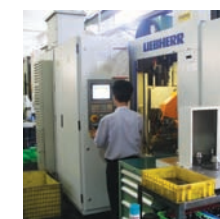
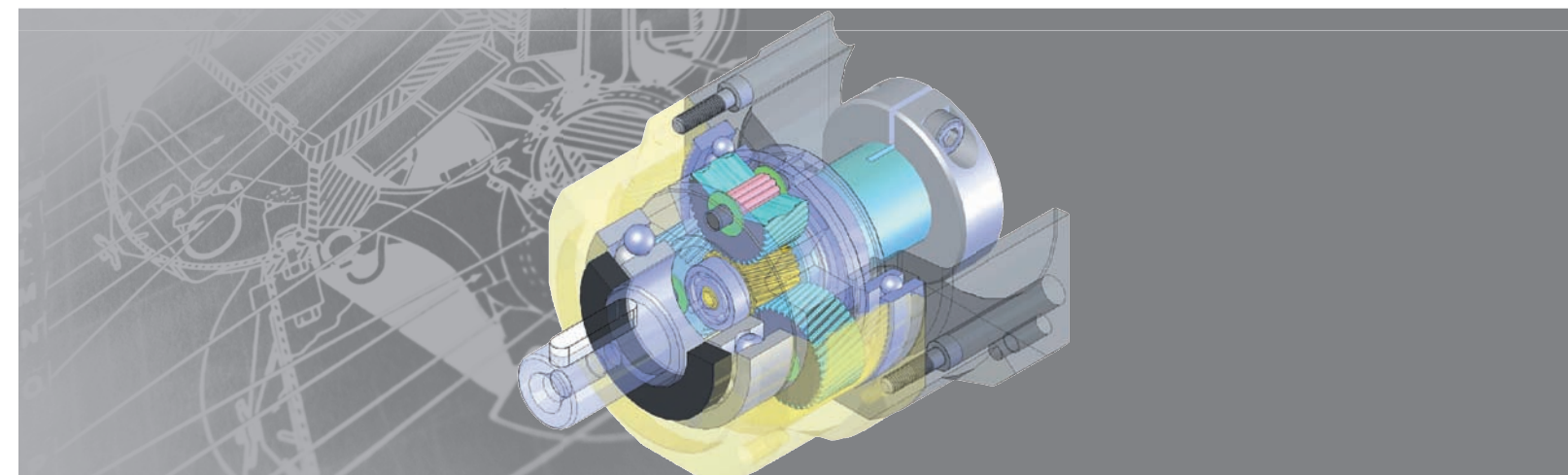


Quality First & Customer's Satisfaction

High Accuracy & Efficiency Profit

ATG is specialist in design, R&D and manufacturing of a wide range of high-tech gear motor and helical gear reducers, worm gear reducers, planetary gear reducers. In recent years, to meet customers' requirements of quality and price, we have been dedicated to constantly upgrade the performance of gear reducer, maximize efficiency, and provide the most comprehensive technical supports. Under the company's policy of "Quality First; Customer Satisfaction" and "Intelligence; Sincerity; Honesty", we have invited many highly experienced talents.

At ATG we have a team with outstanding background in high-tech field. ATG outstanding enterprise culture results from its practicality, constantly learning the advanced management system and a commitment to excellence.



Among the wide range of speed reducers, the planetary gear reducer features compact construction, high-torque resistance, high transmission efficiency, wide range of speed reduction and high accuracy.

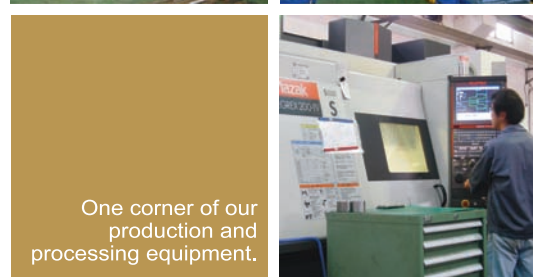
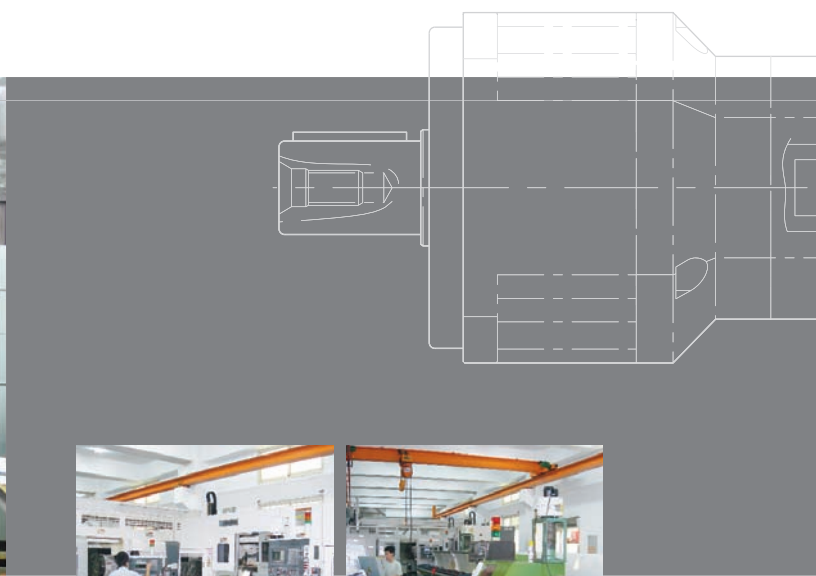
The planetary gear reducers are widely applied in servo, stepping and DC transmission system. With its outstanding feature of high precision transmission, the planetary gear reducer is excellent for reducing speed, increasing torque and reducing torsional inertia ratio. High torque, low backlash and quiet running are three key features of ATG gear reducers, and these are the reasons why ATG gear reducers are in the leading position on the market.

Integration / Automation Machining equipment

Based on our acknowledgement of the unique processing characteristics of speed reducers on all parts, we have developed and designed a series of high-efficiency automatic machining equipment, to work with high-performance processing machines.

Our well-experienced technicians take good control of precision in our parts, and stringent quality control to ensure the best precision and performance of all parts and components.

A series of automatic processing equipment provides the most solid foundation for the consistency of precision in the machining of parts and components.



One corner of our production and processing equipment.



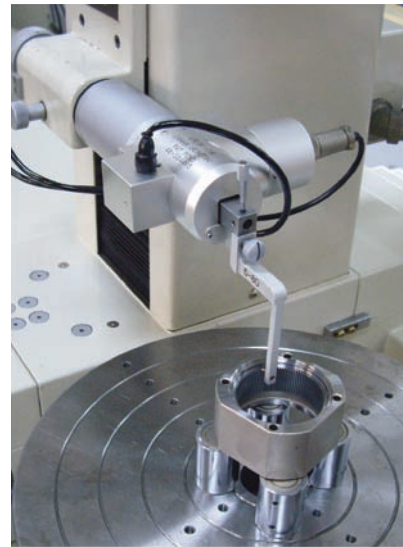
Automatic

processing equipment



Automatic processing equipment

To enhance technical improvement, ATG has placed a huge investment in the purchase of a whole set of the latest CNC computer processing machines and equipment, working precision parts, in combination with distinguished engineering personnel, to upgrade the precision of parts and ensure stable quality.



High Precision Planetary Reducer

Comprehensive quality control is not a mere slogan

[Comprehensive quality control] is never a mere slogan of ATG. We adhere to our quality policy. To each quality requirement, we have to set up rigorous quality standards for prompt and accurate quality control every single part is subjected to comprehensive inspection and tests, from initial receipt of material to assembly of finished products and regular operation, to completely satisfy your requirement. Our quality control department has the most advanced inspection equipment conducting precision measurement (A good tool is the master of all good works.) Our precision inspection instruments are the best assurance of our reliable quality.



Concept of Planetary Reducer

중요한 기술적 요인인 기어, 감속비율, 평균 수명, 정격 회전력, 최대 효율, 소음, Axial과 Radial 구동능력, 작업온도의 성능에 대한 설명입니다.

Some critical technical parameters are normally applied for evaluating the performance of a gear reducer, speed reduction ratio, average service life, rated output torque, return full load efficiency, noise, axial and radial loading capacity and working temperature.

● **기어 비율** : 출력속도에서 입력속도의 비율.

GEAR RATIO : A ratio of output speed to input speed.

● **평균 수명** : 출력속도에 따른 감속기 운동시간의 지속적인 상태 비율.

AVERAGE SERVICE LIFE : Under the rated loading condition the continuous working time for a gear reducer running at the rated input speed.

● **최대 작업 효율** : 기어의 효율은 최대 작업 상태에 따른다.

이것은 좋은 성능과 함께 감속기의 매우 중요한 평가 요인이다.

FULL LOAD EFFICIENCY : The transmission efficiency of a gear reducer under the maximum loading condition. It is an important evaluation factor for a gear reducer. A gear reducer with high performance.

● **소음** : 소음은 입력 속도 3,000rpm 상태에서 감속기와 1미터 떨어진 지점에서 측정한다.

NOISE: The noise is measured under the conditions of input speed 3000 rpm, no load and one meter distance from the gear reducer.

● **작업 온도** : 감속기 사용의 적정 온도는 -25 ~ +90°C의 환경에서 가능하다.

WORKING TEMPERATURE: The allowable temperature for a gear reducer under the conditions of continuous and frequent can work at -25 ~ +90 degree working environment.

PRODUCTS | PGX/PBL-H-Series



PRODUCTS | KSB/KSBL-Series



PRODUCTS | KSE/KSEL-Series



PRODUCTS | KFB/KFE-Series



PRODUCTS | KFA/KSN-Series



PRODUCTS | KSD/KSDL-Series



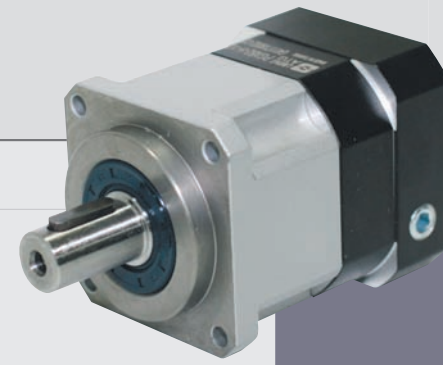
PRODUCTS | TH-Series



PRODUCTS | KWE-Series



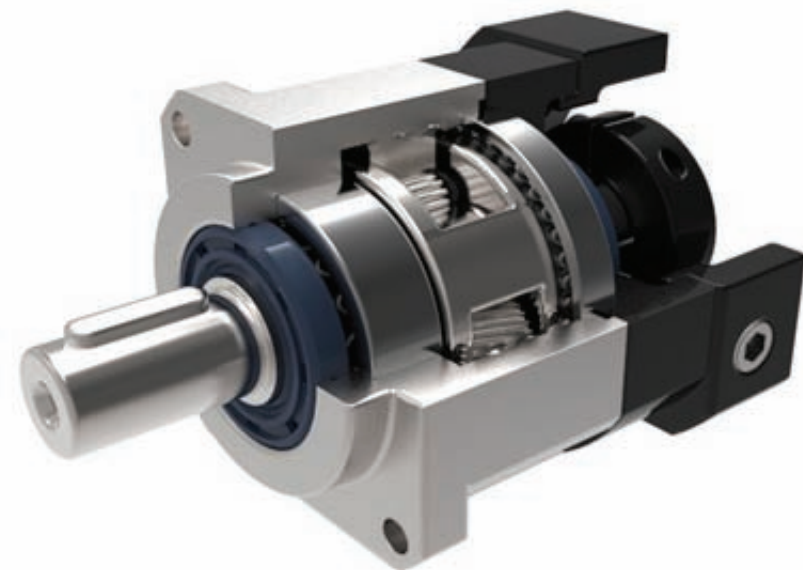
PGX – H Type (Standard Helical Gear Type)



Single Stage Backlash \leq 8 arc-min
Double Stage Backlash \leq 10 arc-min

Indication of Model Numbers

PGX	90	H	10	Key Type
Type	Model	Helical Gear	Ratio	Output Shaft Keyway
PGX	44 62 90 120 142 180 220		Single Stage 3, 4, 5, 6, 7, 8, 9, 10 Double Stage 15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100	<input type="checkbox"/> 무표기 Standard (Keyway) <input checked="" type="checkbox"/> N : 표 기 Solid Output Shaft (No Keyway)



Integrated Planetary Arm bracket

Planetary Arm bracket와 출력 Shaft는 일체형 구조입니다. 이는 비틀림 강성과 높은 정확도를 보장합니다.

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.



Full Needle Bearing Design

Planetary 변속기어는 접촉면 증가를 위한 Retainer없는 Full Needle Bearing 구조입니다. 구조적 강도와 출력 회전력을 상승 시킨것입니다.

The Planetary gear transmission employs full needle bearings Without retainer to increase the contact surface, which greatly Upgrades structural rigidity and output torque.



Collet chuck locking mechanism

감속기의 입력 부분과 Motor output shaft를 연결하기 위한 방식으로 역학적 확실한 체결력과 높은 속도에서 구동 할 때에도 백래쉬가 발생하지 않고 동력을 전달합니다.

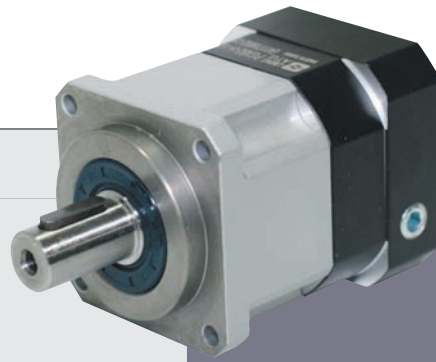
The input end and the motor is couple through a collet chuck locking mechanism, It is dynamically balanced to assure concentricity and balance on the connection when running at high speed. No backlash for transmission.



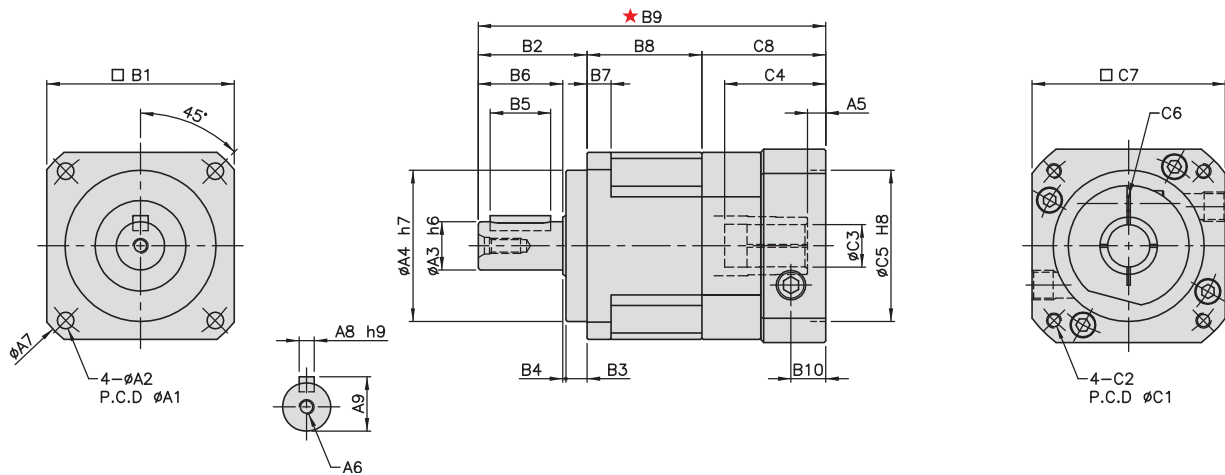
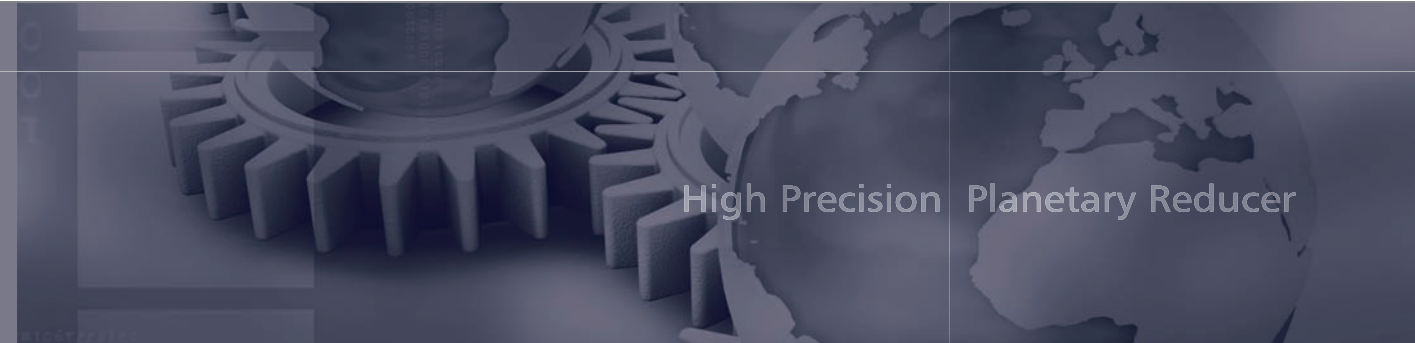
One-Piece Gear Box Body

기어박스과 내부 링은 하나의 구조로 이루어져 있습니다. 헬리컬 기어로 되어 있으며 기어의 교합율은 일반 스퍼기어의 2배 이상이며 원활한 운전과 낮은 소음으로 높은 회전출력과 낮은 백래쉬를 특징으로 합니다.

The gear box and internal ring are one-piece constructed, two times of teeth profile engagement percentage when comparing with common spur gears. In addition, it also features extremely smooth running low nose, high torque output and low backlash.



MODEL : PGX (44~220)-H
Single Reduction
RATIO : 3.4.5.6.7.8.9.10



unit:mm

Model code	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	12.5
A6	M4×P0.7	M5×P0.8	M8×P1.25	M10×P1.5	M12×P1.75	M14×P2.0	M16×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	367
B10	9	11.5	16	19.5	20	23.5	23.5
C							
C1	46, 60, 63, 70	70, 75, 90	70, 90, 100 115, 145, 165	90, 100 115, 145, 165	145, 165, 200, 215	200, 215 235, 265, 300	215, 235 265, 300
C2	M3, M4, M5	M4, M5, M6	M4, M5, M6, M8	M6, M8, M10	M8, M10, M12	M12, M16	M12, M16
C3	5, 6.35, 8,(9, 11)	6.35, 8, 11 12, 14,(16, 19)	14, 16, 19 (22, 24)	19, 22, 24, (28, 32)	22, 24, 28 32, 35,(38)	38, 42, 48, 55	42, 48, 55
C4	26	33.5, 41.5	46, 59	67	84.5	114.5	117.5
C5	30, 40, 50	50, 60, 70	50, 70, 80 95, 110, 130	70, 80 95, 110, 130	110, 114.3, 130, 180	114.3, 180 200, 230	180, 200, 230, 250
C6	M3	M5	M6	M8	M10	M10	M10
C7	46, 55, 60	64, 70, 80	92, 110, 130, 142	130, 150	146, 150, 180, 190	182, 200 220, 250, 265	220, 250, 265
C8	37.5	41, 49	54.5, 67.5	79	98.5	132.5	135.5

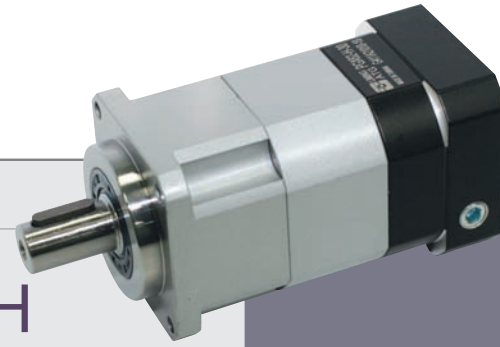
■ Mass Moments of Inertia (kg · cm²)

Ratio	44	62	90	120	142	180	220
3	0.03	0.16	0.61	3.25	9.21	28.98	59.361
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

Model No.	Unit	Ratio	44	62	90	120	142	180	220		
Rated Output Torque	Nm	3	17	54	145	301	553	1085	1827		
		4	15	48	128	269	491	962	1624		
		5	14	45	132	278	510	1070	1809		
		6	13	41	125	252	466	1006	1720		
		7	13	41	123	258	473	997	1683		
		8	12	39	115	241	442	963	1642		
		9	11	40	120	227	412	894	1525		
		10	12	40	116	246	452	953	1601		
		Max. Output 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	2,000	2,000
Max. Input Speed	Nm	3~10	6,000	6,000	6,000	5,000	5,000	4,000	3,000		
Torsional Rigidity	Nm/arc mir	3~10	3	6	14	27	60	140	240		
Max. Radial Force	N	3~10	720	1,120	3,040	6,460	8,830	14,820	48,450		
Max. Axial Force	N	3~10	360	560	1,520	3,230	4,410	7,410	24,220		
Service Life	hr	3~10	10,000 (Continuous Operation 4,000 hrs)								
Efficiency	%	3~10	≥97%								
Operating Temperature	°C	3~10	-25 °C ~ +90 °C								
Lubrication		3~10	VIGO GREASE RE#0								
Degree of Gearbox Protection		3~10	IP65								
Mounting Position		3~10	Any								
Noise Level	dB	3~10	≤56	≤60	≤60	≤63	≤65	≤67	≤70		
Weight ±3%	Kg	3~10	0.58	1.37	3.9	8	14.1	29.3	39.2		

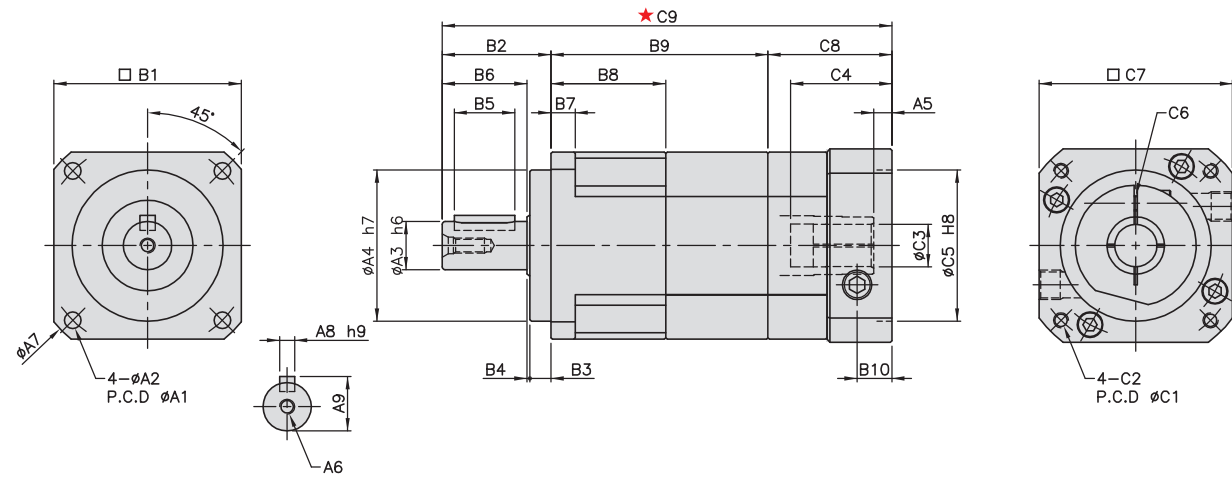
010 * () 안은 주문형입니다. * A5, ★:적용모터에 따라 달라질 수 있습니다.

* 연속운전 사용시 본사와 상담후 선정바랍니다.



MODEL : PGX(44~142) - H
Double Reduction
RATIO : 15.20.25.30.35.40.50.60.70.80.90.100

High Precision Planetary Reducer



unit:mm

Model code	44	62	90	120	142
A					
A1	50	70	100	130	165
A2	4.5	5.5	6.8	9	11
A3	13	16	22	32	40
A4	35	50	80	110	130
A5	5	6	9	10	10
A6	M4×P0.7	M5×P0.8	M8×P1.25	M10×P1.5	M12×P1.75
A7	58	80	116	148	186
A8	5	5	6	10	12
A9	15	18	24.5	35	43
B					
B1	44	62	90	120	142
B2	26	36	48	65	92
B3	5	7	10	12	15
B4	1	1	2	3	3
B5	15	20	30	40	65
B6	20	28	36	50	74
B7	5	8	10	12	15
B8	31.5	38	49	61	70
B9	57.5	71.8	92.5	117	136.5
B10	9	11.5	16	19.5	20
C					
C1	46, 60, 63, 70	70, 75, 90	70, 90, 100 115, 145, 165	90, 100 115, 145, 165	145, 165, 200, 215
C2	M3, M4, M5	M4, M5, M6	M4, M5, M6, M8	M6, M8, M10	M8, M10, M12
C3	5, 6.35, 8, (9, 11)	6.35, 8, 11, 12, 14, (16, 19)	14, 16, 19, (22, 24)	19, 22, 24, (28, 32)	32, 35, (38)
C4	26	33.5, 41.5	46, 59	67	84.5
C5	30, 40, 50	50, 60, 70	50, 70, 80 95, 110, 130	70, 80 95, 110, 130	110, 130 114.3, 180
C6	M3	M5	M6	M8	M10
C7	46, 55, 60, 76	64, 70, 80	92, 110, 130, 142	130, 150	146, 180, 190
C8	37.5	41, 49	54.5, 67.5	79	98.5
C9	121	156.8, 148.8	195, 208	261	327

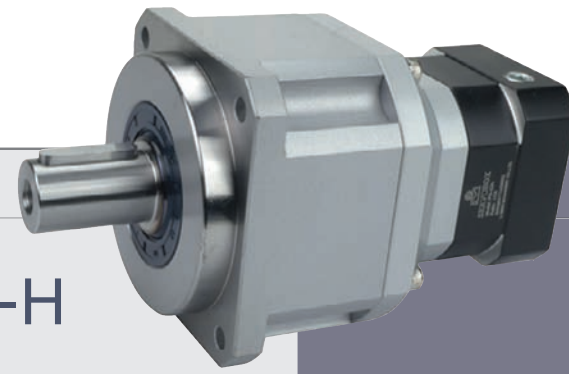
012 * () 안은 주문형입니다. * A5, ★:적용모터에 따라 달라질 수 있습니다.

■ Mass Moments of Inertia (kg · cm²)

Ratio	44	62	90	120	142
15	0.03	0.03	0.14	0.46	2.63
20	0.03	0.03	0.14	0.46	2.63
25	0.03	0.03	0.14	0.46	2.63
30	0.03	0.03	0.14	0.46	2.63
35	0.03	0.03	0.14	0.44	2.43
40	0.03	0.03	0.14	0.44	2.43
50	0.03	0.03	0.14	0.44	2.43
60	0.03	0.03	0.14	0.43	2.39
70	0.03	0.03	0.14	0.43	2.39
80	0.03	0.03	0.14	0.43	2.39
90	0.03	0.03	0.14	0.40	2.39
100	0.03	0.03	0.14	0.40	2.39

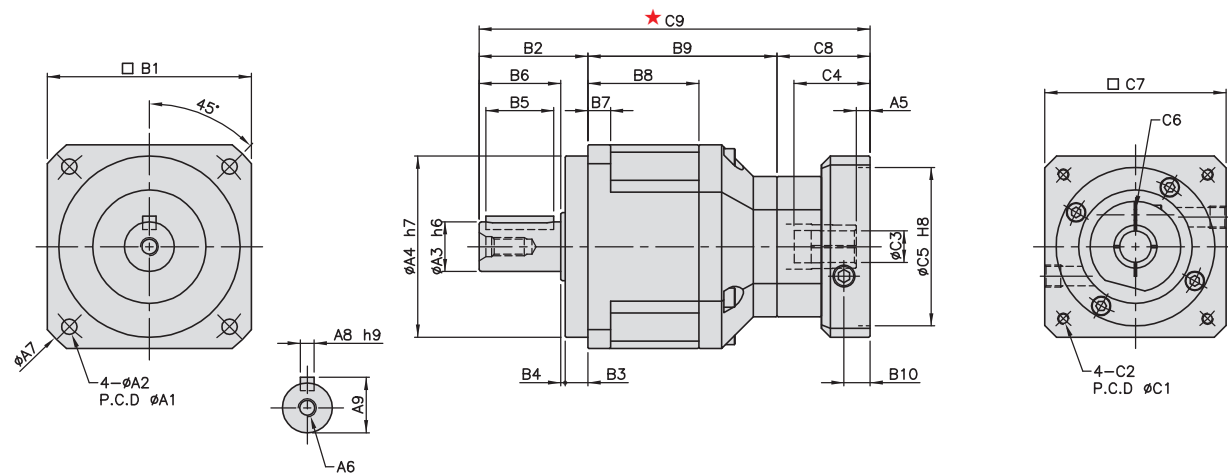
Model No.	Unit	Ratio	44	62	90	120	142
Rated Output Torque	Nm	15	17	54	145	301	553
		20	15	48	128	269	491
		25	14	45	132	278	510
		30	13	41	125	252	466
		35	13	41	123	258	473
		40	12	39	115	241	442
		50	14	45	132	278	510
		60	13	41	125	252	466
		70	13	41	123	258	473
		80	12	39	115	241	442
		90	11	40	120	227	412
		100	12	40	116	246	452
Max. Output 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
Max. Input Speed	Nm	15~100	6,000	6,000	6,000	5,000	5,000
Torsional Rigidity	Nm/arc min	15~100	3	6	14	27	60
Max. Radial Force	N	15~100	720	1,120	3,040	6,460	8,830
Max. Axial Force	N	15~100	360	560	1,520	3,230	4,410
Service Life	hr	15~100	10,000 (Continuous Operation 4,000 hrs)				
Efficiency	%	15~100	≥94%				
Operating Temperature	°C	15~100	-25°C ~ +90°C				
Lubrication		15~100	VIGO GREASE RE#0				
Degree of Gearbox Protection		15~100	IP65				
Mounting Position		15~100	Any				
Noise Level	dB	15~100	≤56	≤60	≤60	≤63	≤65
Weight ±3%	Kg	15~100	0.86	2.1	5.48	12.9	22.8

* 연속운전 사용시 본사와 상담후 선정바랍니다.



MODEL : PGX (62~180)S-H
Double Reduction
RATIO : 15.20.25.30.35.40.50.60.70.80.90.100

High Precision Planetary Reducer



unit:mm

Model code	62	90	120	142	180
A1	70	100	130	165	215
A2	5.5	6.8	9	11	13
A3	16	22	32	40	55
A4	50	80	110	130	160
A5	5	6	9	10	10
A6	M5×P0.8	M8×P1.25	M10×P1.5	M12×P1.75	M14×P2.0
A7	80	116	148	186	238
A8	5	6	10	12	16
A9	18	24.5	35	43	59
B1	62	90	120	142	180
B2	36	48	65	92	106
B3	7	10	12	15	20
B4	1	2	3	3	4
B5	20	30	40	65	70
B6	28	36	50	74	82
B7	8	10	12	15	16
B8	38	49	61	70	85
B9	66	83.5	108.5	127.5	154
B10	9	11.5	16, 30.5	19.5, 27.5	20
C1	46, 60, 63, 70	70, 75, 90	70, 90, 100 115, 145	90, 100 115, 145, 165	145, 165, 200
C2	M4, M5	M4, M5, M6	M6, M8, M10	M6, M8, M10	M8, M12
C3	8	14	19	24	35
C4	26	33.5	59	67	84.5
C5	30, 40, 50	50, 60, 70	50, 70, 80 95, 100	70, 80 95, 110, 130	110, 114.3, 130
C6	M3	M5	M6	M8	M10
C7	46, 55, 60	64, 70, 80	92, 110, 130	110, 130, 150	146, 150, 180
C8	37.5	41	67.5	79	98.5
C9	139.5	172.5	241	298.5	358.5

■ Mass Moments of Inertia (kg · cm²)

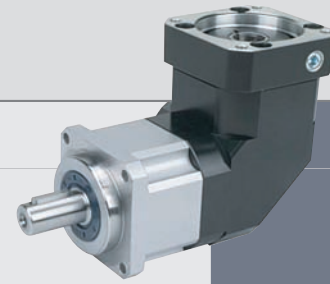
Ratio	62	90	120	142	180
15	0.03	0.14	0.46	2.63	7.3
20	0.03	0.14	0.46	2.63	7.3
25	0.03	0.14	0.46	2.63	7.1
30	0.03	0.14	0.46	2.43	7.1
35	0.03	0.14	0.44	2.43	7.1
40	0.03	0.14	0.44	2.43	6.92
50	0.03	0.14	0.44	2.43	6.92
60	0.03	0.14	0.43	2.39	6.72
70	0.03	0.14	0.43	2.39	6.72
80	0.03	0.14	0.43	2.39	6.72
90	0.03	0.14	0.40	2.39	6.72
100	0.03	0.14	0.40	2.39	6.72

Model No.	Unit	Ratio	62	90	120	142	180
Rated Output Torque	Nm	15	54	145	301	553	1085
		20	48	128	269	491	962
		25	45	132	278	510	1070
		30	41	125	252	466	1006
		35	41	123	258	473	997
		40	39	115	241	442	963
		50	45	132	278	510	1070
		60	41	125	252	466	1006
		70	41	123	258	473	997
		80	39	115	241	442	963
90	40	120	227	412	894		
100	40	116	246	452	953		
Max. Output Torque	Nm	15~100	3 Times of Rated Output Torque				
Rated Input Speed	rpm	15~100	3,000	3,000	3,000	3,000	2,000
Max. Input Speed	Nm	15~100	6,000	6,000	5,000	5,000	4,000
Torsional Rigidity	Nm/arc min	15~100	6	14	27	60	140
Max. Radial Force	N	15~100	1,120	3,040	6,460	8,830	14,820
Max. Axial Force	N	15~100	560	1,520	3,230	4,410	7,410
Service Life	hr	15~100	10,000 (Continuous Operation 4,000 hrs)				
Efficiency	%	15~100	≥94%				
Operating Temperature	°C	15~100	-25°C ~ +90°C				
Lubrication		15~100	VIGO GREASE RE#0				
Degree of Gearbox Protection		15~100	IP65				
Mounting Position		15~100	Any				
Noise Level	dB	15~100	≤60	≤60	≤63	≤65	≤67
Weight ±3%	Kg	15~100	1.73	4.6	9.42	20.5	39.14

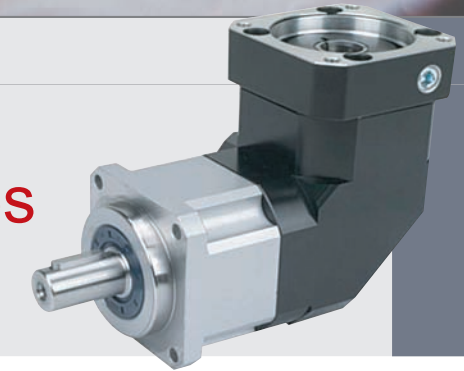
014 *A5, ★:적용모터에 따라 달라질 수 있습니다.

* 연속운전 사용시 본사와 상담후 선정바랍니다.

PBL-H Type (Standard Helical Gear Type)



Features of PBL Series (Standard Helical Gear Type)



Single Stage Backlash \leq 10 arc-min
Double Stage Backlash \leq 12 arc-min

Indication of Model Numbers

PBL	90	H	10	Key Type
Type PBL	Model 44 62 90 120 142	Helical Gear	Ratio Single Stage 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16, 18, 20 Double Stage 15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100, 120, 140, 160, 180, 200.	Output Shaft Keyway <input type="checkbox"/> 무표기 Standard (Keyway) N : 표 기 Solid Output Shaft (No Keyway)



One-piece Helical Gear Box

기어박스과 내부 링은 하나의 구조로 이루어져 있습니다. 헬리컬 기어로 되어 있으며 기어의 교합율은 일반 스퍼 기어의 2배 이상이며 원활한 운전과 낮은 소음으로 높은 회전출력과 낮은 백래쉬를 특징으로 합니다.

The gear box and internal gear ring are one-piece constructed. 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



Integrated Planetary Arm bracket

Planetary Arm Bracket과 출력 Shaft는 일체형 구조로 한번에 정밀 가공되어 비틀림 강도와 정밀도를 상승 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 a accuracy in the specified tolerance.



Full Needle Bearing Design

Planetary 변속기에는 접촉면 증가를 위한 Retainer 없는 Full Needle Bearing 구조입니다. 구조적 강도와 출력 회전력을 상승 시킨것입니다.

The planetary gear transmission employs full needle bearings Without retainer to increase the contact surface, which greatly Upgrades structural rigidity and output torque .



Spiral bevel gear

한번에 접촉하는 기어 물림의 길이가 크기 때문에 일반 bevel gear에 비해 운동이 부드럽고, 고속 회전에서도 안정적이며 진동과 소음이 적습니다.

Bite at a time, the length of contact because of the size Compared to bevel gear movement is smooth. Stable at high speed, low noise and vibration



Collet chuck locking mechanism

Motor shaft를 연결하기 위한 방식으로 확실한 체결력과 높은 속도에서 구동 할 때에도 백래쉬가 발생하지 않습니다.

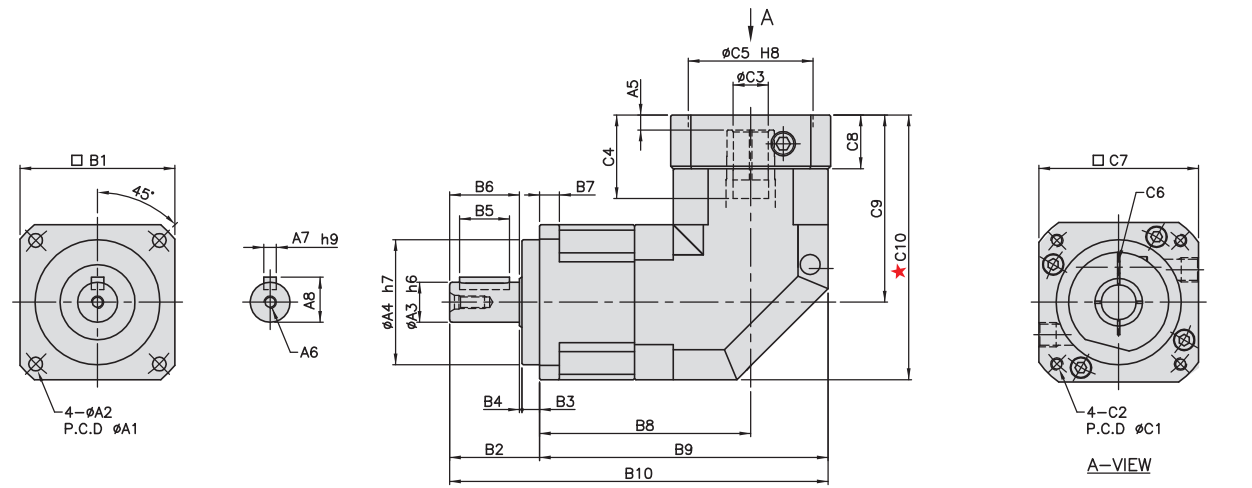
The input end and the motor is couple through a collet chuck locking mechanism, It is dynamically balanced to assure concentricity and balance on the connection when running at high speed. No backlash for transmission.





MODEL : PBL (44~142)-H
Single Reduction
RATIO : 3.4.5.6.7.8.9.10.12.14.16.18.20

High Precision Planetary Reducer



		unit:mm					
Model code	Model	44	62	90	120	142	
	A	A1	50	70	100	130	165
A2		4.5	5.5	6.8	9	11	
A3		13	16	22	32	40	
A4		35	50	80	110	130	
A5		6	6	9	10	10	
A6		M4×P0.7	M5×P0.8	M8×P1.25	M10×P1.5	M12×P1.75	
A7		5	5	6	10	12	
A8		15	18	24.5	35	43	
B		B1	44	62	90	120	142
		B2	26	36	48	65	92
	B3	5	7	10	12	15	
	B4	1	1	2	3	3	
	B5	15	20	30	40	65	
	B6	20	28	36	50	74	
	B7	5	8	10	12	15	
	B8	76	84.5	122.1	148	165.5	
	B9	98	115.5	167.1	208	236.5	
	B10	124	151.5	215.1	273	328.5	
C	C1	46, 60, 63, 70	70, 75, 90	70, 90, 145	90, 145, 165	145, 165, 200, 215	
	C2	M3, M4, M5	M4, M5, M6	M4, M5, M6, M8	M6, M8, M10	M8, M10, M12	
	C3	5, 6.35 8,(9, 11)	11, 12 14,(16, 19)	14, 16 19,(22, 24)	19, 22 24,(28, 32)	32, 35,(38)	
	C4	26	33.5, 41.5	53, 67.5	67	85	
	C5	30, 40, 50	50, 60, 70	50, 70, 110	70, 110, 130	110, 114.3, 130, 180	
	C6	M3	M5	M6	M8	M10	
	C7	46, 55, 60	64, 70, 80	92, 110, 130	130, 150	146, 150, 180, 190	
	C8	16	21.5	26.5, 41	35.5, 45.5	35.5	
	C9	61	77	115.3, 129.8	141, 151	174	
	C10	83	108	160.3, 174.8	201, 211	245	

■ Mass Moments of Inertia (kg · cm²)

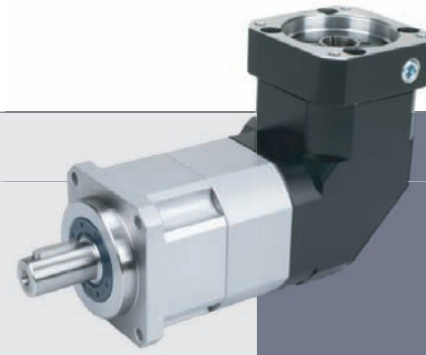
Ratio	44	62	90	120	142
3	0.09	0.36	2.28	6.85	23.5
4	0.09	0.36	2.28	6.85	23.5
5	0.09	0.36	2.28	6.85	23.5
6	0.09	0.36	2.28	6.85	23.5
7	0.09	0.36	2.28	6.85	23.5
8	0.09	0.36	2.28	6.85	23.5
9	0.09	0.36	2.28	6.85	23.5
10	0.09	0.36	2.28	6.85	23.5
12	0.03	0.08	1.88	6.20	21.8
14	0.03	0.08	1.88	6.20	21.8
16	0.03	0.08	1.88	6.20	21.8
18	0.03	0.08	1.88	6.20	21.8
20	0.03	0.08	1.88	6.20	21.8

Model No.	Unit	Ratio	44	62	90	120	142
Rated Output Torque	Nm	3	17	54	145	301	553
		4	15	48	128	269	491
		5	14	45	132	278	510
		6	13	41	125	252	466
		7	13	41	123	258	473
		8	12	39	115	241	442
		9	11	40	120	227	412
		10	12	40	116	246	452
		12	13	41	125	252	466
		14	13	41	123	258	473
		16	12	39	115	241	442
		18	11	40	120	227	412
		20	12	40	116	246	452
Max. Output 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
Max. Input Speed	Nm	3~20	5,000	5,000	5,000	4,000	4,000
Torsional Rigidity	Nm/arc min	3~20	3	6	14	27	60
Max. Radial Force	N	3~20	720	1,120	3,040	6,460	8,830
Max. Axial Force	N	3~20	360	560	1,520	3,230	4,410
Service Life	hr	3~20	10,000 (Continuous Operation 4,000 hrs)				
Efficiency	%	3~20	≥95%				
Operating Temperature	°C	3~20	-25°C ~ +90°C				
Lubrication		3~20	Vigo Grease Re #0				
Degree of Gearbox Protection		3~20	IP65				
Mounting Position	dB	3~20	Any				
Noise Level	dB	3~20	≤70	≤72	≤74	≤76	≤78
Weight ±3%	Kg	3~20	0.99	2.2	6.88	12.5	23.16

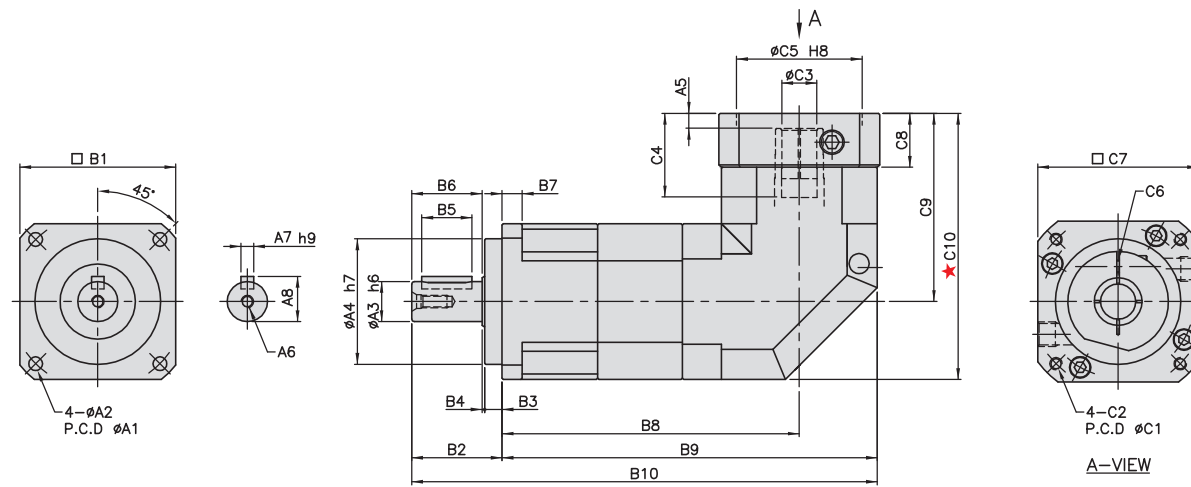
018 * () 안은 주문형입니다. * A5, ★:적용모터에 따라 달라질 수 있습니다.

* 연속운전 사용시 본사와 상담후 선정바랍니다.

MODEL : PBL(44~142)-H
Double Reduction
RATIO : 15.20.25.30.35.40.50.60.70.80.
90. 100. 120. 140. 160. 180. 200



High Precision Planetary Reducer



unit:mm

Model code	44	62	90	120	142
A					
A1	50	70	100	130	165
A2	4.5	5.5	6.8	9	11
A3	13	16	22	32	40
A4	35	50	80	110	130
A5	6	6	9	10	10
A6	M4 × P0.7	M5 × P0.8	M8 × P1.25	M10 × P1.5	M12 × P1.75
A7	5	5	6	10	12
A8	15	18	24.5	35	43
B					
B1	44	62	90	120	142
B2	26	36	48	65	92
B3	5	7	10	12	15
B4	1	1	2	3	3
B5	15	20	30	40	65
B6	20	28	36	50	74
B7	5	8	10	12	15
B8	102	118.3	165.6	204	232
B9	124	149.3	210.6	264	303
B10	150	185.3	258.6	329	395
C					
C1	46, 60, 63, 70	70, 75, 90	70, 90, 145	90, 145, 165	145, 165, 200, 215
C2	M3, M4, M5	M4, M5, M6	M4, M5, M6, M8	M6, M8, M10	M8, M10, M12
C3	5, 6.35 8,(9, 11)	11, 12 14,(16, 19)	14, 16 19,(22, 24)	19, 22 24,(28, 32)	32, 35,(38)
C4	26	33.5, 41.5	53, 67.5	67	85
C5	30, 40, 50	50, 60, 70	50, 70, 110	70, 110, 130	110, 114.3 130, 180
C6	M3	M5	M6	M8	M10
C7	46, 55, 60	64, 70, 80	92, 110, 130	130, 150	146, 150, 180, 190
C8	16	21.5	26.5, 41	35.5, 45.5	35.5
C9	61	77	115.3, 129.8	141, 151	174
C10	83	108	160.3, 174.8	201, 211	245

■ Mass Moments of Inertia (kg · cm²)

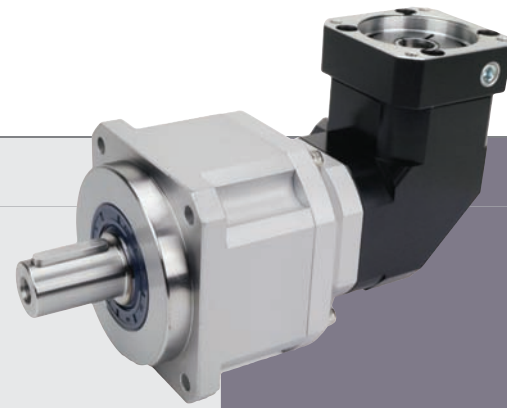
Ratio	44	62	90	120	142
15	0.09	0.36	2.28	6.85	23.45
20	0.09	0.36	2.28	6.85	23.45
25	0.09	0.36	2.28	6.85	23.45
30	0.09	0.36	2.28	6.85	23.50
35	0.09	0.36	2.28	6.85	23.50
40	0.09	0.36	2.28	6.85	23.50
50	0.09	0.36	2.28	6.85	23.50
60	0.09	0.36	2.28	6.85	23.50
70	0.09	0.36	2.28	6.85	23.50
80	0.09	0.36	2.28	6.85	23.50
90	0.09	0.36	2.28	6.85	23.50
100	0.09	0.36	2.28	6.85	23.50
120	0.03	0.10	1.88	6.20	21.80
140	0.03	0.10	1.88	6.20	21.80
160	0.03	0.10	1.88	6.20	21.80
180	0.03	0.10	1.88	6.20	21.80
200	0.03	0.10	1.88	6.20	21.80

Model No.	Unit	Ratio	44	62	90	120	142
Rated Output Torque	Nm	15	17	54	145	301	553
		20	15	48	128	269	491
		25	14	45	132	278	510
		30	13	41	125	252	466
		35	13	41	123	258	473
		40	12	39	115	241	442
		50	14	45	132	278	510
		60	13	41	125	252	466
		70	13	41	123	258	473
		80	12	39	115	241	442
		90	11	40	120	227	412
		100	12	40	116	246	453
		120	13	41	125	252	466
		140	13	41	123	258	473
		160	12	39	115	241	442
		180	11	40	120	227	412
200	12	40	116	246	453		
Max. Output 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
Max. Input Speed	Nm	15~200	5,000	5,000	5,000	4,000	4,000
Torsional Rigidity	Nm/arcmin	15~200	3	6	14	27	60
Max. Radial Load	N	15~200	720	1,120	3,040	6,460	8,830
Max. Axial Load	N	15~200	360	560	1,520	3,320	4,410
Service Life	hr	15~200	10,000(Continuous Operation 4,000hrs)				
Efficiency	%	15~200	≥ 92%				
Operating Temperature	°C	15~200	-25°C~+90°C				
Lubrication		15~200	Vigo Grease Re #0				
Degree of Gearbox Protection		15~200	IP65				
Mounting Position		15~200	Any				
Noise Level	dB	15~200	≤70	≤72	≤74	≤76	≤78
Weight ±3%	Kg	15~200	1.5	3	8.15	13.9	29.4

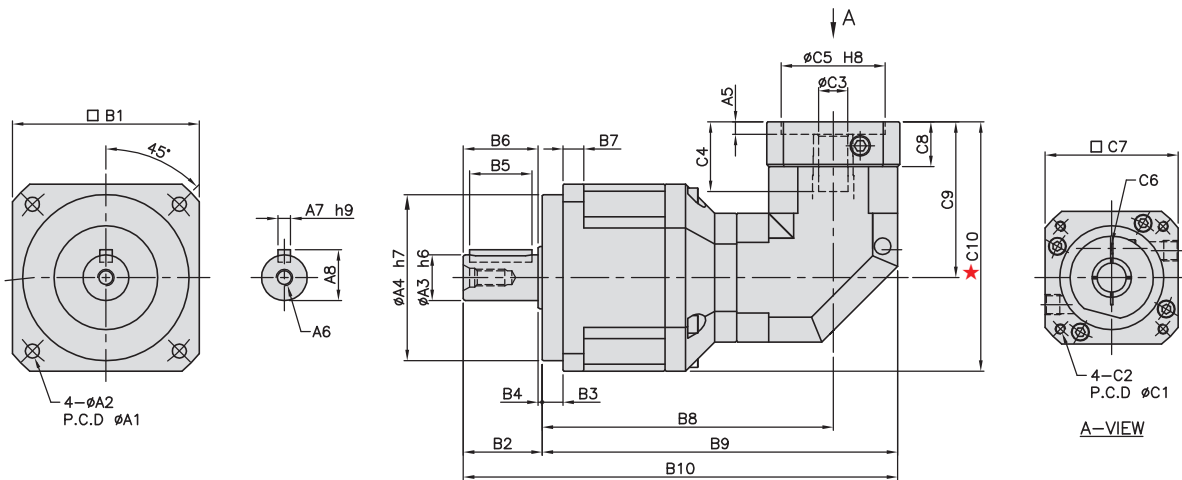
020 * () 안은 주문형입니다. * A5, ★:적용모터에 따라 달라질 수 있습니다.

* 연속운전 사용시 본사와 상담후 선정바랍니다.

