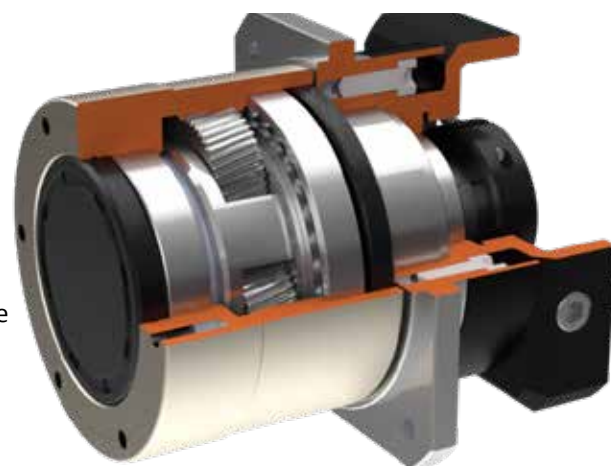


# SERVOBOX

Planetary Reducers

## Characteristic of KSR Series

- 레디얼 하중을 위한 설계      Designed for High Radial Load Applications
- AGV 용 휠 드라이브          AGV Wheel Drive
- 벨트 풀리 방식 최적화      Belt & Pulley Drive
- 정밀급                          Low Backlash
- 고효율                          High Efficiency
- 고속회전                      High Input Speed
- 고강성과 높은토크          High Rigidity & High Torque
- 높은 안정성                  High Stability
- 좁은 공간에 용이          Compact Construction

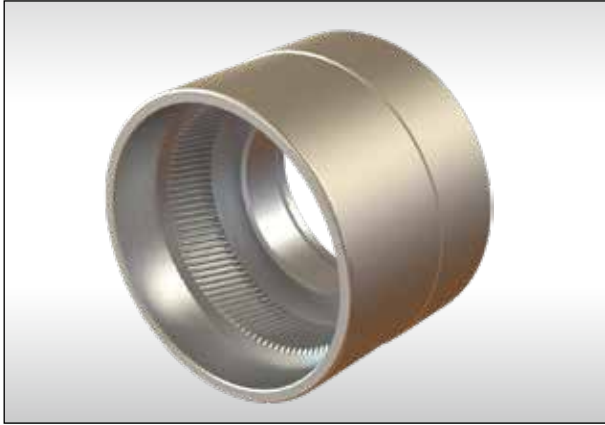


## Indication of Model Numbers

KSR	100	—	9	—	P1	MOTOR
Type	Model		Ratio		Backlash Class	Motor Type
KSR	82 100 132		1-Stage 2, 3, 4, 6, 9  2-Stage 10, 15, 20, 24, 30, 36, 40, 45, 60, 90		1-Stage ≤ 6  2-Stage ≤ 8	Motor Brand & Model No.

# Features of KSR Series

## KSR Series 제품 특성



### One-piece Helical Gearbox Housing

감속기 케이스에 내치기어를 일체형으로 정밀 가공하였고, 기어 맞물림이 스퍼기어의 2배이상인 Helical gear 적용으로 동작 소음을 최소화하여 고출력 저소음, 저백래쉬를 실현하였습니다.

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



### Full Needle Roller Bearings Design

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

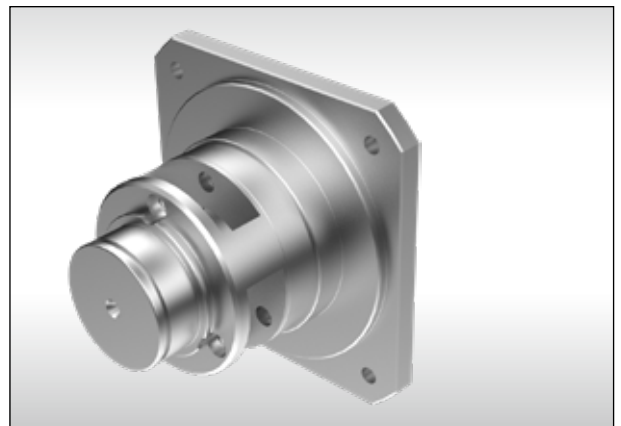
The planetary gear transmission employs full needle roller bearings without retainer to increase the contact surface, which greatly upgrades structural rigidity and service life.



