

Agricultural-Products Harvesting Robot

Zero-back Drive

Robo Series

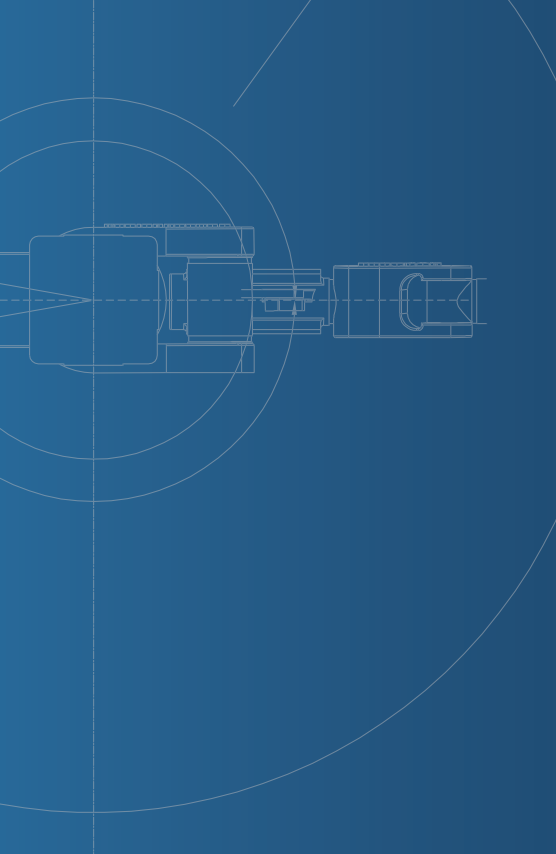


SENEs TECHNOLOGY

The Future of New Generation Robot
Industrial Robot Series and Harvesting Robot



SeneS Technology Co., Ltd.



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Harvesting Robot

The future of high technology

농산물 수확 로봇

Agricultural-Products Harvesting Robot

Equipment for harvesting agricultural products such as fruits and vegetables(Peppers, bell peppers, paprika, etc) using robot

Item	Specifications
Model	Farm Master I
Dimension	600 x 1500 x 1760 (mm)
Weight	Approx. 100 kg
Mobility Operation Speed	Max 1.5 m/s
Harvesting Ability	Max 200 ea/h (depending on the crop)
Power Supply	Lithium ion battery (rechargeable)
Operating Temperature Range	-10°C ~ 40°C



Harvesting Robot

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로봇 매니플레이터

Robot Manipulator

Item	Specifications
Model	ROBO 003
Payload	3 kg
Weight	20 kg
Power	1Φ 220V 1.5Kw



모빌리티

Mobility

Item	Specifications
Dimension (W*D*H)	920 x 1300 x 670 mm
Speed	0 - 10 km / H
Payload	100 kg
Power	DC 24V 250W



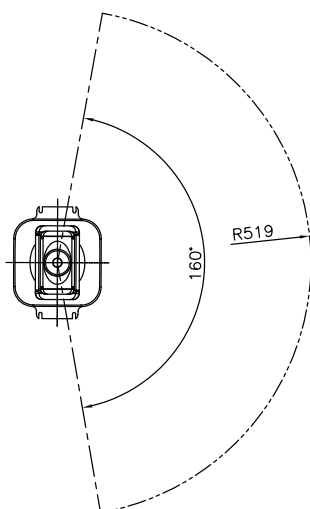
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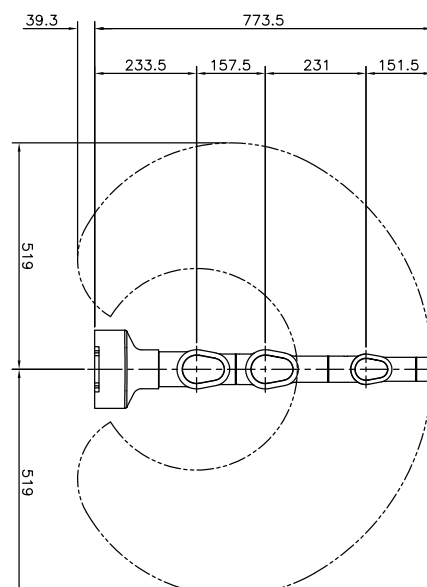


Product Overview

- ROBO 001 - 1kg payload
- ROBO 003 - 3kg payload
- ROBO 005 - 5kg payload
- ROBO 010 - 10kg payload
- ROBO 015 - 15kg payload



MODEL		ROBO 001
Max Payload(Kg)		1
Motion Range (°)	Arm rotation (JT 1)	±80
	Arm out-in (JT 2)	±90
	Arm up-down (JT 3)	±90
	Wrist swivel (JT 4)	±180
	Wrist band (JT 5)	±90
	Wrist twist (JT 6)	±360
Max Speed (°/s)	Arm rotation (JT 1)	60
	Arm out-in (JT 2)	60
	Arm up-down (JT 3)	100
	Wrist swivel (JT 4)	180
	Wrist band (JT 5)	360
	Wrist twist (JT 6)	360
Moment (N.M)	Wrist swivel (JT 4)	4.5
	Wrist band (JT 5)	4.5
	Wrist twist (JT 6)	4.5
Moment of Inertia (Kg.M²)	Wrist swivel (JT 4)	0.011
	Wrist band (JT 5)	0.005
	Wrist twist (JT 6)	0.001
positioning accuracy(mm)		±0.05
Max Reach(mm)		530
Mass (Kg)		10
Body Color		White/Dark Navy
Installation		Floor
Environmental	Temperature(°C)	0~40
Condition	Humidity(%)	35~85 (No dew nor frost allowed)
Power Requirement(KVA)		1.5
Degree of Protection		Wrist IP 60 Base axis IP54
Machine Controller		SNS001Series



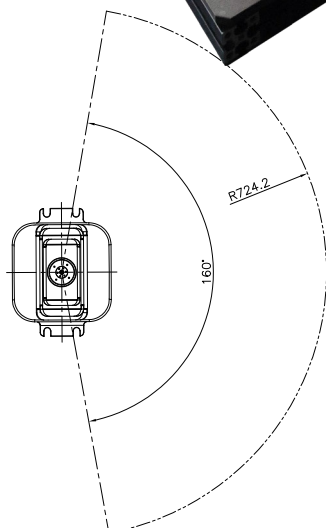
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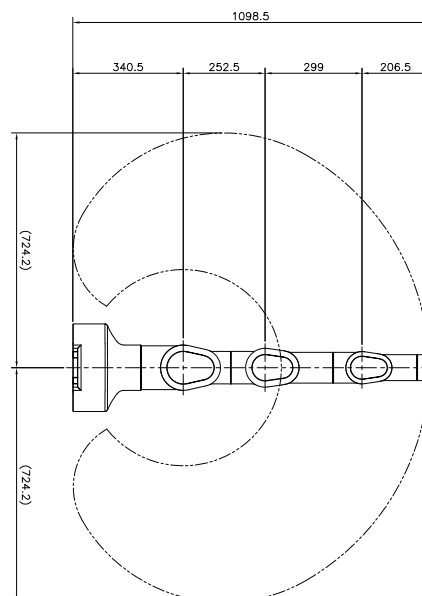


Product Overview

- ROBO 001 - 1kg payload
- **ROBO 003 - 3kg payload**
- ROBO 005 - 5kg payload
- ROBO 010 - 10kg payload
- ROBO 015 - 15kg payload



MODEL		ROBO 003
Max Payload(Kg)		3
Motion Range (°)	Arm rotation (JT 1)	±170
	Arm out-in (JT 2)	-80 ~ +135
	Arm up-down (JT 3)	+118 ~ -170
	Wrist swivel (JT 4)	±270
	Wrist band (JT 5)	±145
	Wrist twist (JT 6)	±360
Max Speed (°/s)	Arm rotation (JT 1)	160
	Arm out-in (JT 2)	160
	Arm up-down (JT 3)	170
	Wrist swivel (JT 4)	340
	Wrist band (JT 5)	340
	Wrist twist (JT 6)	450
Moment (N.M)	Wrist swivel (JT 4)	7.2
	Wrist band (JT 5)	7.2
	Wrist twist (JT 6)	5.2
Moment of Inertia (Kg.M²)	Wrist swivel (JT 4)	0.3
	Wrist band (JT 5)	0.3
	Wrist twist (JT 6)	0.3
Moment of Inertia(Kg.M²)		0.05
Max Reach(mm)		540
Max Speed(mm/s)		3,100
Mass		26
Body Color		Ivory/Dark Navy
Installation		Floor
Environmental	Temperature(°C)	0~40
Condition	Humidity(%)	35~85 (No dew nor frost allowed)
Power Requirement(KVA)		1.5
Degree of Protection		Wrist IP 60 Base axis IP54
Machine Controller		SNS003Series



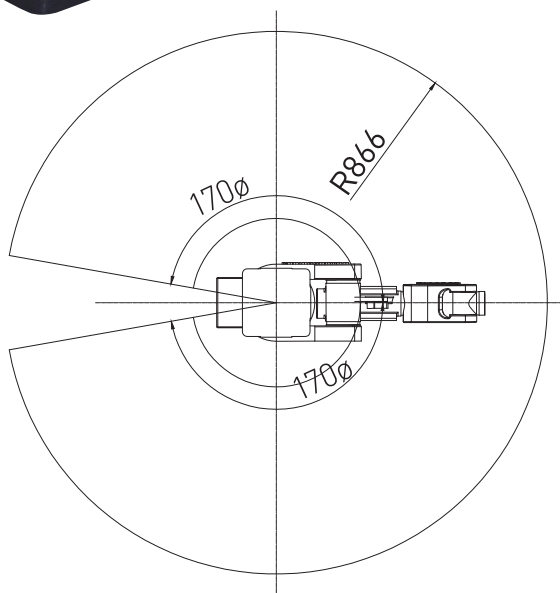
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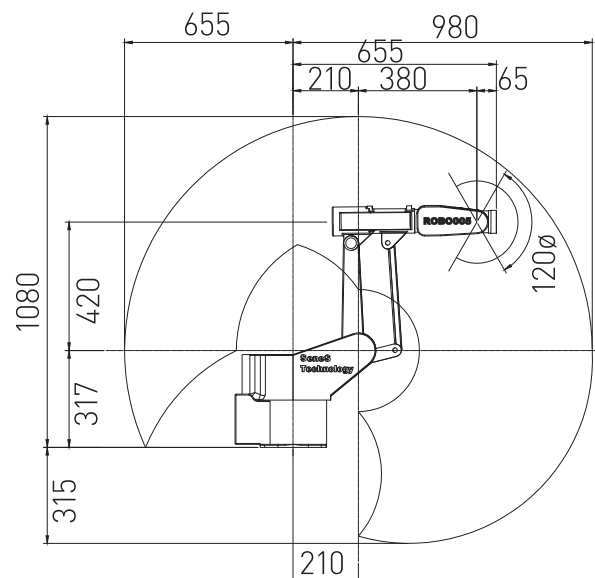


