PBL-H Series

- 1-Stage Backlash ≦ 10 arcmin
- 2-Stage Backlash ≦ 12 arcmin

Indication of Model Numbers

PBL	90	-	H	-	10	-	Key Type

Type	Model	Helical	Ratio	Output Shaft Keyway
PBL	44 62 90 120 142 180 220	H	1-Stage 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16, 18, 20 2-Stage 15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100, 120, 140, 160, 180, 200	□ : 무표기 Standard (Keyway) N : 표기 Solid Output Shaft (No Keyway)

저소음
헬리컬기어 사용으로 부드럽고 조용한 운전가능

Quiet operation
Grinding spiral bevel gear & Helical gears contribute to reduce vibration and noise.

고강성과 높은 토크
uncage needle bearing 사용, 강성과 토크를 높임

High Rigidity & High Torque
High rigidity & high torque are achived by integrant needle roller bearings and one-piece constructed.

고효율
1-Stage 95%이상, 2-Stage 92%이상

High Efficiency
Efficiency for 1-Stage model exceeds 95%
2-Stage model exceeds 92%.

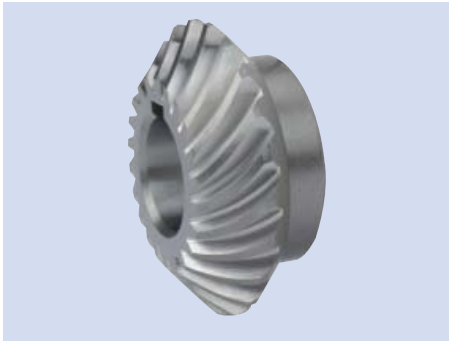
Features of PBL-H Series

PBL-H Series 제품 특성

Spiral Bevel Gear

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

Grinding spiral bevel gear is excellent in transmission efficiency, stability, duriability, large arc overlapping factor, heavy loading, compact strucure, wear-resisting and long service life.



Integrated Planetary Arm Bracket

Planetary Arm Bracket와 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.

Full Needle Roller Bearings Design

Planetary 변속기어는 접촉면 증가를 위한 Retainer 없는 Full Needle Bearing 구조입니다.
구조적 강도와 출력 회전력을 상승시킨 것입니다.

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

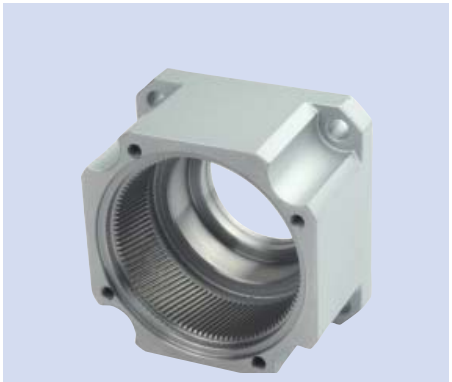
Motor shaft를 연결하기 위한 Collet Clamp 방식으로 확실한 체결력과 높은 속도에서 구동할 때에도 백래쉬가 발생하지 않습니다.

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.

One-piece Helical Gear Box body

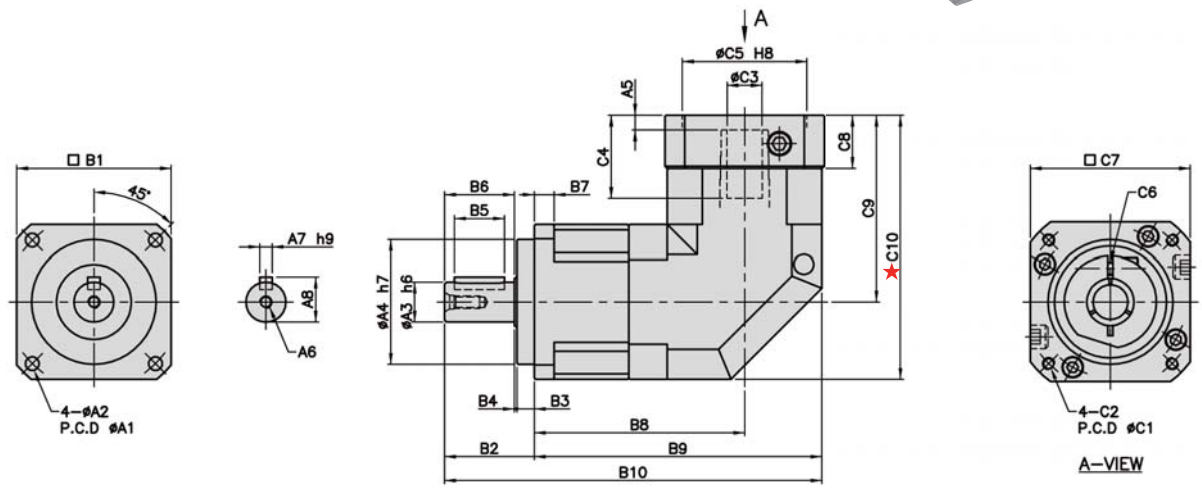
감속기 케이스에 내치기어를 일체형으로 정밀 가공하였고, 헬리컬기어로 되어 있으며 기어의 교합율은 일반 스퍼기어의 2배 이상이며 원활한 운전과 낮은 소음으로 높은 회전출력과 낮은 백래쉬를 특징으로 합니다.

