ATG Planetary Reducers

Helical Gear Design

기어 맞물림이 평기어의 2배이상인 Helical Gear 적용으로 동작 소음을 최소화하고 고출력, 저소음, 저백래쉬를 실현하였습니다.

The speed reduction mechanism employs helical gears, which provides two times meshing rate of teeth when comparing with regular spur gears. In addition, it also features extremely smooth running, low noise, high torque output and low backlash.

Synthetic Lubrication Grease

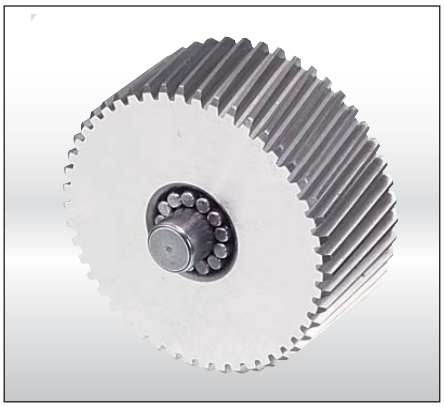
누유방지를 위하여 IP65등급의 밀폐 설계와 첨단 합성 윤활 시스템을 적용하였습니다.

The protective class IP65 seales design avoids leakage problem. It features no maintenance.

Collet Locking Mechanism

감속기의 입출력과 모터 출력축을 연결하기 위한 Collet clamp 방식으로 역학상 확실한 체결력과 동심도를 보장하며 높은 속도에서 구동할 때에도 백래쉬가 발생하지 않고 동력을 전달합니다.

The input-end and the motor are coupled through a collet locking meshanism. It has passed dynamical balance analysis to assure concentricity and balance on the connection and no backlash for power transmission while running at high speed.



Full Needle Roller Bearings Design

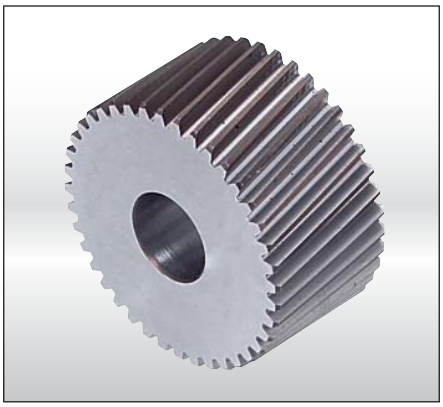
ATG 감속기의 유성기어는 구조적 강도와 출력 향상을 위하여 Full Needle Bearing을 적용하였습니다.

The planetary gear transmission employs full needle roller bearings without retainer to increase the contact surface, which greatly upgrades structural rigidity and service life.

Integrated Planetary Arm Bracket

Planetary Arm Bracket와 출력 Shaft는 일체형 구조로 한번에 정밀 가공되어 비틀림 강도와 정밀도를 향상 시켰습니다.

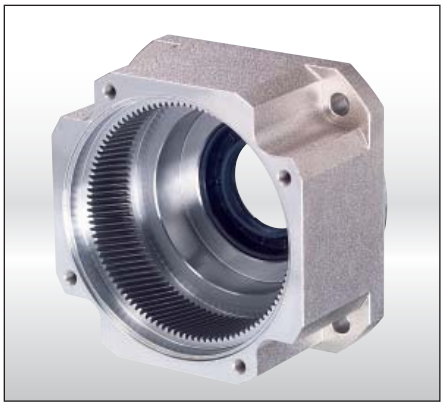
The planetary arm bracket and the output shaft are one-piece constructed to increase torsional rigidity and accuracy. The entire structure is one-time machined for controlling accuracy in the specified tolerance.



High Precision Gear Machining

감속기 내부의 유성기어와 썬기어는 기어제작 용도의 크롬 몰리브덴 합금강으로 제조 되었습니다. 기어의 강도는 57~60HRC 이며 정밀도 향상을 위해 열처리 후 스카이빙 연마공정을 적용하여 DIN 6 Class(JIS 2급)이내의 등급을 유지합니다. 특히 니트라이딩 열처리공법에 비하여 보다 깊은 조직 강화를 통한 기어강도 및 제품수명을 향상 하였습니다.

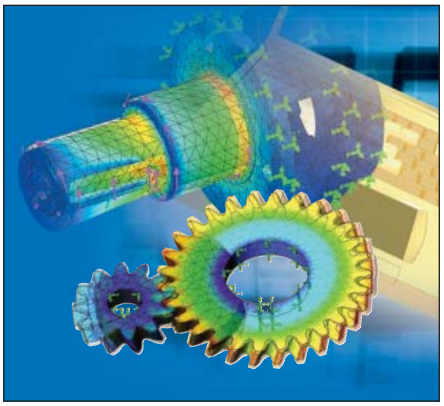
The planetary gear and sun gear are made by high quality Ni-Cr-Mo alloy steel (SNcm20), precision machined and carburized to hardness 57-60HRC. Precision teeth grinding assures gear accuracy reaches DIN6 class. It provides better wear resistance, impact resistance and longer service life than gears with only surface nitrided.



One-piece Helical Gear Box body & Advanced Surface Treatment

기어 제작용 합금강을 사용하여 적합한 열처리 공정후 감속기 케이스에 내치기어를 직접 가공하여 고정밀, 고강도를 실현하며 부식방지를 위한 내환경 표면처리를 하였습니다.

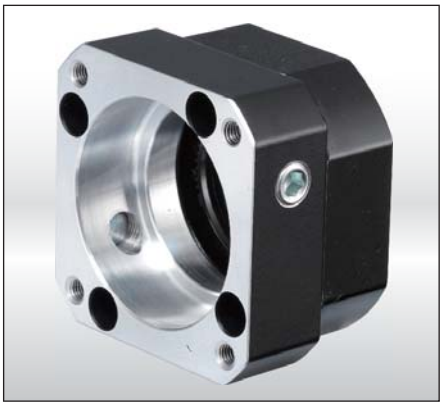
The gear box and internal gear are one-piece constructed, which is made by Cr-Mo alloy steel (SCM435), and tempered for high torque output. High gear accuracy meets DIN6 class standard. Gearbox surface is anti-corrosive treated for upgrading environmental-resistant and corrosion-resistant capability.



3D-CAE Design and Analysis

기어 전문 3D-CAE 툴을 통한 모의 실험으로 최적의 구동조건 분석 후 완성되어진 디자인 입니다.

Employs 3D-CAE software for analysis and design, the software allows for analyzing the strength of the entire gear reducer and modifying the helical teeth profile and lead. This reduces the impact and noise during teeth engage and disengage, while increasing the service life of gears and the gear reducer.



Modular Design of Motor Connection Plate

Motor Connection Plate의 스페셜 모듈디자인은 모든 Servo Motor 적용이 가능하며 알루미늄 합금소재에 산화방지 및 부식방지를 위한 내환경 표면처리를 하였습니다.

The special modular design of motor connection plate is suitable for any brand and any type of servomotor. It is made by aluminum alloy. Its surface is anti-oxidant treated for upgrading environmental-resistant and corrosion-resistant capability.

ATG

ATG Planetary Reducer Series의 고정밀 유성치차 감속기는 Helical Gear를 사용하고 있습니다. 모든 기어는 고정밀 CNC 기어 가공기에서 제작되어 기어 맞물림이 정확하며 가동은 부드럽고 소음은 최소입니다.
일체형 기어박스 본체는 타사 동급제품에 비해 더 작은 구조(부피와 무게의 1/4이상 감소)이며 보다 큰 회전력과 효율을 자랑합니다.

SERVOBOX
Planetary Reducers

ATG Planetary Reducer series high precision planetary gear reducer employs helical gears. All gears are high precision machined by CNC gear hobbing machine, providing high accuracy gear engagement, smooth running and minimum noise.
LIMING gear box is one-piece fabricated. When comparing with the competitive gear reducer, LIMING gear reducer features smaller construction (saves over 1/4 of size and weight), higher output torque and higher transmission efficiency.