Product Overview

- ROBO 001 - 1kg payload
- ROBO 003 - 3kg payload
- **ROBO 005 - 5kg payload**
- ROBO 010 - 10kg payload
- ROBO 015 - 15kg payload



MODEL		ROBO 005
Max Payload(Kg)		5
Motion Range (°)	Arm rotation (JT 1)	±170
	Arm out-in (JT 2)	-80 ~ +135
	Arm up-down (JT 3)	+118 ~ -170
	Wrist swivel (JT 4)	±270
	Wrist band (JT 5)	±145
	Wrist twist (JT 6)	±360
Max Speed (°/s)	Arm rotation (JT 1)	160
	Arm out-in (JT 2)	160
	Arm up-down (JT 3)	170
	Wrist swivel (JT 4)	340
	Wrist band (JT 5)	340
	Wrist twist (JT 6)	450
Moment (N.M)	Wrist swivel (JT 4)	12.3
	Wrist band (JT 5)	12.3
	Wrist twist (JT 6)	7
Moment of Inertia (Kg.M²)	Wrist swivel (JT 4)	0.4
	Wrist band (JT 5)	0.4
	Wrist twist (JT 6)	0.12
Moment of Inertia(Kg.M²)		0.05
Max Reach(mm)		980
Max Speed(mm/s)		3,100
Mass		37
Body Color		Ivory/Dark Navy
Installation		Floor
Environmental	Temperature(°C)	0~40
Condition	Humidity(%)	35~85 (No dew nor frost allowed)
Power Requirement(KVA)		1.5
Degree of Protection		Wrist IP 60 Base axis IP54
Machine Controller		SNS005Series



SENESES ROBO SERIES

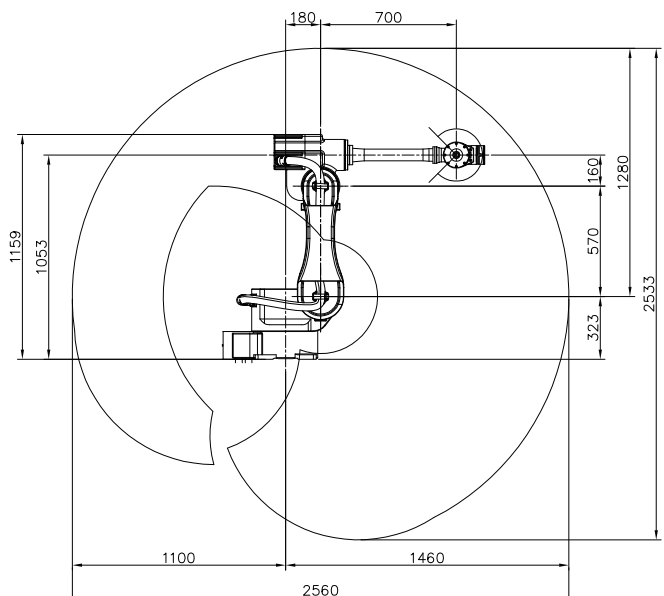
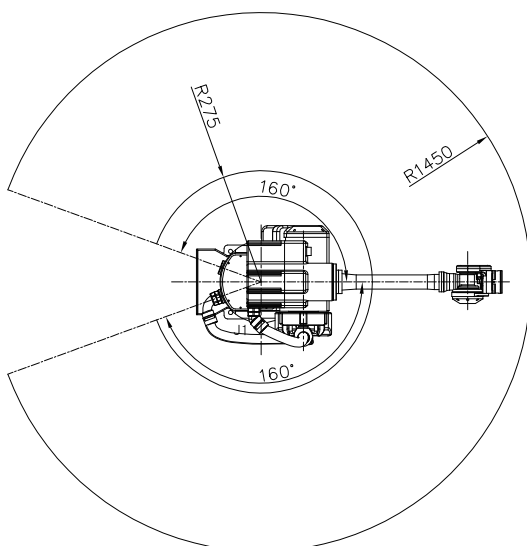
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Product Overview

- ROBO 001 - 1kg payload
- ROBO 003 - 3kg payload
- ROBO 005 - 5kg payload
- **ROBO 010 - 10kg payload**
- ROBO 015 - 15kg payload

MODEL		ROBO 010
Max Payload(Kg)		10
Motion Range (°)	Arm rotation (JT 1)	±170
	Arm out-in (JT 2)	-90 ~ +145
	Arm up-down (JT 3)	+150 ~ -163
	Wrist swivel (JT 4)	±270
	Wrist band (JT 5)	±145
	Wrist twist (JT 6)	±360
Max Speed (°/s)	Arm rotation (JT 1)	120
	Arm out-in (JT 2)	120
	Arm up-down (JT 3)	215
	Wrist swivel (JT 4)	365
	Wrist band (JT 5)	380
	Wrist twist (JT 6)	480
Moment (N.M)	Wrist swivel (JT 4)	13
	Wrist band (JT 5)	13
	Wrist twist (JT 6)	7.5
Moment of Inertia (Kg.M ²)	Wrist swivel (JT 4)	0.45
	Wrist band (JT 5)	0.45
	Wrist twist (JT 6)	0.14
Moment of Inertia(Kg.M ²)		0.1
Max Reach(mm)		1,450
Max Speed(mm/s)		4,100
Mass		110
Body Color		Ivory/Dark Navy
Installation		Floor
Environmental	Temperature(°C)	0~40
Condition	Humidity(%)	35~85 (No dew nor frost allowed)
Power Requirement(KVA)		2
Degree of Protection		Wrist IP 60 Base axis IP54
Machine Controller		SNS010Series



SENESES ROBO SERIES

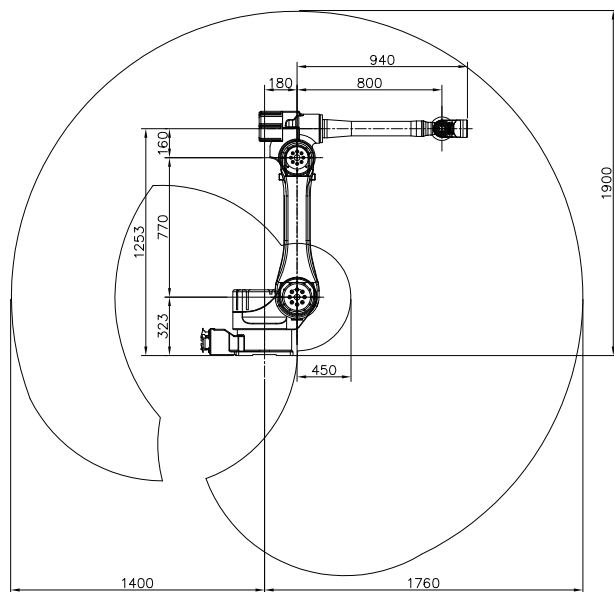
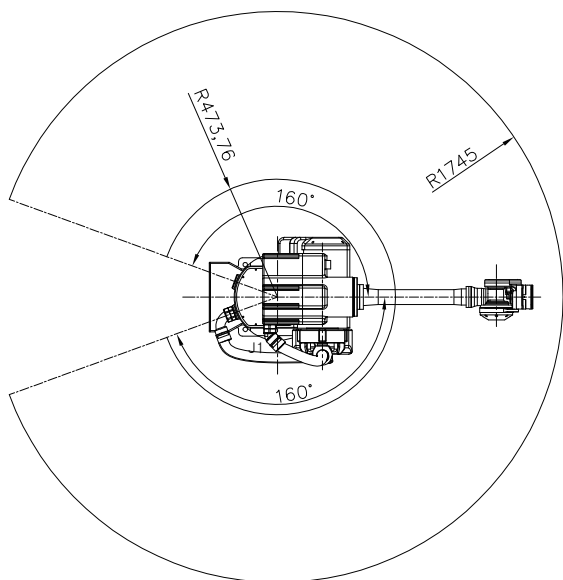
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Product Overview

- ROBO 001 - 1kg payload
- ROBO 003 - 3kg payload
- ROBO 005 - 5kg payload
- ROBO 010 - 10kg payload
- **ROBO 015 - 15kg payload**

MODEL		ROBO 015
Max Payload(Kg)		15
Motion Range (°)	Arm rotation (JT 1)	±170
	Arm out-in (JT 2)	-90 ~ +155
	Arm up-down (JT 3)	+150 ~ -163
	Wrist swivel (JT 4)	±270
	Wrist band (JT 5)	±145
	Wrist twist (JT 6)	±360
Max Speed (°/s)	Arm rotation (JT 1)	120
	Arm out-in (JT 2)	120
	Arm up-down (JT 3)	215
	Wrist swivel (JT 4)	365
	Wrist band (JT 5)	380
	Wrist twist (JT 6)	480
Moment (N.M)	Wrist swivel (JT 4)	13
	Wrist band (JT 5)	13
	Wrist twist (JT 6)	7.5
Moment of Inertia (Kg.M ²)	Wrist swivel (JT 4)	0.45
	Wrist band (JT 5)	0.45
	Wrist twist (JT 6)	0.14
Moment of Inertia(Kg.M ²)		0.2
Max Reach(mm)		1,745
Max Speed(mm/s)		4,600
Mass		175
Body Color		Ivory/Dark Navy
Installation		Floor
Environmental	Temperature(°C)	0~40
Condition	Humidity(%)	35~85 (No dew nor frost allowed)
Power Requirement(KVA)		3
Degree of Protection		Wrist IP 60 Base axis IP54
Machine Controller		SNS015Series



ZERO BACK DRIVE

High Power & Extreme Precision



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CS SERIES

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CSD		
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ZERO BACK DRIVE

High Power & Extreme Precision



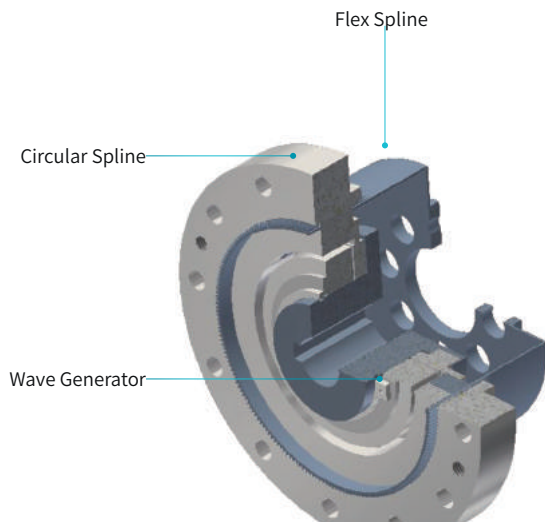
Product Overview

- CSA(G) Component Type
- CSA(G) Unit Type
- CSD Type
- SHA(G) Component Type
- SHA(G) Unit Type

Metal's elastic dynamics applied Zero Back Drive.

