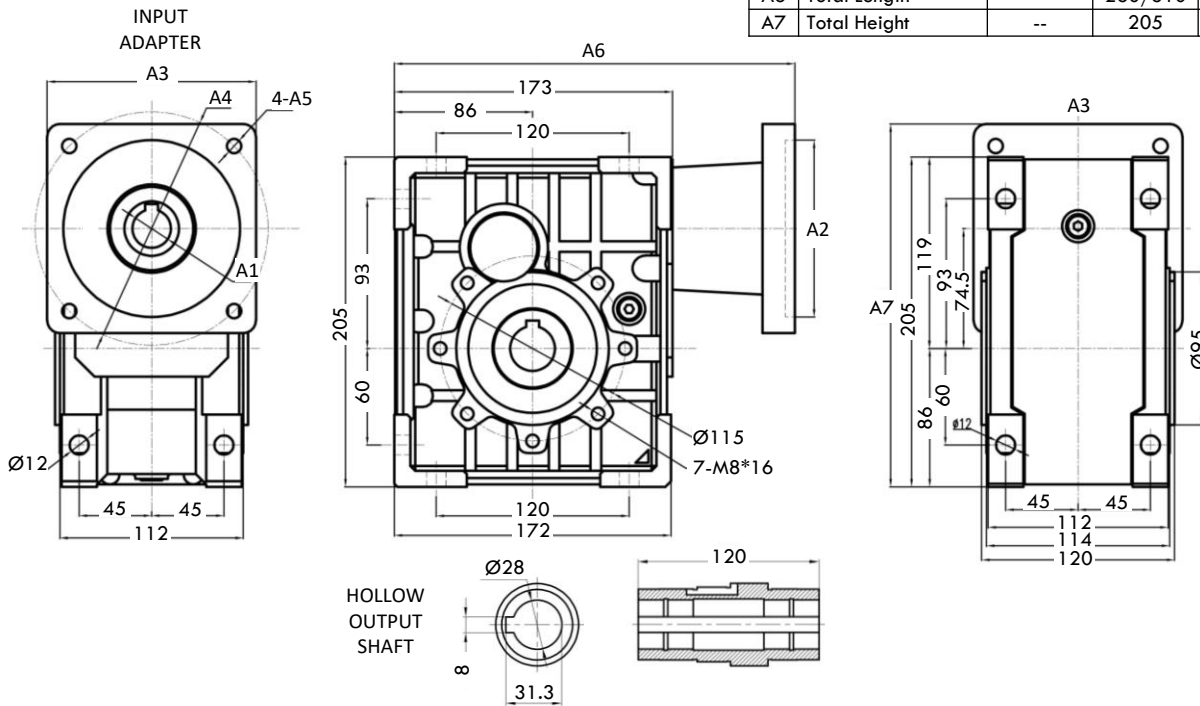
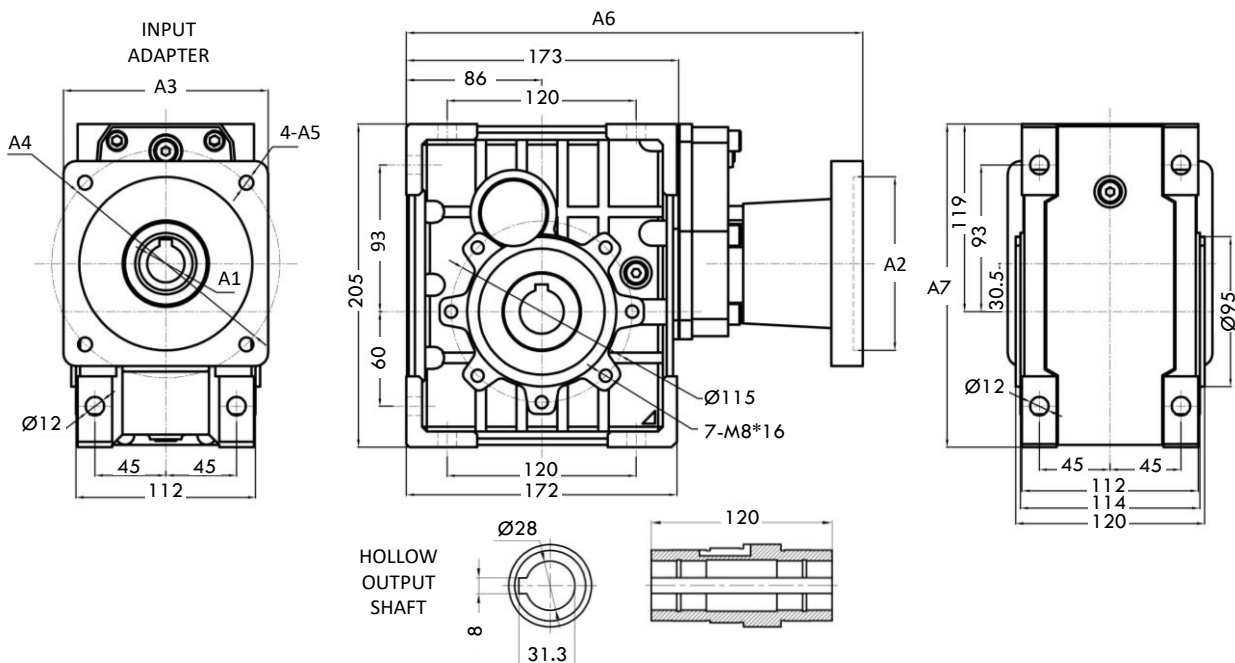