MODEL : PBL (62~142)S-H
Double Reduction
RATIO : 15.20.25.30.35.40.50.60.70.80.
90. 100. 120. 140. 160. 180. 200



High Precision Planetary Reducer



unit:mm

Model code	62	90	120	142
A1	70	100	130	165
A2	5.5	6.8	9	11
A3	16	22	32	40
A4	50	80	110	130
A5	6	6	9	10
A6	M5×P0.8	M8×P1.25	M10×P1.5	M12×P1.75
A7	5	6	10	12
A8	18	24.5	35	43
B1	62	90	120	142
B2	36	48	65	92
B3	7	10	12	15
B4	1	2	3	3
B5	20	30	40	65
B6	28	36	50	74
B7	8	10	12	15
B8	110.5	130	181.6	214.5
B9	132.5	161	226.6	274.5
B10	168.5	209	291.6	366.5
C1	46, 60, 63, 70	70, 75, 90	90, 100, 115, 145	115, 145
C2	M4, M5	M4, M5, M6	M6, M8, M10	M6, M8, M10
C3	8	14	19	24
C4	27	33.5	53	67
C5	30, 40, 50	50, 60, 70	70, 80, 95, 110	95, 110
C6	M3	M5	M6	M8
C7	46, 55, 60	67, 70, 80	92, 110, 130	110, 130
C8	16	21.5	26.5	35.5
C9	61	77	115.3	141
C10	92	122	175.3	212

■ Mass Moments of Inertia (kg · cm²)

Ratio	62	90	120	142
15	0.09	0.36	2.28	6.85
20	0.09	0.36	2.28	6.85
25	0.09	0.36	2.28	6.85
30	0.09	0.36	2.28	6.85
35	0.09	0.36	2.28	6.85
40	0.09	0.36	2.28	6.85
50	0.09	0.36	2.28	6.85
60	0.09	0.36	2.28	6.85
70	0.09	0.36	2.28	6.85
80	0.09	0.36	2.28	6.85
90	0.09	0.36	2.28	6.85
100	0.09	0.36	2.28	6.85
120	0.03	0.10	1.88	6.20
140	0.03	0.10	1.88	6.20
160	0.03	0.10	1.88	6.20
180	0.03	0.10	1.88	6.20
200	0.03	0.10	1.88	6.20

Model No.	Unit	Ratio	62	90	120	142
Rated Output Torque	Nm	15	54	145	301	553
		20	48	128	269	491
		25	45	132	278	510
		30	41	125	252	466
		35	41	123	258	473
		40	39	115	241	442
		50	45	132	278	510
		60	41	125	252	466
		70	41	123	258	473
		80	39	115	241	442
		90	40	120	227	412
		100	40	116	246	453
		120	41	125	252	466
		140	41	123	258	473
		160	39	115	241	442
		180	40	120	227	412
200	40	116	246	453		
Max. Output Torque	Nm	15~200	3 Times of Rated Output Torque			
Rated Input Speed	rpm	15~200	3,000	3,000	3,000	3,000
Max. Input Speed	Nm	15~200	5,000	5,000	4,000	4,000
Torsional Rigidity	Nm/arcmin	15~200	6	14	27	60
Max. Radial Load	N	15~200	1,120	3,040	6,460	8,830
Max. Axial Load	N	15~200	560	1,520	3,230	4,410
Service Life	hr	15~200	10,000(Continuous Operation 4,000hrs)			
Efficiency	%	15~200	≥ 92%			
Operating Temperature	°C	15~200	-25°C~+90°C			
Lubrication		15~200	Vigo Grease Re #0			
Degree of Gearbox Protection		15~200	IP65			
Mounting Position		15~200	Any			
Nosie Level	dB	15~200	≤72	≤74	≤76	≤78
Weight ±3%	Kg	15~200	2	6.1	12.5	23.2

022 *A5, ★:적용모터에 따라 달라질 수 있습니다.

* 연속운전 사용시 본사와 상담후 선정바랍니다.

ATG (KSB, KSE) Planetary Reducers

ATG (KSB, KSE) Planetary Reducers

ATG Series의 고정밀 유성치차 감속기는 Helical gear를 사용하고 있습니다. 모든 기어는 고정밀CNC 기어 가공기에 서 제작되어 기어 맞물림이 정확하며 가동은 부드럽고 소음은 최소화됩니다.

일체형 기어박스 본체는 타사동급 제품에 비해 더 작은 구조(부피와 무게의 1/4이상 감소)이며 보다 큰 회전력과 효율을 자랑합니다.

ATG 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.

One-piece fabricated gear box body. When comparing with the competitive gear reducer, ATG gear reducer features smaller construction (Saves over 1/4 of volume and weight), higher torque output and higher transmission efficiency.

Features of KSB, KSE Series

Low Noise

65dB 이하

Low Backlash

1 Stage는 1 Arc-min~5 Arc-min,
2 Stage는 3 Arc-min~7 Arc-min으로 선택 설계 가능.

High Efficiency

1 stage 모델 효율성 97% 이내,
2 stage 모델은 94% 이내.

High Input Speed

입력 속도 5000 RPM 이상 허용.

High Torque

기존 Planetary 변속기어보다
보다 높은 Torque.

High Stability

높은 장력의 합금 사용.
기어 표면 경화는 표면만 경화가 아닌
기어 전체 경화로 만들어 짐.
이는 기어의 수명 연장과 오랜 기간의 운전 후에도
새 것 같은 정확성을 유지시켜 줌.

High Speed Reduction Ratio

모듈 디자인 기어감속기
유성기어 박스 연결가능
감속비를 1/1000 이상

Low Noise

Under 65dB

Low Backlash

Backlash is under 5 Arc-min Available to select
specification with 1 Arc-min of backlash. Backlash for
two-stage speed reduction is within 7 Arc-min.

High Efficiency

Efficiency for single stage model exceeds 97%.
For two-stage model exceeds 94%.

High Input Speed

Input speed allows for up to 5000 RPM.

High Torque

Higher torque output than that of conventional 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 as new after a long period of
operation.

High Speed Reduction Ratio

The gear reducer is a modular design. The planetary
gear box can be connected. Speed reduction ratio is
1/1000.

Indication Of Model Numbers

KSB	90	10	P0	MOTOR
TYPE	MODEL	RATIO	BACKLASH CLASS	MOTOR TYPE
KSB	44	SINGLE STAGE	PS ≤ 1 Arc-min	MOTOR BRAND & MODEL NO.
KSE	62	3~10	PO ≤ 3 Arc-min	
KSB-A	90	DOUBLE STAGE	P1 ≤ 5 Arc-min	
KSE-A	120	15~100	DOUBLE STAGE	
	142	TRIPLE STAGE	PS ≤ 3 Arc-min	
	180	125~1000	PO ≤ 5 Arc-min	
	220		P1 ≤ 7 Arc-min	

KSBL	90	10	P0	MOTOR
TYPE	MODEL	RATIO	BACKLASH CLASS	MOTOR TYPE
KSBL	44	SINGLE STAGE	PS ≤ 2 Arc-min	MOTOR BRAND & MODEL NO.
KSEL	62	3~20	PO ≤ 4 Arc-min	
KSBL-A	90	DOUBLE STAGE	P1 ≤ 6 Arc-min	
KSEL-A	120	15~200	P2 ≤ 8 Arc-min	
	142		DOUBLE STAGE	
			PS ≤ 4 Arc-min	
			PO ≤ 7 Arc-min	
			P1 ≤ 9 Arc-min	
			P2 ≤ 12 Arc-min	

A-TYPE의 정의

1. IN SHAFT SIZE

KSB-62-2 STAGE, KSB-142-2 STAGE, KSB-180-2 STAGE의 경우, 1/30 이하의 감속기에 MOTOR를 적용 시 감속기가 지원하는 IN SHAFT의 크기로 인해 조립할 수 없는 경우가 발생합니다. 이러한 경우 KSB-A TYPE의 감속기를 사용하셔야 합니다.

EX) KSB-62-15-P1 (IN SHAFT SIZE 8)+MITSUBISHI KFS43 (IN SHAFT SIZE 14) → 조립불가
KSB-62A-15-P1 (IN SHAFT SIZE 14)+MITSUBISHI KFS43 (IN SHAFT SIZE 14) → 조립가능

MODEL	1 STAGE-IN SHAFT SIZE	2 STAGE-IN SHAFT SIZE	A TYPE
44	8	8	8
62	14	8	14
90	19	14	19
120	24	19	24
142	35	24	35
180	55	35	55
220	55	55	55

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일반적으로 감속비가 1/15~1/30일 경우 감속기의 정격 및 최대 토오크 값이 모터의 정격 및 최대 토오크 범주 안에 속하기 때문에 안정성 있는 사용 환경을 보장합니다.

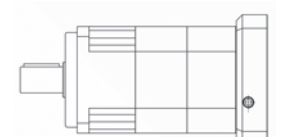
2. 외관형태

KSB 감속기는 2 STAGE 부분이 더 작아지는 외관을 가지고 있습니다.

1 STAGE와 2 STAGE 부분의 SIZE가 동일한 제품을 사용하셔야 하실 경우, A-TYPE의 감속기를 선정하셔야 합니다.



Standard



A-TYPE

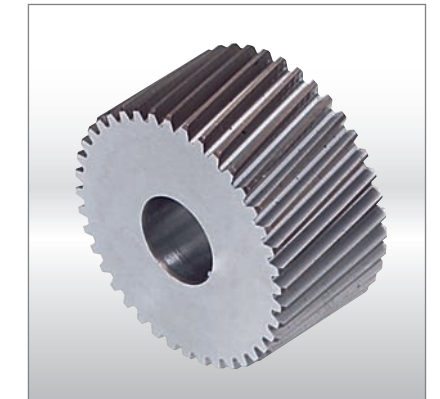
ATG Planetary Reducers



Full needle bearings design
ATG 감속기의 유성기어는 구조적 강도와 출력 향상을 위하여 Full needle bearing을 적용 하였습니다.



Integrated planetary arm bracket
Planetary arm bracket과 출력 Shaft는 일체형 구조로 한번에 정밀 가공되어 비틀림 강도와 정밀도를 향상 시켰습니다.



High precision gear machining
감속기 내부의 유성기어와 선기어는 기어제작 용도의 크롬 몰리브덴 합금강으로 제조되었습니다. 기어의 강도는 57~60HRC이며 정밀도 향상을 위해 열처리 후 스카이빙 연마 공정을 적용하여 DIN 6 class(JIS 2급) 이내의 등급을 유지합니다. 특히 니트라이딩 열처리 공법에 비하여 보다 깊은 조직 강화를 통한 기어강도 및 제품 수명을 향상 하였습니다.

The Planetary gear transmission employs full needle bearings without retainers to increase the contact surface, which greatly upgrades structural rigidity and output torque.

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.

The Planetary gear and sun gear are manufactured from high quality Cr-Mo alloy steel(SNCM220), precision machined and carburized to hardness 57-60 HRC. 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.



Helical gear design
기어 맞물림이 평기어의 2배 이상인 Helical gear 적용으로 동작 소음을 최소화하고 고출력, 저소음, 저백래시를 실현하였습니다.

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



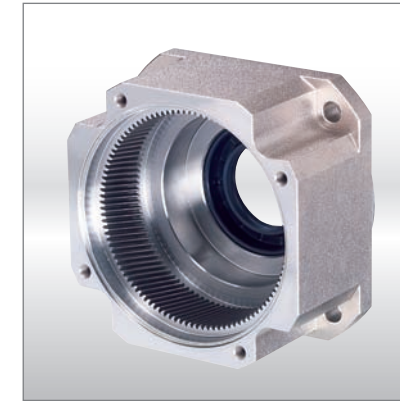
Synthetic lubrication grease
누유 방지를 위하여 IP 65등급의 밀폐 설계와 첨단 합성 윤활 시스템을 적용 하였습니다.

Employs synthetic lubrication. The class IP65 protective sealing design fully avoids leaking problem without maintenance.



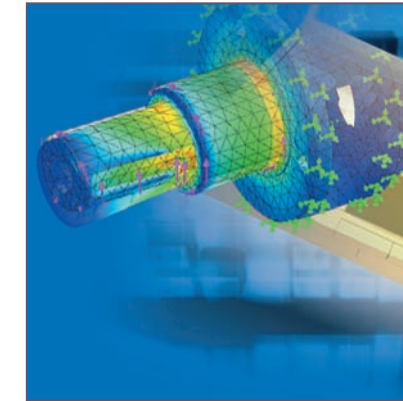
Collet chuck locking mechanism
감속기의 입력과 Motor의 출력 shaft를 연결하기 위한 기계 구조입니다. 이는 역학상 확실한 체결력과 높은 속도에서 구동할 때 접촉의 균형을 이룰 수 있는 구조입니다.

The input end and the motor is coupled through a collet chuck locking mechanism. It is dynamically balanced to assure concentricity and balance on the connection when running at high speed. No backlash for power transmission.



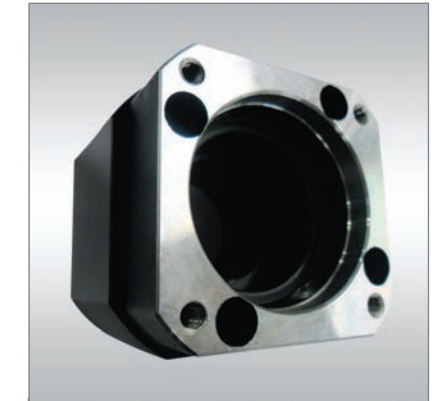
One-piece gear box body & advanced surface treatment
기어 제작용 합금강을 사용하여 적합한 열처리 공정 후 감속기 케이스에 내치기어를 직접 가공하여 고정밀, 고강도를 실현하며 부식방지를 위한 내환경 표면처리를 하였습니다.

The gear box and internal ring are one-piece constructed, which is manufactured from Cr-Mo alloy steel(SCM435), and tempered for high torque output. High gear accuracy meets DIN6 class standard. Gear 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 디자인입니다.

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 impact and noise during teeth engage and disengage, while increasing the service life of gears and the gear reducer.

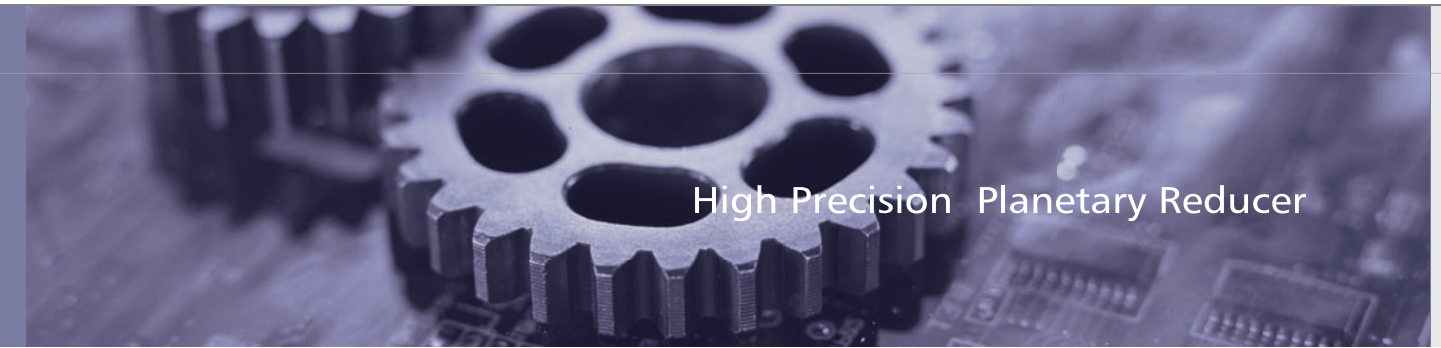
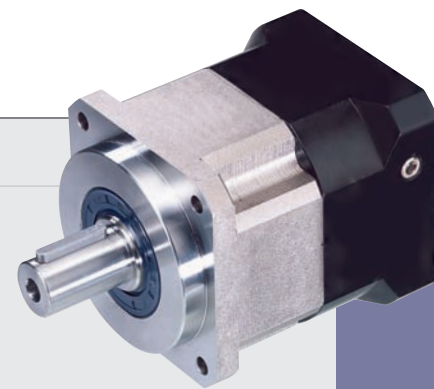


Modular design of motor connection plate
Motor connection plate의 스페셜 모듈 디자인은 모든 서보모터 적용이 가능하며 알루미늄 합금소재에 산화방지 및 부식방지를 위한 내환경 표면처리를 하였습니다.

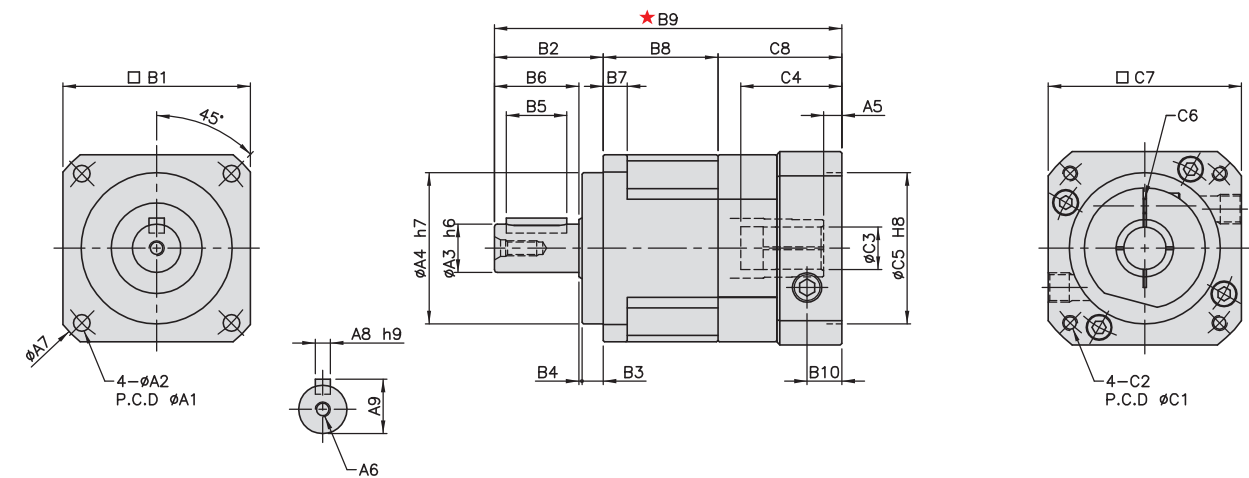
The special modular design of motor connection plate is suitable for any brand and any type of servomotor. Manufactured from aluminum alloy, its surface is anti-oxidant treated for upgrading environmental-resistant and corrosion-resistant capability.

MODEL : KSB

Single Reduction
RATIO : 3.4.5.6.7.8.9.10



High Precision Planetary Reducer



unit:mm

Model code	44	62	90	120	142	180	220
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	12.5
A6	M4×P0.7	M5×P0.8	M8×P1.25	M10×P1.5	M12×P1.75	M14×P2.0	M16×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
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	367
B10	9	11.5	16	19.5	20	23.5	23.5
C1	46, 60, 63, 70	70, 75, 90	70, 90, 100 115, 145, 165	90, 100 115, 145, 165	145, 165 200, 215	200, 215 235, 265, 300	215, 235 265, 300
C2	M4, M5	M4, M5, M6	M6, M8, M10	M6, M8, M10	M8, M12	M12, M16	M12, M16
C3	5, 6.35, 8, (11)	6.35, 8, 11 12, 14, (16, 19)	14, 16, 19 (22, 24)	19, 22 24, (28, 32)	22, 24, 28 32, 35, (38)	38, 42, 48, 55	42, 48, 55
C4	26	33.5, 41.5	46, 59	67	84.5	114.5	117.5
C5	30, 40, 50	50, 60, 70	50, 70, 80 95, 110, 130	70, 80 95, 110, 130	110, 114.3 130, 180	114.3, 180 200, 230	180, 200 230, 250
C6	M3	M5	M6	M8	M10	M10	M10
C7	46, 55, 60	64, 70, 80	92, 110 130, 142	130, 150	146, 150 180, 190	182, 200 220, 250, 265	220, 250, 265
C8	37.5	41, 49	54.5, 67.5	79	98.5	132.5	135.5

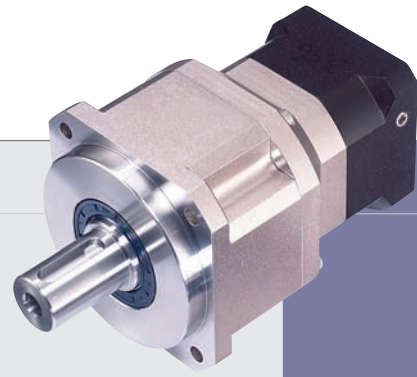
Mass Moments of Inertia (kg · cm²)

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

Model No.	Unit	Ratio	44	62	90	120	142	180	220		
Rated Output Torque	Nm	3	19	59	165	335	625	1206	2030		
		4	16	51	146	300	555	1069	1804		
		5	16	48	160	333	618	1189	2010		
		6	15	45	151	311	583	1118	1911		
		7	15	45	149	309	573	1108	1870		
		8	14	43	143	298	553	1070	1824		
		9	13	44	145	278	516	993	1694		
		10	14	43	141	294	549	1059	1779		
		Max. Output Torque	Nm	3~10	3 Times of Rated Output Torque						
		Rated Input Speed	rpm	3~10	5,000	5,000	4,000	4,000	3,000	3,000	2,000
Max. Input Speed	rpm	3~10	10,000	10,000	8,000	8,000	6,000	6,000	4,000		
Backlash P5	arc min	3~10			≤1	≤1	≤1	≤1	≤1		
Backlash P0	arc min	3~10	≤3	≤3	≤3	≤3	≤3	≤3	≤3		
Backlash P1	arc min	3~10	≤5	≤5	≤5	≤5	≤5	≤5	≤5		
Torsional Rigidity	Nm/arc min	3~10	3	6	14	27	60	140	240		
Max. Radial Load	N	3~10	760	1,180	3,200	6,800	9,300	15,600	51,000		
Max. Axial Load	N	3~10	380	590	1,600	3,400	4,650	7,800	25,500		
Service Life	hr	3~10	20,000 (4,000 / Continuous Operation)								
Efficiency	%	3~10	≥97								
Operating Temperature	°C	3~10	-25°C ~ +90°C								
Lubrication		3~10	VIGO GREASE RE #0								
Degree of Gearbox Protection		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	1.37	3.9	8	14.2	29.3	39.2		

028 * () 안은 주문형입니다. * A5, ★: 적용모터에 따라 달라질 수 있습니다.

* 연속운전 사용시 본사와 상담후 선정바랍니다.

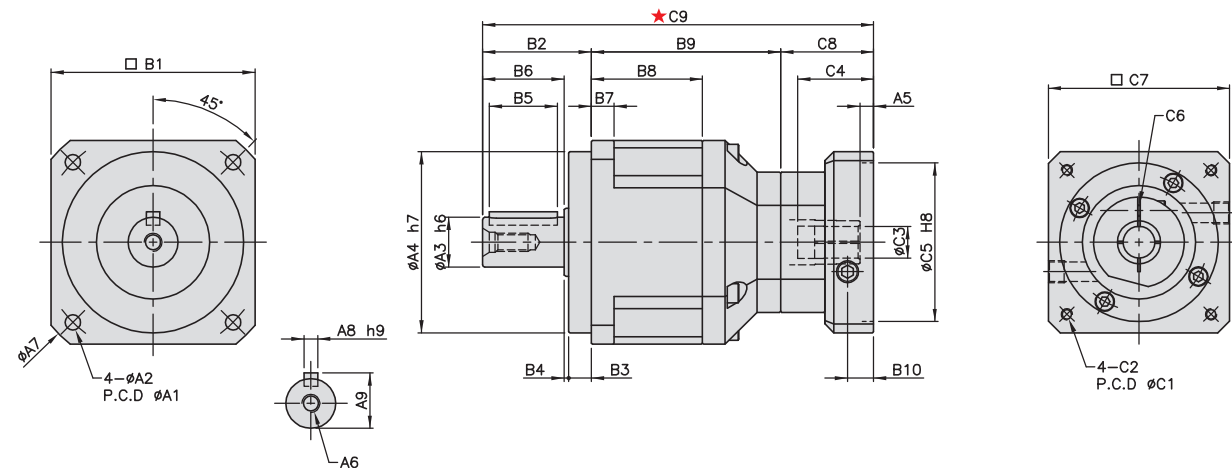


MODEL : KSB

Double Reduction

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

High Precision Planetary Reducer



unit:mm

Model code	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
A6	M5×P0.8	M8×P1.25	M10×P1.5	M12×P1.75	M14×P2.0	M16×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, 30.5	19.5, 27.5	20	23.5
C						
C1	46, 60, 63, 70	70, 75, 90	70, 90, 100 115, 145, 165	90, 100 115, 145, 165	145, 165, 200, 215	200, 215 235, 265, 300
C2	M4, M5	M4, M5, M6	M6, M8, M10	M6, M8, M10	M8, M12	M12, M16
C3	5, 6.35, 8, (11)	6.35, 8, 11 12, 14, (16, 19)	14, 16, 19, (22, 24)	19, 22, 24, (28, 32)	22, 24, 28 32, 35, (38)	38, 42, 48, 55
C4	26	33.5, 41.5	59	67	84.5	114.5
C5	30, 40, 50	50, 60, 70	50, 70, 80 95, 110, 130	70, 80 95, 110, 130	110, 114.3, 130, 180	114.3, 180, 200, 230
C6	M3	M5	M6	M8	M10	M10
C7	46, 55, 60	64, 70, 80	92, 110, 130, 142	130, 150	146, 150, 180, 190	182, 200, 220, 250, 265
C8	37.5	41, 49	67.5	79	98.5	132.5
C9	139.5	172.5, 180.5	241	298.5	358.5	446.5

Mass Moments of Inertia (kg · cm²)

Ratio	62	90	120	142	180	220
15	0.03	0.14	0.46	2.63	7.3	22.79
20	0.03	0.14	0.46	2.63	7.3	22.79
25	0.03	0.14	0.46	2.63	7.1	22.79
30	0.03	0.14	0.46	2.43	7.1	22.59
35	0.03	0.14	0.44	2.43	7.1	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

Model No.	Unit	Ratio	62	90	120	142	180	220
Rated Output Torque	Nm	15	59	165	335	625	1206	2030
		20	51	146	300	555	1069	1804
		25	48	160	333	618	1189	2010
		30	45	151	311	583	1118	1911
		35	45	149	309	573	1108	1870
		40	43	143	298	553	1070	1824
		50	48	160	333	618	1189	2010
		60	45	151	311	583	1118	1911
		70	45	149	309	573	1108	1870
		80	43	143	298	553	1070	1824
		90	44	145	278	516	993	1694
100	43	141	294	549	1059	1779		
Max. Output Torque	Nm	15~100	3 Times of Rated Output Torque					
Rated Input Speed	rpm	15~100	5,000	4,000	4,000	3,000	3,000	2,000
Max. Input Speed	rpm	15~100	10,000	8,000	8,000	6,000	6,000	4,000
Backlash P5	arc min	15~100	≤3					
Backlash P0	arc min	15~100	≤5	≤5	≤5	≤5	≤5	≤5
Backlash P1	arc min	15~100	≤7	≤7	≤7	≤7	≤7	≤7
Torsional Rigidity	Nm/arc min	15~100	6	14	27	60	140	240
Max. Radial Load	N	15~100	1,180	3,200	6,800	9,300	15,600	51,000
Max. Axial Load	N	15~100	590	1,600	3,400	4,650	7,800	25,500
Service Life	hr	15~100	20,000 (4,000 / Continuous Operation)					
Efficiency	%	15~100	≥94%					
Operating Temperature	°C	15~100	-25°C ~ +90°C					
Lubrication		15~100	VIGO GREASE RE #0					
Degree of Gearbox Protection		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	20.5	39.14	54.2

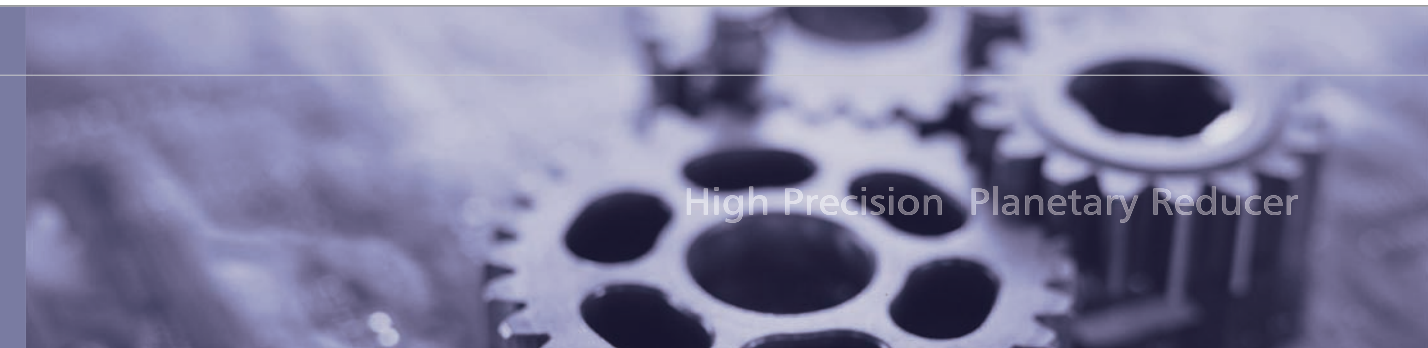
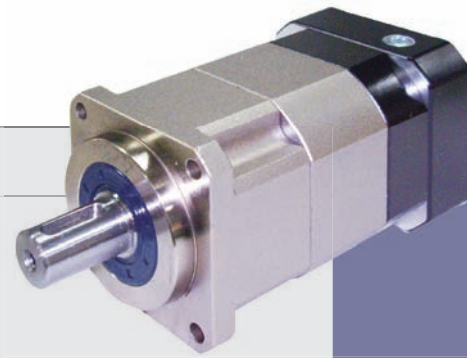
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* 연속운전 사용시 본사와 상담후 선정바랍니다.

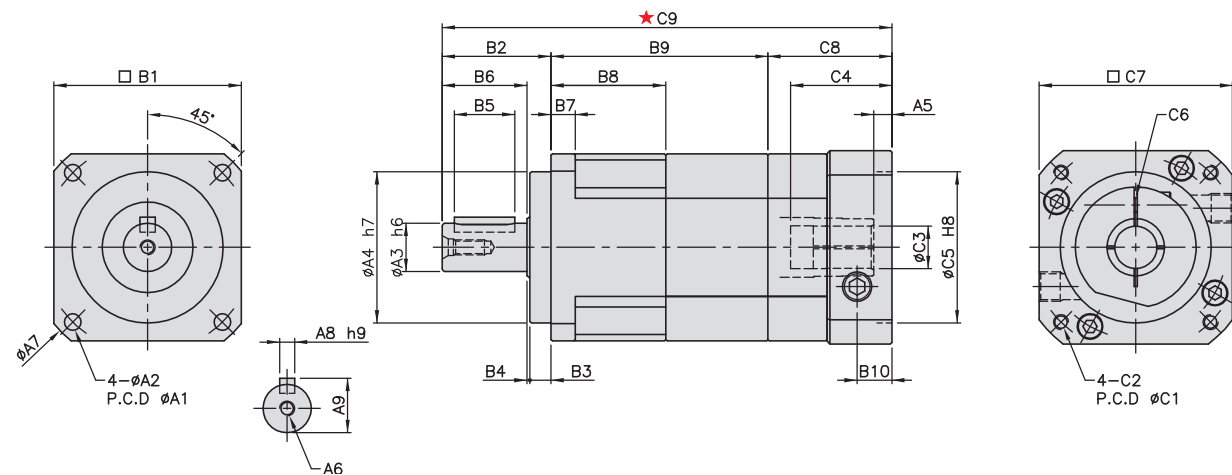
MODEL : KSB-A

Double Reduction

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



High Precision Planetary Reducer



unit:mm

Model code	44A	62A	90A	120A	142A	180A	220A
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, 23.5	10	10	11.5	12.5
A6	M4×P0.7	M5×P0.8	M8×P1.25	M10×P1.5	M12×P1.75	M14×P2.0	M16×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
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	23.5
C1	46, 60, 63, 70	70, 75, 90	70, 90, 100 115, 145, 165	90, 100 115, 145, 165	145, 165, 200, 215	200, 215 235, 265, 300	215, 235, 265, 300
C2	M4, M5	M4, M5, M6	M6, M8, M10	M6, M8, M10	M8, M12	M12, M16	M12, M16
C3	5, 6.35, 8, (11)	6.35, 8, 11 12, 14, (16, 19)	14, 16, 19, (22, 24)	19, 22, 24, (28, 32)	22, 24, 28 32, 35, (38)	38, 42, 48, 55	42, 48, 55
C4	26	33.5, 41.5	46, 59	67	84.5	114.5	117.5
C5	30, 40, 50	50, 60, 70	50, 70, 80 95, 110, 130	70, 80 95, 110, 130	110, 114.3, 130, 180	114.3, 180 200, 230	180, 200, 230, 250
C6	M3	M5	M6	M8	M10	M10	M10
C7	46, 55, 60	64, 70, 80	92, 110, 130, 142	130, 150	146, 150, 180, 190	182, 200, 220, 250, 265	220, 250, 265
C8	37.5	41, 49	54.5, 67.5	79	98.5	132.5	135.5
C9	121	148.8, 156.8	195, 208	261	327	404.5	460.5

■ Mass Moments of Inertia (kg · cm²)

Ratio	44A	62A	90A	120A	142A	180A	220A
15	0.03	0.03	0.14	0.46	2.63	7.3	22.79
20	0.03	0.03	0.14	0.46	2.63	7.3	22.79
25	0.03	0.03	0.14	0.46	2.63	7.1	22.79
30	0.03	0.03	0.14	0.46	2.43	7.1	22.59
35	0.03	0.03	0.14	0.44	2.43	7.1	22.59
40	0.03	0.03	0.14	0.44	2.43	6.92	22.59
50	0.03	0.03	0.14	0.44	2.43	6.92	22.59
60	0.03	0.03	0.14	0.43	2.39	6.72	21.83
70	0.03	0.03	0.14	0.43	2.39	6.72	21.83
80	0.03	0.03	0.14	0.43	2.39	6.72	21.83
90	0.03	0.03	0.14	0.40	2.39	6.72	21.60
100	0.03	0.03	0.14	0.43	2.39	6.72	21.83

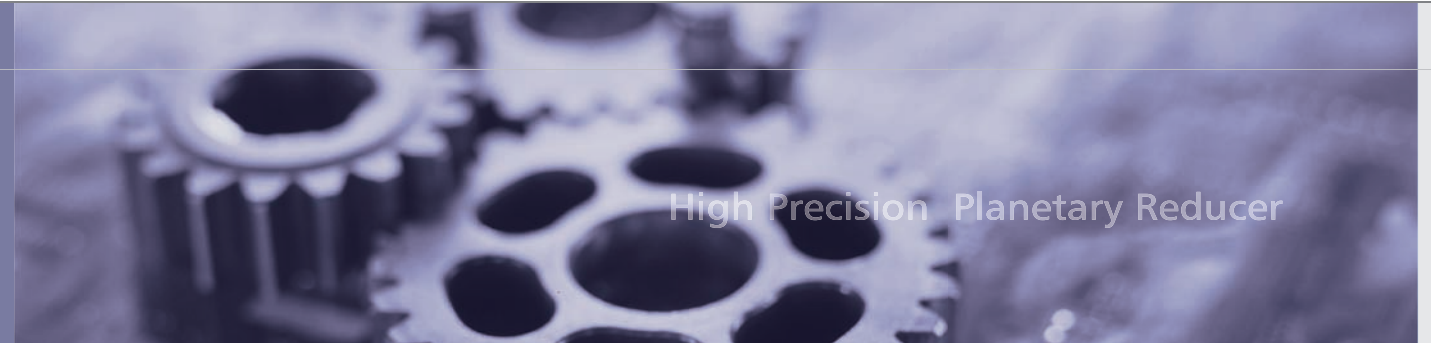
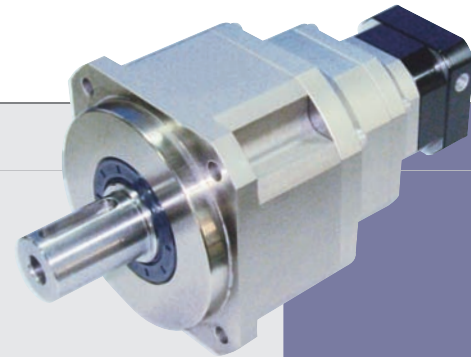
Model No.	Unit	Ratio	44A	62A	90A	120A	142A	180A	220A
Rated Output Torque	Nm	15	19	59	165	335	625	1206	2030
		20	16	51	146	300	555	1069	1804
		25	16	48	160	333	618	1189	2010
		30	15	45	151	311	583	1118	1911
		35	15	45	149	309	573	1108	1870
		40	14	43	143	298	553	1070	1824
		50	16	48	160	333	618	1189	2010
		60	15	45	151	311	583	1118	1911
		70	15	45	149	309	573	1108	1870
		80	14	43	143	298	553	1070	1824
		90	13	44	145	278	516	993	1694
100	14	43	141	294	549	1059	1779		
Max. Output Torque	Nm	15~100	3 Times of Rated Output Torque						
Rated Input Speed	rpm	15~100	5,000	5,000	4,000	4,000	3,000	3,000	2,000
Max. Input Speed	rpm	15~100	10,000	10,000	8,000	8,000	6,000	6,000	4,000
Backlash P5	arc min	15~100			≤3	≤3	≤3	≤3	≤3
Backlash P0	arc min	15~100	≤5	≤5	≤5	≤5	≤5	≤5	≤5
Backlash P1	arc min	15~100	≤7	≤7	≤7	≤7	≤7	≤7	≤7
Torsional Rigidity	Nm/arc min	15~100	3	6	14	27	60	140	240
Max. Radial Load	N	15~100	760	1,180	3,200	6,800	9,300	15,600	51,000
Max. Axial Load	N	15~100	380	590	1,600	3,400	4,650	7,800	25,500
Service Life	hr	15~100	20,000 (4,000 / Continuous Operation)						
Efficiency	%	15~100	≥94%						
Operating Temperature	°C	15~100	-25°C ~ +90°C						
Lubrication		15~100	VIGO GREASE RE #0						
Degree of Gearbox Protection		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	0.86	2.1	5.48	12.9	22.8	42.5	59.5

MODEL : KSB

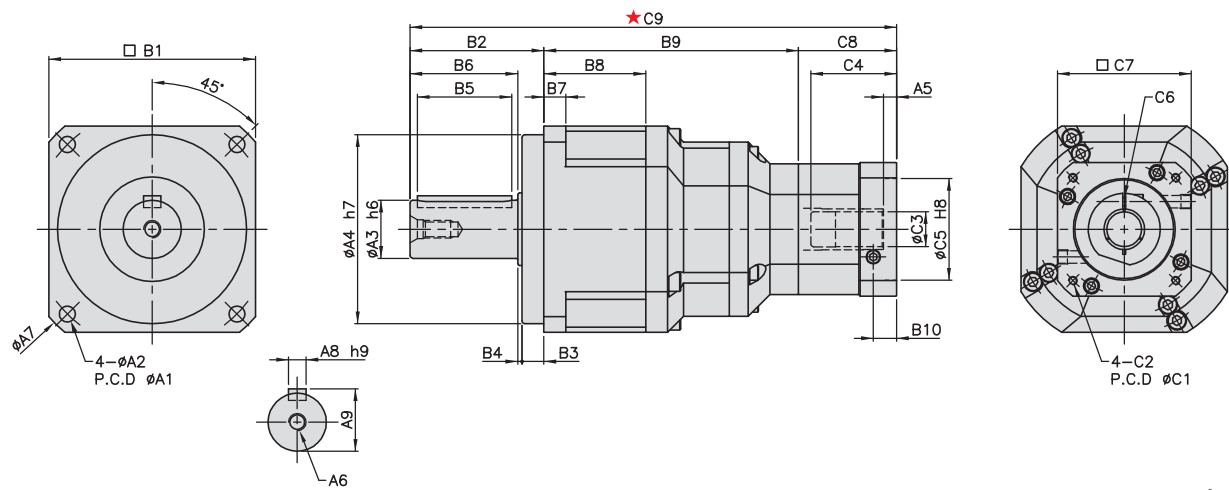
Triple Reduction

RATIO : 125.150.175.200.250.300.350.

400.450.500.600.700.800.900.1000



High Precision Planetary Reducer



unit:mm

Model code	90	120	142	180	220
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, 23.5	10, 20	10
A6	M8×P1.25	M10×P1.5	M12×P1.75	M14×P2.0	M16×P2.0
A7	116	148	186	238	288
A8	6	10	12	16	20
A9	24.5	35	43	59	79.5
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
C1	46, 60, 63, 70	70, 75, 90	70, 90, 100 115, 145, 165	90, 100 115, 145, 165	145, 165 200, 215
C2	M4, M5	M4, M5, M6	M6, M8, M10	M6, M8, M10	M8, M12
C3	5, 6.35, 8,(11)	6.35, 8, 11 12, 14,(16, 19)	14, 16 19,(22, 24)	19, 22 24,(28, 32)	22, 24, 28 32, 35,(38)
C4	26	33.5, 41.5	59	67	84.5
C5	30, 40, 50	50, 60, 70	50, 70, 80 95, 110, 130	70, 80 95, 110, 130	110, 114.3 130, 180
C6	M3	M5	M6	M8	M10
C7	46, 55, 60	64, 70, 80	92, 110, 130, 142	130, 150	146, 150, 180, 190
C8	37.5	41, 49	67.5	79	98.5
C9	197	249, 257	334.5	396.5	481.5

Mass Moments of Inertia (kg · cm²)

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

Model No.	Unit	Ratio	90	120	142	180	220
Rated Output Torque	Nm	125	160	333	618	1189	2010
		150	165	335	625	1206	2030
		175	149	309	573	1108	1870
		200	146	300	555	1069	1804
		250	160	333	618	1189	2010
		300	151	311	583	1118	1911
		350	149	309	573	1108	1870
		400	143	298	553	1070	1824
		450	145	278	516	993	1694
		500	160	333	618	1189	2010
		600	151	311	583	1118	1911
		700	149	309	573	1108	1870
		800	143	298	553	1070	1824
		900	145	278	516	993	1694
1000	141	294	549	1059	1779		
Max. Output Torque	Nm	125~1000	3 Times of Rated Output Torque				
Rated Input Speed	rpm	125~1000	4,000	4,000	3,000	3,000	2,000
Max. Input Speed	rpm	125~1000	8,000	8,000	6,000	6,000	4,000
Backlash P5	arc min	125~1000	≤ 5				
Backlash P0	arc min	125~1000	≤ 7				
Backlash P1	arc min	125~1000	≤ 9				
Torsional Rigidity	Nm/arc min	125~1000	14	27	60	140	240
Max. Radial Load	N	125~1000	3,200	6,800	9,300	15,600	51,000
Max. Axial Load	N	125~1000	1,600	3,400	4,650	7,800	25,500
Service Life	hr	125~1000	20,000 (4,000 / Continuous Operation)				
Efficiency	%	125~1000	≥ 90%				
Operating Temperature	°C	125~1000	-25°C ~ +90°C				
Lubrication		125~1000	VIGO GREASE RE #0				
Degree of Gearbox Protection		125~1000	IP65				
Mounting Position		125~1000	Any				
Noise Level	dB	125~1000	≤ 60	≤ 63	≤ 65	≤ 67	≤ 70
Weight ± 3%	kg	125~1000	5.3	12.6	24.9	49.8	78.6

034 * () 안은 주문형입니다. * A5, ★: 적용모터에 따라 달라질 수 있습니다.

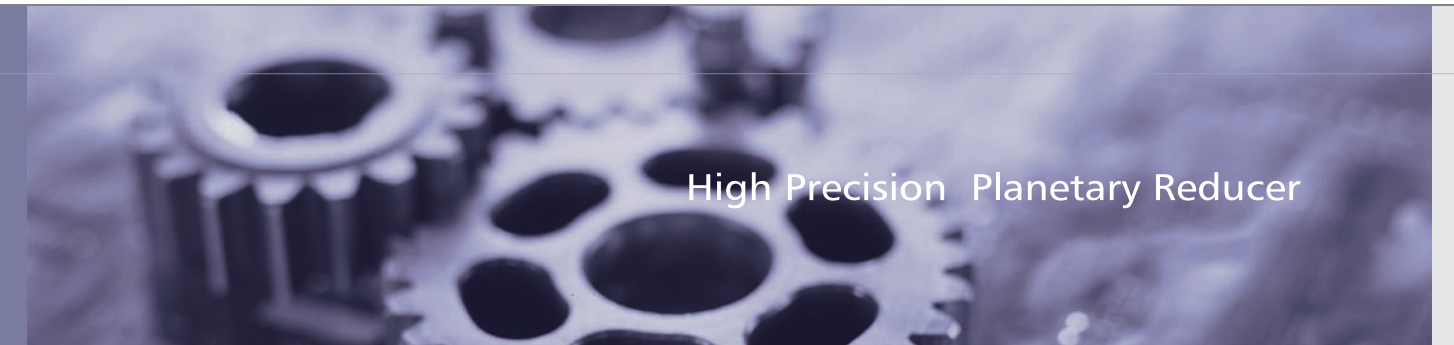
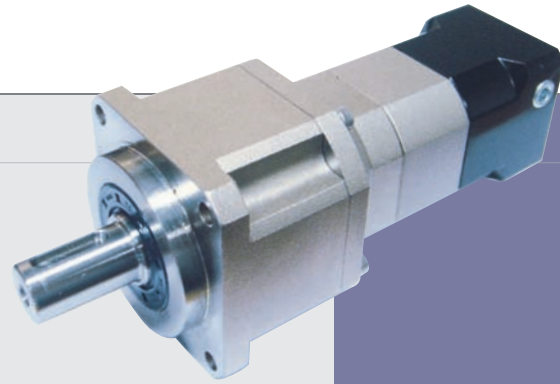
* 연속운전 사용시 본사와 상담후 선정바랍니다.

MODEL : KSB-A

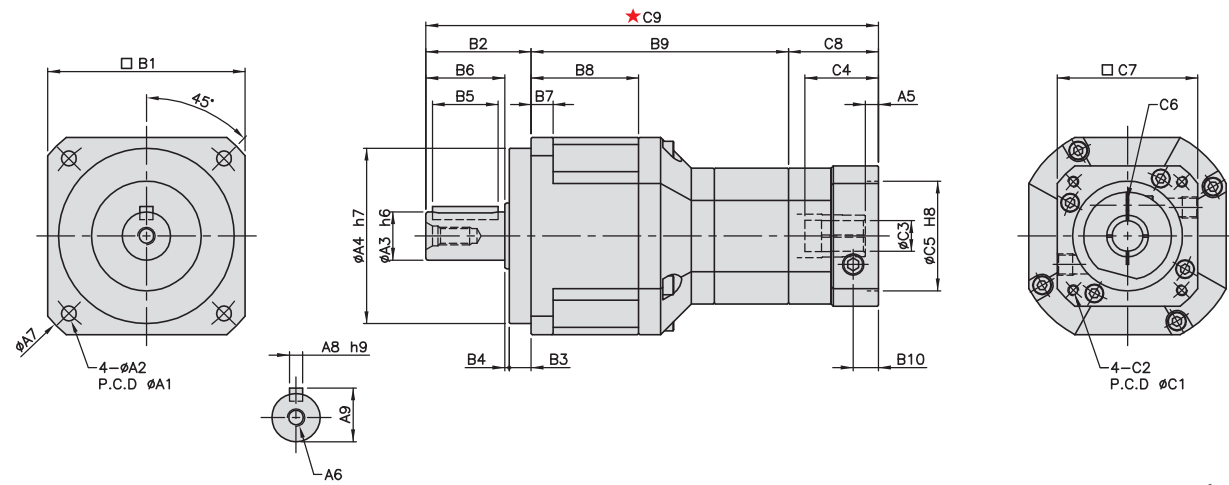
Triple Reduction

RATIO : 125.150.175.200.250.300.350.