Consists of just 3 of parts as Wave generator, Flex spline & Circular Spline

금속의 굴곡과 탄성 역학을 응용한 제로백 드라이브는 웨이브 제너레이터, 플렉스 스플라인 그리고 써클러 스플라인, 3개의 기본 부품으로 구성됩니다.



Structure of CSA component type
/CSA컴포넌트 타입의 구조

CS 시리즈의 특징

- 컴팩트, 심플한 디자인
- 고토크 용량
- 고강성
- 우수한 위치 결정도와 회전정도
- 입출력 축이 동축상
- 폭넓은 감속비
- 소형화

Feature of CS Series

- Compact and Simple design
- High Torque
- High Stiffness
- Excellence Positioning and Accuracies
- Coaxial Input and Output



SZB-CSA-XX-XXX-2UH 조립도

ZERO BACK DRIVE

형식/기호

SZB - CSA - 25 - 100 - 2A - 사양1/SP1

제로백 드라이브
/Zero Back Drive

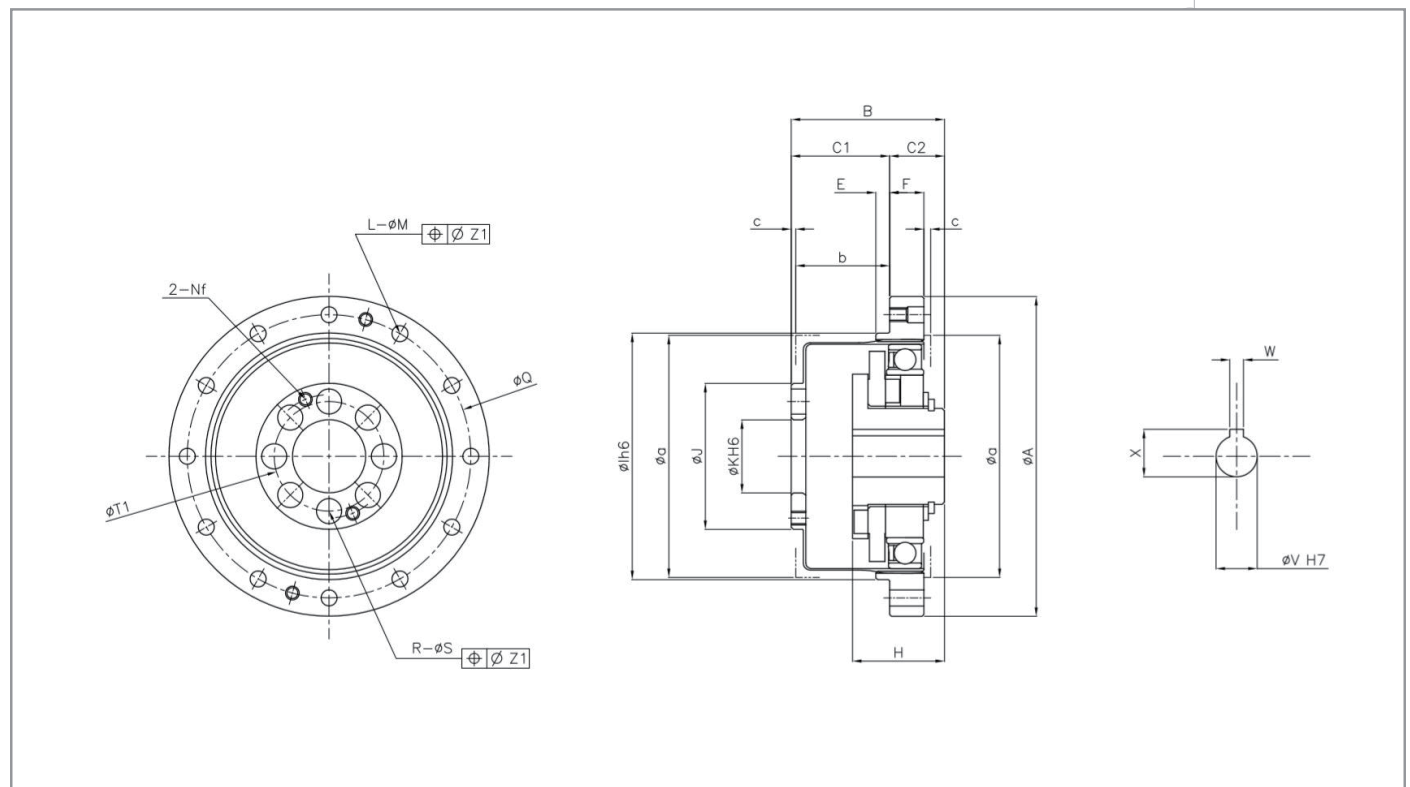
기호명/Model name	형번/Model No	감속비/Reduction ratio					형식/Modle	특수사양/Special Speciafitcion
CSA CSAG	14	50	80	100	-	-	2A : Component 2UH : Unit	Non Record: Standard
	17	50	80	100	120	-		
	20	50	80	100	120	160		
	25	50	80	100	120	160		
	32	50	80	100	120	160		
	40	50	80	100	120	160		
	45	50	80	100	120	160		
CSD	14	50	-	100	-	-	2A : Component	Non Record: Standard
	17	50	-	100	-	-		
	20	50	-	100	-	160		
	25	50	-	100	-	160		
	32	50	-	100	-	160		
	40	50	-	100	-	160		

주1/Reduce ration: Input=wave generation, Fix=circular spline, output=flex spline

ZERO BACK DRIVE

Component Type
외형도 Drawing

SZB-CSA-XX-XXX-2A



ZERO BACK DRIVE

Component Type

규격 Dimension

기호 Symbol		형번 Model	14	17	20	25	32	40	45
ØAh6			50	60	70	85	110	135	155
B	CSAG		28.5 ⁰ _{-0.4}	32.5 ⁰ _{-0.4}	33.5 ⁰ _{-0.4}	37 ⁰ _{-0.5}	44 ⁰ _{-0.6}	53 ⁰ _{-0.6}	59 ⁰ _{-0.6}
	CSA		28.5 ⁰ _{-0.8}	32.5 ⁰ _{-0.9}	33.5 ⁰ ₋₁	37 ⁰ ₋₁	44 ⁰ _{-1.1}	53 ⁰ _{-1.1}	59 ⁰ _{-1.2}
C1			17.5 ^{+0.4} ₀	20 ^{+0.5} ₀	21.5 ^{+0.6} ₀	24 ^{+0.6} ₀	28 ^{+0.6} ₀	34 ^{+0.6} ₀	38 ^{+0.6} ₀
C2			11	12.5	12	13	16	19	20.5
E			2	2.5	3	3	3	4	4
F			6	6.5	7.5	10	14	17	19
H	CSAG		18.5	20.7	21.5	21.6	23.6	29.7	30.5
	CSAG		17.6	19.5	20.1	20.2	22	27.5	27.9
Ølh6			38	48	54	67	90	110	124
J			23	27.2	32	40	52	64	72
ØKH6			11	10	16	20	26	32	36
L	CSAG		8	16	16	16	16	16	16
	CSA		6	12	12	12	12	12	12
ØM			3.5	3.4	3.5	4.5	5.5	6.6	9
Nf			M3	M3	M3	M4	M5	M6	M6
Q(PCD)			44	54	62	75	100	120	140
R			6	6	8	8	8	8	8
ØS			4.5	5.5	5.5	6.6	9	11	13.5
T1(PCD)			17	19	24	30	40	50	54
ØV	표준(H7)		6	8	9	11	14	14	19
	최대치수		8	10	13	15	15	20	20
W			-	-	3	4	5	5	6
X			-	-	10.4 ^{+0.1} ₀	12.8 ^{+0.1} ₀	16.3 ^{+0.1} ₀	16.3 ^{+0.1} ₀	21.8 ^{+0.1} ₀
Øa			38	45	53	66	86	106	119
b			17.1	19	20.5	23	26.8	33	36.5
c			1	1	1.5	1.5	1.5	2	2
f			M3*4	M3*6	-	-	-	-	-
Weight(Kg)			0.09	0.15	0.28	0.42	0.89	1.7	2.3

ZERO BACK DRIVE

Component Type 테크니컬 데이터 Technical Data

-CSA Component Type

모델 Model No.	감속비 /Reduction Ratio	입력2000r/min시의 정격토크 Nm /Rated torque at input 2000r/min		기동/정지시의 허용피크토크 Nm /Permissible peak torque at start/stop		평균 부하 토크의 최대 허용치 Nm /Permissible max value of ave. load torque		순간 허용 최대 토크 Nm /Instantaneous permissible max torque		허용 최고입력 회전속도 r/min /Permissible max input rotational speed(r/ min)	허용 평균입력 회전속도 r/min Permissible average input rotational speed(r/ min)	관성 모멘트 /Inertia moment I/1000Kgm ²
		Nm	kgfm	Nm	kgfm	Nm	kgfm	Nm	kgfm	그리스윤활	그리스윤활	
14	50	5.4	0.55	18	1.8	6.9	0.7	35	3.6	8500	3500	0.033
	80	7.8	0.8	23	2.4	11	1.1	47	4.8			
	100	7.8	0.8	28	2.9	11	1.1	54	5.5			
17	50	16	1.6	34	3.5	26	2.6	70	7.1	6500	3500	0.079
	80	22	2.2	43	4.4	27	2.7	87	8.9			
	100	24	2.4	54	5.5	39	4	108	11			
	120	24	2.4	54	5.5	39	4	86	8.8			
20	50	25	2.5	56	5.7	34	3.5	98	10	6500	3500	0.193
	80	34	3.5	74	7.5	47	4.8	127	13			
	100	40	4.1	82	8.4	49	5	147	15			
	120	40	4.1	87	8.9	49	5	147	15			
	160	40	4.1	92	9.4	49	5	147	15			
25	50	39	4	98	10	55	5.6	186	19	5600	3500	0.413
	80	63	6.4	137	14	87	8.9	255	26			
	100	67	6.8	157	16	108	11	284	29			
	120	67	6.8	167	17	108	11	304	31			
	160	67	6.8	176	18	108	11	314	32			
32	50	76	7.8	216	22	108	11	382	39	4800	3500	1.69
	80	118	12	304	31	167	17	568	58			
	100	137	14	333	34	216	22	647	66			
	120	137	14	353	36	216	22	686	70			
	160	137	14	372	38	216	22	686	70			
40	50	137	14	402	41	196	20	686	70	4000	3000	4.5
	80	206	21	519	53	284	29	980	100			
	100	265	27	568	58	372	38	1080	110			
	120	294	30	617	63	451	46	1180	120			
	160	294	30	647	66	451	46	1180	120			
45	50	176	18	500	51	265	27	950	97	3800	3000	8.68
	80	313	32	706	72	390	40	1270	130			
	100	353	36	755	77	500	51	1570	160			
	120	402	41	823	84	620	63	1760	180			
	160	402	41	882	90	630	64	1910	195			