Characteristic of KSB, KSE Series

Low Noise
저소음

Low Backlash
1-Stage는 1 arcmin ~ 5 arcmin,
2-Stage는 3 arcmin ~ 7 arcmin으로 선택 설계 가능

High Efficiency
1-Stage 효율성 97% 이상,
2-Stage 효율성 94% 이상

High Input Speed
입력속도 5,000rpm 허용

High Torque
기존 평기어 Planetary 변속기어보다 높은 Torque

High Stability
높은 장력의 합금강 사용. 기어 표면 경화는 표면만 경화가 아닌 기어 전체 경화로 만들어짐
이는 기어의 수명 연장과 오랜 기간의 운전후에도 새것같은 정확성을 유지 시켜줌

High Speed Reduction Ratio
모듈 디자인 기어 감속기, 유성기어박스 연결 가능, 감속 비율 1/1,000 이상

Low Noise
Low noise

Low Backlash
Backlash for 1-stage model is under 5 arcmin. Available to select specification with 1 arcmin of backlash. Backlash for 2-stage model is under 7 arcmin.

High Efficiency
Efficiency for 1-Stage model exceeds 97%
2-Stage model exceeds 94%.

High Input Speed
Input speed allows for 5,000rpm.

High Torque
Higher output torque is in comparision with spur gear planetary gear reducers.

High Stability
Employs high tensile strength alloy steel. Gear hardening is made for the entire gear instead of only surface hardening, which extends gear service life and maintain high accuracy after a long period of operation.

High Speed Reduction Ratio
The gear reducer is a modular deign. The planetary gear box can be connected. Speed reduction ratio can reach over than 1/1,000.

Indication of Model Numbers

KSB	-	90	-	10	Key Type	-	P1	MOTOR

Type	Model	Ratio	Output Shaft Keyway	Backlash Class	Motor Type
KSB KSE KSB-A KSE-A	44 62 90 120 142 180 220 270 330	1-Stage 3 ~ 10 2-Stage 15 ~ 100 3-Stage 125 ~ 1000	□ : 무표기 Standard (Keyway) N : 표기 Solid Output Shaft (No Keyway)	1-Stage Ps ≦ 1 arcmin P0 ≦ 3 arcmin P1 ≦ 5 arcmin 2-Stage Ps ≦ 3 arcmin P0 ≦ 5 arcmin P1 ≦ 7 arcmin 3-Stage Ps ≦ 5 arcmin P0 ≦ 7 arcmin P1 ≦ 9 arcmin	Motor Brand & Model No.

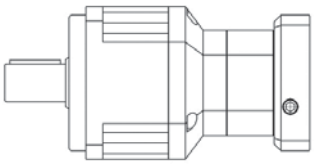
KSBL	-	90	-	10	Key Type	-	P1	MOTOR

Type	Model	Ratio	Output Shaft Keyway	Backlash Class	Motor Type
KSBL KSEL KSBL-A KSEL-A	44 62 90 120 142 180 220	1-Stage 3 ~ 20 2-Stage 15 ~ 200	□ : 무표기 Standard (Keyway) N : 표기 Solid Output Shaft (No Keyway)	1-Stage Ps ≦ 2 arcmin P0 ≦ 4 arcmin P1 ≦ 6 arcmin P2 ≦ 8 arcmin 2-Stage Ps ≦ 4 arcmin P0 ≦ 7 arcmin P1 ≦ 9 arcmin P2 ≦ 12 arcmin	Motor Brand & Model No.

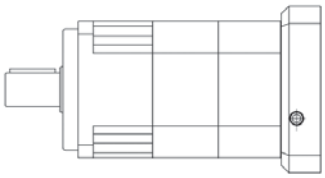
A-Type의 정의

높은 토크를 가능하게 2단 또는 3단으로 구성 되어진 감속기의 기본 구조는 뒤에 오는 단이 한치수 작은 단으로 구성되어져 있습니다.
서보모터 크기로 인하여 감속기와 취부가 불가능할 경우에 한해 A-Type의 감속기로 사용이 가능하게 합니다.

예) KSB-62-15-P1 (In Shaft Φ8) + KP43 (Motor Shaft Φ14) → 조립불가
KSB-62A-15-P1 (In Shaft Φ14) + KP43 (Motor Shaft Φ14) → 조립가능



Standard



A-Type

안전계수를 감안한 올바른 감속기 선정 예제 :

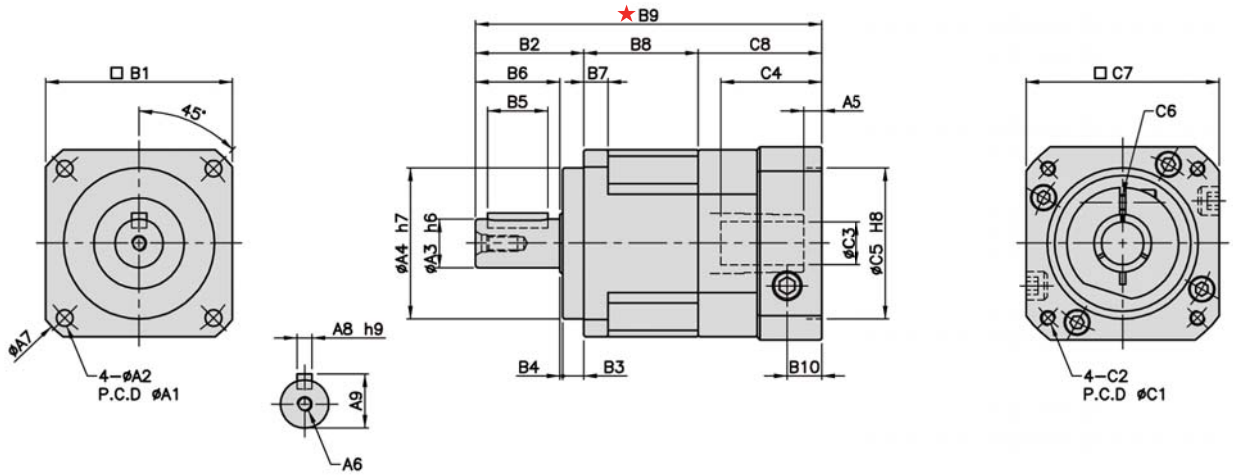
Servo Motor 0.5kW, 정격토크 2.39Nm, Motor Shaft Ø24mm를 사용시

1. 감속비 1/50의 경우 : 출력토크는 2.39Nm x 50 x 94%(효율) =112Nm
   - ● 감속기 KSB-120-50 적용시 감속기 정격토크는 333Nm로 S.F = 2.9(안전계수) 허용
   - ● KSB-90A-50 적용시 감속기 정격토크는 160Nm S.F = 1.4(안전계수) 허용
2. 감속비 1/100의 경우 : 출력토크는 2.39Nm x 100 x 94%(효율) = 224Nm
   - ● 감속기 KSB-120-100 적용시 S.F = 1.3
   - ● 감속기 KSB-90A-100 적용시 S.F = 0.62 : 낮은 안전계수로 인한 선정 불가