The gear box and internal gear 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 has features of extremely smooth running, low noise, high output torque and low backlash.



MODEL : PBL-H

RATIO : 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16, 18, 20 (1-Stage)



unit : mm

Code	Model	44	62	90	120	142	180	220
A	A1	50	70	100	130	165	215	250
	A2	4.5	5.5	6.8	9	11	13	17
	A3	13	16	22	32	40	55	75
	A4	35	50	80	110	130	160	180
	A5	6	6	9, 23.5	10, 20	10	12.5, 14.5	12.5, 14.5
	A6	M4 × P0.7	M5 × P0.8	M8 × P1.25	M10 × P1.5	M12 × P1.75	M14 × P2.0	M16 × P2.0
	A7	5	5	6	10	12	16	20
	A8	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	76	84.5	122.1	148	165.5	223.6	231.6
	B9	98	115.5	167.1	208	236.5	313.6	341.6
	B10	124	151.5	215.1	273	328.5	419.6	480.6
C	C1	46, 60, 63	70, 75, 90	90, 100, 115, 145	115, 145, 165	145, 165, 215	200, 215, 265	200, 265, 300
	C2	M3, M4, M5	M4, M5, M6	M5, M6, M8	M6, M8, M10	M8, M10, M12	M10, M12	M12, M16
	C3	8, (11)	14, (19)	19, (24)	24, (32)	35, (38)	38, 42, 48, 55	42, 48, 55
	C4	27	33.5, 41.5	53, 67.5	67, 77	85	117, 119	117, 119
	C5	30, 40, 50	50, 60, 70	70, 80, 95, 110	95, 110, 130	110, 130, 180	114.3, 180, 230	114.3, 230, 250
	C6	M4 × P0.7	M5 × P0.8	M6 × P1.0	M8 × P1.25	M10 × P1.5	M10 × P1.5	M10 × P1.5
	C7	46, 55	64, 70, 80	92, 110, 130	122, 130, 150	146, 150, 190	182, 200, 250	222, 250, 265
	C8	16	21.5	26.5, 41	35.5, 45.5	35.5	45.5, 47.5	45.5, 47.5
	C9	61	77, 85	115.3, 129.8	141, 151	174	235, 237	235, 237
	C10	83	108, 116	160.3, 174.8	201, 211	245	325, 327	345, 347

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

Characteristic of PBL-H 1-Stage

Model No.		Unit	Ratio	44	62	90	120	142	180	220
Rated Output Torque (Nominal output torque)	T_{2N}	Nm	3	17	54	145	301	553	1,067	1,786
			4	15	48	128	269	491	940	1,587
			5	14	45	132	278	510	1,050	1,770
			6	13	41	125	252	466	985	1,680
			7	13	41	123	258	473	975	1,645
			8	12	39	115	241	442	942	1,605
			9	11	40	120	227	412	875	1,490
			10	12	40	116	246	452	930	1,565
			12	13	41	125	252	466	985	1,680
			14	13	41	123	258	473	975	1,645
			16	12	39	115	241	442	942	1,605
			18	11	40	120	227	412	875	1,490
			20	12	40	116	246	452	930	1,565
Max. Acceleration Torque	T_{2B}	Nm	3~20	1.8 Times of Rated Output Torque						
Max. Output Torque Emergency Stop Torque	T_{2NOT}	Nm	3~20	3 Times of Rated Output Torque						
Rated Input Speed	n_{1N}	rpm	3~20	3,000	3,000	3,000	3,000	3,000	3,000	2,000
Max. Input Speed	n_{1B}	rpm	3~20	6,000	6,000	6,000	5,000	5,000	4,000	3,000
Backlash	j_t	arcmin	3~20	≦10	≦10	≦10	≦10	≦10	≦10	≦10
Torsional Rigidity		Nm/arcmin	3~20	3	6	14	27	60	140	240
Max. Radial Force	F_{2rB}	N	3~20	720	1,120	3,040	6,460	8,830	14,820	48,450
Max. Axial Force	F_{2aB}	N	3~20	360	560	1,520	3,230	4,410	7,410	24,225
Service Life	L_H	hr	3~20	S5 Cycle Operation: >20,000 (S1 Continuous Operation: >10,000 hrs)						
Efficiency	n	%	3~20	≧95%						
Operating Temperature		℃	3~20	−25°C ~ +90°C						
Lubrication			3~20	VIGO GREASE RE #0						
Protection Class			3~20	IP65						
Mounting Position			3~20	Any						
Noise Level		dB	3~20	≦65	≦68	≦70	≦72	≦74	≦76	≦78
Weight ±3%		kg	3~20	0.99	2.1	6.88	12.5	23.2	51	63.7