ZERO BACK DRIVE

Component Type 테크니컬 데이터 Technical Data

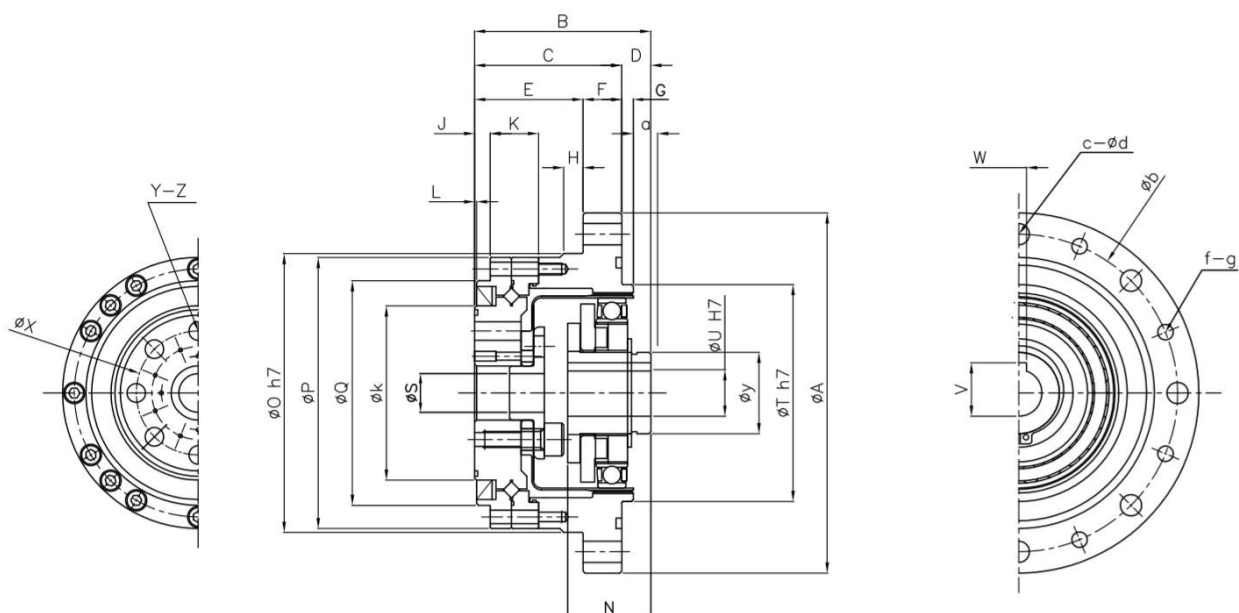
-CSAG Component Type

모델 Model No.	감속비 /Reduction Ratio	입력 2000r/min시의 정격토크 Nm /Rated torque at input 2000r/min		기동/정지시의 허용피크토크 Nm /Permissible peak torque at start/stop		평균 부하 토크의 최대 허용치 Nm /Permissible max value of ave. load torque		순간 허용 최대 토크 Nm /Instantaneous permissible max torque		허용 최고 입력 회전 속도r/min /Permissible max input rotational speed(r/ min)	허용 최고 평균 회전 속도r/min Permissible average input rotational speed(r/ min)	관성 모멘트 /Inertia moment I/1000Kgm ²
		Nm	kgfm	Nm	kgfm	Nm	kgfm	Nm	kgfm	그리스윤활	그리스윤활	
14	50	7	0.7	23	2.3	9	0.9	46	4.7	8500	3500	0.033
	80	10	1	30	3.1	14	1.4	61	6.2			
	100	10	1	36	3.7	14	1.4	70	7.2			
17	50	21	2.1	44	4.5	34	3.4	91	9	7300	3500	0.079
	80	29	2.9	56	5.7	35	3.6	113	12			
	100	31	3.2	70	7.2	51	5.2	143	15			
	120	31	3.2	70	7.2	51	5.2	112	11			
20	50	33	3.3	73	7.4	44	4.5	127	13	6500	3500	0.193
	80	44	4.5	96	9.8	61	6.2	165	17			
	100	52	5.3	107	10.9	64	6.5	191	20			
	120	52	5.3	113	11.5	64	6.5	191	20			
	160	52	5.3	120	12.2	64	6.5	191	20			
25	50	51	5.2	127	13	72	7.3	242	25	5600	3500	0.413
	80	82	8.4	178	18	113	12	332	34			
	100	87	8.9	204	21	140	14	369	38			
	120	87	8.9	217	22	140	14	395	40			
	160	87	8.9	229	23	140	14	408	42			
32	50	99	10	281	29	140	14	497	51	4800	3500	1.69
	80	153	16	395	40	217	22	738	75			
	100	178	18	433	44	281	29	841	86			
	120	178	18	459	47	281	29	892	91			
	160	178	18	484	49	281	29	892	91			
40	50	178	18	523	53	255	26	892	91	4000	3000	4.5
	80	268	27	675	69	369	38	1270	130			
	100	345	35	738	75	484	49	1400	143			
	120	382	39	802	82	586	60	1530	156			
	160	382	39	841	86	586	60	1530	156			
45	50	229	23	650	66	345	35	1235	126	3800	3000	8.68
	80	407	41	918	94	507	52	1651	168			
	100	459	47	982	100	650	66	2041	208			
	120	523	53	1070	109	806	82	2288	233			
	160	523	53	1147	117	819	84	2483	253			

ZERO BACK DRIVE

Unit Type
외형도 Drawing

SZB-CSA-XX-XXX-2UH



ZERO BACK DRIVE

Unit Type
규격 Dimension

기호 Symbol		형번 Model	14	17	20	25	32	40	45
ØA			73	79	93	107	138	160	180
B			41 ⁰ _{-0.9}	45 ⁰ _{-0.9}	45.5 ⁰ ₋₁	52 ⁰ ₋₁	62 ⁰ _{-1.1}	72.5 ⁰ _{-1.1}	79.5 ⁰ _{-1.2}
C			34	37	38	46	57	66.5	74
D	CSAG		7 ⁰ _{-0.4}	8 ⁰ _{-0.4}	7.5 ⁰ _{-0.5}	6 ⁰ _{-0.5}	5 ⁰ _{-0.6}	6 ⁰ _{-0.6}	5.5 ⁰ _{-0.6}
	CSA		7 ⁰ _{-0.8}	8 ⁰ _{-0.9}	7.5 ⁰ ₋₁	6 ⁰ ₋₁	5 ⁰ _{-1.1}	6 ⁰ _{-1.1}	5.5 ⁰ _{-1.2}
E			27	29	28	36	45	50.5	58
F			7	8	10	10	12	16	16
G			2	2	3	3	3	4	4
H			3.5	4	5	5	5	5	6
L	CSAG		0.5	0.5	0.5	0.5	1	1.5	1
	CSA		0.5	1.1	1.1	1.1	1.2	1.6	1.6
N	CSAG		18.5	20.7	21.5	21.6	23.6	29.7	30.5
	CSA		17.6	19.5	20.1	20.2	22	27.5	27.9
ØO h7			56	63	72	86	113	127	148
ØP	CSAG		56	62	70	85	112	123	147
	CSA		55	62	70	85	112	123	147
ØQ			42.5	49.5	58	73	96	109	127
ØS			8	7	10	15	20	24	25
ØT h7			38	48	56	67	90	110	124
ØU H7			6	8	12	14	14	14	19
V			-	-	13.8 ^{+0.1} ₀	16.3 ^{+0.1} ₀	16.3 ^{+0.1} ₀	16.3 ^{+0.1} ₀	21.8 ^{+0.1} ₀
W Js9			-	-	4	5	5	5	6
ØX			23	27	32	42	55	68	82
Y			6	6	8	8	8	8	8
Z			M4X8	M5X10	M6X9	M8X12	M10X15	M10X15	M12X18
a			1	1	1.5	1.5	1.5	2	2
Øb			65	71	82	96	125	144	164
C	CSAG		8	8	8	10	12	10	12
	CSA		6	6	6	8	12	8	12
Ød			4.5	4.5	5.5	5.5	6.6	9	9
f	CSAG		8	8	8	10	12	10	12
	CSA		6	6	6	8	12	8	12
g			M4	M4	M5	M5	M6	M8	M8
Øy			14	18	21	26	26	32	32
Weight(Kg)			0.52	0.68	0.98	1.5	3.2	5	7

