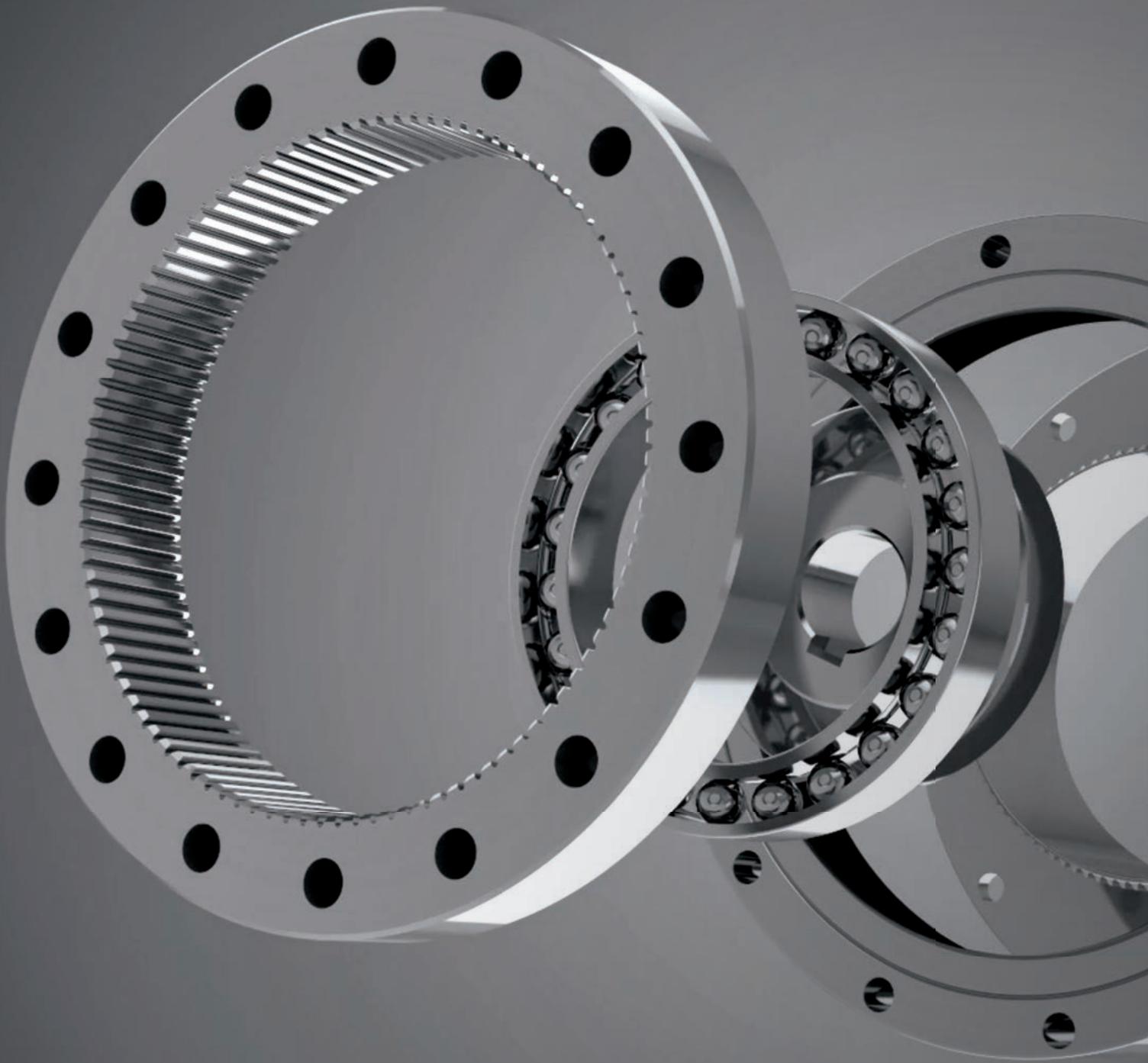


FLEXWAVE

WP series



정밀 제어용 감속기
A High precision reducer



「기술의 연마」 그것이 저희의 끊임없는 신념입니다.
"Relentless Refinement of Technology"

FLEXWAVE

플렉스 웨이브

일본전산심포가 가장 자신있는 감속기의 기술. 그 기술을 진화시켜, 새로운 감속기가 탄생하였습니다.

로봇의 보급이 가속되어, 정밀제어용 감속기의 기대가 높아지고 있습니다.
당사도 고객의 기대에 보답하기 위하여 지금까지 축적해 온 기술들을 집결하여
경량 콤팩트, 고감속, 저백래쉬의 감속기를 완성 하였습니다.
「플렉스 웨이브」, 새로운 로봇 시대의 흐름에 맞추어
로봇, 공작기계 등 여러 분야에서 활약하겠습니다.

Nidec-Shimpo Corporation is a global leader in various high precision gear technologies. Based on increased demand for higher accuracy from machine tool and robot manufacturers, we've utilized our expertise to develop a new gear reduction mechanism.

This mechanism, called Flexwave, addresses the need for high torque density in a lightweight, compact package, combined with zero backlash and high reduction ratios. As a result, manufacturers of high performance robots, machine tools and other automation equipment will see increased performance and competitiveness in their respective markets.

進歩가 있기에, 世界가 있다.

Tractioning Your Future

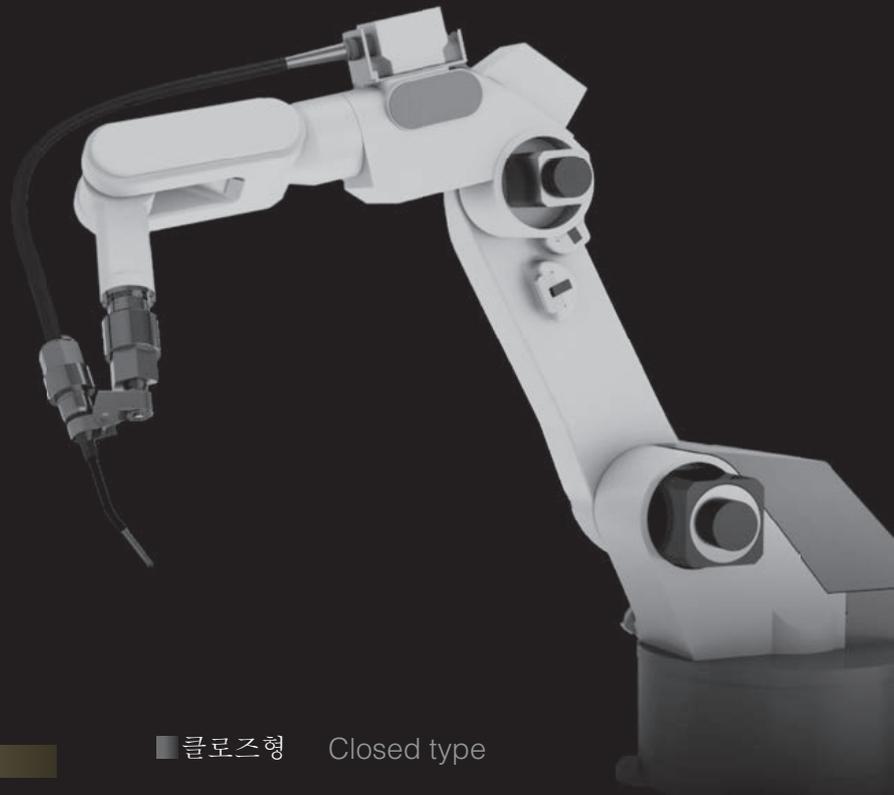
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FLEXWAVE Line up



■ 오픈형 Open type



WPU-□-□-SNH

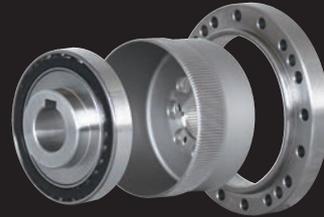
유니트타입 (중공축) Hollow unit

■ 클로즈형 Closed type



WPU-□-□-SNJ

유니트타입 (입력축) Input shaft unit



WPC-□-□- CN(CF)

컴포넌트타입 Component



WPS-□-□-SN

간이유니트타입 Simple unit

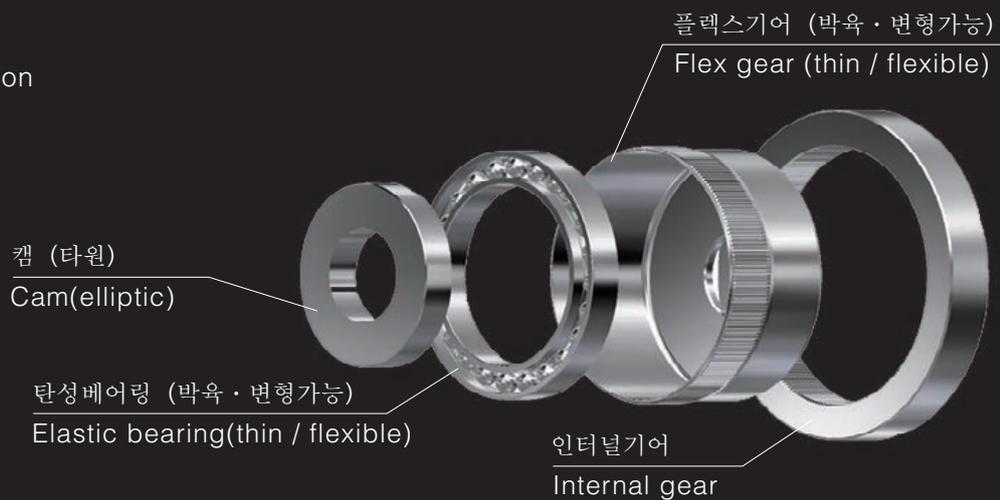


WPU-□-□-CN (CF)

유니트타입 Unit

부품구성

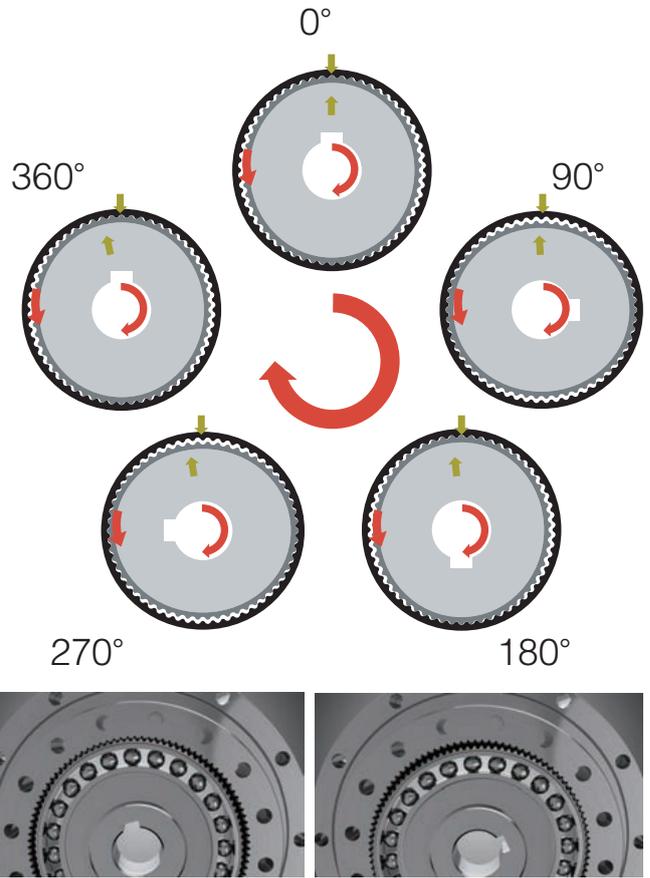
Parts Configuration



감속기구

Reduction Mechanism

- 탄성베어링 · 플렉스기어를 캠에 의해서 타원형태로 변형시킵니다
- 타원의 장축부분 양단에 플렉스기어와 인터널기어가 균형있게 맞물립니다.
- 인터널기어를 고정하고, 캠을 시계방향으로 360° 회전시켰을 때, 인터널기어와 플렉스기어의 잇수차만큼 플렉스기어가 반시계방향으로 회전합니다.
- Flex gear and elastic bearing take elliptic shape with the cam inserted.
- Flex gear and internal gear are engaged at both ends of the long axis of the ellipse in a stable manner.
- With the internal gear fixed, when the cam (input) is rotated clockwise, the flex gear (output) rotates counterclockwise. And its rotational speed is determined by the tooth count differential between two gears.

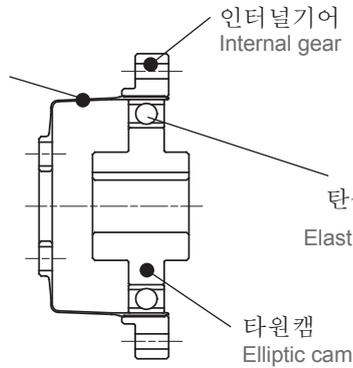


부품명칭

Parts Name

클로즈형
Closed type

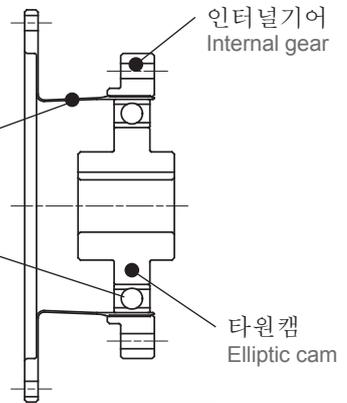
플렉스기어
Flex gear



오픈형
Open type

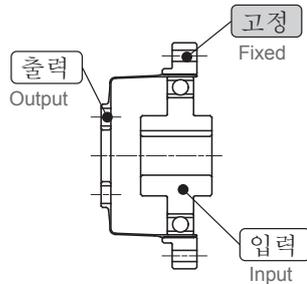
플렉스기어
Flex gear

탄성베어링
Elastic bearing



감속비

Reduction Ratio

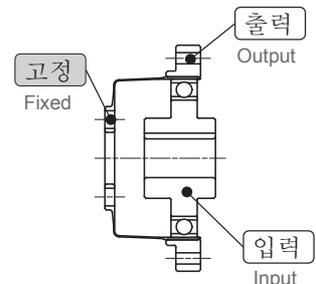


$$\text{감속비} = \frac{-1}{R}$$

Reduction ratio

※입력회전방향과 출력회전방향이 반대

*The input and output rotation directions are opposite.



$$\text{감속비} = \frac{1}{R+1}$$

Reduction ratio

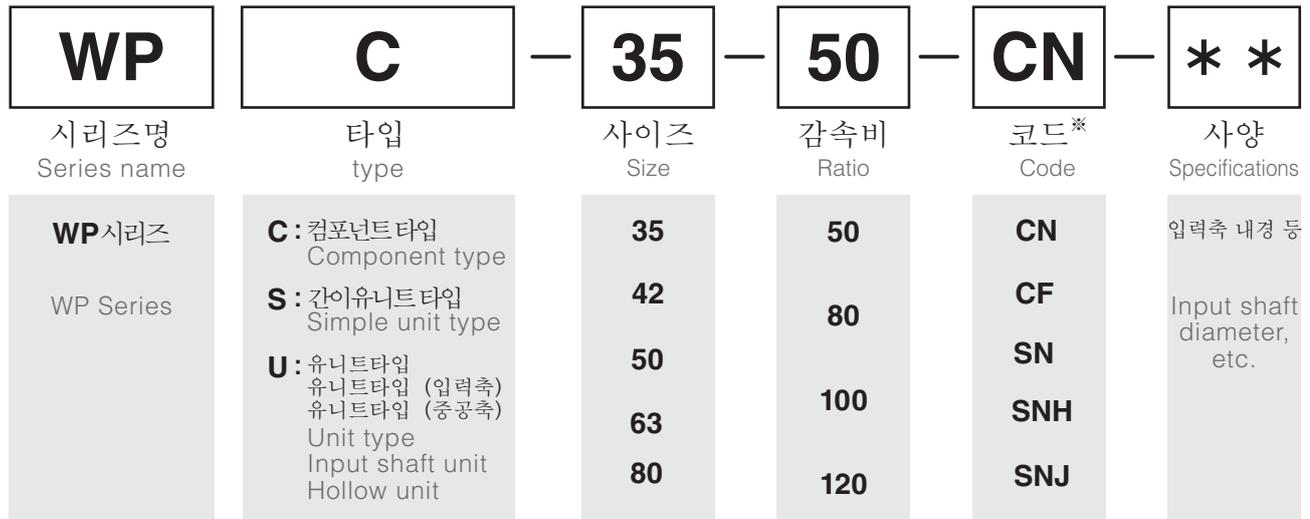
※입력회전방향과 출력회전방향이 동일

*The input and output rotation directions are same.

● R 은 감속기 사양표의 감속비

R represents the 'Ratio' figure in the specifications table on the next page.

감속기형식 Reducer Model Nomenclature



● 형 번호 Availability

Ratio matrix

Frame size		감속비	50	80	100	120
	사이즈					
	35					
	42					
	50					
	63					
80						

※상세 코드는 치수표를 확인하여 주십시오.
For the code details, please check the Dimensions Table.

감속기 사양 Reducer Specifications

사이즈 Size	감속비 Ratio R*1	※2	※3	※4	※5	※6
		허용평균 토크 Nominal output torque [Nm]	허용최대 토크 Maximum output torque [Nm]	비상시최대 토크 Emergency stop torque [Nm]	허용평균 입력회전수 Nominal input speed [r/min]	허용최대 입력회전수 Maximum input speed [r/min]
35	50	7	23	46	3000	8500
	80	9	27	55		
	100	9	32	63		
42	50	21	44	91	3000	7300
	80	26	50	102		
	100	28	63	129		
	120	28	63	129		
50	50	33	73	127	3000	6500
	80	40	86	149		
	100	47	96	172		
	120	47	96	172		
63	50	51	127	242	3000	5600
	80	66	142	266		
	100	70	163	295		
	120	70	163	295		
80	50	89	253	447	3000	4800
	80	122	316	590		
	100	142	346	673		
	120	142	346	673		

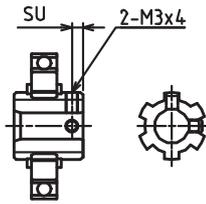
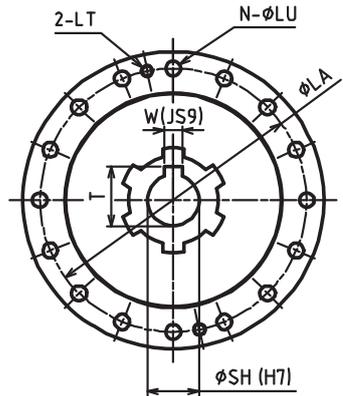
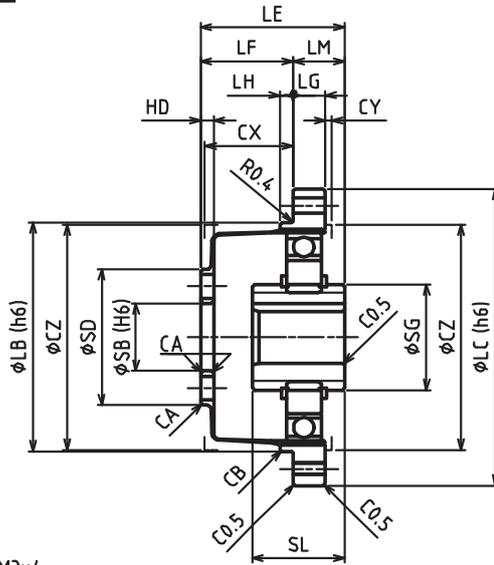
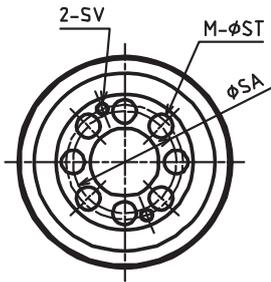
※ 1 R 값을 전 페이지의 식에 넣어 감속비를 구하여 주십시오.
 ※ 2 입력회전수 2000r/min의 경우 허용하는 최대치
 ※ 3 기동·정지시 허용하는 최대치
 ※ 4 충격 등이 작용하였을 경우 허용하는 최대치
 ※ 5 운전중 허용하는 평균입력회전수의 최대치
 ※ 6 운전중 허용하는 입력회전수의 최대치

*1 Reduction ratio is to be calculated by the formula in the previous page, using R value in this table.
 *2 The maximum allowable value at the input rotation speed of 2000r/min
 *3 The maximum torque when starting and stopping.
 *4 The maximum torque when it receives shock.
 *5 The maximum average input speed.
 *6 The maximum input speed.

치수표 Dimensions Table

클로즈형 컴포넌트타입
Closed Type, Component

WPC- □ - □ -CN
WPC- □ - □ -CF



INPUT SHAFT FOR 35&42

사이즈 Size	중량 Weight	관성모멘트 Moment of inertia
	kg	$\times 10^{-4} \text{kgm}^2$
35	0.10	0.0383
42	0.17	0.0855
50	0.26	0.207
63	0.43	0.544
80	0.91	1.63

[mm]

사이즈 Size	LA	LB	LC	N*1	LU	LT	LE	LF	LG	LH	LM	SG	SH	SL	W
35	44	38	50	8 (6)	3.5	M3	28.5	17.5	6	2	11	15.8	6	18.5	-
42	54	48	60	16(12)	3.5	M3	32.5	20	6.5	2.5	12.5	15.8	8	20.7	-
50	62	54	70	16(12)	3.5	M3	33.5	21.5	7.5	3	12	24.8	12	21.5	4
63	75	67	85	16(12)	4.5	M4	37	24	10	3	13	27.8	14	21.6	5
80	100	90	110	16(12)	5.5	M5	44	28	14	3	16	27.8	14	23.6	5

사이즈 Size	T	SU	SA	SB	SD	M	ST	SV	HD	CA	CB	CX	CY	CZ
35	-	2.5	17	11	23.5	6	4.5	M3	2.4	C0.5	C0.3	17	1	38
42	-	3	19	10	27	6	5.5	M3	3	C0.5	C0.3	19	1	45
50	13.8	-	24	16	32	8	5.5	M3	3	C0.5	C0.5	20.5	1.5	53
63	16.3	-	30	20	40	8	6.5	M4	3	C0.5	C0.5	23	1.5	66
80	16.3	-	40	26	52	8	8.8	M5	3.2	C0.5	C0.5	26.8	1.5	86

*1 -CN과 -CF는 치수가 다릅니다.
() 안은 -CF의 값입니다.

*2 입력부 상세에 대해서는 별도 치수도의 확인을 부탁드립니다.

*1 -CN and -CF are different in dimensions. The -CF value is shown in ().
*2 For details in the input section, please check the drawings.