ATG SERVOBOX
Planetary Reducers

MODEL : KSB

1-Stage
RATIO : 3, 4, 5, 6, 7, 8, 9, 10



unit : mm

Code	Model	44	62	90	120	142	180	220
A	A1	50	70	100	130	165	215	250
	A2	4.5	5.5	6.8	9	11	13	17
	A3	13	16	22	32	40	55	75
	A4	35	50	80	110	130	160	180
	A5	5	6	9	10	10	11.5, 13.5	12.5, 14.5
	A6	M4 x P0.7	M5 x P0.8	M8 x P1.25	M10 x P1.5	M12 x P1.75	M14 x P2.0	M16 x P2.0
	A7	58	80	116	148	186	238	288
	A8	5	5	6	10	12	16	20
	A9	15	18	24.5	35	43	59	79.5
B	B1	44	62	90	120	142	180	220
	B2	26	36	48	65	92	106	139
	B3	5	7	10	12	15	20	30
	B4	1	1	2	3	3	4	5
	B5	15	20	30	40	65	70	90
	B6	20	28	36	50	74	82	104
	B7	5	8	10	12	15	16	20
	B8	31.5	38	49	61	70	85	93
	B9	95	115, 123	151.5, 164.5	205	260.5	323.5, 325.5	367.5, 369.5
	B10	9	11.5	16	19.5	20	23.5, 25.5	23.5, 25.5
C	C1	46, 60, 63	70, 75, 90	90, 100, 115, 145	115, 145, 165	145, 165, 215	200, 215, 265	200, 265, 300
	C2	M3, M4, M5	M4, M5, M6	M5, M6, M8	M6, M8, M10	M8, M10, M12	M10, M12	M12, M16
	C3	8, (11)	14, (19)	19, (24)	24, (32)	35, (38)	38, 42, 48, 55	42, 48, 55
	C4	26	33.5, 41.5	46, 59	67	84.5	114.5, 116.5	117.5, 119.5
	C5	30, 40, 50	50, 60, 70	70, 80, 95, 110	95, 110, 130	110, 130, 180	114.3, 180, 230	114.3, 230, 250
	C6	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M10 x P1.5	M10 x P1.5
	C7	46, 55	64, 70, 80	92, 110, 130	122, 130, 150	146, 150, 190	182, 200, 250	222, 250, 265
	C8	37.5	41, 49	54.5, 67.5	79	98.5	132.5, 134.5	135.5, 137.5

* ( ) 안은 주문형입니다 . * A5, ★은 적용 모터에 따라 달라질 수 있습니다 .

Model No.		Unit	Ratio	44	62	90	120	142	180	220
Rated Output Torque (Nominal output torque)	T_{2N}	Nm	3	19	59	165	335	625	1,206	2,030
			4	16	51	146	300	555	1,069	1,804
			5	16	48	160	333	618	1,189	2,010
			6	15	45	151	311	583	1,118	1,911
			7	15	45	149	309	573	1,108	1,870
			8	14	43	143	298	553	1,070	1,824
			9	13	44	145	278	516	993	1,694
			10	14	43	141	294	549	1,059	1,779
Max. Acceleration Torque	T_{2B}	Nm	3 ~ 10	1.8 Times of Rated Output Torque						
Max. Output Torque Emergency Stop Torque	T_{2NOT}	Nm	3 ~ 10	3 Times of Rated Output Torque						
Rated Input Speed	n_{1N}	rpm	3 ~ 10	3,000	3,000	3,000	3,000	3,000	3,000	2,000
Max. Input Speed	n_{1B}	rpm	3 ~ 10	6,000	6,000	6,000	5,000	5,000	4,000	3,000
Backlash Ps	j_t	arcmin	3 ~ 10	–	≦ 1	≦ 1	≦ 1	≦ 1	≦ 1	≦ 1
Backlash P0	j_t	arcmin	3 ~ 10	≦ 3	≦ 3	≦ 3	≦ 3	≦ 3	≦ 3	≦ 3
Backlash P1	j_t	arcmin	3 ~ 10	≦ 5	≦ 5	≦ 5	≦ 5	≦ 5	≦ 5	≦ 5
Torsional Rigidity		Nm/arcmin	3 ~ 10	3	6	14	27	60	140	240
Max. Radial Force	F_{2rB}	N	3 ~ 10	760	1,180	3,200	6,800	9,300	15,600	51,000
Max. Axial Force	F_{2aB}	N	3 ~ 10	380	590	1,600	3,400	4,650	7,800	25,500
Service Life	L_H	hr	3 ~ 10	S5 Cycle Operation: 〉30,000 (S1 Continuous Operation: 〉15,000 hrs)						
Efficiency	n	%	3 ~ 10	≧97%						
Operating Temperature		℃	3 ~ 10	−25°C ~ +90°C						
Lubrication			3 ~ 10	VIGO GREASE RE #0						
Protection Class			3 ~ 10	IP65						
Mounting Position			3 ~ 10	Any						
Noise Level		dB	3 ~ 10	≦ 56	≦ 58	≦ 60	≦ 63	≦ 65	≦ 67	≦ 70
Weight ±3%		kg	3 ~ 10	0.6	1.28	3.8	8	14.3	28.3	42.5

■ Mass Moments of Inertia (kg.㎠)

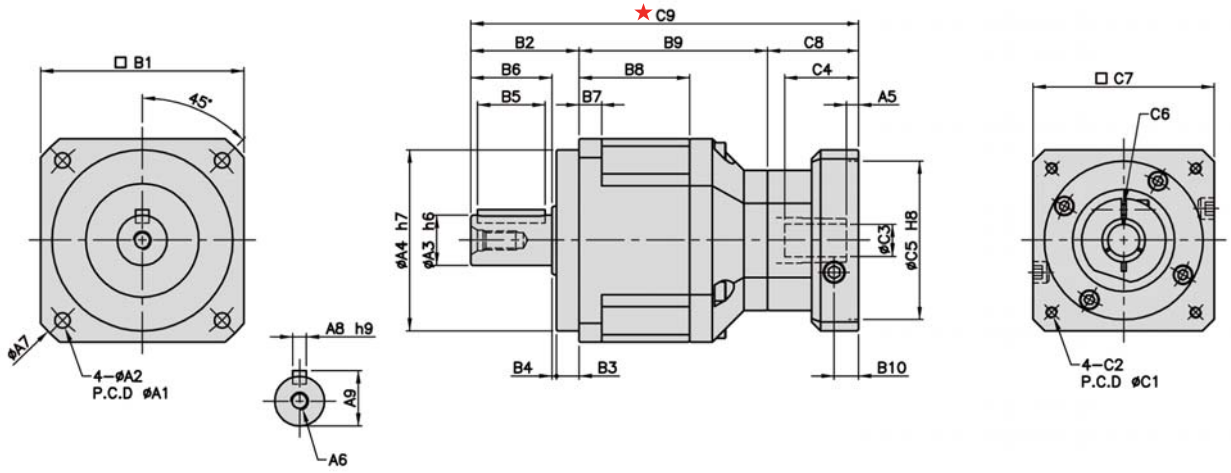
Ratio	44	62	90	120	142	180	220
3	0.03	0.16	0.61	3.25	9.21	28.98	59.61
4	0.03	0.14	0.48	2.74	7.54	23.67	54.37
5	0.03	0.13	0.47	2.71	7.42	23.29	53.27
6	0.03	0.13	0.45	2.65	7.25	22.75	51.72
7	0.03	0.13	0.45	2.62	7.14	22.48	50.97
8	0.03	0.13	0.44	2.58	7.07	22.59	50.84
9	0.03	0.13	0.44	2.57	7.04	22.53	50.63
10	0.03	0.13	0.44	2.57	7.03	22.51	50.56

* 연속운전 사용시 본사와 상담 후 선정바랍니다 .