ZERO BACK DRIVE

Unit Type

테크니컬 데이터 Technical Data

-CSA Unit Type

모델 Model No.	감속비 /Reduction Ratio	입력 2000r/min시의 정격토크 Nm /Rated torque at input 2000r/min		기동/정지시의 정격 토크 Nm /Permissible peak torque at start/stop		평균 부하 토크의 최대 허용치 Nm /Permissible max value of ave. load torque		순간 허용 최대 토크 Nm /Instantaneous permissible max torque		허용 최고 입력 회전 속도r/min /Permissible max input rotational speed(r/ min)	허용 최고 평균 회전 속도r/min Permissible average input rotational speed(r/ min)	관성 모멘트 /Inertia moment I/1000Kgm ²
		Nm	kgfm	Nm	kgfm	Nm	kgfm	Nm	kgfm	그리스유타	그리스유타	
14	50	5.4	0.55	18	1.8	6.9	0.7	35	3.6	8500	3500	0.033
	80	7.8	0.8	23	2.4	11	1.1	47	4.8			
	100	7.8	0.8	28	2.9	11	1.1	54	5.5			
17	50	16	1.6	34	3.5	26	2.6	70	7.1	6500	3500	0.079
	80	22	2.2	43	4.4	27	2.7	87	8.9			
	100	24	2.4	54	5.5	39	4	108	11			
	120	24	2.4	54	5.5	39	4	86	8.8			
20	50	25	2.5	56	5.7	34	3.5	98	10	6500	3500	0.193
	80	34	3.5	74	7.5	47	4.8	127	13			
	100	40	4.1	82	8.4	49	5	147	15			
	120	40	4.1	87	8.9	49	5	147	15			
	160	40	4.1	92	9.4	49	5	147	15			
25	50	39	4	98	10	55	5.6	186	19	5600	3500	0.413
	80	63	6.4	137	14	87	8.9	255	26			
	100	67	6.8	157	16	108	11	284	29			
	120	67	6.8	167	17	108	11	304	31			
	160	67	6.8	176	18	108	11	314	32			
32	50	76	7.8	216	22	108	11	382	39	4800	3500	1.69
	80	118	12	304	31	167	17	568	58			
	100	137	14	333	34	216	22	647	66			
	120	137	14	353	36	216	22	686	70			
	160	137	14	372	38	216	22	686	70			
40	50	137	14	402	41	196	20	686	70	4000	3000	4.5
	80	206	21	519	53	284	29	980	100			
	100	265	27	568	58	372	38	1080	110			
	120	294	30	617	63	451	46	1180	120			
	160	294	30	647	66	451	46	1180	120			
45	50	176	18	500	51	265	27	950	97	3800	3000	8.68
	80	313	32	706	72	390	40	1270	130			
	100	353	36	755	77	500	51	1570	160			
	120	402	41	823	84	620	63	1760	180			
	160	402	41	882	90	630	64	1910	195			

ZERO BACK DRIVE

Unit Type

테크니컬 데이터 Technical Data

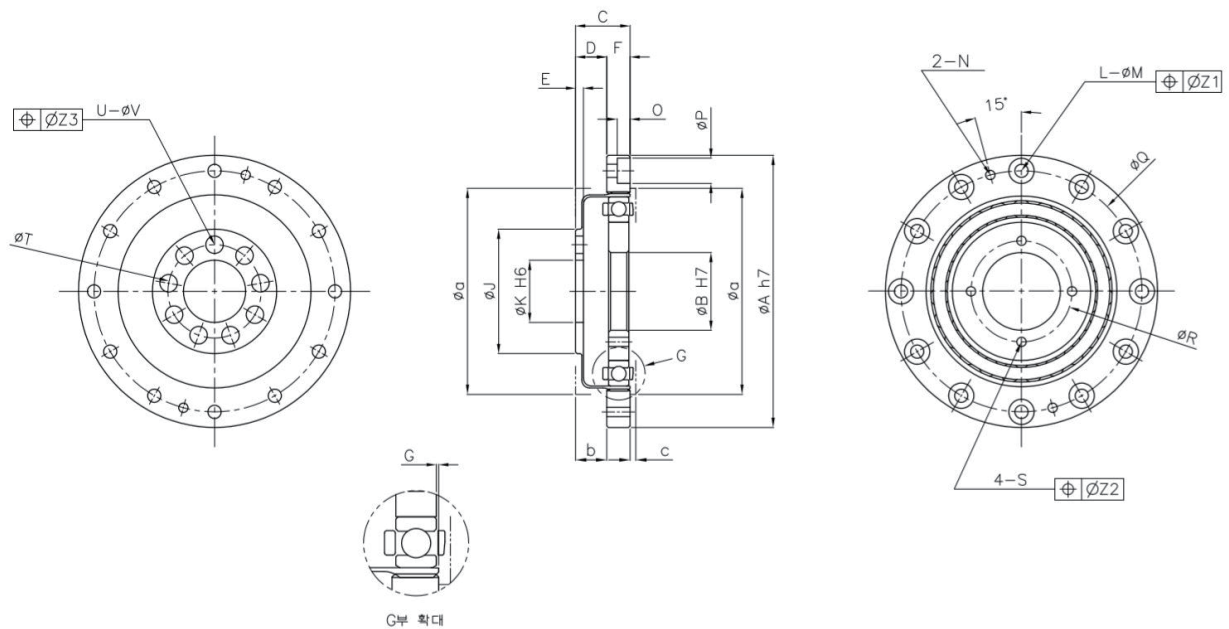
-CSAG Unit Type

모델 Model No.	감속비 /Reduction Ratio	입력 2000r/min시의 정격토크 Nm /Rated torque at input 2000r/min		기동/정지시의 정격 토크 Nm /Permissible peak torque at start/stop		평균 부하 토크의 최대 허용치 Nm /Permissible max value of ave. load torque		순간 허용 최대 토크 Nm /Instantaneous permissible max torque		허용 최고 입력 회전 속도r/min /Permissible max input rotational speed(r/ min)	허용 최고 평균 회전 속도r/min Permissible average input rotational speed(r/ min)	관성 모멘트 /Inertia moment I/1000Kgm ²
		Nm	kgfm	Nm	kgfm	Nm	kgfm	Nm	kgfm	그리스윤활	그리스윤활	
14	50	7	0.7	23	2.3	9	0.9	46	4.7	8500	3500	0.033
	80	10	1	30	3.1	14	1.4	61	6.2			
	100	10	1	36	3.7	14	1.4	70	7.2			
17	50	21	2.1	44	4.5	34	3.4	91	9	7300	3500	0.079
	80	29	2.9	56	5.7	35	3.6	113	12			
	100	31	3.2	70	7.2	51	5.2	143	15			
	120	31	3.2	70	7.2	51	5.2	112	11			
20	50	33	3.3	73	7.4	44	4.5	127	13	6500	3500	0.193
	80	44	4.5	96	9.8	61	6.2	165	17			
	100	52	5.3	107	10.9	64	6.5	191	20			
	120	52	5.3	113	11.5	64	6.5	191	20			
	160	52	5.3	120	12.2	64	6.5	191	20			
25	50	51	5.2	127	13	72	7.3	242	25	5600	3500	0.413
	80	82	8.4	178	18	113	12	332	34			
	100	87	8.9	204	21	140	14	369	38			
	120	87	8.9	217	22	140	14	395	40			
	160	87	8.9	229	23	140	14	408	42			
32	50	99	10	281	29	140	14	497	51	4800	3500	1.69
	80	153	16	395	40	217	22	738	75			
	100	178	18	433	44	281	29	841	86			
	120	178	18	459	47	281	29	892	91			
	160	178	18	484	49	281	29	892	91			
40	50	178	18	523	53	255	26	892	91	4000	3000	4.5
	80	268	27	675	69	369	38	1270	130			
	100	345	35	738	75	484	49	1400	143			
	120	382	39	802	82	586	60	1530	156			
	160	382	39	841	86	586	60	1530	156			
45	50	229	23	650	66	345	35	1235	126	3800	3000	8.68
	80	407	41	918	94	507	52	1651	168			
	100	459	47	982	100	650	66	2041	208			
	120	523	53	1070	109	806	82	2288	233			
	160	523	53	1147	117	819	84	2483	253			

ZERO BACK DRIVE

CSD Component Type 외형도 Drawing

SZB-CSD-XX-XXX-2A



ZERO BACK DRIVE

CSD Component Type 규격 Dimension

기호 Symbol		형번 Model	14	17	20	25	32	40
ØAh7			50 ⁰ _{-0.025}	60 ⁰ _{-0.030}	70 ⁰ _{-0.030}	85 ⁰ _{-0.035}	110 ⁰ _{-0.035}	135 ⁰ _{-0.040}
ØBH7			11 ^{+0.018} ₀	15 ^{+0.018} ₀	20 ^{+0.021} ₀	24 ^{+0.021} ₀	32 ^{+0.025} ₀	40 ^{+0.025} ₀
C			11	12.5	14	17	22	27
D			6.5 +0.2	7.5 +0.2	8 +0.3	10 +0.3	13 +0.3	16 +0.3
E			1.4	1.7	2	2	2.5	3
F			4.5	5	6	7	9	11
G			0.3 ^{+0.2} ₀	0.3 ^{+0.2} ₀	0.3 ^{+0.2} ₀	0.4 ^{+0.2} ₀	0.5 ^{+0.2} ₀	0.6 ^{+0.2} ₀
H			4 ⁰ _{-0.1}	5 ⁰ _{-0.1}	5.2 ⁰ _{-0.1}	6.3 ⁰ _{-0.1}	8.6 ⁰ _{-0.1}	10.3 ⁰ _{-0.1}
ØJ			23	27.2	32	40	52	64
ØK H6			11 ^{+0.011} ₀	11 ^{+0.011} ₀	16 ^{+0.011} ₀	20 ^{+0.013} ₀	30 ^{+0.013} ₀	32 ^{+0.016} ₀
L			6	8	12	12	12	12
ØM			3.4	3.4	3.4	3.4	4.5	5.5
N			M3	M3	M3	M3	M4	M5
ØP			-	-	6.5	6.5	8	9.5
ØQ			44	54	62	75	100	120
ØR			17	21	26	30	40	50
S			M3	M3	M3	M3	M4	M5
ØT(PCD)			17	19.5	24	30	41	48
U			9	8	9	9	11	10
ØV			3.4	4.5	4.5	5.5	6.6	9
하우스 내벽	Øa		38	45	53	66	86	106
	b		6.5	7.5	8	10	13	16
	c		1	1	1.5	1.5	2	2.5
Weight(Kg)			0.06	0.1	0.13	0.24	0.51	0.92