Fig. 85 OTS0753-CM

Gear Reduction Ratio (1/X)	3Stage : 75, 100, 125, 150, 200, 250, 300
Output Shaft Size \varnothing	Hollow $\varnothing 28 \times 120\text{mmL}$

	Input Adapter Type	CM06	CM08	CM12
A1	Input Shaft Bore \varnothing	11 or 16	19 or 22	19 ~ 24
A2	Input Pilot Bore \varnothing	50	70	110
A3	Adapter Frame Size	60x60	80x80	130x130
A4	Mounting PCD \varnothing	70	90	145
A5	Mounting Bolt Size	M4	M5	M8
A6	Total Length	--	290/340	290/370
A7	Total Height	--	205	205

Unit : mm



DIMENSION – OTS HELICAL HYPOID GEAR REDUCER

Fig. 86 OTS0902-CM

Gear Reduction Ratio (1/X)	2Stage : 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60
Output Shaft Size \varnothing	Hollow $\varnothing 35 \times 140$ mmL

	Input Adapter Type	CM08	CM12	CM14
A1	Input Shaft Bore \varnothing	19 or 22	19 ~ 24	28 or 35
A2	Input Pilot Bore \varnothing	70	110	114.3
A3	Adapter Frame Size	80x80	130x130	180x180
A4	Mounting PCD \varnothing	90	145	200
A5	Mounting Bolt Size	M5	M8	M12
A6	Total Length	--	295/375	295/395
A7	Total Height	--	256	281