### Collet Locking Mechanism

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

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



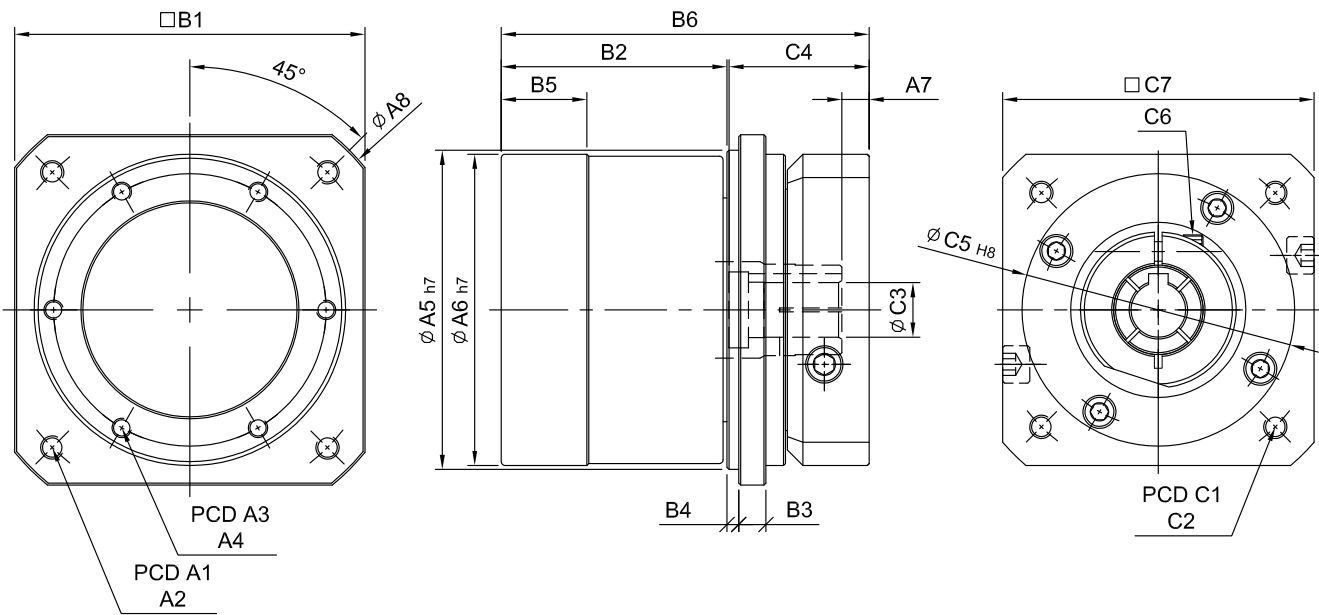
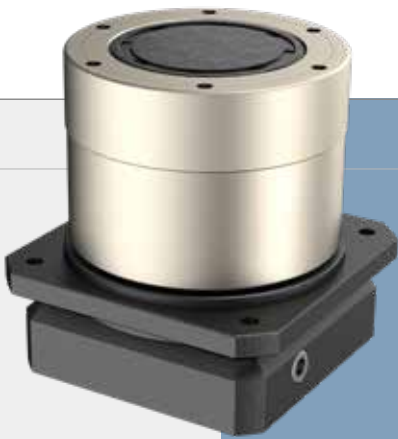
### Integrated Planetary Arm Bracket

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.

MODEL : KSR

1-Stage  
RATIO : 2, 3, 4, 6, 9



unit: mm

	Model Code	82	100	132
A	A1	100	122	166
	A2	M6 x P1.0	M8 x P1.25	M10 x P1.5
	A3	70	84	114
	A4	M5 x P0.8	M6 x P1.0	M8 x P1.25
	A5	82	100	132
	A6	80	96	128
	A7	7, 9	8, 17	11.5
	A8	116	139	184
B	B1	90	108	140
	B2	58	63	85.5
	B3	7	9.5	12
	B4	3	3.5	4
	B5	22	24	34
	B6	94.5	111.5	143
C	C1	85	115	130
	C2	M6 x P1.0	M6 x P1.0	M8 x P1.25
	C3	14, 19	19, 24	24, 28
	C4	36, 43	47, 56	63.5
	C5	70	95	110
	C6	M5 x P0.8	M6 x P1.0	M8 x P1.25
	C7	80	110	130