400.450.500.600.700.800.900.1000



High Precision Planetary Reducer



unit:mm

Model code	62A	90A	120A	142A	180A	220A
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, 23.5	10, 20	10	11.5
A6	M5×P0.8	M8×P1.25	M10×P1.5	M12×P1.75	M14×P2.0	M16×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
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, 30.5	19.5, 27.5	20	23.5
C1	46, 60, 63, 70	70, 75, 90	70, 90, 100 115, 145, 165	90, 100 115, 145, 165	145, 165, 200, 215	200, 215 235, 265, 300
C2	M4, M5	M4, M5, M6	M6, M8, M10	M6, M8, M10	M8, M12	M12, M16
C3	5, 6.35, 8, (11)	6.35, 8, 11 12, 14, (16, 19)	14, 16, 19, (22, 24)	19, 22, 24, (28, 32)	22, 24, 28 32, 35, (38)	38, 42, 48, 55
C4	26	33.5, 41.5	46, 59	67	84.5	114.5
C5	30, 40, 50	50, 60, 70	50, 70, 80 95, 110, 130	70, 80 95, 110, 130	110, 114.3 130, 180	114.3, 180 200, 230
C6	M3	M5	M6	M8	M10	M10
C7	46, 55, 60	64, 70, 80	92, 110, 130, 142	130, 150	146, 150, 180, 190	182, 200, 220, 250, 265
C8	37.5	41, 49	54.5, 67.5	79	98.5	132.5
C9	165.5	206.3, 214.3	271.5, 284.5	354.5	425	527.5

Mass Moments of Inertia (kg · cm²)

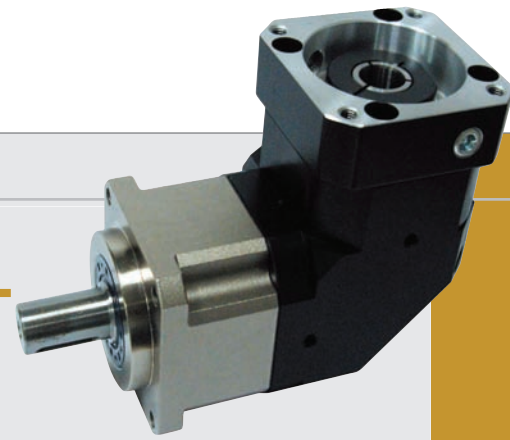
Ratio	62A	90A	120A	142A	180A	220A
125	0.01	0.01	0.04	0.71	1.42	3.29
150	0.01	0.01	0.04	0.51	0.92	2.15
175	0.01	0.01	0.04	0.40	0.83	1.26
200	0.01	0.01	0.04	0.21	0.65	0.98
250	0.01	0.01	0.04	0.11	0.52	0.82
300	0.01	0.01	0.04	0.09	0.21	0.82
350	0.01	0.01	0.04	0.09	0.21	0.82
400	0.01	0.01	0.04	0.09	0.21	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

Model No.	Unit	Ratio	62A	90A	120A	142A	180A	220A
Rated Output Torque	Nm	125	48	160	333	618	1189	2010
		150	59	165	335	625	1206	2030
		175	45	149	309	573	1108	1870
		200	51	146	300	555	1069	1804
		250	48	160	333	618	1189	2010
		300	45	151	311	583	1118	1911
		350	45	149	309	573	1108	1870
		400	43	143	298	553	1070	1824
		450	44	145	278	516	993	1694
		500	48	160	333	618	1189	2010
		600	45	151	311	583	1118	1911
		700	45	149	309	573	1108	1870
800	43	143	298	553	1070	1824		
900	44	145	278	516	993	1694		
1000	43	141	294	549	1059	1779		
Max. Output Torque	Nm	125~1000	3 Times of Rated Output Torque					
Rated Input Speed	rpm	125~1000	5,000	4,000	4,000	3,000	3,000	2,000
Max. Input Speed	rpm	125~1000	10,000	8,000	8,000	6,000	6,000	4,000
Backlash PS	arcmin	125~1000			≤5	≤5	≤5	≤5
Backlash P0	arcmin	125~1000	≤7	≤7	≤7	≤7	≤7	≤7
Backlash P1	arcmin	125~1000	≤9	≤9	≤9	≤9	≤9	≤9
Torsional Rigidity	Nm/arc min	125~1000	6	14	27	60	140	240
Max. Radial Load	N	125~1000	1,180	3,200	6,800	9,300	15,600	51,000
Max. Axial Load	N	125~1000	590	1,600	3,400	4,650	7,800	25,500
Service Life	hr	125~1000	20,000 (4,000 / Continuous Operation)					
Efficiency	%	125~1000	≥90%					
Operating Temperature	°C	125~1000	-25°C ~ +90°C					
Lubrication		125~1000	VIGO GREASE RE #0					
Degree of Gearbox Protection		125~1000	IP65					
Mounting Position		125~1000	Any					
Noise Level	dB	125~1000	≤58	≤60	≤63	≤65	≤67	≤70
Weight ±3%	kg	125~1000	1.93	5.4	12.8	25.5	52.1	81.7

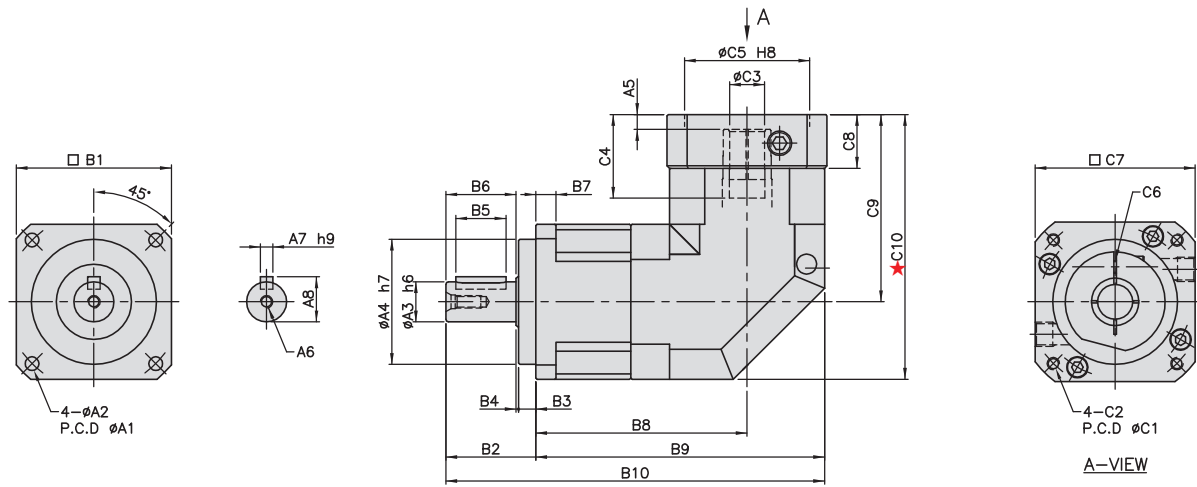
MODEL : KSBL

Single Reduction

RATIO : 3.4.5.6.7.8.9.10.12.14.16.18.20



High Precision Planetary Reducer



unit:mm

Model code	44	62	90	120	142
A A1	50	70	100	130	165
A2	4.5	5.5	6.8	9	11
A3	13	16	22	32	40
A4	35	50	80	110	130
A5	6	6	9	10	10
A6	M4×P0.7	M5×P0.8	M8×P1.25	M10×P1.5	M10×P1.75
A7	5	5	6	10	12
A8	15	18	24.5	35	43
B B1	44	62	90	120	142
B2	26	36	48	65	92
B3	5	7	10	12	15
B4	1	1	2	3	3
B5	15	20	30	40	65
B6	20	28	36	50	74
B7	5	8	10	12	15
B8	76	84.5	122.1	148	165.5
B9	98	115.5	167.1	208	236.5
B10	124	151.5	215.1	273	328.5
C C1	46, 60, 63, 70	70, 75, 90	70, 90, 145	90, 145, 165,,	145, 165, 200, 215
C2	M3, M4, M5	M4, M5, M6	M4, M5, M6, M8	M6, M8, M10	M8, M10, M12
C3	5, 6.35 8,(9, 11)	11, 12 14,(16, 19)	14, 16 19,(22, 24)	19, 22 24,(28, 32)	32, 35(38)
C4	26	33.5, 41.5	53, 67.5	67	85
C5	30, 40, 50	50, 60, 70	50, 70, 110	70, 110, 130	110, 114.3, 130, 180
C6	M3	M5	M6	M8	M10
C7	46, 55, 60	64, 70, 80	92, 110, 130	130, 150	146, 150, 180, 190
C8	16	21.5	26.5, 41	35.5, 45.5	35.5
C9	61	77	115.3, 129.8	141, 151	174
C10	83	108	160.3, 174.8	201, 211	245

■ Mass Moments of Inertia (kg · cm²)

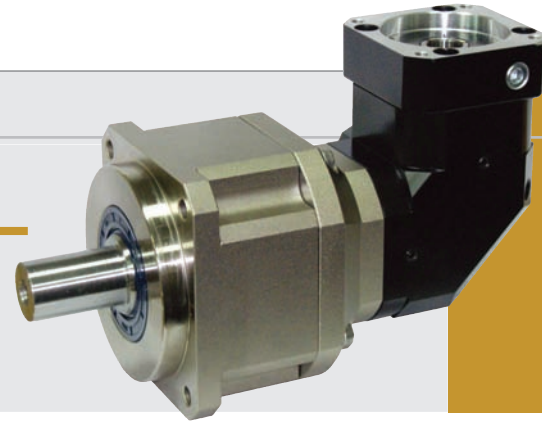
Ratio	44	62	90	120	142
3	0.09	0.36	2.28	6.85	23.5
4	0.09	0.36	2.28	6.85	23.5
5	0.09	0.36	2.28	6.85	23.5
6	0.09	0.36	2.28	6.85	23.5
7	0.09	0.36	2.28	6.85	23.5
8	0.09	0.36	2.28	6.85	23.5
9	0.09	0.36	2.28	6.85	23.5
10	0.09	0.36	2.28	6.85	23.5
12	0.03	0.08	1.88	6.20	21.8
14	0.03	0.08	1.88	6.20	21.8
16	0.03	0.08	1.88	6.20	21.8
18	0.03	0.08	1.88	6.20	21.8
20	0.03	0.08	1.88	6.20	21.8

Model No.	Unit	Ratio	44	62	90	120	142
Rated Output Torque	Nm	3	19	59	165	335	625
		4	16	51	146	300	555
		5	16	48	160	333	618
		6	15	45	151	311	583
		7	15	45	149	309	573
		8	14	43	143	298	553
		9	13	44	145	278	516
		10	14	43	141	294	549
		12	15	45	151	311	583
		14	15	45	149	309	573
		16	14	43	143	298	553
		18	13	44	145	278	516
		20	14	43	141	294	549
Max. Output Touque	Nm	3~20	3 Times of Rated Output Torque				
Rated Input Speed	rpm	3~20	4,000	4,000	4,000	3,000	3,000
Max. Input Speed	rpm	3~20	8,000	8,000	6,000	5,000	4,000
Backlash Ps	arcmin	3~20	-	-	≤2	≤2	≤2
Backlash P0	arcmin	3~20	≤4	≤4	≤4	≤4	≤4
Backlash P1	arcmin	3~20	≤6	≤6	≤6	≤6	≤6
Backlash P2	arcmin	3~20	≤8	≤8	≤8	≤8	≤8
Torsional Rigidity	Nm/arcmin	3~20	3	6	14	27	60
Max. Radial Laod	N	3~20	760	1,180	3,200	6,800	9,300
Max. Axial Load	N	3~20	380	590	1,600	3,400	4,650
Service Life	hr	3~20	20,000(Continuous Operation 4,000hrs)				
Efficiency	%	3~20	≥95%				
Operating Temperature	°C	3~20	-25°C~ +90°C				
Lubrication		3~20	VIGO GREASE RE #0				
Degree of Gearbox Protection		3~20	IP65				
Mounting Position		3~20	ANY				
Nosie Level	dB	3~20	≤65	≤68	≤70	≤72	≤74
Weight ±3%	Kg	3~20	0.99	2.2	6.88	12.5	23.16

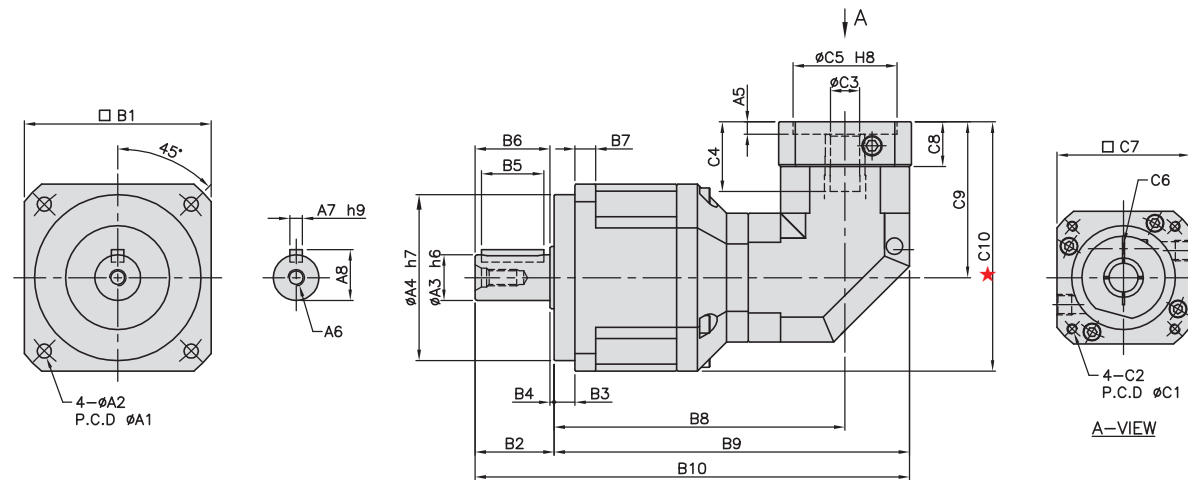
MODEL : KSBL

Double Reduction

RATIO : 15. 20. 25. 30. 35. 40. 50. 60. 70. 80.
90. 100. 120. 140. 160. 180. 200



High Precision Planetary Reducer



■ Mass Moments of Inertia (kg · cm²)

Ratio	62	90	120	142
15	0.09	0.36	2.28	6.85
20	0.09	0.36	2.28	6.85
25	0.09	0.36	2.28	6.85
30	0.09	0.36	2.28	6.85
35	0.09	0.36	2.28	6.85
40	0.09	0.36	2.28	6.85
50	0.09	0.36	2.28	6.85
60	0.09	0.36	2.28	6.85
70	0.09	0.36	2.28	6.85
80	0.09	0.36	2.28	6.85
90	0.09	0.36	2.28	6.85
100	0.09	0.36	2.28	6.85
120	0.03	0.10	1.88	6.20
140	0.03	0.10	1.88	6.20
160	0.03	0.10	1.88	6.20
180	0.03	0.10	1.88	6.20
200	0.03	0.10	1.88	6.20

unit:mm

Model code	62	90	120	142
A A1	70	100	130	165
A2	5.5	6.8	9	11
A3	16	22	32	40
A4	50	80	110	130
A5	6	6	9	10
A6	M5×P0.8	M8×P1.25	M10×P1.5	M12×P1.75
A7	5	6	10	12
A8	18	24.5	35	43
B B1	62	90	120	142
B2	36	48	65	92
B3	7	10	12	15
B4	1	2	3	3
B5	20	30	40	65
B6	28	36	50	74
B7	8	10	12	15
B8	110.5	130	181.6	214.5
B9	132.5	161	226.6	274.5
B10	168.5	209	291.6	366.5
C C1	46, 60, 63, 70	70, 75, 90	90, 100, 115, 145, 165	145, 165
C2	M4, M5	M4, M5, M6	M6, M8, M10	M6, M8, M10
C3	5, 6.5, 6, 8, (11)	6.35, 8, 11 12, 14, (16, 19)	14, 16, 19, (22, 24)	19, 22, 24, (28, 32)
C4	27	33.5	53, 67.5	67, 77
C5	30, 40, 50	50, 60, 70	70, 80, 95, 110, 130	110, 130
C6	M3	M5	M6	M8
C7	46, 55, 60	64, 70, 80	92, 110, 130, 142	130, 150
C8	16	21.5	26.5, 41	35.5, 45.5
C9	61	77	115.3, 129.8	141, 151
C10	92	122	175.3, 189.8	212, 222

Model No.	Unit	Ratio	62	90	120	142
Rated Output Torque	Nm	15	59	165	335	625
		20	51	146	300	555
		25	48	160	333	618
		30	45	151	311	583
		35	45	149	309	573
		40	43	143	298	553
		50	48	160	333	618
		60	45	151	311	583
		70	45	149	309	573
		80	43	143	298	553
		90	44	145	278	516
		100	43	141	294	549
		120	45	151	311	583
		140	45	149	309	573
		160	43	143	298	553
		180	44	145	278	516
200	43	141	294	549		
Max. Output Torque	Nm	15~200	3 Times of Rated Output Torque			
Rated Input Speed	rpm	15~200	4,000	4,000	3,000	3,000
Max. Input Speed	rpm	15~200	8,000	6,000	5,000	4,000
Backlash P _s	arcmin	15~200	-	≤4	≤4	≤4
Backlash P ₀	arcmin	15~200	≤7	≤7	≤7	≤7
Backlash P ₁	arcmin	15~200	≤9	≤9	≤9	≤9
Backlash P ₂	arcmin	15~200	≤12	≤12	≤12	≤12
Torsional Rigidity	Nm/arcmin	15~200	6	14	27	60
Max. Radial Load	N	15~200	1,180	3,200	6,800	9,300
Max. Axial Load	N	15~200	590	1,600	3,400	4,650
Service Life	hr	15~200	20,000(Continuous Operation 4,000hrs)			
Efficiency	%	15~200	≥95%			
Operating Temperature	°C	15~200	-25°C~ +90°C			
Lubrication		15~200	VIGO GREASE RE #0			
Degree of Gearbox Protection		15~200	IP65			
Mounting Position		15~200	ANY			
Nosie Level	dB	15~200	≤65	≤68	≤70	≤72
Weight ±3%	Kg	15~200	2	6.1	12.5	23.2

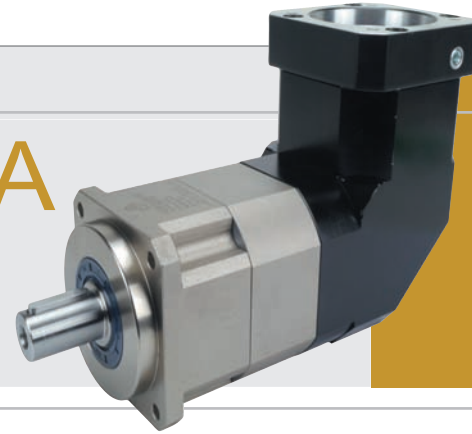
040 * () 안은 주문형입니다. * A5, ★:적용모터에 따라 달라질 수 있습니다.

* 연속운전 사용시 본사와 상담후 선정바랍니다.

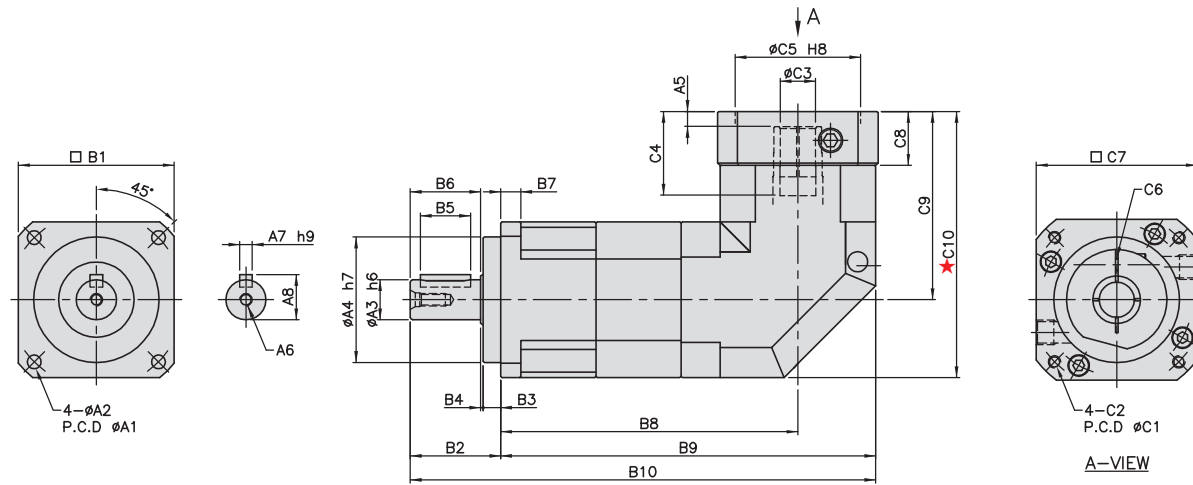
MODEL : KSBL-A

Double Reduction

RATIO : 15. 20. 25. 30. 35. 40. 50. 60. 70. 80.
90. 100. 120. 140. 160. 180. 200



High Precision Planetary Reducer



unit:mm

Model code	44A	62A	90A	120A	142A
A1	50	70	100	130	165
A2	4.5	5.5	6.8	9	11
A3	13	16	22	32	40
A4	35	50	80	110	130
A5	6	6	9	10	10
A6	M4×P0.7	M5×P0.8	M8×P1.25	M10×P1.5	M12×P1.75
A7	5	5	6	10	12
A8	15	18	24.5	35	43
B1	44	62	90	120	142
B2	26	36	48	65	92
B3	5	7	10	12	15
B4	1	1	2	3	3
B5	15	20	30	40	65
B6	20	28	36	50	74
B7	5	8	10	12	15
B8	102	118.3	165.6	204	232
B9	124	149.3	210.6	264	303
B10	150	185.3	258.6	329	395
C1	46, 60, 63, 70	70, 75, 90	70, 90, 145	90, 145, 165	145, 165, 200, 215
C2	M3, M4, M5	M4, M5, M6	M4, M5, M6, M8	M6, M8, M10	M8, M10, M12
C3	5, 6.35 8,(9, 11)	11, 12 14,(16, 19)	14, 16 19(22, 24)	19, 22 24(28, 32)	32, 35(38)
C4	26,	33.5, 41.5	53, 67.5	67	85
C5	30, 40, 50	50, 60, 70	50, 70, 110	70, 110, 130	110, 114.3, 130, 180
C6	M3	M5	M6	M8	M10
C7	46, 55, 60	64, 70, 80	92, 110, 130	130, 150	146, 150, 180, 190
C8	16	21.5	26.5, 41	35.5, 45.5	35.5
C9	61	77	115.3, 129.8	141, 151	174
C10	83	108	160.3, 174.8	201, 211	245

■ Mass Moments of Inertia (kg · cm²)

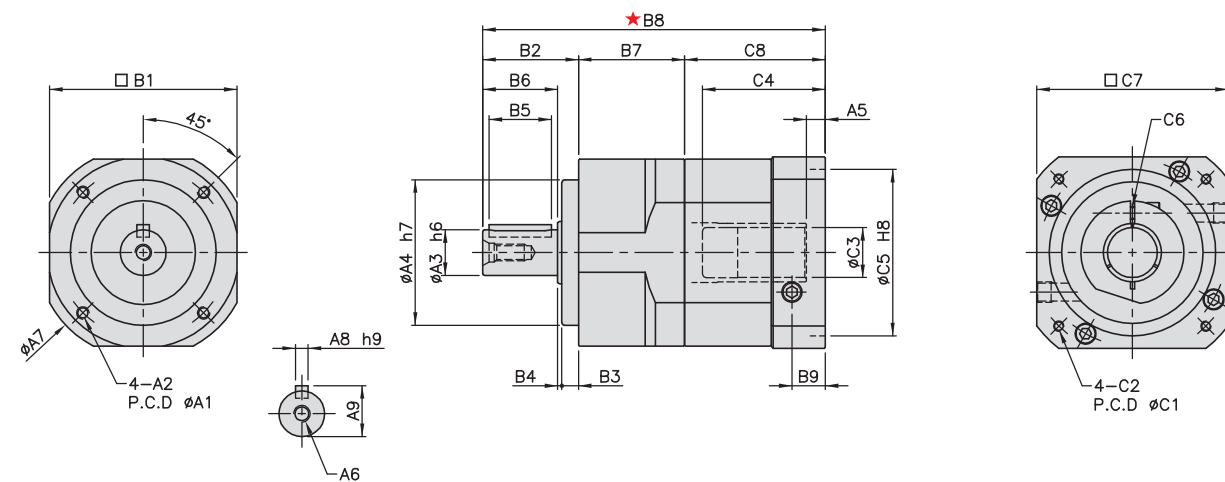
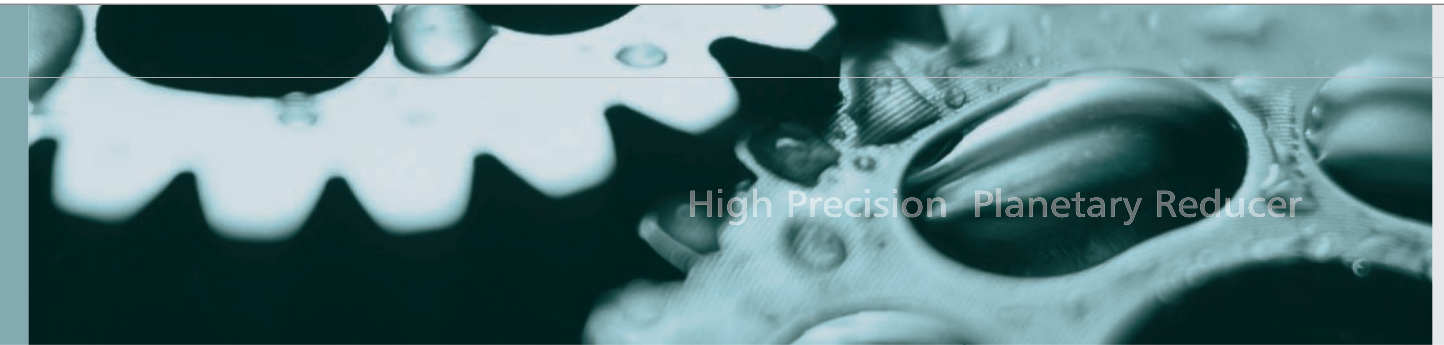
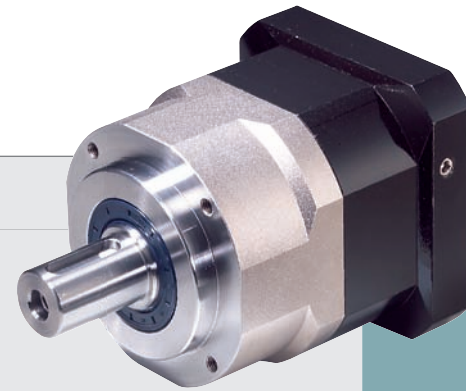
Ratio	44A	62A	90A	120A	142A
15	0.09	0.36	2.28	6.85	23.45
20	0.09	0.36	2.28	6.85	23.45
25	0.09	0.36	2.28	6.85	23.45
30	0.09	0.36	2.28	6.85	23.50
35	0.09	0.36	2.28	6.85	23.50
40	0.09	0.36	2.28	6.85	23.50
50	0.09	0.36	2.28	6.85	23.50
60	0.09	0.36	2.28	6.85	23.50
70	0.09	0.36	2.28	6.85	23.50
80	0.09	0.36	2.28	6.85	23.50
90	0.09	0.36	2.28	6.85	23.50
100	0.09	0.36	2.28	6.85	23.50
120	0.03	0.08	1.88	6.20	21.80
140	0.03	0.08	1.88	6.20	21.80
160	0.03	0.08	1.88	6.20	21.80
180	0.03	0.08	1.88	6.20	21.80
200	0.03	0.08	1.88	6.20	21.80

Model No.	Unit	Ratio	44A	62A	90A	120A	142A
Rated Output Torque	Nm	15	19	59	165	335	625
		20	16	51	146	300	555
		25	16	48	160	333	618
		30	15	45	151	311	583
		35	15	45	149	309	573
		40	14	43	143	298	553
		50	16	48	160	333	618
		60	15	45	151	311	583
		70	15	45	149	309	573
		80	14	43	143	298	553
		90	13	44	145	278	516
		100	14	43	141	294	549
		120	15	45	151	311	583
		140	15	45	149	309	573
		160	14	43	143	298	553
180	13	44	145	278	516		
200	14	43	141	294	549		
Max. Output Torque	Nm	15~200	3 Times of Rated Output Torque				
Rated Input Speed	rpm	15~200	4,000	4,000	4,000	3,000	3,000
Max. Input Speed	rpm	15~200	8,000	8,000	6,000	5,000	4,000
Backlash P _s	arcmin	15~200	-	-	≤4	≤4	≤4
Backlash P ₀	arcmin	15~200	≤7	≤7	≤7	≤7	≤7
Backlash P ₁	arcmin	15~200	≤9	≤9	≤9	≤9	≤9
Backlash P ₂	arcmin	15~200	≤12	≤12	≤12	≤12	≤12
Torsional Rigidity	Nm/arcmin	15~200	3	6	14	27	60
Max. Radial Load	N	15~200	760	1,180	3,200	6,800	9,300
Max. Axial Load	N	15~200	380	590	1,600	3,400	4,650
Service Life	hr	15~200	20,000(Continuous Operation 4,000hrs)				
Efficiency	%	15~200	≥94%				
Operating Temperature	°C	15~200	-25°C ~ +90°C				
Lubrication		15~200	VIGO GREASE RE #0				
Degree of Gearbox Protection		15~200	IP65				
Mounting Position		15~200	ANY				
Noise Level	dB	15~200	≤65	≤68	≤70	≤72	≤74
Weight ±3%	Kg	15~200	1.5	3	8.15	13.9	29.4

MODEL : KSE

Single Reduction

RATIO : 3.4.5.6.7.8.9.10



unit:mm

Model code	44	62	90	120	142	180	220
A							
A1	44	62	82	110	140	184	218
A2	M4×P0.7	M5×P0.8	M6×P1.0	M8×P1.25	M10×P1.5	M12×P1.75	M16×P2.0
A3	13	16	22	32	40	55	75
A4	35	50	70	90	120	160	180
A5	5	6	9	10	10	11.5	12.5
A6	M4×P0.7	M5×P0.8	M8×P1.25	M10×P1.5	M12×P1.75	M14×P2.0	M16×P2.0
A7	50	70	102	134	166	215	252
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	46	65	92	106	139
B3	5	7	8	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	31.5	38	51	61	70	85	93
B8	95	115, 123	164.5	205	260.5	323.5	367
B9	9	11.5	16	19.5	20	23.5	23.5
C							
C1	46, 60 63, 70	70 75, 90	70, 90, 100 115, 145, 165	90, 100 115, 145, 165	145, 165 200, 215	200, 215 235, 265, 300	215, 235 265, 300
C2	M4, M5	M4, M5, M6	M6, M8, M10	M6, M8, M10	M8, M12	M12, M16	M12, M16
C3	5, 6.35 8,(11)	6.35, 8, 11 12, 14,(16, 19)	14, 16 19,(22, 24)	19, 22 24,(28, 32)	22, 24, 28 32, 35,(38)	38, 42, 48, 55	42, 48, 55
C4	26	33.5, 41.5	59	67	84.5	114.5	117.5
C5	30, 40, 50	50, 60, 70	50, 70, 80 95, 110, 130	70, 80 95, 110, 130	110, 114.3 130, 180	114.3, 180 200, 230	180, 200 230, 250
C6	M3	M5	M6	M8	M10	M10	M10
C7	46, 55, 60	64, 70, 80	92, 110 130, 142	130, 150	146, 150 180, 190	182, 200 220, 250, 265	220, 250, 265
C8	37.5	41, 49	67.5	79	98.5	132.5	135.5

044 * () 안은 주문형입니다. * A5, ★:적용모터에 따라 달라질 수 있습니다.

Mass Moments of Inertia (kg · cm²)

Ratio	44	62	90	120	142	180	220
3	0.03	0.16	0.61	3.25	9.21	28.98	69.61
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

Model No.	Unit	Ratio	44	62	90	120	142	180	220		
Rated Output Torque	Nm	3	19	59	165	335	625	1206	2030		
		4	16	51	146	300	555	1069	1804		
		5	16	48	160	333	618	1189	2010		
		6	15	45	151	311	583	1118	1911		
		7	15	45	149	309	573	1108	1870		
		8	14	43	143	298	553	1070	1824		
		9	13	44	145	278	516	993	1694		
		10	14	43	141	294	549	1059	1779		
		Max. Output Torque	Nm	3~10	3 Times of Rated Output Torque						
		Rated Input Speed	rpm	3~10	5,000	5,000	4,000	4,000	3,000	3,000	2,000
Max. Input Speed	rpm	3~10	10,000	10,000	8,000	8,000	6,000	6,000	4,000		
Backlash P5	arc min	3~10			≤1	≤1	≤1	≤1	≤1		
Backlash P0	arc min	3~10	≤3	≤3	≤3	≤3	≤3	≤3	≤3		
Backlash P1	arc min	3~10	≤5	≤5	≤5	≤5	≤5	≤5	≤5		
Torsional Rigidity	Nm/arc min	3~10	3	6	14	27	60	140	240		
Max. Radial Load	N	3~10	760	1,180	3,200	6,800	9,300	15,600	51,000		
Max. Axial Load	N	3~10	380	590	1,600	3,400	4,650	7,800	25,500		
Service Life	hr	3~10	20,000 (4,000 / Continuous Operation)								
Efficiency	%	3~10	≥97								
Operating Temperature	°C	3~10	-25°C ~ +90°C								
Lubrication		3~10	VIGO GREASE RE #0								
Degree of Gearbox Protection		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	0.51	1.23	3.7	7.5	13.9	28.5	38.6		

* 연속운전 사용시 본사와 상담후 선정바랍니다.

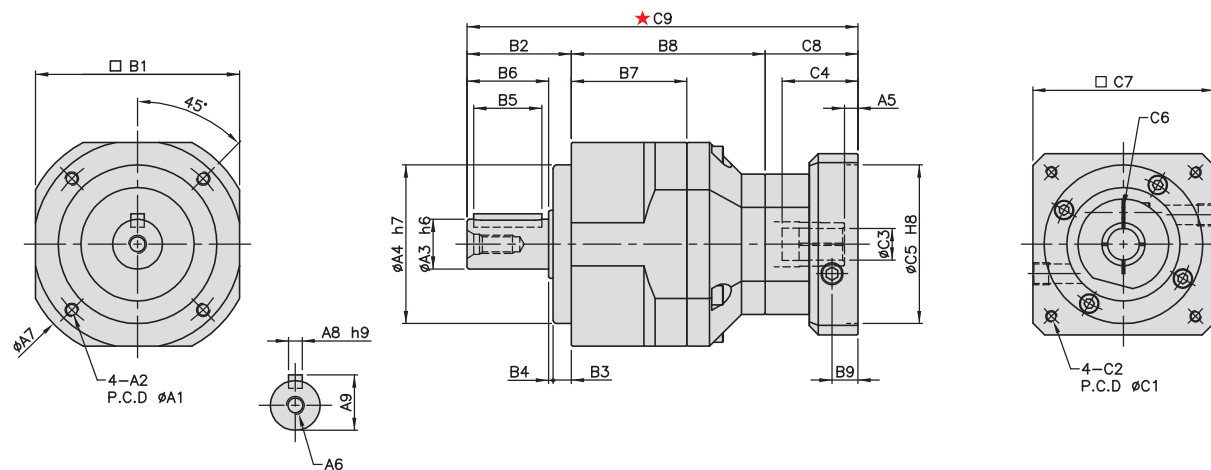
MODEL : KSE

Double Reduction

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



High Precision Planetary Reducer



Mass Moments of Inertia (kg · cm²)

Ratio	62	90	120	142	180	220
15	0.03	0.14	0.46	2.63	7.3	22.79
20	0.03	0.14	0.46	2.63	7.3	22.79
25	0.03	0.14	0.46	2.63	7.1	22.79
30	0.03	0.14	0.46	2.43	7.1	22.59
35	0.03	0.14	0.44	2.43	7.1	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

unit:mm

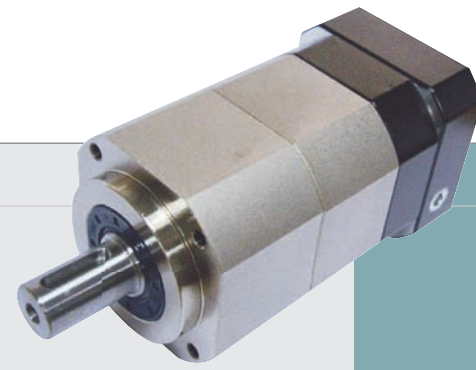
Model code	62	90	120	142	180	220
A A1	62	82	110	140	184	218
A2	M5×P0.8	M6×P1.0	M8×P1.25	M10×P1.5	M12×P1.75	M16×P2.0
A3	16	22	32	40	55	75
A4	50	70	90	120	160	180
A5	5	6	9, 23.5	10, 20	10	11.5
A6	M5×P0.8	M8×P1.25	M10×P1.5	M12×P1.75	M14×P2.0	M16×P2.0
A7	70	102	134	166	215	252
A8	5	6	10	12	16	20
A9	18	24.5	35	43	59	79.5
B B1	62	90	120	142	180	220
B2	36	46	65	92	106	139
B3	7	8	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	38	51	61	70	85	93
B8	66	85.5	108.5	127.5	154	175
B9	9	11.5	16	19.5	20	23.5
C C1	46, 60, 63, 70	70, 75, 90	70, 90, 100 115, 145, 165	90, 100 115, 145, 165	145, 165 200, 215	200, 215 235, 265, 300
C2	M4, M5	M4, M5, M6	M6, M8, M10	M6, M8, M10	M8, M12	M12, M16
C3	5, 6.35, 8, (11)	6.35, 8, 11 12, 14, (16, 19)	14, 16 19, (22, 24)	19, 22 24, (28, 32)	22, 24, 28 32, 35, (38)	38, 42, 48, 55
C4	26	33.5, 41.5	59	67	84.5	114.5
C5	30, 40, 50	50, 60, 70	50, 70, 80 95, 110, 130	70, 80 95, 110, 130	110, 114.3 130, 180	114.3, 180 200, 230
C6	M3	M5	M6	M8	M10	M10
C7	46, 55, 60	64, 70, 80	92, 110 130, 142	130, 150	146, 150 180, 190	182, 200 220, 250, 265
C8	37.5	41, 49	67.5, 82	79, 89	98.5	132.5
C9	139.5	172.5, 180.5	241	298.5	358.5	446.5

Model No.	Unit	Ratio	62	90	120	142	180	220
Rated Output Torque	Nm	15	59	165	335	625	1206	2030
		20	51	146	300	555	1069	1804
		25	48	160	333	618	1189	2010
		30	45	151	311	583	1118	1911
		35	45	149	309	573	1108	1870
		40	43	143	298	553	1070	1824
		50	48	160	333	618	1189	2010
		60	45	151	311	583	1118	1911
		70	45	149	309	573	1108	1870
		80	43	143	298	553	1070	1824
		90	44	145	278	516	993	1694
100	43	141	294	549	1059	1779		
Max. Output Torque	Nm	15~100	3 Times of Rated Output Torque					
Rated Input Speed	rpm	15~100	5,000	4,000	4,000	3,000	3,000	2,000
Max. Input Speed	rpm	15~100	10,000	8,000	8,000	6,000	6,000	4,000
Backlash P5	arc min	15~100	≤3	≤3	≤3	≤3	≤3	≤3
Backlash P0	arc min	15~100	≤5	≤5	≤5	≤5	≤5	≤5
Backlash P1	arc min	15~100	≤7	≤7	≤7	≤7	≤7	≤7
Torsional Rigidity	Nm/arc min	15~100	6	14	27	60	140	240
Max. Radial Load	N	15~100	1,180	3,200	6,800	9,300	15,600	51,000
Max. Axial Load	N	15~100	590	1,600	3,400	4,650	7,800	25,500
Service Life	hr	15~100	20,000 (4,000 / Continuous Operation)					
Efficiency	%	15~100	≥94%					
Operating Temperature	°C	15~100	-25°C ~ +90°C					
Lubrication		15~100	VIGO GREASE RE #0					
Degree of Gearbox Protection		15~100	IP65					
Mounting Position		15~100	Any					
Noise Level	dB	15~100	≤58	≤60	≤63	≤65	≤67	≤70
Weight ±3%	Kg	15~100	1.62	4.3	8.8	19.5	38.1	53.6

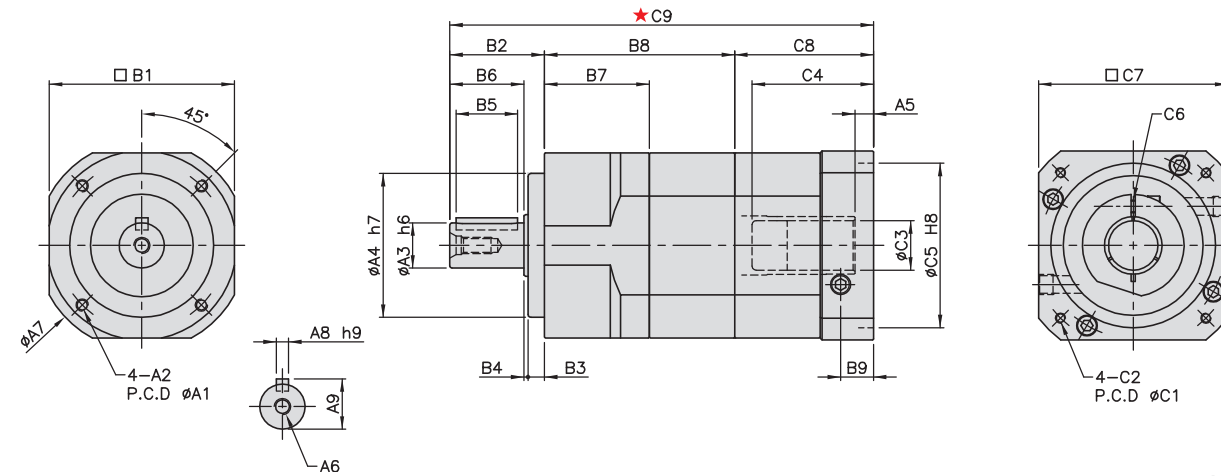
MODEL : KSE-A

Double Reduction

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



High Precision Planetary Reducer



unit:mm

Model code	44A	62A	90A	120A	142A	180A	220A
A							
A1	44	62	82	110	140	184	218
A2	M4×P0.7	M5×P0.8	M6×P1.0	M8×P1.25	M10×P1.5	M12×P1.75	M16×P2.0
A3	13	16	22	32	40	55	75
A4	35	50	70	90	120	160	180
A5	5	6	9, 23.5	10, 20	10	11.5	12.5
A6	M4×P0.7	M5×P0.8	M8×P1.25	M10×P1.5	M12×P1.75	M14×P2.0	M16×P2.0
A7	50	70	102	134	166	215	252
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	46	65	92	106	139
B3	5	7	8	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	31.5	38	51	61	70	85	93
B8	57.5	71.8	94.5	117	136.5	166	186
B9	9	11.5	16, 30.5	19.5, 27.5	20	23.5	23.5
C							
C1	46, 60, 63, 70	70, 75, 90	70, 90, 100 115, 145, 165	90, 100 115, 145, 165	145, 165 200, 215	200, 215 235, 265, 300	215, 235 265, 300
C2	M4, M5	M4, M5, M6	M6, M8, M10	M6, M8, M10	M8, M12	M12, M16	M12, M16
C3	5, 6.35, 8, (11)	6.35, 8, 11 12, 14, (16, 19)	14, 16, 19 (22, 24)	19, 22, 24 (28, 32)	22, 24, 28 32, 35, (38)	38, 42 48, 55	42, 48, 55
C4	26	33.5, 41.5	59	67	84.5	114.5	117.5
C5	30, 40, 50	50, 60, 70	50, 70, 80 95, 110, 130	70, 80 95, 110, 130	110, 114.3 130, 180	114.3, 180 200, 230	180, 200 230, 250
C6	M3	M5	M6	M8	M10	M10	M10
C7	46, 55, 60	64, 70, 80	92, 110 130, 142	130, 150	146, 150 180, 190	182, 200 220, 250, 265	220, 250, 265
C8	37.5	41, 49	67.5	79, 89	98.5	132.5	135.5
C9	121	148.8, 156.8	208	261	327	404.5	460.5

048 * () 안은 주문형입니다. * A5, ★: 적용모터에 따라 달라질 수 있습니다.

Mass Moments of Inertia (kg · cm²)

Ratio	44A	62A	90A	120A	142A	180A	220A
15	0.03	0.03	0.14	0.46	2.63	7.3	22.79
20	0.03	0.03	0.14	0.46	2.63	7.3	22.79
25	0.03	0.03	0.14	0.46	2.63	7.1	22.79
30	0.03	0.03	0.14	0.46	2.43	7.1	22.59
35	0.03	0.03	0.14	0.44	2.43	7.1	22.59
40	0.03	0.03	0.14	0.44	2.43	6.92	22.59
50	0.03	0.03	0.14	0.44	2.43	6.92	22.59
60	0.03	0.03	0.14	0.43	2.39	6.72	21.83
70	0.03	0.03	0.14	0.43	2.39	6.72	21.83
80	0.03	0.03	0.14	0.43	2.39	6.72	21.83
90	0.03	0.03	0.14	0.40	2.39	6.72	21.60
100	0.03	0.03	0.14	0.40	2.39	6.72	21.60

Model No.	Unit	Ratio	44A	62A	90A	120A	142A	180A	220A		
Rated Output Torque	Nm	15	19	59	165	335	625	1206	2030		
		20	16	51	146	300	555	1069	1804		
		25	16	48	160	333	618	1189	2010		
		30	15	45	151	311	583	1118	1911		
		35	15	45	149	309	573	1108	1870		
		40	14	43	143	298	553	1070	1824		
		50	16	48	160	333	618	1189	2010		
		60	15	45	151	311	583	1118	1911		
		70	15	45	149	309	573	1108	1870		
		80	14	43	143	298	553	1070	1824		
Max. Output Torque	Nm	15~100	3 Times of Rated Output Torque								
		Rated Input Speed	rpm	15~100	5,000	5,000	4,000	4,000	3,000	3,000	2,000
		Max. Input Speed	rpm	15~100	10,000	10,000	8,000	8,000	6,000	6,000	4,000
		Backlash P5	arc min	15~100	≤4	≤4	≤4	≤4	≤4	≤4	≤4
		Backlash P0	arc min	15~100	≤8	≤8	≤8	≤8	≤8	≤8	≤8
		Backlash P1	arc min	15~100	≤12	≤12	≤12	≤12	≤12	≤12	≤12
		Torsional Rigidity	Nm/arc min	15~100	3	6	14	27	60	140	240
		Max. Radial Load	N	15~100	760	1,180	3,200	6,800	9,300	15,600	51,000
		Max. Axial Load	N	15~100	380	590	1,600	3,400	4,650	7,800	25,500
		Service Life	hr	15~100	20,000 (4,000 / Continuous Operation)						
Efficiency	%	15~100	≥94%								
Operating Temperature	°C	15~100	-25°C ~ +90°C								
Lubrication		15~100	VIGO GREASE RE #0								
Degree of Gearbox Protection		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	0.7	1.8	5.1	11.8	21.5	41.3	56.8		

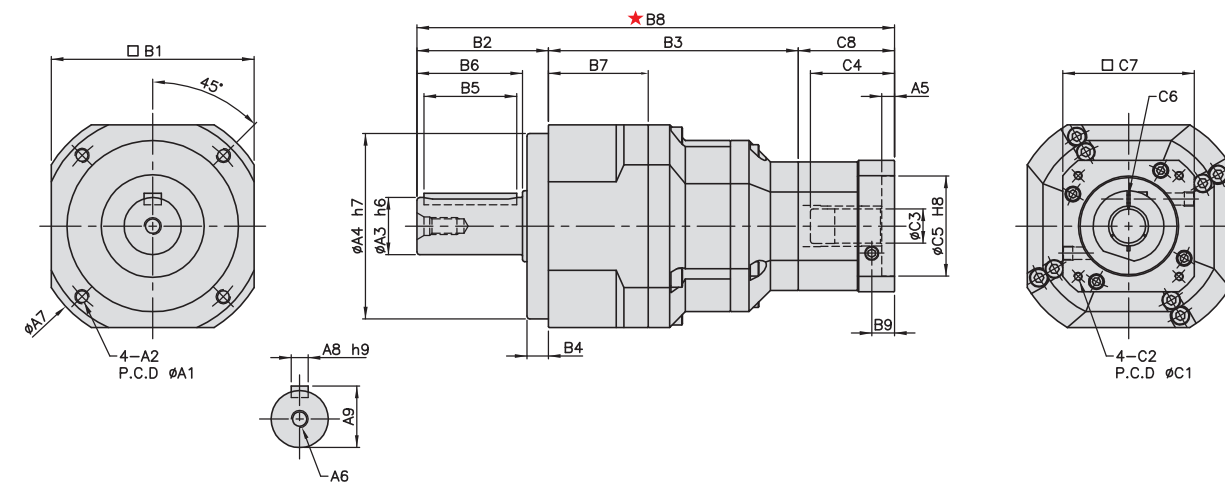
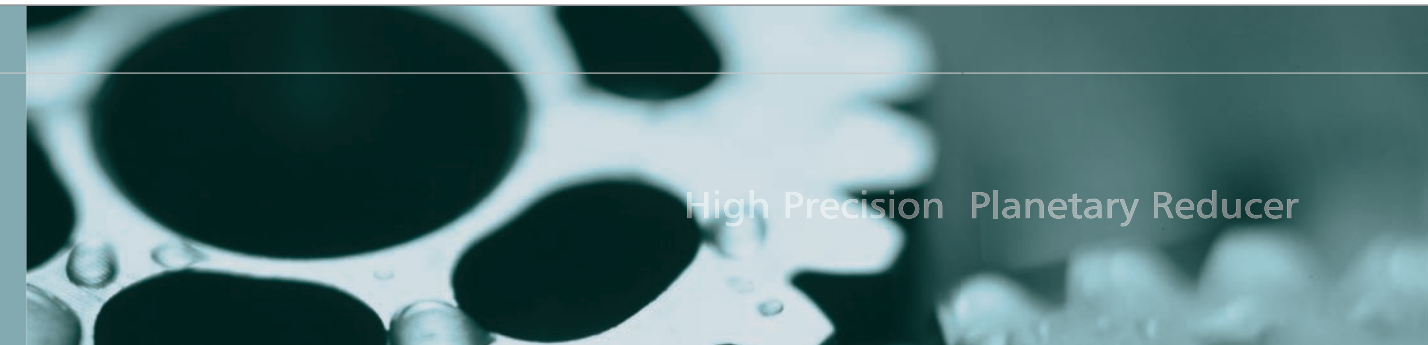
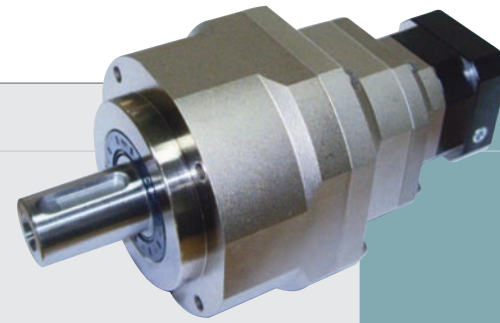
* 연속운전 사용시 본사와 상담후 선정바랍니다.

MODEL : KSE

Triple Reduction

RATIO : 125.150.175.200.250.300.350.

400.450.500.600.700.800.900.1000



unit:mm

Model code	90	120	142	180	220
A					
A1	82	110	140	184	218
A2	M6×P1.0	M8×P1.25	M10×P1.5	M12×P1.75	M16×P2.0
A3	22	32	40	55	75
A4	70	90	120	160	180
A5	5	6	9	10	10
A6	M8×P1.25	M10×P1.5	M12×P1.75	M14×P2.0	M16×P2.0
A7	102	134	166	215	252
A8	6	10	12	16	20
A9	24.5	35	43	59	79.5
B					
B1	90	120	142	180	220
B2	46	65	92	106	139
B3	113.5	143	175	211.5	244
B4	8	12	15	20	30
B5	30	40	65	70	90
B6	36	50	74	82	104
B7	51	61	70	85	93
B8	197	249, 257	334.5	396.5	481.5
B9	9	11.5	16, 30.5	19.5, 27.5	20
C					
C1	46, 60, 63, 70	70, 75, 90	70, 90, 100 115, 145, 165	90, 100 115, 145, 165	145, 165 200, 215
C2	M4, M5	M4, M5, M6	M6, M8, M10	M6, M8, M10	M8, M12
C3	5, 6.35, 8,(11)	6.35, 8, 11 12, 14,(16, 19)	14, 16 19,(22, 24)	19, 22 24,(28, 32)	22, 24, 28 32, 35,(38)
C4	26	33.5, 41.5	59	67	84.5
C5	30, 40, 50	50, 60, 70	50, 70, 80 95, 110, 130	70, 80 95, 110, 130	110, 114.3 130, 180
C6	M3	M5	M6	M8	M10
C7	46, 55, 60	64, 70, 80	92, 110 130, 142	130, 150	146, 150 180, 190
C8	37.5	41, 49	67.5	79	98.5

050 * () 안은 주문형입니다. * A5, ★:적용모터에 따라 달라질 수 있습니다.

Mass Moments of Inertia (Kg · cm²)

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

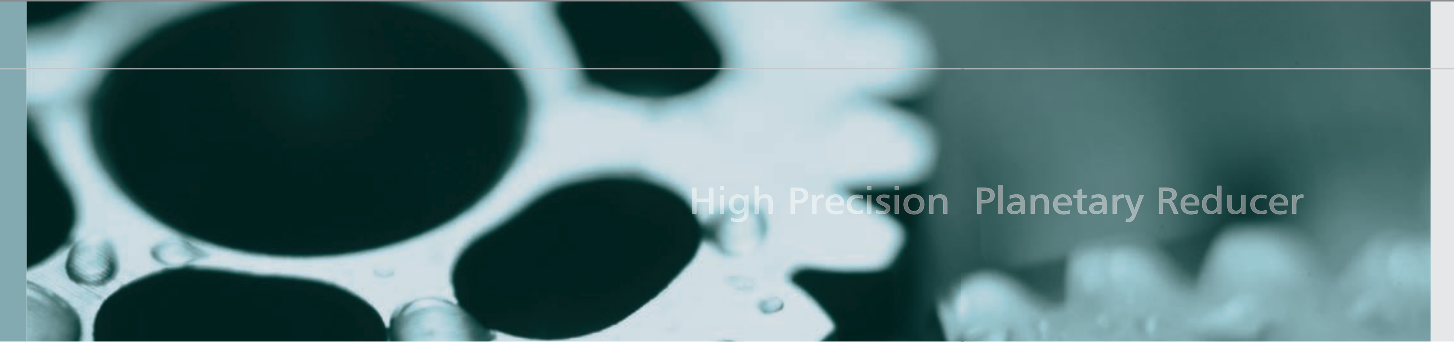
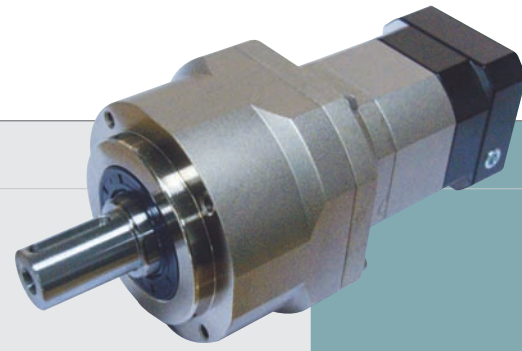
Model No.	Unit	Ratio	90	120	142	180	220
Rated Output Torque	Nm	125	160	333	618	1189	2010
		150	165	335	625	1206	2030
		175	149	309	573	1108	1870
		200	146	300	555	1069	1804
		250	160	333	618	1189	2010
		300	151	311	583	1118	1911
		350	149	309	573	1108	1870
		400	143	298	553	1070	1824
		450	145	278	516	993	1694
		500	160	333	618	1189	2010
		600	151	311	583	1118	1911
		700	149	309	573	1108	1870
		800	143	298	553	1070	1824
900	145	278	516	993	1694		
1000	141	294	549	1059	1779		
Max. Output Torque	Nm	125~1000	3 Times of Rated Output Torque				
Rated Input Speed	rpm	125~1000	4,000	4,000	3,000	3,000	2,000
Max. Input Speed	rpm	125~1000	8,000	8,000	6,000	6,000	4,000
Backlash PS	arc min	125~1000	≤5	≤5	≤5	≤5	≤5
Backlash P0	arc min	125~1000	≤7	≤7	≤7	≤7	≤7
Backlash P1	arc min	125~1000	≤9	≤9	≤9	≤9	≤9
Torsional Rigidity	Nm/arc min	125~1000	14	27	60	140	240
Max. Radial Load	N	125~1000	3,200	6,800	9,300	15,600	51,000
Max. Axial Load	N	125~1000	1,600	3,400	4,650	7,800	25,500
Service Life	hr	125~1000	20,000 (4,000 / Continuous Operation)				
Efficiency	%	125~1000	≥90%				
Operating Temperature	°C	125~1000	-25°C ~ +90°C				
Lubrication		125~1000	VIGO GREASE RE #0				
Degree of Gearbox Protection		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	12.4	24.5	49.3	78.1

* 연속운전 사용시 본사와 상담후 선정바랍니다.

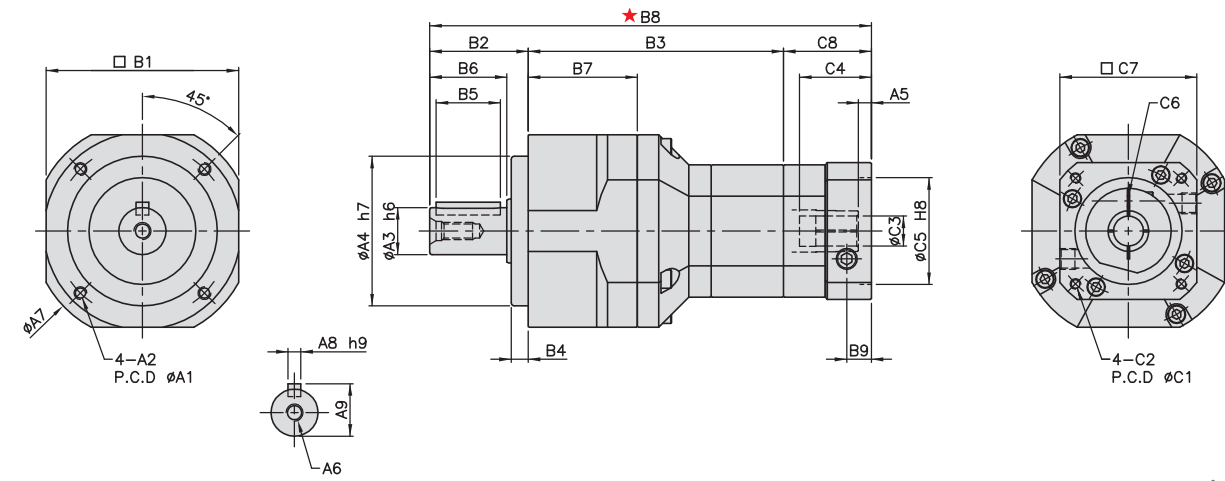
MODEL : KSE-A

Triple Reduction

RATIO : 125.150.175.200.250.300.350.
400.450.500.600.700.800.900.1000



High Precision Planetary Reducer



unit:mm

Model code	62A	90A	120A	142A	180A	220A
A						
A1	62	82	110	140	184	218
A2	M5×P0.8	M6×P1.0	M8×P1.25	M10×P1.5	M12×P1.75	M16×P2.0
A3	16	22	32	40	55	75
A4	50	70	90	120	160	180
A5	5	6.5	9, 23.5	10, 20	10	11.5
A6	M5×P0.8	M8×P1.25	M10×P1.5	M12×P1.75	M14×P2.0	M16×P2.0
A7	70	102	134	166	215	252
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	46	65	92	106	139
B3	92	119.5	152	183.5	220.5	256
B4	7	8	12	15	20	30
B5	20	30	40	65	70	90
B6	28	36	50	74	82	104
B7	38	51	61	70	85	93
B8	165.5	206.5, 214.5	284.5	354.5	425	527.5
B9	9	11.5	16, 30.5	19.5	20	23.5
C						
C1	46, 60, 63, 70	70, 75, 90	70, 90, 100 115, 145, 165	90, 100 115, 145, 165	145, 165 200, 215	200, 215 235, 265, 300
C2	M4, M5	M4, M5, M6	M6, M8, M10	M6, M8, M10	M8, M12	M12, M16
C3	5, 6.35, 8, (11)	6.35, 8, 11 12, 14, (16, 19)	14, 16 19, (22, 24)	19, 22, 24, (28, 32)	22, 24, 28 32, 35, (38)	38, 42, 48, 55
C4	26	33.5, 41.5	59	67	84.5	114.5
C5	30, 40, 50	50, 60, 70	50, 70, 80 95, 110, 130	70, 80 95, 110, 130	110, 114.3 130, 180	114.3, 180 200, 230
C6	M3	M5	M6	M8	M10	M10
C7	46, 55, 60	64, 70, 80	92, 110 130, 142	130, 150	146, 150 180, 190	182, 200 220, 250, 265
C8	37.5	41, 49	67.5	79	98.5	132.5

052 * () 안은 주문형입니다. * A5, ★: 적용모터에 따라 달라질 수 있습니다.