감속기 형식 /
사양
Reducer Model /
Specifications

치수표
Dimensions Table

형식 선정 /
수명 계산 (탄성 베어링)
Model selection /
Life estimation
(Elastic bearing)

수명 계산 (주 베어링)
Life estimation
(Main bearing)

이동부의 허용 하중 /
입력 샤프트
lubricant information
Maximum load at
input shaft

취부정도
Attachment fixture
requirement

전달토크
Transmitting Torque

입력부 구조 /
주요 사항
Installation and
assembly instructions

모터 취부 방법
Motor installation
procedure

특성 데이터
Characteristics Data

치수표 Dimensions Table

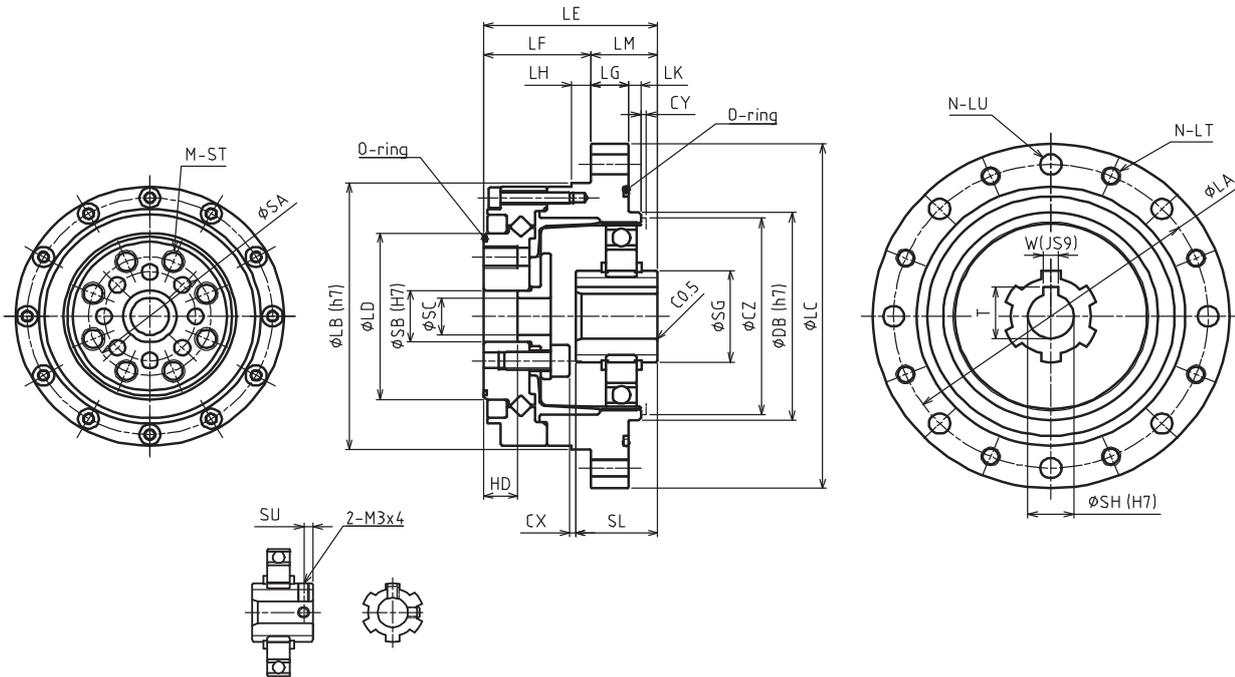
클로즈형 유니트타입

Closed Type, Unit

WPU- □ - □ -CN

WPU- □ - □ -CF

사이즈 Size	중량 Weight	관성모멘트 Moment of inertia
	kg	$\times 10^{-4} \text{kgm}^2$
35	0.50	0.0377
42	0.68	0.0856
50	0.95	0.207
63	1.5	0.544
80	3.3	1.63



INPUT SHAFT FOR 35&42

[mm]

사이즈 Size	LA	LB	LC	LD	N ^{*1}	LT	LU	LE	LF	LG	LH	LK	LM	DB	SG
35	65	56	73	31	8 (6)	M4	4.5	41	27	7	3.5	2	14	38	15.8
42	71	63	79	38	8 (6)	M4	4.5	45	29	8	4	2	16	48	15.8
50	82	72	93	45	8 (6)	M5	5.5	45.5	28	10	5	3	17.5	56	24.8
63	96	86	107	58	10 (8)	M5	5.5	52	36	10	5	3	16	67	27.8
80	125	113	138	78	12	M6	6.5	62	45	12	5	3	17	90	27.8

사이즈 Size	SH	SL	W	T	SU	SA	SB	SC	M	ST	HD	CX	CY	CZ
35	6	18.5	-	-	2.5	23	11	8	6	M4 × 8	9.5	1.6	1	38
42	8	20.7	-	-	3	27	10	7	6	M5 × 8	9.5	1.3	1	45
50	12	21.5	4	13.8	-	32	14	10	8	M6 × 9	9	1.5	1.5	53
63	14	21.6	5	16.3	-	42	20	15	8	M8 × 10	12	3.4	1.5	66
80	14	23.6	5	16.3	-	55	26	20	8	M10 × 12	15	5.2	1.5	86

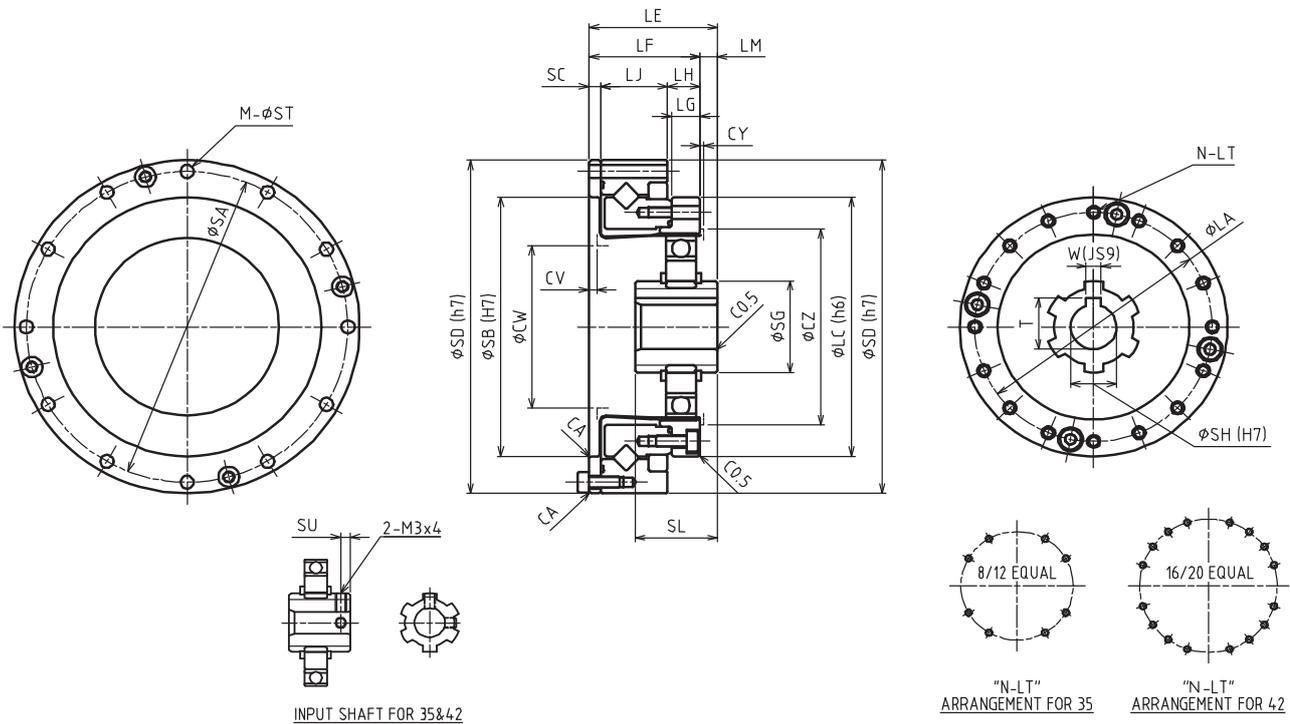
*1 -CN과 -CF는 치수가 다릅니다.
() 안은 -CF의 값입니다.

*2 입력부 상세에 대해서는 별도 치수의 확인을 부탁드립니다.

*1 -CN and -CF are different in dimensions. The -CF value is shown in () .
*2 For details in the input section, please check the drawings.

오픈형 간이유니트타입
Open type, Simple unit
WPS- □ - □ - SN

사이즈 Size	중량 Weight	관성 모멘트 Moment of inertia
	kg	$\times 10^{-4} \text{kgm}^2$
35	0.39	0.0391
42	0.55	0.0870
50	0.79	0.209
63	1.3	0.549
80	2.7	1.65



[mm]

사이즈 Size	LA	LC	LE	LF	LG	LH	LJ	LM	SG	SH	SL	W	T	SU	SA	SB
35	44	50	28.5	23.5	6	7	14.1	5	15.8	6	18.5	-	-	2.5	64	48
42	54	60	32.5	26.5	6.5	7.5	16	6	15.8	8	20.7	-	-	3	74	60
50	62	70	33.5	29	7.5	8.5	17.5	4.5	24.8	12	21.5	4	13.8	-	84	70
63	77	85	37	34	10	12	18.7	3	27.8	14	21.6	5	16.3	-	102	88
80	100	110	44	42	14	15	23.4	2	27.8	14	23.6	5	16.3	-	132	114

사이즈 Size	SC	SD	M	ST	CA	CY	CZ	CV	CW	N	LT
35	2.4	70	8	3.5	C0.3	1	38	1.6	31	8	M3 × 5, $\phi 3.5 \times 6$
42	3	80	12	3.5	C0.3	1	45	2	37	16	M3 × 6, $\phi 3.5 \times 6.5$
50	3	90	12	3.5	C0.3	1.5	53	2	44	16	M3 × 6, $\phi 3.5 \times 7.5$
63	3.3	110	12	4.5	C0.3	1.5	66	2	56	16	M4 × 7, $\phi 4.5 \times 10$
80	3.6	142	12	5.5	C0.5	1.5	86	2	72	16	M5 × 8, $\phi 5.5 \times 14$

※ 1 입력부상세에 대해서는 별도 치수도의 확인을 부탁드립니다. *1 For details in the input section, please check the drawings.

치수표
Dimensions Table

형식선정 /
Model selection /
수명계산 (탄성베어링)
Life estimation
(Elastic bearing)

수명계산 (주 베어링)
Life estimation
(Main bearing)

윤활제
Maximum load at
input shaft/
lubricant information

취부정도
Attachment
fixture
requirement

전달토크
Transmitting Torque

주요사항
Input section structure/
Installation and
assembly instructions

모터 취부방법
Motor installation
procedure

특성데이터
Characteristics Data

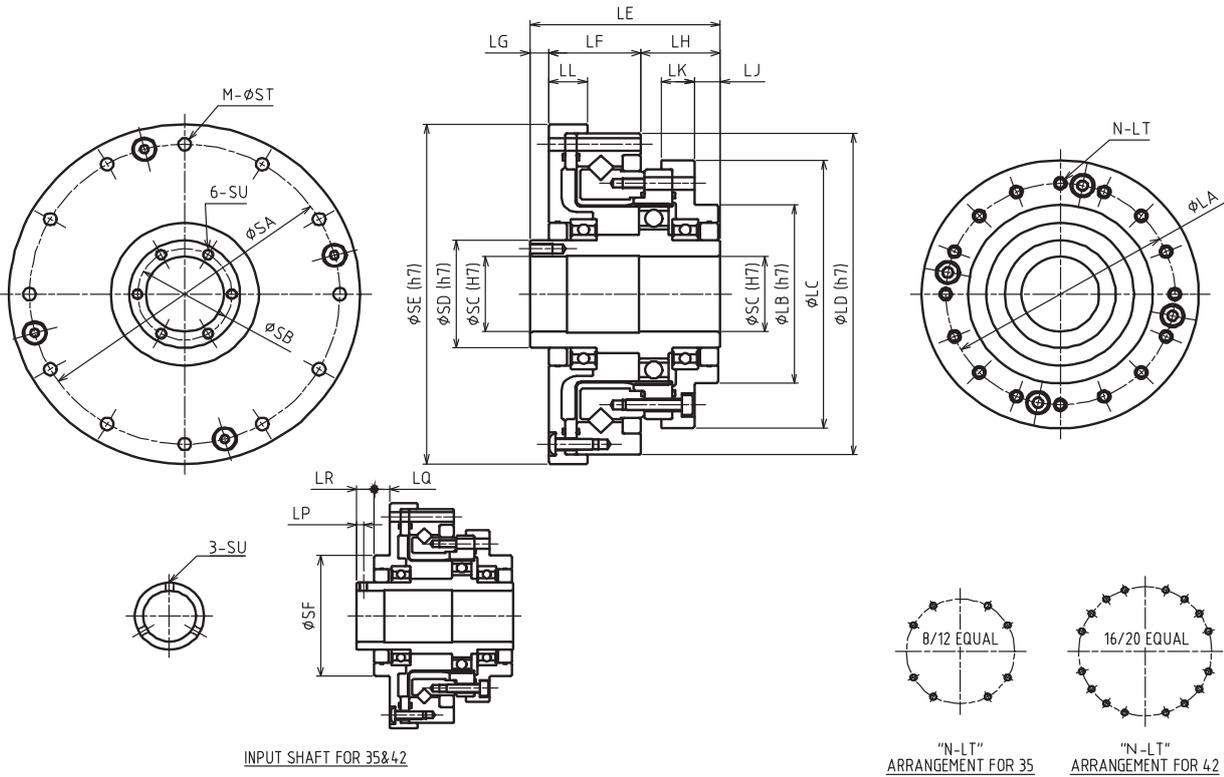
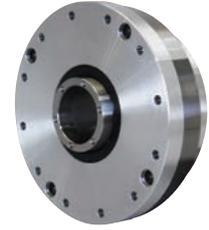
치수표

Dimensions Table

오픈형 유니트타입 (중공축)
Open type, Unit (hollow shaft)

WPU- □ - □ - SNH

사이즈 Size	중량 Weight	관성모멘트 Moment of inertia
	kg	$\times 10^{-4} \text{kgm}^2$
35	0.57	0.103
42	0.79	0.230
50	1.1	0.460
63	1.7	1.24
80	3.4	3.18



INPUT SHAFT FOR 35&42

"N-LT" ARRANGEMENT FOR 35

"N-LT" ARRANGEMENT FOR 42

[mm]

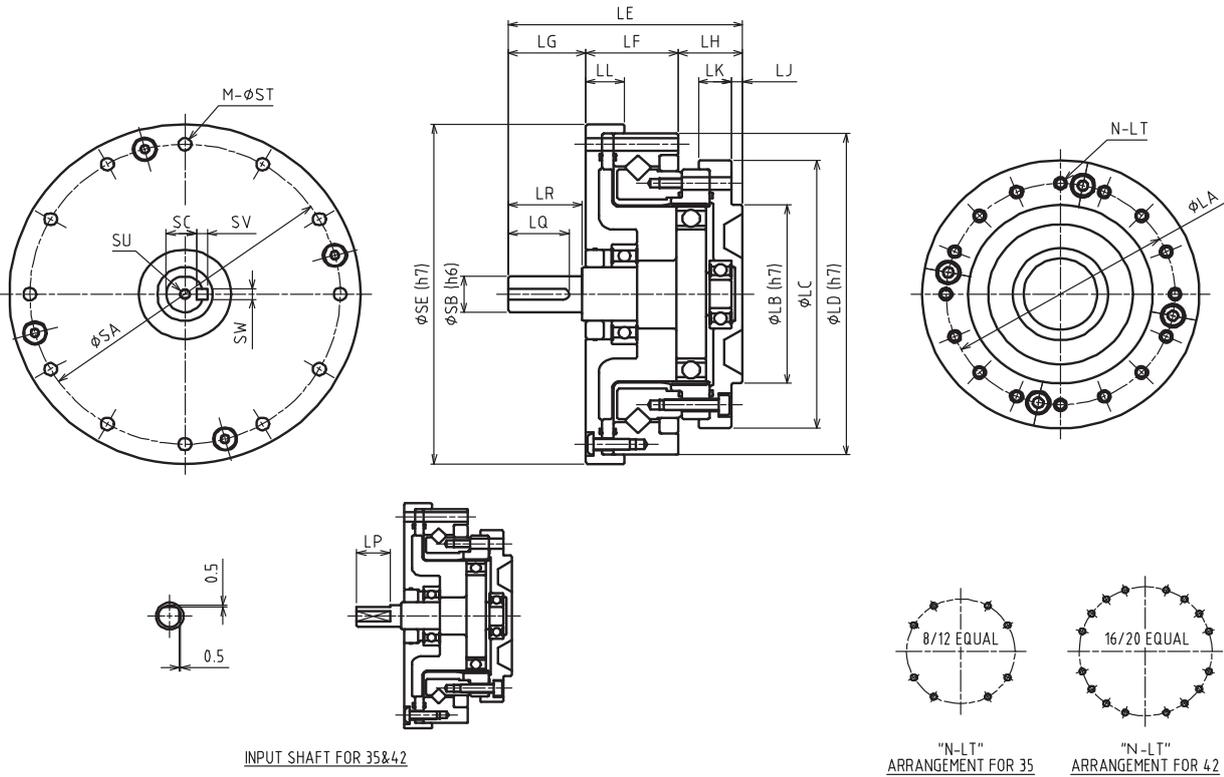
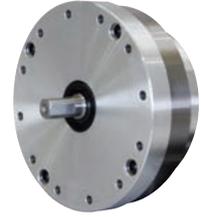
사이즈 Size	LA	LB	LC	LD	LE	LF	LG	LH	LJ	LK	LL	LP	LQ	LR
35	44	36	54	70	52.5	20.5	12	20	7.5	8	9	2.5	5.5	6.5
42	54	45	64	80	56.5	23	12	21.5	8.5	8.5	10	2.5	5.5	6.5
50	62	50	75	90	51.5	25	5	21.5	7	9	10.5	-	-	-
63	77	60	90	110	55.5	26	6	23.5	6	8.5	10.5	-	-	-
80	100	85	115	142	65.5	32	7	26.5	5	9.5	12	-	-	-

사이즈 Size	SA	SB	SC	SD	SE	SF	M	ST	SU	N	LT
35	64	-	14	20	74	36	8	3.5	M3	8	M3 × 5, φ 3.5 × 11.5
42	74	-	19	25	84	45	12	3.5	M3	16	M3 × 6, φ 3.5 × 12
50	84	25.5	21	30	95	-	12	3.5	M3 × 6	16	M3 × 6, φ 3.5 × 13.5
63	102	33.5	29	38	115	-	12	4.5	M3 × 6	16	M4 × 7, φ 4.5 × 15.5
80	132	40.5	36	45	147	-	12	5.5	M3 × 6	16	M5 × 8, φ 5.5 × 20.5

오픈형 유니트타입(입력축)
Open type, Unit (input shaft)

WPU- □ - □ - SNJ

사이즈 Size	중량 Weight	관성모멘트 Moment of inertia
	kg	$\times 10^{-4} \text{kgm}^2$
35	0.48	0.0376
42	0.69	0.0897
50	1.0	0.208
63	1.6	0.554
80	3.2	1.74



INPUT SHAFT FOR 35&42

"N-LT"
ARRANGEMENT FOR 35

"N-LT"
ARRANGEMENT FOR 42

[mm]

사이즈 Size	LA	LB	LC	LD	LE	LF	LG	LH	LJ	LK	LL	LP	LQ	LR
35	44	36	54	70	50.5	20.5	15	15	2.5	8	9	11	-	-
42	54	45	64	80	56	23	17	16	3	8.5	10	12	-	-
50	62	50	75	90	63.5	25	21	17.5	3	9	10.5	-	16.5	20
63	77	60	90	110	72.5	26	26	20.5	3	8.5	10.5	-	22.5	25
80	100	85	115	142	84.5	32	26	26.5	5	9.5	12	-	22.5	25

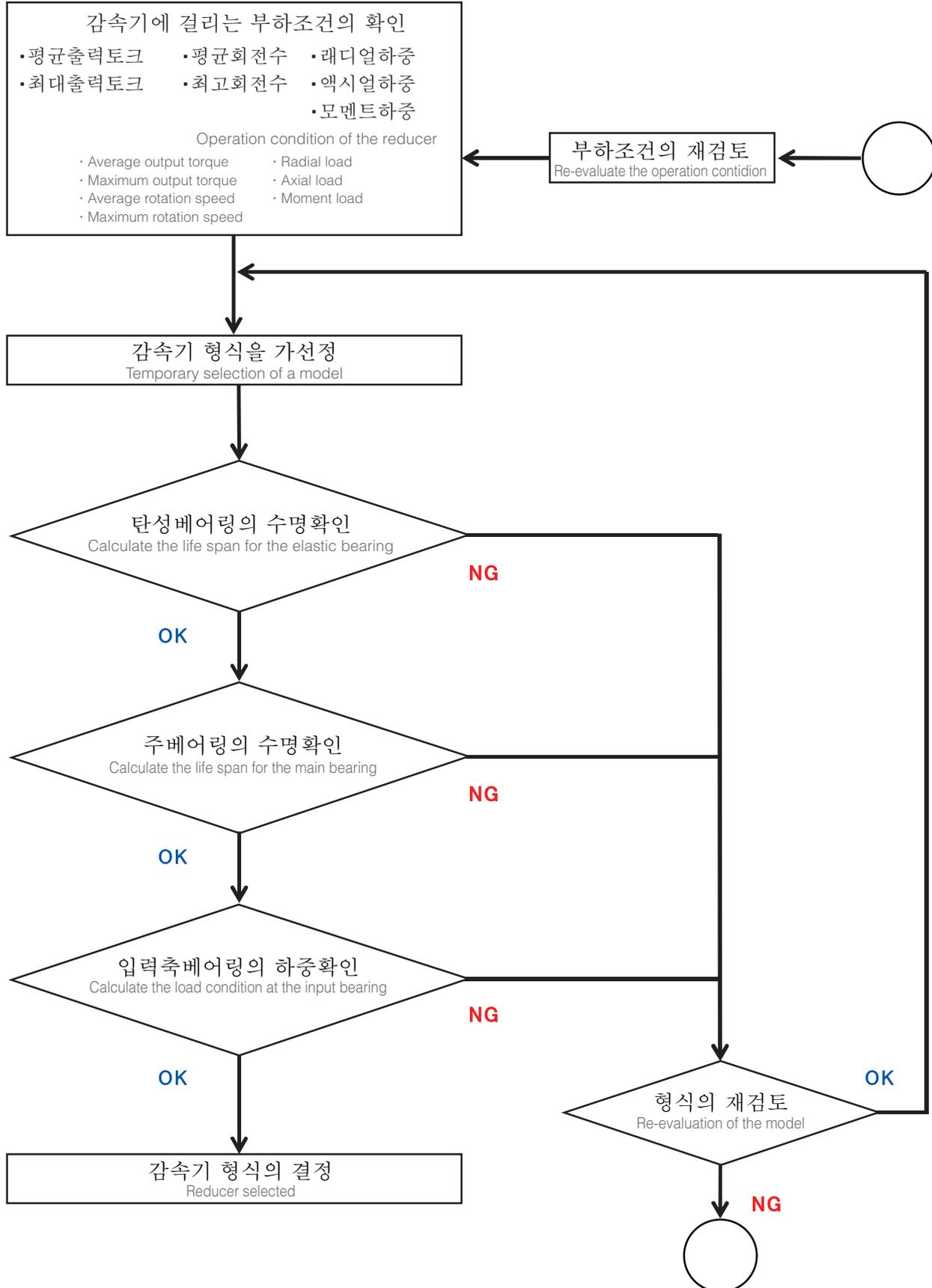
사이즈 Size	SA	SB	SC	SE	SV	SW	M	ST	SU	N	LT
35	64	6	-	74	-	-	8	3.5	-	8	M3 × 5, φ 3.5 × 11.5
42	74	8	-	84	-	-	12	3.5	-	16	M3 × 6, φ 3.5 × 12
50	84	10	8.2	95	3	3	12	3.5	M3 × 6	16	M3 × 6, φ 3.5 × 13.5
63	102	14	11	115	5	5	12	4.5	M3 × 6	16	M4 × 7, φ 4.5 × 15.5
80	132	14	11	147	5	5	12	5.5	M3 × 6	16	M5 × 8, φ 5.5 × 20.5