Unit : mm

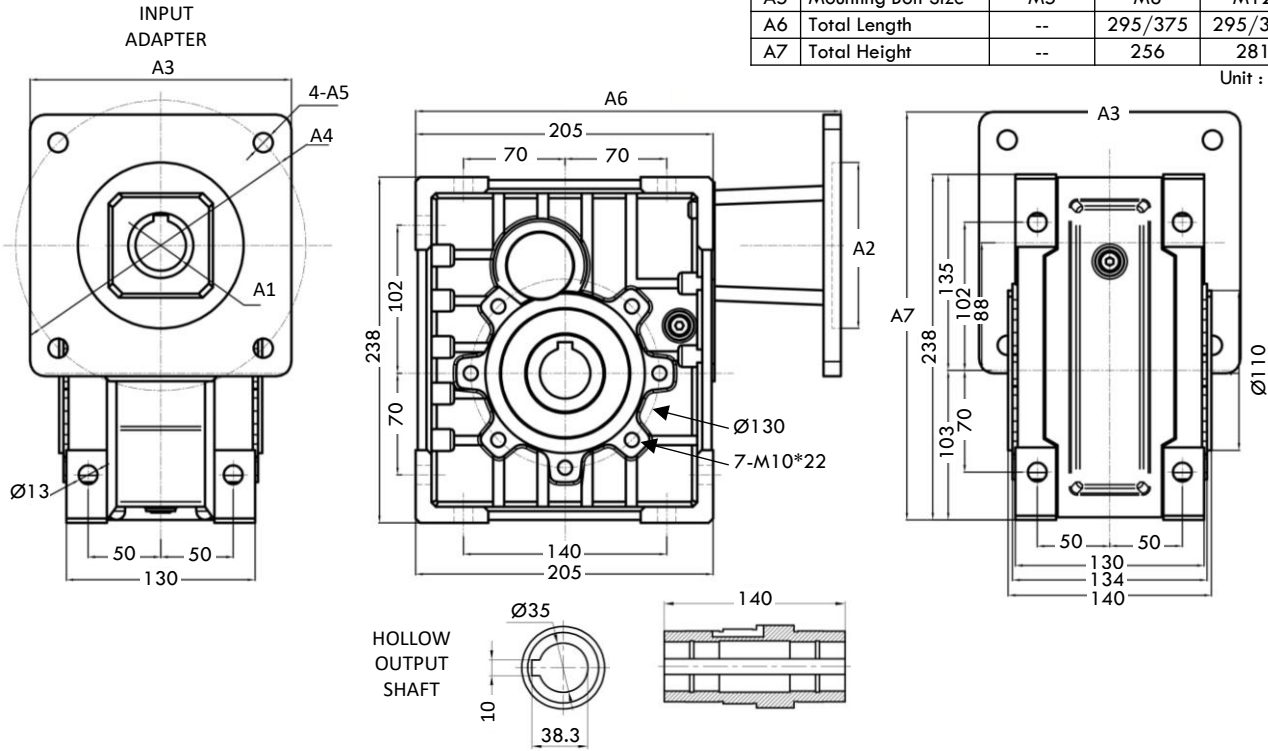
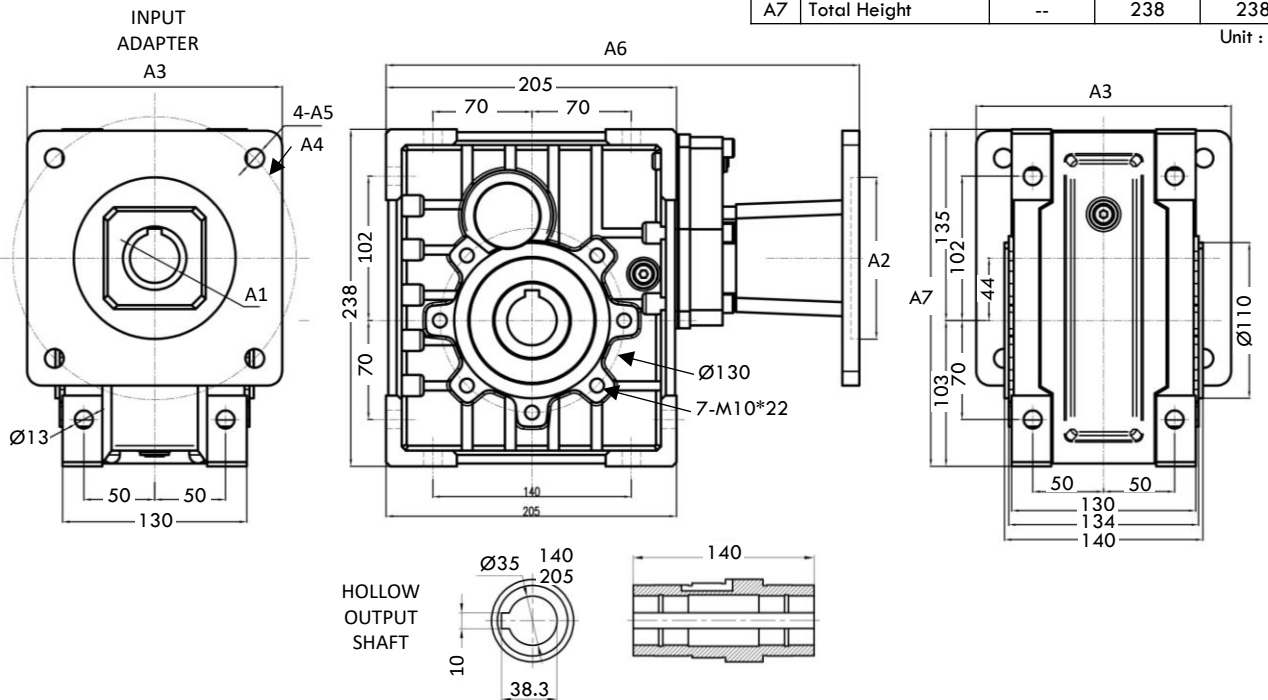