ZERO BACK DRIVE

CSD Component Type 테크니컬 데이터 Technical Data

-CSD Component Type

모델 Model No.	감속비 /Reduction Ratio	입력 2000r/min시의 정격토크 Nm /Rated torque at input 2000r/min		기동/정지시의 정격 토크 Nm /Permissible peak torque at start/stop		평균 부하 토크의 최대 허용치 Nm /Permissible max value of ave. load torque		순간 허용 최대 토크 Nm /Instantaneous permissible max torque		허용 최고 입력 회전 속도r/min /Permissible max input rotational speed(r/ min)	허용 최고 평균 회전 속도r/min Permissible average input rotational speed(r/ min)	관성 모멘트 /Inertia moment I/1000Kgm ²
		Nm	kgfm	Nm	kgfm	Nm	kgfm	Nm	kgfm	그리스유효	그리스유효	
14	50	3.7	0.38	12	1.2	4.8	0.49	24	2.4	8500	3500	0.021
	100	5.4	0.55	19	1.9	7.7	0.79	31	3.2			
17	50	11	1.1	23	2.3	18	1.9	48	4.9	7300	3500	0.054
	100	16	1.6	37	3.8	27	2.8	55	5.6			
20	50	17	1.7	39	4	24	2.4	69	7.7	6500	3500	0.09
	100	28	2.9	57	5.8	34	3.5	65	6.6			
	160	28	2.9	64	6.5	34	3.5	65	6.6			
25	50	27	2.8	69	7	38	3.9	127	13	5600	3500	0.282
	100	47	4.8	110	11	75	7.6	135	14			
	160	47	4.8	123	13	75	7.6	135	14			
32	50	53	5.4	151	15	75	7.6	268	27	4800	3500	1.09
	100	96	10	233	24	151	15	331	34			
	160	96	10	261	27	151	15	331	34			
40	50	96	10	281	29	137	14	480	49	4000	3000	2.85
	100	185	19	398	41	260	27	580	59			
	160	206	21	453	46	316	32	580	59			

ZERO BACK DRIVE

CS Series 테크니컬 데이터 Technical Data

- Backlash

감속비 Ratio	형번 Model	14	17	20	25	32	40	45
50		2	2	2	2	2	2	2
80		2	2	2	2	2	2	2
100		2	2	2	2	2	2	2
120		-	-	2	2	2	2	2
160		-	-	-	2	2	2	2

Arc min

- Start Torque

감속비 Ratio	형번 Model	14	17	20	25	32	40	45
50		4.1	6.3	8.2	15	32.5	57.5	78.7
80		3	4.1	5.1	9.6	18.7	36.2	51
100		2.6	3.6	4.6	7.5	18.7	32.5	45
120		-	-	4.1	7.8	16.2	30	41.2
160		-	-	-	6.8	15	26.2	36.2

cNm

- Increase Start Torque

감속비 Ratio	형번 Model	14	17	20	25	32	40	45
50		1.8	3.3	5.2	9.9	20	36	52
80		1.8	3.3	5.3	10	21	36	53
100		2	3.6	5.6	11	22	40	56
120		-	-	6.1	12	24	43	61
160		-	-	-	14	29	51	70

Nm

ZERO BACK DRIVE

High Power & Extreme Precision



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ZERO BACK DRIVE

High Power & Extreme Precision



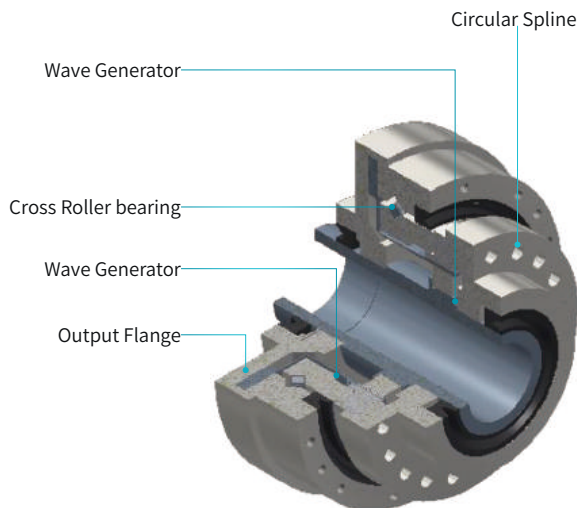
Product Overview

- CSA(G) Component Type
- CSA(G) Unit Type
- CSD Type
- SHA(G) Component Type
- SHA(G) Unit Type

Metal's elastic dynamics applied Zero Back Drive.

Consists of just 3 of parts as Wave generator, Flex spline & Circular Spline

금속의 굴곡과 탄성 역학을 응용한 제로백 드라이브는 웨이브 제너레이터, 플렉스 스플라인 그리고 써클러 스플라인, 3개의 기본 부품으로 구성됩니다.



Structure of SHA Unit type
/SHA유닛 타입의 구조

SH 시리즈의 특징

- 컴팩트, 심플한 디자인
- 고토크 용량
- 고강성
- 우수한 위치 결정도와 회전정도
- 입출력 축이 동축상
- 폭넓은 감속비
- 소형화

Feature of SH Series

- Compact and Simple Design
- High Torque
- High Stiffness
- Excellence Positioning and Accuracies
- Coaxial Input and Output



SZB-SHA-XX-XXX-2UH 조립도

ZERO BACK DRIVE

형식/기호

SZB - SHA - 25 - 100 - 2A - 사양1/SP1

제로백 드라이브
/Zero Back Drive

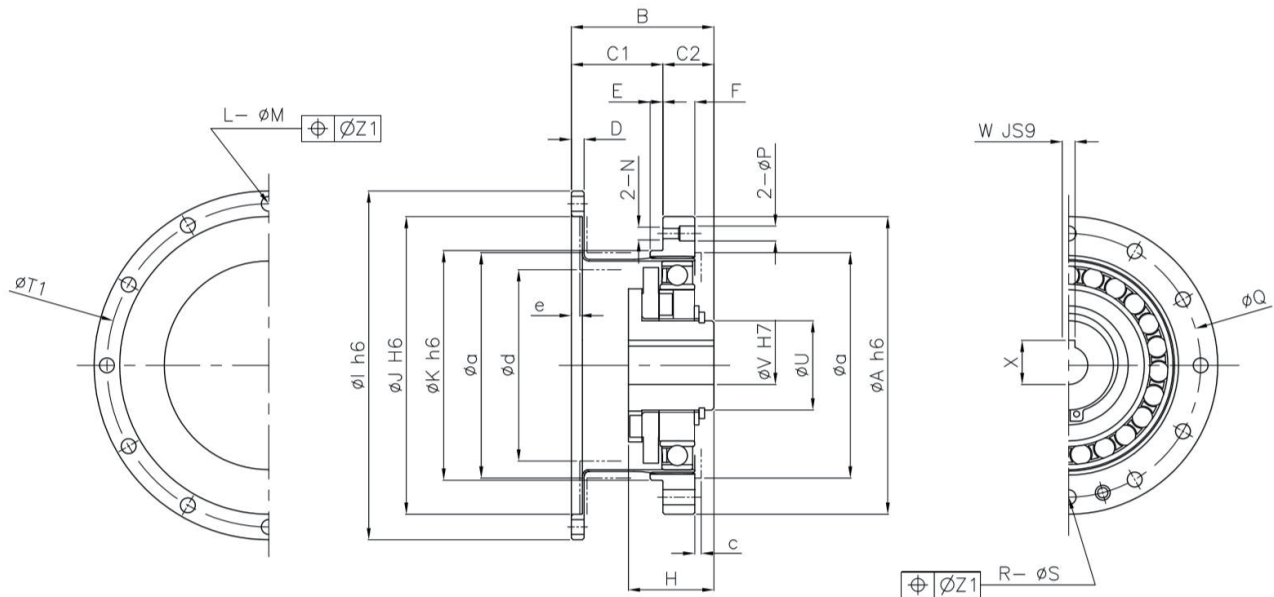
기호명/Model name	형번/Model No	감속비/Reduction ratio					형식/Modle	특수사양/Special Speciafitcion
SHA SHAG	14	50	80	100	-	-	2A : Component 2UH : Unit	Non Record: Standard
	17	50	80	100	120	-		
	20	50	80	100	120	160		
	25	50	80	100	120	160		
	32	50	80	100	120	160		
	40	50	80	100	120	160		
	45	50	80	100	120	160		

주1/Reduce ration: Input=wave generation, Fix=circular spline, output=flex spline

ZERO BACK DRIVE

Component Type
외형도 Drawing

SZB-SHA-XX-XXX-2A



ZERO BACK DRIVE

Component Type

규격 Dimension

기호 Symbol		형번 Model	14	17	20	25	32	40	45
ØAh6			50	60	70	85	110	135	155
B	SHAG		28.5 ⁰ _{-0.4}	32.5 ⁰ _{-0.4}	33.5 ⁰ _{-0.4}	37 ⁰ _{-0.5}	44 ⁰ _{-0.6}	53 ⁰ _{-0.6}	59 ⁰ _{-0.6}
	SHA		28.5 ⁰ _{-0.8}	32.5 ⁰ _{-0.9}	33.5 ⁰ ₋₁	37 ⁰ ₋₁	44 ⁰ _{-1.1}	53 ⁰ _{-1.1}	59 ⁰ _{-0.6}
C1			17.5 ^{+0.4} ₀	20 ^{+0.5} ₀	21.5 ^{+0.6} ₀	24 ^{+0.6} ₀	28 ^{+0.6} ₀	34 ^{+0.6} ₀	38 ^{+0.6} ₀
C2			11	12.5	12	13	16	19	20.5
E			2	2.5	3	3	3	4	4
F			6	6.5	7.5	10	14	17	19
H	SHAG		18.5	20.7	21.5	21.6	23.6	29.7	30.5
	SHA		17.6	19.5	20.1	20.2	22	27.5	27.9
ØI h6	SHAG		60	72	82	104	134	164	190
	SHA		60	72	82	104	134	164	190
ØJ h6			48	60	70	88	114	140	158
ØK h6			38	48	54	67	90	110	124
L			8	12	12	12	12	12	18
ØM			3.5	3.4	3.5	4.5	5.5	6.6	6.6
N			M3	M3	M3	M4	M5	M6	M8
ØP			-	-	3.5	4.5	5.5	6.6	9
ØQ			44	54	62	75	100	120	140
R	SHAG		8	16	16	16	16	16	16
	SHA		6	12	12	12	12	12	12
ØS			3.5	3.5	3.5	4.5	5.5	6.6	9
ØT1	SHAG		54	66	76	96	124	152	180
	SHA		54	66	76	96	124	152	180
ØU			14	18	21	26	26	32	32
ØV	표준(H7)		6	8	9	11	14	14	19
	최대치수		8	10	13	15	15	20	20
W Js9			-	-	3	4	5	5	6
X			-	-	10.4 ^{+0.1} ₀	12.8 ^{+0.1} ₀	16.3 ^{+0.1} ₀	16.3 ^{+0.1} ₀	21.8 ^{+0.1} ₀
하우스 내벽	Øa		38	45	53	66	86	106	119
	c		1	1	1.5	1.5	1.5	2	2
	Ød		31	38	45	56	73	90	101
	e		1.7	2.1	2	2	2	2	2.3
Weight(Kg)			0.11	0.18	0.31	0.48	0.97	1.87	2.64