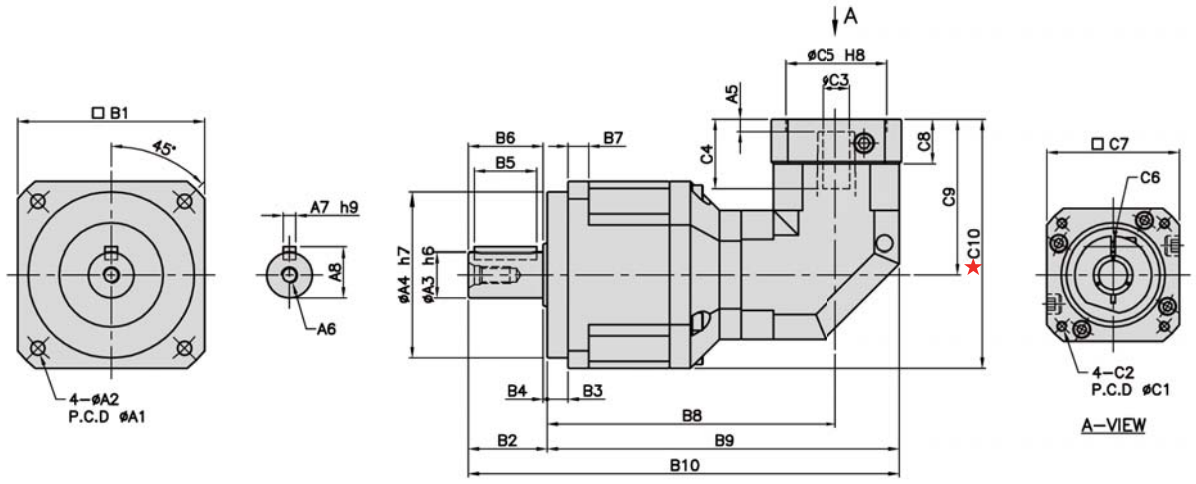
Mass Moments of Inertia (kg.㎠)

Ratio	44	62	90	120	142	180	220
3	0.09	0.36	2.28	6.85	23.5	68.2	135.0
4	0.09	0.36	2.28	6.85	23.5	68.2	135.0
5	0.09	0.36	2.28	6.85	23.5	68.2	135.0
6	0.09	0.36	2.28	6.85	23.5	68.2	135.0
7	0.09	0.36	2.28	6.85	23.5	68.2	135.0
8	0.09	0.36	2.28	6.85	23.5	68.2	135.0
9	0.09	0.36	2.28	6.85	23.5	68.2	135.0
10	0.09	0.36	2.28	6.85	23.5	68.2	135.0
12	0.03	0.08	1.88	6.20	21.8	65.5	119.2
14	0.03	0.08	1.88	6.20	21.8	65.5	119.2
16	0.03	0.08	1.88	6.20	21.8	65.5	119.2
18	0.03	0.08	1.88	6.20	21.8	65.5	119.2
20	0.03	0.08	1.88	6.20	21.8	65.5	119.2

* 연속운전 사용시 본사와 상담 후 선정바랍니다 .