■ Mass Moments of Inertia (Kg · cm²)

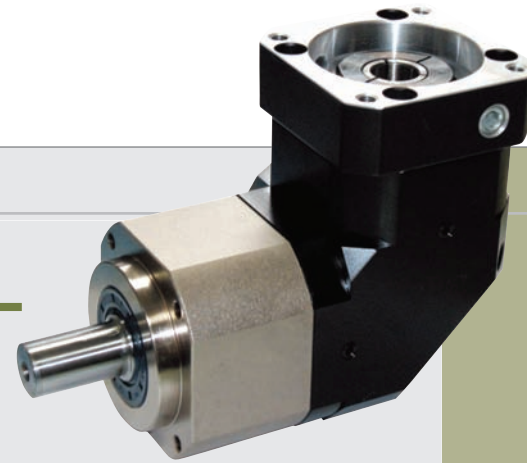
Ratio	62 A	90A	120A	142A	180A	220A
125	0.01	0.01	0.04	0.71	1.42	3.29
150	0.01	0.01	0.04	0.51	0.92	2.15
175	0.01	0.01	0.04	0.40	0.83	1.26
200	0.01	0.01	0.04	0.21	0.65	0.98
250	0.01	0.01	0.04	0.11	0.52	0.82
300	0.01	0.01	0.04	0.09	0.21	0.82
350	0.01	0.01	0.04	0.09	0.21	0.82
400	0.01	0.01	0.04	0.09	0.21	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

Model No.	Unit	Ratio	62A	90A	120A	142A	180A	220A
Rated Output Torque	Nm	125	48	160	333	618	1189	2010
		150	59	165	335	625	1206	2030
		175	45	149	309	573	1108	1870
		200	51	146	300	555	1069	1804
		250	48	160	333	618	1189	2010
		300	45	151	311	583	1118	1911
		350	45	149	309	573	1108	1870
		400	43	143	298	553	1070	1824
		450	44	145	278	516	993	1694
		500	48	160	333	618	1189	2010
		600	45	151	311	583	1118	1911
		700	45	149	309	573	1108	1870
		800	43	143	298	553	1070	1824
900	44	145	278	516	993	1694		
1000	43	141	294	549	1059	1779		
Max. Output Torque	Nm	125~1000	3 Times of Rated Output Torque					
Rated Input Speed	rpm	125~1000	5,000	4,000	4,000	3,000	3,000	2,000
Max. Input Speed	rpm	125~1000	10,000	8,000	8,000	6,000	6,000	4,000
Backlash PS	arc min	125~1000			≤5	≤5	≤5	≤5
Backlash P0	arc min	125~1000	≤7	≤7	≤7	≤7	≤7	≤7
Backlash P1	arc min	125~1000	≤9	≤9	≤9	≤9	≤9	≤9
Torsional Rigidity	Nm/arc min	125~1000	6	14	27	60	140	240
Max. Radial Load	N	125~1000	1,180	3,200	6,800	9,300	15,600	51,000
Max. Axial Load	N	125~1000	590	1,600	3,400	4,650	7,800	25,500
Service Life	hr	125~1000	20,000 (4,000 / Continuous Operation)					
Efficiency	%	125~1000	≥90%					
Operating Temperature	°C	125~1000	-25°C ~ +90°C					
Lubrication		125~1000	VIGO GREASE RE #0					
Degree of Gearbox Protection		125~1000	IP65					
Mounting Position		125~1000	Any					
Noise Level	dB	125~1000	≤58	≤60	≤63	≤65	≤67	≤70
Weight ±3%	Kg	125~1000	1.91	5.3	12.5	25	51.5	81.2

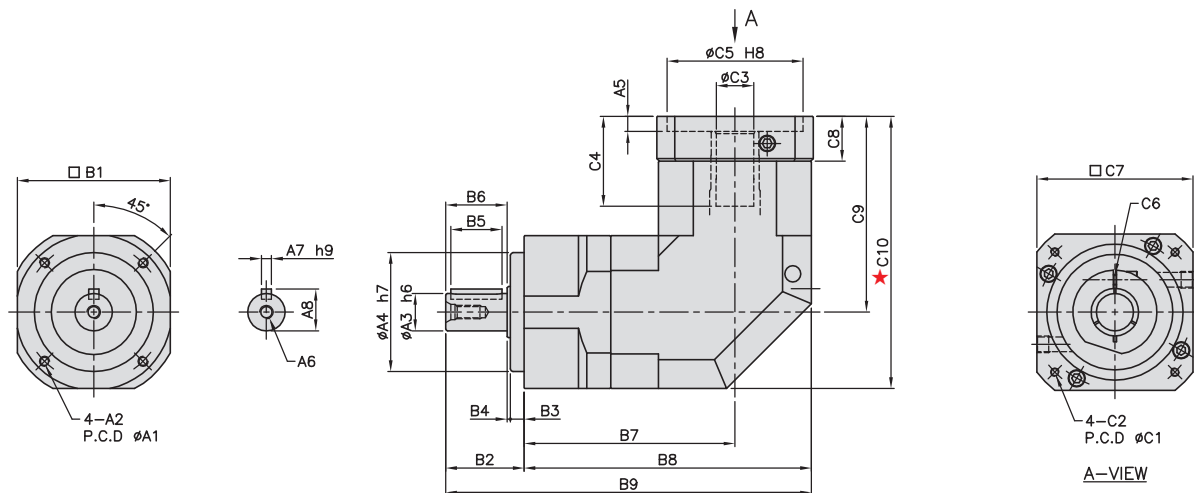
* 연속운전 사용시 본사와 상담후 선정바랍니다.

MODEL : KSEL

Single Reduction
RATIO : 3.4.5.6.7.8.9.10.12.14.16.18.20



High Precision Planetary Reducer



unit:mm

Model code	44	62	90	120	142
A					
A1	44	62	82	110	140
A2	M4×P0.7	M5×P0.8	M6×P1.0	M8×P1.25	M10×P1.5
A3	13	16	22	32	40
A4	35	50	70	90	120
A5	6	6	9, 23.5	10, 20	10
A6	M4×P0.7	M5×P0.8	M8×P1.25	M10×P1.5	M12×P1.75
A7	5	5	6	10	12
A8	15	18	24.5	35	43
B					
B1	44	62	90	120	142
B2	26	36	46	65	92
B3	5	7	8	12	15
B4	1	1	2	3	3
B5	15	20	30	40	65
B6	20	28	36	50	74
B7	76	84.5	124.1	148	165.3
B8	98	115.5	169.1	208	236.5
B9	124	151.5	215.5	273	328.5
C					
C1	46, 60, 63, 70	70, 75, 90	70, 90, 100, 145	90, 145, 165	145, 165, 200, 215
C2	M3, M4, M5	M4, M5, M6	M4, M5, M6, M8	M6, M8, M10	M8, M10, M12
C3	3, 6.35, 8, (9, 11)	11, 12, 14, (16, 19)	14, 16, 19, (22, 24)	19, 22, 24, (28, 32)	32, 35, (38)
C4	27	33.5, 41.5	53, 67.5	67, 77	85
C5	30, 40, 50	50, 60, 70	50, 70, 110	70, 110, 130	110, 114.3, 130, 180
C6	M3	M5	M6	M8	M10
C7	46, 55, 60	64, 70, 80	92, 110, 130	130, 150	146, 150, 180, 190
C8	16	21.5	26.5, 41	35.5, 45.5	35.5
C9	61	77	115.3, 129.8	141, 151	174
C10	83	108	160.3, 174.8	201, 211	245

■ Mass Moments of Inertia (kg · cm²)

Ratio	44	62	90	120	142
3	0.09	0.36	2.28	6.85	23.5
4	0.09	0.36	2.28	6.85	23.5
5	0.09	0.36	2.28	6.85	23.5
6	0.09	0.36	2.28	6.85	23.5
7	0.09	0.36	2.28	6.85	23.5
8	0.09	0.36	2.28	6.85	23.5
9	0.09	0.36	2.28	6.85	23.5
10	0.09	0.36	2.28	6.85	23.5
12	0.03	0.08	1.88	6.20	21.8
14	0.03	0.08	1.88	6.20	21.8
16	0.03	0.08	1.88	6.20	21.8
18	0.03	0.08	1.88	6.20	21.8
20	0.03	0.08	1.88	6.20	21.8

Model No.	Unit	Ratio	44	62	90	120	142
Rated Output Torque	Nm	3	19	59	165	335	625
		4	16	51	146	300	555
		5	16	48	160	333	618
		6	15	45	151	311	583
		7	15	45	149	309	573
		8	14	43	143	298	553
		9	13	44	145	278	516
		10	14	43	141	311	583
		12	15	45	149	309	573
		14	15	43	143	298	553
		16	14	43	143	298	553
		18	13	44	145	278	516
		20	14	43	141	294	549
		Max. Output Torque	Nm	3~20	3 Times of Rated Output Torque		
Rated Input Speed	rpm	3~20	4,000	4,000	4,000	3,000	3,000
Max. Input Speed	rpm	3~20	8,000	8,000	6,000	5,000	4,000
Backlash Ps	arcmin	3~20	-	-	≤2	≤2	≤2
Backlash P0	arcmin	3~20	≤4	≤4	≤4	≤4	≤4
Backlash P1	arcmin	3~20	≤6	≤6	≤6	≤6	≤6
Backlash P2	arcmin	3~20	≤8	≤8	≤8	≤8	≤8
Torsional Rigidity	Nm/arcmin	3~20	3	6	14	27	60
Max. Radial Load	N	3~20	760	1,180	3,200	6,800	9,300
Max. Axial Load	N	3~20	380	590	1,600	3,400	4,650
Service Life	hr	3~20	20,000(Continuous Operation 4,000 hrs)				
Efficiency	%	3~20	≥95%				
Operating Temperature	°C	3~20	-25°C ~ +90°C				
Lubrication		3~20	VIGO GREASE RE#0				
Degree of Gearbox Protection		3~20	IP65				
Mounting Position		3~20	ANY				
Noise Level	dB	3~20	≤65	≤68	≤70	≤72	≤74
Weight ±3%	Kg	3~20	0.88	2	6.58	13	22

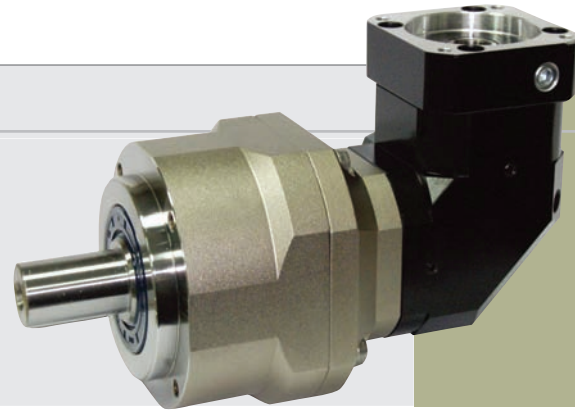
054 * () 안은 주문형입니다. * A5, ★:적용모터에 따라 달라질 수 있습니다.

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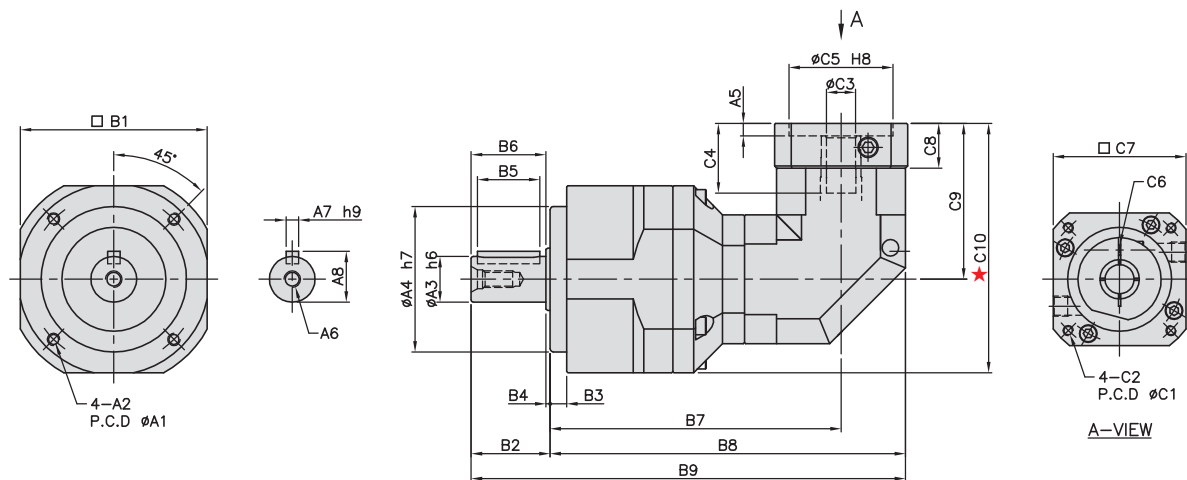
MODEL : KSEL

Double Reduction

RATIO : 15. 20. 25. 30. 35. 40. 50. 60. 70. 80.
90. 100. 120. 140. 160. 180. 200



High Precision Planetary Reducer



■ Mass Moments of Inertia (kg · cm²)

Ratio	62	90	120	142
15	0.09	0.36	2.28	6.85
20	0.09	0.36	2.28	6.85
25	0.09	0.36	2.28	6.85
30	0.09	0.36	2.28	6.85
35	0.09	0.36	2.28	6.85
40	0.09	0.36	2.28	6.85
50	0.09	0.36	2.28	6.85
60	0.09	0.36	2.28	6.85
70	0.09	0.36	2.28	6.85
80	0.09	0.36	2.28	6.85
90	0.09	0.36	2.28	6.85
100	0.09	0.36	2.28	6.85
120	0.03	0.10	1.88	6.20
140	0.03	0.10	1.88	6.20
160	0.03	0.10	1.88	6.20
180	0.03	0.10	1.88	6.20
200	0.03	0.10	1.88	6.20

unit:mm

Model code	62	90	120	142
A1	62	82	110	140
A2	M5×P0.8	M6×P1.0	M8×P1.25	M10×P1.5
A3	16	22	32	40
A4	50	70	90	120
A5	6	6	9, 23.5	10, 20
A6	M5×P0.8	M8×P1.25	M10×P1.5	M12×P1.75
A7	5	6	10	12
A8	18	24.5	35	43
B1	62	90	120	142
B2	36	46	65	92
B3	7	8	12	15
B4	1	2	3	3
B5	20	30	40	65
B6	28	36	50	74
B7	110.5	132	181.6	214.5
B8	132.5	163	226.6	274.5
B9	168.5	209-	291.6	366.5
C1	46, 60, 63, 70	70, 75, 90	90, 100, 115, 145, 165	145, 165
C2	M4, M5	M4, M5, M6	M6, M8, M10	M6, M8, M10
C3	5, 6.5, 8,(11)	6.35, 8, 11 12, 14,(16, 19)	14, 16, 19,(22, 24)	19, 22, 24,(28, 32)
C4	27	33.5	53, 67.5	67, 77
C5	30, 40, 50	50, 60, 70	70, 80, 95, 110, 130	110, 130
C6	M3	M5	M6	M8
C7	46, 55, 60, 76	64, 70, 80	92, 110, 130, 142	130, 150
C8	16	21.5, 29.5	26.5, 41	35.5, 45.5
C9	60	77	115.3, 129.8	141, 151
C10	92	122, 128	175.3, 189.8	212, 222

Model No.	Unit	Ratio	62	90	120	142		
Rated Output Torque	Nm	15	59	165	335	625		
		20	51	146	300	555		
		25	48	160	333	618		
		30	45	151	311	583		
		35	45	149	309	573		
		40	43	143	298	553		
		50	48	160	333	618		
		60	45	151	311	583		
		70	45	149	309	573		
		80	43	143	298	553		
		90	44	145	278	516		
		100	43	141	294	549		
		120	45	151	311	583		
		140	45	149	309	573		
		160	43	143	298	553		
		180	44	145	278	516		
		200	43	141	294	549		
		Max. Output Touque	Nm	15~200	3 Times of Rated Output Torque			
		Rated Input Speed	rpm	15~200	4,000	4,000	3,000	3,000
		Max. Input Speed	rpm	15~200	8,000	8,000	5,000	4,000
Backlash Ps	arcmin	15~200	-	≤4	≤4	≤4		
Backlash P0	arcmin	15~200	≤7	≤7	≤7	≤7		
Backlash P1	arcmin	15~200	≤9	≤9	≤9	≤9		
Backlash P2	arcmin	15~200	≤12	≤12	≤12	≤12		
Torisional Rigidity	Nm/arcmin	15~200	6	14	27	60		
Max. Radial Laod	N	15~200	1,180	3,200	6,800	9,300		
Max. Axial Load	N	15~200	590	1,600	3,400	4,650		
Service Life	hr	15~200	20,000(Continuous Operation 4,000 hrs)					
Efficiency	%	15~200	≥95%					
Operating Temperature	°C	15~200	-25°C~ +90°C					
Lubrication		15~200	VIGO GREASE RE#0					
Degree of Gearbox Protection		15~200	IP65					
Mounting Position		15~200	ANY					
Nosie Level	dB	15~200	≤68	≤70	≤72	≤74		
Weight ±3%	Kg	15~200	2.4	7.98	12.6	26.8		

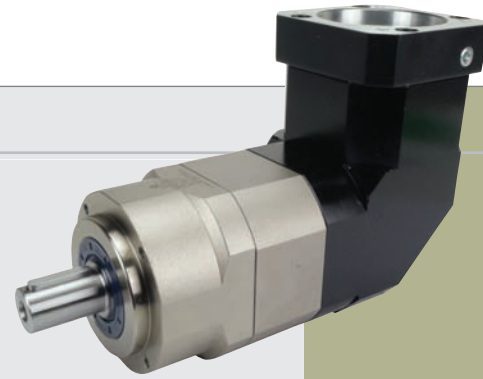
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* 연속운전 사용시 본사와 상담후 선정바랍니다.

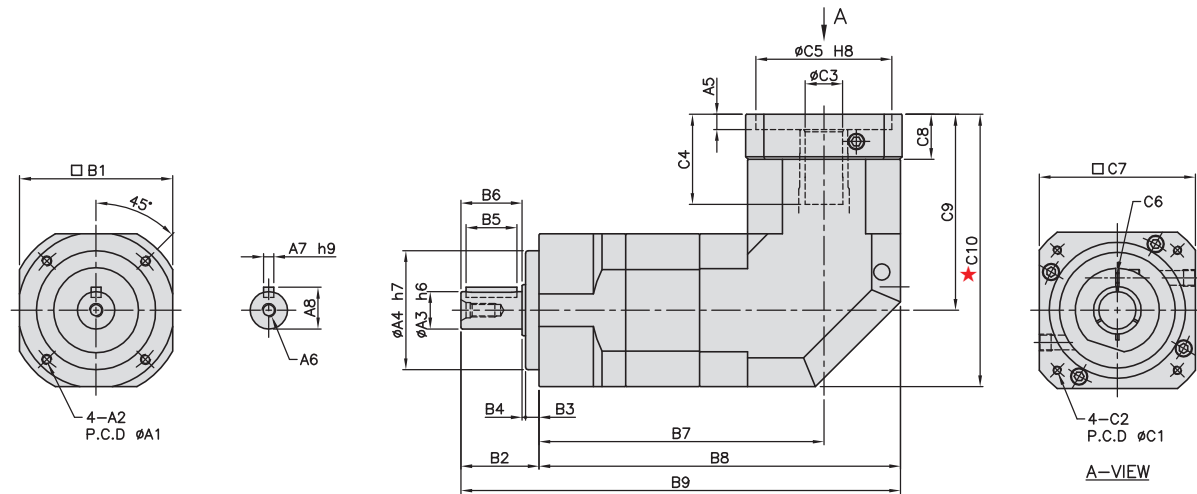
MODEL : KSEL-A

Double Reduction

RATIO : 15. 20. 25. 30. 35. 40. 50. 60. 70. 80.
90. 100. 120. 140. 160. 180. 200



High Precision Planetary Reducer



unit:mm

Model code	44A	62A	90A	120A	142A
A1	44	62	82	110	140
A2	M4×P0.7	M5×P0.8	M6×P1.0	M8×P1.25	M10×P1.5
A3	13	16	22	32	40
A4	35	50	70	90	120
A5	6	6	9, 23.5	10, 20	10
A6	M4×P0.7	M5×P0.8	M8×P1.25	M10×P1.5	M12×P1.75
A7	5	5	6	10	12
A8	15	18	24.5	35	43
B1	44	62	90	120	142
B2	26	36	46	65	92
B3	5	7	8	12	15
B4	1	1	2	3	3
B5	15	20	30	40	65
B6	20	28	36	50	74
B7	102	118.3	167.6	204	232
B8	124	149.3	212.6	264	303
B9	150	185.3	258.6	329	395
C1	46, 60, 63, 70	70, 75, 90	70, 90, 145	90, 145, 165	145, 165, 200, 215
C2	M3, M4, M5	M4, M5, M6	M4, M5, M6, M8	M6, M8, M10	M8, M10, M12
C3	3, 6.35, 8, (9, 11)	11, 12, 14, (16, 19)	14, 16, 19, (22, 24)	19, 22, 24, (28, 32)	32, 35, (38)
C4	27	33.5, 41.5	53, 67.5	67, 77	85
C5	30, 40, 50	50, 60, 70	50, 70, 110	70, 110, 130	110, 114.3, 130, 180
C6	M3	M5	M6	M8	M10
C7	46, 55, 60	64, 70, 80	92, 110, 130	130, 150	146, 150, 180, 190
C8	16	21.5	26.5, 41	35.5, 45.5	35.5
C9	61	77	115.3, 129.8	141, 151	174
C10	83	108	160/3, 174.8	201, 211	245

■ Mass Moments of Inertia (kg · cm²)

Ratio	44A	62A	90A	120A	142A
15	0.09	0.36	2.28	6.85	23.45
20	0.09	0.36	2.28	6.85	23.45
25	0.09	0.36	2.28	6.85	23.45
30	0.09	0.36	2.28	6.85	23.50
35	0.09	0.36	2.28	6.85	23.50
40	0.09	0.36	2.28	6.85	23.50
50	0.09	0.36	2.28	6.85	23.50
60	0.09	0.36	2.28	6.85	23.50
70	0.09	0.36	2.28	6.85	23.50
80	0.09	0.36	2.28	6.85	23.50
90	0.09	0.36	2.28	6.85	23.50
100	0.09	0.36	2.28	6.85	23.50
120	0.03	0.08	1.88	6.20	21.80
140	0.03	0.08	1.88	6.20	21.80
160	0.03	0.08	1.88	6.20	21.80
180	0.03	0.08	1.88	6.20	21.80
200	0.03	0.08	1.88	6.20	21.80

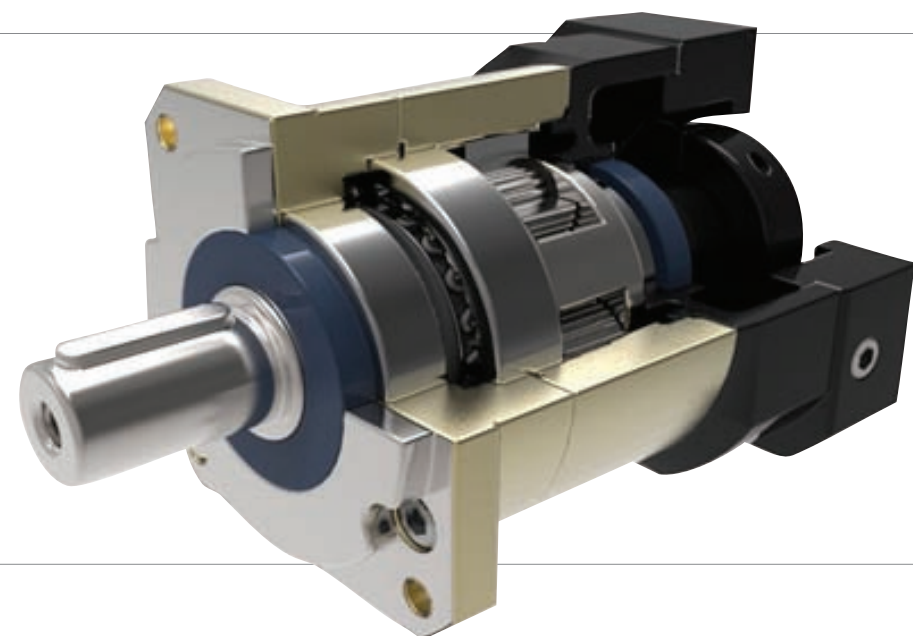
Model No.	Unit	Ratio	44A	62A	90A	120A	142A
Rated Output Torque	Nm	15	19	59	165	335	625
		20	16	51	146	300	555
		25	16	48	160	333	618
		30	15	45	151	311	583
		35	15	45	149	309	573
		40	14	43	143	298	553
		50	16	48	160	333	618
		60	15	45	151	311	583
		70	14	45	149	309	573
		80	14	43	143	298	53
		90	13	44	145	278	516
		100	14	43	141	294	549
		120	15	45	151	311	583
		140	15	43	149	309	573
160	14	43	143	298	553		
180	13	44	145	278	516		
200	14	43	141	294	549		
Max. Output Torque	Nm	15~200	3 Times of Rated Output Torque				
Rated Input Speed	rpm	15~200	4,000	4,000	4,000	3,000	3,000
Max. Input Speed	rpm	15~200	8,000	8,000	6,000	5,000	4,000
Backlash Ps	arcmin	15~200	-	-	≤4	≤4	≤4
Backlash P0	arcmin	15~200	≤7	≤7	≤7	≤7	≤7
Backlash P1	arcmin	15~200	≤9	≤9	≤9	≤9	≤9
Backlash P2	arcmin	15~200	≤12	≤12	≤12	≤12	≤12
Torsional Rigidity	Nm/arcmin	15~200	3	6	14	27	60
Max. Radial Load	N	15~200	760	1,180	3,200	6,800	9,300
Max. Axial Load	N	15~200	380	590	1,600	3,400	4,650
Service Life	hr	15~200	20,000(Continuous Operation 4,000 hrs)				
Efficiency	%	15~200	≥95%				
Operating Temperature	°C	15~200	-25°C~ +90°C				
Lubrication		15~200	VIGO GREASE RE#0				
Degree of Gearbox Protection		15~200	IP65				
Mounting Position		15~200	ANY				
Nosie Level	dB	15~200	≤65	≤68	≤70	≤72	≤74
Weight ±3%	Kg	15~200	1.1	3.3	9.98	16.5	31.5

KFB Series

Single Stage Backlash \leq 8 arc/min
 Double Stage Backlash \leq 12 arc/min

Indication of Model Numbers

KFB	90	10	MOTOR
TYPE KFB KFE	MODEL 50 70 90 120 145 180	RATIO SINGLE STAGE 3, 4, 5, 7, 10 DOUBLE STAGE 15, 20, 25, 30, 35, 40, 50, 70, 100	MOTOR TYPE MOTOR BRAND & MODEL NO.



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.



Full needle bearings design

ATG 감속기의 유성기어는 구조적 강도와 출력 향상을 위하여 Full needle bearing을 적용하였습니다.

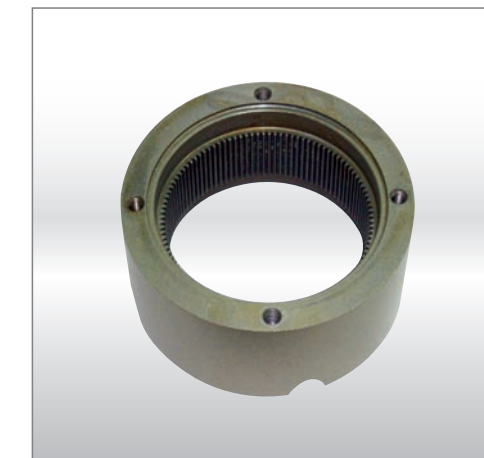
The planetary gear transmission employs full needle bearings without retainer to increase the contact surface, which greatly upgrades structural rigidity and output torque.



High precision gear machining

감속기 내부의 유성 기어와 선 기어는 기어 제작 용도의 크롬 몰리브덴 합금강으로 제조 되었습니다. 기어의 강도는 57~60 HRC이며 정밀도 향상을 위해 열처리후 스카이빙 연마 공정을 적용하여 DIN 6 class(JIS 2급) 이내의 등급을 유지합니다.

The planetary gear and sun gear are manufactured from high quality Cr-Mo alloy steel(SNCM415), precision machined and carburized to address 57-60 HRC. Precision teeth grinding or Skiving assures gear accuracy reaches DIN6 class.



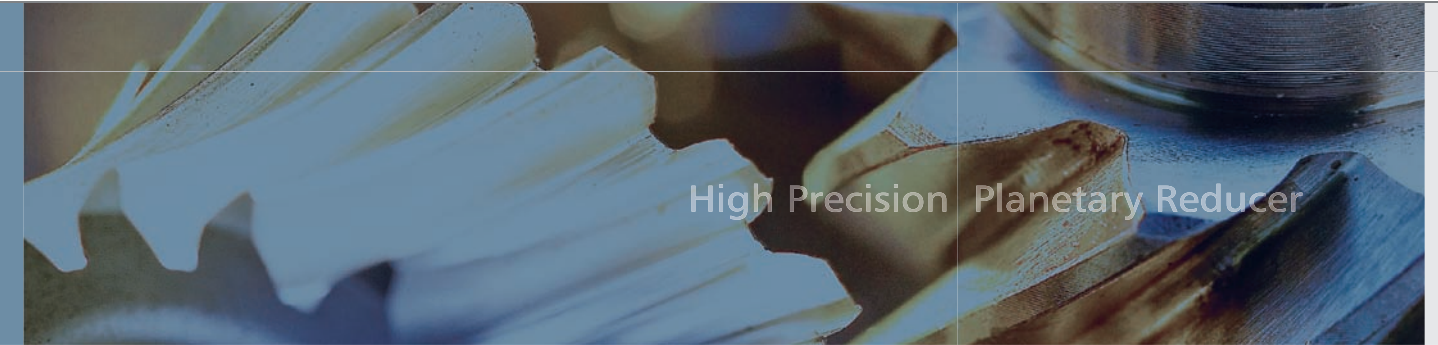
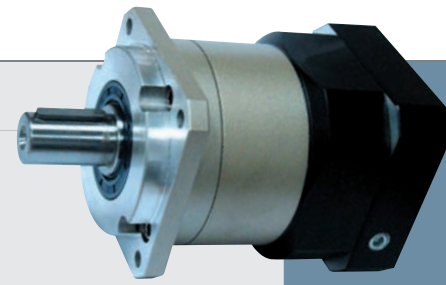
One-piece gearbox body

감속기 케이스에 내치기어를 정밀 가공하여 견고함과 정밀도를 향상 하였습니다.

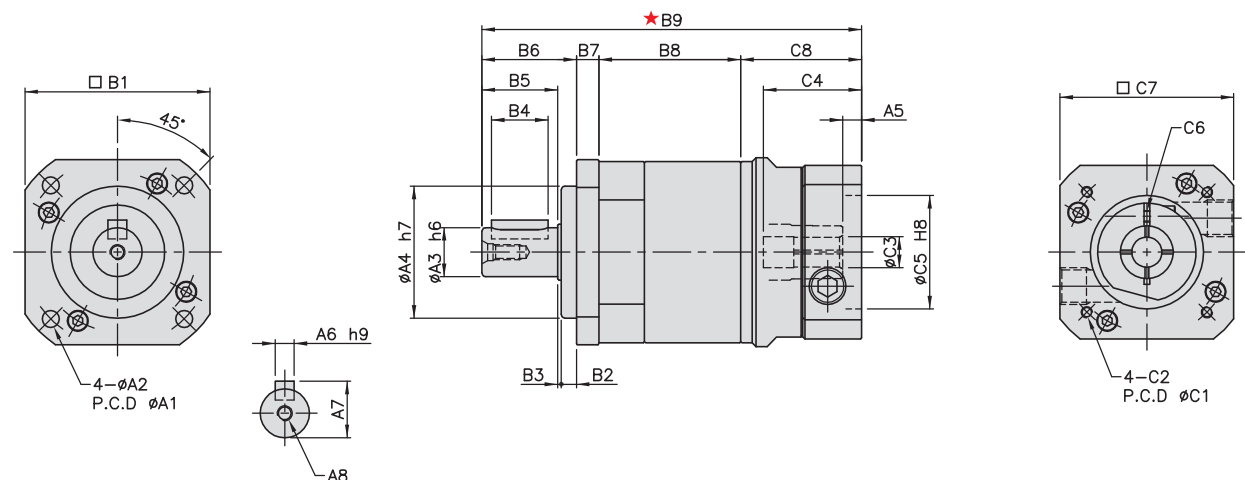
The gearbox and internal ring are one-piece constructed. High gear accuracy meets DIN6 class standard.

MODEL : KFB

Single Reduction
RATIO : 3.4.5.7.10



High Precision Planetary Reducer



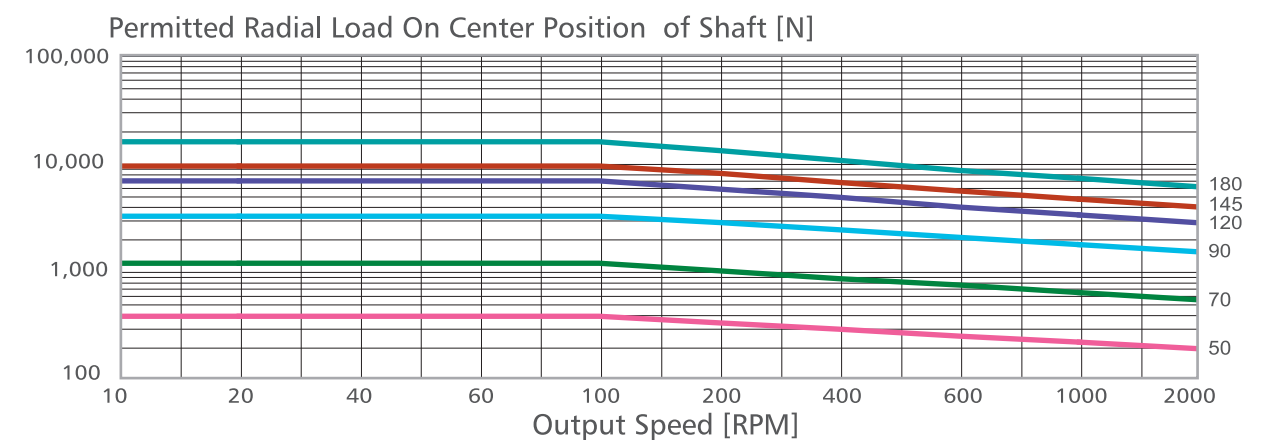
unit:mm

Model code	50	70	90	120	145	180
A						
A1	50	70	100	130	165	215
A2	4.5	6	6.8	9	11	13
A3	13	16	22	32	40	55
A4	35	50	80	110	130	160
A5	5	6	9	10	10	13
A6	5	5	6	10	12	16
A7	15	18	24.5	35	43	59
A8	M4×P0.7	M5×P0.8	M8×P1.25	M10×P1.5	M12×P1.75	M14×P2.0
B						
B1	50	70	90	120	145	180
B2	4	5	6	8	10	20
B3	1	1	2	2	3	4
B4	15	20	30	40	65	70
B5	20	28	36	50	74	82
B6	25	34	44	60	87	106
B7	6	8	9	12	15	16
B8	37.5	49.5	59	86	95	69.5
B9	100.5	132.5	170.5, 185	227.5, 237.5	291	325
C						
C1	46, 60, 63, 70	70, 75, 90	70, 90, 100 115, 145, 165	90, 100 115, 145, 165	145, 165 200, 215	200, 215 235, 265
C2	M4, M5	M4, M5, M6	M6, M8, M10	M6, M8, M10	M8, M10, M12	M12
C3	5, 6.35, 8	6.35, 8 11, 12, 14	14, 16 19,(22, 24)	19, 22 24,(28, 32)	22, 24 28, 32, 35	38, 42, 48
C4	26	33.5	51, 65.5	63, 73	81.5	115
C5	30, 40, 50	50, 60, 70	50, 70, 80 95, 110, 130	70, 80 95, 110, 130	110, 114.3 130, 180	114.3, 180 200, 230
C6	M3	M5	M6	M8	M10	M10
C7	46, 55, 60	64, 70, 80	92, 110 130, 142	130, 150	146, 150 180, 190	180, 200 220, 250
C8	32	41	58.5, 73	69.5, 79.5	94	133.5

Model No.	Unit	Ratio	50	70	90	120	145	180
Rated Output Torque	Nm	3	17	50	125	268	482	940
		4	15	45	111	238	426	860
		5	14	42	104	223	401	835
		7	13	39	98	208	373	790
		10	12	37	92	198	356	760
Max. Output Torque	Nm	3~10	3 Times of Rated Output Torque					
Rated Input Speed	rpm	3~10	5,000	4,800	4,000	3,600	3,000	3,000
Max. Input Speed	Nm	3~10	8,000	6,000	6,000	4,800	3,600	3,600
Backlash	arc min	3~10	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8
Torsional Rigidity	Nm/arc min	3~10	2.3	5	15	45	69	140
Max. Radial Force	N	3~10	750	1,180	3,000	6,500	9,100	11,150
Max. Axial Force	N	3~10	375	590	1,500	3,250	4,550	5,575
Service Life	hr	3~10	10,000 (Continuous Operation 4,000 hrs)					
Efficiency	%	3~10	≥ 97%					
Operating Temperature	°C	3~10	-25°C ~ +90°C					
Lubrication		3~10	VIGO GREASE RE#0					
Degree of Gearbox Protection		3~10	IP65					
Mounting Position		3~10	Any					
Noise Level	dB	3~10	≤ 62	≤ 62	≤ 65	≤ 68	≤ 70	≤ 70
Weight ±3%	Kg	3~10	0.63	1.57	3.22	8	16	33

■ Mass Moments of Inertia (kg · cm²)

Ratio	50	70	90	120	145	180
3	0.03	0.15	0.57	2.99	8.84	28.50
4	0.03	0.13	0.45	2.52	7.23	23.19
5	0.03	0.12	0.44	2.49	7.12	22.81
7	0.03	0.12	0.42	2.41	6.85	22.01
10	0.03	0.12	0.41	2.36	6.74	22.03



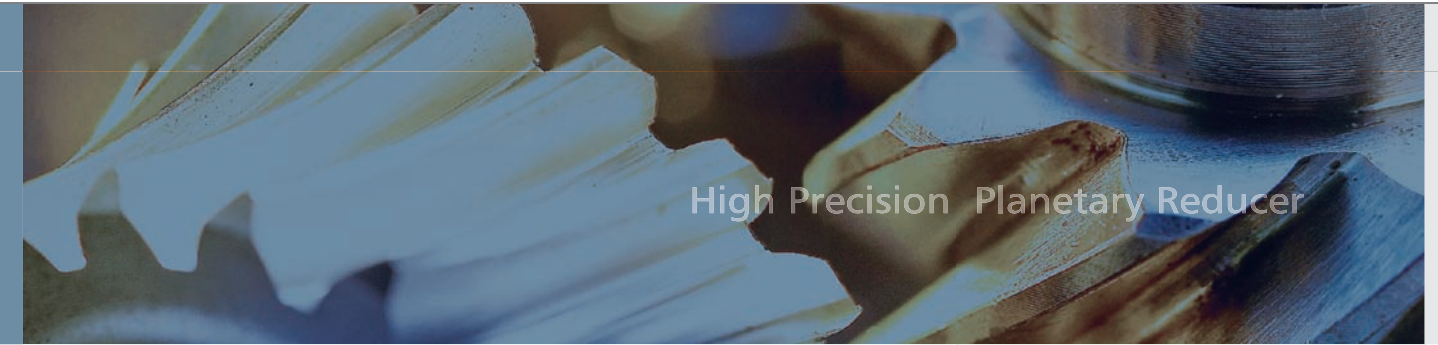
062 * () 안은 주문형입니다. * A5, ★:적용모터에 따라 달라질 수 있습니다.

* 연속운전 사용시 본사와 상담후 선정바랍니다.

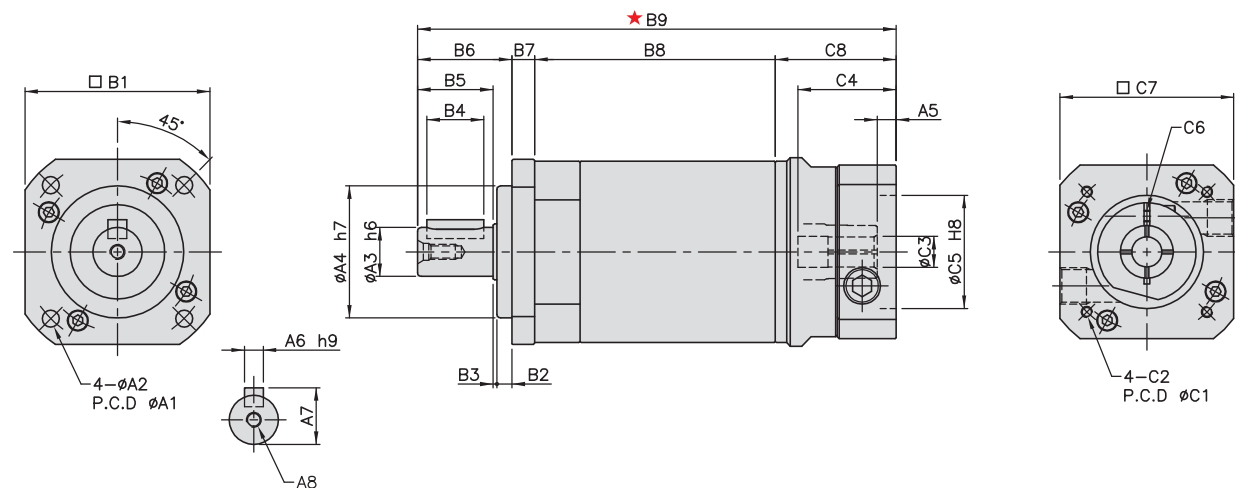
MODEL : KFB

Double Reduction

RATIO : 15.20.25.30.35.40.50.70.100



High Precision Planetary Reducer



unit:mm

Model code	50	70	90	120	145	180
A						
A1	50	70	100	130	165	215
A2	4.5	6	6.8	9	11	13
A3	13	16	22	32	40	55
A4	35	50	80	110	130	160
A5	5	6	9	10	10	13
A6	5	5	6	10	12	16
A7	15	18	24.5	35	43	59
A8	M4×P0.7	M5×P0.8	M8×P1.25	M10×P1.5	M12×P1.75	M14×P2.0
B						
B1	50	70	90	120	145	180
B2	4	5	6	8	10	20
B3	1	1	2	2	3	4
B4	15	20	30	40	65	70
B5	20	28	36	50	74	82
B6	25	34	44	60	87	106
B7	6	8	9	12	15	16
B8	63.7	83.5	98.7	140	158.7	139
B9	126.7	166.5	210.2, 224.7	281.5, 291.5	354.7	394.5
C						
C1	46, 60, 63, 70	70, 75, 90	70, 90, 100 115, 145, 165	90, 100 115, 145, 165	145, 165 200, 215	200, 215 235, 265
C2	M4, M5	M4, M5, M6	M6, M8, M10	M6, M8, M10	M8, M10, M12	M12
C3	5, 6.35, 8	6.35, 8 11, 12, 14	14, 16 19,(22, 24)	19, 22 24,(28, 32)	22, 24 28, 32, 35	38, 42, 48
C4	26	33.5	51, 65.5	63, 73	81.5	115
C5	30, 40, 50	50, 60, 70	50, 70, 80 95, 110, 130	70, 80 95, 110, 130	110, 114.3 130, 180	114.3, 180 200, 230
C6	M3	M5	M6	M8	M10	M10
C7	46, 55, 60	64, 70, 80	92, 110 130, 142	130, 150	146, 150 180, 190	180, 200 220, 250
C8	32	41	58.5, 73	69.5, 79.5	94	133.5

Model No.	Unit	Ratio	50	70	90	120	145	180
Rated Output Torque	Nm	15	17	50	125	268	482	940
		20	15	45	111	238	426	860
		25	14	42	104	223	401	835
		30	17	50	125	268	482	940
		35	13	39	98	208	373	790
		40	15	45	111	238	427	860
		50	14	42	104	223	402	835
		70	13	40	98	208	373	790
100	12	37	92	198	357	760		
Max. Output Torque	Nm	15~100	3 Times of Rated Output Torque					
Rated Input Speed	rpm	15~100	5,000	4,800	4,000	3,600	3,000	3,000
Max. Input Speed	Nm	15~100	8,000	6,000	6,000	4,800	3,600	3,600
Backlash	arc min	15~100	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12
Torsional Rigidity	Nm/arc min	15~100	2.3	5	15	45	69	140
Max. Radial Force	N	15~100	750	1,180	3,000	6,500	9,100	11,150
Max. Axial Force	N	15~100	375	590	1,500	3,250	4,550	5,575
Service Life	hr	15~100	10,000 (Continuous Operation 4,000 hrs)					
Efficiency	%	15~100	≥94					
Operating Temperature	°C	15~100	-25°C ~ +90°C					
Lubrication		15~100	VIGO GREASE RE#0					
Degree of Gearbox Protection		15~100	IP65					
Mounting Position		15~100	Any					
Noise Level	dB	15~100	≤ 65	≤ 65	≤ 68	≤ 70	≤ 72	≤ 72
Weight ±3%	Kg	15~100	0.9	2.24	4.59	11.22	22.5	37

■ Mass Moments of Inertia (kg · cm²)

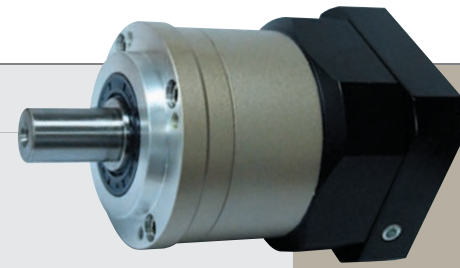
Ratio	50	70	90	120	145	180
15	0.03	0.03	0.13	0.42	2.52	7.14
20	0.03	0.03	0.13	0.42	2.52	7.14
25	0.03	0.03	0.13	0.42	2.52	6.94
30	0.03	0.03	0.13	0.42	2.33	6.94
35	0.03	0.03	0.13	0.40	2.33	6.94
40	0.03	0.03	0.13	0.40	2.33	6.76
50	0.03	0.03	0.13	0.40	2.33	6.76
70	0.03	0.03	0.13	0.39	2.29	6.56
100	0.03	0.03	0.13	0.36	2.29	6.56

064 * () 안은 주문형입니다. * A5, ★:적용모터에 따라 달라질 수 있습니다.

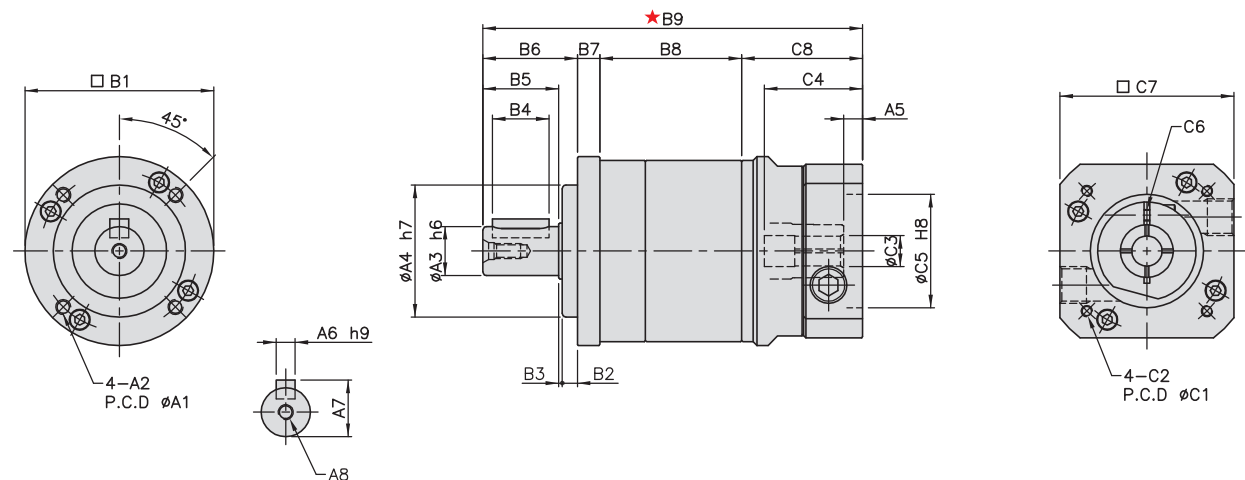
* 연속운전 사용시 본사와 상담후 선정바랍니다.