Fig. 87 OTS0903-CM

Gear Reduction Ratio (1/X)	3Stage : 75, 100, 125, 150, 200, 250, 300
Output Shaft Size \varnothing	Hollow $\varnothing 35 \times 140$ mmL

	Input Adapter Type	CM08	CM12	CM14
A1	Input Shaft Bore \varnothing	19 or 22	19 ~ 24	28 or 35
A2	Input Pilot Bore \varnothing	70	110	114.3
A3	Adapter Frame Size	80x80	130x130	180x180
A4	Mounting PCD \varnothing	90	145	200
A5	Mounting Bolt Size	M5	M8	M12
A6	Total Length	--	325/405	325/425
A7	Total Height	--	238	238

Unit : mm



DIMENSION – OTS HELICAL HYPOID GEAR REDUCER

Fig. 88 OTS1102-CM

Gear Reduction Ratio (1/X)	2Stage : 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60
Output Shaft Size \varnothing	Hollow $\varnothing 42 \times 155\text{mmL}$

	Input Adapter Type	CM08	CM12	CM14
A1	Input Shaft Bore \varnothing	19 or 22	19 ~ 24	28 or 35
A2	Input Pilot Bore \varnothing	70	110	114.3
A3	Adapter Frame Size	80x80	130x130	180x180
A4	Mounting PCD \varnothing	90	145	200
A5	Mounting Bolt Size	M5	M8	M12
A6	Total Length	--	369/449	369/469
A7	Total Height	--	300.5	325.5