MODEL : PBL-S-H

RATIO : 15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100, 120, 140, 160, 180, 200 (2-Stage)



unit : mm

Code	Model	62S	90S	120S	142S	180S	220S
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	6	6	9, 23.5	10, 20	10	12.5, 14.5
	A6	M5 × P0.8	M8 × P1.25	M10 × P1.5	M12 × P1.75	M14 × P2.0	M16 × P2.0
	A7	5	6	10	12	16	20
	A8	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	110.5	130	181.6	214.5	249.5	313.6
	B9	132.5	161	226.6	274.5	320.5	403.6
	B10	168.5	209	291.6	366.5	426.5	542.6
C	C1	46, 60, 63	70, 75, 90	90, 100, 115, 145	115, 145, 165	145, 165, 200	200, 215, 265
	C2	M3, M4, M5	M4, M5, M6	M5, M6, M8	M6, M8, M10	M8, M10, M12	M10, M12
	C3	8	14	19	24	35	38, 42, 48, 55
	C4	27	33.5	53, 67.5	67, 77	85	117, 119
	C5	30, 40, 50	50, 60, 70	70, 80, 95, 110	95, 110, 130	110, 114.3, 130	114.3, 180, 230
	C6	M4 × P0.7	M5 × P0.8	M6 × P1.0	M8 × P1.25	M10 × P1.5	M10 × P1.5
	C7	46, 55	64, 70, 80	92, 110, 130	122, 130, 150	146, 150	182, 200, 250
	C8	16	21.5	26.5, 41	35.5, 45.5	35.5	45.5, 47.5
	C9	61	77	115.3, 129.8	141, 151	174	235, 237
	C10	92	122	175.3, 189.8	212, 222	264	345, 347

* A5, ★은 적용 모터에 따라 달라질 수 있습니다 .

Characteristic of PBL-S-H 2-Stage

Model No.		Unit	Ratio	62S	90S	120S	142S	180S	220S
Rated Output Torque (Nominal output torque)	T_{2N}	Nm	15	54	145	301	553	1,067	1,786
			20	48	128	269	491	940	1,587
			25	45	132	278	510	1,050	1,770
			30	41	125	252	466	985	1,680
			35	41	123	258	473	975	1,645
			40	39	115	241	442	942	1,605
			50	45	132	278	510	1,050	1,770
			60	41	125	252	466	985	1,680
			70	41	123	258	473	975	1,645
			80	39	115	241	442	942	1,605
			90	40	120	227	412	875	1,490
			100	40	116	246	452	930	1,565
			120	41	125	252	466	985	1,680
			140	41	123	258	473	975	1,645
			160	39	115	241	442	942	1,605
			180	40	120	227	412	875	1,490
			200	40	116	246	452	930	1,565
Max. Acceleration Torque	T_{2B}	Nm	15~200	1.8 Times of Rated Output Torque					
Max. Output Torque Emergency Stop Torque	T_{2NOT}	Nm	15~200	3 Times of Rated Output Torque					
Rated Input Speed	n_{1N}	rpm	15~200	3,000	3,000	3,000	3,000	3,000	2,000
Max. Input Speed	n_{1B}	rpm	15~200	6,000	6,000	5,000	5,000	4,000	3,000
Backlash	j_t	arcmin	15~200	≦12	≦12	≦12	≦12	≦12	≦12
Torsional Rigidity		Nm/arcmin	15~200	6	14	27	60	140	240
Max. Radial Force	F_{2rB}	N	15~200	1,120	3,040	6,460	8,830	14,820	48,450
Max. Axial Force	F_{2aB}	N	15~200	560	1,520	3,230	4,410	7410	24,225
Service Life	L_H	hr	15~200	S5 Cycle Operation: ⟩20,000 (S1 Continuous Operation: ⟩10,000 hrs)					
Efficiency	n	%	15~200	≧92%					
Operating Temperature		℃	15~200	−25°C ~ +90°C					
Lubrication			15~200	VIGO GREASE RE #0					
Protection Class			15~200	IP65					
Mounting Position			15~200	Any					
Noise Level		dB	15~200	≦68	≦70	≦72	≦74	≦76	≦78
Weight ±3%		kg	15~200	2	6.1	12.5	23.2	41.4	72.5