MODEL : KFE

Single Reduction
RATIO : 3.4.5.7.10



High Precision Planetary Reducer



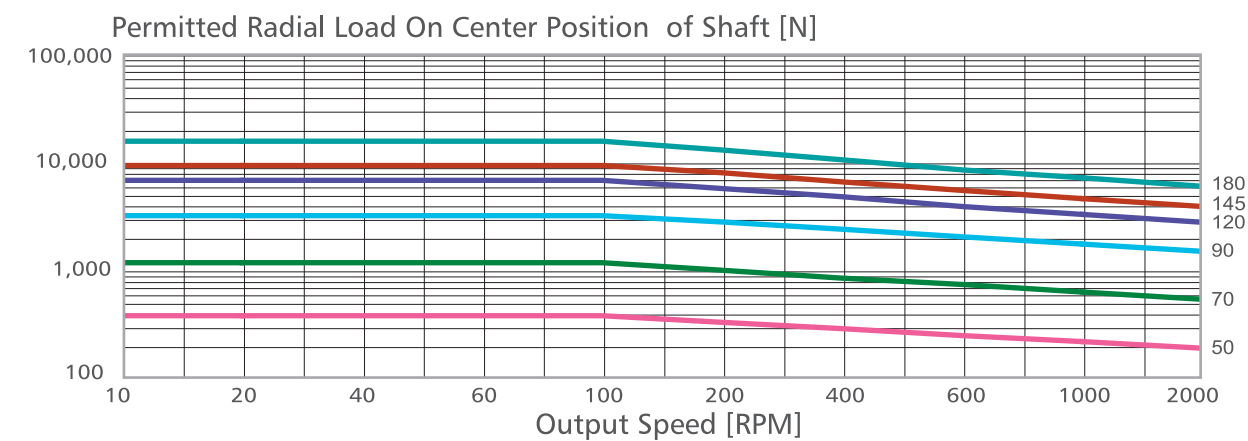
unit:mm

Model code	50	70	90	120	145	180
A						
A1	42	60	80	105	130	184
A2	M4×P0.7	M5×P0.8	M6×P1.0	M8×P1.25	M10×P1.5	M12×P1.75
A3	13	16	22	32	40	55
A4	35	50	70	90	110	160
A5	5	6	9	10	10	13
A6	5	5	6	10	12	16
A7	15	18	24.5	35	43	59
A8	M4×P0.7	M5×P0.8	M8×P1.25	M10×P1.5	M12×P1.75	M14×P2.0
B						
B1	50	70	93	122	148	205
B2	4	5	6	8	10	20
B3	1	1	2	2	3	4
B4	15	20	30	40	65	70
B5	20	28	36	50	74	82
B6	25	34	44	60	87	106
B7	6	8	9	12	15	21.5
B8	37.5	49.5	59	86	95	64
B9	100.5	132.5	170.5, 185	227.5, 237.5	291	325
C						
C1	46, 60, 63, 70	70, 75, 90	70, 90, 100 115, 145, 165	90, 100 115, 145, 165	145, 165 200, 215	200, 215 235, 265
C2	M4, M5	M4, M5, M6	M6, M8, M10	M6, M8, M10	M8, M10, M12	M12
C3	5, 6.35, 8	6.35, 8 11, 12, 14	14, 16 19, (22, 24)	19, 22 24, (28, 32)	22, 24 28, 32, 35	38, 42, 48
C4	26	33.5	51, 65.5	63, 73	81.5	115
C5	30, 40, 50	50, 60, 70	50, 70, 80 95, 110, 130	70, 80 95, 110, 130	110, 114.3 130, 180	114.3, 180 200, 230
C6	M3	M5	M6	M8	M10	M10
C7	46, 55, 60	64, 70, 80	92, 110 130, 142	130, 150	146, 150 180, 190	180, 200 220, 250
C8	32	41	58.5, 73	69.5, 79.5	94	133.5

Model No.	Unit	Ratio	50	70	90	120	145	180
Rated Output Torque	Nm	3	17	50	125	268	482	940
		4	15	45	111	238	426	860
		5	14	42	104	223	401	835
		7	13	39	98	208	373	790
		10	12	37	92	198	356	760
Max. Output Torque	Nm	3~10	3Times of Rated Output Torque					
Rated Input Speed	rpm	3~10	5,000	4,800	4,000	3,600	3,000	3,000
Max. Input Speed	Nm	3~10	8,000	6,000	6,000	4,800	3,600	3,600
Backlash	arc min	3~10	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8
Torsional Rigidity	Nm/arc min	3~10	2.3	5	15	45	69	140
Max. Radial Force	N	3~10	750	1,180	3,000	6,500	9,100	11,150
Max. Axial Force	N	3~10	375	590	1,500	3,250	4,550	5,575
Service Life	hr	3~10	10,000 (Continuous Operation 4,000 hrs)					
Efficiency	%	3~10	≥ 97%					
Operating Temperature	°C	3~10	-25°C ~ +90°C					
Lubrication		3~10	VIGO GREASE RE#0					
Degree of Gearbox Protection		3~10	IP65					
Mounting Position		3~10	Any					
Noise Level	dB	3~10	≤ 62	≤ 62	≤ 65	≤ 68	≤ 70	≤ 70
Weight ±3%	Kg	3~10	0.63	1.57	3.22	8	16	32.5

■ Mass Moments of Inertia (kg · cm²)

Ratio	50	70	90	120	145	180
3	0.03	0.15	0.57	2.99	8.84	28.50
4	0.03	0.13	0.45	2.52	7.23	23.19
5	0.03	0.12	0.44	2.49	7.12	22.81
7	0.03	0.12	0.42	2.41	6.85	22.01
10	0.03	0.12	0.41	2.36	6.74	22.03



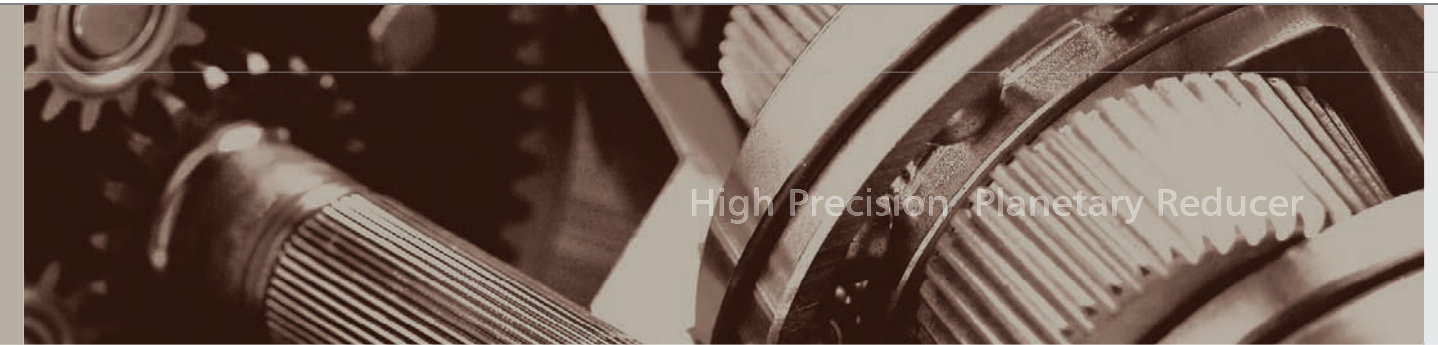
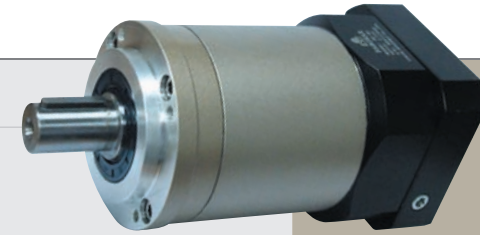
066 * () 안은 주문형입니다. * A5, ★:적용모터에 따라 달라질 수 있습니다.

* 연속운전 사용시 본사와 상담후 선정바랍니다.

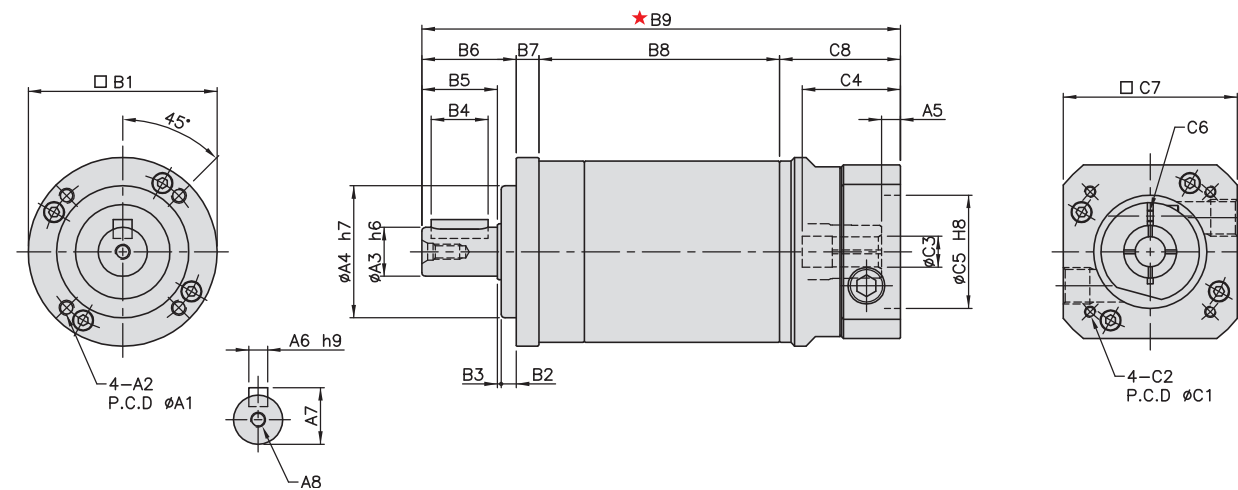
MODEL : KFE

Double Reduction

RATIO : 15.20.25.30.35.40.50.70.100



High Precision Planetary Reducer



unit:mm

Model code	50	70	90	120	145	180
A						
A1	42	60	80	105	130	184
A2	M4×P0.7	M5×P0.8	M6×P1.0	M8×P1.25	M10×P1.5	M12×P1.75
A3	13	16	22	32	40	55
A4	35	50	70	90	110	160
A5	5	6	9	10	10	13
A6	5	5	6	10	12	16
A7	15	18	24.5	35	43	59
A8	M4×P0.7	M5×P0.8	M8×P1.25	M10×P1.5	M12×P1.75	M14×P2.0
B						
B1	50	70	93	122	148	205
B2	4	5	6	8	10	20
B3	1	1	2	2	3	4
B4	15	20	30	40	65	70
B5	20	28	36	50	74	82
B6	25	34	44	60	87	106
B7	6	8	9	12	15	21.5
B8	63.7	83.5	98.7	140	158.7	133.5
B9	126.7	166.5	210.2, 224.7	281.5, 291.5	354.7	394.5
C						
C1	46, 60, 63, 70	70, 75, 90	70, 90, 100 115, 145, 165	90, 100 115, 145, 165	145, 165 200, 215	200, 215 235, 265
C2	M4, M5	M4, M5, M6	M6, M8, M10	M6, M8, M10	M8, M10, M12	M12
C3	5, 6.35, 8	6.35, 8 11, 12, 14	14, 16 19,(22, 24)	19, 22 24,(28, 32)	22, 24 28, 32, 35	38, 42, 48
C4	26	33.5	51, 65.5	63, 73	81.5	115
C5	30, 40, 50	50, 60, 70	50, 70, 80 95, 110, 130	70, 80 95, 110, 130	110, 114.3 130, 180	114.3, 180 200, 230
C6	M3	M5	M6	M8	M10	M10
C7	46, 55, 60	64, 70, 80	92, 110 130, 142	130, 150	146, 150 180, 190	180, 200 220, 250
C8	32	41	58.5, 73	69.5, 79.5	94	133.5

068 * () 안은 주문형입니다. * A5, ★:적용모터에 따라 달라질 수 있습니다.

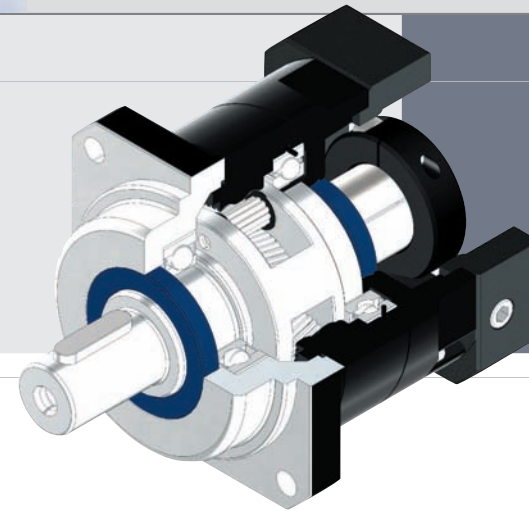
Model No.	Unit	Ratio	50	70	90	120	145	180
Rated Output Torque	Nm	15	17	50	125	268	482	940
		20	15	45	111	238	426	860
		25	14	42	104	223	401	835
		30	17	50	125	268	482	940
		35	13	39	98	208	373	790
		40	15	45	111	238	427	860
		50	14	42	104	223	402	835
		70	13	40	98	208	373	790
100	12	37	92	198	357	760		
Max. Output Torque	Nm	15~100	3 Times of Rated Output Torque					
Rated Input Speed	rpm	15~100	5,000	4,800	4,000	3,600	3,000	3,000
Max. Input Speed	Nm	15~100	8,000	6,000	6,000	4,800	3,600	3,600
Backlash	arc min	15~100	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12
Torsional Rigidity	Nm/arc min	15~100	2.3	5	15	45	69	140
Max. Radial Force	N	15~100	750	1,180	3,000	6,500	9,100	11,150
Max. Axial Force	N	15~100	375	590	1,500	3,250	4,550	5,575
Service Life	hr	15~100	10,000 (Continuous Operation 4,000 hrs)					
Efficiency	%	15~100	≤ 94%					
Operating Temperature	°C	15~100	-25°C ~ +90°C					
Lubrication		15~100	VIGO GREASE RE#0					
Degree of Gearbox Protection		15~100	IP65					
Mounting Position		15~100	Any					
Noise Level	dB	15~100	≤ 65	≤ 65	≤ 68	≤ 70	≤ 72	≤ 72
Weight ±3%	Kg	15~100	0.9	2.24	4.59	11.22	22.5	36.5

■ Mass Moments of Inertia (kg · cm²)

Ratio	50	70	90	120	145	180
15	0.03	0.03	0.13	0.42	2.52	7.14
20	0.03	0.03	0.13	0.42	2.52	7.14
25	0.03	0.03	0.13	0.42	2.52	6.94
30	0.03	0.03	0.13	0.42	2.33	6.94
35	0.03	0.03	0.13	0.40	2.33	6.94
40	0.03	0.03	0.13	0.40	2.33	6.76
50	0.03	0.03	0.13	0.40	2.33	6.76
70	0.03	0.03	0.13	0.39	2.29	6.56
100	0.03	0.03	0.13	0.36	2.29	6.56

* 연속운전 사용시 본사와 상담후 선정바랍니다.

KFA Series



Single Stage Backlash ≤ 8 arcmin
 Double Stage Backlash ≤ 12 arcmin

Indication of Model Numbers

KFA	80	10	Key Type	Motor
Type	MODEL	Ratio	Output Shaft Keyway	Motor Type
KFA	50 80 100	1-STAGE 3, 4, 5, 7, 10 2-STAGE 15, 20, 25, 30, 35, 40, 50, 70, 100	□ : 무표기 Standard(KeyWay) N : 표기 Solid Output Shaft (No Keyway)	

저 소음

헬리컬 기어 사용으로 부드럽고 조용한 운전가능.

고 강성과 높은 토크

uncage needle bearings 사용 강성과 토크를 높임

모터플레이트의 모듈 디자인

모듈 디자인을 통하여 어떠한 써보모터에도 적용 가능

오일 누유 방지와 편리한 유지보수

쉽게 분리되지 않는 고점도의 윤활유 사용
 효과적인 오일 누유 방지, 어떠한 위치에서도 부착 가능.

Quiet operation

Helical gears contribute to reduce vibration and noise.

High rigidity & high torque

High rigidity & high torque are achieved by uncage needle bearings.

Modular Design of Motor Connection Plate

The special modular design of motor connection plate is suitable for any flange mounting servo motors.

No grease leakage & Maintenance-free

Perfect solution using high viscosity anti-separation grease. No need to replace the grease for the life of the unit. Can be attached in any position.

Features of KFA Series

KFA Series 제품 특성



Helical gear design & High precision gear machining

기어 맞물림이 평기어의 2배 이상인 Helical gear 적용으로 동작 소음을 최소화하고 고출력, 저소음, 저백래시를 실현하였습니다.
 감속기 내부의 유성기어와 선기어는 기어제작 용도의 크롬 몰리브덴 합금강으로 제조되었습니다.
 기어의 강도는 57~60HRC이며 정밀도 향상을 위해 열처리 후 스카이빙 연마 공정을 적용하여 DIN 6 class(JIS 2급) 이내의 등급을 유지합니다.

Helical Gear Design

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.

High Precision Gear Machining

Manufactured from high quality Ni-Cr-Mo alloy steel(SNCM220), precision machined and carburized top hardness 57-60HRC. Precision teeth grinding assures gear accuracy reaches DIN6 class.



Full Needle Bearing Design

감속기의 유성기어는 구조적 강도와 출력 향상을 위하여 Full needle bearing을 적용 하였습니다.

The planetary gear transmission employs full needle bearing without retainer to increase the contact surface, which greatly upgrades structural rigidity and output torque.



One-piece Helical Gear Box

감속기 케이스와 링기어를 일체형으로 가공, 기어 맞물림이 스퍼기어의 2배이상인 Helical gear 적용으로 동작 소음을 최소화하여 고출력 저소음, 저백래시를 실현하였습니다.

The gear box and internal gear ring are one-piece constructed, 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 and low backlash.



Intergrated Planetary Arm Bracket

Planetary arm bracket과 출력 Shaft는 일체형 구조로 정밀 가공되어 비틀림 강도와 정밀도를 향상시켰습니다.

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.



Collet Chuck Locking Mechanism

감속기의 입력 부분과 Motor output shaft를 연결하기 위한 방식으로 역학적 확실한 체결력과 높은 속도에서 구동할 때에도 백래시가 발생하지 않고 동력을 전달합니다.

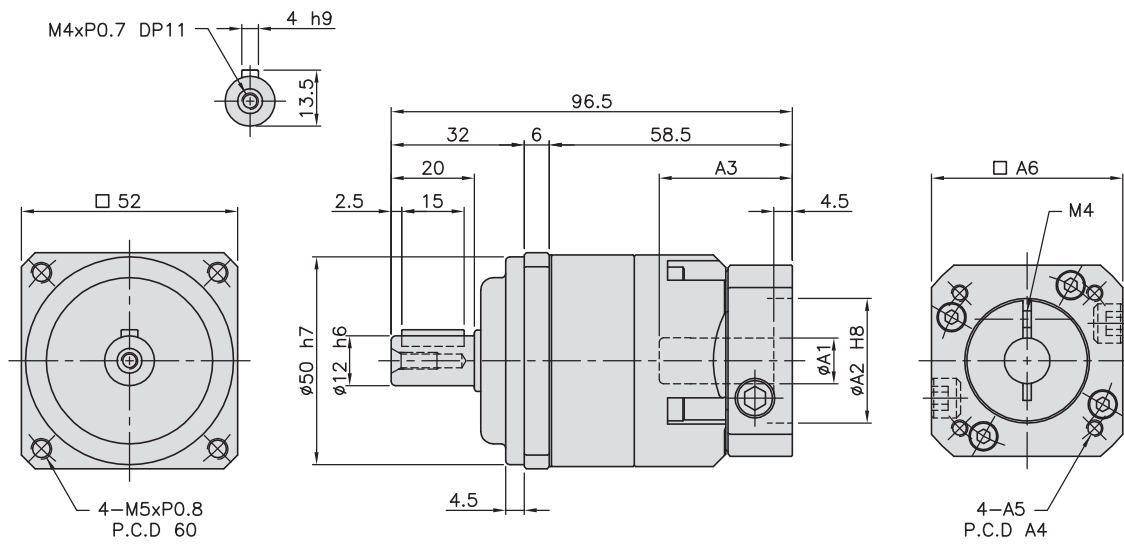
The input-end and the motor are coupled through a collet chuck locking mechanism. It is dynamically balanced to assure concentricity and balance on the connection when running at high speed. No backlash for power transmission.

PGX-H
PBL
KSB
KSBL
KSE
KSEL
KFB
KFE
KFA
KSN
KSD
KSDL
TH
KWE

MODEL : KFA50
Single Reduction
RATIO : 3. 4. 5. 7. 10

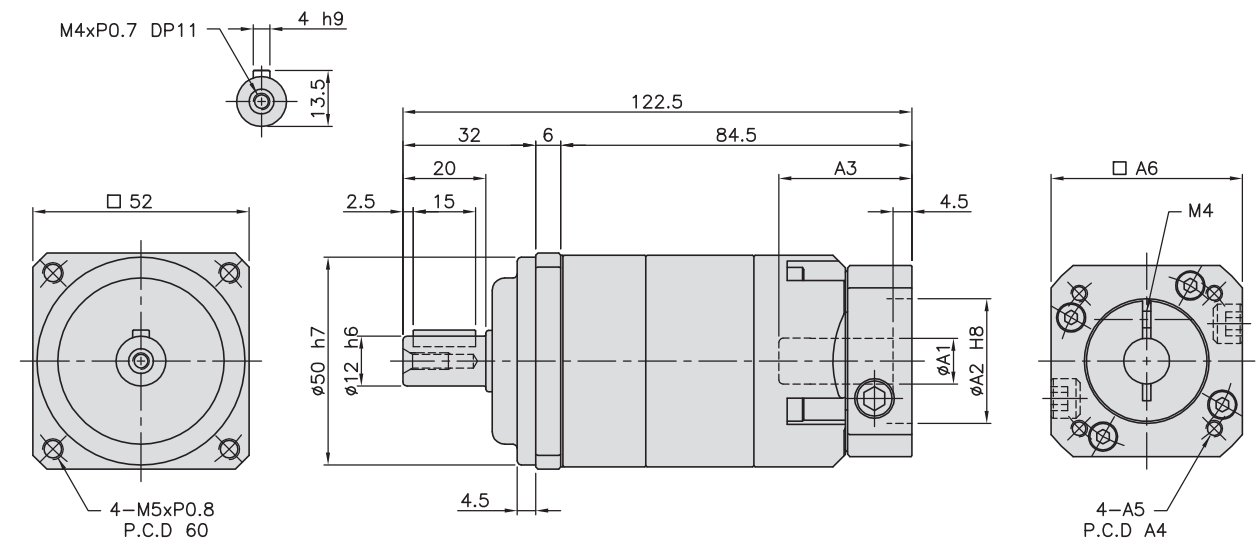


MODEL : KFA50
Double Reduction
RATIO : 15. 20. 25. 30. 35. 40. 50. 70. 100



Dimension of Input Flange unit:mm

No.	$\phi A1$	$\phi A2$	A3	A4	A5	A6
1	11	30	32	45	M3	46
2		30	32	46	M4	46
3	14	40	32	63	M5	55
4		50	32	70	M4	60
5		50	32	70	M5	60



Dimension of Input Flange unit:mm

No.	$\phi A1$	$\phi A2$	A3	A4	A5	A6
1	11	30	32	45	M3	46
2		30	32	46	M4	46
3	14	40	32	63	M5	55
4		50	32	70	M4	60
5		50	32	70	M5	60

KFA50-1

Ratio		3	4	5	7	10
Rated Output Torque	Nm	19	16	16	15	14
Max. Output Torque	Nm	3 Times of Rated Output Torque				
Rated Input Speed	rpm	3,000				
Max. Input Speed	rpm	5,000				
Torsional Rigidity	Nm / arcmin	3				
Max. Radial Force	N	350				
Max. Axial Force	N	180				
Service Life	hr	10,000(4,000 / Continuous operation)				
Efficiency	%	$\geq 97\%$				
Operating Temperature	$^{\circ}\text{C}$	$-25^{\circ}\text{C} \sim +90^{\circ}\text{C}$				
Lubrication		Vigo Grease Re #0				
Protection Class		IP 65				
Mounting Position		Any				
Noise Level	dB	≤ 58 dB				
Weight $\pm 2\%$	kg	0.66				

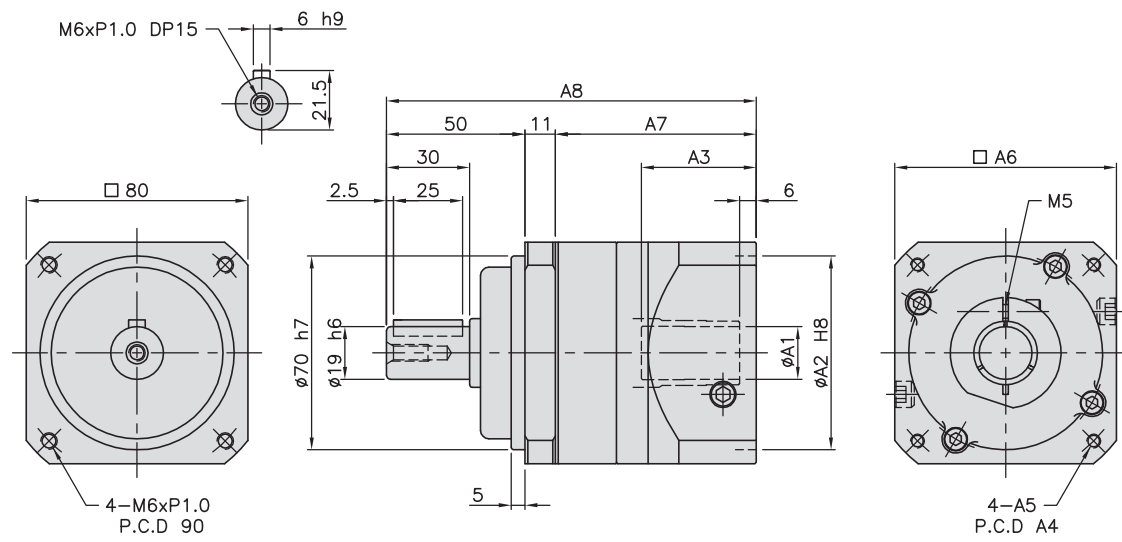
KFA50-2

Ratio		15	20	25	30	35	40	50	70	100	
Rated Output Torque	Nm	19	16	16	19	15	16	16	15	14	
Max. Output Torque	Nm	3 Times of Rated Output Torque									
Rated Input Speed	rpm	3,000									
Max. Input Speed	rpm	5,000									
Torsional Rigidity	Nm / arcmin	3									
Max. Radial Force	N	350									
Max. Axial Force	N	180									
Service Life	hr	10,000(4,000 / Continuous operation)									
Efficiency	%	$\geq 95\%$									
Operating Temperature	$^{\circ}\text{C}$	$-25^{\circ}\text{C} \sim +90^{\circ}\text{C}$									
Lubrication		Vigo Grease Re #0									
Protection Class		IP 65									
Mounting Position		Any									
Noise Level	dB	≤ 60 dB									
Weight $\pm 2\%$	kg	0.98									

MODEL : KFA80
Single Reduction
RATIO : 3. 4. 5. 7. 10

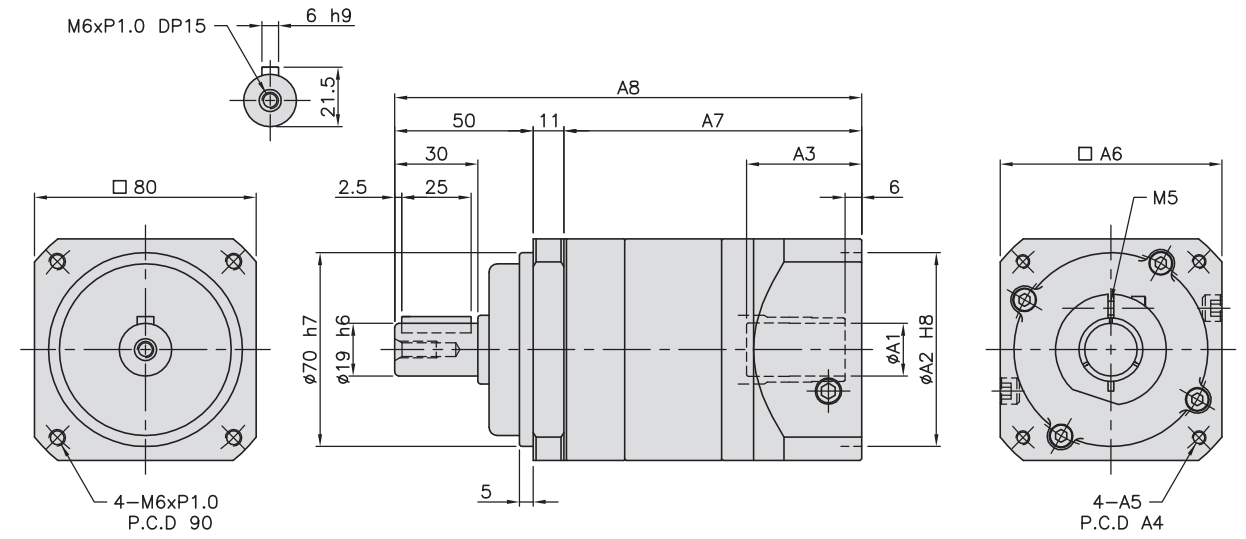


MODEL : KFA80
Double Reduction
RATIO : 15. 20. 25. 30. 35. 40. 50. 70. 100



Dimension of Input Flange unit:mm

No.	∅A1	∅A2	A3	A4	A5	A6	A7	A8
1	14	50	33.5	70	M5	80	64.5	125.5
2	19	70	41.5	90	M5	80	72.5	133.5
3	19	70	41.5	90	M6	80	72.5	133.5



Dimension of Input Flange unit:mm

No.	∅A1	∅A2	A3	A4	A5	A6	A7	A8
1	14	50	33.5	70	M5	80	99.5	160.5
2	19	70	41.5	90	M5	80	107.5	168.5
3	19	70	41.5	90	M6	80	107.5	168.5

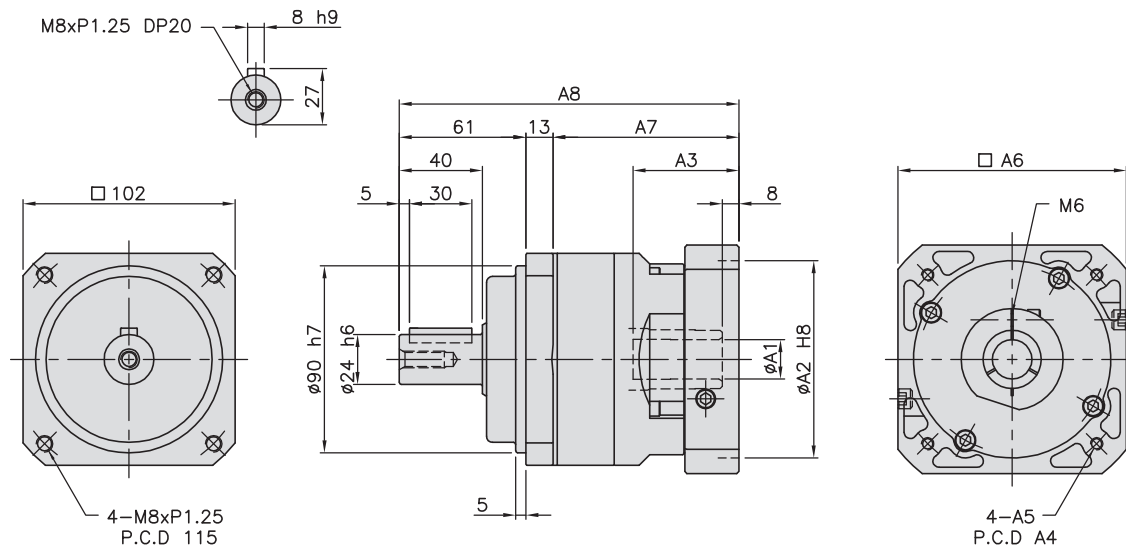
KFA80-1

Ratio		3	4	5	7	10
Rated Output Torque	Nm	112	110	108	105	100
Max. Output Torque	Nm	3 Times of Rated Output Torque				
Rated Input Speed	rpm	3,000				
Max. Input Speed	rpm	5,000				
Torsional Rigidity	Nm / arcmin	10				
Max. Radial Force	N	1,200				
Max. Axial Force	N	600				
Service Life	hr	10,000(4,000 / Continuous operation)				
Efficiency	%	≥97%				
Operating Temperature	°C	-25°C~+90°C				
Lubrication		Vigo Grease Re #0				
Protection Class		IP 65				
Mounting Position		Any				
Noise Level	dB	≤60 dB				
Weight ±2%	kg	1.9				

KFA80-2

Ratio		15	20	25	30	35	40	50	70	100	
Rated Output Torque	Nm	112	110	108	112	105	110	108	105	100	
Max. Output Torque	Nm	3 Times of Rated Output Torque									
Rated Input Speed	rpm	3,000									
Max. Input Speed	rpm	5,000									
Torsional Rigidity	Nm / arcmin	10									
Max. Radial Force	N	1,200									
Max. Axial Force	N	600									
Service Life	hr	10,000(4,000 / Continuous operation)									
Efficiency	%	≥95%									
Operating Temperature	°C	-25°C~+90°C									
Lubrication		Vigo Grease Re #0									
Protection Class		IP 65									
Mounting Position		Any									
Noise Level	dB	≤62 dB									
Weight ±2%	kg	3									

MODEL : KFA100
Single Reduction
RATIO : 3. 4. 5. 7. 10

MODEL : KFA100
Double Reduction
RATIO : 15. 20. 25. 30. 35. 40. 50. 70. 100


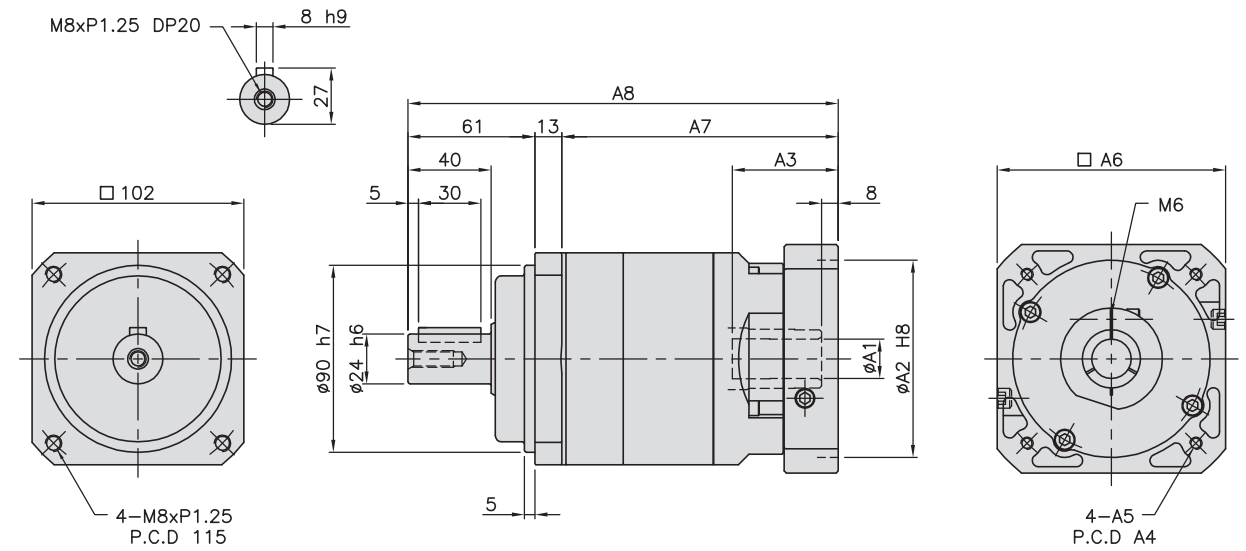
Dimension of Input Flange

unit:mm

No.	∅A1	∅A2	A3	A4	A5	A6	A7	A8
1	19 , 24	70	51	90	M6	92	89.5	163.5
2		80	51	100	M6	92	89.5	163.5
3		95	51	115	M6	110	89.5	163.5
4		95	51	115	M8	110	89.5	163.5
5		110	51	145	M8	130	89.5	163.5
6		110	65.5	145	M8	130	104	178

KFA100-1

Ratio		3	4	5	7	10
Rated Output Torque	Nm	165	146	160	149	141
Max. Output Torque	Nm	3 Times of Rated Output Torque				
Rated Input Speed	rpm	3,000				
Max. Input Speed	rpm	5,000				
Torsional Rigidity	Nm / arcmin	14				
Max. Radial Force	N	3,200				
Max. Axial Force	N	1,600				
Service Life	hr	10,000(4,000 / Continuous operation)				
Efficiency	%	≥97%				
Operating Temperature	°C	-25°C~+90°C				
Lubrication		Vigo Grease Re #0				
Protection Class		IP 65				
Mounting Position		Any				
Noise Level	dB	≤66 dB				
Weight±2%	kg	3.5				



Dimension of Input Flange

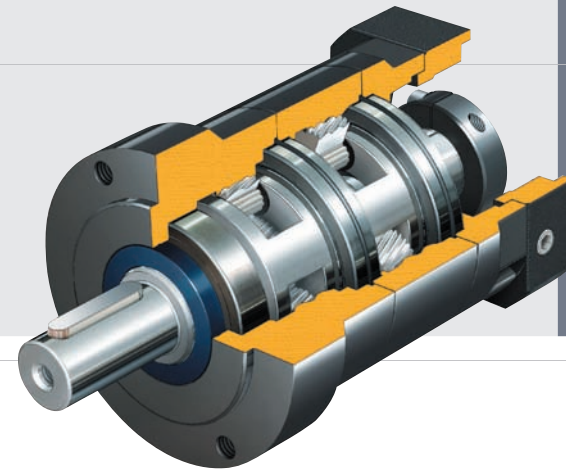
unit:mm

No.	∅A1	∅A2	A3	A4	A5	A6	A7	A8
1	19 , 24	70	51	90	M6	92	133	207
2		80	51	100	M6	92	133	207
3		95	51	115	M6	110	133	207
4		95	51	115	M8	110	133	207
5		110	51	145	M8	130	133	207
6		110	65.5	145	M8	130	147.5	221.5

KFA100-2

Ratio		15	20	25	30	35	40	50	70	100
Rated Output Torque	Nm	165	146	160	165	149	146	160	149	141
Max. Output Torque	Nm	3 Times of Rated Output Torque								
Rated Input Speed	rpm	3,000								
Max. Input Speed	rpm	5,000								
Torsional Rigidity	Nm / arcmin	14								
Max. Radial Force	N	3,200								
Max. Axial Force	N	1,600								
Service Life	hr	10,000(4,000 / Continuous operation)								
Efficiency	%	≥95%								
Operating Temperature	°C	-25°C~+90°C								
Lubrication		Vigo Grease Re #0								
Protection Class		IP 65								
Mounting Position		Any								
Noise Level	dB	≤67 dB								
Weight±2%	kg	5.4								

KSN Series



Single Stage Backlash ≤ 8 arcmin
 Double Stage Backlash ≤ 12 arcmin

Indication of Model Numbers

KSN	80	10	Key Type	Motor
Type	MODEL	Ratio	Output Shaft Keyway	Motor Type
KSN	60 80 115	1-STAGE 3, 4, 5, 7, 10 2-STAGE 15, 20, 25, 30, 35, 40, 50, 70, 100	□ : 무표기 Standard(KeyWay) N : 표기 Solid Output Shaft (No Keyway)	

저 소음

헬리컬 기어 사용으로 부드럽고 조용한 운전가능.

고 강성과 높은 토크

uncage needle bearings사용 강성과 토크를 높임

모터플레이트의 모듈 디자인

모듈 디자인을 통하여 어떠한 써보모터에도 적용 가능

오일 누유 방지와 편리한 유지보수

쉽게 분리되지 않는 고정도의 윤활유 사용
 효과적인 오일 누유 방지, 어떠한 위치에서도 부착 가능.

Quiet operation

Helical gears contribute to reduce vibration and noise.

High rigidity & high torque

High rigidity & high torque are achived by uncage needle bearings.

Modular Design of Motor Connection Plate

The special modular design of motor connection plate is suitable for any flange mounting servo motors.

No grease leakage & Maintenance-free

Perfect solution using high viscosity anti-separation grease. No need to replace the grease for the life of the unit. Can be attached in any position.

Features of KSN Series

KSN Series 제품 특성



Helical gear design & High precision gear machining

기어 맞물림이 평기어의 2배 이상인 Helical gear 적용으로 동작 소음을 최소화하고 고회력, 저소음, 저백래시를 실현하였습니다.
 감속기 내부의 유성기어와 선기어는 기어제작 용도의 크롬 몰리브덴 합금강으로 제조되었습니다.
 기어의 강도는 57~60HRC이며 정밀도 향상을 위해 열처리 후 스카이빙 연마 공정을 적용하여 DIN 6 class(JIS 2급) 이내의 등급을 유지합니다.

Helical Gear Design

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.

High Precision Gear Machining

Manufactured from high quality Ni-Cr-Mo alloy steel(SNCR220), precision machined and carburized top hardness 57-60HRC. Precision teeth grinding assures gear accuracy reaches DIN6 class.



Integrated Planetary Arm Bracket

Planetary arm bracket과 출력 Shaft는 일체형 구조로 정밀 가공되어 비틀림 강도와 정밀도를 향상시켰습니다.

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.



Collet Chuck Locking Mechanism

감속기의 입력 부분과 Motor output shaft를 연결하기 위한 방식으로 역학적 확실한 체결력과 높은 속도에서 구동할 때에도 백래시가 발생하지 않고 동력을 전달합니다.

The input-end and the motor are coupled through a collet chuck locking mechanism. It is dynamically balanced to assure concentricity and balance on the connection when running at high speed. No backlash for power transmission.



Full Needle Bearing Design

감속기의 유성기어는 구조적 강도와 출력 향상을 위하여 Full needle bearing을 적용 하였습니다.

The planetary gear transmission employs full needle bearing without retainer to increase the contact surface, which greatly upgrades structural rigidity and output torque.

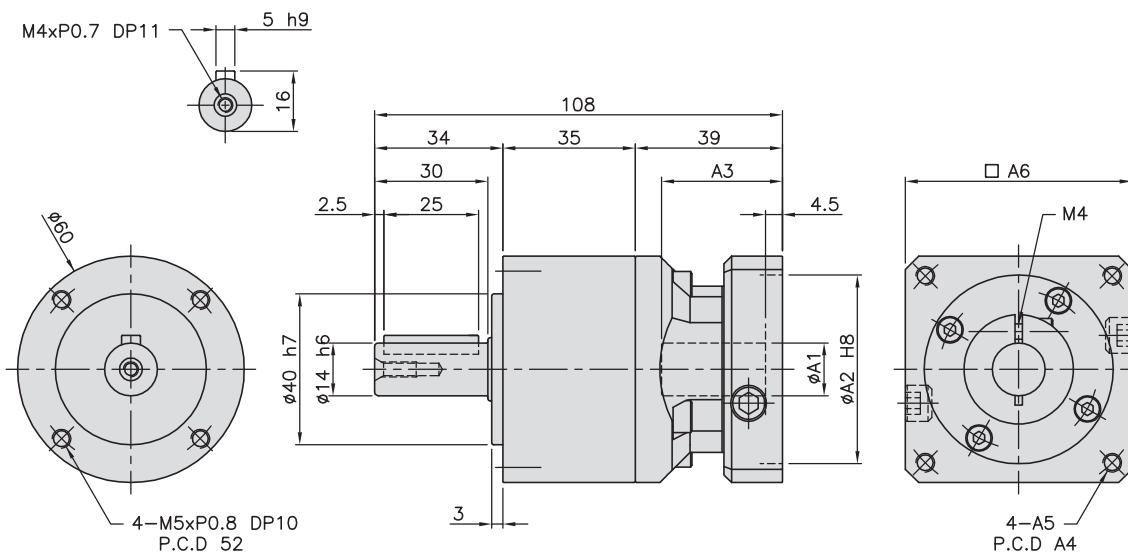


One-piece Helical Gear Box

감속기 케이스와 링기어를 일체형으로 가공, 기어 맞물림이 스퍼기어의 2배이상인 Helical gear 적용으로 동작 소음을 최소화하여 고회력 저소음, 저백래시를 실현하였습니다.

The gear box and internal gear ring are one-piece constructed, 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 and low backlash.

MODEL : KSN60
Single Reduction
RATIO : 3. 4. 5. 7. 10

MODEL : KSN60
Double Reduction
RATIO : 15. 20. 25. 30. 35. 40. 50. 70. 100


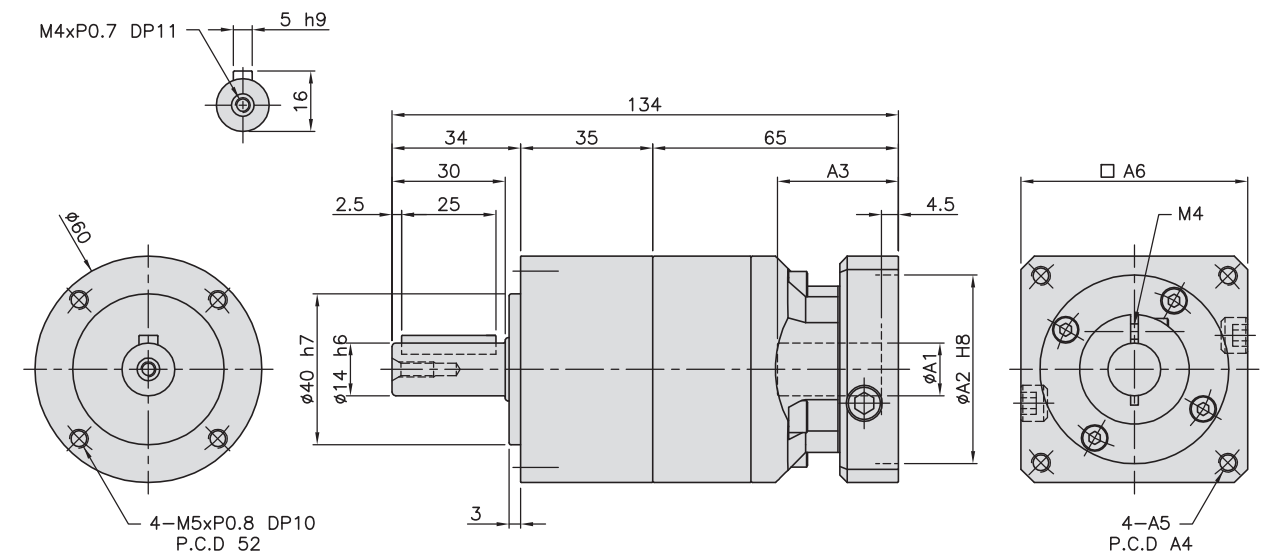
Dimension of Input Flange

unit:mm

No.	$\phi A1$	$\phi A2$	A3	A4	A5	A6
1	11	30	32	45	M3	46
2		30	32	46	M4	46
3	14	40	32	63	M5	55
4		50	32	70	M4	60
5		50	32	70	M6	60

KSN60-1

Ratio		3	4	5	7	10
Rated Output Torque	Nm	28	38	40	35	25
Max. Output Torque	Nm	3 Times of Rated Output Torque				
Rated Input Speed	rpm	3,000				
Max. Input Speed	rpm	5,000				
Torsional Rigidity	Nm / arcmin	4				
Max. Radial Force	N	460				
Max. Axial Force	N	230				
Service Life	hr	10,000(4,000 / Continuous operation)				
Efficiency	%	$\geq 97\%$				
Operating Temperature	$^{\circ}\text{C}$	$-25^{\circ}\text{C} \sim +90^{\circ}\text{C}$				
Lubrication		Vigo Grease Re #0				
Protection Class		IP 65				
Mounting Position		Any				
Noise Level	dB	≤ 58 dB				
Weight $\pm 2\%$	kg	0.98				



Dimension of Input Flange

unit:mm

No.	$\phi A1$	$\phi A2$	A3	A4	A5	A6
1	11	30	32	45	M3	46
2		30	32	46	M4	46
3	14	40	32	63	M5	55
4		50	32	70	M4	60
5		50	32	70	M5	60

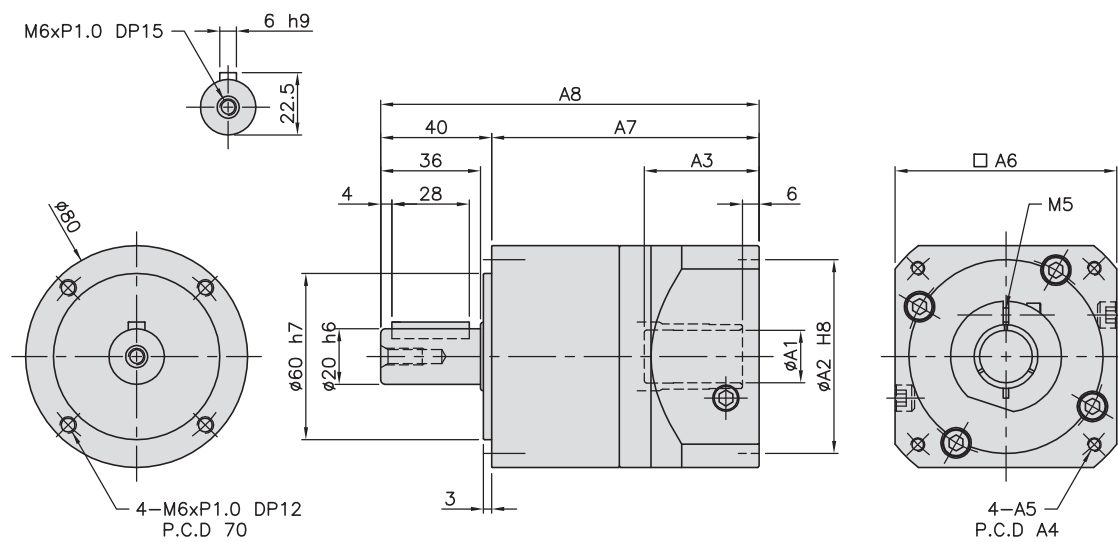
KSN60-2

Ratio		15	20	25	30	35	40	50	70	100
Rated Output Torque	Nm	28	38	40	28	35	38	40	35	25
Max. Output Torque	Nm	3 Times of Rated Output Torque								
Rated Input Speed	rpm	3,000								
Max. Input Speed	rpm	5,000								
Torsional Rigidity	Nm / arcmin	3								
Max. Radial Force	N	460								
Max. Axial Force	N	230								
Service Life	hr	10,000(4,000 / Continuous operation)								
Efficiency	%	$\geq 95\%$								
Operating Temperature	$^{\circ}\text{C}$	$-25^{\circ}\text{C} \sim +90^{\circ}\text{C}$								
Lubrication		Vigo Grease Re #0								
Protection Class		IP 65								
Mounting Position		Any								
Noise Level	dB	≤ 60 dB								
Weight $\pm 2\%$	kg	1.5								

MODEL : KSN80
Single Reduction
RATIO : 3. 4. 5. 7. 10



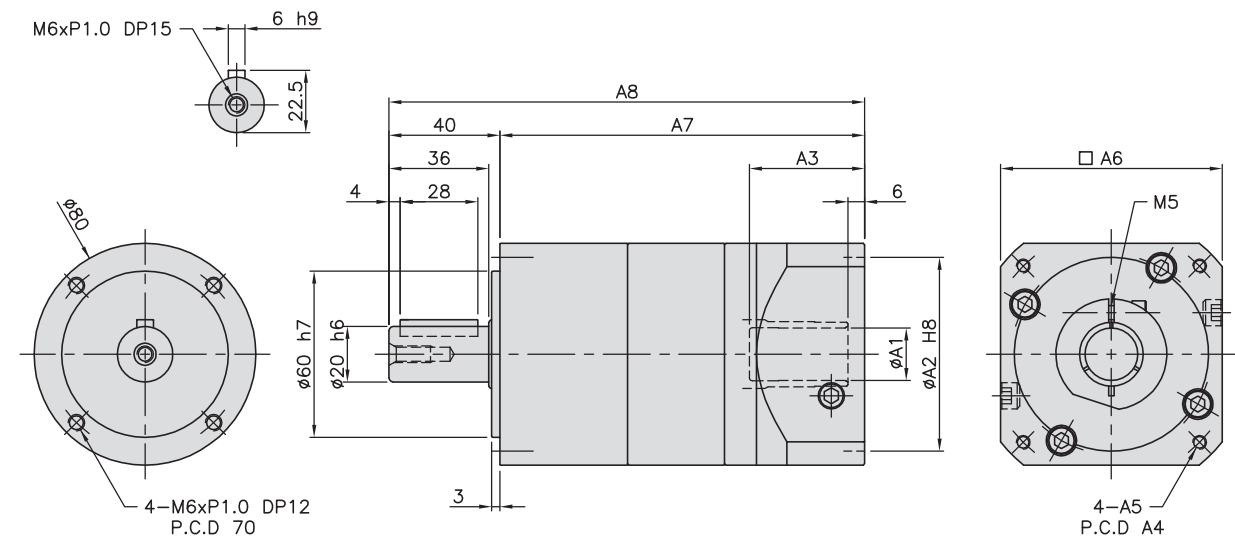
MODEL : KSN80
Double Reduction
RATIO : 15. 20. 25. 30. 35. 40. 50. 70. 100



Dimension of Input Flange

unit:mm

No.	$\phi A1$	$\phi A2$	A3	A4	A5	A6	A7	A8
1	14	50	33.5	70	M5	80	88.5	128.5
2	'	70	41.5	90	M5	80	96.5	136.5
3	19	70	41.5	90	M6	80	96.5	136.5



Dimension of Input Flange

unit:mm

No.	$\phi A1$	$\phi A2$	A3	A4	A5	A6	A7	A8
1	14	50	33.5	70	M5	80	123.5	163.5
2	'	70	41.5	90	M5	80	131.5	171.5
3	19	70	41.5	90	M6	80	131.5	171.5

KSN80-1

Ratio		3	4	5	7	10
Rated Output Torque	Nm	112	110	108	105	100
Max. Output Torque	Nm	3 Times of Rated Output Torque				
Rated Input Speed	rpm	3,000				
Max. Input Speed	rpm	5,000				
Torsional Rigidity	Nm / arcmin	10				
Max. Radial Force	N	1,300				
Max. Axial Force	N	660				
Service Life	hr	10,000(4,000 / Continuous operation)				
Efficiency	%	$\geq 97\%$				
Operating Temperature	$^{\circ}\text{C}$	$-25^{\circ}\text{C} \sim +90^{\circ}\text{C}$				
Lubrication		Vigo Grease Re #0				
Protection Class		IP 65				
Mounting Position		Any				
Noise Level	dB	≤ 60 dB				
Weight $\pm 2\%$	kg	2.3				

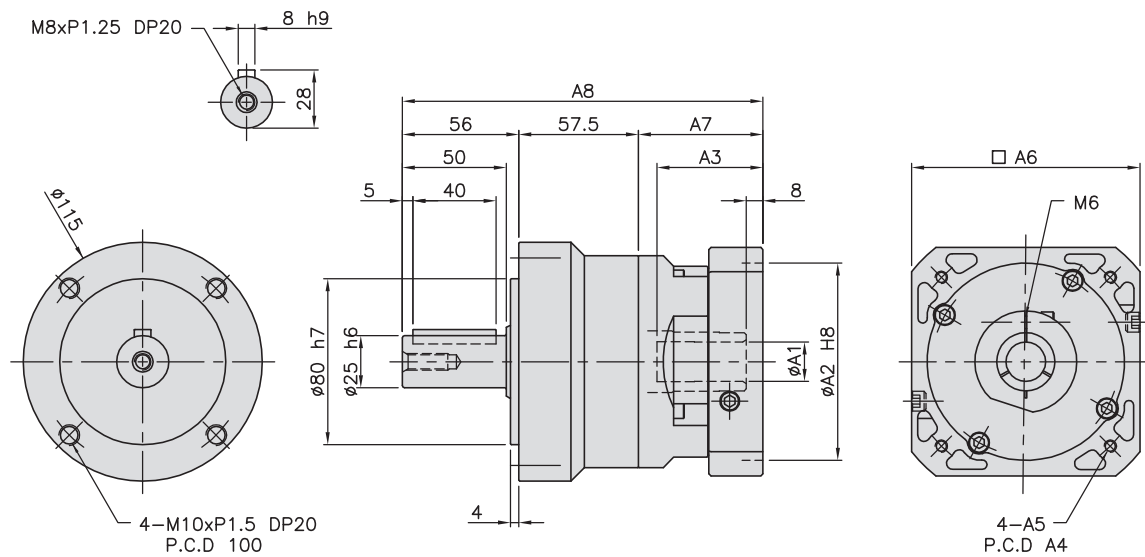
KSN80-2

Ratio		15	20	25	30	35	40	50	70	100	
Rated Output Torque	Nm	112	110	108	112	105	110	108	105	100	
Max. Output Torque	Nm	3 Times of Rated Output Torque									
Rated Input Speed	rpm	3,000									
Max. Input Speed	rpm	5,000									
Torsional Rigidity	Nm / arcmin	10									
Max. Radial Force	N	1,300									
Max. Axial Force	N	660									
Service Life	hr	10,000(4,000 / Continuous operation)									
Efficiency	%	$\geq 95\%$									
Operating Temperature	$^{\circ}\text{C}$	$-25^{\circ}\text{C} \sim +90^{\circ}\text{C}$									
Lubrication		Vigo Grease Re #0									
Protection Class		IP 65									
Mounting Position		Any									
Noise Level	dB	≤ 62 dB									
Weight $\pm 2\%$	kg	3.5									