형식선정

Model selection

형식선정의 흐름

Model selection flow



수명계산 (탄성베어링)

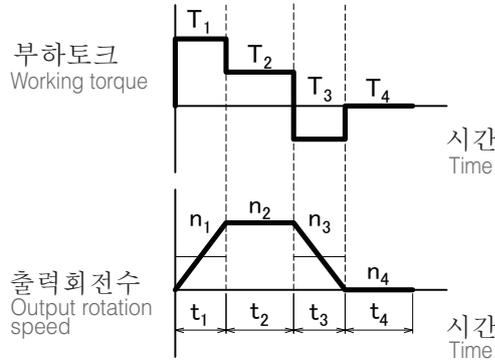
Life estimation (Elastic bearing)

탄성베어링 수명계산

Life span for the elastic bearing

■ 운전패턴

Operation cycle example



① 평균출력토크 · 최대출력토크의 산출

Calculation formula for output torque

평균출력토크 Average output torque	Tao	Nm	$Tao = \sqrt[3]{\frac{n_1 \cdot t_1 \cdot T_1 ^3 + n_2 \cdot t_2 \cdot T_2 ^3 + \dots + n_n \cdot t_n \cdot T_n ^3}{n_1 \cdot t_1 + n_2 \cdot t_2 + \dots + n_n \cdot t_n}}$
최대출력토크 Peak output torque value	Tmo	Nm	Tmo = T ₁ , T ₂ , ... T _n 의 최대치 Tmo = Largest among T ₁ , T ₂ , ... T _n

최대출력토크가 허용최대출력 이하일 것을 확인하여 주십시오.
Please make sure the peak output torque is below the maximum output torque in the specification table

② 평균입력회전수 · 최고입력회전수의 산출

Calculation formula for input speed

평균출력회전수 Average output rotation speed	nao	r/min	$nao = \frac{n_1 \cdot t_1 + n_2 \cdot t_2 + \dots + n_n \cdot t_n}{t_1 + t_2 + \dots + t_n}$
최고출력회전수 Peak output rotation speed	nmo	r/min	nmo = n ₁ , n ₂ , ... n _n 의 최대치 nmo = Largest among n ₁ , n ₂ , ... n _n
평균입력회전수 Average input speed	nai	r/min	nai = nao × R (R = 감속비) (R = ratio)
최고입력회전수 Peak input speed value	nmi	r/min	nmi = nmo × R (R = 감속비) (R = ratio)

최고입력회전수가 허용최고입력회전수 이하일 것을 확인하여 주십시오.
Please make sure the peak input speed value is below the maximum input speed in the specification table

③ 수명시간의 계산

Calculation formula for life span

탄성베어링 수명시간 Part life span for the elastic bearing	Lhe	h	$Lhe = 7000 \times \left(\frac{Tar}{Tao}\right)^3 \times \left(\frac{nar}{nai}\right)$
정격토크 Rating torque	Tar	Nm	성능표의 허용평균토크 Nominal output torque in the specification table
정격입력회전수 Rating input rotation speed	nar	r/min	2000 r/min

감속기 형식 / Reducer Model / Specifications	치수표 Dimensions Table	형식선정 / 수명계산 (탄성베어링) Model selection / Life estimation (Elastic bearing)	수명계산 (주베어링) Life estimation (Main bearing)	입력축의 허용하중 / 입력축의 윤활제 Maximum load at input shaft/ lubricant information	취부정도 Attachment requirement	전달토크 Transmitting Torque	입력부구조 / 주요사항 Input section structure/ Installation and assembly instructions	모터 취부방법 Motor installation procedure	특성데이터 Characteristics Data
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수명계산 (주베어링) *Life estimation (Main bearing)*

주베어링 사양 (크로스롤러 베어링) Main bearing specification (Cross roller bearing)

시리즈 Series	사이즈 Size	롤러의 피치원경 Pitch circle diameter of the bearing rollers	오프셋 Offset	기본동정격하중 Basic dynamic load rating	기본정정격하중 Basic static load rating	허용 모멘트 Allowable moment	모멘트 강성 Moment rigidity
		Dm m	L m	C N	Co N	Mal Nm	Km × 10 ⁴ Nm/rad
WPU-□-□-C□	35	0.0335	0.0088	5620	6540	36.5	7.35
	42	0.0410	0.0098	6340	8170	55.8	8.02
	50	0.0485	0.0098	10400	13300	91.0	13.5
	63	0.0620	0.0108	15800	21100	156	27.7
	80	0.0815	0.0128	24400	35600	313	66.0
WPS-□-□-SN	35	0.0505	0.0162	7110	10200	74.0	14.4
	42	0.0598	0.0180	10900	15200	124	19.7
	50	0.0708	0.0194	17200	24700	187	40.1
	63	0.0856	0.0234	25100	37400	258	71.5
	80	0.114	0.0292	43300	67600	580	188
WPU-□-□-SNH WPU-□-□-SNJ	35	0.0505	0.0217	7110	10200	74.0	14.4
	42	0.0598	0.0235	10900	15200	124	19.7
	50	0.0708	0.0254	17200	24700	187	40.1
	63	0.0856	0.0289	25100	37400	258	71.5
	80	0.114	0.0357	43300	67600	580	188

주베어링 수명계산

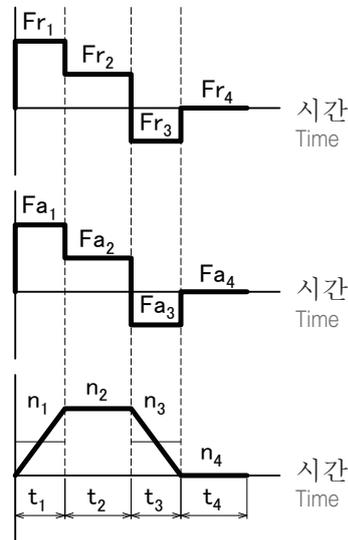
Life span for the main bearing

운전패턴 Operation cycle example

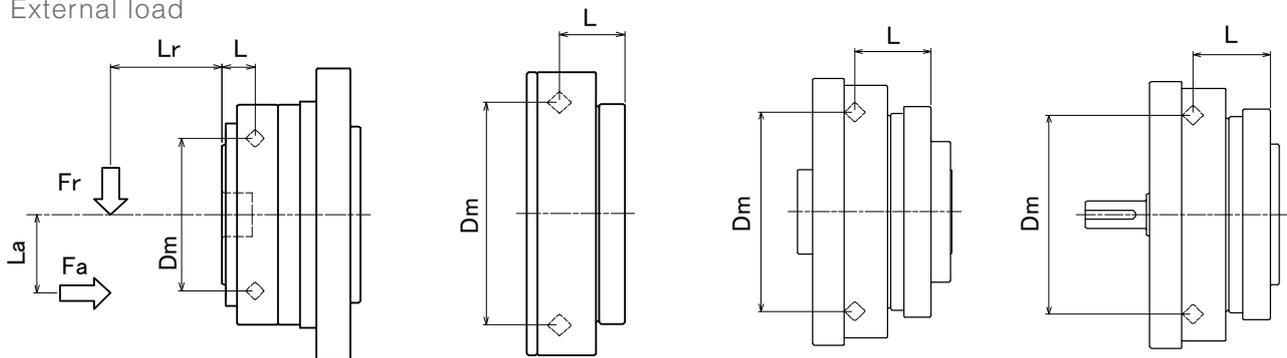
라디얼 하중
Radial load

액시얼 하중
Axial load

출력회전수
Output rotation
speed



외부부하 External load



① 최대부하모멘트의 산출

Calculation formula for the largest working moment

최대부하모멘트 Peak working moment	Mm	Nm	$Mm = Frm \cdot (Lr + L) + Fam \cdot La$
최대 래디얼 하중 Peak radial load	Frm	N	$Frm = Fr_1, Fr_2 \dots Fr_n$ 의 최대치 Frm = Largest among $Fr_1, Fr_2, \dots Fr_n$
최대 액시얼 하중 Peak axial load	Fam	N	$Fam = Fa_1, Fa_2, \dots Fa_n$ 의 최대치 Fam = Largest among $Fa_1, Fa_2, \dots Fa_n$

최대부하모멘트가 허용모멘트 이하일 것을 확인하여 주십시오.

Please make sure the peak working moment is below the maximum allowable moment

② 평균래디얼하중 · 액시얼하중 · 평균출력회전수 · 평균부하모멘트의 산출

Calculation formula for the Average radial load, Axial load, Average output rotation speed, Average working moment

평균래디얼하중 Average radial load	Fra	N	$Fra = \sqrt[10]{\frac{n_1 \cdot t_1 \cdot Fr_1 ^{10/3} + n_2 \cdot t_2 \cdot Fr_2 ^{10/3} + \dots + n_n \cdot t_n \cdot Fr_n ^{10/3}}{n_1 \cdot t_1 + n_2 \cdot t_2 + \dots + n_n \cdot t_n}}$
평균 액시얼하중 Axial load	Faa	N	$Faa = \sqrt[10]{\frac{n_1 \cdot t_1 \cdot Fa_1 ^{10/3} + n_2 \cdot t_2 \cdot Fa_2 ^{10/3} + \dots + n_n \cdot t_n \cdot Fa_n ^{10/3}}{n_1 \cdot t_1 + n_2 \cdot t_2 + \dots + n_n \cdot t_n}}$
평균출력회전수 Average output rotation speed	nao	r/min	$nao = \frac{n_1 \cdot t_1 + n_2 \cdot t_2 \dots n_n \cdot t_n}{t_1 + t_2 + \dots + t_n}$
평균부하모멘트 Average working moment	Ma	Nm	$Ma = Fra \cdot (Lr + L) + Faa \cdot La$

③ 하중계수 · 동등가래디얼하중의 산출

Calculation formula for the Loading factor, Equivalent radial load

하중계수 Loading factor	Xc, Yc	-	$\frac{Faa}{Fra + 2Ma / Dm} \leq 1.5$ 의 경우, $Xc = 1.0, Yc = 0.45$
			$\frac{Faa}{Fra + 2Ma / Dm} > 1.5$ 의 경우, $Xc = 0.67, Yc = 0.67$
동등가래디얼하중 Equivalent radial load	Pc	N	$Pc = Xc \cdot (Fra + 2Ma/Dm) + Yc \cdot Faa$

④ 주베어링 수명시간의 계산

Life span for the main bearing

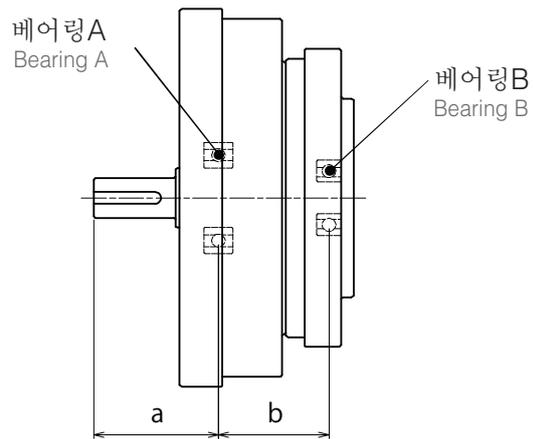
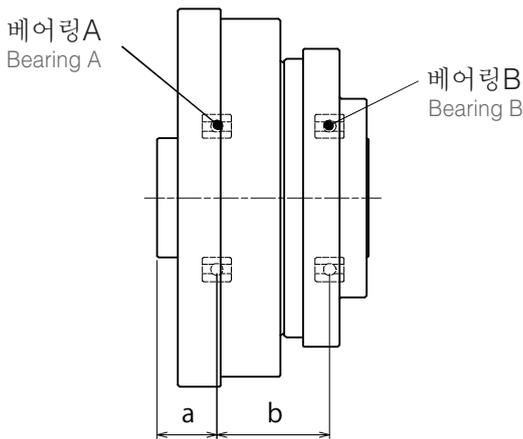
주베어링 수명시간 Life span for the main bearing	Lhc	h	$Lhc = \frac{10^6}{60 \cdot nao} \cdot \left(\frac{C}{fw \cdot Pc} \right)^{\frac{10}{3}}$
충격계수 Impact factor	f w	-	1.0 : 충격을 동반하지 않는 경우 no shock
			1.2 : 다소의 충격을 동반하는 경우 with some shock
			1.5 : 진동충격을 동반하는 경우 with shock and vibration

입력축의 허용하중 Maximum load at input shaft

■ 베어링사양 (오픈형, 유니트타입) Bearing specification (Open type, Unit)

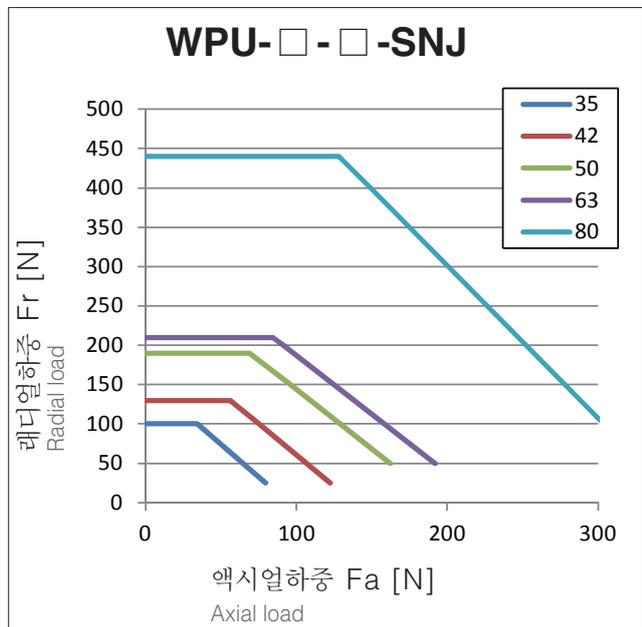
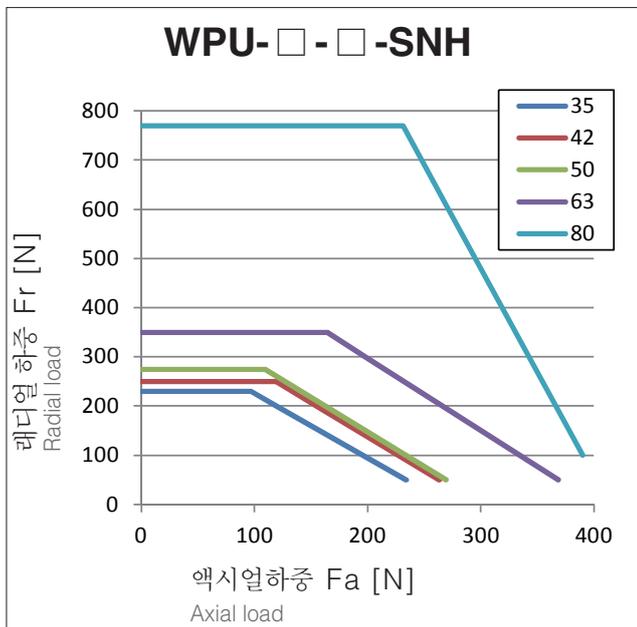
Bearing specification (Open type, Unit)

시리즈 Series	사이즈 Size	베어링 A Bearing A		베어링 B Bearing B		a	b
		기본동정격하중 Basic dynamic load rating	기본정정격하중 Basic static load rating	기본동정격하중 Basic dynamic load rating	기본정정격하중 Basic static load rating		
		C	Co	C	Co		
		N	N	N	N		
WPU-□-□- SNH	35	4000	2470	4000	2470	16	27
	42	4300	2950	4300	2950	16	31
	50	4500	3450	4500	3450	14.5	27.5
	63	4900	4350	4900	4350	15.5	30.8
	80	14100	10900	5350	5250	19	37.0
WPU-□-□- SNJ	35	2240	910	1080	430	24	21.5
	42	2700	1270	1610	710	27	23.5
	50	4350	2260	2240	910	31.5	26
	63	5600	2830	2700	1270	37.5	29
	80	9400	5000	4350	2260	39	38.5



■ 허용하중 (평균입력회전수 : 2000r/min, 수명시간 : 7000h)

Maximum load (Average input rotation speed : 2000r/min, Life span : 7000h)



윤활제 *lubricant information*

사용그리스

Grease

스미플렉스MP No.2 (스미코윤활제주식회사) Sumiplex MP No.2 (SUMICO LUBRICANT CO., LTD.)

사용온도범위 : 0~40°C (주위온도) Operating temperature range: 0-40°C (ambient temperature)

그리스도포

Grease application

이하와 같이, 감속기 각부에 그리스를 도포하여 주시기 바랍니다.
Please apply grease according to the table below.

■ 그리스 도포량 Grease application

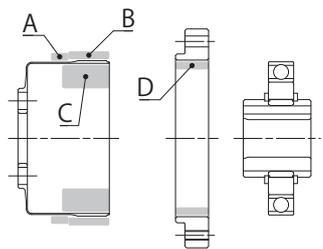
- 도포개소C는 감속기의 설치자세(출력축의 횡향,상향,하향)에 따라 도포량을 변경하여주십시오.
(그리스의 봉입이 완료된 유니트타입은 C(횡향)의 그리스량이 채워져 있습니다.)
- 감속기가 상향, 하향의 경우는 입력ASSY~케이스 내벽 공간의 50%의 그리스를 충전하여 주십시오

- The quantity of grease applied to C should be adjusted depending on the mounting direction.
C of the unit type product is already filled with the same quantity of grease as horizontal mounting.
- For vertical up/down, 50% of the space between input assy and casing inner wall should be filled with grease.

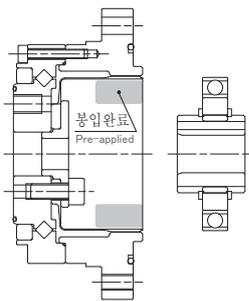
사이즈 Size	도포개소 Applied part					
	A	B	C (횡향) Horizontal	C (상향) Vertical up	C (하향) Vertical down	D
35	0.3	0.3	6	8	9	0.3
42	0.5	0.5	10	12	14	0.5
50	0.8	0.8	16	18	21	0.8
63	1.5	1.5	30	35	40	1.5
80	3.0	3.0	60	70	80	3.0

■ 그리스 도포부 Grease application location

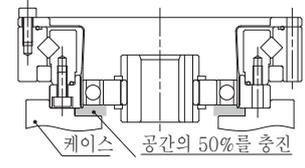
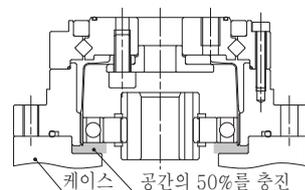
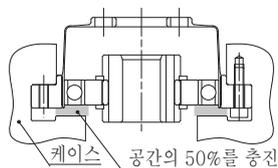
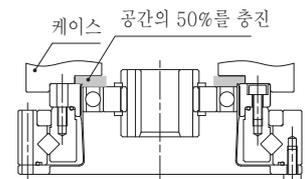
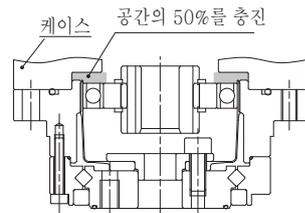
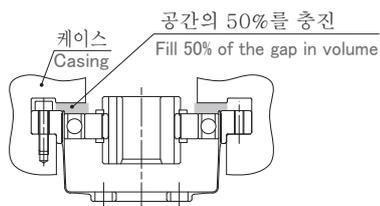
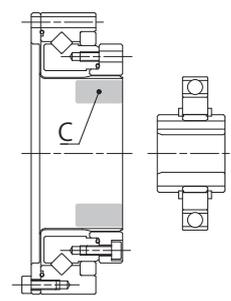
WPC-□-□-CF(CN)



WPU-□-□-CF(CN)



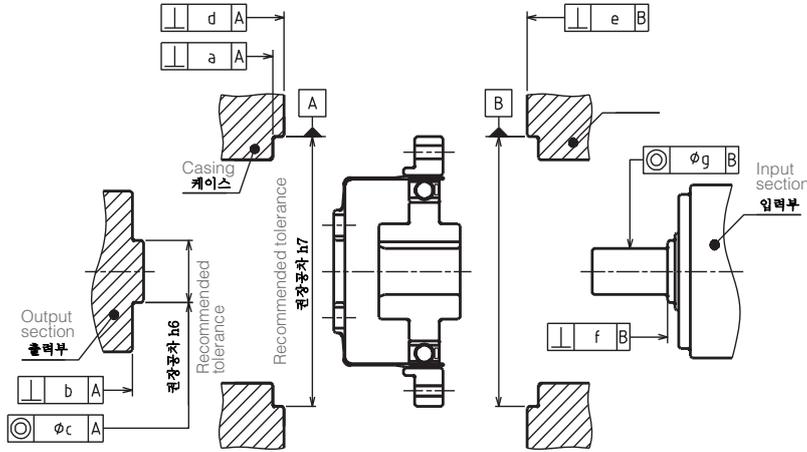
WPS-□-□-SN



취부정도 Attachment fixture requirement

■ 취부정도 Attachment fixture requirement

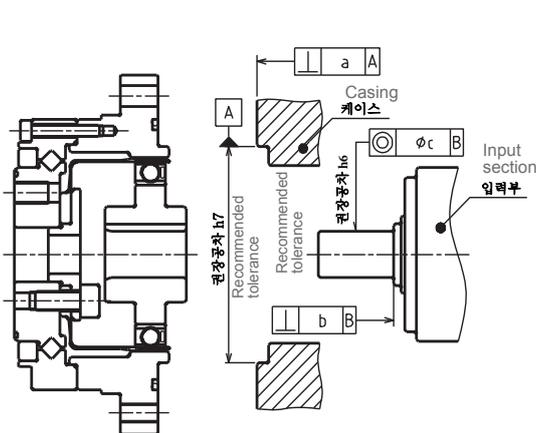
WPC-□-□-CF(CN)



취부정도 [mm]

사이즈 Size	35	42	50	63	80
a	0.015	0.015	0.018	0.018	0.023
b	0.010	0.012	0.014	0.016	0.020
c	0.013	0.013	0.015	0.018	0.020
d	0.015	0.015	0.018	0.018	0.023
e	0.015	0.015	0.018	0.018	0.023
f	0.012	0.012	0.014	0.016	0.016
g	0.016	0.020	0.024	0.024	0.024

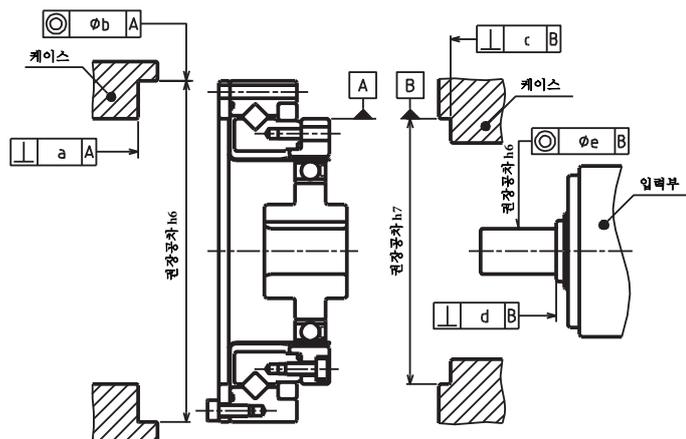
WPU-□-□-CF(CN)



취부정도 [mm]

사이즈 Size	35	42	50	63	80
a	0.020	0.020	0.020	0.025	0.025
b	0.012	0.012	0.014	0.016	0.016
c	0.016	0.020	0.024	0.024	0.024

WPS-□-□-SN



취부정도 [mm]

사이즈 Size	35	42	50	63	80
a	0.025	0.025	0.025	0.030	0.030
b	0.020	0.020	0.020	0.025	0.025
c	0.020	0.020	0.020	0.025	0.025
d	0.012	0.012	0.014	0.016	0.016
e	0.016	0.020	0.024	0.024	0.024

전달토크 *Transmitting Torque*

볼트취부

Bolting

볼트의 체결토크는 하기와 같습니다.
볼트의 수량 (-CF, -CN은 수량의 차이가 있습니다.) 및 체결토크로 전달가능한 토크가 달라지므로 주의하여 주시기 바랍니다.
Please refer to the table below for the bolt tightening torque.
Please be noted that the transmittable torque varies depending on the bolt count (different between CF and CN) and tightening torque.