ATG SERVOBOX
Planetary Reducers

MODEL : KSB

2-Stage
RATIO : 15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100



unit : mm

Code	Model	62	90	120	142	180	220
A	A1	70	100	130	165	215	250
	A2	5.5	6.8	9	11	13	17
	A3	16	22	32	40	55	75
	A4	50	80	110	130	160	180
	A5	5	6	9	10	10	11.5, 13.5
	A6	M5 x P0.8	M8 x P1.25	M10 X P1.5	M12 x P1.75	M14 x P2.0	M16 x P2.0
	A7	80	116	148	186	238	288
	A8	5	6	10	12	16	20
	A9	18	24.5	35	43	59	79.5
B	B1	62	90	120	142	180	220
	B2	36	48	65	92	106	139
	B3	7	10	12	15	20	30
	B4	1	2	3	3	4	5
	B5	20	30	40	65	70	90
	B6	28	36	50	74	82	104
	B7	8	10	12	15	16	20
	B8	38	49	61	70	85	93
	B9	66	83.5	108.5	127.5	154	175
	B10	9	11.5	16	19.5	20	23.5, 25.5
C	C1	46, 60, 63	70, 75, 90	90, 100, 115, 145	115, 145, 165	145, 165, 215	200, 215, 265
	C2	M3, M4, M5	M4, M5, M6	M5, M6, M8	M6, M8, M10	M8, M10, M12	M10, M12
	C3	8, (11)	14, (19)	19, (24)	24, (32)	35, (38)	38, 42, 48, 55
	C4	26	33.5, 41.5	46, 59	67	84.5	114.5, 116.5
	C5	30, 40, 50	50, 60, 70	70, 80, 95, 110	95, 110, 130	110, 130, 180	114.3, 180, 230
	C6	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M10 x P1.5
	C7	46, 55	64, 70, 80	92, 110, 130	122, 130, 150	146, 180, 190	182, 200, 250
	C8	37.5	41, 49	54.5, 67.5	79	98.5	132.5, 134.5
	C9	139.5	172.5, 180.5	228, 241	298.5	358.5	446.5, 448.5

* ( ) 안은 주문형입니다 . * A5, ★은 적용 모터에 따라 달라질 수 있습니다 .

Model No.		Unit	Ratio	62	90	120	142	180	220
Rated Output Torque (Nominal output torque)	T_{2N}	Nm	15	59	165	335	625	1,206	2,030
			20	51	146	300	555	1,069	1,804
			25	48	160	333	618	1,189	2,010
			30	45	151	311	583	1,118	1,911
			35	45	149	309	573	1,108	1,870
			40	43	143	298	553	1,070	1,824
			50	48	160	333	618	1,189	2,010
			60	45	151	311	583	1,118	1,911
			70	45	149	309	573	1,108	1,870
			80	43	143	298	553	1,070	1,824
			90	44	145	278	516	993	1,694
			100	43	141	294	549	1,059	1,779
Max. Acceleration Torque	T_{2B}	Nm	15 ~ 100	1.8 Times of Rated Output Torque					
Max. Output Torque Emergency Stop Torque	T_{2NOT}	Nm	15 ~ 100	3 Times of Rated Output Torque					
Rated Input Speed	n_{1N}	rpm	15 ~ 100	3,000	3,000	3,000	3,000	3,000	2,000
Max. Input Speed	n_{1B}	rpm	15 ~ 100	6,000	6,000	5,000	5,000	4,000	3,000
Backlash Ps	j_t	arcmin	15 ~ 100	–	≦ 3	≦ 3	≦ 3	≦ 3	≦ 3
Backlash P0	j_t	arcmin	15 ~ 100	≦ 5	≦ 5	≦ 5	≦ 5	≦ 5	≦ 5
Backlash P1	j_t	arcmin	15 ~ 100	≦ 7	≦ 7	≦ 7	≦ 7	≦ 7	≦ 7
Torsional Rigidity		Nm/arcmin	15 ~ 100	6	14	27	60	140	240
Max. Radial Force	F_{2rB}	N	15 ~ 100	1,180	3,200	6,800	9,300	15,600	51,000
Max. Axial Force	F_{2aB}	N	15 ~ 100	590	1,600	3,400	4,650	7,800	25,500
Service Life	L_H	hr	15 ~ 100	S5 Cycle Operation: 〉30,000 (S1 Continuous Operation: 〉15,000 hrs)					
Efficiency	n	%	15 ~ 100	≧ 94%					
Operating Temperature		℃	15 ~ 100	−25°C ~ +90°C					
Lubrication			15 ~ 100	VIGO GREASE RE #0					
Protection Class			15 ~ 100	IP65					
Mounting Position			15 ~ 100	Any					
Noise Level		dB	15 ~ 100	≦ 58	≦ 60	≦ 63	≦ 65	≦ 67	≦ 70
Weight ±3%		kg	15 ~ 100	1.73	4.6	9.42	17.2	34.1	57.3

■ Mass Moments of Inertia (kg.㎠)

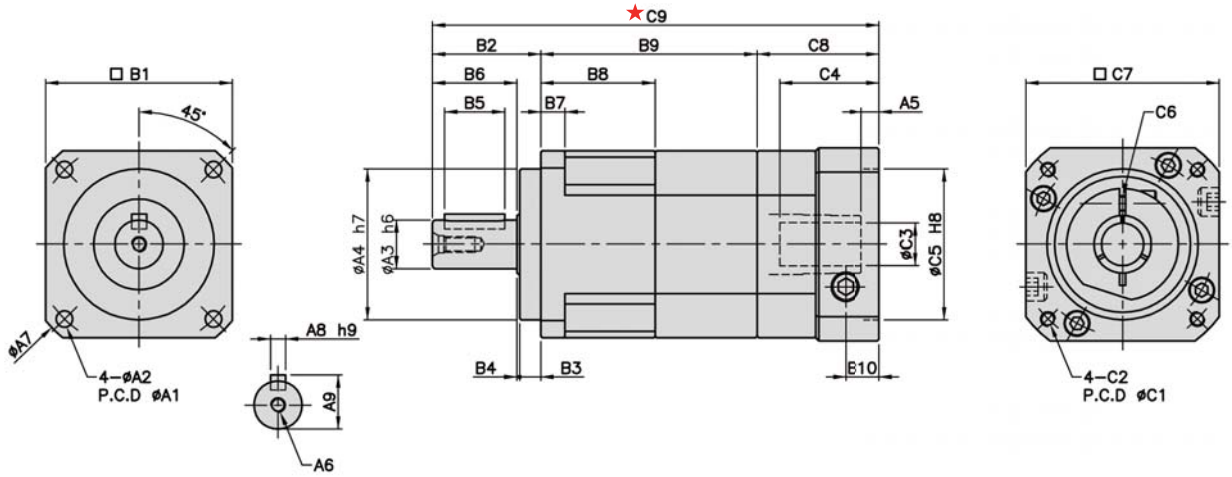
Ratio	62	90	120	142	180	220
15	0.03	0.14	0.46	2.63	7.30	22.79
20	0.03	0.14	0.46	2.63	7.30	22.79
25	0.03	0.14	0.46	2.63	7.10	22.79
30	0.03	0.14	0.46	2.43	7.10	22.59
35	0.03	0.14	0.44	2.43	7.10	22.59
40	0.03	0.14	0.44	2.43	6.92	22.59
50	0.03	0.14	0.44	2.43	6.92	22.59
60	0.03	0.14	0.43	2.39	6.72	21.83
70	0.03	0.14	0.43	2.39	6.72	21.83
80	0.03	0.14	0.43	2.39	6.72	21.83
90	0.03	0.14	0.40	2.39	6.72	21.60
100	0.03	0.14	0.40	2.39	6.72	21.60

* 연속운전 사용시 본사와 상담 후 선정바랍니다 .