ZERO BACK DRIVE

Component Type 테크니컬 데이터 Technical Data

-SHA Component Type

모델 Model No.	감속비 /Reduction Ratio	입력 2000r/min 시의 정격토크 /Rated torque at input 2000r/min		기동/정지시의 정격 토크 Nm /Permissible peak torque at start/stop		평균 부하 토크의 최대 허용치 Nm /Permissible max value of ave. load torque		순간 허용 최대 토크 Nm /Instantaneous permissible max torque		허용 최고 입력 회전 속도r/min /Permissible max input rotational speed(r/ min)	허용 최고 평균 회전 속도r/min Permissible average input rotational speed(r/ min)	관성 모멘트 /Inertia moment I/1000Kgm ²
		Nm	kgfm	Nm	kgfm	Nm	kgfm	Nm	kgfm	그리스윤활	그리스윤활	
14	50	5.4	0.55	18	1.8	6.9	0.7	35	3.6	8500	3500	0.033
	80	7.8	0.8	23	2.4	11	1.1	47	4.8			
	100	7.8	0.8	28	2.9	11	1.1	54	5.5			
17	50	16	1.6	34	3.5	26	2.6	70	7.1	6500	3500	0.079
	80	22	2.2	43	4.4	27	2.7	87	8.9			
	100	24	2.4	54	5.5	39	4	108	11			
	120	24	2.4	54	5.5	39	4	86	8.8			
20	50	25	2.5	56	5.7	34	3.5	98	10	6500	3500	0.193
	80	34	3.5	74	7.5	47	4.8	127	13			
	100	40	4.1	82	8.4	49	5	147	15			
	120	40	4.1	87	8.9	49	5	147	15			
	160	40	4.1	92	9.4	49	5	147	15			
25	50	39	4	98	10	55	5.6	186	19	5600	3500	0.413
	80	63	6.4	137	14	87	8.9	255	26			
	100	67	6.8	157	16	108	11	284	29			
	120	67	6.8	167	17	108	11	304	31			
	160	67	6.8	176	18	108	11	314	32			
32	50	76	7.8	216	22	108	11	382	39	4800	3500	1.69
	80	118	12	304	31	167	17	568	58			
	100	137	14	333	34	216	22	647	66			
	120	137	14	353	36	216	22	686	70			
	160	137	14	372	38	216	22	686	70			
40	50	137	14	402	41	196	20	686	70	4000	3000	4.5
	80	206	21	519	53	284	29	980	100			
	100	265	27	568	58	372	38	1080	110			
	120	294	30	617	63	451	46	1180	120			
	160	294	30	647	66	451	46	1180	120			
45	50	176	18	500	51	265	27	950	97	3800	3000	8.68
	80	313	32	706	72	390	40	1270	130			
	100	353	36	755	77	500	51	1570	160			
	120	402	41	823	84	620	63	1760	180			
	160	402	41	882	90	630	64	1910	195			

ZERO BACK DRIVE

Component Type 테크니컬 데이터 Technical Data

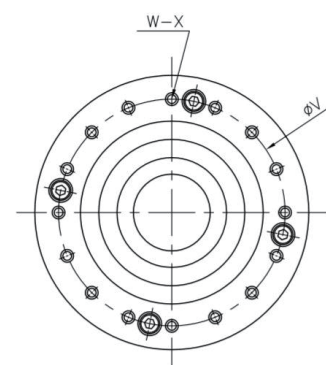
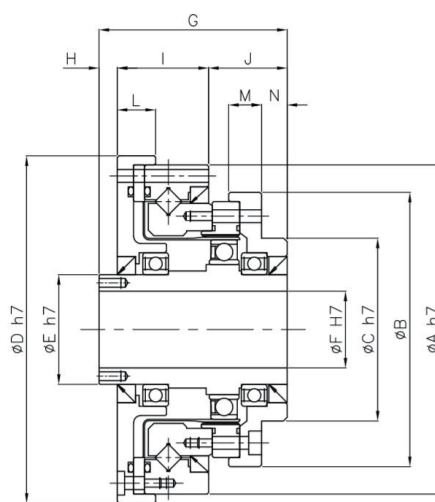
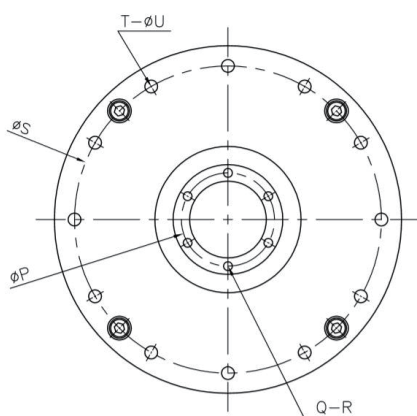
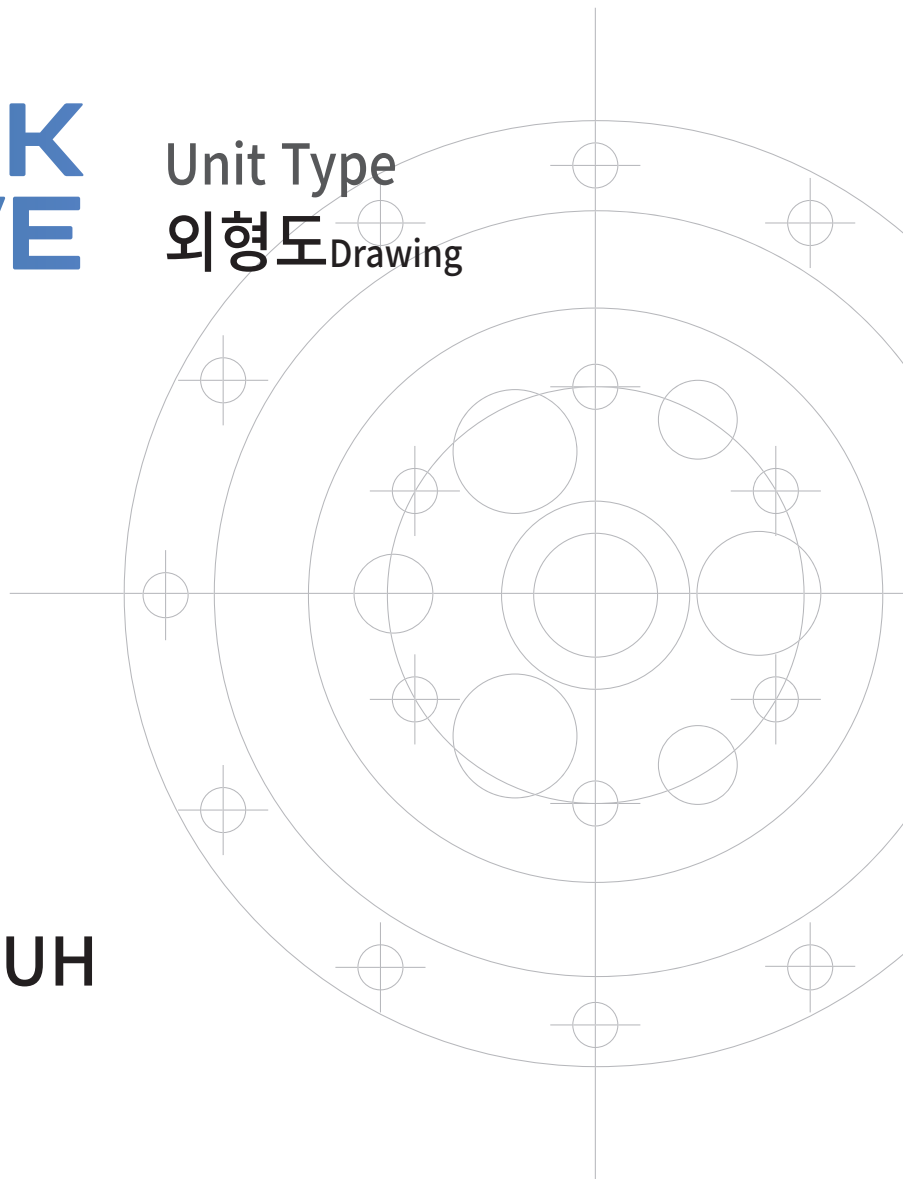
-SHAG Component Type

모델 Model No.	감속비 /Reduction Ratio	입력 2000r/min 시의 정격토크 /Rated torque at input 2000r/min		기동/정지시의 정격 토크 Nm /Permissible peak torque at start/stop		평균 부하 토크의 최대 허용치 Nm /Permissible max value of ave. load torque		순간 허용 최대 토크 Nm /Instantaneous permissible max torque		허용 최고 입력 회전 속도r/min /Permissible max input rotational speed(r/ min)	허용 최고 평균 회전 속도r/min Permissible average input rotational speed(r/ min)	관성 모멘트 /Inertia moment I/1000Kgm ²
		Nm	kgfm	Nm	kgfm	Nm	kgfm	Nm	kgfm	그리스윤활	그리스윤활	
14	50	7	0.7	23	2.3	9	0.9	46	4.7	8500	3500	0.033
	80	10	1	30	3.1	14	1.4	61	6.2			
	100	10	1	36	3.7	14	1.4	70	7.2			
17	50	21	2.1	44	4.5	34	3.4	91	9	7300	3500	0.079
	80	29	2.9	56	5.7	35	3.6	113	12			
	100	31	3.2	70	7.2	51	5.2	143	15			
	120	31	3.2	70	7.2	51	5.2	112	11			
20	50	33	3.3	73	7.4	44	4.5	127	13	6500	3500	0.193
	80	44	4.5	96	9.8	61	6.2	165	17			
	100	52	5.3	107	10.9	64	6.5	191	20			
	120	52	5.3	113	11.5	64	6.5	191	20			
	160	52	5.3	120	12.2	64	6.5	191	20			
25	50	51	5.2	127	13	72	7.3	242	25	5600	3500	0.413
	80	82	8.4	178	18	113	12	332	34			
	100	87	8.9	204	21	140	14	369	38			
	120	87	8.9	217	22	140	14	395	40			
	160	87	8.9	229	23	140	14	408	42			
32	50	99	10	281	29	140	14	497	51	4800	3500	1.69
	80	153	16	395	40	217	22	738	75			
	100	178	18	433	44	281	29	841	86			
	120	178	18	459	47	281	29	892	91			
	160	178	18	484	49	281	29	892	91			
40	50	178	18	523	53	255	26	892	91	4000	3000	4.5
	80	268	27	675	69	369	38	1270	130			
	100	345	35	738	75	484	49	1400	143			
	120	382	39	802	82	586	60	1530	156			
	160	382	39	841	86	586	60	1530	156			
45	50	229	23	650	66	345	35	1235	126	3800	3000	8.68
	80	407	41	918	94	507	52	1651	168			
	100	459	47	982	100	650	66	2041	208			
	120	523	53	1070	109	806	82	2288	233			
	160	523	53	1147	117	819	84	2483	253			