볼트체결토크

Tightening torque for bolts

볼트사이즈	Bolt size	M3	M4	M5	M6	M8	M10
체결토크 [Nm]	Tightening torque	1.9	4.3	8.7	15	36	71

권장볼트 : 강도구분12.9 이상
Recommended bolt :
Strength rating above 12.9

전달토크 (클로즈형, 유니트타입)

Bolt specifications and Transmitting torque (Closed type, Unit)

출력플랜지취부 Output flange attachment

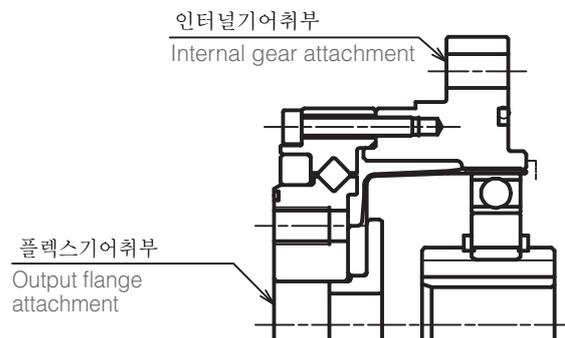
사이즈	Size	35	42	50	63	80
볼트사이즈	Bolt size	M4	M5	M6	M8	M10
볼트수량	Bolt count	6	6	8	8	8
취부 PCD [mm]	Bolt PCD	23	27	32	42	55
체결토크 [Nm]	Tightening torque	4.3	8.7	15	36	71
전달토크 [Nm]	Transmitting torque	56	106	238	566	1177

인터널기어취부 (CN) Internal gear attachment

사이즈	Size	35	42	50	63	80
볼트사이즈	Bolt size	M4	M4	M5	M5	M6
볼트수량	Bolt count	8	8	8	10	12
취부 PCD [mm]	Bolt PCD	65	71	82	96	125
체결토크 [Nm]	Tightening torque	4.3	4.3	8.7	8.7	15
전달토크 [Nm]	Transmitting torque	210	230	430	629	1392

인터널기어취부 (CF) Internal gear attachment

사이즈	Size	35	42	50	63	80
볼트사이즈	Bolt size	M4	M4	M5	M5	-
볼트수량	Bolt count	6	6	6	8	-
취부 PCD [mm]	Bolt PCD	65	71	82	96	-
체결토크 [Nm]	Tightening torque	4.3	4.3	8.7	8.7	-
전달토크 [Nm]	Transmitting torque	158	172	322	503	-



사양 Reducer Model/ Specifications	감속기형식 / 치수표	형식선정 / 수명계산 (탄성베어링)	수명계산 (주베어링)	입력축의 허용하중 / 윤활제	최부정도	전달토크	입력부구조 / 주의사항	모터취부방법	특성데이터
	Dimensions Table	Model selection/ Life estimation (Elastic bearing)	Life estimation (Main bearing)	Maximum load at input shaft/ lubricant information	Attachment fixture requirement	Transmitting Torque	Input section structure/ Installation and assembly instructions	Motor installation procedure	Characteristics Data

전달토크 Transmitting Torque

전달토크(클로즈형, 컴포넌트타입)

Bolt specifications and Transmitting torque (Closed type, Component)

플렉스기어취부 Flex Gear Attachment

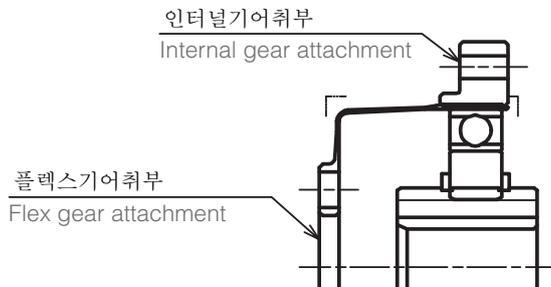
사이즈	Size	35	42	50	63	80
볼트사이즈	Bolt size	M4	M5	M5	M6	M8
볼트수량	Bolt count	6	6	8	8	8
취부 PCD [mm]	Bolt PCD	17	19	24	30	40
체결토크 [Nm]	Tightening torque	4.3	8.7	8.7	15	36
전달토크 [Nm]	Transmitting torque	41	75	126	223	539

인터널기어취부 (CN) Internal Gear Attachment

사이즈	Size	35	42	50	63	80
볼트사이즈	Bolt size	M3	M3	M3	M4	M5
볼트수량	Bolt count	8	16	16	16	16
취부 PCD [mm]	Bolt PCD	44	54	62	75	100
체결토크 [Nm]	Tightening torque	1.9	1.9	1.9	4.3	8.7
전달토크 [Nm]	Transmitting torque	82	200	230	485	1048

인터널기어취부 (CF) Internal Gear Attachment

사이즈	Size	35	42	50	63	80
볼트사이즈	Bolt size	M3	M3	M3	M4	M5
볼트수량	Bolt count	6	12	12	12	12
취부 PCD [mm]	Bolt PCD	44	54	62	75	100
체결토크 [Nm]	Tightening torque	1.9	1.9	1.9	4.3	8.7
전달토크 [Nm]	Transmitting torque	61	150	172	364	786



◆핀홀의 추가 Reinforcement

플렉스기어 취부의 전달토크가 요구에 충족되지 않는 경우는 핀의 병용을 부탁드립니다. 핀홀은 옵션으로 추가 가능합니다.

Pins can be added if the transmittable torque at the flex gear interface is not sufficient. As an option, holes can be added.



전달토크 (오픈형)

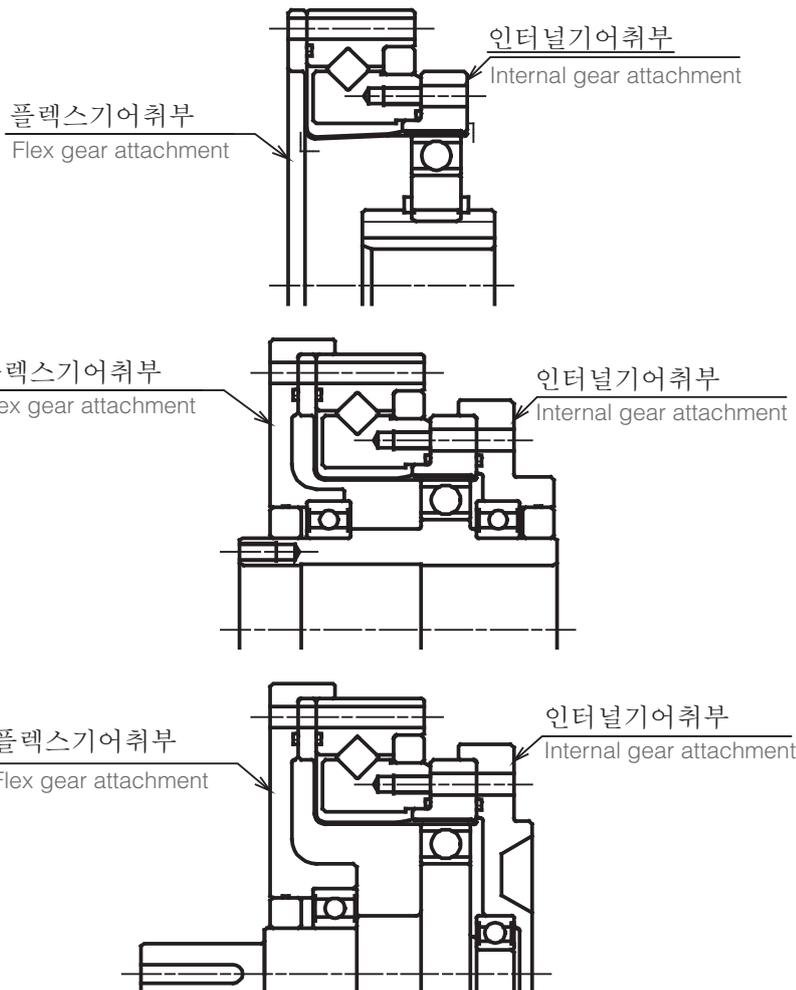
Bolt specifications and Transmitting torque (Open type)

플렉스기어취부 Flex Gear Attachment

사이즈	Size	35	42	50	63	80
볼트사이즈	Bolt size	M3	M3	M3	M4	M5
볼트수량	Bolt count	8	12	12	12	12
취부 PCD [mm]	Bolt PCD	64	74	84	102	132
조임토크 [Nm]	Tightening torque	1.9	1.9	1.9	4.3	8.7
전달토크 [Nm]	Transmitting torque	119	206	234	495	1037

인터널기어취부 Internal Gear Attachment

사이즈	Size	35	42	50	63	80
볼트사이즈	Bolt size	M3	M3	M3	M4	M5
볼트수량	Bolt count	8	16	16	16	16
취부 PCD [mm]	Bolt PCD	44	54	62	77	100
조임토크 [Nm]	Tightening torque	1.9	1.9	1.9	4.3	8.7
전달토크 [Nm]	Transmitting torque	82	200	230	498	1048



입력부구조 *Input section structure*

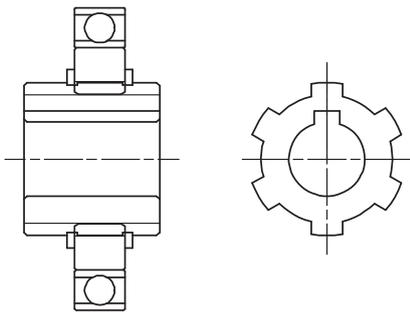
입력부의 구조

Input section structure

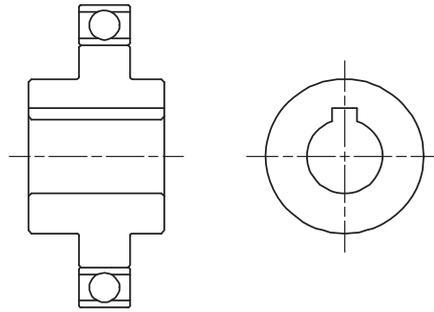
입력부구조는 스플라인타입 (자동조심구조) 와 리지드타입이 있으며, 입력부 직경에 의해 달라집니다. 상세는 치수도의 확인을 부탁드립니다.

There are two types of input section structure, spline type (self-centering feature) and rigid type.

■ 스플라인타입 (자동조심구조) Spline type (self-centering)



■ 리지드타입 Rigid type

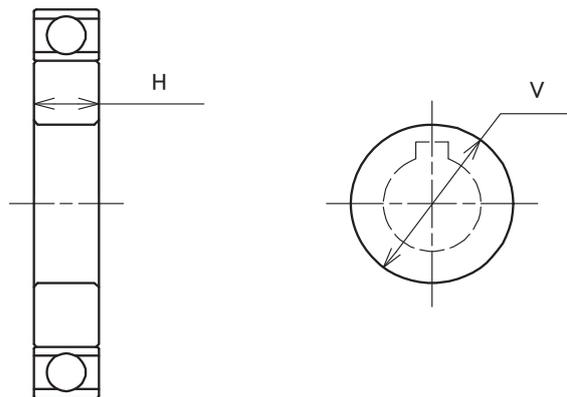


캠의 홀 치수

Cam hole diameter

캠의 홀 치수는 변경이 가능합니다. 하기 표의 표준 홀 치수 이하의 경우는 스플라인타입, 표준에서 최대치수의 범위는 리지드 타입이 됩니다. 하기 범위 이외의 치수는 문의를 부탁드립니다.

The diameter of the cam opening is customizable. Holes smaller than the 'standard hole size' in the table will be built in the spline type. Holes equal to or larger than the 'standard hole size' and smaller than the 'maximum hole size' will be built in the rigid type. Please contact us if you need sizes outside the specification in the table.



캠치수 Cam dimension

[mm]

사이즈 size	35	42	50	63	80
표준 홀 경 standard bore size	6	8	12	14	14
최대 홀 경 V maximum bore size	17	20	23	28	36
최소 두께 H minimum thickness	6	7	8	9	11

주의사항 Installation and assembly instructions

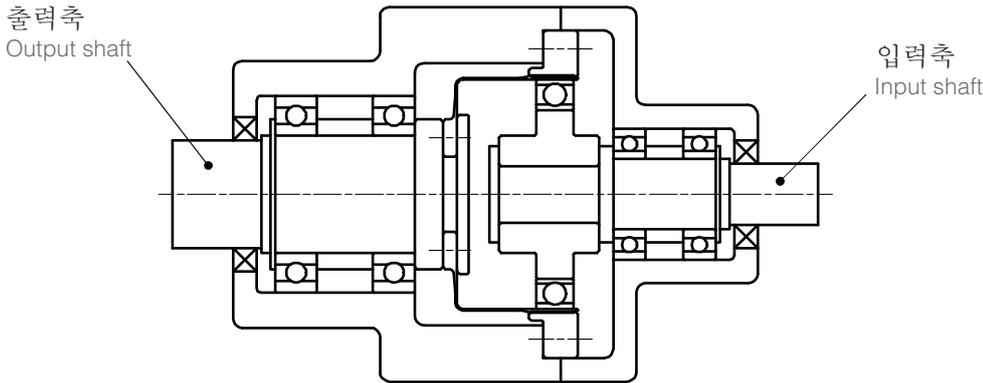
입력 · 출력축의 지지 (WPC-□-□-□)

Shaft installation instruction

입력축 · 출력축은 축에 작용하는 래디얼하중 · 액시얼하중을 지지하는 구조로 하여 주십시오.

(아래 그림은 참고 예)

Please design the support structure for input shaft and output shaft so that both radial and axial loads are supported. (Diagram below shows an example)



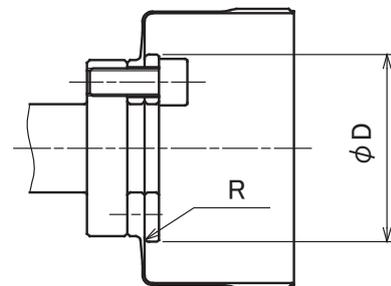
취부치수 (WPC-□-□-□)

Attachment flange requirement

플렉스기어와 접하는 취부플랜지는 플렉스기어의 파손방지를 위해 아래 치수를 지켜 주십시오.

For the attachment flange that comes in contact with flex gear, please build the corner radius according to the table below, in order to prevent damage.

	[mm]				
기호 Item	35	42	50	63	80
D	24.5	29	34	42	55
R	1.2	1.2	1.4	1.5	2



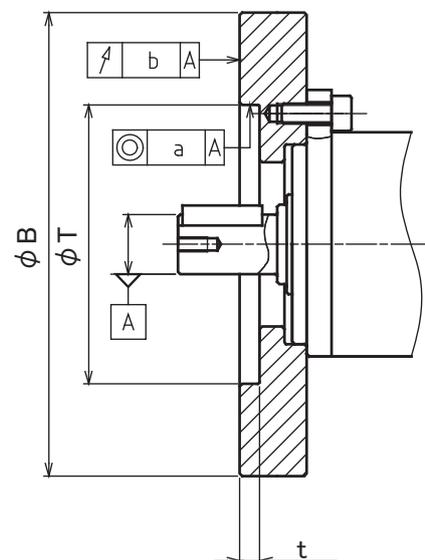
모터취부용 플랜지 치수 (WPU-□-□-□)

Size requirement of the flange for motor attachment

유니트타입에 모터를 취부할 경우에는 취부용 플랜지가 필요합니다. 모터취부용 플랜지의 치수는 아래의 치수에 따라 주십시오.

An attachment flange is required in order to attach a unit type Flexwave to the motor. The table below shows the dimension requirement for the flange.

	[mm]				
기호 Item	35	42	50	63	80
B	73	79	93	107	138
T	38H7	48H7	56H7	67H7	90H7
t	3	3	4.5	4.5	4.5
a	0.03	0.04	0.04	0.04	0.04
b	0.03	0.04	0.04	0.04	0.04



사양 Reducer Model / Specifications	감속기 형식 / 치수표	형식 선정 / 수명 계산 (탄성베어링)	수명 계산 (주베어링)	입력축의 허용하중 / 윤활제	취부정도	전달토크	입력부구조 / 주의사항	모터 취부방법	특성데이터
	Dimensions Table	Model selection / Life estimation (Elastic bearing)	Life estimation (Main bearing)	Maximum load at input shaft/ lubricant information	Attachment fixture requirement	Transmitting Torque	Input section structure/ Installation and assembly instructions	Motor installation procedure	Characteristics Data

모터취부방법 Motor installation procedure

모터취부방법 (WPU-□-□-□) Motor installation procedure

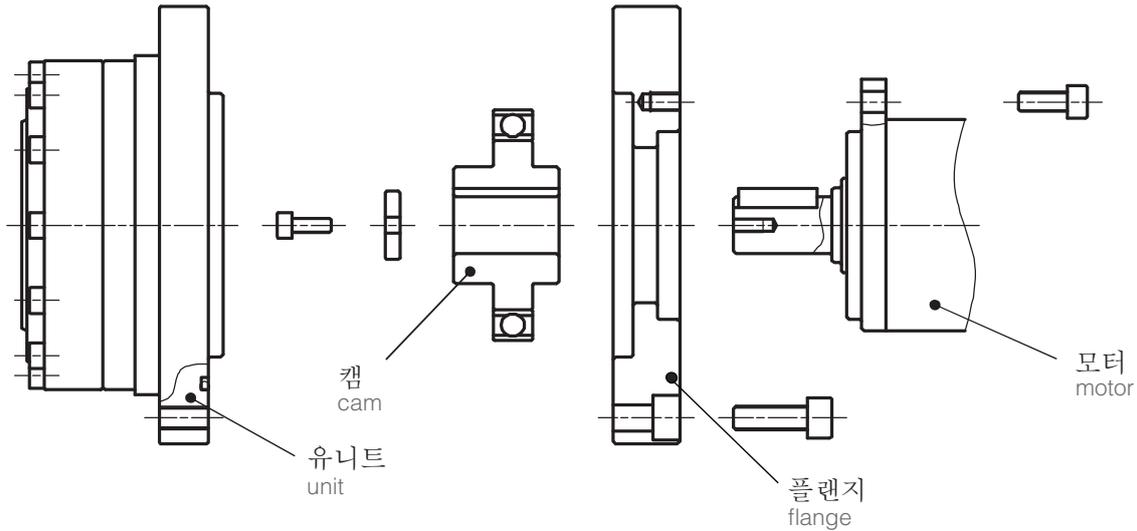
Motor installation procedure

■ 취부순서 1

- 모터에 플랜지를 취부
- 모터축에 캠 (베어링) 을 취부
- 유니트에 취부

Procedure 1

- Attach the flange on to the motor
- Attach the cam with elastic bearings to the motor shaft
- Attach the unit

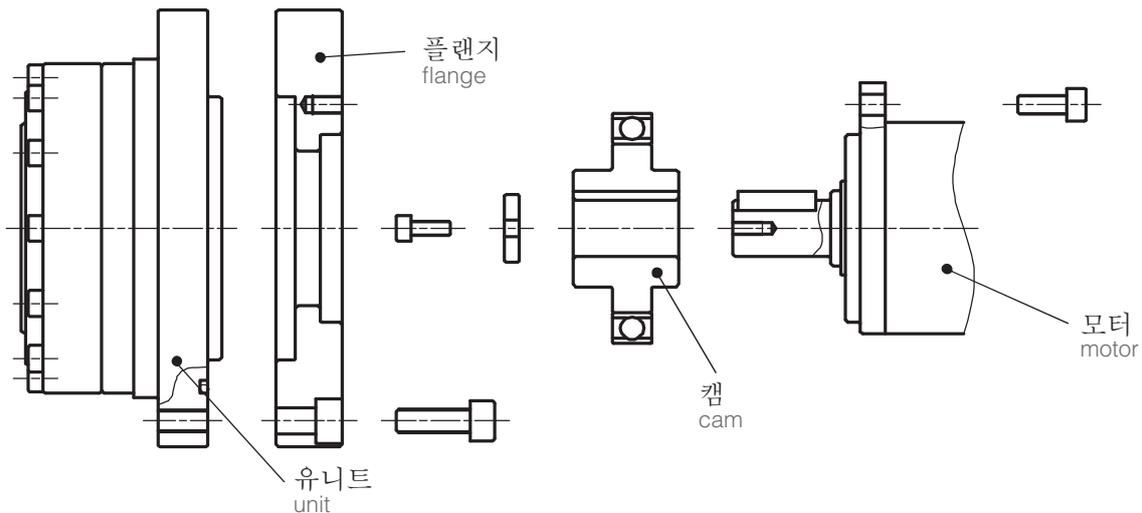


■ 취부순서 2

- 모터축에 캠 (베어링) 을 취부
- 모터에 플랜지를 취부
- 유니트에 취부

Procedure 2

- Attach the cam with elastic bearings to the motor shaft
- Attach the flange on to the motor
- Attach the unit



취부시의 주의 Caution during installation

- 각 부품의 조립시에는 과도한 힘으로 누르지 않도록 하여 주십시오.
- 입력ASSY (캠, 모터) 를 기울여 삽입하지 않도록 주의하여 주십시오.
- Do not use excessive force while mating parts
- Please watch for tilting during input section assembly (motor insertion into cam)

특성데이터 Characteristics Data

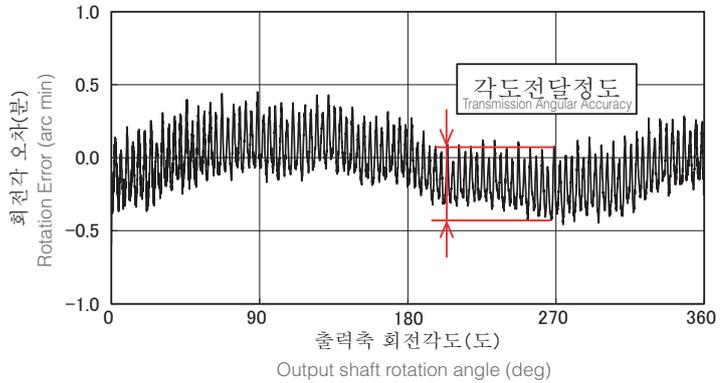
각도전달정도

Transmission Angular Accuracy

각도전달정도란

무부하에서 입력축을 회전시킬 경우 이론상의 출력회전각도와 실제 출력회전각도의 차

What is Transmission Angular Accuracy?
It is the difference between the measured output rotation angle and the theoretical angle, while input shaft is rotated with no load.