## High Precision Planetary Reducer

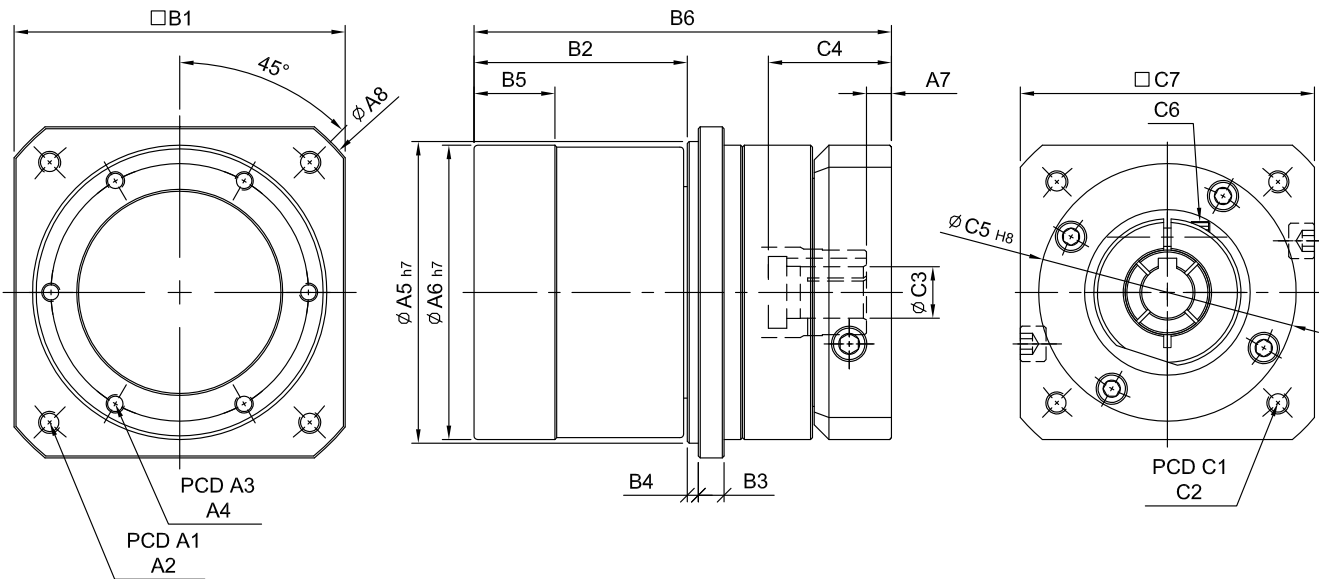
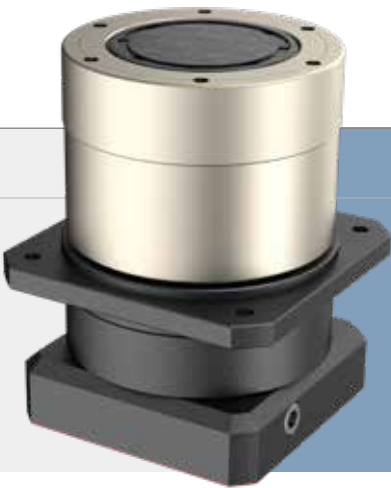
Model No.		Unit	Ratio	82	100	132
Rated Output Torque (Nominal output torque)	$T_{2N}$	Nm	2	96	145	301
			3	91	135	270
			4	84	128	265
			6	80	123	258
			9	75	116	246
Max. Acceleration Torque	$T_{2B}$	Nm	2 ~ 9	1.5 Times of Rated Output Torque		
Max. Output Torque Emergency Stop Torque	$T_{2NOT}$	Nm	2 ~ 9	3 Times of Rated Output Torque		
Rated Input Speed	$n_{1N}$	rpm	2 ~ 9	3,000		
Max. Input Speed	$n_{1B}$	rpm	2 ~ 9	6,000		
Backlash		arcmin	2 ~ 9	$\leq 6$	$\leq 6$	$\leq 6$
Torsional Rigidity		Nm/arcmin	2 ~ 9	10	14	27
Max. Radial Force	$F_{2rB}$	N	2 ~ 9	3,000	3,400	7,200
Max. Axial Force	$F_{2aB}$	N	2 ~ 9	1,500	1,700	3,600
Service Life	$L_H$	hr	2 ~ 9	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)		
Efficiency	$\eta$	%	2 ~ 9	$\geq 97\%$		
Operating Temperature		°C	2 ~ 9	- 25° C ~ + 90° C		
Lubrication			2 ~ 9	Synthetic Grease		
Protection Class			2 ~ 9	IP65		
Mounting Position			2 ~ 9	Any		
Noise Level		dB	2 ~ 9	$\leq 60$	$\leq 62$	$\leq 64$
Weight $\pm 3\%$		Kg	2 ~ 9	2.5		