ZERO BACK DRIVE

Unit Type
외형도 Drawing

SZB-SHA-XX-XXX-2UH



ZERO BACK DRIVE

Unit Type
규격 Dimension

기호 Symbol	형번 Model	14	17	20	25	32	40	45
ØAh7		70	80	90	110	142	170	190
ØB		54	64	75	90	115	140	160
ØC h7		36	45	50	60	85	100	120
ØD h7		74	84	95	115	147	175	195
ØE h7		20	25	30	38	45	59	64
ØF h7		14	19	21	29	36	46	52
G		52.5	56.5	51.5	55.5	65.5	79	85
H		12	12	5	6	7	8	8
I		20.5	23	25	26	32	38	42
J		20	21.5	21.5	23.5	26.5	33	35
L		9	10	10.5	10.5	12	14	15
M		8	8.5	9	8.5	9.5	13	12
N		7.5	8.5	7	6	5	7	7
ØP (P)		(2.5)	(2.5)	25.5	33.5	40.5	52	58
Q		3	3	6	6	6	6	6
R		M3	M3	M3X6	M3X6	M3X6	M4X8	M4X8
ØS		64	74	84	102	132	158	180
T		8	12	12	12	12	12	18
ØU		3.5	3.5	3.5	4.5	5.5	6.6	6.6
ØV		44	54	62	77	100	122	140
W		12등배중8	20등배중16	16	16	16	16	12
X		M3X5	M3X6	M3X6	M4X7	M5X8	M6X10	M8X10
		Ø3.5X11.5	Ø3.5X12	Ø3.5X13.5	Ø4.5X15.5	Ø5.5X20.5	Ø6.6X25	Ø9X28
Weight(Kg)		0.71	1	1.38	2.1	4.5	7.7	10

ZERO BACK DRIVE

Unit Type

테크니컬 데이터 Technical Data

-SHA Unit Type

모델 Model No.	감속비 /Reduction Ratio	입력 2000r/min 시의 정격토크 /Rated torque at input 2000r/min		기동/정지시의 정격 토크 Nm /Permissible peak torque at start/stop		평균 부하 토크의 최대 허용치 Nm /Permissible max value of ave. load torque		순간 허용 최대 토크 Nm /Instantaneous permissible max torque		허용 최고 입력 회전 속도r/min /Permissible max input rotational speed(r/ min)	허용 최고 평균 회전 속도r/min Permissible average input rotational speed(r/ min)	관성 모멘트 /Inertia moment I/1000Kgm ²
		Nm	kgfm	Nm	kgfm	Nm	kgfm	Nm	kgfm	그리스윤활	그리스윤활	
14	50	5.4	0.55	18	1.8	6.9	0.7	35	3.6	8500	3500	0.033
	80	7.8	0.8	23	2.4	11	1.1	47	4.8			
	100	7.8	0.8	28	2.9	11	1.1	54	5.5			
17	50	16	1.6	34	3.5	26	2.6	70	7.1	6500	3500	0.079
	80	22	2.2	43	4.4	27	2.7	87	8.9			
	100	24	2.4	54	5.5	39	4	108	11			
	120	24	2.4	54	5.5	39	4	86	8.8			
20	50	25	2.5	56	5.7	34	3.5	98	10	6500	3500	0.193
	80	34	3.5	74	7.5	47	4.8	127	13			
	100	40	4.1	82	8.4	49	5	147	15			
	120	40	4.1	87	8.9	49	5	147	15			
	160	40	4.1	92	9.4	49	5	147	15			
25	50	39	4	98	10	55	5.6	186	19	5600	3500	0.413
	80	63	6.4	137	14	87	8.9	255	26			
	100	67	6.8	157	16	108	11	284	29			
	120	67	6.8	167	17	108	11	304	31			
	160	67	6.8	176	18	108	11	314	32			
32	50	76	7.8	216	22	108	11	382	39	4800	3500	1.69
	80	118	12	304	31	167	17	568	58			
	100	137	14	333	34	216	22	647	66			
	120	137	14	353	36	216	22	686	70			
	160	137	14	372	38	216	22	686	70			
40	50	137	14	402	41	196	20	686	70	4000	3000	4.5
	80	206	21	519	53	284	29	980	100			
	100	265	27	568	58	372	38	1080	110			
	120	294	30	617	63	451	46	1180	120			
	160	294	30	647	66	451	46	1180	120			
45	50	176	18	500	51	265	27	950	97	3800	3000	8.68
	80	313	32	706	72	390	40	1270	130			
	100	353	36	755	77	500	51	1570	160			
	120	402	41	823	84	620	63	1760	180			
	160	402	41	882	90	630	64	1910	195			

ZERO BACK DRIVE

Unit Type

테크니컬 데이터 Technical Data

-SHAG Unit Type

모델 Model No.	감속비 /Reduction Ratio	입력 2000r/min 시의 정격토크 /Rated torque at input 2000r/min		기동/정지시의 정격 토크 Nm /Permissible peak torque at start/stop		평균 부하 토크의 최대 허용치 Nm /Permissible max value of ave. load torque		순간 허용 최대 토크 Nm /Instantaneous permissible max torque		허용 최고 입력 회전 속도r/min /Permissible max input rotational speed(r/ min)	허용 최고 평균 회전 속도r/min Permissible average input rotational speed(r/ min)	관성 모멘트 /Inertia moment I/1000Kgm ²
		Nm	kgfm	Nm	kgfm	Nm	kgfm	Nm	kgfm	그리스윤활	그리스윤활	
14	50	7	0.7	23	2.3	9	0.9	46	4.7	8500	3500	0.033
	80	10	1	30	3.1	14	1.4	61	6.2			
	100	10	1	36	3.7	14	1.4	70	7.2			
17	50	21	2.1	44	4.5	34	3.4	91	9	7300	3500	0.079
	80	29	2.9	56	5.7	35	3.6	113	12			
	100	31	3.2	70	7.2	51	5.2	143	15			
	120	31	3.2	70	7.2	51	5.2	112	11			
20	50	33	3.3	73	7.4	44	4.5	127	13	6500	3500	0.193
	80	44	4.5	96	9.8	61	6.2	165	17			
	100	52	5.3	107	10.9	64	6.5	191	20			
	120	52	5.3	113	11.5	64	6.5	191	20			
	160	52	5.3	120	12.2	64	6.5	191	20			
25	50	51	5.2	127	13	72	7.3	242	25	5600	3500	0.413
	80	82	8.4	178	18	113	12	332	34			
	100	87	8.9	204	21	140	14	369	38			
	120	87	8.9	217	22	140	14	395	40			
	160	87	8.9	229	23	140	14	408	42			
32	50	99	10	281	29	140	14	497	51	4800	3500	1.69
	80	153	16	395	40	217	22	738	75			
	100	178	18	433	44	281	29	841	86			
	120	178	18	459	47	281	29	892	91			
	160	178	18	484	49	281	29	892	91			
40	50	178	18	523	53	255	26	892	91	4000	3000	4.5
	80	268	27	675	69	369	38	1270	130			
	100	345	35	738	75	484	49	1400	143			
	120	382	39	802	82	586	60	1530	156			
	160	382	39	841	86	586	60	1530	156			
45	50	229	23	650	66	345	35	1235	126	3800	3000	8.68
	80	407	41	918	94	507	52	1651	168			
	100	459	47	982	100	650	66	2041	208			
	120	523	53	1070	109	806	82	2288	233			
	160	523	53	1147	117	819	84	2483	253			

ZERO BACK DRIVE

SH Series

테크니컬 데이터 Technical Data

- Backlash

감속비 Ratio	형번 Model	14	17	20	25	32	40	45
50		1	2	2	2	2	2	2
80		2	2	2	2	2	2	2
100		2	2	2	2	2	2	2
120		-	-	2	2	2	2	2
160		-	-	-	2	2	2	2

Arc min

- Start Torque

감속비 Ratio	형번 Model	14	17	20	25	32	40	45
50		9	27	36	56	85	136	165
80		8	25	33	50	74	117	138
100		2.7	24	32	49	72	112	138
120		-	-	31	48	68	110	126
160		-	-	-	47	67	105	122

cNm

- Increase Start Torque

감속비 Ratio	형번 Model	14	17	20	25	32	40	45
50		5.3	16	22	34	51	82	99
80		7.2	24	31	48	70	112	133
100		8.2	29	38	59	86	134	158
120		-	-	45	69	97	158	182
160		-	-	-	90	128	201	233

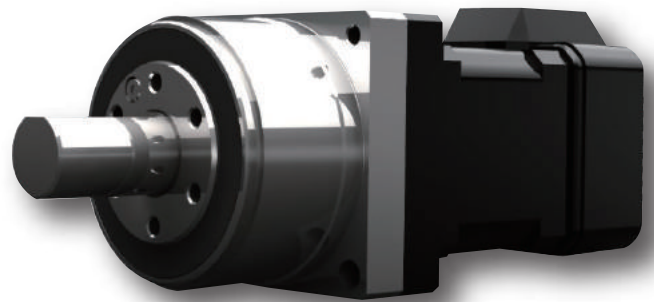
Nm

The Other
하모닉 이외 제작 가능한 제품

CSA-mini Type

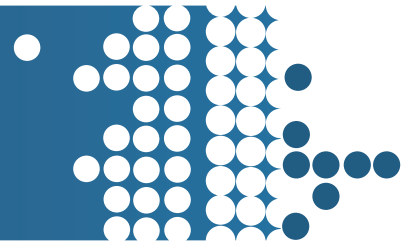
CSA-mini Type은 최소 형번을 사용하여
유니트화한 제품입니다.

- 소형 · 경량
- 컴팩트 · 심플한 디자인
- 고토크용량
- 고강성
- 제로백래쉬
- 우수한 위치결정정도와 회전정도
- 입출력축이 동축상



AGV Wheel

- 바퀴지름 $\Phi 130$
- 감속비 20:1



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