MODEL : KSN115
Single Reduction
RATIO : 3. 4. 5. 7. 10



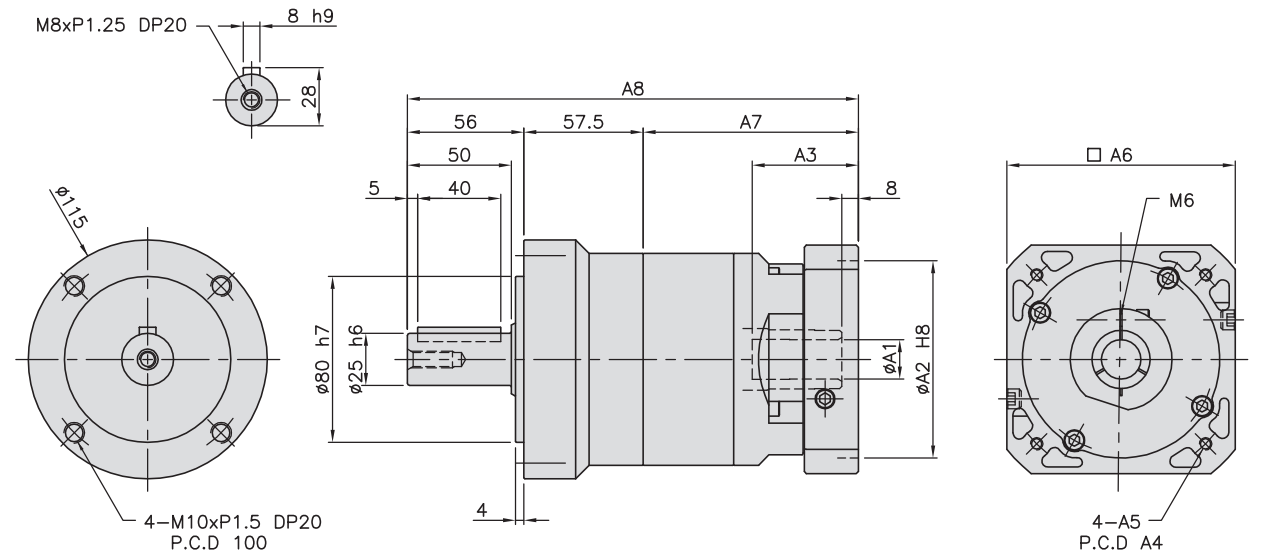
MODEL : KSN115
Double Reduction
RATIO : 15. 20. 25. 30. 35. 40. 50. 70. 100



Dimension of Input Flange

No.	∅A1	∅A2	A3	A4	A5	A6	A7	A8
1	19	70	51	90	M6	92	60	173.5
2		80	51	100	M6	92	60	173.5
3		95	51	115	M6	110	60	173.5
4	24	95	51	115	M8	110	60	173.5
5		110	51	145	M8	130	60	173.5
6		110	65.5	145	M8	130	74.5	188

unit:mm



Dimension of Input Flange

No.	∅A1	∅A2	A3	A4	A5	A6	A7	A8
1	19	70	51	90	M6	92	103.5	217
2		80	51	100	M6	92	103.5	217
3		95	51	115	M6	110	103.5	217
4	24	95	51	115	M8	110	103.5	217
5		110	51	145	M8	130	103.5	217
6		110	65.5	145	M8	130	118	231.5

unit:mm

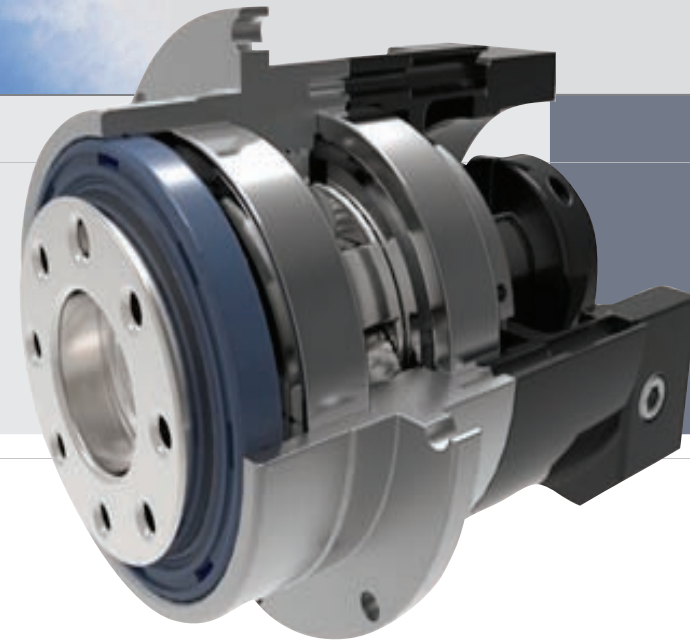
KSN115-1

Ratio		3	4	5	7	10
Rated Output Torque	Nm	165	146	160	149	141
Max. Output Torque	Nm	3 Times of Rated Output Torque				
Rated Input Speed	rpm	3,000				
Max. Input Speed	rpm	5,000				
Torsional Rigidity	Nm / arcmin	14				
Max. Radial Force	N	3,200				
Max. Axial Force	N	1,600				
Service Life	hr	10,000(4,000 / Continuous operation)				
Efficiency	%	≥97%				
Operating Temperature	°C	-25°C~+90°C				
Lubrication		Vigo Grease Re #0				
Protection Class		IP 65				
Mounting Position		Any				
Noise Level	dB	≤ 65 dB				
Weight ±2%	kg	5.4				

KSN115-2

Ratio		15	20	25	30	35	40	50	70	100	
Rated Output Torque	Nm	165	146	160	165	149	146	160	149	141	
Max. Output Torque	Nm	3 Times of Rated Output Torque									
Rated Input Speed	rpm	3,000									
Max. Input Speed	rpm	5,000									
Torsional Rigidity	Nm / arcmin	14									
Max. Radial Force	N	3,200									
Max. Axial Force	N	1,600									
Service Life	hr	10,000(4,000 / Continuous operation)									
Efficiency	%	≥95%									
Operating Temperature	°C	-25°C~+90°C									
Lubrication		Vigo Grease Re #0									
Protection Class		IP 65									
Mounting Position		Any									
Noise Level	dB	≤ 67 dB									
Weight ±2%	kg	6.7									

KSD Series



Features of KSD Series

KSD Series 제품 특성

Indication of Model Numbers

KSD	90	10	□	P0	Motor
TYPE	MODEL	RATIO	Output Bearing	Backlash Class	Motor Type
KSD	47	1-STAGE 5, 7, 10	□: STANDARD Ball Bearing T: Taper Bearing 90, 110, 140	1-Stage 2-Stage P0 ≤ 3 ≤ 5 P1 ≤ 5 ≤ 7 P2 ≤ 7 ≤ 9	Motor Brand & Model No
	64				
	90				
	110				
KSDL	140	2-STAGE 25, 35, 50, 70, 100			
	47				
	64				
	90				
	110	1-STAGE 5, 7, 10, 14, 20		1Stage 2-Stage P0 ≤ 4 ≤ 7 P1 ≤ 6 ≤ 9 P2 ≤ 8 ≤ 12	
	140				
		2-STAGE 25, 35, 50, 70 100, 140, 200			

저 소음

헬리컬 기어 사용으로 부드럽고 조용한 운전가능.

고 정밀도

백래쉬 3분, 정밀제어에 이상적.

고 강성과 높은 토크

uncage needle bearings사용 강성과 토크를 높임

모터플레이트의 모듈 디자인

모듈 디자인을 통하여 어떠한 써보모터에도 적용 가능

오일 누유 방지와 편리한 유지보수

쉽게 분리되지 않는 고정도의 윤활유 사용
효과적인 오일 누유 방지, 어떠한 위치에서도 부착 가능.

Quiet operation

Helical gears contribute to reduce vibration and noise.

High precision

Backlash 3 arc-min is ideal for precision control.

High rigidity & high torque

High rigidity & high torque are achieved by uncage needle bearings.

Modular Design of Motor Connection Plate

The special modular design of motor connection plate is suitable for any flange mounting servo motors.

No grease leakage & Maintenance-free

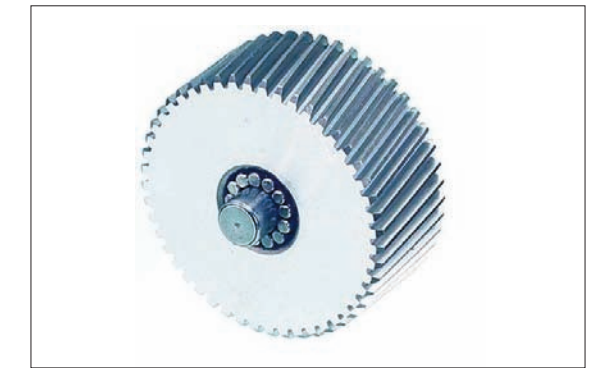
Perfect solution using high viscosity anti-separation grease. No need to replace the grease for the life of the unit. Can be attached in any position.



Integrated Planetary Arm Bracket

Planetary arm bracket과 출력 Shaft는 일체형 구조로 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.



Full Needle Bearing Design

감속기의 유성기어는 구조적 강도와 출력 향상을 위하여 Full needle bearing을 적용 하였습니다.

The planetary gear transmission employs full needle bearing without retainer to increase the contact surface, which greatly upgrades structural rigidity and output torque.



Collet Chuck Locking Mechanism

감속기의 입력 부분과 Motor output shaft를 연결하기 위한 방식으로 역학적 확실한 체결력과 높은 속도에서 구동 할 때에도 백래쉬가 발생하지 않고 동력을 전달합니다.

The input-end and the motor are coupled through a collet chuck locking mechanism. It is dynamically balanced to assure concentricity and balance on the connection when running at high speed. No backlash for power transmission.



One-piece Helical Gear Box

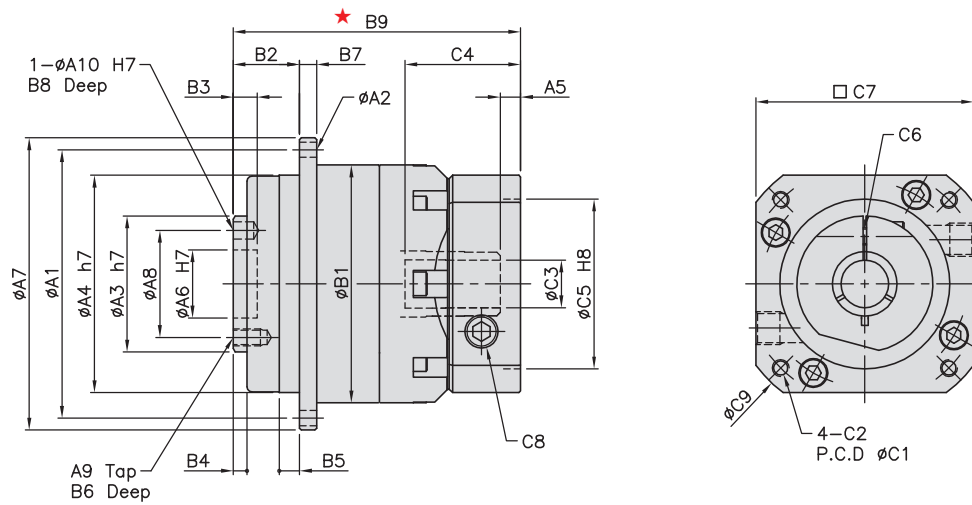
감속기 케이스와 링기어를 일체형으로 가공, 기어 맞물림이 스퍼기어의 2배이상인 Helical gear 적용으로 동작 소음을 최소화하여 고회력 저소음, 저백래쉬를 실현하였습니다.

The gear box and internal gear ring are one-piece constructed, 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 and low backlash.

MODEL : KSD
Single Reduction
RATIO : 5, 7, 10



High Precision Planetary Reducer



*Output Dimensions P.96 참조

unit:mm

Model code	47	64	90	110	140
A1	67	79	109	135	168
A2	8-3.4	8-4.5	8-5.5	8-5.5	12-6.8
A3	28	40	63	80	100
A4	47	64	90	110	140
A5	6	6	7.5, 21.5	10, 20	10
A6	12	20	31.5	40	50
A7	72	86	118	146	179
A8	20	31.5	50	63	80
A9	4-M3 x P0.5	7-M5 x P0.8	7-M6 x P1.0	11-M6 x P1.0	11-M8 x P1.25
A10	3	5	6	6	8
B1	59	70	98	125	156
B2	19.5	19.5	30	29	38
B3	5	7	12	12	12
B4	3	4	6	6	6
B5	5	6	10	10	15
B6	6.5	10	12	12	16
B7	4	5	7	8	10
B8	4	6	6	7	7
B9	73	84.5	118, 132	153, 163	186.5
C1	46, 60, 63	70, 75, 90	90, 100, 115, 145	115, 145, 165	145, 165, 200
C2	M3, M4, M5	M4, M5, M6	M5, M6, M8	M6, M8, M10	M8, M10, M12
C3	8,(11)	14,(19)	19,(22, 24)	24,(28, 32)	28, 32, 35
C4	30.5	34	43.5, 57.5	67, 77	84.5
C5	30, 40, 50	50, 60, 70	50, 70, 80, 95, 110	110, 130	110, 130, 180
C6	M3	M5	M6	M8	M10
C7	46, 55	64, 70, 80	92, 110, 130	122, 130, 150	146, 150, 190
C8	1/8"PT	1/8"PT	1/8"PT	1/4"PT	1/4"PT
C9	58, 74	80, 90, 105	116, 140, 165	138, 165, 190	170, 190, 245

■ Mass Moments of Inertia (kg · cm²)

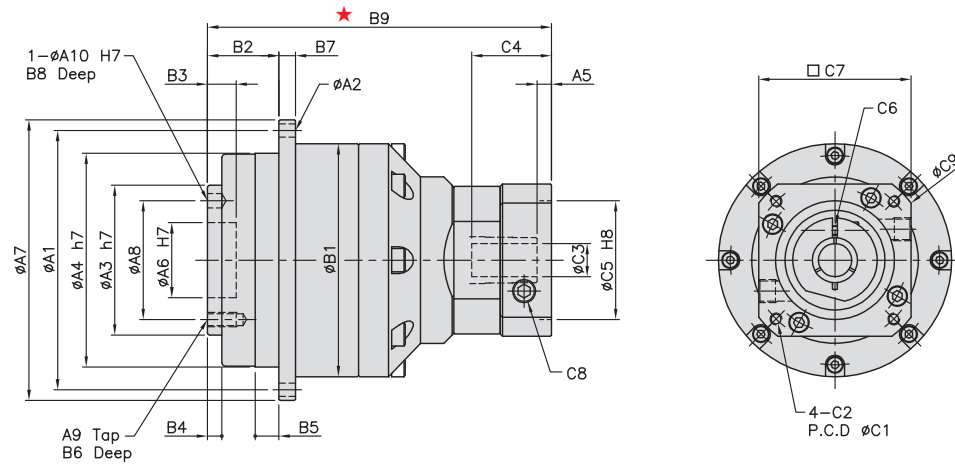
Ratio	47	64	90	110	140
5	0.03	0.12	0.45	2.70	7.41
7	0.03	0.12	0.45	2.64	7.12
10	0.03	0.12	0.43	2.56	7.01

Model No.	Unit	Ratio	47	64	90	110	140
Rated Output Torque	Nm	5	20	50	155	333	618
		7	19	47	142	309	573
		10	16	43	136	294	549
Max. Output Torque	Nm	5~10	3 Times of Rated Output Torque				
Rated Input Speed	rpm	5~10	3,000	3,000	3,000	3,000	3,000
Max. Input Speed	rpm	5~10	6,000	6,000	6,000	6,000	6,000
Backlash P0	arc min	5~10	≤3	≤3	≤3	≤3	≤3
Backlash P1	arc min	5~10	≤5	≤5	≤5	≤5	≤5
Backlash P2	arc min	5~10	≤7	≤7	≤7	≤7	≤7
Torsional Rigidity	Nm/arc min	5~10	6	14	30	86	155
Max. Axial Force Ball Bearing	N	5~10	1020	1260	4230	6360	7035
Max. Axial Force Taper Bearing	N	5~10	-	-	7330	11,500	18,600
Service Life	hr	5~10	10,000 (4,000 / Continuous operation)				
Efficiency	%	5~10	≥97%				
Operating Temperature	°C	5~10	-25° C ~ +95° C				
Lubrication		5~10	Vigo Grease Re #0				
Gearbox Protection Degree		5~10	IP65				
Mounting Position		5~10	Any				
Noise Level	dB	5~10	≤56	≤58	≤60	≤63	≤65
Weight ±3%	Kg	5~10	0.65	1.3	3.85	7.65	13.2



MODEL : KSD
Double Reduction
RATIO : 25, 35, 50, 70, 100

High Precision Planetary Reducer



*Output Dimensions P.96 참조

unit:mm

Model code	47	64	90	110	140
A1	67	79	109	135	168
A2	8-3.4	8-4.5	8-5.5	8-5.5	12-6.8
A3	28	40	63	80	100
A4	47	64	90	110	140
A5	6	6	6	9, 23	10, 20
A6	12	20	31.5	40	50
A7	72	86	118	146	179
A8	20	31.5	50	63	80
A9	4-M3 x P0.5	7-M5 x P0.8	7-M6 x P1.0	11-M6 x P1.0	11-M8 x P1.25
A10	3	5	6	6	8
B1	59	70	98	125	156
B2	19.5	19.5	30	29	38
B3	5	7	12	12	12
B4	3	4	6	6	6
B5	5	6	10	10	15
B6	6.5	10	12	12	16
B7	4	5	7	8	10
B8	4	6	6	7	7
B9	99	109	144.5	189, 203.5	224.5, 234.5
C1	46, 60, 63	46, 60, 63	70, 75, 90	90, 100, 115, 145	115, 145, 165
C2	M3, M4, M5	M3, M4, M5	M4, M5, M6	M5, M6, M8	M6, M8, M10
C3	8,(11)	8,(11)	14,(19)	19,(22, 24)	24,(28, 32)
C4	30.5	32	33.5	59, 73.5	67, 77
C5	30, 40, 50	30, 40, 50	50, 60, 70	70, 80, 95, 110	95, 110, 130
C6	M3	M3	M5	M6	M8
C7	46, 55	46, 55	64, 70, 80	92, 110, 130	122, 130, 150
C8	1/8"PT	1/8"PT	1/8"PT	1/8"PT	1/4"PT
C9	58, 74	58, 74	80, 90, 105	116, 140, 165	138, 165, 190

■ Mass Moments of Inertia (kg · cm²)

Ratio	47	64	90	110	140
25	0.03	0.03	0.15	0.45	2.70
35	0.03	0.03	0.15	0.45	2.70
50	0.03	0.03	0.14	0.40	2.60
70	0.03	0.03	0.14	0.40	2.60
100	0.03	0.03	0.14	0.40	2.60

Model No.	Unit	Ratio	47	64	90	110	140
Rated Output Torque	Nm	25	20	50	155	333	618
		35	19	47	142	309	573
		50	20	50	155	333	618
		70	19	47	142	309	573
		100	16	43	136	294	549
Max. Output Torque	Nm	25~100	3 Times of Rated Output Torque				
Rated Input Speed	rpm	25~100	3,000	3,000	3,000	3,000	3,000
Max. Input Speed	rpm	25~100	6,000	6,000	6,000	6,000	6,000
Backlash P0	arc min	25~100	≤5	≤5	≤5	≤5	≤5
Backlash P1	arc min	25~100	≤7	≤7	≤7	≤7	≤7
Backlash P2	arc min	25~100	≤9	≤9	≤9	≤9	≤9
Torsional Rigidity	Nm/arc min	25~100	6	14	30	86	155
Max. Axial Force Ball Bearing	N	25~100	1,020	1,260	4,230	6,360	7,035
Max. Axial Force Taper Bearing	N	25~100	-	-	7,330	11,500	18,600
Service Life	hr	25~100	10,000 (4,000 / Continuous operation)				
Efficiency	%	25~100	≥94%				
Operating Temperature	°C	25~100	-25° C ~ +90° C				
Lubrication		25~100	Vigo Grease Re #0				
Gearbox Protection Degree		25~100	IP65				
Mounting Position		25~100	Any				
Noise Level	dB	25~100	≤56	≤58	≤60	≤63	≤65
Weight ±3%	Kg	25~100	0.98	1.82	4.45	10.3	17.6

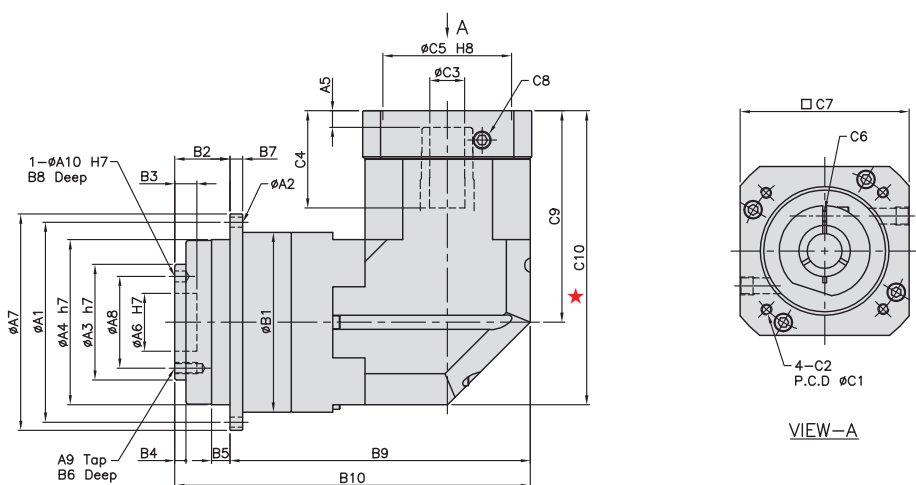
090 * () 안은 주문형입니다. * A5, ★:적용모터에 따라 달라질 수 있습니다.

* 연속운전 사용시 본사와 상담후 선정바랍니다.

MODEL : KSDL
Single Reduction
RATIO : 5, 7, 10, 14, 20



High Precision Planetary Reducer



*Output Dimensions P.96 참조

unit:mm

Model code	47	64	90	110	140
A1	67	79	109	135	168
A2	8-3.4	8-4.5	8-5.5	8-5.5	12-6.6
A3	28	40	63	80	100
A4	47	64	90	110	140
A5	6	6	9, 23.5	10, 20	10
A6	12	20	31.5	40	50
A7	72	86	118	146	179
A8	20	31.5	50	63	80
A9	4-M3xP0.5	7-M5xP0.8	7-M6xP1.0	11-M6xP1.0	11-M8xP1.25
A10	3	5	6	6	8
B1	59	70	98	125	156
B2	19.5	19.5	30	29	38
B3	5	7	12	12	12
B4	3	4	6	6	6
B5	5	6	10	10	15
B6	6.5	10	12	12	16
B7	4	5	7	8	10
B8	4	6	6	7	7
B9	82.5	105.5	163.6	203	227.5
B10	102	125	193.6	232	265.5
C1	46, 60, 63	70, 75, 90	90, 100, 115, 145	115, 145, 165	145, 165, 200
C2	M3, M4, M5	M4, M5, M6	M5, M6, M8	M6, M8, M10	M8, M10, M12
C3	8,(11)	14,(19)	19,(22, 24)	24,(28, 32)	28, 32, 35
C4	27	33.5	53, 67.5	67, 77	84.5
C5	30, 40, 50	50, 60, 70	70, 80, 95, 110	95, 110, 130	110, 130, 180
C6	M3	M5	M6	M8	M10
C7	46, 55	64, 70, 80	92, 110, 130	122, 130, 150	146, 150, 190
C8	1/8"PT	1/8"PT	1/8"PT	1/4"PT	1/4"PT
C9	60	77	115.3, 129.8	141, 151	174
C10	82	108	160.3, 174.8	201, 211	245

■ Mass Moments of Inertia (kg · cm²)

Ratio	47	64	90	110	140
5	0.09	0.36	2.28	6.85	23.50
7	0.09	0.36	2.28	6.85	23.50
10	0.09	0.36	2.28	6.85	23.50
14	0.03	0.08	1.88	6.20	21.80
20	0.03	0.08	1.88	6.20	21.80

Model No.	Unit	Ratio	47	64	90	110	140		
Rated Output Torque	Nm	5	20	50	155	333	618		
		7	19	47	142	309	573		
		10	16	43	136	294	549		
		14	19	47	142	309	573		
Max. Output Torque	Nm	5~20	3 Times of Rated Output Torque						
		Rated Input Speed	rpm	5~20	3,000	3,000	3,000	3,000	3,000
		Max. Input Speed	rpm	5~20	6,000	6,000	6,000	6,000	6,000
		Backlash P0	arc min	5~20	≤4	≤4	≤4	≤4	≤4
Backlash P1	arc min	5~20	≤6	≤6	≤6	≤6	≤6		
Backlash P2	arc min	5~20	≤8	≤8	≤8	≤8	≤8		
Torsional Rigidity	Nm/arc min	5~20	6	14	30	86	155		
Max. Axial Force Ball Bearing	N	5~20	1,020	1,260	4,230	6,360	7,035		
Max. Axial Force Taper Bearing	N	5~20	-	-	7,330	11,500	18,600		
Service Life	hr	5~20	10,000 (4,000 / Continuous operation)						
Efficiency	%	5~20	≥95%						
Operating Temperature	°C	5~20	-25° C ~ +90° C						
Lubrication		5~20	Vigo Grease Re #0						
Gearbox Protection Degree		5~20	IP65						
Mounting Position		5~20	Any						
Noise Level	dB	5~20	≤68	≤70	≤72	≤74	≤76		
Weight ±3%	Kg	5~20	1.08	2.2	6.8	13.6	23.2		

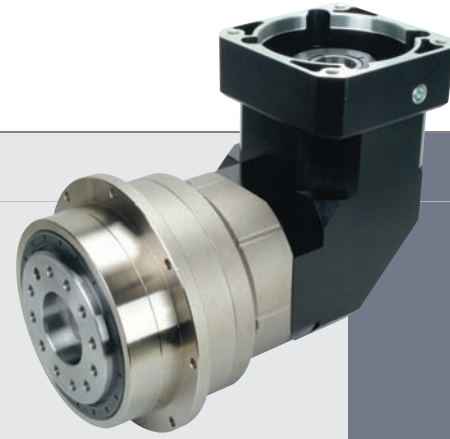
092 * () 안은 주문형입니다. * A5, ★:적용모터에 따라 달라질 수 있습니다.

* 연속운전 사용시 본사와 상담후 선정바랍니다.

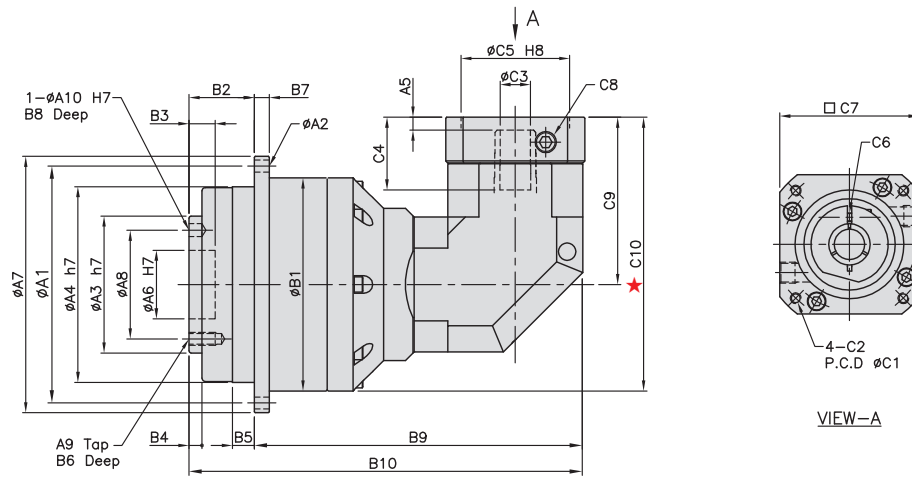
MODEL : KSDL

Double Reduction

RATIO : 25, 35, 50, 70, 100, 140, 200



High Precision Planetary Reducer



*Output Dimensions P.96 참조

unit:mm

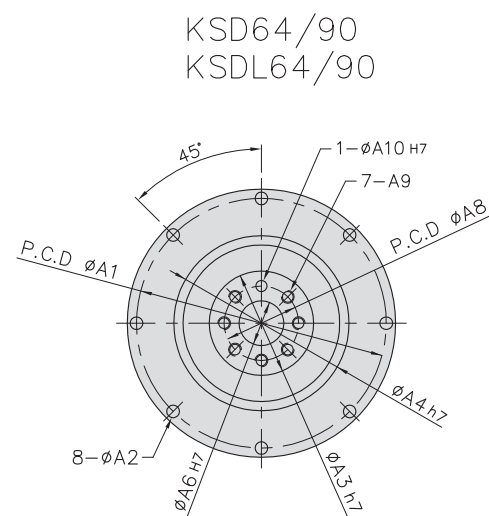
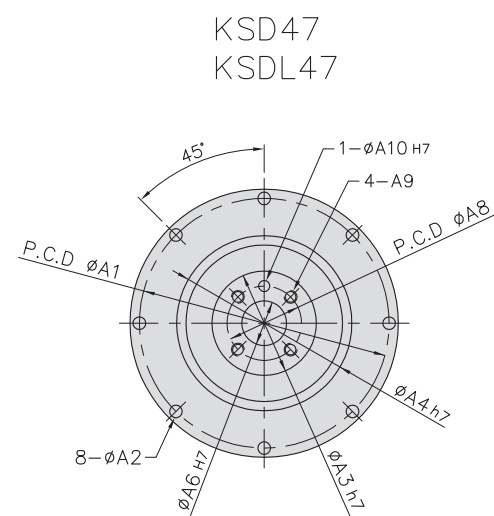
Model code	47	64	90	110	140
A1	67	79	109	135	168
A2	8-3.4	8-4.5	8-5.5	8-5.5	12-6.6
A3	28	40	63	80	100
A4	47	64	90	110	140
A5	6	6	6	10	10
A6	12	20	31.5	40	50
A7	72	86	118	146	179
A8	20	31.5	50	63	80
A9	4-M3xP0.5	7-M5xP0.8	7-M6xP1.0	11-M6xP1.0	11-M8xP1.25
A10	3	5	6	6	8
B1	59	70	98	125	156
B2	19.5	19.5	30	29	38
B3	5	7	12	12	12
B4	3	4	6	6	6
B5	5	6	10	10	15
B6	6.5	10	12	12	16
B7	4	5	7	8	10
B8	4	6	6	7	7
B9	108.5	118.5	151	210.6	254.5
B10	128	138	181	239.6	292.5
C1	46, 60, 63	46, 60, 63	70, 75, 90	90, 100, 115, 145	115, 145, 165
C2	M3, M4, M5	M3, M4, M5	M4, M5, M6	M5, M6, M8	M6, M8, M10
C3	8,(11)	8,(11)	14,(19)	19,(22, 24)	24,(28, 32)
C4	27	27	33.5	53, 67.5	67, 77
C5	30, 40, 50	30, 40, 50	50, 60, 70	70, 80, 95, 110	95, 110, 130
C6	M3	M3	M5	M6	M8
C7	46, 55	46, 55	64, 70, 80	92, 110, 130	122, 130, 150
C8	1/8"PT	1/8"PT	1/8"PT	1/8"PT	1/4"PT
C9	61	61	77	115.3, 129.8	141, 156
C10	90.5	96	126	177.8, 192.3	219, 234

■ Mass Moments of Inertia (kg · cm²)

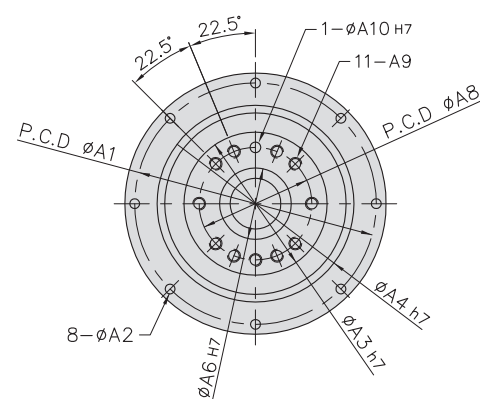
Ratio	47	64	90	110	140
25	0.09	0.36	2.28	6.85	23.5
35	0.09	0.36	2.28	6.85	23.5
50	0.09	0.36	2.28	6.85	23.5
70	0.09	0.36	2.28	6.85	23.5
100	0.09	0.36	2.28	6.85	23.5
140	0.03	0.08	1.88	6.20	21.8
200	0.03	0.08	1.88	6.20	21.8

Model No.	Unit	Ratio	47	64	90	110	140
Rated Output Torque	Nm	25	20	50	155	333	618
		35	19	47	142	309	573
		50	20	50	155	333	618
		70	19	47	142	309	573
		100	16	43	136	294	549
		140	19	47	142	309	573
200	16	43	136	294	549		
Max. Output Torque	Nm	25~200	3 Times of Rated Output Torque				
Rated Input Speed	rpm	25~200	3,000	3,000	3,000	3,000	3,000
Max. Input Speed	rpm	25~200	6,000	6,000	6,000	6,000	6,000
Backlash P0	arc min	25~200	≤7	≤7	≤7	≤7	≤7
Backlash P1	arc min	25~200	≤9	≤9	≤9	≤9	≤9
Backlash P2	arc min	25~200	≤12	≤12	≤12	≤12	≤12
Torsional Rigidity	Nm/arc min	25~200	6	14	30	86	155
Max. Axial Force Ball Bearing	N	25~200	1,020	1,260	4,230	6,360	7,035
Max. Axial Force Taper Bearing	N	25~200	-	-	7,330	11,500	18,600
Service Life	hr	25~200	10,000 (4,000 / Continuous operation)				
Efficiency	%	25~200	≥92%				
Operating Temperature	°C	25~200	-25° C ~ +90° C				
Lubrication		25~200	Vigo Grease Re #0				
Gearbox Protection Degree		25~200	IP65				
Mounting Position		25~200	Any				
Noise Level	dB	25~200	≤68	≤70	≤72	≤74	≤76
Weight ±3%	Kg	25~200	1.4	2.7	7.4	15.8	27.3

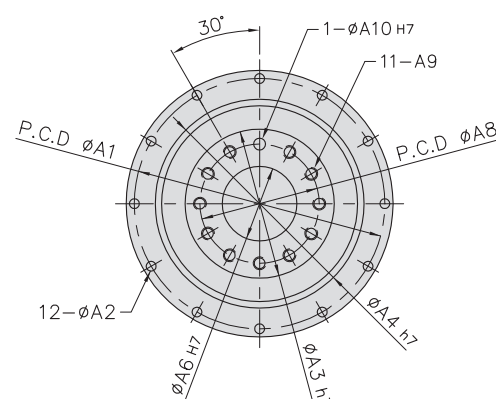
Output Dimensions



KSD110
KSDL110



KSD140
KSDL140



unit:mm

Dimension	KSD47 KSDL47	KSD64 KSDL64	KSD90 KSDL90	KSD110 KSDL110	KSD140 KSDL140
A1	67	79	109	135	168
A2	3.4	4.5	5.5	5.5	6.6
A3	28	40	63	80	100
A4	47	64	90	110	140
A6	12	20	31.5	40	50
A8	20	31.5	50	63	80
A9	M3x0.5P	M5x0.8P	M6x1P	M6x1P	M8x1.25P
A10	3	5	6	6	8

감속기 정밀도 비교 자료 및 대응 품목

[KSB Type] 고강성, 고정밀급 감속기 (Helical Type)

ATG	APEX	SPG	SHIMPO
KSB(size) - (1 stage) - P5≤1 (2 stage) - P5≤3 (3 stage) - P5≤5	AB(size) - (1 stage) - P0 (2 stage) - P0		VRB - (size) - (2 stage)
KSB(size) - (1 stage) - P0≤3 (2 stage) - P0≤5 (3 stage) - P0≤7	AB(size) - (1 stage) - P1 (2 stage) - P1		VRB - (size) - (1 stage) (2 stage)
KSB(size) - (1 stage) - P1≤5 (2 stage) - P1≤7 (3 stage) - P1≤9	AB(size) - (1 stage) - P2 (2 stage) - P2	SPIH(size) - P - (1 stage) - P - (2 stage)	

[KSE Type] 고강성, 고정밀급 감속기 (Helical Type)

ATG	APEX	SPG	SHIMPO
KSE(size) - (1 stage) - P5≤1 (2 stage) - P5≤3 (3 stage) - P5≤5			
KSE(size) - (1 stage) - P0≤3 (2 stage) - P0≤5 (3 stage) - P0≤7			VRL - (size) - (2 stage)
KSE(size) - (1 stage) - P1≤5 (2 stage) - P1≤7 (3 stage) - P1≤9			VRL - (size) - (1 stage) (2 stage)

[KSD Type] 고강성, 고정밀급 감속기 (Helical Type)

ATG	APEX	SPG	SHIMPO
KSD(size) - (1 stage) - P0≤3 (2 stage) - P0≤5	AD(size) - (1 stage) - P1 (2 stage) - P1		VRT - (size) - (1 stage) - (2 stage)
KSD(size) - (1 stage) - P1≤5 (2 stage) - P1≤7	AD(size) - (1 stage) - P2 (2 stage) - P2	SPIFH(size) - P - (1 stage) - P - (2 stage)	
KSD(size) - (1 stage) - P2≤7 (2 stage) - P2≤9			

[PGX - H Type] 고강성, 정밀급 보급형 감속기 (Helical Type)

ATG	APEX	SPG	SHIMPO
PGX - H Series	AE(Front Plate) Series	SPIH-S Series	

[KFA/KSN Type] 고강성, 정밀급 보급형 감속기 (Helical Type)

ATG	APEX(Spur Gear)	NEUGART(Spur Gear)	SHIMPO
KFA Series	PS II Series		VRSF Series
KSN Series	PG II Series	PLE Series	

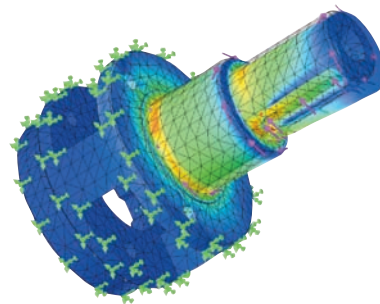
[KFB/KFE Type] 고강성, 정밀급 보급형 감속기 (Spur Type)

ATG	APEX	SPG	SHIMPO
KFB Series	PA II Series	SPI-S Series	
KFE Series	PE II Series		

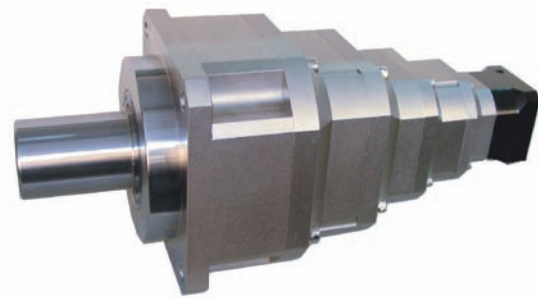
Concept of Planetary Reducer

STAGE NUMBERS : The sun gear and planetary gear forms an independent speed reduction gear train. If there is only one gear train in the gear reducer, it is defined as one stage transmission. In order to achieve higher speed reduction ratio, multiple stages transmission is required. Li Ming'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 allow speed reduction ratio from 100 to over 100,000.

RATED OUTPUT TORQUE : Under the rated loading and long time running conditions, the allowable output torque for a gear reducer. The maximum output is the triple of this value.



3D-CAE Design and analysis



Loading Test

Set collar, Clamp 능력 TEST 결과치

ATG		TEST RESULTS			LM - 080513	
LI MING MACHINERY CO., LTD		TECHNICIAN : Cheng-Yi Chang		DATE: 13/05/2008		
MODEL	KSB	TEST CODE	LM-014524	RATIO	KSB-1/10	CLASS : P1
Test Objective: Determine maximum torque capacity of set collar and clamp system				테스트 목적: Set Collar와 클램핑 시스템의 최대 토크를 측정하기 위함		
Test Equipment: Torque wrench				테스트장비: 토크 렌치		
Test Method: 1. Secure set collar, insert the motor shaft into set collar 2. Tighten the set collar bolt with torque wrench 3. Then fixed in fixture and apply torque, until the motor shaft slip and record the torque value. 4. Record value from torque wrench				테스트 방법: 1. Set Collar를 고정한 후, motor shaft를 넣는다. 2. 토크 렌치로 Set Collar를 조인다. 3. 고정장치에 토크 값을 적용한 후, motor shaft slip이 일어나는 값을 기록한다. 4. 토크 렌치로부터 값을 기록한다.		
Table A						
MODEL	Clamp screw	Strength tightening torque	Tighten torque (N.M)	Value (n.M)		
KSB 44	M3*P 0.5	12.9	2.2	58		
KSB 62	M4*P 0.7	12.9	4.83	102		
	M5*P 0.8	12.9	10	164		
KSB 90	M6*P 1.0	12.9	16.3	233		
KSB 120	M8*P 1.25	12.9	41	423		
KSB 142, 180, 220	M10*P 1.5	12.9	81	678		

Lubricating GREASE

VIGO GREASE RE #0

*VIGO GREASE RE #0 제품은 열 안정성이 우수한 합성 기유와 내열성, 내수성 및 기계적 안정성이 우수한 리튬계 증주제, 극압 조건하에서 마모방지 성능이 탁월한 유기 몰리브덴 첨가제 및 고체윤활제 등을 주원료로 하여 제조된 로봇 감속기어 전용 합성 그리스로서 일본의 주요 로봇(화낙, 야스카와 등) 및 기어 제조사(TEIJIN SEIKI 등) 들로부터 승인을 획득한 우수한 제품입니다.

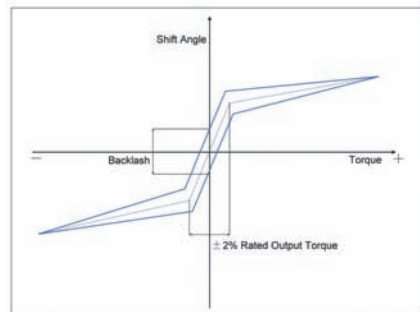
*본 제품은 합성계 기유로 제조되어 광범위한 온도에서 적용이 가능하며, 유동성이 우수하여 감속기어의 복잡한 윤활부위에 잘 침투되어 기어를 윤활시켜 증으로서 설비의 효율을 향상시켜 주고, 설비의 수명을 연장시켜 주는 특징이 있어 과도한 조건하에서 운전되는 산업용 로봇의 감속기어 부위 윤활에 가장 적합합니다.

*사용온도 범위 : -40 ~ 130°C

대표성상

시험항목	시험방법	VIGOGREASE RE #0
증주제 종류	적외선분광계	리튬
외관	육안	노란색, 버터상
혼화주도	ASTM D 217	385
적점	ASTM D 566	190
동판부식 (100°C x 24h)	ASTM D 4048	부식없음
혼화안정도, 10만회	ASTM D 217	400
산화안정도 (99°C x 100h), kPa	ASTM D 942	20
고속 4-ball 극압성능, 용착점, N	ASTM D 2596	3,089
저온 토오크 시험 (-30°C), mN m	ASTM D 1478-63	
기동 토오크		220
회전 토오크		32

ATG 감속기 Backlash 측정 방법



- 일반적으로 감속기의 정도를 나타내는 Backlash 를 측정할 때에는 감속기의 정격 토크 부하토오크 2%를 가하여 측정된 값을 읽습니다 .
- KSB/KSE Series 감속기의 경우 모든 가공 부품을 정밀 측정 장비로 전수 검사를 하며 정밀도에 따라 Backlash 등급을 선별하여 제품 생산을 하고 있습니다.

ATG 감속기 Model별 정밀도(Backlash) 등급

1) ATG 감속기 Model 별 Backlash 관계 (Helical Gear Type)

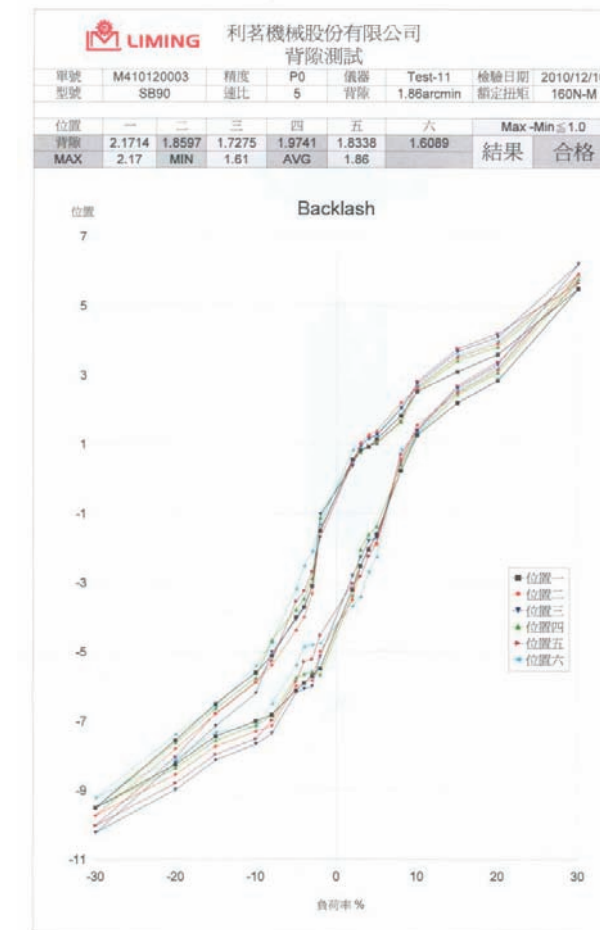
MODEL	감속비(i)	PS	P0	P1	P2
PGX-H	1 stage (1/3~1/10)	-	-	-	≤8
	2 stage (1/15~1/100)	-	-	-	≤10
PBL-H	1 stage (1/3~1/20)	-	-	-	≤10
	2 stage (1/15~1/200)	-	-	-	≤12
KSB/KSE	1 stage (1/3~1/10)	≤1	≤3	≤5	-
	2 stage (1/15~1/100)	≤3	≤5	≤7	-
	3 stage (1/125~1/1000)	≤5	≤7	≤9	-
KSD	1 stage (1/5~1/10)	-	≤3	≤5	≤7
	2 stage (1/25~1/100)	-	≤5	≤7	≤9
KSDL	1 stage (1/5~1/10)	-	≤4	≤6	≤8
	2 stage (1/25~1/100)	-	≤7	≤9	≤12
KFA / KSN	1 stage (1/3~1/10)	-	-	-	≤8
	2 stage (1/15~1/100)	-	-	-	≤12

2) ATG 감속기 Model 별 Backlash 관계 (Spur Gear Type)

MODEL	감속비(i)	P1	P2	
KFB/KFE	1 stage (1/3~1/10)			≤8
	2 stage (1/15~1/100)			≤12

3) 감속기 Backlash Test Report

Model : KSB90-5-P0
정밀도등급 : ≤3



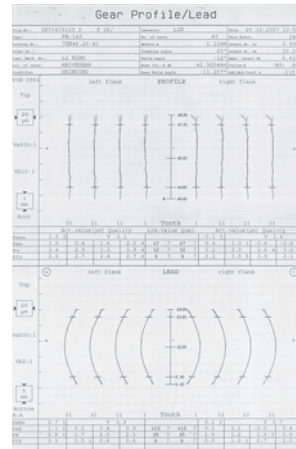
4) ATG 기술 연구소(구로)에서는 Backlash 측정장비(기계식)를 자체 설계 제작하여 보유하고 있습니다. 유성치차 감속기의 Backlash를 별도로 측정 , 확인하고자 하는 고객(USER)에게는 자체 Test Room을 Open하여 고객 입회하에 바로 측정이 가능합니다 .

- 통상 Backlash는 정격 토크 (Tr)의 2~3% 측정하며 필요에 따라 그 이상의 토크(Tr)로도 측정할 수 있습니다 .

- Backlash 각도 환산
- 1 arcmin = 0.017 °
- 3 arcmin = 0.05 °
- 5 arcmin = 0.083 °
- 7 arcmin = 0.117 °



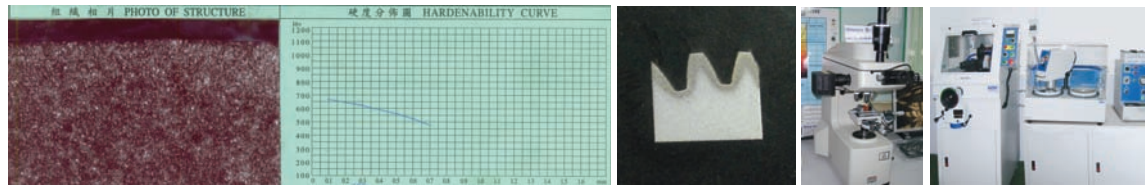
Gear Profile/Lead



HIGH PRECISION GEAR MACHINING:The planetary gear and sun gear are manufactured from high quality Cr-Mo alloy steel(SNCM220), precision machined and carbonized to hardness 57-60 HRC. 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.

Heat Treatment

- Metallograph ● Hardenability curve



Lubrication

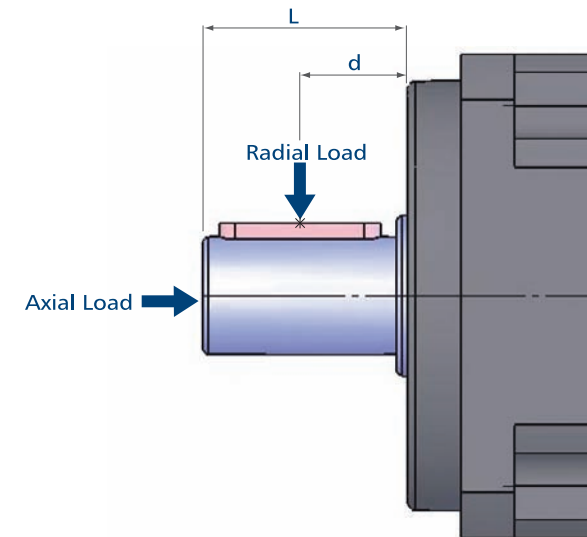


- IP65 Test Report by Metal Industries & Development centre.

- LUBRICATION : It's no essential to replace lubricant during the service life of the planetary gear reducer. IEC-529 STANDARD 규정 등급입니다. 즉, ATG 감속기는 방진 방수(IP65)를 가진 구조라는 뜻입니다.

첫 번째 보호 등급		두 번째 보호 등급	
NO	고형 물체의 침투, 접촉에 의한 보호 등급	NO	물의 침입에 대한 보호 등급
0	보호 없음	0	보호 없음
1	직경 50mm 이상의 고체에 보호	1	응결된 물방울에 대한 보호
2	직경 50mm 이상의 고체에 보호	2	15° 각도에서 떨어지는 물방울에 보호
3	직경 50mm 이상의 고체에 보호	3	60° 각도에서 떨어지는 물방울에 보호
4	직경 50mm 이상의 고체에 보호	4	모든 방향에서 분사되는 물의 침투 방지
5	운전에 영향을 안 줄 정도의 먼지에 대한 보호	5	모든 방향에서 분사되는 압력을 가진 물의 침투 방지
6	먼지에 대한 완전한 보호	6	고압 분무기로 분사되는 물의 침투 방지
		7	잠정적으로 침수된 물속에서의 물의 침투 방지
		8	압력을 가진 수중에서의 보호

Permitted Radial Loads on Output Shaft of the Gearbox



감속기의 OUT SHAFT 쪽에 벨트를 이어 기구에 동력전달을 할 때, Radial load(OHL)를 계산하는 방식은 아래와 같습니다.

$$OHL = (T \times s \times f \times p) / R$$

T = 사용할 최대 토크

s = 부하 하중(아래 Table-1 표)

f = 주행 하중(아래 Driven Coefficient 표)

p = 위치점: 부하 값이 D와 같으면 P = 1

부하 값이 D 보다 크면 P = 1.5

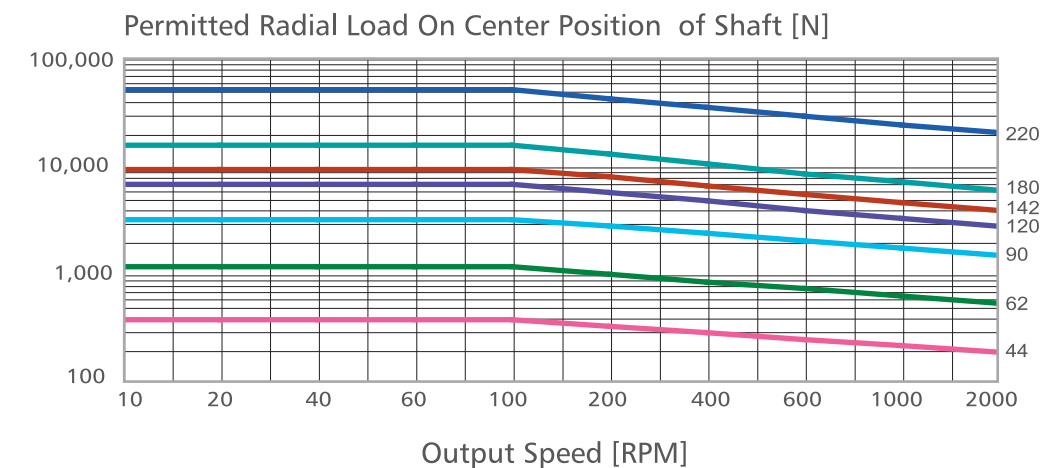
R = 벨트 풀리 또는 제안 풀리의 반지름 값

Loading classification	Running per Day			
	0.50 hr	2 hr	8~10 hr	10~24hr
Uniform	0.80	0.90	1.00	1.25
Medium shock	0.90	1.00	1.25	1.50
Heavy shock	1.00	1.25	1.50	1.75

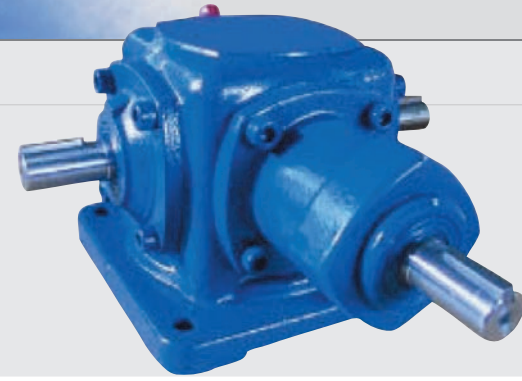
Driven Coefficient (f)	
Driven	(f)
Chain pulley	1.00
Gear	1.25
V-belt	1.50
Flat-belt	2.50

- 한시간 이내에 정회전·역회전·정지 상태를 10회 이상 바꿀 시에는 상기표에 기재된 Data 값의 ±20% 차이가 나타날 수도 있습니다.