[arc min]

감속비 Ratio	사이즈 Size				
	35	42	50	63	80
50	2.0	2.0	1.5	1.0	1.0
80	1.5	1.5	1.0	1.0	1.0
100	1.5	1.5	1.0	1.0	1.0
120	-	1.5	1.0	1.0	1.0

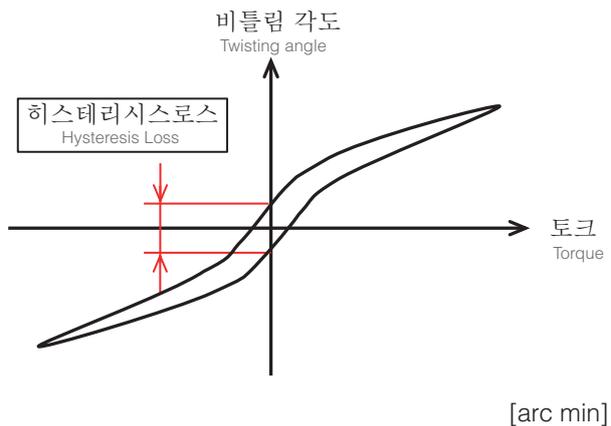
히스테리시스로스

Hysteresis Loss

히스테리시스로스란

입력축을 고정하고 출력축에 토크를가하였을 경우 제로토크시의 비틀림각의 차

What is Hysteresis Loss?
When torque load is applied at the output shaft in alternate direction repeatedly with input shaft fixed, there is residual twisting angle when torque is back to zero.
In this context, hysteresis loss is the difference in the forward and backward twisting angle.



[arc min]

감속비 Ratio	사이즈 Size				
	35	42	50	63	80
50	2.0	2.0	2.0	2.0	2.0
80	1.5	1.5	1.0	1.0	1.0
100	1.5	1.5	1.0	1.0	1.0
120	-	1.5	1.0	1.0	1.0

감속기 형식 / 사양
Reducer Model / Specifications

치수표
Dimensions Table

형식 선정 / 수명 계산 (탄성베어링)
Model selection / Life estimation (Elastic bearing)

수명 계산 (주베어링)
Life estimation (Main bearing)

입력축의 허용하중 / 윤활제
Maximum load at input shaft / Lubricant information

취부정도
Attachment fixture requirement

전달토크
Transmitting Torque

입력부구조 / 주의사항
Input section structure / Installation and assembly instructions

모터 취부방법
Motor Installation procedure

특성데이터
Characteristics Data

특성 데이터 Characteristics Data

최대백래쉬량

Maximum Backlash

[arc sec]

최대백래쉬량이란

입력부가 스플라인타입의 경우 출력축의 유격 (기어 맞물림부의 백래쉬는 0이기 때문에 리지드타입의 백래쉬는 0이 됩니다.)

What is Maximum Backlash?

In this context, maximum backlash is the output backlash for spline type input shaft. (Backlash is zero for rigid type input, because gear engagement backlash is zero.)

감속비 Ratio	사이즈 Size				
	35	42	50	63	80
50	27	27	18	16	16
80	17	17	11	10	10
100	13	13	9	8	8
120	-	11	7	7	7

강성 (클로즈형, 유니트타입)

Stiffness (Closed type, Unit)

강성이란

입력축을 고정하고 출력축에 토크를 가할 경우 스프링정수와 비틀림 각

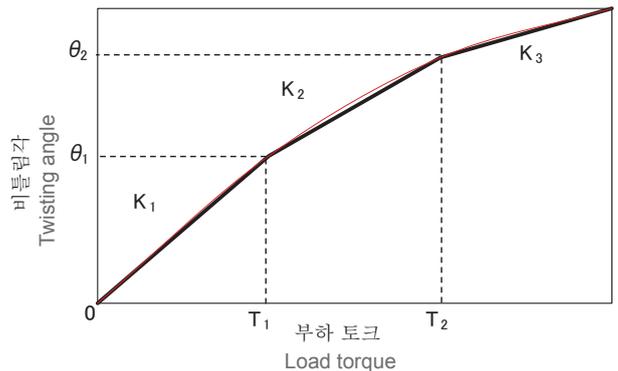
What is Stiffness?

In this context, stiffness is the output shaft twisting angle and the spring coefficient, while torque load is applied to the output shaft with input side fixed.

K1...토크가 0 ~ T₁ 의 스프링정수
Spring coefficient at 0 ~ T₁ torque

K2...토크가 T₁ ~ T₂ 의 스프링정수
Spring coefficient at T₁ ~ T₂ torque

K3...토크가 T₂ ~ 의 스프링정수
Spring coefficient at T₂ ~ torque



감속비 Ratio	기호 item	단위 unit	사이즈 Size				
			35	42	50	63	80
-	T ₁	Nm	2	3.9	7	14	29
-	T ₂	Nm	6.9	12	25	48	108
50	K ₁	× 10 ⁴ Nm/rad	0.28	0.69	1.1	2.7	5.6
	K ₂	× 10 ⁴ Nm/rad	0.45	0.85	1.7	3.3	7.1
	K ₃	× 10 ⁴ Nm/rad	0.55	1.1	2.5	4.0	8.3
	θ ₁	arcmin	2.3	2.2	2.0	1.8	2.0
	θ ₂	arcmin	5.7	4.5	5.3	5.5	6.5
80	K ₁	× 10 ⁴ Nm/rad	0.45	0.92	1.2	3.3	6.9
	K ₂	× 10 ⁴ Nm/rad	0.63	1.1	1.8	3.7	8.1
	K ₃	× 10 ⁴ Nm/rad	0.70	1.3	2.2	4.5	10
	θ ₁	arcmin	1.8	1.3	1.8	1.6	1.7
	θ ₂	arcmin	4.7	3.5	4.8	4.4	4.9

※표의 수치는 평균치입니다.
Average value shown in the table

기동토크

Starting Torque

[cNm]

기동토크란

입력측에서 회전시킬 경우에 입력측이 회전을 시작하는 토크
(무부하, 주변온도 : 25°C)

What is Starting Torque?

Input torque needed for input side to start rotating (no load, ambient temperature : 25°C)

감속비 Ratio	사이즈 Size				
	35	42	50	63	80
50	1.7	3.9	5.5	8.7	19
80	1.9	4.2	6.0	9.5	21
100	1.6	3.5	5.0	7.9	18
120	-	2.8	4.0	6.3	14

※사용조건에 따라 값이 다르므로, 참고치입니다.

For reference only. Torque value may vary depending on the condition.

중속기동토크

Output Starting Torque

[Nm]

중속기동토크란

출력측에서 회전시킬 경우에 출력측이 회전을 시작하는 토크
(무부하, 주변온도 : 25°C)

What is Output Starting Torque?

Output torque needed for output side to start rotating (no load, ambient temperature : 25°C)

감속비 Ratio	사이즈 Size				
	35	42	50	63	80
50	1.3	2.6	4.5	5.7	12
80	1.9	4.0	6.8	8.6	19
100	2.1	4.4	7.5	9.5	21
120	-	5.3	9.0	11	25

※사용조건에 따라 값이 다르므로, 참고치입니다.

For reference only. Torque value may vary depending on the condition.

무부하러닝토크

(클로즈형, 유니트타입)

No-load Running Torque
(Closed type, Unit)

무부하러닝토크란

무부하에서 회전시키는데 필요한 입력측의 토크
(평균값, 주변온도 : 25°C)

What is No-load Running Torque?

Input torque needed to keep it running with no load (average value, ambient temperature : 25°C)

감속비 Ratio	기호	사이즈 Size				
		35	42	50	63	80
50	500r/min	3.1	5.1	11.2	13.7	26.1
	1000r/min	3.4	5.4	12.4	15.2	28.6
	2000r/min	3.6	5.9	13.6	16.9	31.3
	3500r/min	3.9	6.3	14.9	18.8	34.2
80	500r/min	4.3	7.7	8.4	15.6	28.6
	1000r/min	4.6	8.3	9.2	17.3	31.2
	2000r/min	5.0	8.9	10.1	19.2	34.2
	3500r/min	5.4	9.6	11.1	21.4	37.4
100	500r/min	2.9	7.4	9.5	14.2	22.5
	1000r/min	3.1	8.0	10.5	15.7	24.6
	2000r/min	3.3	8.6	11.5	17.5	26.9
	3500r/min	3.6	9.2	12.6	19.4	29.4
120	500r/min	-	6.1	9.2	12.4	26.3
	1000r/min	-	6.5	10.1	13.8	28.8
	2000r/min	-	7.0	11.1	15.3	31.5
	3500r/min	-	7.5	12.2	17.0	34.5

※사용조건에 따라 값이 다르므로, 참고치입니다.

For reference only. Torque value may vary depending on the condition.

특성데이터 Characteristics Data

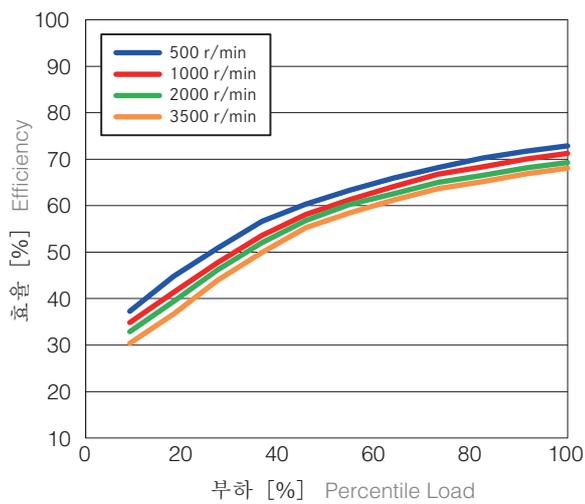
효율 (클로즈형, 유니트타입) Efficiency (Closed type, Unit)

- 부하 [%] : 부하토크 / 허용평균토크
- 주변온도 : 25°C

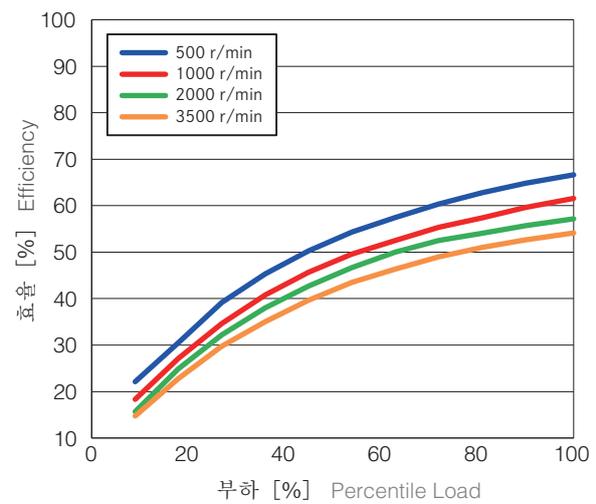
- Percentile Load (%) is equal to load torque divided by allowable average torque.
- Ambient temperature : 25°C
- * These diagrams represent the average value of the actual measurement.

※ 그래프는 실측데이터의 평균값입니다.

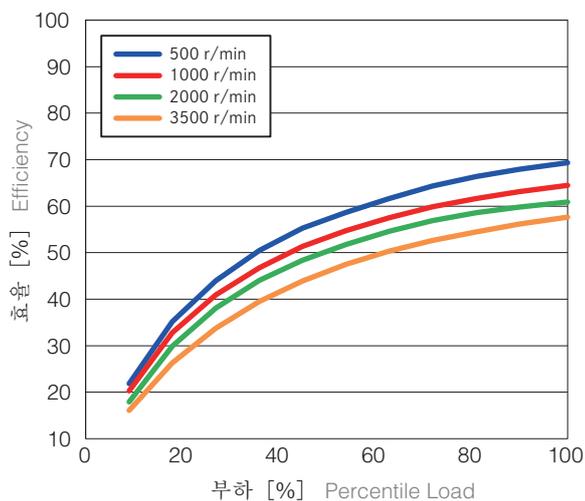
WPU-35-50



WPU-35-80



WPU-35-100



효율 (클로즈형, 유니트타입)

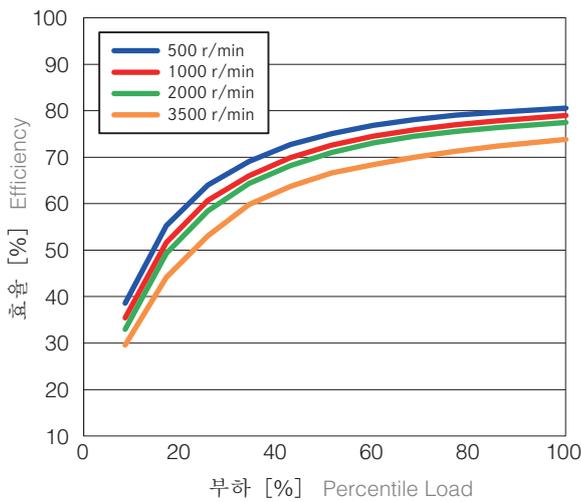
Efficiency (Closed type, Unit)

- 부하 [%] : 부하 토크 / 평균허용토크
- 주변온도 : 25℃

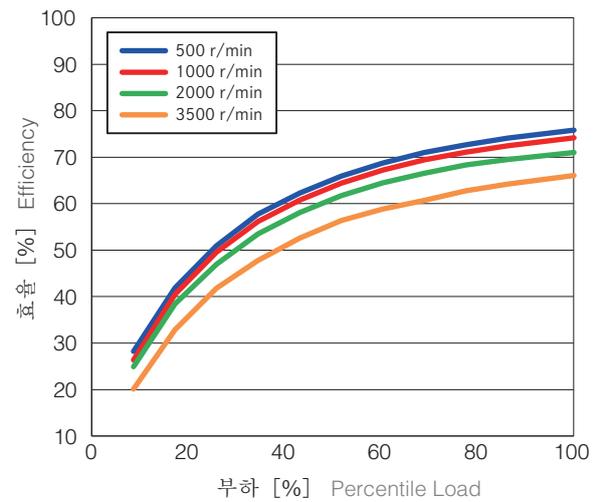
- Percentile Load (%) is equal to load torque divided by allowable average torque.
- Ambient temperature : 25℃
- * These diagrams represent the average value of the actual measurement.

※ 그래프는 실측데이터의 평균값입니다.

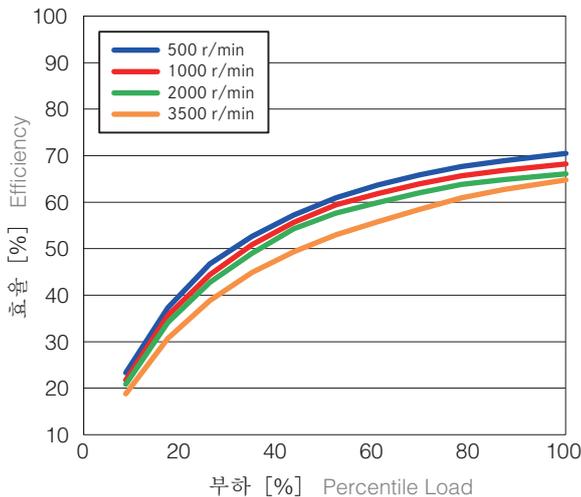
WPU-42-50



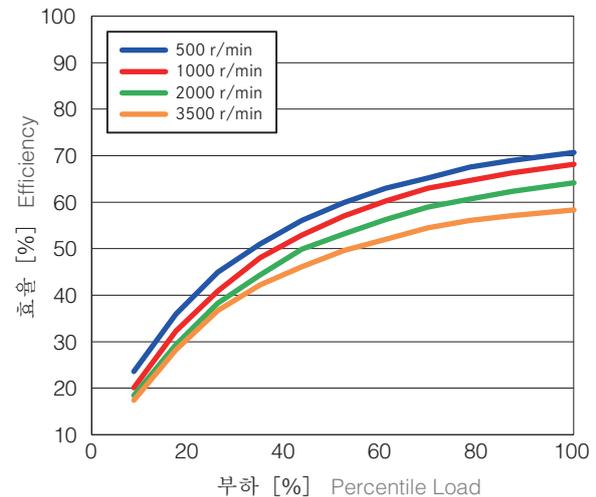
WPU-42-80



WPU-42-100



WPU-42-120



특성데이터 Characteristics Data

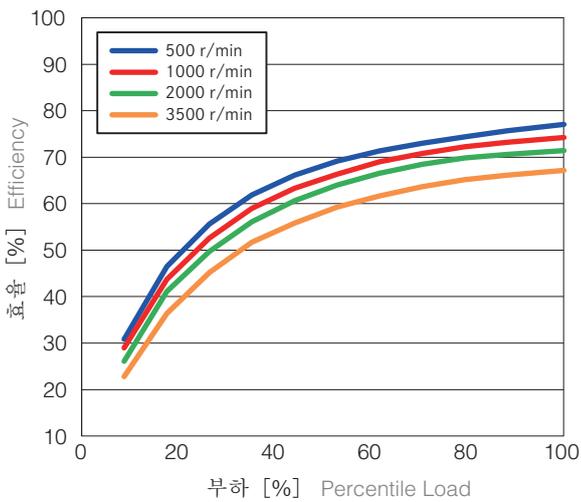
효율 (클로즈형, 유니트타입) Efficiency (Closed type, Unit)

- 부하 [%] : 허용토크 / 허용평균토크
- 주변온도 : 25°C

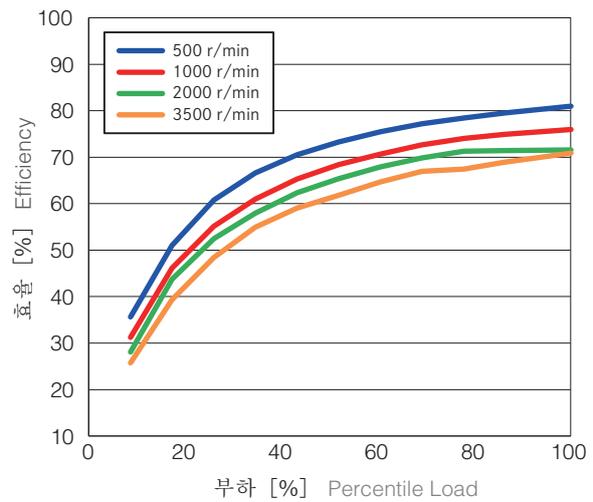
- Percentile Load (%) is equal to load torque divided by allowable average torque.
- Ambient temperature : 25°C
- * These diagrams represent the average value of the actual measurement.

※ 그래프는 실측데이터의 평균값입니다.

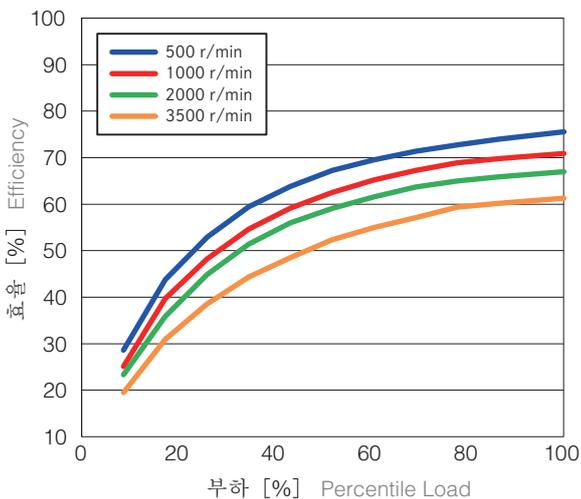
WPU-50-50



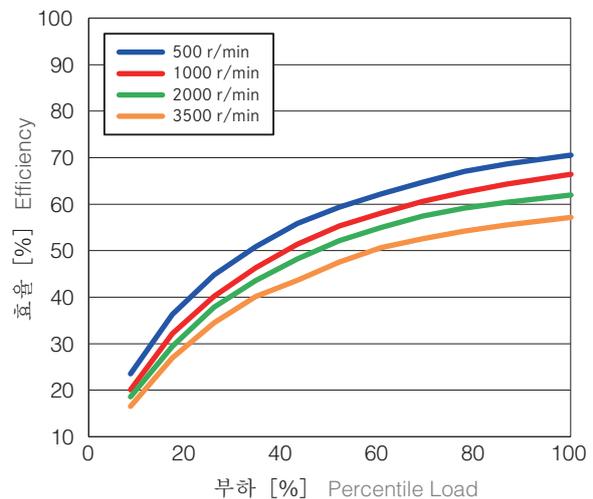
WPU-50-80



WPU-50-100



WPU-50-120



효율 (클로즈형, 유니트타입)

Efficiency (Closed type, Unit)

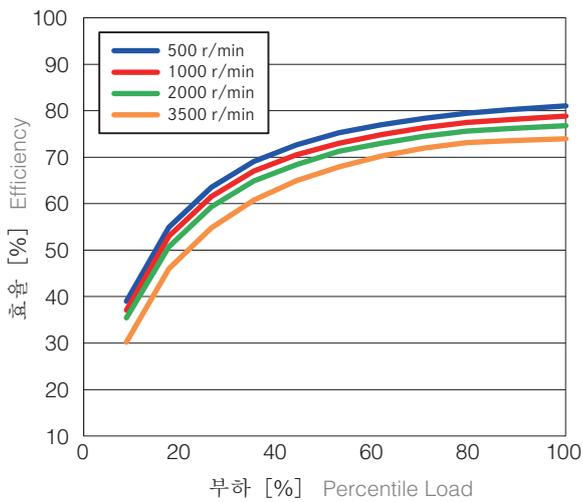
- 부하 [%] : 부하토크 / 허용평균토크
- 주변온도 : 25 °C

- Percentile Load (%) is equal to load torque divided by allowable average torque.
- Ambient temperature : 25°C

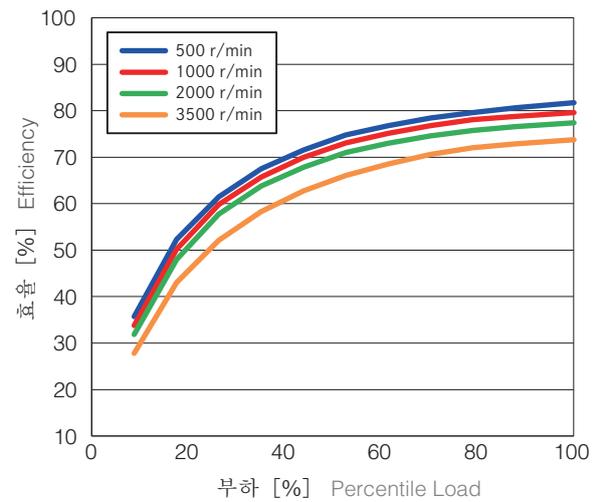
※ 그래프는 실측데이터의 평균값입니다.

* These diagrams represent the average value of the actual measurement.