ATG SERVOBOX
Planetary Reducers

MODEL : KSB-A

2-Stage
RATIO : 15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100



unit : mm

Code	Model	44A	62A	90A	120A	142A	180A	220A
A	A1	50	70	100	130	165	215	250
	A2	4.5	5.5	6.8	9	11	13	17
	A3	13	16	22	32	40	55	75
	A4	35	50	80	110	130	160	180
	A5	5	6	9	10	10	11.5, 13.5	12.5, 14.5
	A6	M4 x P0.7	M5 x P0.8	M8 x P1.25	M10 x P1.5	M12 x P1.75	M14 x P2.0	M16 x P2.0
	A7	58	80	116	148	186	238	288
	A8	5	5	6	10	12	16	20
	A9	15	18	24.5	35	43	59	79.5
B	B1	44	62	90	120	142	180	220
	B2	26	36	48	65	92	106	139
	B3	5	7	10	12	15	20	30
	B4	1	1	2	3	3	4	5
	B5	15	20	30	40	65	70	90
	B6	20	28	36	50	74	82	104
	B7	5	8	10	12	15	16	20
	B8	31.5	38	49	61	70	85	93
	B9	57.5	71.8	92.5	117	136.5	166	186
	B10	9	11.5	16	19.5	20	23.5, 25.5	23.5, 25.5
C	C1	46, 60, 63	70, 75, 90	90, 100, 115, 145	115, 145, 165	145, 165, 215	200, 215, 265	200, 265, 300
	C2	M3, M4, M5	M4, M5, M6	M5, M6, M8	M6, M8, M10	M8, M10, M12	M10, M12	M12, M16
	C3	8, (11)	14, (19)	19, (24)	24, (32)	35, (38)	38, 42, 48, 55	42, 48, 55
	C4	26	33.5, 41.5	46, 59	67	84.5	114.5, 116.5	117.5, 119.5
	C5	30, 40, 50	50, 60, 70	70, 80, 95, 110	95, 110, 130	110, 130, 180	114.3, 180, 230	114.3, 230, 250
	C6	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M10 x P1.5	M10 x P1.5
	C7	46, 55	64, 70, 80	92, 110, 130	122, 130, 150	146, 150, 190	182, 200, 250	222, 250, 265
	C8	37.5	41, 49	54.5, 67.5	79	98.5	132.5, 134.5	135.5, 137.5
	C9	121	148.8, 156.8	195, 208	261	327	404.5, 406.5	460.5, 462.5

* ( ) 안은 주문형입니다 . * A5, ★은 적용 모터에 따라 달라질 수 있습니다 .

Model No.		Unit	Ratio	44A	62A	90A	120A	142A	180A	220A
Rated Output Torque (Nominal output torque)	T_{2N}	Nm	15	19	59	165	335	625	1,206	2,030
			20	16	51	146	300	555	1,069	1,804
			25	16	48	160	333	618	1,189	2,010
			30	15	45	151	311	583	1,118	1,911
			35	15	45	149	309	573	1,108	1,870
			40	14	43	143	298	553	1,070	1,824
			50	16	48	160	333	618	1,189	2,010
			60	15	45	151	311	583	1,118	1,911
			70	15	45	149	309	573	1,108	1,870
			80	14	43	143	298	553	1,070	1,824
			90	13	44	145	278	516	993	1,694
			100	14	43	141	294	549	1,059	1,779
Max. Acceleration Torque	T_{2B}	Nm	15 ~ 100	1.8 Times of Rated Output Torque						
Max. Output Torque Emergency Stop Torque	T_{2NOT}	Nm	15 ~ 100	3 Times of Rated Output Torque						
Rated Input Speed	n_{1N}	rpm	15 ~ 100	3,000	3,000	3,000	3,000	3,000	3,000	2,000
Max. Input Speed	n_{1B}	rpm	15 ~ 100	6,000	6,000	6,000	5,000	5,000	4,000	3,000
Backlash Ps	j_t	arcmin	15 ~ 100	–	–	≦ 3	≦ 3	≦ 3	≦ 3	≦ 3
Backlash P0	j_t	arcmin	15 ~ 100	≦ 5	≦ 5	≦ 5	≦ 5	≦ 5	≦ 5	≦ 5
Backlash P1	j_t	arcmin	15 ~ 100	≦ 7	≦ 7	≦ 7	≦ 7	≦ 7	≦ 7	≦ 7
Torsional Rigidity		Nm/arcmin	15 ~ 100	3	6	14	27	60	140	240
Max. Radial Force	F_{2rB}	N	15 ~ 100	760	1,180	3,200	6,800	9,300	15,600	51,000
Max. Axial Force	F_{2aB}	N	15 ~ 100	380	590	1,600	3,400	4,650	7,800	25,500
Service Life	L_H	hr	15 ~ 100	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
Efficiency	η	%	15 ~ 100	≧94%						
Operating Temperature		℃	15 ~ 100	−25°C ~ +90°C						
Lubrication			15 ~ 100	VIGO GREASE RE #0						
Protection Class			15 ~ 100	IP65						
Mounting Position			15 ~ 100	Any						
Noise Level		dB	15 ~ 100	≦ 56	≦ 58	≦ 60	≦ 63	≦ 65	≦ 67	≦ 70
Weight ±3%		kg	15 ~ 100	0.9	2	5.5	11	21	42	59

■ Mass Moments of Inertia (kg.㎠)

Ratio	44A	62A	90A	120A	142A	180A	220A
15	0.03	0.14	0.46	2.63	7.30	22.79	56.98
20	0.03	0.14	0.46	2.63	7.30	22.79	56.98
25	0.03	0.14	0.46	2.63	7.10	22.79	56.98
30	0.03	0.14	0.46	2.43	7.10	22.59	56.48
35	0.03	0.14	0.44	2.43	7.10	22.59	56.48
40	0.03	0.14	0.44	2.43	6.92	22.59	56.48
50	0.03	0.14	0.44	2.43	6.92	22.59	56.48
60	0.03	0.14	0.43	2.39	6.72	21.83	54.58
70	0.03	0.14	0.43	2.39	6.72	21.83	54.58
80	0.03	0.14	0.43	2.39	6.72	21.83	54.58
90	0.03	0.14	0.40	2.39	6.72	21.60	54.00
100	0.03	0.14	0.40	2.39	6.72	21.60	54.00

* 연속운전 사용시 본사와 상담 후 선정바랍니다 .

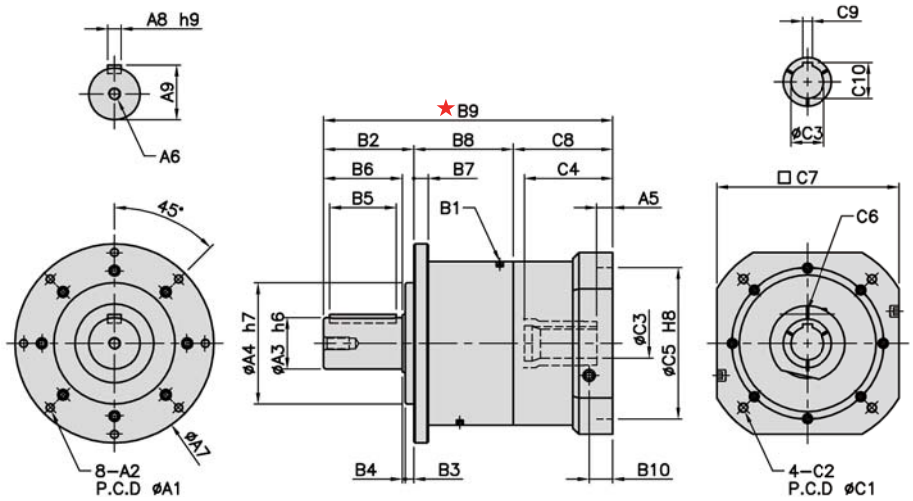
ATG SERVOBOX Planetary Reducers

MODEL : KSB

1-Stage
RATIO : 3, 4, 5, 7, 10

■ Mass Moments of Inertia (kg.㎠)

