

HARMONIC REDUCERS

RC Series Compact Flexspline

- Very compact size with large transmittable torque.
- High transmission accuracy with zero backlash.
- Ideal when compactness is priority.

RCH-R Series (rigid joint)	р.3 - 7
RCH-H Series (hollow shaft)	p. 8 - 10
RCU-R Series (rigid joint)	p. 11 - 13



HARMONIC REDUCERS

DESIGN OF INPUT CONNECTION



Solid Shaft (S)



Rigid Joint (R)



Simplified Hollow Shaft





TECHNICAL DATA

RATING TABLE

Size	Ratio	Rated torque at 2000rpm(Nm)	limit for repeated peak torque(Nm)	Limit for average torque(Nm)	Limit for momentary peak torque(Nm)	Maximum input speed(r/min)	Limit for average input speed(r/min)
	50	3.7	12	4.8	23		
14	80	5.4	16	7.7	35	8500	3500
	100	5.4	19	7.7	35		
	50	11	23	18	48		
17	80	15	29	19	61	7200	2500
17	100	16	37	27	71	7300	3500
	120	16	37	27	71		
	50	17	39	24	69		
	80	24	51	33	89	6500	3500
20	100	28	57	34	95		
	120	28	60	34	95		
	160	28	64	34	95		
	50	27	69	38	127		
	80	44	96	60	179		
25	100	47	110	75	184	5600	3500
	120	47	117	75	204		
	160	47	123	75	204		
	50	53	151	75	268		
32	80	83	213	117	398		
	100	96	233	151	420	4800	3500
	120	96	247	151	445		
	160	96	261	151	445		



TECHNICAL DATA

POSITIONAL ACCURACY

Size Ratio	Unit	14	17	20	25	32
Reduction ratio	arc sec	90	90	60	60	60

HYSTERESIS LOSS

Size Ratio	Unit	14	17	20	25	32
50	arc min	2.5	2.0	2.0	2.0	2.0
80 or more	arc min	2.0	1.0	1.0	1.0	1.0

TORSIONAL STIFFNESS

Ratio		Size	14	17	20	25	32
T ₁		Nm	2.0	3.9	7.0	14	29
T ₂ Nm		6.9	12	25	48	108	
	K_1	Nm/arc min	0.9	2.1	3.4	6.4	15.0
Reduction ratio 50	K ₂	Nm/arc min	1.15	2.8	4.3	8.6	19.4
	K ₃	Nm/arc min	1.5	3.6	6.4	11.8	26.9
	K1	Nm/arc min	1.25	2.7	4.3	8.6	19.4
Reduction ration 80 or more	K ₂	Nm/arc min	1.4	3.0	5.3	11.8	24.7
	K3	Nm/arc min	1.9	4.2	8.0	15.0	35.5



RCH-R SERIES











RCH-R SERIES

Unit:mm

DIMENSIONS

Size 14 17 20 25 32 Symbol 84 110 φ A h6 49 59 69 φ B H 7 11 15 20 24 32 С 17.5 18.5 22 27.9 19 D 1 15.5 16.5 17 20 23.6 D 2 2 2 2 2 4.3 Е 2.4 3 3 3.3 3.6 F 5.2 5 63 96 4 G * 0.6 ± 0.1 1.9 ± 0.1 1.7 ± 0.1 1 ± 0.1 0.5 ± 0.1 Н* 15.6 16.8 27.2 18 21.5 110 142 φIh7 70 80 90 φ J H 7 50 61 71 88 114 Κ 8 12 12 12 12 φL 3.5 3.5 3.5 4.5 5.5 φΜ 64 74 84 102 132 Ν1 2 2 2 4 4 М 3 М3 М 3 М 3 M 4 N 2 Ν3 6 6 6 8 10 15° 22.5° 15° N 4 15° 15° φ0 17 21 26 30 40 Ρ1 4 4 4 4 4 Ρ2 М 3 М3 М3 М 3 Μ4 Q 1 8 12 12 12 12 Q 2 M3x5 M3x6 M 3 x 6 M4x6 M 5 x 8 R _ φ3.5x5.5 φ3.5x5.5 φ4.5x6 φ5.5x10.8 φS 43 52 61.4 76 99 36.5 53 Φa 45 66 86 b 1 1 1.5 1.5 2 31 Φc 38 45 56 73 d 1.4 1.8 1.7 1.8 1.8 O-Ring O-Ring O-Ring O-Ring O-Ring e 37*0.6 45*0.5 52*0.7 66.5*1.3 85*2 O-Ring O-Ring O-Ring O-Ring O-Ring f 53*1 63.5*1 74*1 91*1 118*1 0.33 0 4 2 0.52 0.91 1.87 weight(kg)

Notes: 1. As size G shall affect the performance and strength, so please strictly observe it.