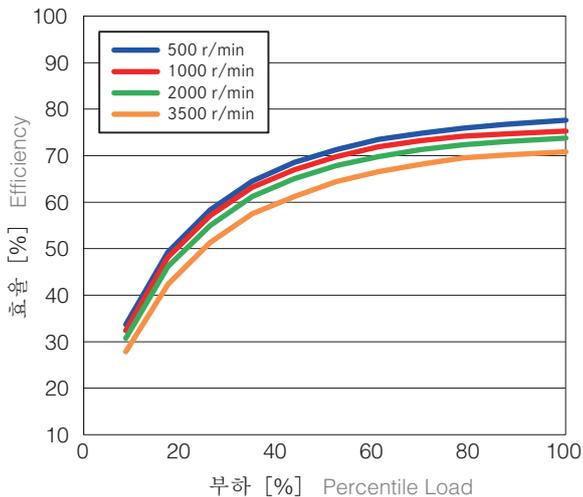
WPU-63-50



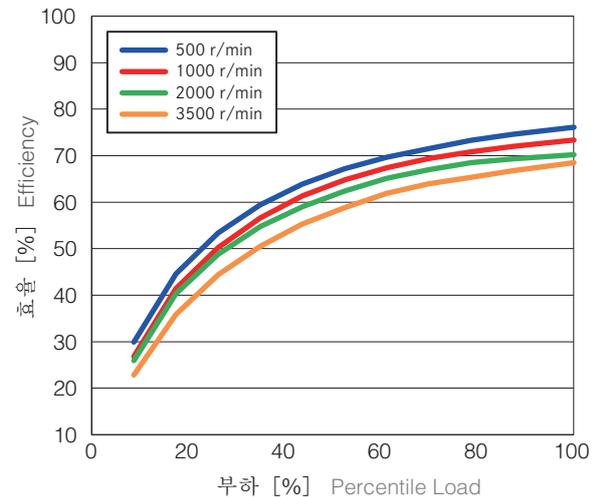
WPU-63-80



WPU-63-100



WPU-63-120



특성데이터 Characteristics Data

효율 (클로즈형, 유니트타입)

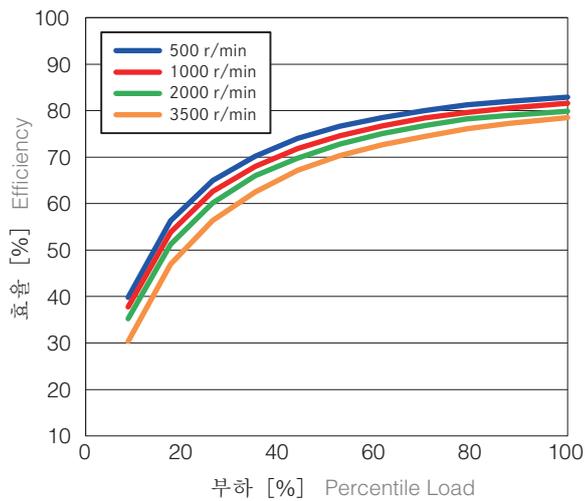
Efficiency (Closed type, Unit)

- 부하 [%] : 부하토크 / 허용평균토크
- 주변온도 : 25 °C

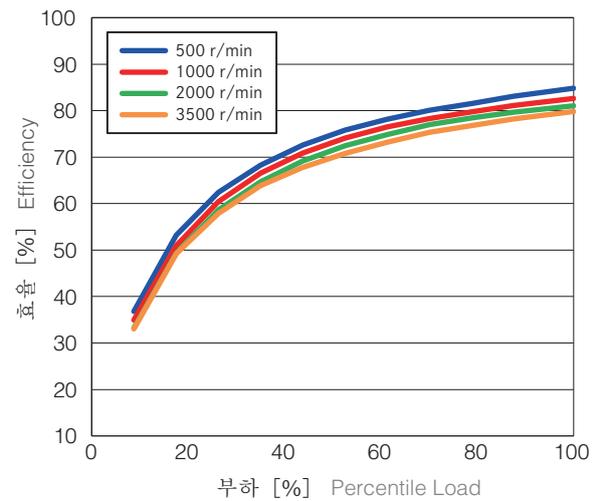
- Percentile Load (%) is equal to load torque divided by allowable average torque.
- Ambient temperature : 25°C
- * These diagrams represent the average value of the actual measurement.

※ 그래프는 실측 데이터의 평균값입니다.

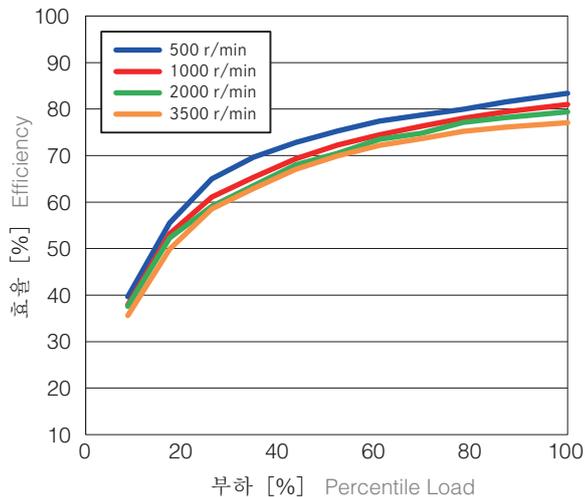
WPU-80-50



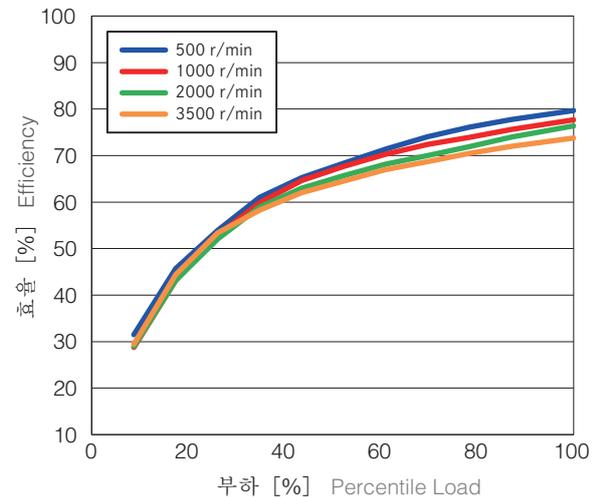
WPU-80-80



WPU-80-100



WPU-80-120



type D 타입 D

감속기형식 Reducer Model Nomenclature

WP	U	35	50	CD
시리즈 명 Series name	타입 type	사이즈 Size	감속비 Ratio	코드* Code
WP 시리즈 WP Series	S : 간이 유니트타입 Simple unit type U : 유니트타입 유니트타입 (중공축) Unit type Hollow unit	35 42 50 63 80	50 80 100 120	CD CDH SD SDH

● 형번표 Availability

Ratio matrix

Frame size	감속비	50	80	100	120
	사이즈	35	42	50	63

* 상세코드는 치수표를 확인하여 주십시오.
For the code details, please check the Dimensions Table.



감속기 사양 Reducer Specifications

사이즈 Size	감속비 Ratio R	*1	*2	*3	*4	*5
		허용평균 토크 Nominal output torque	허용최대 토크 Maximum output torque	비상시최대 토크 Emergency stop torque	허용평균 입력회전수 Nominal input speed	허용최고 입력회전수 Maximum input speed
		[Nm]	[Nm]	[Nm]	[r/min]	[r/min]
35	50	3.7	12	24	3000	8500
	80	5.4	16	29		
	100	5.4	19	31		
42	50	11	23	48	3000	7300
	80	15	29	52		
	100	16	37	55		
	120	16	37	55		
50	50	17	39	69	3000	6500
	80	24	51	75		
	100	28	57	76		
	120	28	57	76		
63	50	27	69	127	3000	5600
	80	44	96	147		
	100	47	110	152		
	120	47	110	152		
80	50	53	151	268	3000	4800
	80	82	212	334		
	100	96	233	359		
	120	96	233	359		

*1 입력회전수 2000r/min일 때의 허용하는 최대치
 *2 기동·정지시에 허용하는 최대치
 *3 충격등이 작용하였을 때의 허용하는 최대치
 *4 운전중에 허용하는 평균입력회전수의 최대치
 *5 운전중에 허용하는 입력회전수의 최대치

*1 The maximum allowable value at the input rotation speed of 2000r/min
 *2 The maximum torque when starting and stopping.
 *3 The maximum torque when it receives shock.
 *4 The maximum average input speed.
 *5 The maximum input speed.

감속기형식 / 사양
Reducer Model / Specifications

치수표
Dimensions Table

형식선정 / 수명계산 /
입력축의 허용하중 /
Model selection /
Life estimation /
Maximum load at input shaft

윤활제 /
취부정보
Lubricant information /
Attachment fixture
requirement

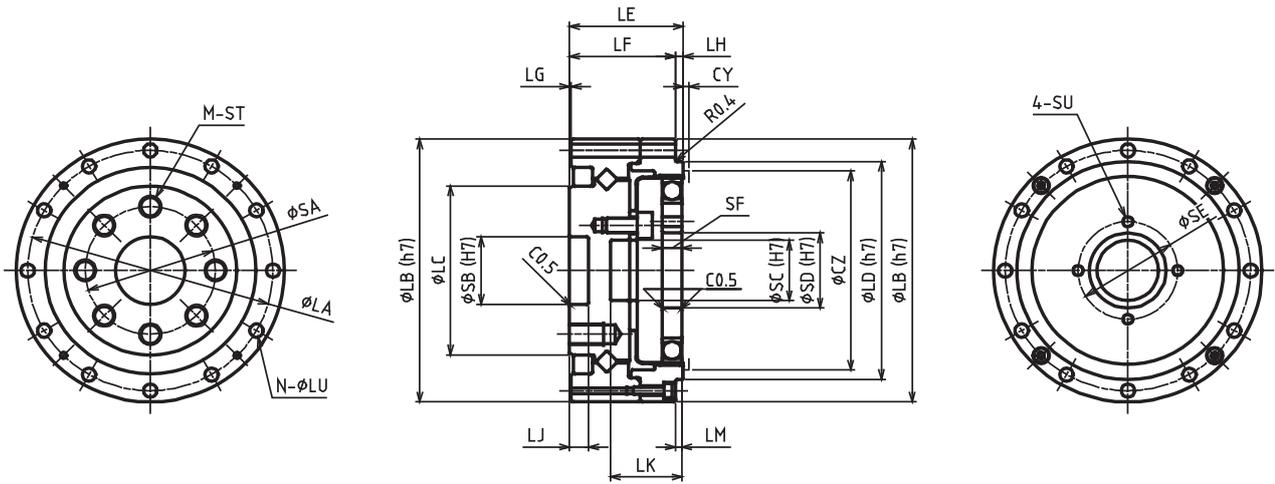
전달토크
Transmitting Torque

특성데이터
Characteristics Data

치수표 Dimensions Table

클로즈형 유니트타입
Closed Type, Unit

WPU- □ - □ - CD



[mm]

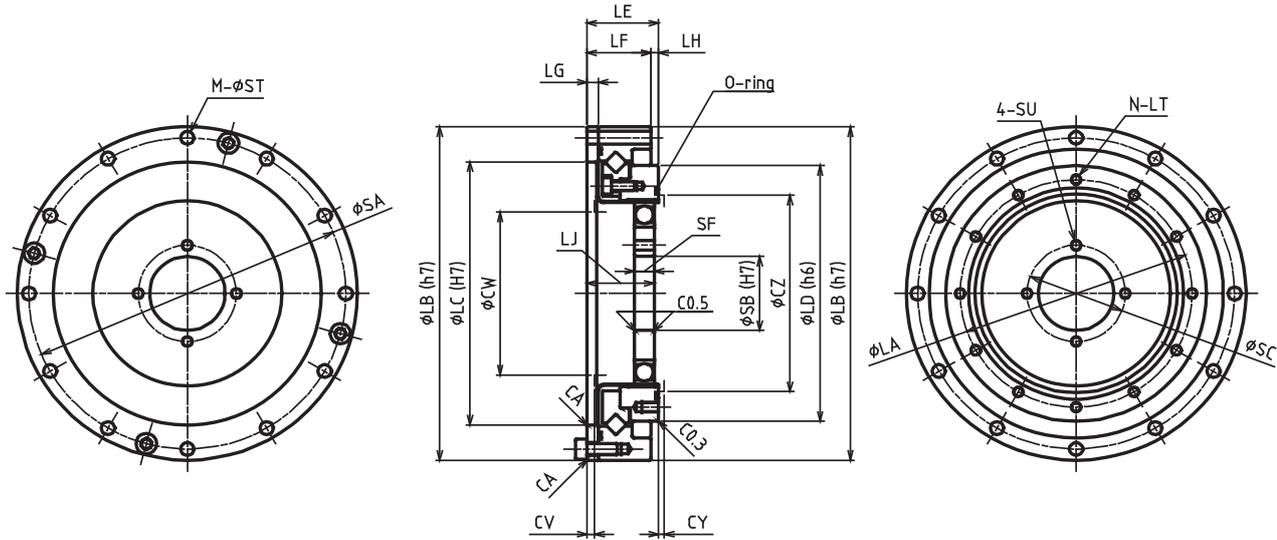
사이즈 Size	LA	LB	LC	LD	LE	LF	LG	LH	LJ	LK	LM	N	LU
35	49	55	31	42.5	25	23	0.5	2	5	14.7	1.7	6	3.5
42	56	62	38	49.5	26.5	24.5	0.5	2	5	16.2	1.7	10	3.5
50	64	70	45	58	29.7	27.7	0.5	2	5	18.7	1.7	12	3.5
63	79	85	58	73	37.1	34.1	0.5	3	5.5	23.6	2.6	18	3.5
80	104	112	78	96	43	40	1	3	5.5	30.5	2.5	18	4.5

사이즈 Size	SA	SB	SC	SD	SE	SF	CY	CZ	M	ST	SU
35	25	12	11	11	17	4	1	38	10	M3 × 6	M3
42	27	14	11	15	21	5	1	45	8	M5 × 8	M3
50	34	18	16	20	26	5.2	1.5	53	8	M6 × 9	M3
63	42	24	20	24	30	6.3	1.5	66	8	M8 × 12	M3
80	57	32	30	32	40	8.6	2	86	10	M8 × 12	M4

치수표 Dimensions Table

오픈형 간이유니트타입
Open type, Simple unit

WPS- □ - □ -SD



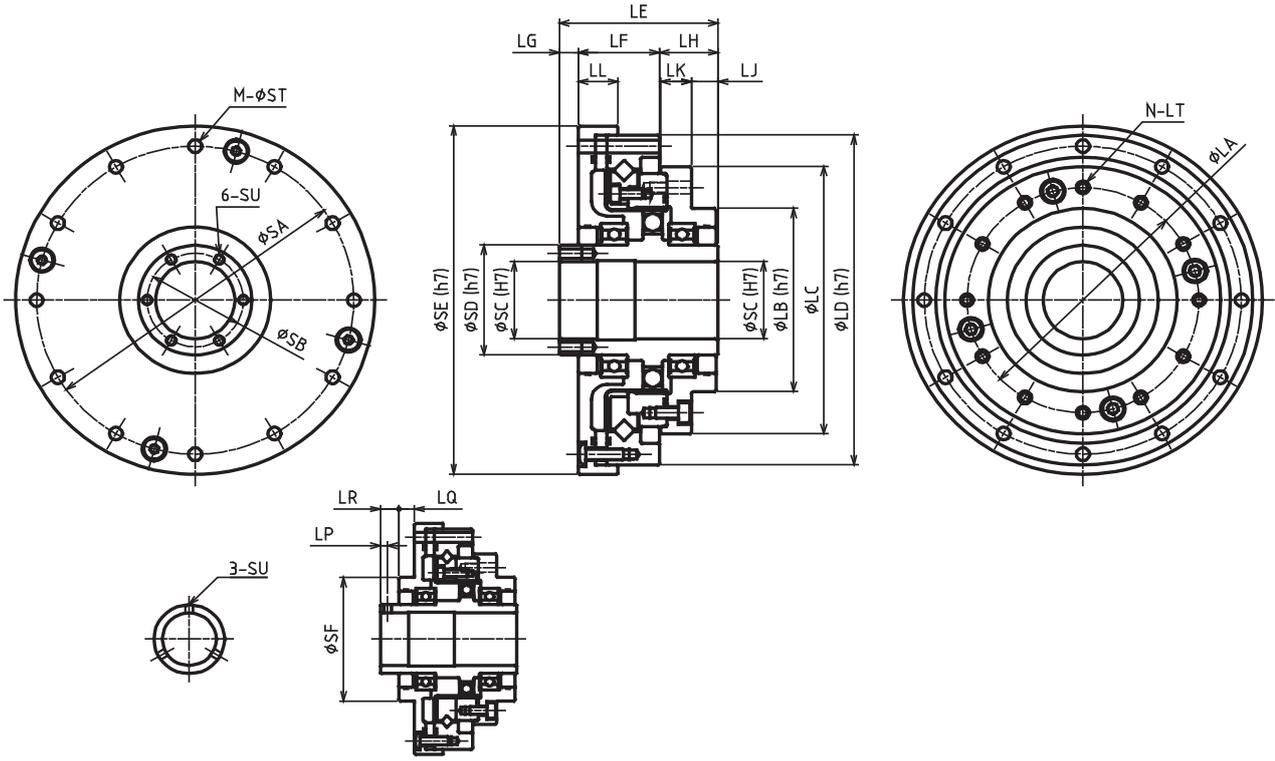
[mm]

사이즈 Size	LA	LB	LC	LD	LE	LF	LG	LH	LJ	N	LT
35	43	70	50	49	17.5	15.5	2.4	2	15.7	8	M3 × 4.5
42	52	80	61	59	18.5	16.5	3	2	16.9	12	M3 × 4.5
50	61.4	90	71	69	19	17	3	2	17.8	12	M3 × 4.5
63	76	110	88	84	22	20	3.3	2	21.6	12	M4 × 6
80	99	142	114	110	27.9	23.6	3.6	4.3	27.3	12	M5 × 8

사이즈 Size	SA	SB	SC	SF	CA	CY	CZ	CV	CW	M	ST	SU
35	64	11	17	4	0.3	1	36.5	1.6	31	8	3.5	M3
42	74	15	21	5	0.3	1	43.5	2	37	12	3.5	M3
50	84	20	26	5.2	0.3	1.5	53	2	44	12	3.5	M3
63	102	24	30	6.3	0.3	1.5	66	2	56	12	4.5	M3
80	132	32	40	8.6	0.5	2	84	2	72	12	5.5	M4

오픈형 유니트타입(중공축)
Open type, Unit (hollow shaft)

WPU- □ - □ -SDH



INPUT SHAFT FOR 35&42

사이즈 Size	LA	LB	LC	LD	LE	LF	LG	LH	LJ	LK	LL	LP	LQ	LR
35	43	36	52	70	45.5	19.5	12	14	6.5	7.5	9	2.5	5.5	6.5
42	52	45	62	80	48	20.5	12	15.5	7	8.5	10	2.5	5.5	6.5
50	61.4	50	73	90	42	21.5	5	15.5	7	8.5	10.5	-	-	-
63	76	60	87	110	46.5	24	6	16.5	6	10.5	10.5	-	-	-
80	99	75	114	142	55	28.6	7	19.4	7.5	11.9	12	-	-	-

[mm]

사이즈 Size	SA	SB	SC	SD	SE	SF	M	ST	SU	N	LT
35	64	-	14	20	74	36	8	3.5	M3	8	M3 × 4.5, φ 3.5 × 5.5
42	74	-	19	25	84	45	12	3.5	M3	12	M3 × 4.5, φ 3.5 × 6.5
50	84	25.5	21	30	95	-	12	3.5	M3 × 6	12	M3 × 4.5, φ 3.5 × 6.5
63	102	33.5	29	38	115	-	12	4.5	M3 × 6	12	M4 × 6, φ 4.5 × 8.5
80	132	48	41	45	147	-	12	5.5	M3 × 6	12	M5 × 8, φ 5.5 × 7.6

치수표
Dimensions Table

형식 선정 / 수명 계산
입력축의 허용하중
Model selection / Life estimation / Maximum load at input shaft

윤활제 / 취부정도
Lubricant information / Attachment fixture requirement

전달토크
Transmitting Torque

특성데이터
Characteristics Data

수명계산 *Life estimation*

형식선정/수명계산 *Model selection / Life estimation*

형식선정 · 수명계산방식은 표준 타입과 동일하므로 **P13~P16**을 참조하여 주시기 바랍니다.
 주베어링사양은 표준타입과 다르기 때문에 하기를 참조하여 주시기 바랍니다.

For the flow of model selection and life estimation, please refer to Standard type p.13~16.
 For the bearing specification, please refer to the table below.

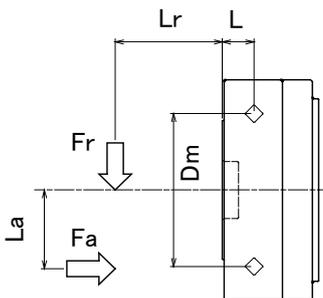
■ 주베어링사양 (크로스롤러 베어링) *Main bearing specification(Cross roller bearing)*

시리즈 Series	사이즈 Size	롤러의 피치원경 Pitch circle diameter of the bearing rollers	오프셋 Offset	기본동정격하중 Basic dynamic load rating	기본정정격하중 Basic static load rating	허용모멘트 Allowable moment	모멘트강성 Moment rigidity
		Dm	L	C	Co	Mal	Km
		m	m	N	N	Nm	× 10 ⁴ Nm/rad
WPU-□-□-CD	35	0.0335	0.0090	5620	6540	36.5	7.35
	42	0.0410	0.0095	6340	8170	55.8	8.02
	50	0.0493	0.0105	10400	13300	91.0	13.5
	63	0.0615	0.0128	15800	21100	156	27.7
	80	0.0815	0.0130	24400	35600	313	66.0
WPU-□-□-CDH	35	0.0505	0.0062	7110	10200	74.0	14.4
	42	0.0598	0.0066	10900	15200	124	19.7
	50	0.0708	0.0077	17200	24700	187	40.1
	63	0.0856	0.0092	25100	37400	258	71.5
	80	0.114	0.0106	43300	67600	580	188
WPS-□-□-SD	35	0.0512	0.0111	8010	11400	37.0	8.86
	42	0.0614	0.0112	7370	10900	62	20.8
	50	0.0715	0.0114	8030	12800	93	22.5
	63	0.0869	0.0128	14300	24500	129	33.3
	80	0.113	0.0181	23700	42500	290	84.5
WPU-□-□-SDH	35	0.0512	0.0166	8010	11400	37.0	8.86
	42	0.0614	0.0177	7370	10900	62	20.8
	50	0.0715	0.0179	8030	12800	93	22.5
	63	0.0869	0.0213	14300	24500	129	33.3
	80	0.113	0.0257	23700	42500	290	84.5

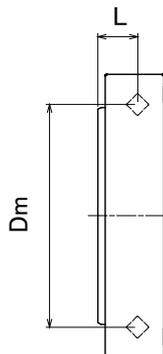
■ 외부부하

External load

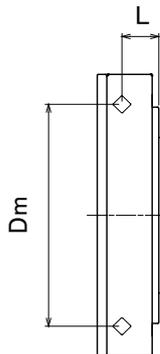
WPU-□-□-CD



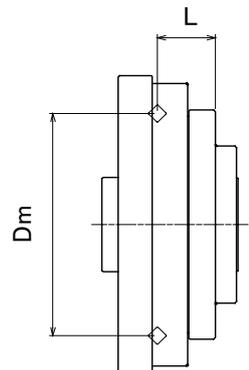
WPU-□-□-CDH



WPS-□-□-SD



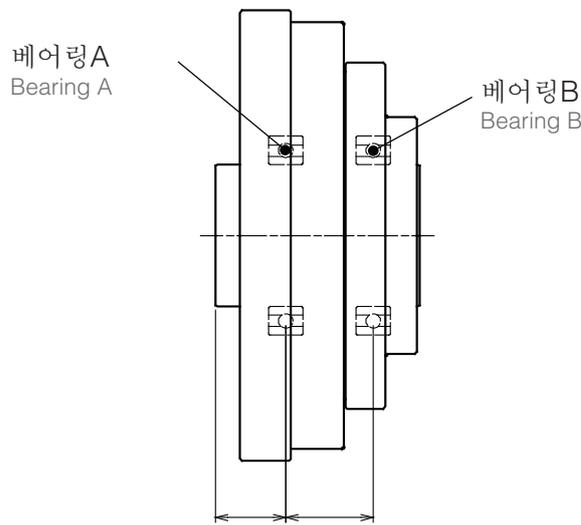
WPU-□-□-SDH



입력축의 허용하중 *Maximum load at input shaft*

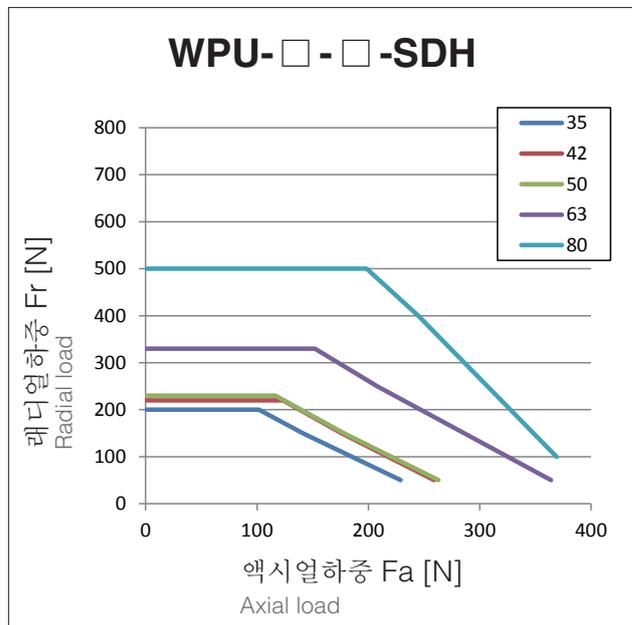
■ 베어링사양 (오픈형, 유니트타입) Bearing specification (Open type, Unit)

시리즈 Series	사이즈 Size	베어링 A Bearing A		베어링 B Bearing B		a	b
		기본동정격하중 Basic dynamic load rating	기본정정격하중 Basic static load rating	기본동정격하중 Basic dynamic load rating	기본정정격하중 Basic static load rating		
		C	Co	C	Co		
		N	N	N	N	mm	mm
WPU-□-□-SDH	35	4000	2470	4000	2470	16.0	20.0
	42	4300	2950	4300	2950	16.0	22.5
	50	4500	3450	4500	3450	14.5	18.0
	63	4900	4350	4900	4350	15.5	21.8
	80	8800	8500	6400	6200	17.0	28.5



■ 허용하중 (평균입력회전수 : 2000r/min, 수명시간 : 7000h)

Maximum load (Average input rotation speed : 2000r/min, Life span : 7000h)



감속기형식 / 사양
Reducer Model / Specifications

치수표
Dimensions Table

형식선정 / 수명계산 / 입력축의 허용하중
Model selection / Life estimation / Maximum load at input shaft

윤활제 / 취부정보
Lubricant information / Attachment fixture requirement

전달토크
Transmitting Torque

특성데이터
Characteristics Data

윤활제 *lubricant information*

사용그리스

Grease

스미플렉스MP No.2 (스미코윤활제주식회사)

Sumiplex MP No.2 (SUMICO LUBRICANT CO., LTD.)