Ratio	270	330
3	122.20	252.96
4	111.46	230.72
5	109.20	226.05
7	104.49	216.29
10	103.65	214.55



unit : mm

Code	Model	270	330
A	A1	300	380
	A2	13	17
	A3	85	100
	A4	200	250
	A5	26	26
	A6	M20 x P2.5	M24 x P3.0
	A7	328	416
	A8	22	28
	A9	90	106
B	B1	PT1/4"	PT1/4"
	B2	149	159
	B3	14	14
	B4	5	5
	B5	110	120
	B6	130	140
	B7	24	28
	B8	164	189
	B9	477.5	515
	B10	39	39
C	C1	300, 350	300, 350
	C2	M16, M18	M16, M18
	C3	48, 55, 60, 65, 70	55, 60, 75
	C4	146	146
	C5	250, 300	250, 300
	C6	M12 x P1.75	M12 x P1.75
	C7	300, 330	300, 330
	C8	164.5	167
	C9	14, 16, 18, 20	16, 18, 20
	C10	51.8, 59.3, 64.4, 69.4, 74.9	59.3, 64.4, 79.9

Model No.		Unit	Ratio	270	330
Rated Output Torque (Nominal output torque)	T_{2N}	Nm	3	4,770	8,790
			4	4,730	8,730
			5	4,680	8,660
			7	4,570	8,520
			10	4,420	8,310
Max. Acceleration Torque	T_{2B}	Nm	3 ~ 10	1.8 Times of Rated Output Torque	
Max. Output Torque Emergency Stop Torque	T_{2NOT}	Nm	3 ~ 10	3 Times of Rated Output Torque	
Rated Input Speed	n_{1N}	rpm	3 ~ 10	2,000	2,000
Max. Input Speed	n_{1B}	rpm	3 ~ 10	3,000	3,000
Backlash Ps	j_t	arcmin	3 ~ 10	≦ 1	≦ 1
Backlash P0	j_t	arcmin	3 ~ 10	≦ 3	≦ 3
Backlash P1	j_t	arcmin	3 ~ 10	≦ 5	≦ 5
Torsional Rigidity		Nm/arcmin	3 ~ 10	510	980
Max. Radial Force	F_{2rB}	N	3 ~ 10	107,100	224,910
Max. Axial Force	F_{2aB}	N	3 ~ 10	53,550	112,455
Service Life	L_H	hr	3 ~ 10	S5 Cycle Operation: ⟩30,000 (S1 Continuous Operation: ⟩15,000 hrs)	
Efficiency	η	%	3 ~ 10	≧97%	
Operating Temperature		℃	3 ~ 10	−25°C ~ +90°C	
Lubrication			3 ~ 10	VIGO GREASE RE #0	
Protection Class			3 ~ 10	IP65	
Mounting Position			3 ~ 10	Any	
Noise Level		dB	3 ~ 10	≦ 72	≦ 74
Weight ±3%		kg	3 ~ 10	97	190

* A5, ★은 적용 모터에 따라 달라질 수 있습니다 .

MODEL : KSB

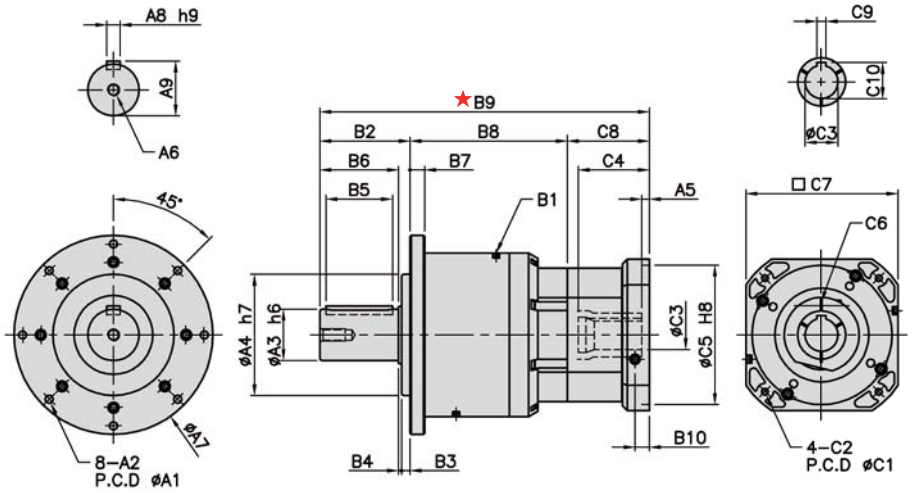
2-Stage
RATIO : 15, 20, 25, 30, 35, 40, 50, 70, 100

■ Mass Moments of Inertia (kg.cm²)

Ratio	270	330
15	63.81	185.05
20	63.81	185.05
25	63.81	185.05
30	63.25	183.43
35	63.25	183.43
40	63.25	183.43
50	63.25	183.43
70	61.12	177.26
100	60.48	175.39

unit : mm

Code	Model	270	330
A	A1	300	380
	A2	13	17
	A3	85	100
	A4	200	250
	A5	15.5	26
	A6	M20 x P2.5	M24 x P3.0
	A7	328	416
	A8	22	28
	A9	90	106
B	B1	PT1/4"	PT1/4"
	B2	149	159
	B3	14	14
	B4	5	5
	B5	110	120
	B6	130	140
	B7	24	28
	B8	259.5	301.5
	B9	547	625, 635.5
	B10	23.5	39
C	C1	200, 265, 300	300, 350
	C2	M12, M16	M16, M18
	C3	42, 48, 55	48, 55, 60, 65, 70
	C4	120.5	146, 149
	C5	114.3, 230, 250	250, 300
	C6	M10 x P1.5	M12 x P1.75
	C7	222, 250, 265	300, 330
	C8	138.5	164.5, 175
	C9	12, 14, 16	14, 16, 18, 20
	C10	45.3, 51.8, 59.3	51.8, 59.3, 64.4, 69.4, 74.9