- The permitted radial load is reduced when output RPM increased.



TH Series



System Drawing of Model TH

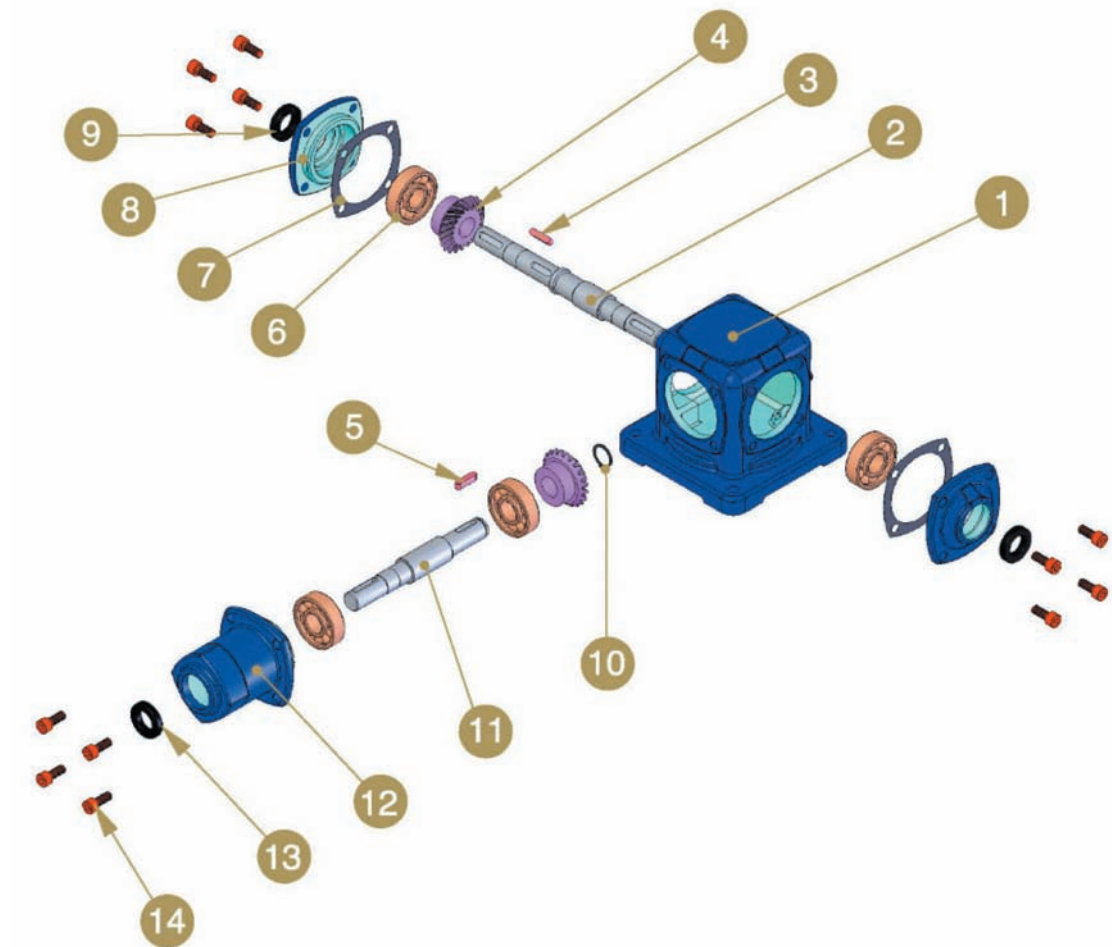
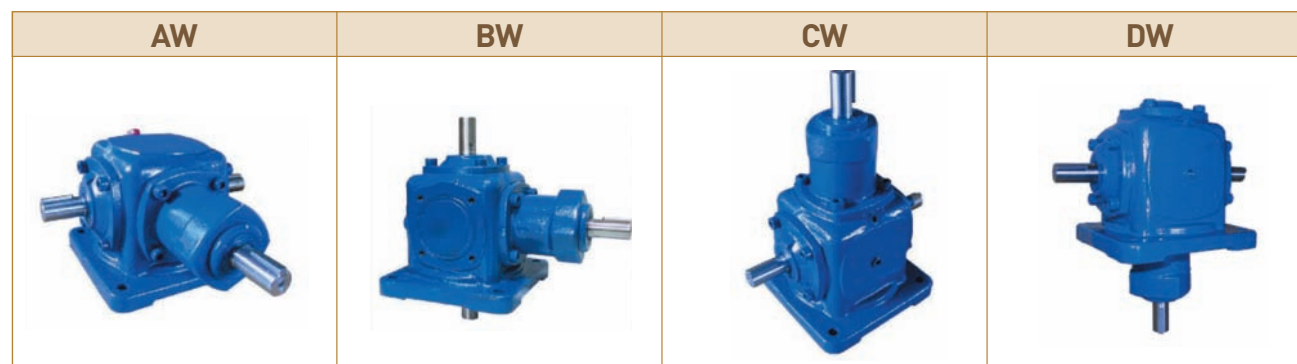
BEVEL GEAR REDUCER SERIES

“T” 자형 베벨 감속기

Indication of Model Numbers

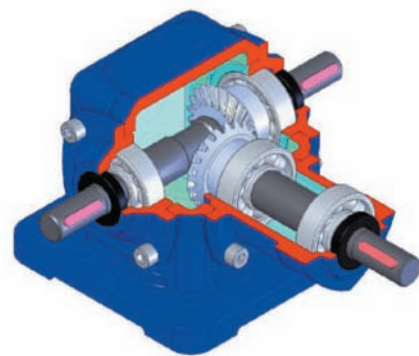
TH	15	1	AW
Type	Model	Ratio	Shaft Direction
TH	15 19 25 40	1/1 1/2	AW BW CW DW

Shaft Direction



NO.	NAME OF PARTS	NO.	NAME OF PARTS
1	Gear Shell	9	Oil Seal TC
2	Output Shaft	10	Snap Ring
3	Key	11	Input Shaft
4	Bevel Gear	12	Input Shaft Cover
5	Key	13	Oil Seal SC & TC
6	Ball Bearing	14	HEX Screw
7	Paper Packing		
8	Output Shaft Cover		

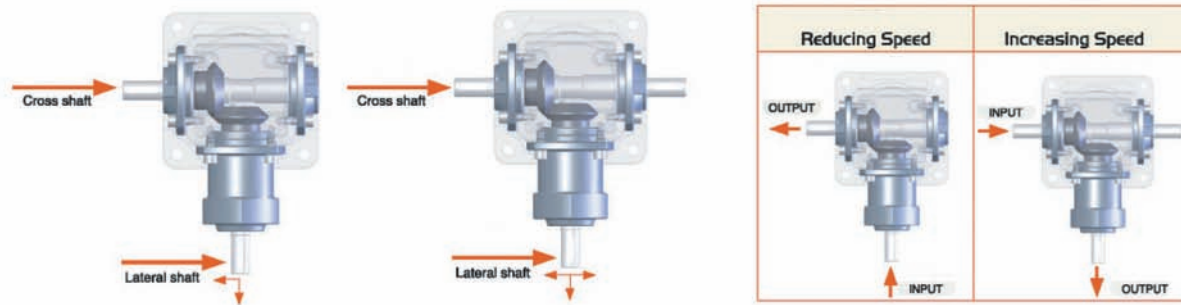
Features of TH Series



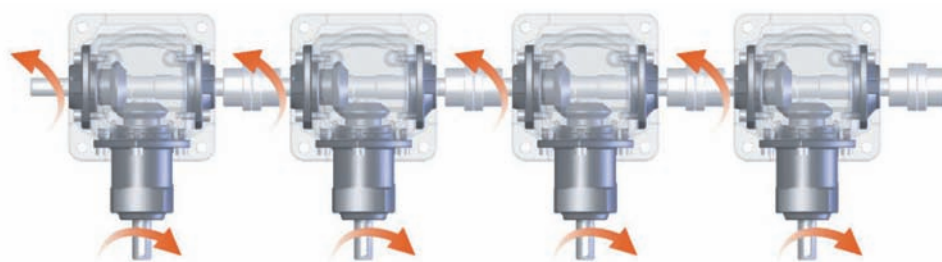
제품 몸체 : 고강성 FC 주철
 기어 : 침탄 처리를 한 SCM21 합금강
 샤프트 : 중탄소강(S45C) / 베어링 : 볼베어링
 오일씰 : 먼지와 누유를 예방할 수 있는 이중립 오일씰

CASING : High rigid FC cast iron.
 GEAR : Made of superior purity alloy steel SCM21 with carbonized heat treatment to increase hardness.
 SHAFT : Made of steel S45C to bear high loading.
 BEARING : Equipped with ball bearing.
 OIL SEAL : With double lips to prevent dust and oil leakage.

[기본전동방식]



[설치 예]



[주의 사항]

1. 감속기의 운전방향과 비율을 정확히 선택합니다.
2. 오일 선택 : 그리스(ISO VG 460) 혹은 KUO-KUANG사의 HD-460 오일을 사용합니다.
3. 특수규격 요구시 별도 문의 바랍니다.
1. To choose correct rotating direction and ratio.
2. To choose oil :Grease or Kuo-KUANG brand oil HD-460 lubricant.
3. If you have special request, please contact us.

Shaft & Rotating Direction

AW	AR	AL	AW-C	AR-C	AL-C
BW	BR	BL	BW-C	BR-C	BL-C
CW	CR	CL	CW-C	CR-C	CL-C
DW	DR	DL	DW-C	DR-C	DL-C

[운할방법]

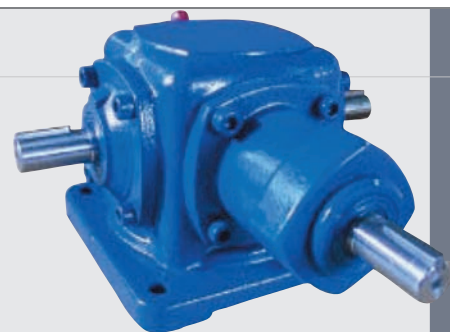
- 감속기의 효율과 제품수명을 위해서 적절한 윤활유를 사용한다.
1. 본제품은 KUO-KUANG사의 HD-460오일을 사용합니다.
 2. 그리스는 연속운전이 아닐 경우에 적용할 수 있습니다.
 3. 1년에 한번 혹은 2400시간 사용후 윤활유를 교체 사용하시길 바랍니다.

To use appropriate lubricant will enhance the efficiency of bevel gear reducer and increase its service life.

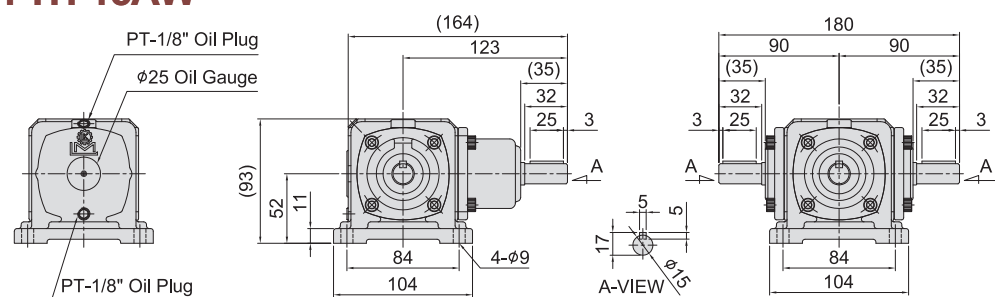
1. LI MING bevel gear reducers use KUO-KUANG brand oil HD-460.
2. Grease can be chosen for short-term operation.
3. Please replace lubricant once per year or per 2400 hours for long-term operation.

MODEL : TH-AW

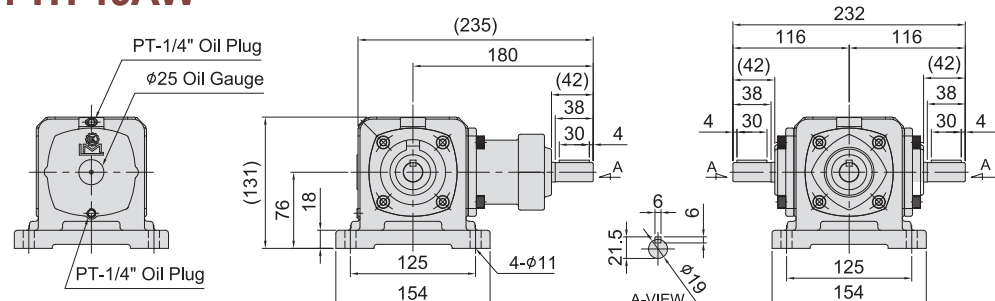
RATIO : 1, 2



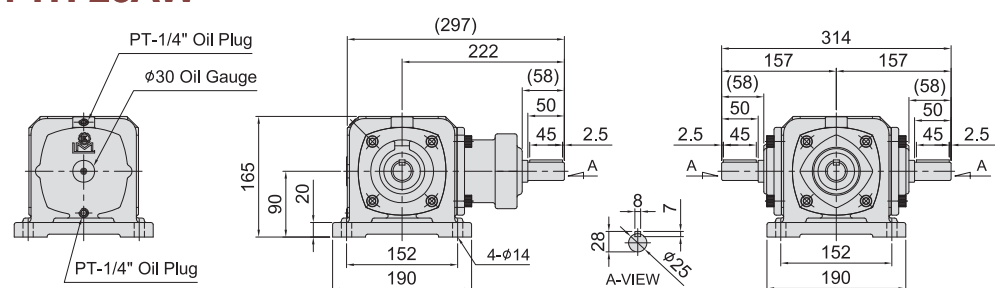
■ **MODEL : TH-15AW**



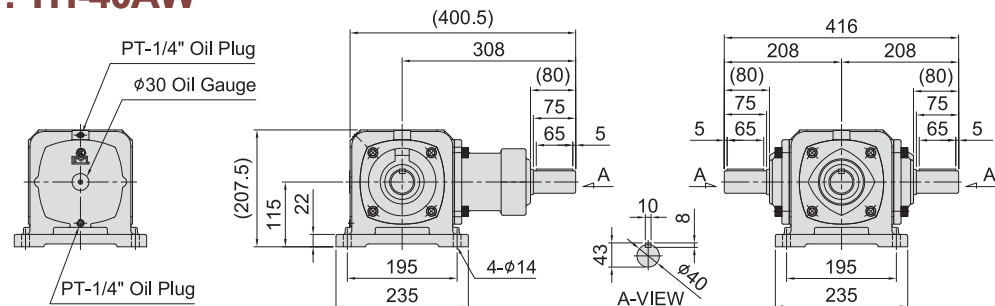
■ **MODEL : TH-19AW**



■ **MODEL : TH-25AW**

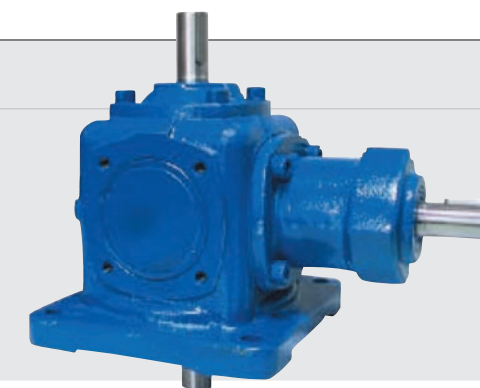


■ **MODEL : TH-40AW**

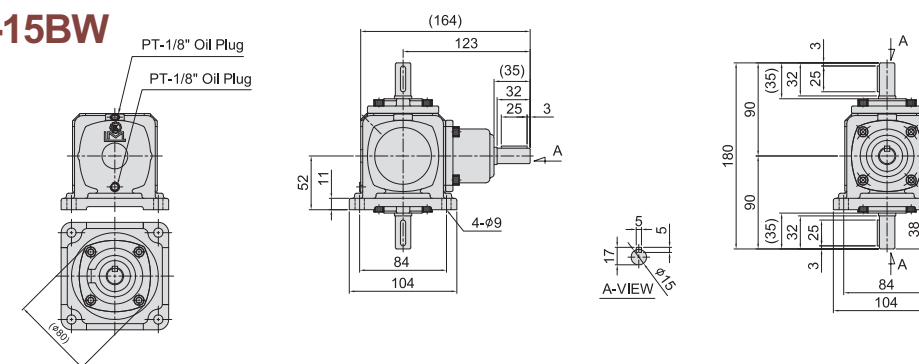


MODEL : TH-BW

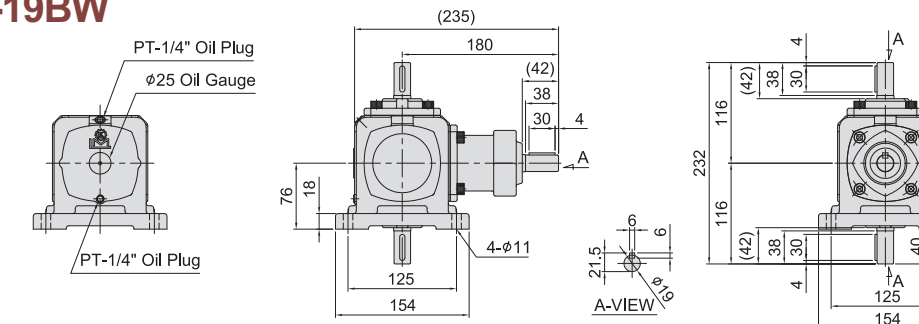
RATIO : 1, 2



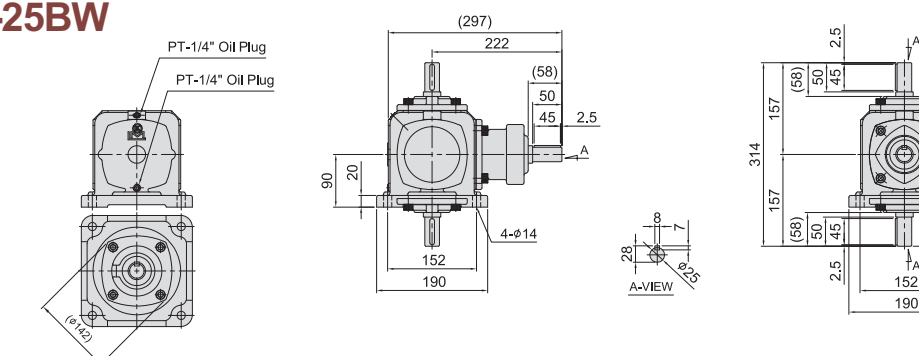
■ **MODEL : TH-15BW**



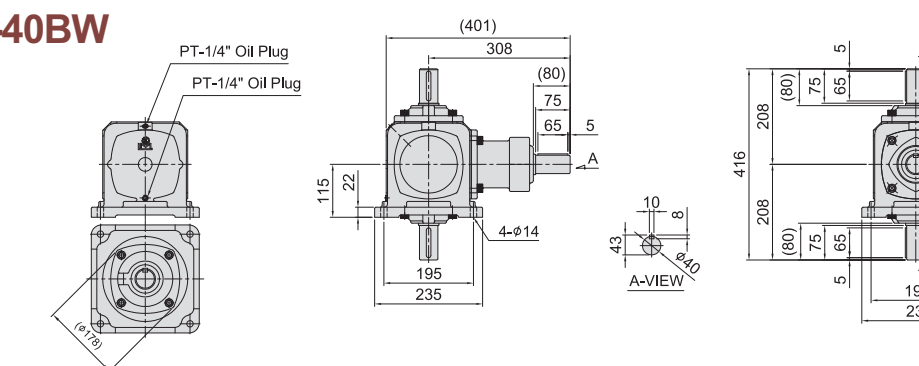
■ **MODEL : TH-19BW**



■ **MODEL : TH-25BW**



■ **MODEL : TH-40BW**

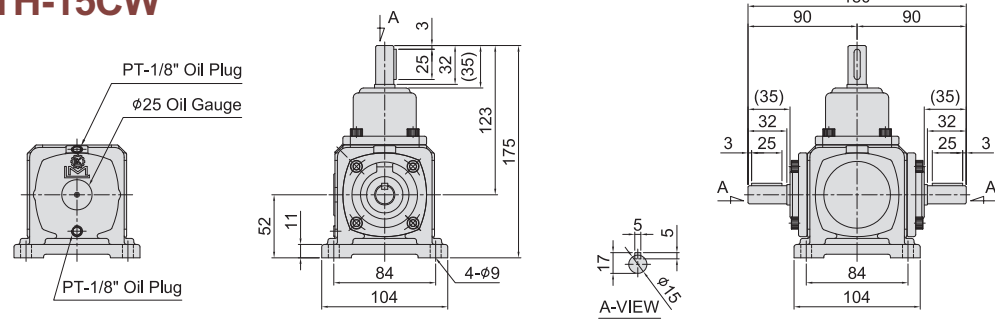


MODEL : TH-CW

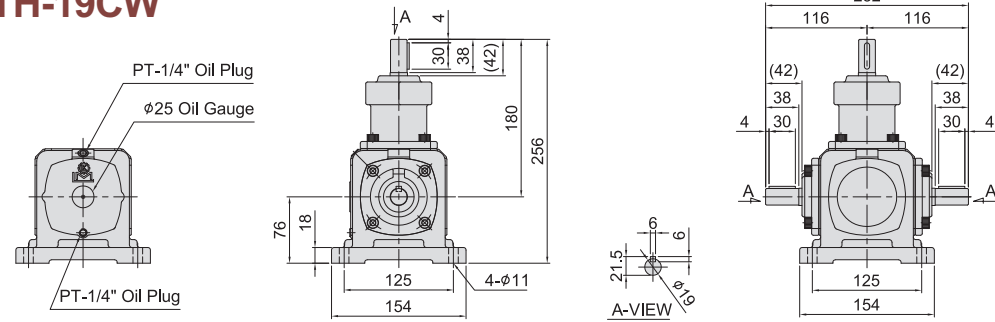
RATIO : 1, 2



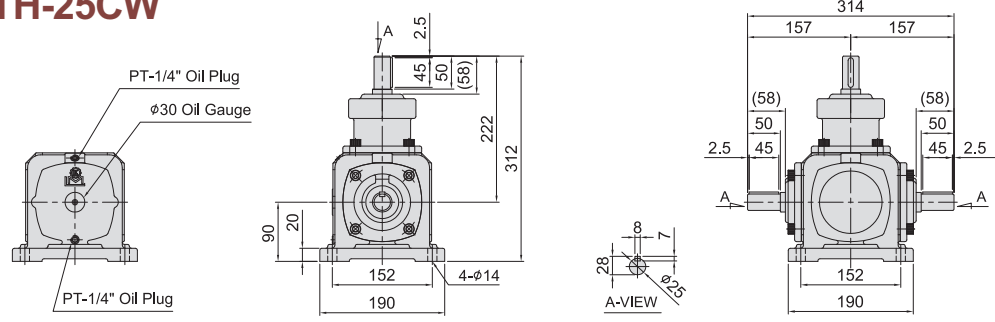
MODEL : TH-15CW



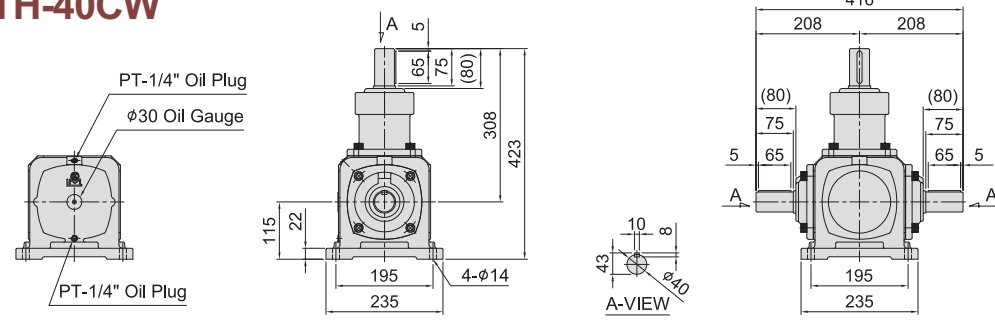
MODEL : TH-19CW



MODEL : TH-25CW



MODEL : TH-40CW

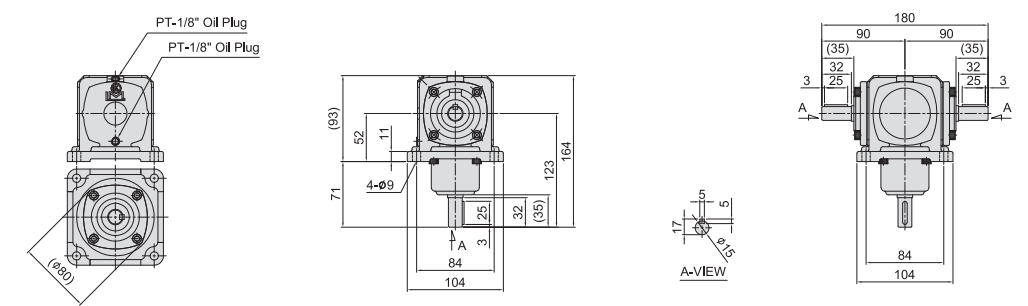


MODEL : TH-DW

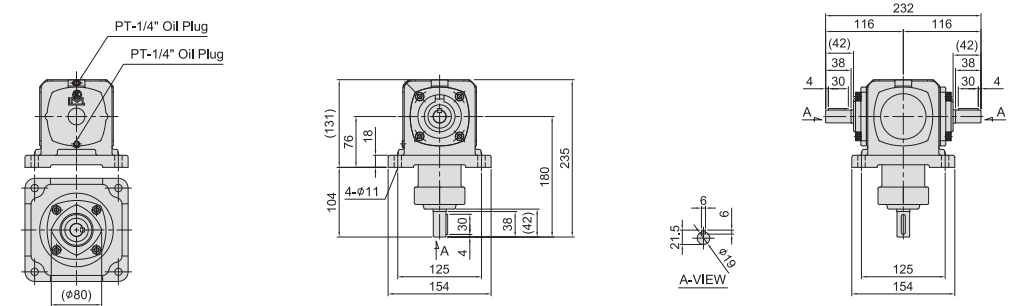
RATIO : 1, 2



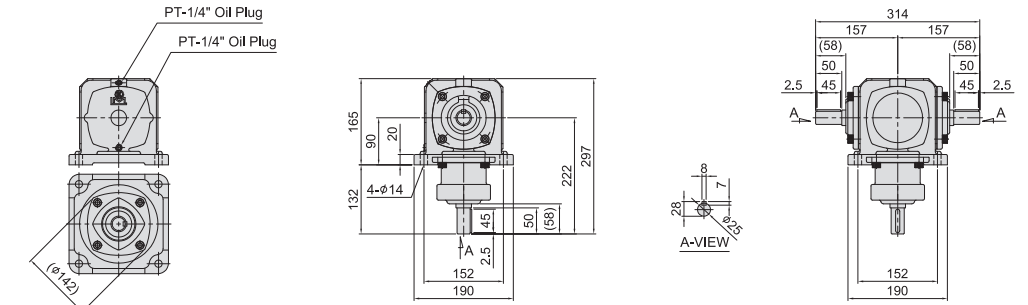
MODEL : TH-15DW



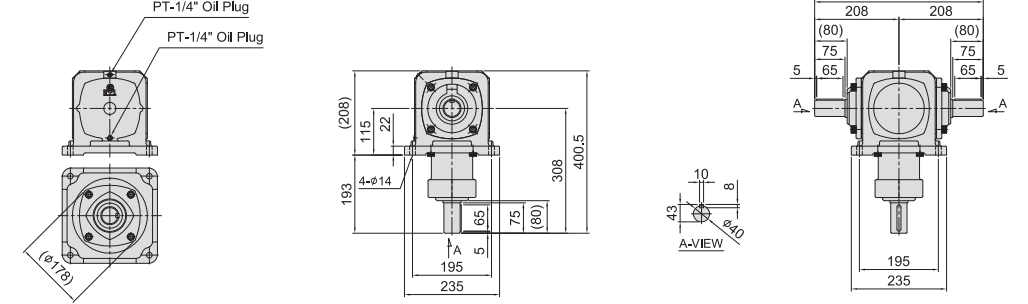
MODEL : TH-19DW



MODEL : TH-25DW

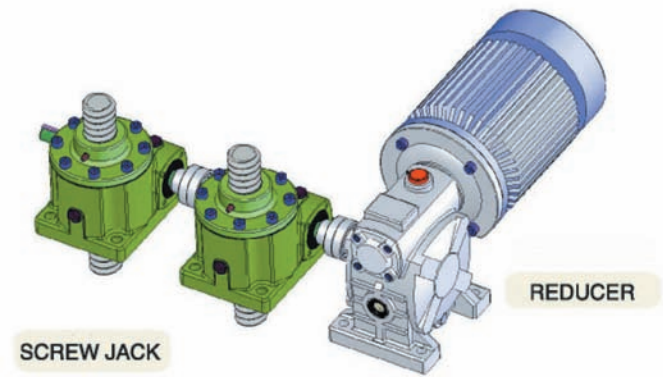


MODEL : TH-40DW

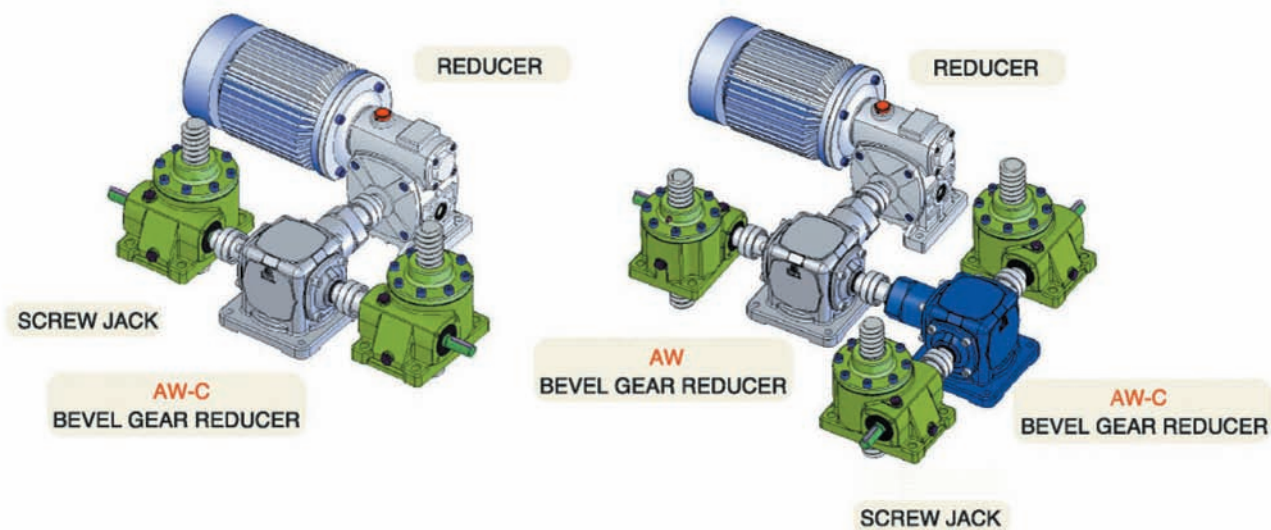


EXAMPLES OF APPLICATION

MODEL : I-TYPE



MODEL : T-TYPE



MODEL : U-TYPE



TH Bevel Reducers Parameter

감속비 1 : 1

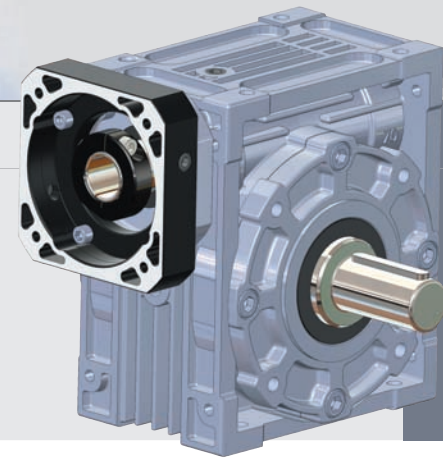
Ratio	Input Speed l/min	TH-15			TH-19			TH-25			TH-40		
		Input KW	Output Torque N·m {kg·m}		Input KW	Output Torque N·m {kg·m}		Input KW	Output Torque N·m {kg·m}		Input KW	Output Torque N·m {kg·m}	
1 : 1	3000	3.41	10.6 {1.08}		7.71	24.00 {2.45}		22.80	71.10 {7.25}		—	—	—
	2000	2.43	11.3 {1.16}		5.96	27.90 {2.84}		18.60	87.00 {8.87}		57.30	268 {27.3}	
	1750	2.15	11.5 {1.17}		5.61	30.00 {3.06}		17.10	91.10 {9.30}		52.30	279 {28.5}	
	1450	1.79	11.6 {1.18}		4.94	31.90 {3.25}		14.90	96.00 {9.80}		45.60	294 {30.0}	
	1150	1.43	11.7 {1.19}		4.19	34.10 {3.48}		12.70	103.00 {10.5}		37.50	305 {31.1}	
	870	1.12	12.1 {1.23}		3.46	37.20 {3.80}		10.50	113.00 {11.5}		29.00	312 {31.8}	
	580	0.74	12.1 {1.23}		2.45	39.50 {4.03}		7.35	119.00 {12.1}		19.80	319 {32.6}	
	300	0.39	12.3 {1.26}		1.30	40.50 {4.13}		3.93	123.00 {12.5}		10.60	331 {33.8}	
100	0.12	12.7 {1.30}		0.44	41.90 {4.28}		1.36	127.0 {13.0}		3.70	346 {35.3}		

감속비 1 : 2

Ratio	Input Speed l/min	TH-15			TH-19			TH-25			TH-40		
		Input KW	Output Torque N·m {kg·m}		Input KW	Output Torque N·m {kg·m}		Input KW	Output Torque N·m {kg·m}		Input KW	Output Torque N·m {kg·m}	
1 : 2	3000	—	—	—	5.56	34.6 {3.53}		15.60	97.3 {9.92}		—	—	—
	2000	—	—	—	4.3	40.2 {4.10}		10.70	100 {10.2}		18.90	176 {18.0}	
	1750	—	—	—	3.97	42.4 {4.33}		9.44	101 {10.3}		16.90	180 {18.4}	
	1450	—	—	—	3.32	42.8 {4.37}		7.90	102 {10.4}		14.00	180 {18.4}	
	1150	—	—	—	2.67	43.4 {4.43}		6.39	104 {10.6}		11.30	183 {18.7}	
	870	—	—	—	2.04	43.8 {4.47}		4.88	105 {10.7}		8.70	187 {19.1}	
	580	—	—	—	1.38	44.4 {4.53}		3.34	108 {11.0}		5.92	191 {19.5}	
	300	—	—	—	0.72	45.5 {4.64}		1.76	110 {11.2}		3.14	196 {20.0}	
	100	—	—	—	0.24	46.6 {4.76}		0.60	114 {11.6}		1.08	202 {20.6}	
	10	—	—	—	0.02	48.5 {4.95}		0.06	116 {11.8}		0.11	209 {21.3}	

	TH15	TH19	TH25	TH40
Rated Output torque(Nm)	10	30	90	220
Emergency stop torque(Nm)	2 Times Rated output torque			
Cross shaft radial force(Nm)	600	1200	2000	3600
Cross shaft axial force(Nm)	300	600	1000	1800
Lateral shaft radial force(Nm)	700	1600	2600	4000
Lateral shaft axial force(Nm)	350	800	1300	2000
Rated input speed(RPM)	1750	1750	1750	1750
Max. input speed(RPM)	3000	3000	3000	300
Lubrication	ISO VG 460			
Service life(Hour)	10000(4000/continuous Operation)			
Efficiency %	≥ 95%			
Noise(dB)	≤ 70	≤ 74	≤ 76	≤ 78

KWE Series



Low Backlash Worm Reducer

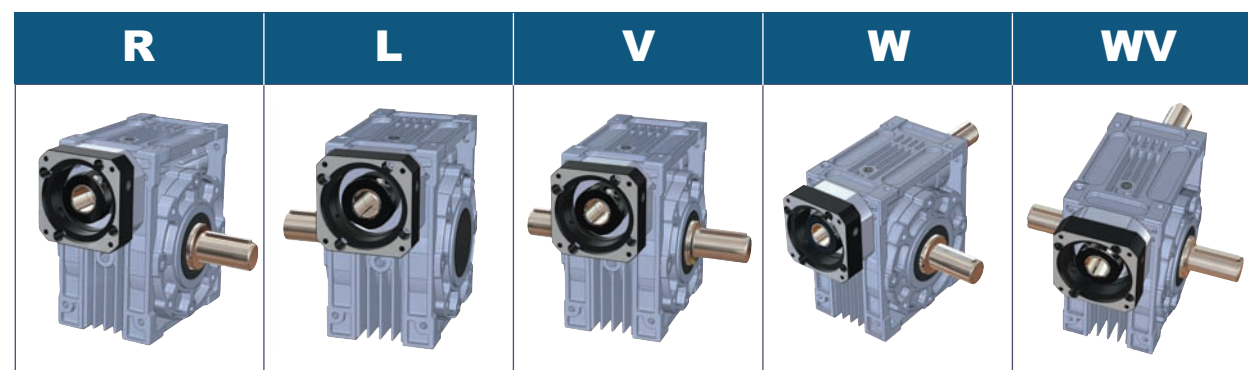
서보용 정밀 웜 감속기

Backlash \leq 8 arc min

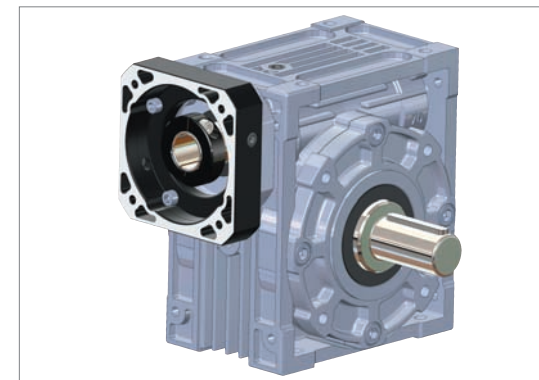
Indication of Model Numbers

KWE	S	□	60	30	L	Motor
Type KWE	Output Shaft S : Solid (중실축) O : hollow (중공축) N : No-key (Power lock)	Output Flange □ : Standard F : Flange Type	Model 30 40 50 60 70	Ratio 1/5 1/10 1/15 1/20 1/30 1/40 1/50 1/60	Shaft Direction R L	Motor Brand & Motor No

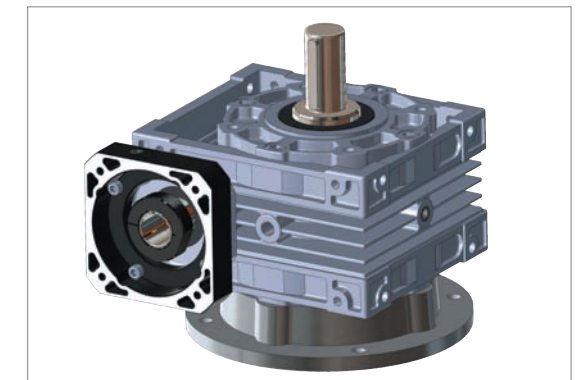
Shaft Direction



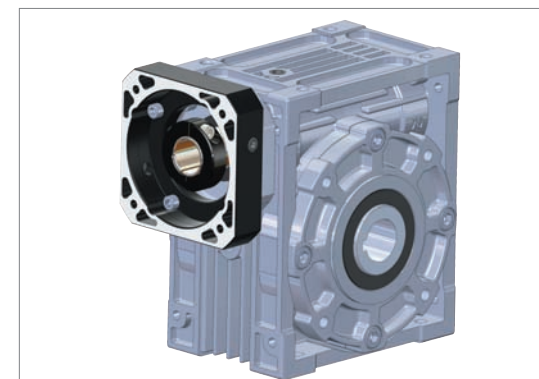
Features of KWE Series (KWE Series 제품 종류)



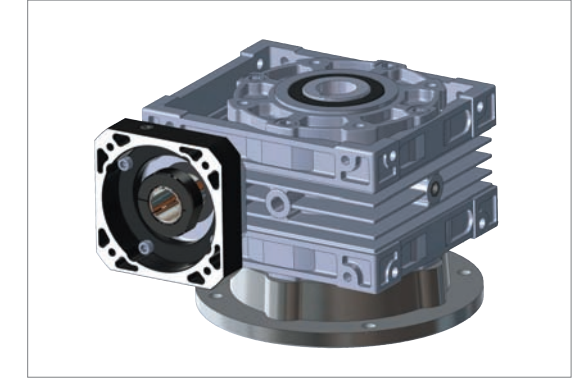
KWES
Solid output shaft



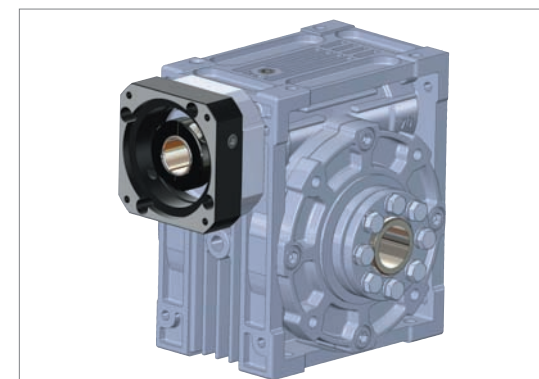
KWESF
Solid output shaft



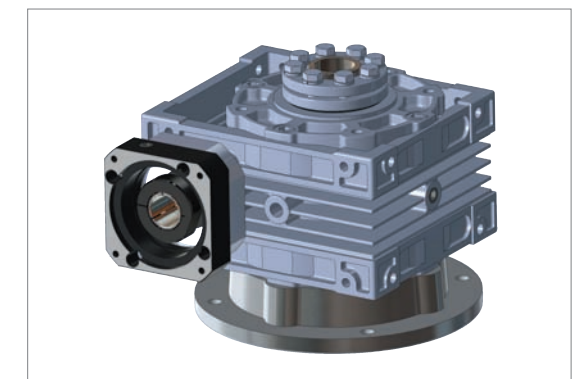
KWEO
Hollow output shaft



KWEOF
Hollow output shaft



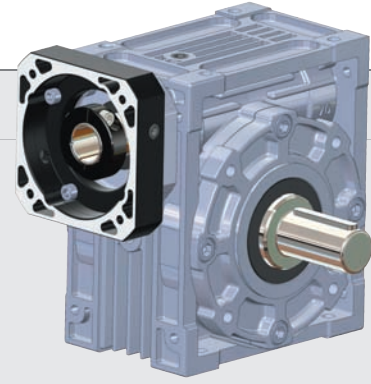
KWEN
Clamping output shaft



KWENF
Clamping output shaft

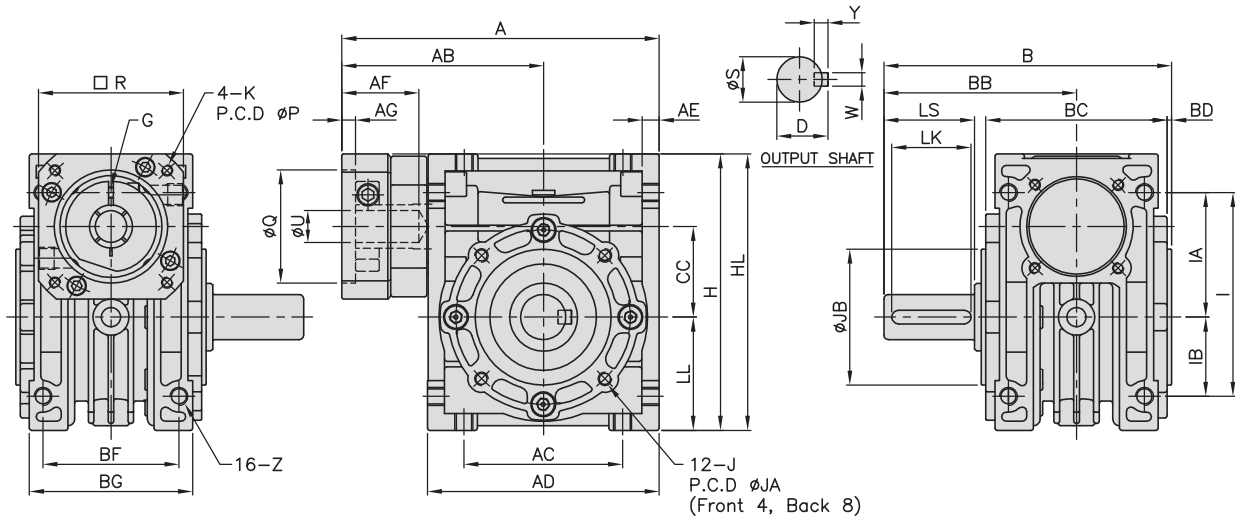
PGX-H
PBL
KSB
KSBL
KSE
KSEL
KFB
KFE
KFA
KSN
KSD
KSDL
TH

PGX-H
PBL
KSB
KSBL
KSE
KSEL
KFB
KFE
KFA
KSN
KSD
KSDL
TH



MODEL : KWES

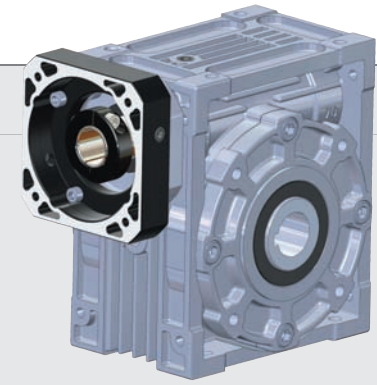
RATIO : 5, 10, 15, 20, 30, 40, 50, 60



Code Model	A	AB	AC	AD	AE	AF	AG	B	BB	BC	BD	BF	BG	CC	LL	I	IA	IB	Z	H	Weight (KG)
30	108	68	55	80	6	32	5	99.5	67.5	60	2	45	58	30	40	72	45	27	M6	98	1.3
40	140	89	70	102	7.5	34	6	127	85	80	2	60	72	40	50	90	55	35	M8	122	2.69
50	158	98	80	120	8.5	34.41	6	150	100	94	3	70	85	50	60	105	65	40	M10	145	4.24
60	195	122	100	146	10	59	9	159	105	102	3	85	103	60	75	136	83	53	M10	180	6.59
70	219	134	120	170	12	54.59	9	187	125	118	3	90	110	70	85	150	90	60	M10	200	10.22

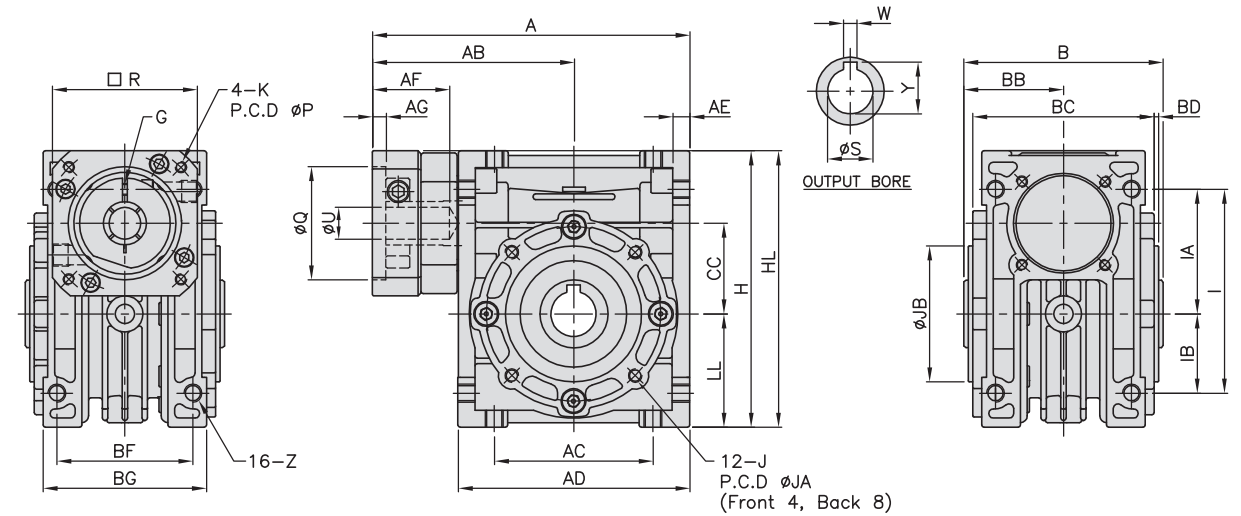
unit:mm

code	Model	30	40	50	60	70
OUTPUT SHAFT	S	16	20	25	25	30
	Y	5	6	7	7	7
	W	5	6	8	8	8
	D	18	22.5	28	28	33
	LS	35	40	50	50	60
	LK	30	35	45	45	55
	J	8-M6 x P1.0	12-M6 x P1.0	12-M6 x P1.0	12-M8 x P1.25	12-M10 x P1.5
	JA	65	77	95	120	140
	JB	55	60	70	80	90
	MOTOR FLANGE & INPUT BORE	P	46, 60, 63	70, 75, 90	70, 75, 90	90, 100, 115, 145
K		M3 x P0.5	M4 x P0.7	M4 x P0.7	M5 x P0.8	M5 x P0.8
K		M4 x P0.7	M5 x P0.8	M5 x P0.8	M6 x P1.0	M6 x P1.0
K		M5 x P0.8	M6 x P1.0	M6 x P1.0	M8 x P1.25	M8 x P1.25
R		46, 55	64, 70, 80	64, 70, 80	92, 110, 130	92, 110, 130
G		M3 x P0.5	M5 x P0.8	M5 x P0.8	M6 x P1.0	M6 x P1.0
Q		30, 40, 50	50, 60, 70	50, 60, 70	70, 80, 95, 110	70, 80, 95, 110
U		8	14	14, 19	19	19, 24
HL	100	122, 125, 130	145, 150	181, 190, 200	210, 220	



MODEL : KWEO

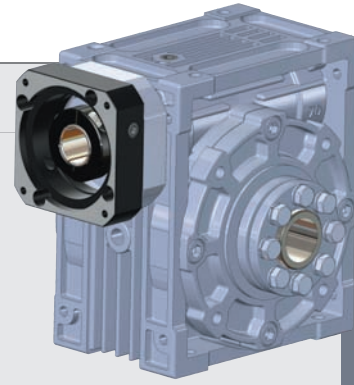
RATIO : 5, 10, 15, 20, 30, 40, 50, 60



Code Model	A	AB	AC	AD	AE	AF	AG	B	BB	BC	BD	BF	BG	CC	LL	I	IA	IB	Z	H	Weight (KG)
30	108	68	55	80	6	32	5	65	32.5	60	2	45	58	30	40	72	45	27	M6	98	1.2
40	140	89	70	102	7.5	34	6	88	44	80	2	60	72	40	50	90	55	35	M8	122	2.44
50	158	98	80	120	8.5	34.41	6	98	50	94	3	70	85	50	60	105	65	40	M10	145	3.91
60	195	122	100	146	10	59	9	108	54	102	3	85	103	60	75	136	83	53	M10	180	6.08
70	219	134	120	170	12	54.59	9	128	64	118	3	90	110	70	85	150	90	60	M10	200	9.32