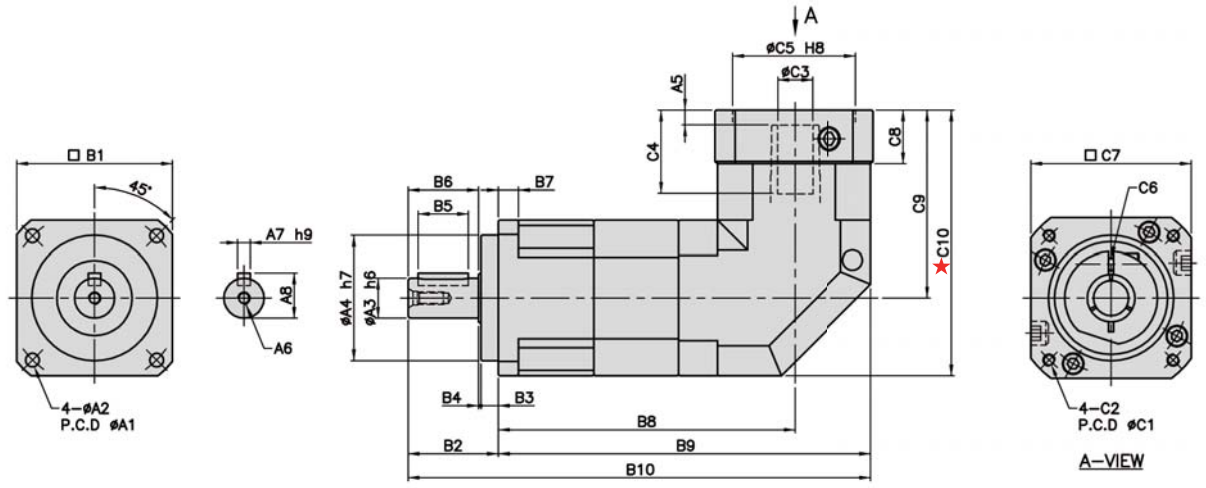
Mass Moments of Inertia (kg.㎠)

Ratio	62S	90S	120S	142S	180S	220S
15	0.09	0.36	2.28	6.85	26.2	70.1
20	0.09	0.36	2.28	6.85	26.2	70.1
25	0.09	0.36	2.28	6.85	23.1	68.2
30	0.09	0.36	2.28	6.85	23.1	68.2
35	0.09	0.36	2.28	6.85	23.1	68.2
40	0.09	0.36	2.28	6.85	23.1	68.2
50	0.09	0.36	2.28	6.85	23.1	68.2
60	0.09	0.36	2.28	6.85	23.1	68.2
70	0.09	0.36	2.28	6.85	23.1	68.2
80	0.09	0.36	2.28	6.85	23.1	68.2
90	0.09	0.36	2.28	6.85	23.1	68.2
100	0.09	0.36	2.28	6.85	23.1	68.2
120	0.03	0.10	1.88	6.20	21.2	65.1
140	0.03	0.10	1.88	6.20	21.2	65.1
160	0.03	0.10	1.88	6.20	21.2	65.1
180	0.03	0.10	1.88	6.20	21.2	65.1
200	0.03	0.10	1.88	6.20	21.2	65.1

* 연속운전 사용시 본사와 상담 후 선정바랍니다 .

MODEL : PBL-H

RATIO : 15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100, 120, 140, 160, 180, 200 (2-Stage)



unit : mm

Code	Model	44	62	90	120	142	180	220
A	A1	50	70	100	130	165	215	250
	A2	4.5	5.5	6.8	9	11	13	17
	A3	13	16	22	32	40	55	75
	A4	35	50	80	110	130	160	180
	A5	6	6	9, 23.5	10, 20	10	12.5, 14.5	12.5, 14.5
	A6	M4 × P0.7	M5 × P0.8	M8 × P1.25	M10 × P1.5	M12 × P1.75	M14 × P2.0	M16 × P2.0
	A7	5	5	6	10	12	16	20
	A8	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	102	118.3	165.6	204	232	304.6	324.6
	B9	124	149.3	210.6	264	303	394.6	434.6
	B10	150	185.3	258.6	329	395	500.6	573.6
C	C1	46, 60, 63	70, 75, 90	90, 100, 115, 145	115, 145, 165	145, 165, 215	200, 215, 265	200, 265, 300
	C2	M3, M4, M5	M4, M5, M6	M5, M6, M8	M6, M8, M10	M8, M10, M12	M10, M12	M12, M16
	C3	8, (11)	14, (19)	19, (24)	24, (32)	35, (38)	38, 42, 48, 55	42, 48, 55
	C4	27	33.5, 41.5	53, 67.5	67, 77	85	117, 119	117, 119
	C5	30, 40, 50	50, 60, 70	70, 80, 95, 110	95, 110, 130	110, 130, 180	114.3, 180, 230	114.3, 230, 250
	C6	M4 × P0.7	M5 × P0.8	M6 × P1.0	M8 × P1.25	M10 × P1.5	M10 × P1.5	M10 × P1.5
	C7	46, 55	64, 70, 80	92, 110, 130	122, 130, 150	146, 150, 190	182, 200, 250	222, 250, 265
	C8	16	21.5	26.5, 41	35.5, 45.5	35.5	45.5, 47.5	45.5, 47.5
	C9	61	77, 85	115.3, 129.8	141, 151	174	235, 237	235, 237
	C10	83	108, 116	160.3, 174.8	201, 211	245	325, 327	345, 347