2. Since the FS will be deformed elastically, in order to prevent it from coming into contact with the housing, please pay attention to the four sizes ϕa , b, ϕc , and d.



RCH-R SERIES

MOMENT OF INERTIA

Size Parameter	14	17	20	25	32
Moment of inertia (×10 ⁻⁴ kgm ²)	0.021	0.054	0.090	0.282	1.090

STARTING TORQUE

					Unit:cNm
Size Ratio	14	17	20	25	32
50	6.2	10	13	26	51
80	5	8.8	10.8	20	42
100	4.8	7.4	9.4	17.6	40
120	-	6.8	8.4	16	34
160	-	-	7.2	13.8	30

BACKDRIVING TORQUE

Size Ratio	14	17	20	25	32
50	3.7	11	15	24	36
80	4.3	15	21	32	46
100	5.8	21	27	41	60
120	-	28	33	51	68
160	-	-	42	64	91



Unit:Nm

RCH-H SERIES











Shape of input part of size 14,17



RCH-H SERIES

Unit:mm

Size 14 17 20 25 32 Symbol 110 142 90 φAh7 70 80 52 87 114 φВ 62 73 75 φ C h7 36 45 50 60 φ D h7 115 147 74 84 95 54 φ E h7 20 25 30 38 29 41 φ F H 7 14 19 21 46.5 55 G 45.5 48 42 5 6 7 Н -_ 24 28.6 I 19.5 20.5 21.5 16.5 19.4 J 14 15.5 15.5 --Κ 6.5 6.5 -10.5 12 L 9 10 10.5 М 7 8 8 10 11Ν 6.5 7 7 6 7.5 33.5 48 $\Phi P(P)$ (2.5)(2.5)25.5 6 6 Q 3 3 6 $M3 \times 6$ M 3 \times 6 M 3 \times 6 R М3 Μ3 102 132 64 74 84 φS 12 12 Т 8 12 12 φU 3.5 3.5 3.5 4.5 5.5 76 99 φV 43 52 61.4 12 12 W 12 12 8 $M4 \times 6$ $M5 \times 8$ M 3 imes 5 $M3 \times 6$ $M3 \times 5$ Х φ 4.5×14.5 φ 5.5×19.7 ϕ 3.5 \times 5.5 φ 3.5×12.5 φ 3.5×11.8 φγ 36 _ _ 45 _ Ζ 5.5 5.5 --_ 1.4 2.7 weight(kg) 0.49 0.66 0.84

DIMENSIONS



RCH-H SERIES

Unit:cNm

MOMENT OF INERTIA

Size Parameter	14	17	20	25	32
Moment of inertia (×10 ⁻⁴ kgm ²)	0.064	0.141	0.271	0.793	2.900

STARTING TORQUE

Size Ratio	14	17	20	25	32
50	10.2	20	27	46	78
80	9	18.8	25	40	69
100	8.8	17.4	24	38	67
120	-	16.8	23	36	61
160	-	-	21	34	57

BACKDRIVING TORQUE

					Unit:Nm
Size Ratio	14	17	20	25	32
50	6	21	29	44	63
80	7.1	28	41	60	84
100	9.7	41	54	80	111
120	-	51	65	99	126
160	-	-	84	126	171