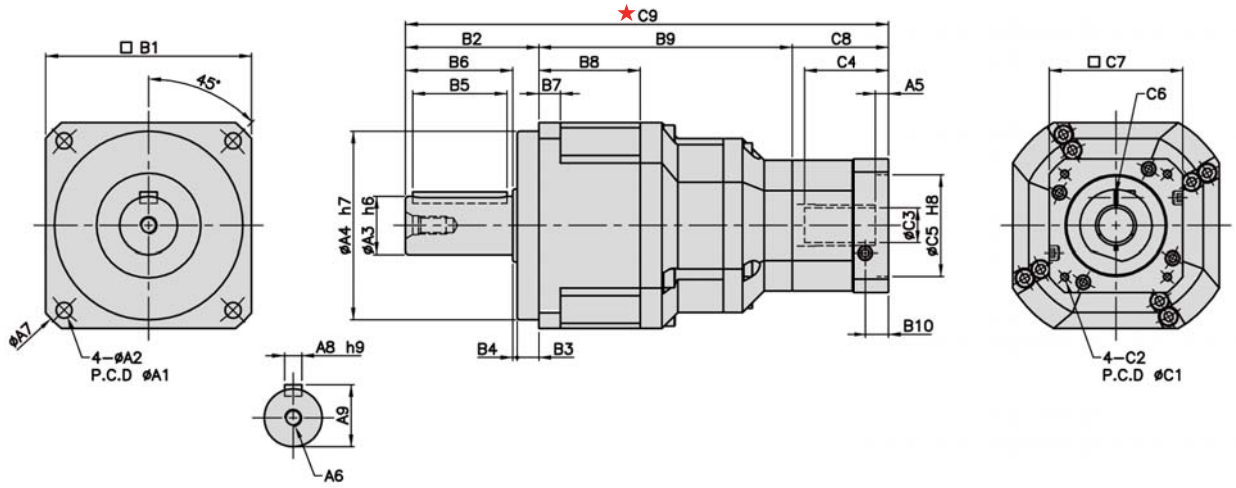
Model No.		Unit	Ratio	270	330
Rated Output Torque (Nominal output torque)	T_{2N}	Nm	15	4,770	8,790
			20	4,730	8,730
			25	4,680	8,660
			30	4,620	8,610
			35	4,570	8,520
			40	4,520	8,440
			50	4,680	8,660
			70	4,570	8,520
			100	4,420	8,310
Max. Acceleration Torque	T_{2B}	Nm	15 ~ 100	1.8 Times of Rated Output Torque	
Max. Output Torque Emergency Stop Torque	T_{2NOT}	Nm	15 ~ 100	3 Times of Rated Output Torque	
Rated Input Speed	n_{1N}	rpm	15 ~ 100	2,000	2,000
Max. Input Speed	n_{1B}	rpm	15 ~ 100	3,000	3,000
Backlash Ps	j_t	arcmin	15 ~ 100	≦ 3	≦ 3
Backlash P0	j_t	arcmin	15 ~ 100	≦ 5	≦ 5
Backlash P1	j_t	arcmin	15 ~ 100	≦ 7	≦ 7
Torsional Rigidity		Nm/arcmin	15 ~ 100	510	980
Max. Radial Force	F_{2rB}	N	15 ~ 100	107,100	224,910
Max. Axial Force	F_{2aB}	N	15 ~ 100	53,550	112,455
Service Life	L_H	hr	15 ~ 100	S5 Cycle Operation: 〉30,000 (S1 Continuous Operation: 〉15,000 hrs)	
Efficiency	n	%	15 ~ 100	≧94%	
Operating Temperature		℃	15 ~ 100	−25°C ~ +90°C	
Lubrication			15 ~ 100	VIGO GREASE RE #0	
Protection Class			15 ~ 100	IP65	
Mounting Position			15 ~ 100	Any	
Noise Level		dB	15 ~ 100	≦ 72	≦ 74
Weight ±3%		kg	15 ~ 100	137	240

* A5, ★은 적용 모터에 따라 달라질 수 있습니다.

ATG SERVOBOX
Planetary Reducers

MODEL : KSB

3-Stage
RATIO : 125, 150, 175, 200, 250, 300, 350,
400, 450, 500, 600, 700, 800, 900, 1000



unit : mm

Code	Model	90	120	142	180	220
A	A1	100	130	165	215	250
	A2	6.8	9	11	13	17
	A3	22	32	40	55	75
	A4	80	110	130	160	180
	A5	5	6	9	10	10
	A6	M8 x P1.25	M10 x P1.5	M12 x P1.75	M14 x P2.0	M16 x P2.0
	A7	116	148	186	238	288
	A8	6	10	12	16	20
	A9	24.5	35	43	59	79.5
B	B1	90	120	142	180	220
	B2	48	65	92	106	139
	B3	10	12	15	20	30
	B4	2	3	3	4	5
	B5	30	40	65	70	90
	B6	36	50	74	82	104
	B7	10	12	15	16	20
	B8	49	61	70	85	93
	B9	111.5	143	175	211.5	244
	B10	9	11.5	16	19.5	20
C	C1	46, 60, 63	70, 75, 90	90, 100, 115, 145	115, 145, 165	145, 165, 215
	C2	M3, M4, M5	M4, M5, M6	M5, M6, M8	M6, M8, M10	M8, M10, M12
	C3	8, (11)	14, (19)	19, (24)	24, (32)	35, (38)
	C4	26	33.5, 41.5	46, 59	67	84.5
	C5	30, 40, 50	50, 60, 70	70, 80, 95, 110	95, 110, 130	110, 130, 180
	C6	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5
	C7	46, 55	64, 70, 80	92, 110, 130	122, 130, 150	146, 150, 190
	C8	37.5	41, 49	54.5, 67.5	79	98.5
	C9	197	249, 257	321.5, 334.5	396.5	481.5

* ( ) 안은 주문형입니다 . * A5, ★은 적용 모터에 따라 달라질 수 있습니다 .

Model No.		Unit	Ratio	90	120	142	180	220
Rated Output Torque (Nominal output torque)	T_{2N}	Nm	125	160	333	618	1,189	2,010
			150	165	335	625	1,206	2,030
			175	149	309	573	1,108	1,870
			200	146	300	555	1,069	1,804
			250	160	333	618	1,189	2,010
			300	151	311	583	1,118	1,911
			350	149	309	573	1,108	1,870
			400	143	298	553	1,070	1,824
			450	145	278	516	993	1,694
			500	160	333	618	1,189	2,010
			600	151	311	583	1,118	1,911
			700	149	309	573	1,108	1,870
			800	143	298	553	1,070	1,824
			900	145	278	516	993	1,694
			1000	141	294	549	1,059	1,779
Max. Acceleration Torque	T_{2B}	Nm	125 ~ 1000	1.8 Times of Rated Output Torque				
Max. Output Torque Emergency Stop Torque	T_{2NOT}	Nm	125 ~ 1000	3 Times of Rated Output Torque				
Rated Input Speed	n_{1N}	rpm	125 ~ 1000	3,000	3,000	3,000	3,000	2,000
Max. Input Speed	n_{1B}	rpm	125 ~ 1000	6,000	5,000	5,000	4,000	3,000
Backlash Ps	j_t	arcmin	125 ~ 1000	–	≦ 5	≦ 5	≦ 5	≦ 5
Backlash P0	j_t	arcmin	125 ~ 1000	≦ 7	≦ 7	≦ 7	≦ 7	≦ 7
Backlash P1	j_t	arcmin	125 ~ 1000	≦ 9	≦ 9	≦ 9	≦ 9	≦ 9
Torsional Rigidity		Nm/arcmin	125 ~ 1000	14	27	60	140	240
Max. Radial Force	F_{2rB}	N	125 ~ 1000	3,200	6,800	9,300	15,600	51,000
Max. Axial Force	F_{2aB}	N	125 ~ 1000	1,600	3,400	4,650	7,800	25,500
Service Life	L_H	hr	125 ~ 1000	S5 Cycle Operation: 〉30,000 (S1 Continuous Operation: 〉15,000 hrs)				
Efficiency	n	%	125 ~ 1000	≧ 90%				
Operating Temperature		℃	125 ~ 1000	−25℃ ~ +90℃				
Lubrication			125 ~ 1000	VIGO GREASE RE #0				
Protection Class			125 ~ 1000	IP65				
Mounting Position			125 ~ 1000	Any				
Noise Level		dB	125 ~ 1000	≦ 60	≦ 63	≦ 65	≦ 67	≦ 70
Weight ±3%		kg	125 ~ 1000	5.2	10	18.1	35	63.7

■ Mass Moments of Inertia (kg.㎠)