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

Characteristic of PBL-H 2-Stage

Model No.		Unit	Ratio	44	62	90	120	142	180	220
Rated Output Torque (Nominal output torque)	T_{2N}	Nm	15	17	54	145	301	553	1,067	1,786
			20	15	48	128	269	491	940	1,587
			25	14	45	132	278	510	1,050	1,770
			30	14	45	125	252	466	985	1,680
			35	14	41	123	258	473	975	1,645
			40	15	39	115	241	442	942	1,605
			50	14	45	132	278	510	1,050	1,770
			60	12	41	125	252	466	985	1,680
			70	13	41	123	258	473	975	1,645
			80	12	39	115	241	442	942	1,605
			90	11	40	120	227	412	875	1,490
			100	12	40	116	246	452	930	1,565
			120	13	41	125	252	466	985	1,680
			140	13	41	123	258	473	975	1,645
			160	12	39	115	241	442	942	1,605
			180	11	40	120	227	412	875	1,490
			200	12	40	116	246	452	930	1,565
Max. Acceleration Torque	T_{2B}	Nm	15~200	1.8 Times of Rated Output Torque						
Max. Output Torque Emergency Stop Torque	T_{2NOT}	Nm	15~200	3 Times of Rated Output Torque						
Rated Input Speed	n_{1N}	rpm	15~200	3,000	3,000	3,000	3,000	3,000	3,000	2,000
Max. Input Speed	n_{1B}	rpm	15~200	6,000	6,000	6,000	5,000	5,000	4,000	3,000
Backlash	j_t	arcmin	15~200	≦12	≦12	≦12	≦12	≦12	≦12	≦12
Torsional Rigidity		Nm/arcmin	15~200	3	6	14	27	60	140	240
Max. Radial Force	F_{2rB}	N	15~200	720	1,120	3,040	6,460	8,830	14,820	48,450
Max. Axial Force	F_{2aB}	N	15~200	360	560	1,520	3,230	4,410	7,410	24,225
Service Life	L_H	hr	15~200	S5 Cycle Operation: 〉20,000 (S1 Continuous Operation: 〉10,000 hrs)						
Efficiency	η	%	15~200	≧92%						
Operating Temperature		℃	15~200	−25°C ~ +90°C						
Lubrication			15~200	VIGO GREASE RE #0						
Protection Class			15~200	IP65						
Mounting Position			15~200	Any						
Noise Level		dB	15~200	≦65	≦68	≦70	≦72	≦74	≦76	≦78
Weight ±3%		kg	15~200	1.5	3	8.15	13.9	29.4	52.4	91.5

Mass Moments of Inertia (kg.㎠)

Ratio	44	62	90	120	142	180	220
15	0.09	0.36	2.28	6.85	23.5	55.2	80.2
20	0.09	0.36	2.28	6.85	23.5	55.2	80.2
25	0.09	0.36	2.28	6.85	23.5	50.4	76.5
30	0.09	0.36	2.28	6.85	23.5	50.4	76.5
35	0.09	0.36	2.28	6.85	23.5	50.4	76.5
40	0.09	0.36	2.28	6.85	23.5	50.4	76.5
50	0.09	0.36	2.28	6.85	23.5	50.4	76.5
60	0.09	0.36	2.28	6.85	23.5	50.4	76.5
70	0.09	0.36	2.28	6.85	23.5	50.4	76.5
80	0.09	0.36	2.28	6.85	23.5	50.4	76.5
90	0.09	0.36	2.28	6.85	23.5	50.4	76.5
100	0.09	0.36	2.28	6.85	23.5	50.4	76.5
120	0.03	0.08	1.88	6.20	21.8	48.7	74.2
140	0.03	0.08	1.88	6.20	21.8	48.7	74.2
160	0.03	0.08	1.88	6.20	21.8	48.7	74.2
180	0.03	0.08	1.88	6.20	21.8	48.7	74.2
200	0.03	0.08	1.88	6.20	21.8	48.7	74.2

* 연속운전 사용시 본사와 상담 후 선정바랍니다.