### ■ Mass Moments of Inertia (kg.cm<sup>2</sup>)

Ratio	82	100	132
2	0.3	0.5	2.7
3	0.3	0.5	2.7
4	0.3	0.5	2.7
6	0.3	0.5	2.7
9	0.3	0.5	2.7

MODEL : KSR

2-Stage  
RATIO : 10, 15, 20, 24, 30, 36, 40, 45, 60, 90



unit: mm

	Model Code	82	100	132
A	A1	100	122	166
	A2	M6 x P1.0	M8 x P1.25	M10 x P1.5
	A3	70	84	114
	A4	M5 x P0.8	M6 x P1.0	M8 x P1.25
	A5	82	100	132
	A6	80	96	128
	A7	7, 9	8	8
	A8	116	139	184
B	B1	90	108	140
	B2	58	63	85.5
	B3	7	9.5	12
	B4	3	3.5	4
	B5	22	24	34
	B6	113.5	137	168
C	C1	85	115	145
	C2	M6 x P1.0	M6 x P1.0	M8 x P1.25
	C3	14, 19	19	19, 24
	C4	33.5, 40.8	43.5	52
	C5	70	95	110
	C6	M5 x P0.8	M5 x P0.8	M8 x P1.25
	C7	80	110	130



## High Precision Planetary Reducer

Model No.		Unit	Ratio	82	100	132
Rated Output Torque (Nominal output torque)	$T_{2N}$	Nm	10	96	145	301
			15	91	135	270
			20	84	128	265
			24	80	123	258
			30	80	123	258
			36	75	116	246
			40	84	128	265
			45	75	116	246
			60	80	123	258
			90	75	116	246
Max. Acceleration Torque	$T_{2B}$	Nm	10 ~ 90	1.5 Times of Rated Output Torque		
Max. Output Torque Emergency Stop Torque	$T_{2NOT}$	Nm	10 ~ 90	3 Times of Rated Output Torque		
Rated Input Speed	$n_{1N}$	rpm	10 ~ 90	3,000		
Max. Input Speed	$n_{1B}$	rpm	10 ~ 90	6,000		
Backlash		arcmin	10 ~ 90	$\leq 8$	$\leq 8$	$\leq 8$
Torsional Rigidity		Nm/arcmin	10 ~ 90	10	14	27
Max. Radial Force	$F_{2rB}$	N	10 ~ 90	3,000	3,400	7,200
Max. Axial Force	$F_{2aB}$	N	10 ~ 90	1,500	1,700	3,600
Service Life	$L_H$	hr	10 ~ 90	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)		
Efficiency	$\eta$	%	10 ~ 90	$\geq 94\%$		
Operating Temperature		$^{\circ}\text{C}$	10 ~ 90	$-25^{\circ}\text{C} \sim +90^{\circ}\text{C}$		
Lubrication			10 ~ 90	Synthetic Grease		
Protection Class			10 ~ 90	IP65		
Mounting Position			10 ~ 90	Any		
Noise Level		dB	10 ~ 90	$\leq 60$	$\leq 62$	$\leq 64$
Weight $\pm 3\%$		Kg	10 ~ 90	2.8		

### ■ Mass Moments of Inertia (kg.cm<sup>2</sup>)

Ratio	82	100	132
10	0.3	0.5	2.7
15	0.3	0.5	2.7
20	0.3	0.5	2.7
24	0.3	0.5	2.7
30	0.3	0.5	2.7
36	0.3	0.5	2.7
40	0.3	0.5	2.7
45	0.3	0.5	2.7
60	0.3	0.5	2.7
90	0.3	0.5	2.7