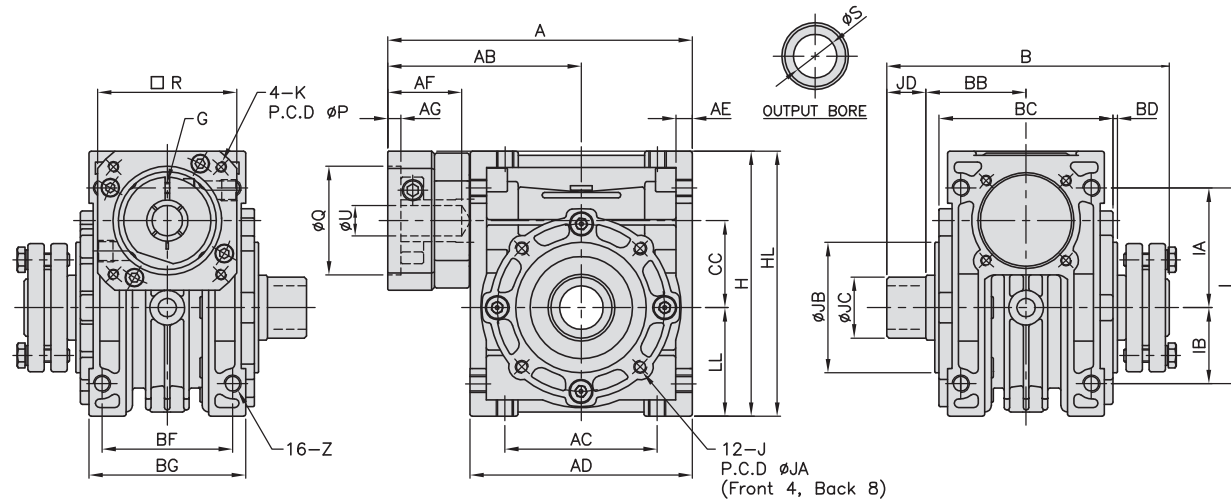
unit:mm

code	Model	30	40	50	60	70	
OUTPUT SHAFT	S	14	20	25	25	30	
	Y	16.3	22.8	28.3	28.3	33.3	
	W	5	6	8	8	8	
	J	8-M6 x P1.0	12-M6 x P1.0	12-M6 x P1.0	12-M8 x P1.25	12-M10 x P1.5	
	JA	65	77	95	120	140	
	JB	55	60	70	80	90	
	MOTOR FLANGE & INPUT BORE	P	46, 60, 63	70, 75, 90	70, 75, 90	90, 100, 115, 145	90, 100, 115, 145
		K	M3 x P0.5	M4 x P0.7	M4 x P0.7	M5 x P0.8	M5 x P0.8
		K	M4 x P0.7	M5 x P0.8	M5 x P0.8	M6 x P1.0	M6 x P1.0
		K	M5 x P0.8	M6 x P1.0	M6 x P1.0	M8 x P1.25	M8 x P1.25
R		46, 55	64, 70, 80	64, 70, 80	92, 110, 130	92, 110, 130	
G		M3 x P0.5	M5 x P0.8	M5 x P0.8	M6 x P1.0	M6 x P1.0	
Q		30, 40, 50	50, 60, 70	50, 60, 70	70, 80, 95, 110	70, 80, 95, 110	
U		8	14	14, 19	19	19, 24	
HL	100	122, 125, 130	145, 150	181, 190, 200	210, 220		



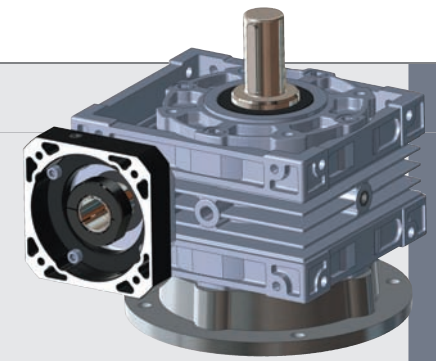
MODEL : KWEN

RATIO : 5, 10, 15, 20, 30, 40, 50, 60



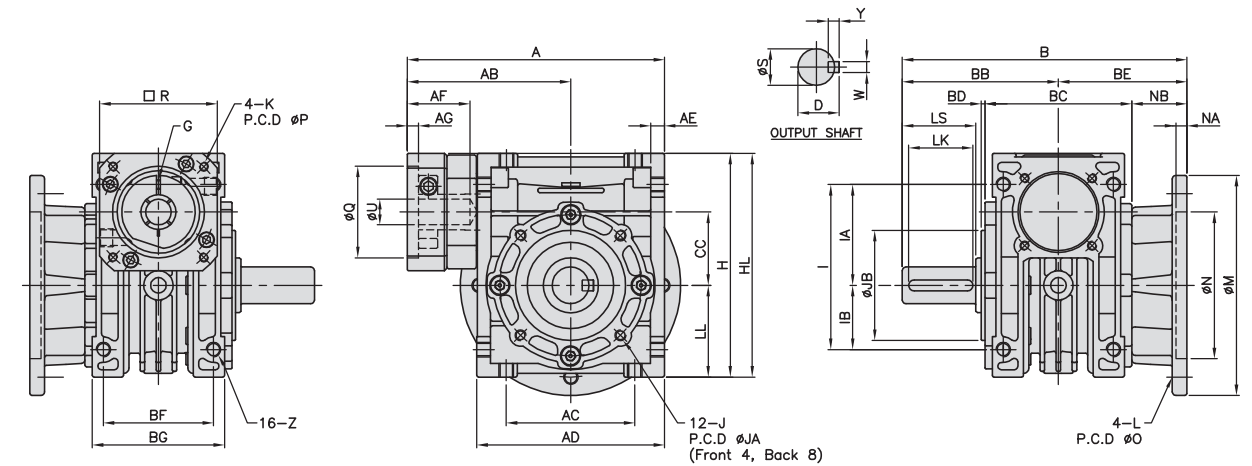
Code Model	A	AB	AC	AD	AE	AF	AG	B	BB	BC	BD	BF	BG	CC	LL	I	IA	IB	Z	H	Weight (KG)
30	108	68	55	80	6	32	5	108	36	60	2	45	58	30	40	72	45	27	M6	98	1.43
40	140	89	70	102	7.5	34	6	128	46	80	2	60	72	40	50	90	55	35	M8	122	2.7
50	158	98	80	120	8.5	34,41	6	146	53	94	3	70	85	50	60	105	65	40	M10	145	4.22
60	195	122	100	146	10	59	9	154	57	102	3	85	103	60	75	136	83	53	M10	180	6.39
70	219	134	120	170	12	54,59	9	172	65	118	3	90	110	70	85	150	90	60	M10	200	9.75

Code Model		30	40	50	60	70
OUTPUT SHAFT	S	14	20	25	25	30
	J	8-M6 x P1.0	12-M6 x P1.0	12-M6 x P1.0	12-M8 x P1.25	12-M10 x P1.5
	JA	65	77	95	120	140
	JB	55	60	70	80	90
	JC	22	28	34	34	40
	JD	18	18	20	20	21
	P	46, 60, 63	70, 75, 90	70, 75, 90	90, 100, 115, 145	90, 100, 115, 145
MOTOR FLANGE & INPUT BORE	K	M3 x P0.5 M4 x P0.7 M5 x P0.8	M4 x P0.7 M5 x P0.8 M6 x P1.0	M4 x P0.7 M5 x P0.8 M6 x P1.0	M5 x P0.8 M6 x P1.0 M8 x P1.25	M5 x P0.8 M6 x P1.0 M8 x P1.25
	R	46, 55	64, 70, 80	64, 70, 80	92, 110, 130	92, 110, 130
	G	M3 x P0.5	M5 x P0.8	M5 x P0.8	M6 x P1.0	M6 x P1.0
	Q	30, 40, 50	50, 60, 70	50, 60, 70	70, 80, 95, 110	70, 80, 95, 110
	U	8	14	14, 19	19	19, 24
	HL	100	122, 125, 130	145, 150	181, 190, 200	210, 220



MODEL : KWESF

RATIO : 5, 10, 15, 20, 30, 40, 50, 60



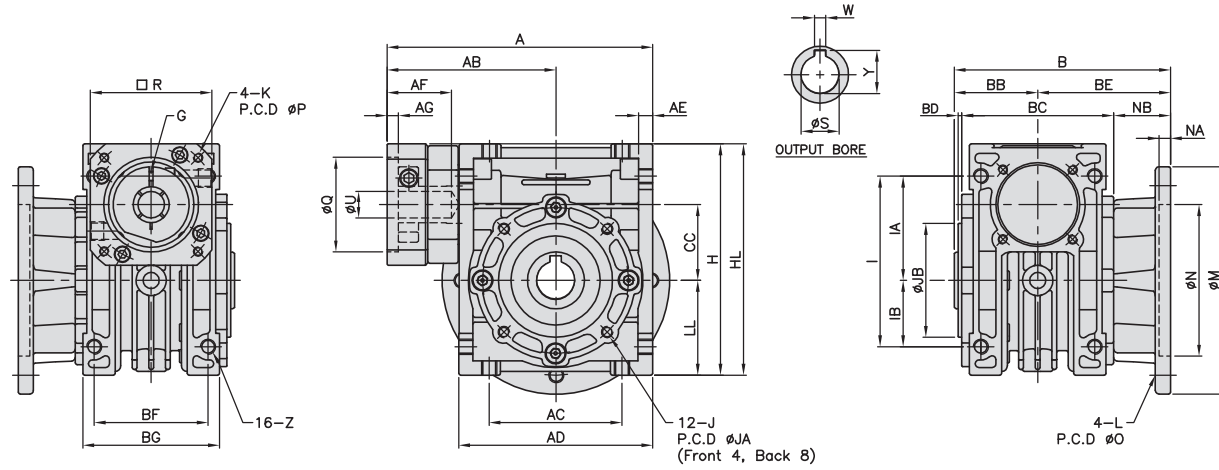
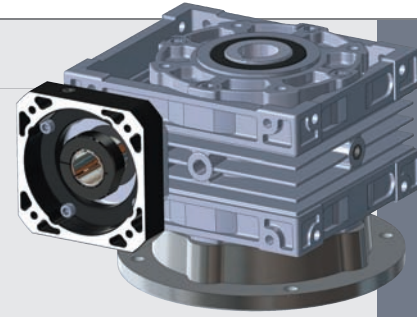
Code Model	A	AB	AC	AD	AE	AF	AG	B	BB	BC	BD	BE	BF	BG	NB	CC	LL	I	IA	IB	Z	H	Weight (KG)
30	108	68	55	80	6	32	5	127.5	67.5	60	2	60	45	58	30	30	40	72	45	27	M6	98	1.44
40	140	89	70	102	7.5	34	6	155	85	80	2	70	60	72	30	40	50	90	55	35	M8	122	2.91
50	158	98	80	120	8.5	34,41	6	180	100	94	3	80	70	85	33	50	60	105	65	40	M10	145	4.57
60	195	122	100	146	10	59	9	205	105	102	3	100	85	103	49	60	75	136	83	53	M10	180	7.25
70	219	134	120	170	12	54,59	9	225	125	118	3	100	90	110	41	70	85	150	90	60	M10	200	11.19

unit:mm

code	Model	30	40	50	60	70
OUTPUT SHAFT	S	16	20	25	25	30
	Y	5	6	7	7	7
	W	5	6	8	8	8
	D	18	22.5	28	28	33
	LS	35	40	50	50	60
	LK	30	35	45	45	55
	J	8-M6 x P1.0	12-M6 x P1.0	12-M6 x P1.0	12-M8 x P1.25	12-M10 x P1.5
	JA	65	77	95	120	140
	JB	55	60	70	80	90
	N	70	80	95	130	150
	NA	5	6	6	7	7
MOTOR FLANGE & INPUT BORE	O	85	100	120	160	185
	L	M6 x P1.0	M8 x P1.25	M10 x P1.5	M10 x P1.5	M12 x P1.75
	M	100	120	140	180	210
	P	46, 60, 63	70, 75, 90	70, 75, 90	90, 100, 115, 145	90, 100, 115, 145
	K	M3 x P0.5 M4 x P0.7 M5 x P0.8	M4 x P0.7 M5 x P0.8 M6 x P1.0	M4 x P0.7 M5 x P0.8 M6 x P1.0	M5 x P0.8 M6 x P1.0 M8 x P1.25	M5 x P0.8 M6 x P1.0 M8 x P1.25
	R	46, 55	64, 70, 80	64, 70, 80	92, 110, 130	92, 110, 130
	G	M3 x P0.5	M5 x P0.8	M5 x P0.8	M6 x P1.0	M6 x P1.0
	Q	30, 40, 50	50, 60, 70	50, 60, 70	70, 80, 95, 110	70, 80, 95, 110
	U	8	14	14, 19	19	19, 24
	HL	100	122, 125, 130	145, 150	181, 190, 200	210, 220

MODEL : KWEOF

RATIO : 5, 10, 15, 20, 30, 40, 50, 60



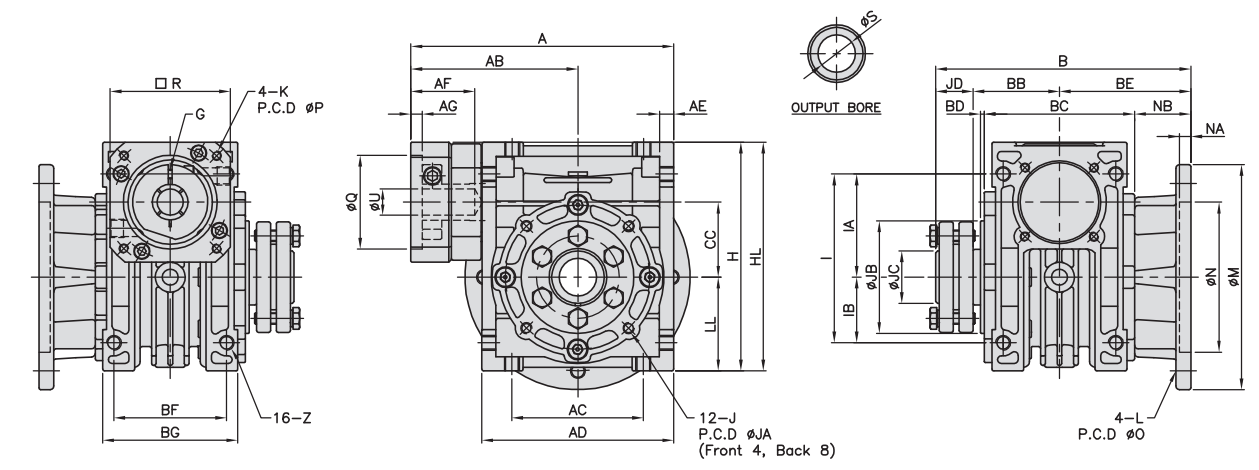
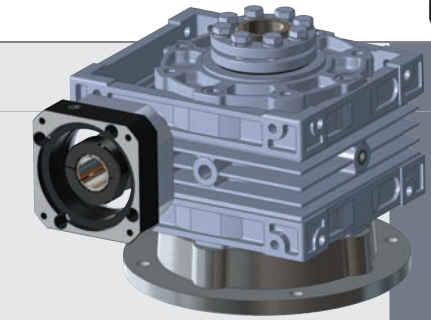
Code Model	A	AB	AC	AD	AE	AF	AG	B	BB	BC	BD	BE	BF	BG	NB	CC	LL	I	IA	IB	Z	H	Weight (KG)
30	108	68	55	80	6	32	5	92.5	32.5	60	2	60	45	58	30	30	40	72	45	27	M6	98	1.34
40	140	89	70	102	7.5	34	6	114	44	80	2	70	60	72	30	40	50	90	55	35	M8	122	2.66
50	158	98	80	120	8.5	34,41	6	130	49	94	3	80	70	85	33	50	60	105	65	40	M10	145	4.24
60	195	122	100	146	10	59	9	154	54	102	3	100	85	103	49	60	75	136	83	53	M10	180	6.74
70	219	134	120	170	12	54,59	9	164	64	118	3	100	90	110	41	70	85	150	90	60	M10	200	10.29

unit:mm

code	Model	30	40	50	60	70
OUTPUT SHAFT	S	14	20	25	25	30
	Y	16.3	22.8	28.3	28.3	33.3
	W	5	6	8	8	8
	J	8-M6 x P1.0	12-M6 x P1.0	12-M6 x P1.0	12-M8 x P1.25	12-M10 x P1.5
	JA	65	77	95	120	140
	JB	55	60	70	80	90
	N	70	80	95	130	150
	NA	5	6	6	7	7
	O	85	100	120	160	185
	L	M6 x P1.0	M8 x P1.25	M10 x P1.5	M10 x P1.5	M12 x P1.75
M	100	120	140	180	210	
MOTOR FLANGE & INPUT BORE	P	46, 60, 63	70, 75, 90	70, 75, 90	90, 100, 115, 145	90, 100, 115, 145
	K	M3 x P0.5 M4 x P0.7 M5 x P0.8	M4 x P0.7 M5 x P0.8 M6 x P1.0	M4 x P0.7 M5 x P0.8 M6 x P1.0	M5 x P0.8 M6 x P1.0 M8 x P1.25	M5 x P0.8 M6 x P1.0 M8 x P1.25
	R	46, 55	64, 70, 80	64, 70, 80	92, 110, 130	92, 110, 130
	G	M3 x P0.5	M5 x P0.8	M5 x P0.8	M6 x P1.0	M6 x P1.0
	Q	30, 40, 50	50, 60, 70	50, 60, 70	70, 80, 95, 110	70, 80, 95, 110
	U	8	14	14, 19	19	19, 24
	HL	100	122, 125, 130	145, 150	181, 190, 200	210, 220

MODEL : KWENF

RATIO : 5, 10, 15, 20, 30, 40, 50, 60



Code Model	A	AB	AC	AD	AE	AF	AG	B	BB	BC	BD	BE	BF	BG	NB	CC	LL	I	IA	IB	Z	H	Weight (KG)
30	108	68	55	80	6	32	5	114	36	60	2	60	45	58	30	30	40	72	45	27	M6	98	1.56
40	140	89	70	102	7.5	34	6	134	46	80	2	70	60	72	30	40	50	90	55	35	M8	122	2.92
50	158	98	80	120	8.5	34,41	6	153	53	94	3	80	70	85	33	50	60	105	65	40	M10	145	4.56
60	195	122	100	146	10	59	9	177	57	102	3	100	85	103	49	60	75	136	83	53	M10	180	7.48
70	219	134	120	170	12	54,59	9	186	65	118	3	100	90	110	41	70	85	150	90	60	M10	200	10.72

unit:mm

code	Model	30	40	50	60	70
OUTPUT SHAFT	S	14	20	25	25	30
	J	8-M6 x P1.0	12-M6 x P1.0	12-M6 x P1.0	12-M8 x P1.25	12-M10 x P1.5
	JA	65	77	95	120	140
	JB	55	60	70	80	90
	JC	22	28	34	34	40
	JD	18	18	20	20	21
	N	70	80	95	130	150
	NA	5	6	6	7	7
	O	85	100	120	160	185
	L	M6 x P1.0	M8 x P1.25	M10 x P1.5	M10 x P1.5	M12 x P1.75
M	100	120	140	180	210	
MOTOR FLANGE & INPUT BORE	P	46, 60, 63	70, 75, 90	70, 75, 90	90, 100, 115, 145	90, 100, 115, 145
	K	M3 x P0.5 M4 x P0.7 M5 x P0.8	M4 x P0.7 M5 x P0.8 M6 x P1.0	M4 x P0.7 M5 x P0.8 M6 x P1.0	M5 x P0.8 M6 x P1.0 M8 x P1.25	M5 x P0.8 M6 x P1.0 M8 x P1.25
	R	46, 55	64, 70, 80	64, 70, 80	92, 110, 130	92, 110, 130
	G	M3 x P0.5	M4 x P0.7	M4 x P0.7	M6 x P1.0	M6 x P1.0
	Q	30, 40, 50	50, 60, 70	50, 60, 70	70, 80, 95, 110	70, 80, 95, 110
	U	8	14	14, 19	19	19, 24
	HL	100	122, 125, 130	145, 150	181, 190, 200	210, 220

Features of KWE Series

KWES, KWEO, KWEN

■ Mass Moments of Inertia (kg · cm²)

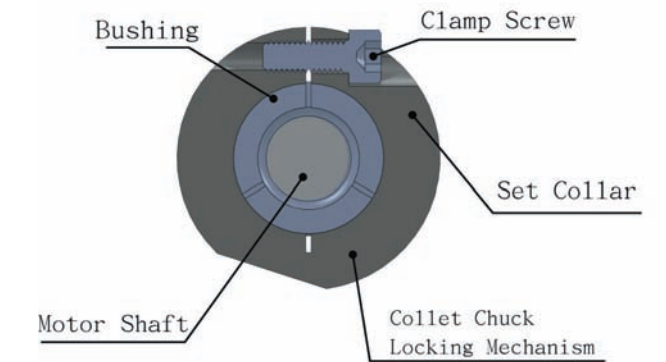
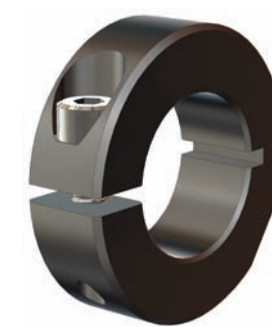
Ratio	30	40	50	60	70
5	0.12	0.35	0.86	1.89	3.40
10	0.12	0.35	0.86	1.89	3.40
15	0.12	0.35	0.86	1.89	3.40
20	0.11	0.33	0.83	1.81	3.10
30	0.12	0.35	0.86	1.89	3.40
40	0.11	0.33	0.83	1.81	3.10
50	0.10	0.30	0.80	1.78	2.90
60	0.10	0.36	0.80	1.78	2.90

Permissible Torque of KWE (Nm)

KWE Series 허용토크

code	Model	30	40	50	60	70
5		9.5	21.6	31.8	47.7	67.6
10		11.4	27.5	51.7	79.5	103.4
15		15.0	35.3	59.6	83.5	107.3
20		14.3	39.2	55.7	87.5	111.3
30		20.0	41.2	59.6	95.4	95.4
40		19.1	42.0	70.6	95.4	95.4
50		17.5	42.9	58.8	99.4	119.3
60		17.2	40.1	63.0	105.9	119.3

Clamp & Rises



Clamp Screw & Set Collar Torque Table

MODEL	Spec. of Clamp Screw	Screw Grade	Tighten Torque (Nm)	Clench Torque (Nm)
30	M3 x P0.5	12.9	2.2	58
40	M5 x P0.8	12.9	4.83	102
50	M5 x P0.8	12.9	10	164
60	M6 x P1.0	12.9	16.3	233
70	M6 x P1.0	12.9	16.3	233

※ Motor Torque가 Clench Torque보다 높을 경우 Slip이 발생할 수 있습니다.
It will cause slip when motor torque exceed clench torque.



Rises the tight link Table

MODEL	Spec. of Collet Screw	Screw Grade	Tighten Torque(N.m)	Clench Torque(N.m)
30	M6 x 20L x 6	12.9	16	68
40	M6 x 20L x 6	12.9	16	108
50	M6 x 20L x 8	12.9	16	189
60	M6 x 20L x 8	12.9	16	189
70	M6 x 20L x 8	12.9	16	294

Technical Information

[안전계수]

안전계수(과부하율)는 기어 감속기의 가동 상황에 따라 달라진다.

가장 적합한 안전계수를 선택하기 위하여 고려해야 할 변수들은 다음과 같다 :

- 가동 기계의 부하 형태 : A-B-C
- 일일 가동시간 : 시간/일(Δ)
- 시동 빈도 : 시동 횟수/시간(*)

부하종류 : A - 균일하중

- 진동이 없는 기계 fa ≤ 0.3
- B - 경하중 fa ≤ 3
- C - 중하중 fa ≤ 10

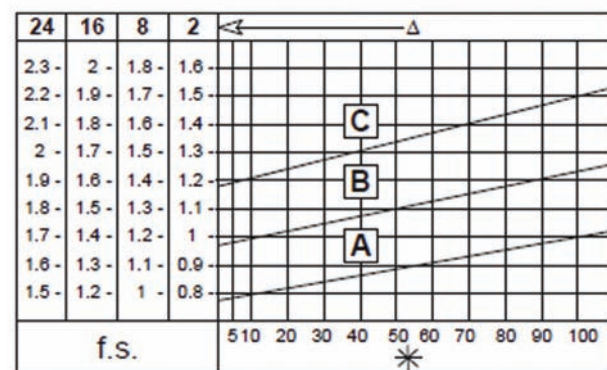
fa = Je/Jm

- Fa 관성계수

- Je (kgm²) 구동축에서 감소된 외부 관성모멘트

- Jm (kgm²) 모터의 관성모멘트

fa > 10의 경우, 당사에 기술서비스 지원을 요청하도록 한다.



- A - 경량자재용 스크류(Screw Feeders), 팬(Fan), 조립라인, 경량 자재용 컨베이어, 소형 믹서기, 리프트, 세척기, 충전기, 제어기
- B - 권선기, 목공기계 투입기, 화물용승강기, 밸런스, 나사 절삭기, 중형믹서, 중량 자재용 컨베이어, 윈치, 슬라이딩 도어, 비료혼합기, 포장기, 콘크리트믹서, 크레인 구조물, 밀링 커터, 옴슨기, 기어펌프
- C - 중량 자재용 믹서, 세링기, 프레스, 원심분리기, 회전 지지대, 중량 자재용 윈치 및 리프트, 가공선반, 분쇄기, 버킷엘리베이터, 드릴링 머신, 햄머분쇄기, 캠 프레스, 절곡기, 턴테이블, 텀블링 바렐, 진동장치, 파쇄기

[설치]

기어 감속기를 설치할 경우, 다음과 같은 권장 사항에 유의하도록 한다.

- 감속기는 반드시 안정된 기계장비에 설치해야 하며 느슨함 혹은 진동이 일어날 수 있는 상황은 피해야 한다.
- 감속기를 기계에 장착하기 전에 기어 감속기의 출력축 회전방향이 올바른지 확인한다.
- 특히 장기간 보관된 경우(4~6개월), 오일씰 부위가 오일에 닿지 않아 굳어지는 경우, 그러한 오일씰은 샤프트에 접촉되는 현상이 발생될 수 있으며, 심지어 적절한 작동에 요구되는 탄성을 잃었을 수 있으므로 교체하도록 한다.
- 축과 출력축 중공 타입의 감속기 결합시 카다로그에서 제공하는 토오르크를 사용하고 축방향의 제약을 확인하여 감속기의 자유로운 이동을 보장해야 한다.
- 가능하면, 직사광선 및 악천후로부터 피하여 설치하는 것이 좋다.
- 팬을 통과한 공기 흐름이 양호하도록 하여 모터 냉각이 제대로 이루어지도록 한다.
- 주변온도가 (-5°C 또는) +40°C인 경우, 기술서비스 지원을 받도록 한다.
- 다양한 부품(Pulley, 기어 휠, 커플링, 샤프트 등)은 장치의 베어링이나 외부 부품에 대한 파손 상황이 발생하지 않고 항상 정확하게 작동할 수 있도록 특수 나사형 구멍이나 기타 장치를 이용하여 솔리드축(solid shaft)이나 중공축(hollow shaft) 상에 장착되어야 한다.
- 눌러붙음 현상이나 산화 현상을 방지하기 위하여 접촉 표면에 윤활유를 칠하도록 한다.
- 시동은 즉시 최대 부하가 걸리지 않도록 서서히 진행한다.
- 구동장치 주변으로 부품이나 다른 물체가 있다면 충격을 받을 우려가 있으며 약간의 누유로 인하여 모터가 손상을 받을 수 있으므로 특별한 보호조치가 필요하다.

Technical Information

[주의 사항]

다른 취부상태 및 특정한 입력 속도의 경우, 기어 감속기의 각 크기에 따른 상이한 한계상황을 강조한 도표를 참조하도록 한다. 또한 다음과 같은 상황에 적용되는 용도인지 여부를 확인한 후, 세밀한 평가를 위해서는 당사의 기술서비스 지원요청을 필요로 한다.

- 속도가 지속적으로 증가하는 경우
- 감속기 고장시 인명 피해가 초래될 수 있는 경우
- 높은 관성이 발생하는 상황에서 사용되는 경우
- 리프팅 윈치로 사용되는 경우
- 감속기와 관련하여 높은 동적 변형이 발생하는 상황에서 사용되는 경우
- 주변온도가 -5°C 이하 또는 40°C를 초과하는 상태에서 설치되는 경우
- 화학적 부식등 열악한 환경에서 사용되는 경우
- 방사선 환경에서 사용되는 경우
- 대기압 이외의 압력 환경에서 사용되는 경우

감속기의 일부가 어딘가에 잠기는 상황에서는 사용하지 않도록 하여야 한다.

감속기가 견딜 수 있는 최대 토크(*)는 성능도표에 명시된 정격 토크(f.s=1)의 2배를 넘지 않도록 한다.

(*)순간 과부하는 전부하, 제동, 충격 또는 기타 원인, 특히 동태적 요인이 존재하는 상황에서 시동하는 경우를 예상할 수 있다.

KWE series	030	040	050	060	070
V5: 1500 ≤ n1 ≤ 3000	-	-	-	-	B
n1 > 3000	B	B	B	B	A
V6	B	B	B	B	B

- A : 권장하지 않는 적용 용도
- B : 사용시 재점검 필요 - 본사와 상의 후 결정

[윤활방법]

주변 온도가 도표에 명시되어 있지 않은 경우, 관련 자료는 본사와 상의하도록 한다.

주변온도가 -30°C 이하이거나 60°C를 초과하는 경우, 특수 재질의 오일씰을 사용할 필요가 있다.

주변 온도가 0°C 이하인 경우의 작동 범위와 관련하여 다음 사항들을 고려할 필요가 있다.

1. 모터는 반영된 주변 온도하에서 작동하기에 적합하여야 한다.
 2. 모터의 동력은 높은 시동토크가 요구되는 경우에도 사용할 수 있어야 한다.
 3. 가동 초기 단계 동안 높은 수준의 오일 점성으로 인하여 윤활문제가 발생될 수 있으므로 부하를 걸지 않고 몇 분 동안 공회전 하도록 한다.
- 최적의 성능을 보장하기 위해서는 초기 100시간 사용후에 오일 배출 후 새로운 오일로 보충해 준다. 그 후에는 2000시간 마다 새로운 오일을 보충해 주어야 한다. 오일 교체 조건은 가동형태와 감속기의 작동 환경에 따라 달라진다.

• 감속기 오일 : Shell Tivela S320

오일량	
모델	오일(CC)
30	30
40	70
50	140
60	260
70	360

Technical Information

[레이디얼 하중]

샤프트 상의 레이디얼 하중은 아래 공식으로 산출한다.

$$Fr_e = \frac{2000M \cdot fz}{D} \leq Fr_1 \text{ o } Fr_2$$

Fr_e (N) 레이디얼 하중 결과치

M (Nm) Shaft 상의 토크

D (mm) Shaft 상의 정착된 Pulley, 기어등의 직경

Fr (N) 최대 허용 레이디얼 하중 값

Fr₁ : 최대 입력 레이디얼 하중

Fr₂ : 최대 출력 레이디얼 하중

Fz = 1.1 기어 피니언

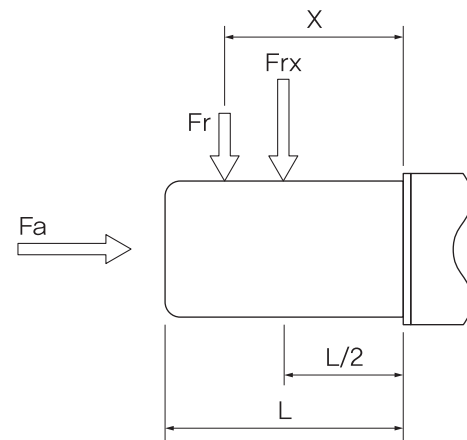
1.4 체인 휠

1.7 V-풀리

2.5 평 풀리

레이디얼 하중의 결과 값이 샤프트의 중심선 상에서 적용되지 않은 경우 허용 레이디얼 하중 Fr_r를 아래 공식에 따라 적용한다.

$$Fr_e \leq \frac{Fr \cdot a}{(b + x)} \leq Fr_{1max} \text{ o } Fr_{2max}$$



KWE series	030	040	050	060	070
a	65	84	101	120	131
b	50	64	76	95	101
Fr ₂ max	1830	3490	4840	6270	7380

KWE Worm Reducers Parameter

INPUT 2800rpm

MODEL	RATIO	5	10	15	20	30	40	50	60
	OR	560rpm	280rpm	187rpm	140rpm	93rpm	70rpm	56rpm	47rpm
	IH	OT	OT	OT	OT	OT	OT	OT	OT
30	0.06	8	9	10	9	12	9	10	9
40	0.18	17	21	23	23	27	22	24	20
50	0.37	31	43	42	41	41	45	39	37
60	0.75	43	66	66	65	70	71	71	67
70	0.75	74	95	93	109	98	110	108	100

INPUT 2000rpm

MODEL	RATIO	5	10	15	20	30	40	50	60
	OR	400rpm	200rpm	133.3rpm	100rpm	66.7rpm	50rpm	40rpm	33.3rpm
	IH	OT	OT	OT	OT	OT	OT	OT	OT
30	0.06	8	10	13	11	14	10	11	10
40	0.18	17	21	31	26	31	27	27	23
50	0.37	32	43	49	48	51	51	49	42
60	0.75	51	80	78	75	80	81	80	75
70	0.75	89	112	109	113	113	131	122	117

INPUT 1400rpm

MODEL	RATIO	5	10	15	20	30	40	50	60
	OR	280rpm	140rpm	93.3rpm	70rpm	46.7rpm	35rpm	28rpm	23.3rpm
	IH	OT	OT	OT	OT	OT	OT	OT	OT
30	0.06	7	10	14	12	15	11	13	12
40	0.18	16	21	31	30	35	31	30	26
50	0.37	33	43	55	51	54	57	52	47
60	0.75	63	85	88	84	86	91	90	85
70	0.75	109	129	126	120	144	147	138	131

INPUT 900rpm

MODEL	RATIO	5	10	15	20	30	40	50	60
	OR	180rpm	90rpm	60rpm	45rpm	30rpm	22.5rpm	18rpm	15rpm
	IH	OT	OT	OT	OT	OT	OT	OT	OT
30	0.06	6	8	11	13	18	13	15	13
40	0.18	17	22	32	35	41	36	35	30
50	0.37	37	48	69	55	55	63	57	54
60	0.75	75	98	104	94	100	105	104	98
70	0.75	124	155	147	167	149	170	160	148

OR=Output RPM(rpm)

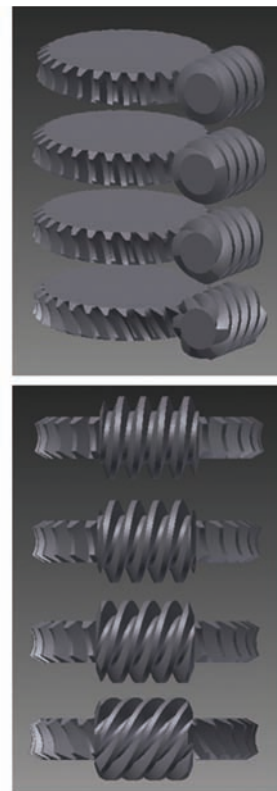
IH=Input HP(KW)

OT=Output Torque(N-m)

Technical Information

[ATG 워م 감속기의 감속비(i) 관계]

Worm Shaft(줄수)	Worm Wheel 잇수(z)	감속비(i)
1줄 나사	60	60
	50	50
	40	40
	30	30
	20	20
2줄 나사	40	20
	30	15
3줄 나사	30	10
6줄 나사	30	5



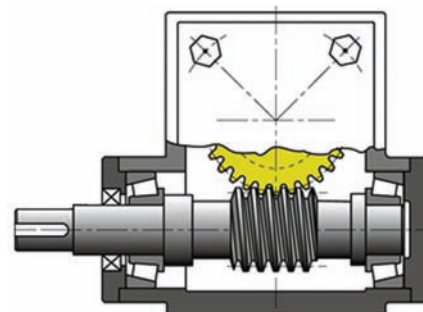
[30z 1줄, 2줄, 3줄, 6줄]

[SELFLOCK]

SelfLock : 워مل로 워مل을 회전시킬 수 없는 경우를 셀프록킹이라고 합니다. 셀프록킹되는 요소로는 워مل기어의 재질, 리드각, 가공정밀도, 베어링의 종류, 윤활유 등이 있습니다. 이와 같이 여러 요소가 있기 때문에 리드각만으로 정해지는 것은 아닙니다만, 보통은 한줄 워مل에서 리드각 4이하에서 셀프록킹이 적용합니다.

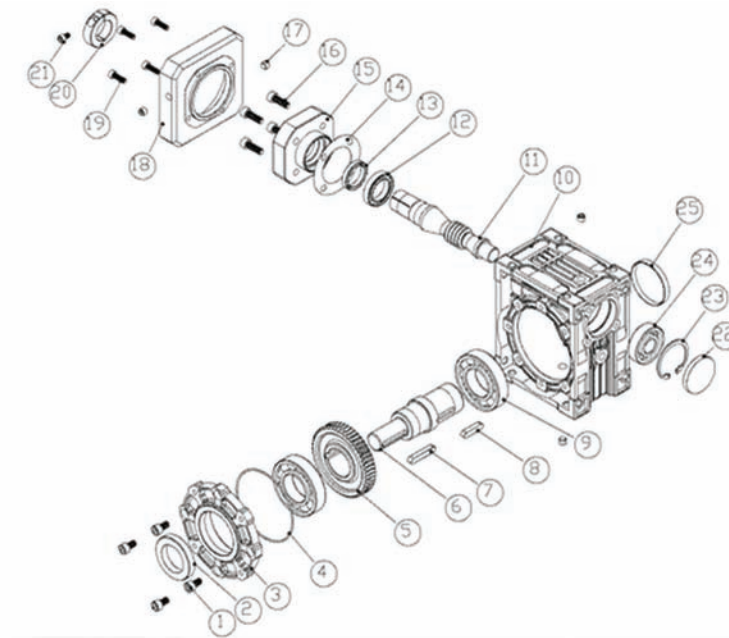
완벽한 역회전 방지가 필요할 경우에는 별도의 제동기구등을 병용하여 주십시오.

[KHK 카다로그 참조]



System Drawing of Model KWES

[KWES 전개도]



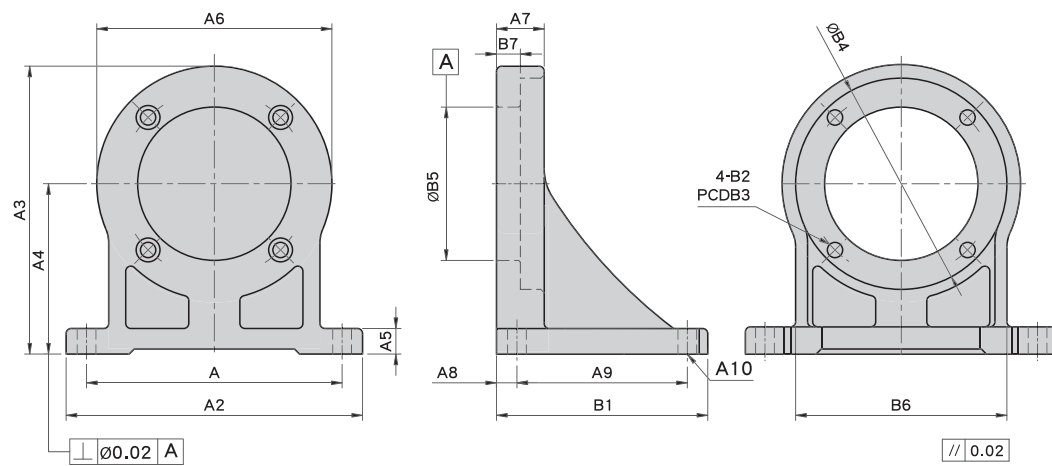
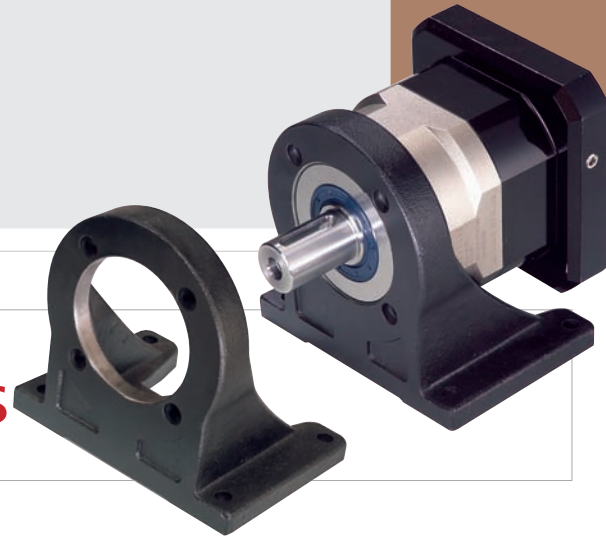
NO	NAME OF PARTS	NO	NAME OF PARTS	NO	NAME OF PARTS
1	Hex Socket Cap Screw	10	Outer Shell	19	Hex Socket Cap Screw
2	Oil Seal	11	Worm Shaft	20	Set Collar
3	Output Shaft Cover	12	Ball Bearing	21	Hex Socket Cap Screw
4	O-ring	13	Oil Seal	22	Seal
5	Worm Wheel	14	Paper Packing	23	Snap Ring
6	Output Shaft	15	Adapter	24	Ball Bearing
7	Key	16	Hex Socket Cap Screw	25	Seal
8	Key	17	Plug		
9	Ball Bearing	18	Motor Flange		

[부품별 재질]

부품	재질
몸체(Body)	ALADC - 12 알루미늄 합금주물 외표면 Conversion Coating 처리
워مل(Worm)	SCM415 크롬몰리브덴강
워مل(Worm Wheel)	ALBC3 알루미늄청동주물
출력축(Out Shaft)	S45C 중탄소강

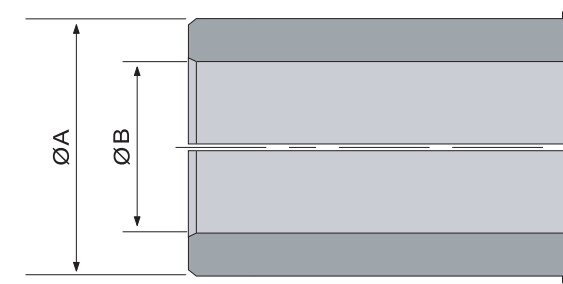
ACCESSORIES

Foot Type Base Kits



		unit:mm						
Model Code	44	62	90	120	142	180	220	
A	A1	70	90	110	150	190	240	280
	A2	88	108	130	176	220	276	330
	A3	75.5	95.5	127	170	207.5	274	334
	A4	45	55	75	100	120	160	200
	A5	8	9	11	16	19	24	30
	A6	60	81	104	140	175	228	268
	A7	13	16	21	28	35	45	60
	A8	10	10	11	14	16	19	26
	A9	40	50	75	100	120	160	200
	A10	4-Ø7	4-Ø7	4-Ø9	4-Ø11	4-Ø13	4-Ø17	4-Ø21
B	B1	60	70	97	128	152	198	252
	B2	Ø4.5	Ø5.5	Ø6.8	Ø9	Ø11	Ø13	Ø17
	B3	44	62	82	110	140	184	218
	B4	50	70	92	124	155	205	242
	B5	35	50	70	90	120	160	180
	B6	50	70	90	125	156	200	230
	B7	6	8	9	14	16	21	30
Kg		0.71	1.57	3.86	6.41	13.44	27.73	

BUSHING



BUSH 조건표

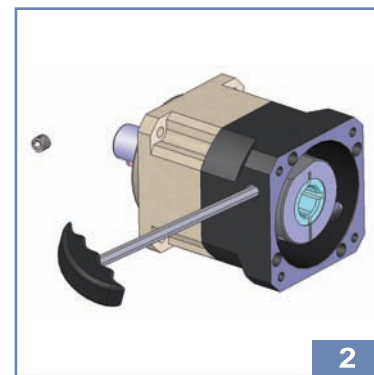
기본 입력축 내 사용가능한 BUSH SIZE입니다.

CONCATENATION BUSH ØB / ØA	8	11	14	19	24	28	35	38	42	48
5	●									
6	●									
6.35	●		●							
8		●	●							
9		●	●							
11			●							
12			●							
14				●	●					
16				●	●					
19					●	●				
22					●	●	●			
24						●	●			
28							●		●	
32							●	●		
35								●	●	
38									●	
42										●

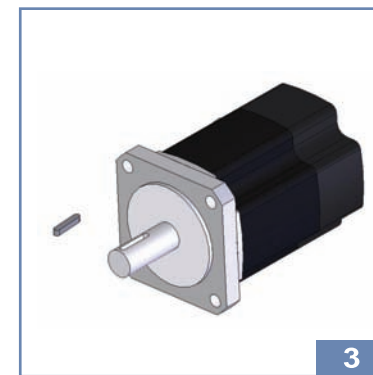
Planetary Gearbox and Motor Mounting Instructions



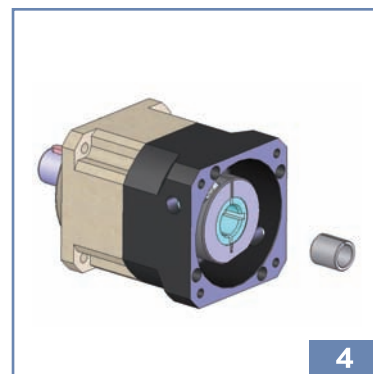
1
모터와 기어박스의 사이즈를 확인 후 마운팅 표면을 깨끗이 닦아 주세요.
Confirm the motor and gearbox size . Clean up the mounting surface.



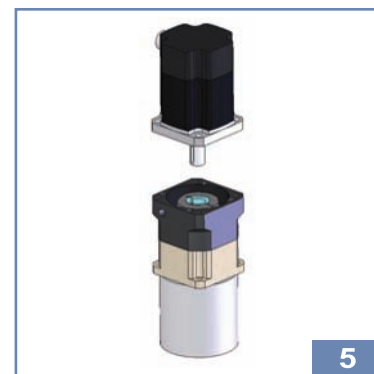
2
아답터 플레이트의 스크류 플러그를 제거 하신 후 컬러의 볼트를 회전 시켜 주세요.
Remove the plug on the adapter plate. Rotate the set collar till the bolt is line up.



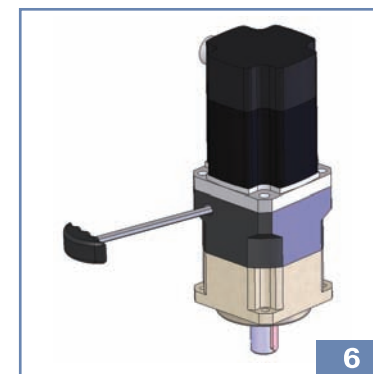
3
키 타입이 아닌 감속기일 때는 모터의 키를 제거 합니다.
Remove the motor key if the diameter of motor shaft under $\phi 32$.



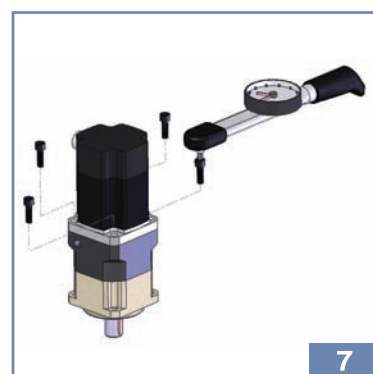
4
모터의 사이즈를 체크하시고 필요 시에는 부싱을 삽입하세요.
Check motor shaft size and insert bushing into input bore if necessary.



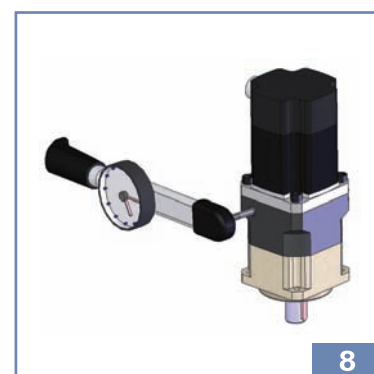
5
모터와 기어 박스를 연결합니다.
Put the motor into the gearbox vertically.



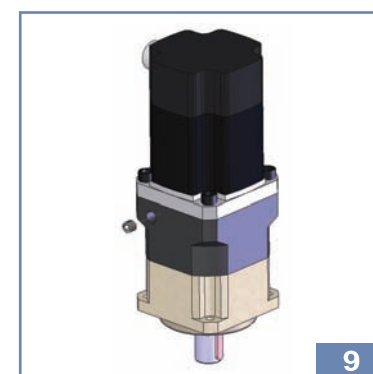
6
연결된 감속기의 스크류 볼트를 가볍게 조여 주세요.
Adapted the motor. Tighten the set collar bolt with light torque.



7
토크 렌치를 사용하여 마운팅 볼트를 조여 주세요.
Tighten the mounting bolt in 1~4 order with torque wrench.



8
토크 렌치를 사용하여 컬러 볼트를 조여 주세요.
Tighten the set collar bolt with torque wrench.



9
스크류 플러그를 조여 주세요.
Tighten back the screw plug.

ATG Series Selection Table of Motor for Reference

KSB, KSE Single Reduction KSB-A, KSE-A Double Reduction

Model	44	62	90	120	142	180	220
	44A	62A	90A	120A	142A	180A	220A
Input Bore	5.65~11	6.35~19	14~24	19~32	22~38	38~55	42~55
Power							
100w	●	●					
200w	●	●					
400w		●					
750w			●	●			
1kw			●	●	●		
1.5kw			●	●	●		
2.2kw				●	●		
3.75kw				●	●		
5.5kw					●	●	
7.5kw					●	●	
11kw						●	●
15kw						●	●
22kw						●	●
30kw						●	●

KSB, KSE Double Reduction

Model	62	90	120	142	180	220
	62A	90A	120A	142A	180A	220A
Input Bore	5.65~11	6.35~19	14~24	19~32	22~38	38~55
Power						
100w	●					
200w	●					
400w	●	●				
750w		●	●			
1kw		●	●	●		
1.5kw		●	●	●		
2.2kw			●	●		
3.75kw			●	●		
5.5kw				●	●	
7.5kw				●	●	
11kw					●	●
15kw					●	●
22kw					●	●
30kw					●	●

KFB Series Selection Table of Motor for Reference

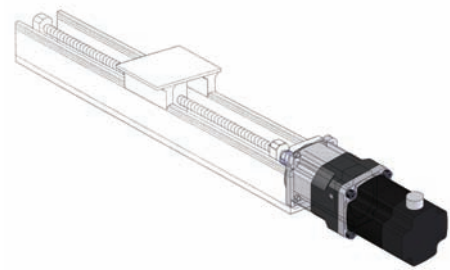
Model	50	70	90	120	145
	50A	70A	90A	120A	145A
Input Bore	5.65~8	6.35~14	14~19	19~32	22~35
Power					
100w	●	●			
200w		●			
400w		●			
750w			●	●	
1kw				●	●
1.5kw				●	●
2.2kw				●	●
3.75kw				●	●
5.5kw					●
7.5kw					●
11kw					
15kw					
22kw					

The Table is for reference, Shall be selected based on rated output torque.

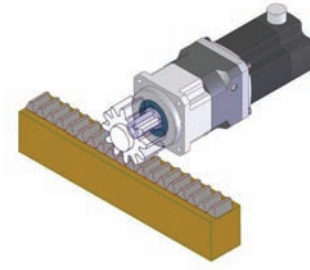
Applications

○ Linear Action

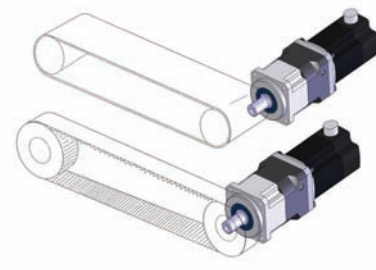
● Ball Screw



● Rack

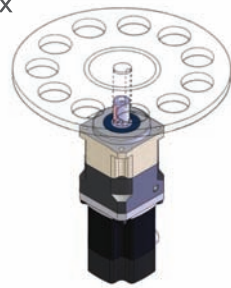


● Roller / Belt

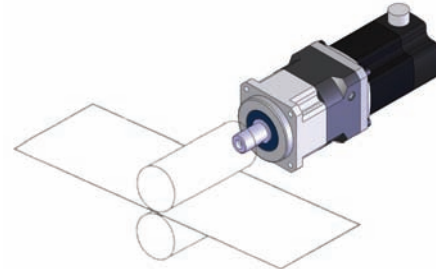


○ Rotary Action

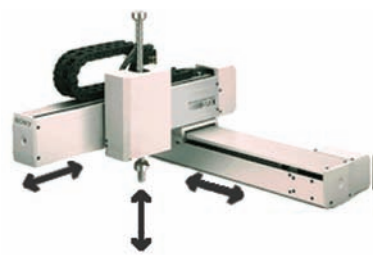
● Index



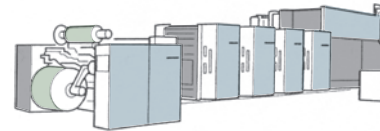
○ Others



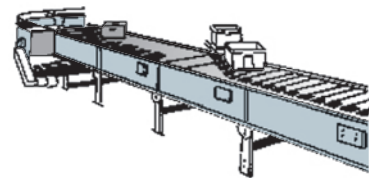
● Robot



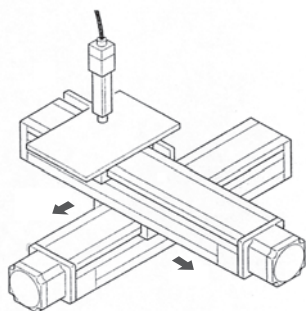
● Printing Machine



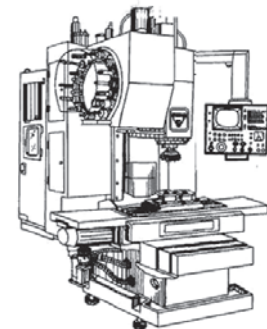
● Conveyor



● Working Table



● CNC Spindle



● Index