사용온도범위 : 0~40°C(주위온도)

Operating temperature range: 0-40°C(ambient temperature)

그리스도포

Grease application

이하와 같이, 감속기 각부에 그리스를 도포하여 주시기 바랍니다.

Please apply grease according to the table below.

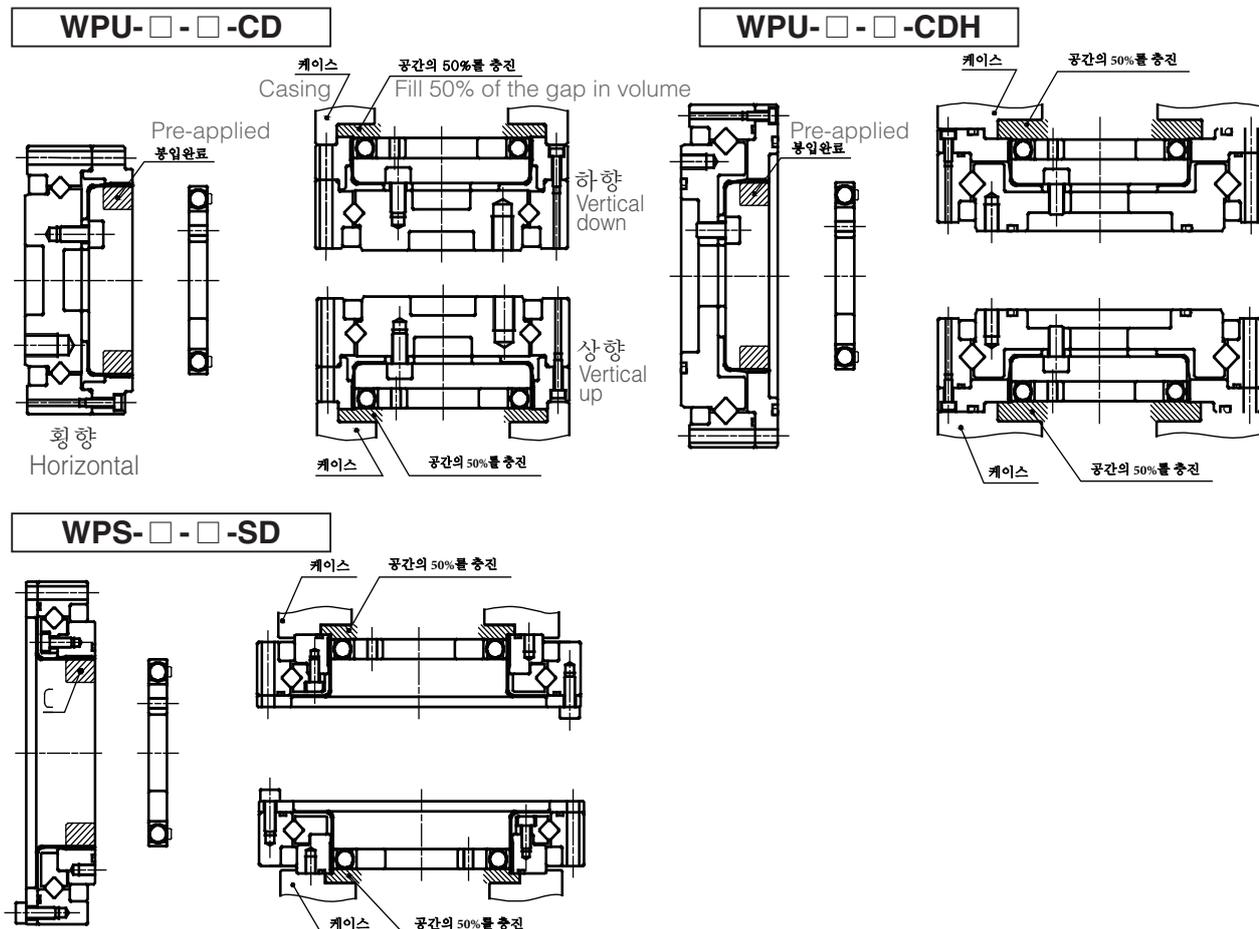
■ 그리스 도포량 Grease application

[g]

- 도포개소C는 감속기의 설치자세 (출력축의 횡향, 상향, 하향)에 따라 도포량을 변경하여 주십시오.
(그리스의 봉입이 완료된 유니트타입은 C(횡향)의 그리스량이 채워져 있습니다.)
- 감속기가 상향, 하향의 경우는 입력ASSY~케이스 내벽 공간에 50% 정도의 그리스를 충전하여 주십시오.
- The quantity of grease applied to C should be adjusted depending on the mounting direction. C of the unit type product is already filled with the same quantity of grease as horizontal mounting.
- For vertical up/down, 50% of the space between input assy and casing inner wall should be filled with grease.

사이즈 Size	도포개소 Applied part		
	C (횡향) Horizontal	C (상향) Vertical up	C (하향) Vertical down
35	3	4	5
42	5	6	7
50	8	9	11
63	16	19	21
80	36	42	48

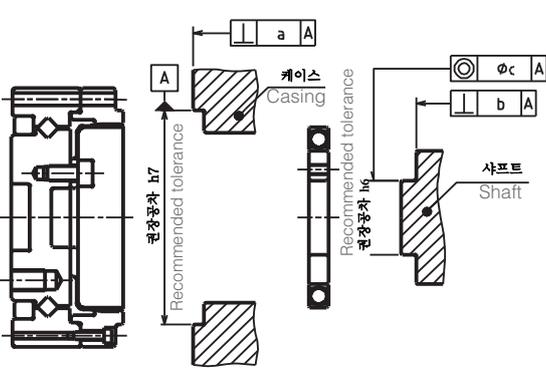
■ 그리스 도포부 Grease application location



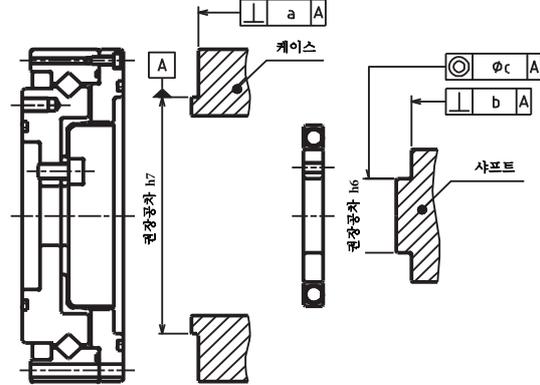
취부정도 Attachment fixture requirement

■ 취부정도 Attachment fixture requirement

WPU-□-□-CD



WPU-□-□-CDH



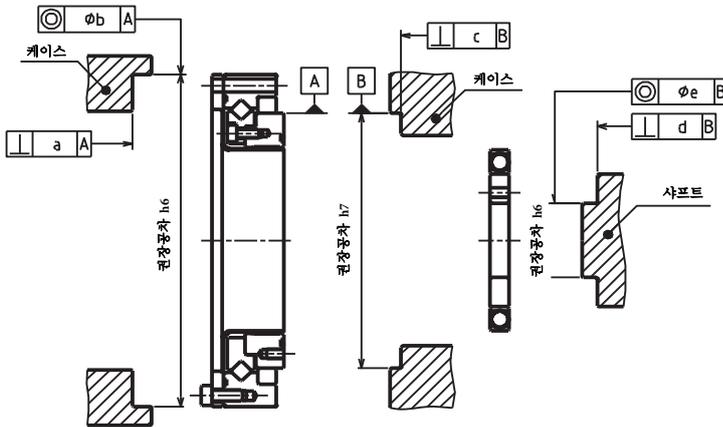
취부정도 [mm]

사이즈 Size	35	42	50	63	80
a	0.020	0.020	0.020	0.025	0.025
b	0.012	0.012	0.014	0.016	0.016
c	0.016	0.020	0.024	0.024	0.024

취부정도 [mm]

사이즈 Size	35	42	50	63	80
a	0.020	0.020	0.020	0.025	0.025
b	0.012	0.012	0.014	0.016	0.016
c	0.016	0.020	0.024	0.024	0.024

WPS-□-□-SD



취부정도 [mm]

사이즈 Size	35	42	50	63	80
a	0.020	0.020	0.020	0.025	0.025
b	0.020	0.020	0.020	0.025	0.025
c	0.020	0.020	0.020	0.025	0.025
d	0.012	0.012	0.014	0.016	0.016
e	0.016	0.020	0.024	0.024	0.024

감속기형식 /
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Model selection /
Life estimation /
Maximum load at input shaft

윤활제 /
취부정도 /
Attachment fixture
requirement

전달토크
Transmitting Torque

특성데이터
Characteristics Data

전달토크 *Transmitting Torque*

볼트취부

Bolting

볼트의 체결토크는 하기 표와 같습니다.

Please refer to the table below for the bolt tightening torque.

볼트 체결토크

Tightening torque for bolts

볼트사이즈	Bolt size	M3	M4	M5	M6	M8	M10
체결토크 [Nm]	Tightening torque	1.9	4.3	8.7	15	36	71

권장볼트 : 강도구분 12.9 이상

Recommended bolt : Strength rating above 12.9

전달토크 (클로즈형 , 유니트타입)

Bolt specifications and Transmitting torque (Closed type, Unit)

출력플랜지취부 (WPU-□-□-CD) Output flange attachment

사이즈	Size	35	42	50	63	80
볼트사이즈	Bolt size	M3	M5	M6	M8	M8
볼트수량	Bolt count	10	8	8	8	10
취부 PCD [mm]	Bolt PCD	25	27	34	42	57
체결토크 [Nm]	Tightening torque	1.9	8.7	15	36	36
전달토크 [Nm]	Transmitting torque	58	141	252	566	960

인터널기어취부 (WPU-□-□-CD) Internal gear attachment

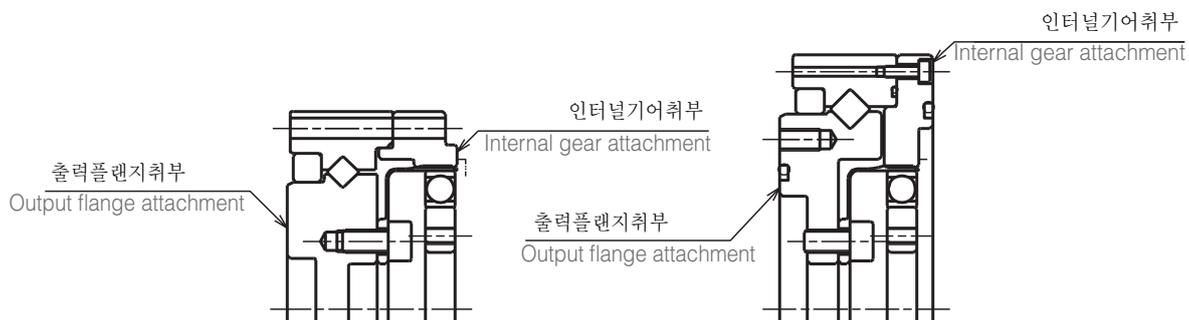
사이즈	Size	35	42	50	63	80
볼트사이즈	Bolt size	M3	M3	M3	M3	M4
볼트수량	Bolt count	6	10	12	18	18
취부 PCD [mm]	Bolt PCD	49	56	64	79	104
체결토크 [Nm]	Tightening torque	1.9	1.9	1.9	1.9	4.3
전달토크 [Nm]	Transmitting torque	68	130	178	330	757

출력플랜지취부 (WPU-□-□-CDH) Output flange attachment

사이즈	Size	35	42	50	63	80
볼트사이즈	Bolt size	M3	M3	M4	M5	M6
볼트수량	Bolt count	8	10	8	8	8
취부 PCD [mm]	Bolt PCD	42	50	60	73	96
체결토크 [Nm]	Tightening torque	1.9	1.9	4.3	8.7	15
전달토크 [Nm]	Transmitting torque	78	116	194	382	713

인터널기어취부 (WPU-□-□-CDH) Internal gear attachment

사이즈	Size	35	42	50	63	80
볼트사이즈	Bolt size	M3	M3	M3	M4	M5
볼트수량	Bolt count	6	8	8	10	10
취부 PCD [mm]	Bolt PCD	64	74	84	102	132
체결토크 [Nm]	Tightening torque	1.9	1.9	1.9	4.3	8.7
전달토크 [Nm]	Transmitting torque	89	137	156	412	864



전달토크 (오픈형)

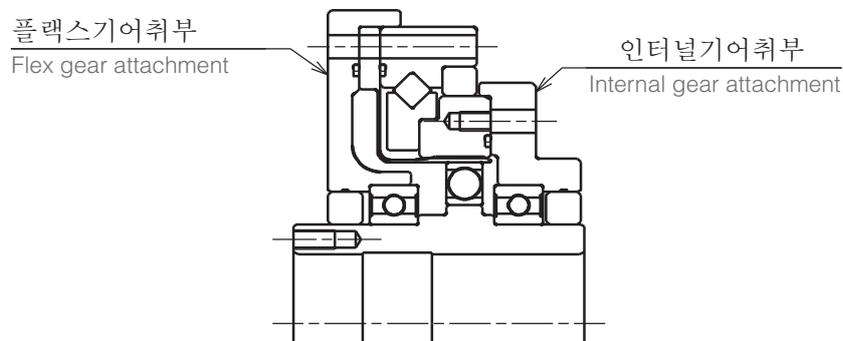
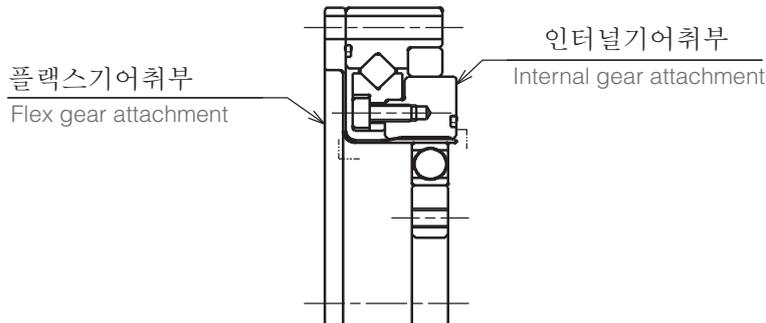
Bolt specifications and Transmitting torque (Open type)

플렉스기어취부 Flex gear attachment

사이즈	Size	35	42	50	63	80
볼트사이즈	Bolt size	M3	M3	M3	M4	M5
볼트수량	Bolt count	8	12	12	12	12
취부 PCD [mm]	Bolt PCD	64	74	84	102	132
체결토크 [Nm]	Tightening torque	1.9	1.9	1.9	4.3	8.7
전달토크 [Nm]	Transmitting torque	119	206	234	495	1037

인터널기어취부 Internal gear attachment

사이즈	Size	35	42	50	63	80
볼트사이즈	Bolt size	M3	M3	M3	M4	M5
볼트수량	Bolt count	8	12	12	12	12
취부 PCD [mm]	Bolt PCD	43	52	61.4	76	99
체결토크 [Nm]	Tightening torque	1.9	1.9	1.9	4.3	8.7
전달토크 [Nm]	Transmitting torque	80	145	171	369	778



각도전달정도

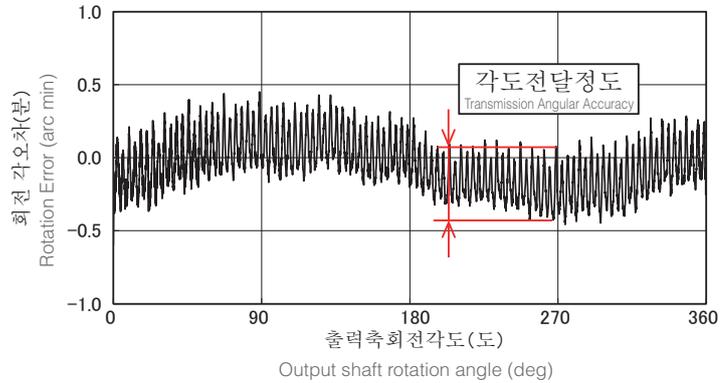
Transmission Angular Accuracy

각도전달정도란

무부하에서 입력축을 회전시킬 경우, 이론상의 출력회전각도와 실제 출력 회전각도의 차

What is Transmission Angular Accuracy?

It is the difference between the measured output rotation angle and the theoretical angle, while input shaft is rotated with no load.



[arc min]

감속비 Ratio	사이즈 Size				
	35	42	50	63	80
50	2.0	2.0	1.5	1.0	1.0
80	1.5	1.5	1.0	1.0	1.0
100	1.5	1.5	1.0	1.0	1.0
120	-	1.5	1.0	1.0	1.0

히스테리시스로스

Hysteresis Loss

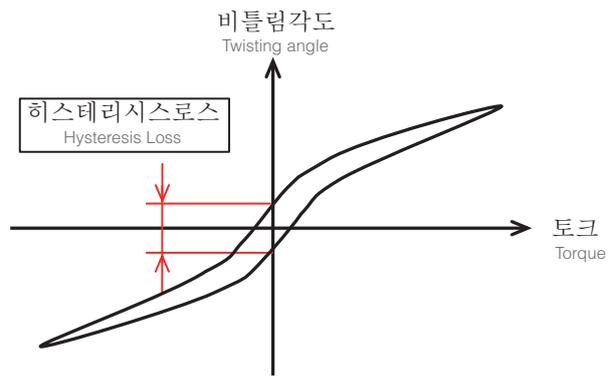
히스테리시스로스란

입력축을 고정하고 출력축에 토크를 가하였을 경우 제로토크시의 비틀림각의 차

What is Hysteresis Loss?

When torque load is applied at the output shaft in alternate direction repeatedly with input shaft fixed, there is residual twisting angle when torque is back to zero.

In this context, hysteresis loss is the difference in the forward and backward twisting angle.



[arc min]

감속비 Ratio	사이즈 Size				
	35	42	50	63	80
50	2.0	2.0	2.0	2.0	2.0
80	1.5	1.5	1.0	1.0	1.0
100	1.5	1.5	1.0	1.0	1.0
120	-	1.5	1.0	1.0	1.0

최대백래쉬량

Maximum Backlash

[arc sec]

최대백래쉬량이란

입력부가 스플라인타입의 경우 출력축의 유격 (기어 맞물림부의 백래쉬는 0이기 때문에 리지드타입의 백래쉬는 0이 됩니다.)

What is Maximum Backlash?

In this context, maximum backlash is the output backlash for spline type input shaft. (Backlash is zero for rigid type input, because gear engagement backlash is zero.)

감속비 Ratio	사이즈 Size				
	35	42	50	63	80
50	27	27	18	16	16
80	17	17	11	10	10
100	13	13	9	8	8
120	-	11	7	7	7

강성 (클로즈형, 유니트타입)

Stiffness (Closed type, Unit)

강성이란

입력축을 고정하고 출력축에 토크를 가할 경우 스프링정수와 비틀림 각

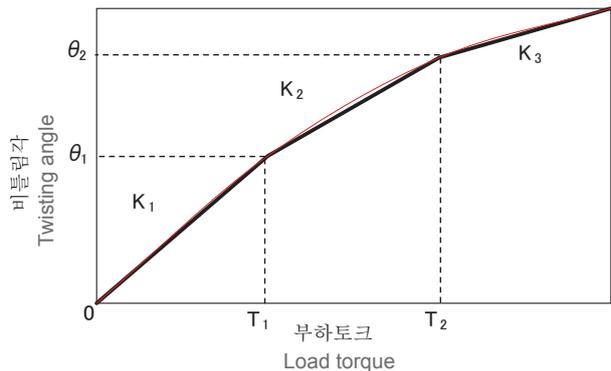
What is Stiffness?

In this context, stiffness is the output shaft twisting angle and the spring coefficient, while torque load is applied to the output shaft with input side fixed.

K1...토크가 0 ~ T₁ 의 스프링정수
Spring coefficient at 0 ~ T₁ torque

K2...토크가 T₁ ~ T₂ 의 스프링정수
Spring coefficient at T₁ ~ T₂ torque

K3...토크가 T₂ ~ 의 스프링정수
Spring coefficient at T₂ ~ torque



감속비 Ratio	기호 item	단위 unit	사이즈 Size				
			35	42	50	63	80
-	T ₁	Nm	2	3.9	7	14	29
-	T ₂	Nm	6.9	12	25	48	108
50	K ₁	× 10 ⁴ Nm/rad	0.39	0.66	1.1	2.2	4.6
	K ₂	× 10 ⁴ Nm/rad	0.47	0.75	1.4	2.6	5.1
	K ₃	× 10 ⁴ Nm/rad	0.52	0.82	1.4	2.7	5.6
	θ ₁	arcmin	1.7	2.0	2.2	2.2	2.2
	θ ₂	arcmin	5.0	5.5	6.3	6.4	7.2
80	K ₁	× 10 ⁴ Nm/rad	0.44	0.86	1.6	2.9	6.2
	K ₂	× 10 ⁴ Nm/rad	0.60	1.0	1.9	3.2	6.5
	K ₃	× 10 ⁴ Nm/rad	0.72	1.0	1.9	3.1	6.5
	θ ₁	arcmin	1.6	1.6	1.5	1.7	1.6
	θ ₂	arcmin	4.0	4.1	4.6	5.2	5.7

※표의 수치는 평균치입니다.
Average value shown in the table

특성 데이터 Characteristics Data

기동토크 (클로즈형, 유니트타입)

Starting Torque (Closed type, Unit) [cNm]

기동토크란

입력측에서 회전시킬 경우에
입력측이 회전을 시작하는 토크
(무부하, 주변온도 : 25°C)

What is Starting Torque?