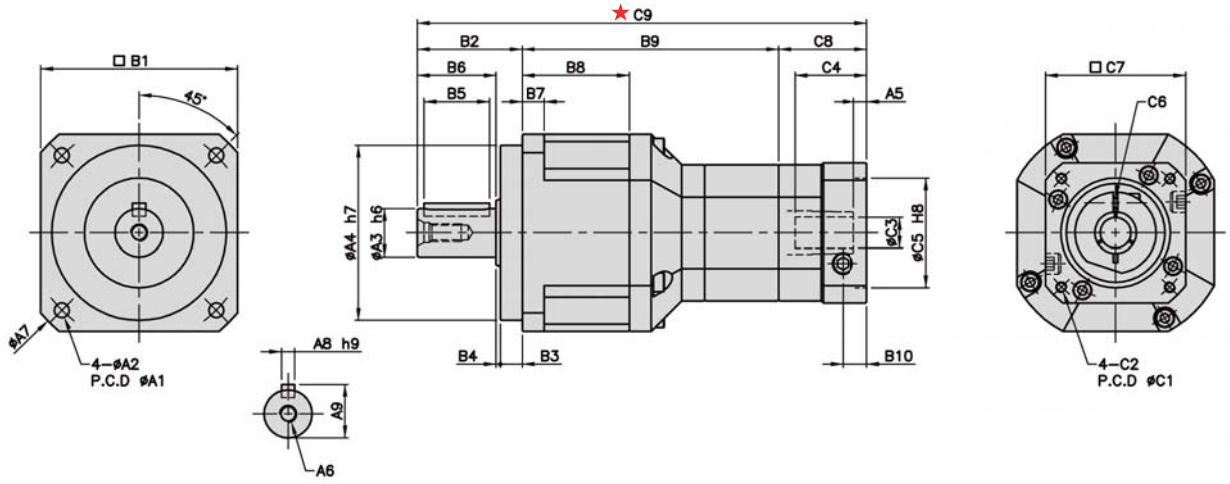
Ratio	90	120	142	180	220
125	0.01	0.04	0.71	1.42	3.29
150	0.01	0.04	0.51	0.92	2.15
175	0.01	0.04	0.40	0.83	1.26
200	0.01	0.04	0.21	0.65	0.98
250	0.01	0.04	0.11	0.52	0.82
300	0.01	0.04	0.09	0.21	0.82
350	0.01	0.04	0.09	0.21	0.82
400	0.01	0.04	0.09	0.21	0.82
450	0.01	0.04	0.09	0.21	0.51
500	0.01	0.04	0.08	0.12	0.51
600	0.01	0.04	0.08	0.12	0.25
700	0.01	0.04	0.08	0.12	0.25
800	0.01	0.04	0.08	0.12	0.25
900	0.01	0.04	0.08	0.12	0.25
1000	0.01	0.04	0.08	0.12	0.25

* 연속운전 사용시 본사와 상담 후 선정바랍니다 .

ATG SERVOBOX
Planetary Reducers

MODEL : KSB-A

3-Stage
RATIO : 125, 150, 175, 200, 250, 300, 350,
400, 450, 500, 600, 700, 800, 900, 1000



unit : mm

Code	Model	62A	90A	120A	142A	180A	220A
A	A1	70	100	130	165	215	250
	A2	5.5	6.8	9	11	13	17
	A3	16	22	32	40	55	75
	A4	50	80	110	130	160	180
	A5	5	6	9	10	10	11.5, 13.5
	A6	M5 x P0.8	M8 x P1.25	M10 x P1.5	M12 x P1.75	M14 x P2.0	M16 x P2.0
	A7	80	116	148	186	238	288
	A8	5	6	10	12	16	20
	A9	18	24.5	35	43	59	79.5
B	B1	62	90	120	142	180	220
	B2	36	48	65	92	106	139
	B3	7	10	12	15	20	30
	B4	1	2	3	3	4	5
	B5	20	30	40	65	70	90
	B6	28	36	50	74	82	104
	B7	8	10	12	15	16	20
	B8	38	49	61	70	85	93
	B9	92	117.3	152	183.5	220.5	256
	B10	9	11.5	16	19.5	20	23.5, 25.5
C	C1	46, 60, 63	70, 75, 90	90, 100, 115, 145	115, 145, 165	145, 165, 215	200, 215, 265
	C2	M3, M4, M5	M4, M5, M6	M5, M6, M8	M6, M8, M10	M8, M10, M12	M10, M12
	C3	8, (11)	14, (19)	19, (24)	24, (32)	35, (38)	38, 42, 48, 55
	C4	26	33.5, 41.5	46, 59	67	84.5	114.5, 116.5
	C5	30, 40, 50	50, 60, 70	70, 80, 95, 110	95, 110, 130	110, 130, 180	114.3, 180, 230
	C6	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M10 x P1.5
	C7	46, 55	64, 70, 80	92, 110, 130	122, 130, 150	146, 150, 190	182, 200, 250
	C8	37.5	41, 49	54.5, 67.5	79	98.5	132.5, 134.5
	C9	165.5	206.3, 214.3	271.5, 284.5	354.5	425	527.5, 529.5

* ( ) 안은 주문형입니다 . * A5, ★은 적용 모터에 따라 달라질 수 있습니다 .

Model No.		Unit	Ratio	62A	90A	120A	142A	180A	220A
Rated Output Torque (Nominal output torque)	T_{2N}	Nm	125	48	160	333	618	1,189	2,010
			150	59	165	335	625	1,206	2,030
			175	45	149	309	573	1,108	1,870
			200	51	146	300	555	1,069	1,804
			250	48	160	333	618	1,189	2,010
			300	45	151	311	583	1,118	1,911
			350	45	149	309	573	1,108	1,870
			400	43	143	298	553	1,070	1,824
			450	44	145	278	516	993	1,694
			500	48	160	333	618	1,189	2,010
			600	45	151	311	583	1,118	1,911
			700	45	149	309	573	1,108	1,870
			800	43	143	298	553	1,070	1,824
			900	44	145	278	516	993	1,694
			1000	43	141	294	549	1,059	1,779
Max. Acceleration Torque	T_{2B}	Nm	125 ~ 1000	1.8 Times of Rated Output Torque					
Max. Output Torque Emergency Stop Torque	T_{2NOT}	Nm	125 ~ 1000	3 Times of Rated Output Torque					
Rated Input Speed	n_{1N}	rpm	125 ~ 1000	3,000	3,000	3,000	3,000	3,000	2,000
Max. Input Speed	n_{1B}	rpm	125 ~ 1000	6,000	6,000	5,000	5,000	4,000	3,000
Backlash Ps	j_t	arcmin	125 ~ 1000	–	–	≦ 5	≦ 5	≦ 5	≦ 5
Backlash P0	j_t	arcmin	125 ~ 1000	≦ 7	≦ 7	≦ 7	≦ 7	≦ 7	≦ 7
Backlash P1	j_t	arcmin	125 ~ 1000	≦ 9	≦ 9	≦ 9	≦ 9	≦ 9	≦ 9
Torsional Rigidity		Nm/arcmin	125 ~ 1000	6	14	27	60	140	240
Max. Radial Force	F_{2rB}	N	125 ~ 1000	1,180	3,200	6,800	9,300	15,600	51,000
Max. Axial Force	F_{2aB}	N	125 ~ 1000	590	1,600	3,400	4,650	7,800	25,500
Service Life	L_H	hr	125 ~ 1000	S5 Cycle Operation: 〉30,000 (S1 Continuous Operation: 〉15,000 hrs)					
Efficiency	*n*	%	125 ~ 1000	≧90%					
Operating Temperature		℃	125 ~ 1000	−25℃ ~ +90℃					
Lubrication			125 ~ 1000	VIGO GREASE RE #0					
Protection Class			125 ~ 1000	IP65					
Mounting Position			125 ~ 1000	Any					
Noise Level		dB	125 ~ 1000	≦ 58	≦ 60	≦ 63	≦ 65	≦ 67	≦ 70
Weight ±3%		kg	125 ~ 1000	4	6.5	13	30	57	87

■ Mass Moments of Inertia (kg.㎠)

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350	0.01	0.01	0.04	0.09	0.21	0.82
400	0.01	0.01	0.04	0.09	0.21	0.82
450	0.01	0.01	0.04	0.09	0.21	0.51
500	0.01	0.01	0.04	0.08	0.12	0.51
600	0.01	0.01	0.04	0.08	0.12	0.25
700	0.01	0.01	0.04	0.08	0.12	0.25
800	0.01	0.01	0.04	0.08	0.12	0.25
900	0.01	0.01	0.04	0.08	0.12	0.25
1000	0.01	0.01	0.04	0.08	0.12	0.25

* 연속운전 사용시 본사와 상담 후 선정바랍니다 .