Unit : mm

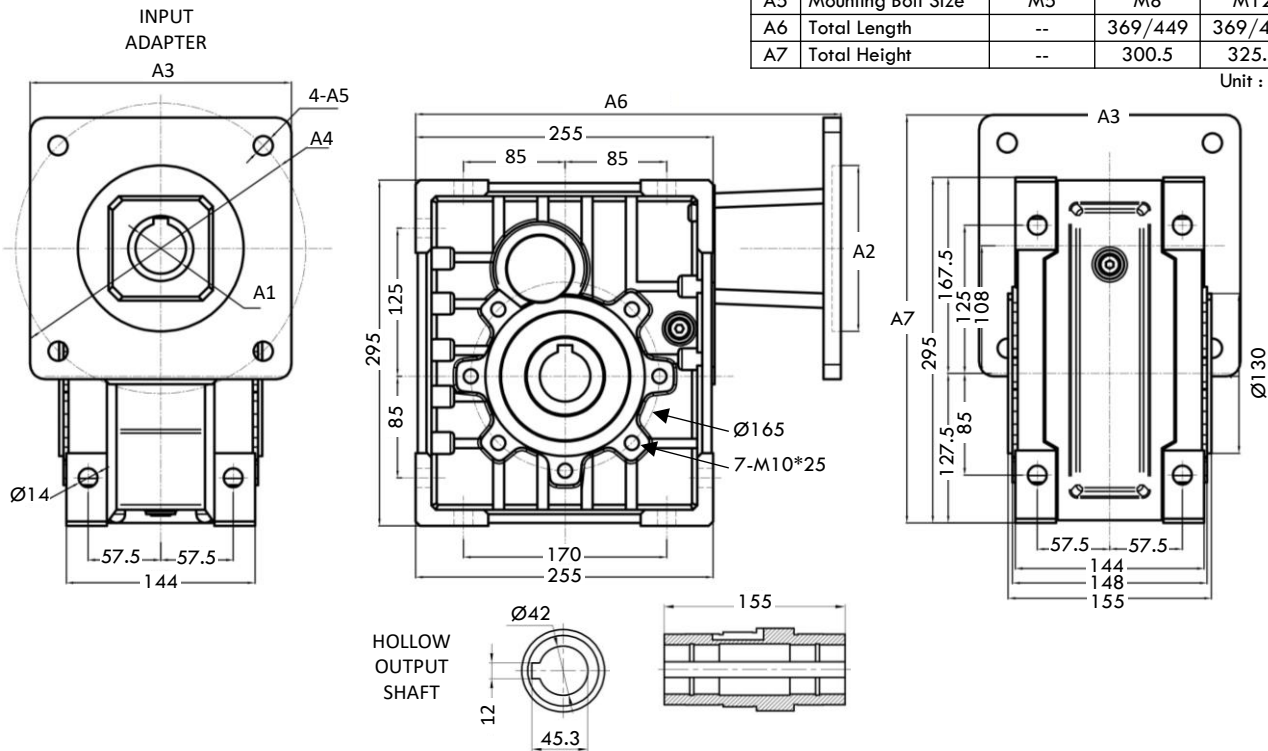
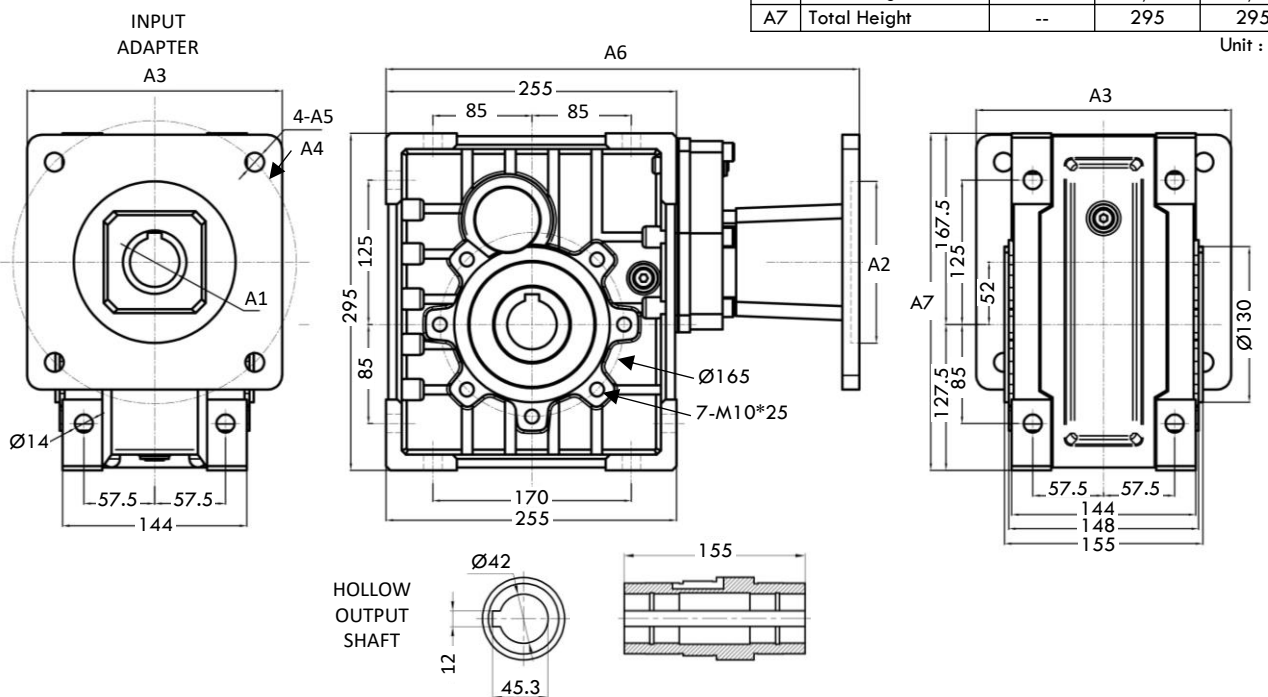


Fig. 89 OTS1103-CM

Gear Reduction Ratio (1/X)	3Stage : 75, 100, 125, 150, 200, 250, 300
Output Shaft Size \varnothing	Hollow $\varnothing 42 \times 155\text{mmL}$

	Input Adapter Type	CM08	CM12	CM14
A1	Input Shaft Bore \varnothing	19 or 22	19 ~ 24	28 or 35
A2	Input Pilot Bore \varnothing	70	110	114.3
A3	Adapter Frame Size	80x80	130x130	180x180
A4	Mounting PCD \varnothing	90	145	200
A5	Mounting Bolt Size	M5	M8	M12
A6	Total Length	--	399/479	399/499
A7	Total Height	--	295	295