Input torque needed for input side to start rotating (no load, ambient temperature : 25°C)

감속비 Ratio	사이즈 Size				
	35	42	50	63	80
50	7.0	11	14	17	26
80	6.8	9.5	13	24	26
100	6.4	9.4	11	14	20
120	-	8.1	9.3	14	20

※사용조건에 따라 값이 다르므로, 참고치입니다.

For reference only. Torque value may vary depending on the condition.

중속기동토크 (클로즈형, 유니트타입)

Output Starting Torque(Closed type, Unit) [Nm]

중속기동토크란

출력측에서 회전시킬 경우에
출력측이 회전을 시작하는 토크
(무부하, 주변온도 : 25°C)

What is Output Starting Torque?

Output torque needed for output side to start rotating (no load, ambient temperature : 25°C)

감속비 Ratio	사이즈 Size				
	35	42	50	63	80
50	1.2	3.6	4.4	5.8	13
80	1.6	3.9	7.2	13	26
100	1.7	5.7	8.6	9.4	23
120	-	4.2	8.1	10	30

※사용조건에 따라 값이 다르므로, 참고치입니다.

For reference only. Torque value may vary depending on the condition.

무부하러닝토크

(클로즈형, 유니트타입)

No-load Running Torque
(Closed type, Unit)

무부하러닝토크란

무부하에서 회전시키는데
필요한 입력측의 토크
(평균치, 주변온도 : 25°C)

What is No-load Running Torque?

Input torque needed to keep it running with no load (average value, ambient temperature : 25°C)

감속비 Ratio	기호	사이즈 Size				
		35	42	50	63	80
50	500r/min	3.4	7.5	9.2	17	35
	1000r/min	4.3	8.2	11	18	37
	2000r/min	5.0	8.5	13	18	39
	3500r/min	5.4	11	14	22	38
80	500r/min	3.2	7.6	10	20	35
	1000r/min	4.0	8.7	12	21	38
	2000r/min	4.8	8.9	14	22	39
	3500r/min	5.2	11	14	24	38
100	500r/min	3.2	7.1	11	21	36
	1000r/min	4.0	8.2	13	23	39
	2000r/min	4.7	8.4	14	24	39
	3500r/min	5.1	9.7	14	25	38
120	500r/min	-	6.7	9.8	23	40
	1000r/min	-	8.1	12	24	41
	2000r/min	-	8.4	13	26	41
	3500r/min	-	8.4	13	26	39

※사용조건에 따라 값이 다르므로, 참고치입니다.

For reference only. Torque value may vary depending on the condition.

효율 (클로즈형, 유니트타입)

Efficiency (Closed type, Unit)

부하 [%] : 부하토크 / 허용평균토크

주변온도 : 25°C

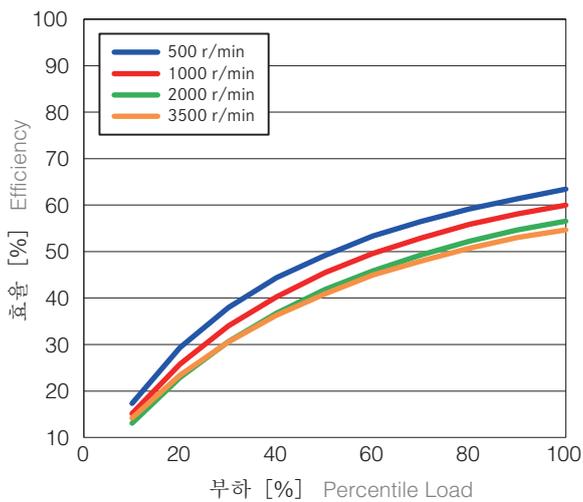
※그래프는 실측 데이터의 평균값입니다.

·Percentile Load (%) is equal to load torque divided by allowable average torque.

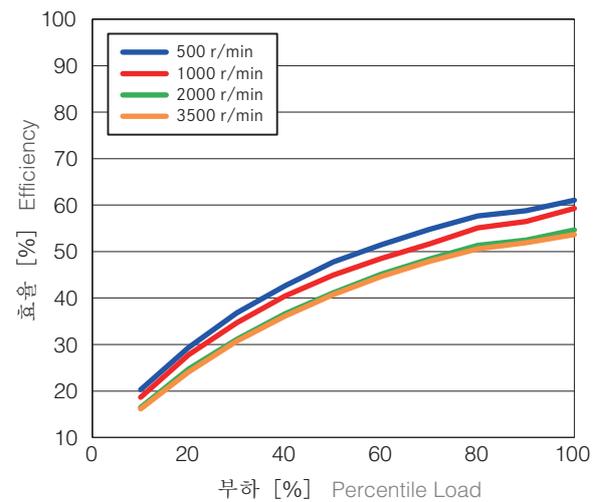
·Ambient temperature : 25°C

* These diagrams represent the average value of the actual measurement.

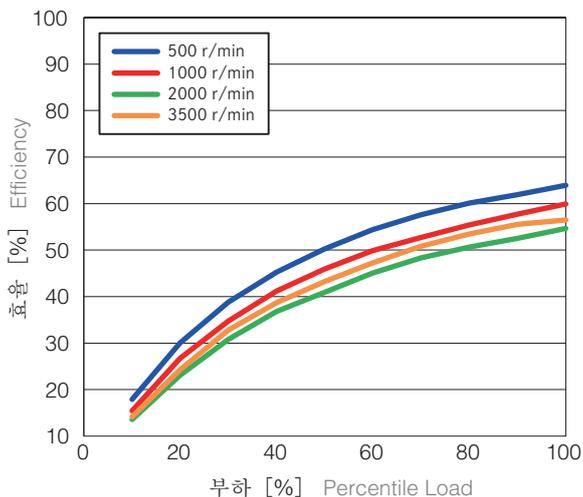
WPU-35-50



WPU-35-80



WPU-35-100



특성데이터 Characteristics Data

효율 (클로즈형, 유니트타입)

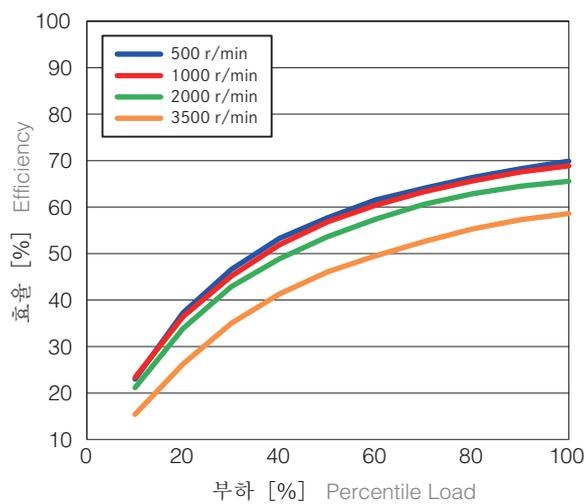
Efficiency (Closed type, Unit)

부하 [%] : 부하토크 / 허용평균토크
주변온도 : 25°C

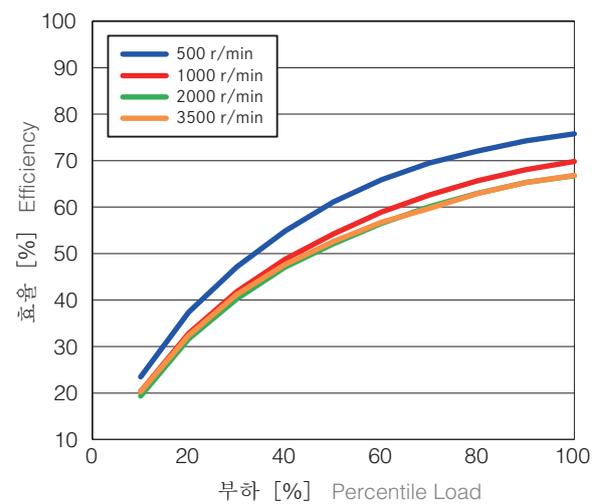
※그래프는 실측 데이터의 평균값입니다.

·Percentile Load (%) is equal to load torque divided by allowable average torque.
·Ambient temperature : 25°C
* These diagrams represent the average value of the actual measurement.

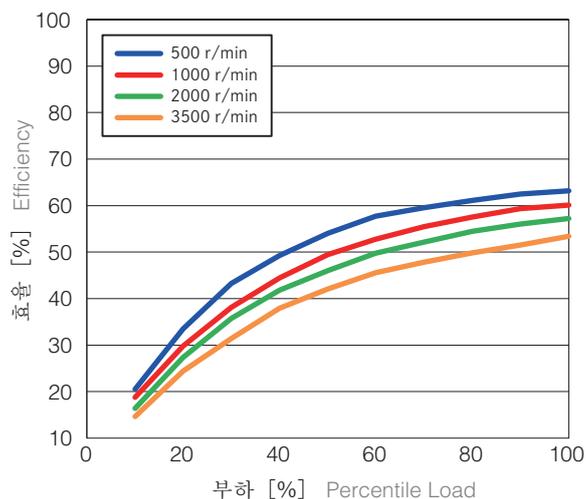
WPU-42-50



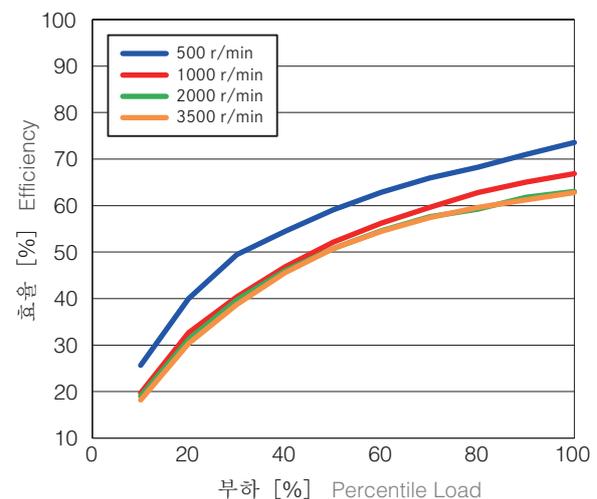
WPU-42-80



WPU-42-100



WPU-42-120



효율 (클로즈형, 유니트타입)

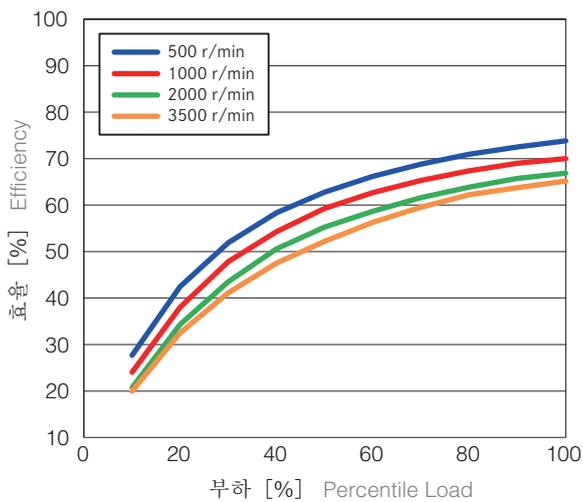
Efficiency (Closed type, Unit)

부하 [%] : 부하토크 / 허용평균토크
주변온도 : 25 °C

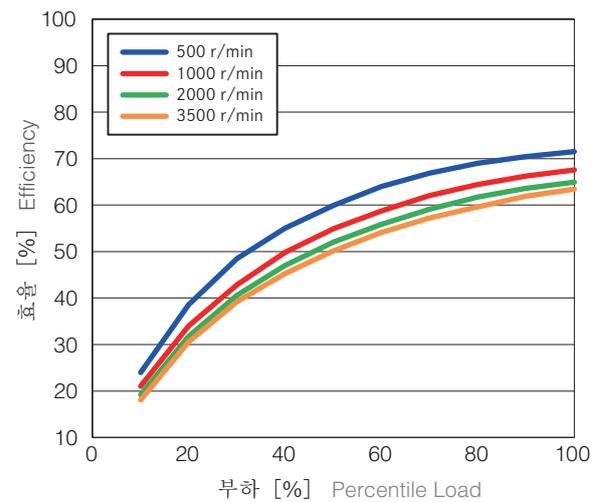
※그래프는 실측 데이터의 평균값입니다.

·Percentile Load (%) is equal to load torque divided by allowable average torque.
·Ambient temperature : 25°C
* These diagrams represent the average value of the actual measurement.

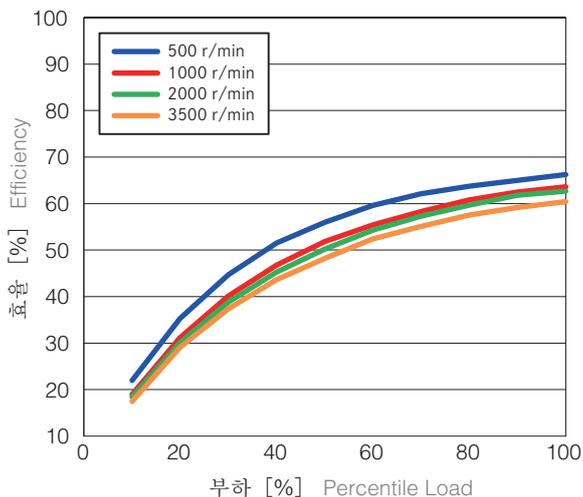
WPU-50-50



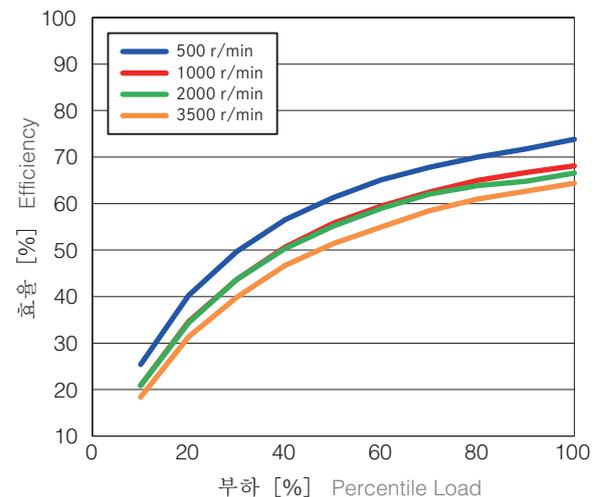
WPU-50-80



WPU-50-100



WPU-50-120



특성데이터 Characteristics Data

효율 (클로즈형, 유니트타입)

Efficiency (Closed type, Unit)

부하 [%] : 부하토크 / 허용평균토크

주변온도 : 25 °C

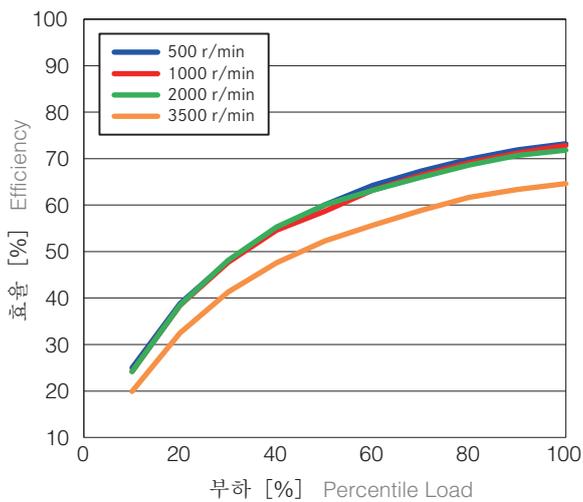
※그래프는 실측 데이터의 평균입니다.

·Percentile Load (%) is equal to load torque divided by allowable average torque.

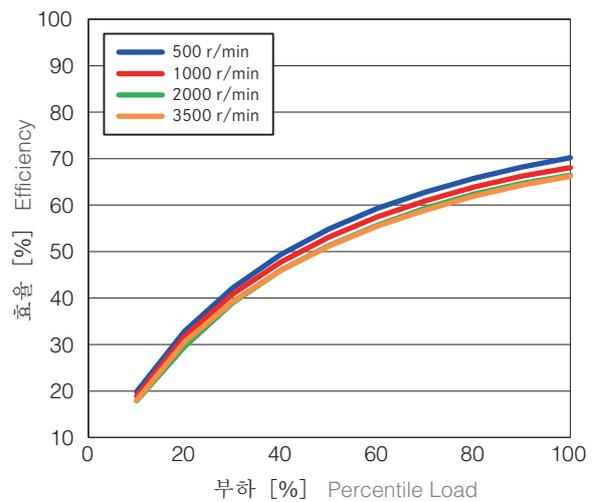
·Ambient temperature : 25°C

* These diagrams represent the average value of the actual measurement.

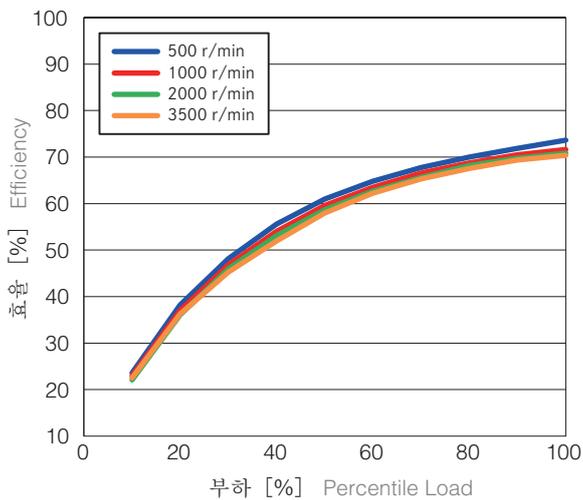
WPU-63-50



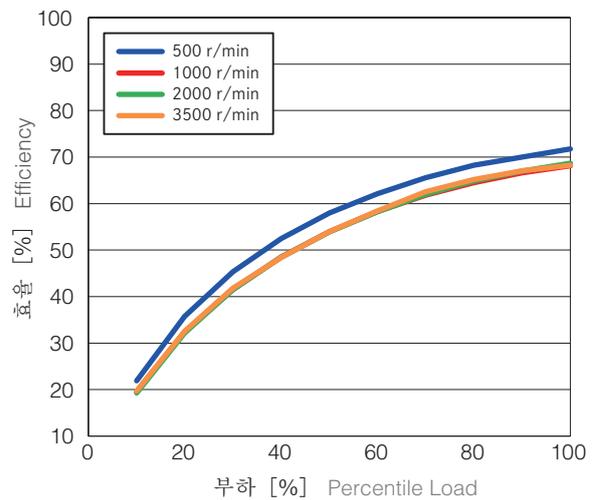
WPU-63-80



WPU-63-100



WPU-63-120



효율 (클로즈형, 유니트타입)

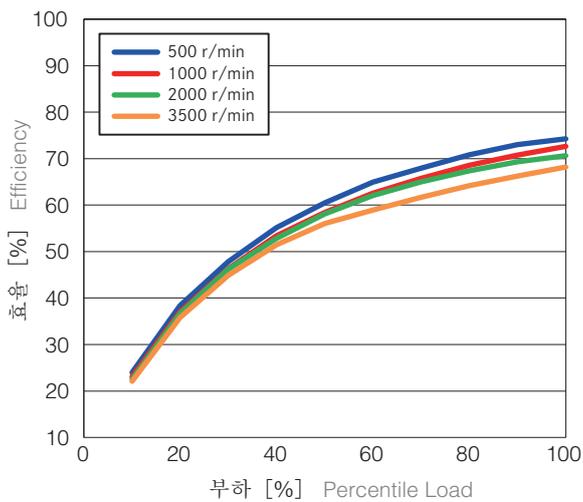
Efficiency (Closed type, Unit)

부하 [%] : 부하토크 / 허용평균토크
주변온도 : 25 °C

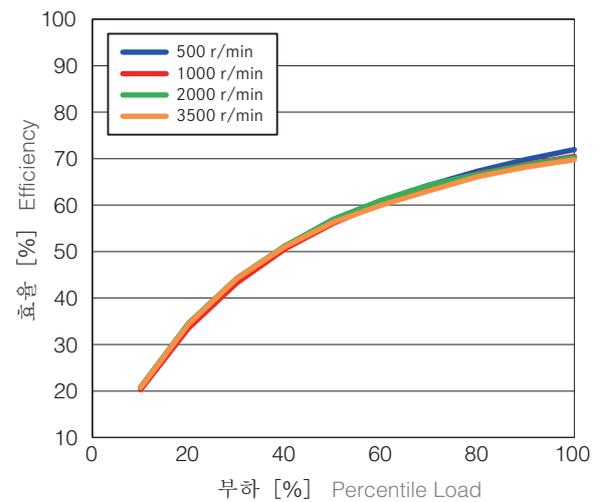
※그래프는 실측 데이터의 평균값입니다.

·Percentile Load (%) is equal to load torque divided by allowable average torque.
·Ambient temperature : 25°C
* These diagrams represent the average value of the actual measurement.

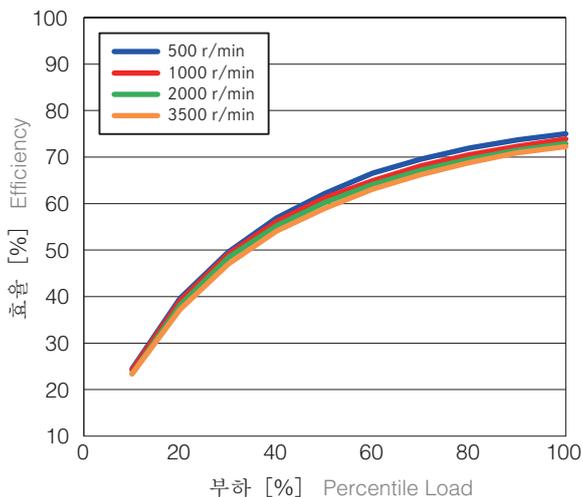
WPU-80-50



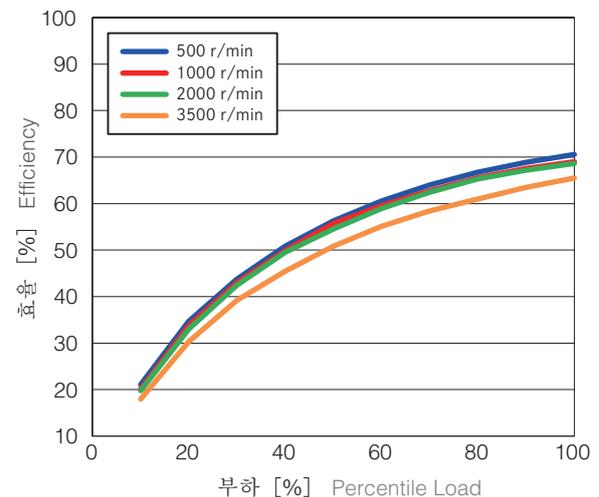
WPU-80-80



WPU-80-100



WPU-80-120





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사용시에는 취급설명서를 참고하시어
올바른 사용을 부탁드립니다.

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- 주요취급품목 : 변 · 감속기/프레스기기/전자기기/제어기기 · 정밀기기/도예기기
- 가격 및 납기 관련 문의는 가까운 대리점 혹은 영업소로 부탁드립니다.
- 이 카달로그는 2018년 6월 현재의 내용입니다. 제품의 외관 및 사양의 개선을 위해 변경되는 경우가 있습니다.

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