TECHNICAL DATA

RATING TABLE

Size	Ratio	Rated torque at 2000rpm(Nm)	limit for repeated peak torque(Nm)	Limit for average torque(Nm)	Limit for momentary peak torque(Nm)	Maximum input speed(r/min)	Limit for average input speed(r/min)
	50	3.7	12	4.8	24		
14	80	5.4	16	7.7	35	8500	3500
	100	5.4	19	7.7	35		
	50	11	23	18	48		
17	80	15	29	19	61	7200	2500
17	100	16	37	27	71	7300	3500
	120	16	37	27	71		
	50	17	39	24	69	6500	
	80	24	51	33	89		3500
20	100	28	57	34	95		
	120	28	60	34	95		
	160	28	64	34	95		
	50	27	69	38	127		
	80	44	96	60	179		
25	100	47	110	75	184	5600	3500
	120	47	117	75	204		
	160	47	123	75	204		
	50	53	151	75	268		
32	80	83	213	117	398		
	100	96	233	151	420	4800	3500
	120	96	247	151	445		
	160	96	261	151	445		



TECHNICAL DATA

POSITIONAL ACCURACY

Size	Unit	14	17	20	25	32
Reduction ratio	rc sec	90	90	60	60	60

HYSTERESIS LOSS

Size	Unit	14	17	20	25	32
50	arc min	2.5	1.5	1.5	1.5	1.5
80 or more	arc min	2.0	1.0	1.0	1.0	1.0

TORSIONAL STIFFNESS

Ratio		Size	14	17	20	25	32
T, Nm		2.0	3.9	7.0	14	29	
T ₂ N m		6.9	12	25	48	108	
Reduction ratio 50	K1	Nm/arc min	0.9	2.1	3.4	6.4	15.0
	K ₂	Nm/arc min	1.15	2.8	4.3	8.6	19.4
	K ₃	Nm/arc min	1.5	3.6	6.4	11.8	26.9
Reduction ration 80 or more	K_1	Nm/arc min	1.25	2.7	4.3	8.6	19.4
	K ₂	Nm/arc min	1.4	3.0	5.3	11.8	28.7
	K3	Nm/arc min	1.9	4.2	8.0	15.0	35.5



RCU-R SERIES









В







RCU-R SERIES

					Unit:mm
Size Symbol	14	17	20	25	32
φ A h7	55	62	70	85	112
В	25	26.5	29.7	37.1	43
С	23	24.5	27.5	34.1	40
D	2	2	2	3	3
E	0.5	0.5	0.5	0.5	1
φ F h7	42.5	49.5	58	73	96
φGH7	11	15	20	24	32
фНН7	11	11	16	20	30
φIH7	12	14	18	24	32
φJ	31	37.3	44	58	78
φ K h7	55	62	70	85	112
L	5	5	5	5.5	5.5
М	1.5 ± 0.1	1.5 ± 0.1	1.5 ± 0.1	2.5 ± 0.1	2.3 ± 0.1
Ν	14.6	16.1	18.6	23.7	27.4
0	4	5	5.2	6.3	9.6
φP	17	21	26	30	40
φQ	49	56	64	79	104
R	6	10	12	18	18
φ S	3.5	3.5	3.5	3.4	4.5
Т	4	4	4	4	4
U	M 3	M 3	M 3	M 3	M 4
φV	25	27	34	42	57
W	10	8	8	8	10
Х	M 3 X 7	M 5 X 8	M 6 X 9	M8X12	M8X12
Фу	38	45	53	66	86
Z	3	3	3.5	4.5	5
weight(kg)	0.35	0.46	0.65	1.2	2.4

DIMENSIONS

Notes: 1. As size M shall affect the performance and strength, so please strictly observe it.

2. Since the FS will be deformed elastically, in order to prevent it from coming into contact with the housing, please pay attention to the two sizes Z, ΦY .



RCU-R SERIES

MOMENT OF INERTIA

Size Parameter	14	17	20	25	32
^{Moment} ofinertia (×10⁻⁴kgm²)	0.021	0.054	0.090	0.282	1.090

STARTING TORQUE

Unit:cNm

Size	14	17	20	25	32
50	4.4	6.7	8.9	16	32
80	3.2	4.4	5.7	10	22
100	2.8	3.8	5.1	9.1	20
120	-	3.6	4.5	8.2	17
160	-	-	3.9	7.2	15

BACKDRIVING TORQUE

Unit:Nm

Size	14	17	20	25	32
50	2.9	4.3	5.2	9.5	19
80	2.9	4.1	5.7	10	21
100	3.5	4.6	6	11	23
120	-	5.1	6.4	12	24
160	-	-	7.4	13	30