Unit : mm

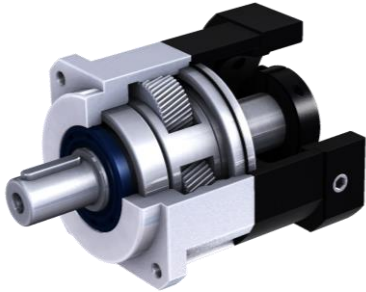




HIGH PRECISION SERVOBOX

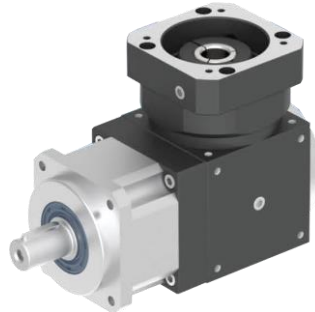


SERVOBOX PRODUCT FAMILIES DESIGNS AND FEATURES



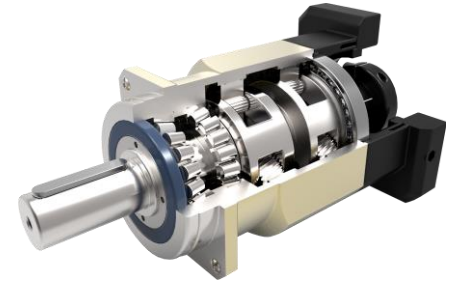
DB ▪ SB Series Planetary ServoBox

- Most cost effective in-line planetary design
- Precise (low backlash between 1~12arcmin)
- High torque capability and torsional stiffness
- Gear ratio from 1/3 ~ 1/1000
- Universal housing and is suitable for all servo and stepper applications



PBT Series

- Right Angle Planetary ServoBox
- Spiral Bevel Gear Design
 - Backlash less than 10arcmin
 - High torque capability and torsional stiffness
 - Gear ratio from 1/3 ~ 1/50



SF Series Planetary ServoBox

- Higher radial and axial load capacity.
- Double taper bearing design with full needle roller bearings without retainer
- One-piece constructed planetary arm bracket
- Universal housing and is suitable for all servo and stepper applications



SD Series Planetary ServoBox

- Precise in-line planetary system with rotary flange design
- Low backlash between 1~12arcmin
- Ball bearing and taper bearing option
- Universal housing and is suitable for rotary and turntable applications



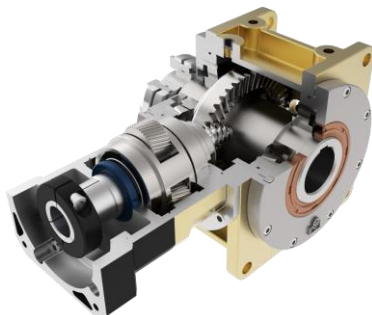
HK Series

- Right Angle Hypoid Gear ServoBox
- Precise space saving right angle hypoid gear system with hollow rotary flange
 - Ball bearing and taper bearing option
 - Universal housing and is suitable for rotary and turntable applications



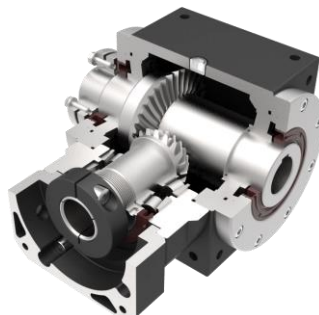
GT Series Hollow Rotary Actuator ServoBox

- Solid hollow output table that allows simple wiring and piping on your equipment design
- Ball bearing and crossed roller bearing option
- Repetitive Positioning Accuracy ± 10 sec
- Lost Motion 2arcmin (0.033°)
- Torsional Backlash ≤ 2 arcmin



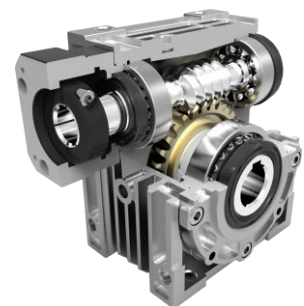
HY Series Hypoid Bevel Gear ServoBox

- Compact design to transmit rotational motion at right angles with higher torque capability
- Ball bearing and taper bearing option
- Heavy duty housing in aluminium die-cast alloy to withstand highest operating temperature
- Hollow/Single/Double output shaft available



ST Series Spiral Bevel Gear ServoBox

- High efficiency design ($\geq 98\%$) to transmit rotational motion at right angles
- Ball bearing and taper bearing option
- Max gear reduction ratios up to 1/500
- Hollow/Single/Double/Multiple shaft configurations are available



WE Series Worm Gear ServoBox

- An economic series with optimized worm gear tooth design (Low backlash between ≤ 8 arcmin)
- Heavy duty housing in aluminium die-cast alloy
- An inherent safety mechanism design as it cannot function in the reverse order
- Hollow/Single/Double output shaft available

