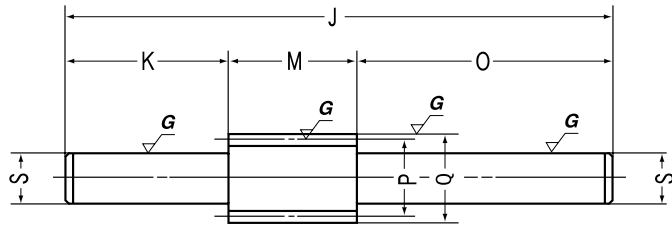




KWG Ground Worm Shafts, AG Worm Wheels Axial Modules 0.5~0.8



W5 Shape

Module 0.5 Ground Worm Shafts

Catalog No.	Axial module <i>m</i>	Number of starts	Lead angle	Hand of thread	Total length		Neck length (L)	Face width	Neck length (R)	Shaft length (R)	Pitch dia.	Outside dia.	Neck dia.
					J	K	L	M	N	O	P	Q	R
KWGO.5-R1	0.5	1	3°11'	R	65	19	—	12	—	34	9	10	—
KWGO.5-R2	0.5	2	6°20'	R	65	19	—	12	—	34	9	10	—

Module 0.5 Worm Wheels

Catalog No.	Transverse module <i>m</i>	Reduction ratio	No. of teeth	Coefficient of profile shift	Number of starts	Hand of thread	Bore		Hub dia.	Pitch dia.	Throat dia.	Outside dia.	Face width	Hub length (R)	Hub length (L)
							A _{H7}	B	C	D	D'	E	F	F'	
AGO.5-20R1	0.5	1/20	20	0	1	R	4	9	10	—	11	5	7	—	
AGO.5-20R2	0.5	1/10	20	0	2	R	4	9	10	—	11	5	7	—	
AGO.5-30R1	0.5	1/30	30	0	1	R	4	12	15	—	16	5	7	—	
AGO.5-30R2	0.5	1/15	30	0	2	R	4	12	15	—	16	5	7	—	
AGO.5-40R1	0.5	1/40	40	0	1	R	5	15	20	—	21	5	7	—	
AGO.5-50R1	0.5	1/50	50	0	1	R	5	20	25	—	26	5	7	—	
AGO.5-60R1	0.5	1/60	60	0	1	R	5	25	30	—	31	5	7	—	

Module 0.8 Ground Worm Shafts

Catalog No.	Axial module <i>m</i>	Number of starts	Lead angle	Hand of thread	Total length		Neck length (L)	Face width	Neck length (R)	Shaft length (R)	Pitch dia.	Outside dia.	Neck dia.
					J	K	L	M	N	O	P	Q	R
KWGO.8-R1	0.8	1	3°49'	R	85	25	—	20	—	40	12	13.6	—
KWGO.8-R2	0.8	2	7°36'	R	85	25	—	20	—	40	12	13.6	—

Module 0.8 Worm Wheels

Catalog No.	Transverse module <i>m</i>	Reduction ratio	No. of teeth	Coefficient of profile shift	Number of starts	Hand of thread	Bore		Hub dia.	Pitch dia.	Throat dia.	Outside dia.	Face width	Hub length (R)	Hub length (L)
							A _{H7}	B	C	D	D'	E	F	F'	
AGO.8-20R1	0.8	1/20	20	0	1	R	5	12	16	—	17.6	8	8	—	
AGO.8-20R2	0.8	1/10	20	0	2	R	5	12	16	—	17.6	8	8	—	
AGO.8-30R1	0.8	1/30	30	0	1	R	5	18	24	—	25.6	8	8	—	
AGO.8-30R2	0.8	1/15	30	0	2	R	5	18	24	—	25.6	8	8	—	
AGO.8-40R1	0.8	1/40	40	0	1	R	6	20	32	—	33.6	8	8	—	
AGO.8-50R1	0.8	1/50	50	0	1	R	8	25	40	—	41.6	8	8	—	
AGO.8-60R1	0.8	1/60	60	0	1	R	8	25	48	—	49.6	8	8	—	

CAUTION: The root area of teeth on worm shafts is very hard due to heat treatment. Extra caution is urged for any secondary operations.

CAUTION: Do not take heavy cuts when performing secondary operations on worm shafts to avoid bending them.

AG0.5 Allowable Worm Wheel Torques (N.m)

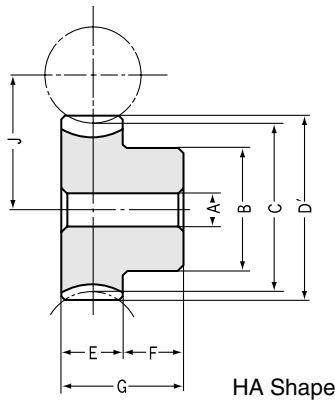
Catalog No.	Worms min ⁻¹						
	30	100	300	600	900	1200	1800
AGO.5-20R1	0.515	0.437	0.356	0.296	0.262	0.241	0.212
AGO.5-20R2	0.511	0.422	0.331	0.273	0.238	0.218	0.19
AGO.5-30R1	1.089	0.935	0.773	0.654	0.581	0.532	1.477
AGO.5-30R2	1.087	0.918	0.731	0.604	0.536	0.488	0.432
AGO.5-40R1	1.863	1.602	1.345	1.15	1.022	0.941	0.84
AGO.5-50R1	2.82	2.42	2.05	1.766	1.581	1.461	1.302
AGO.5-60R1	3.94	3.41	2.89	2.5	2.26	2.08	1.865

Worm Gear Pair

K
G
W
A
G



Ground Worm Shafts, Worm Wheels



HA Shape

Specifications

Catalog No.	KWG	AG
Precision grade	KHK W 001 grade 2	KHK W 002 grade 2
Reference section of gear	Axial	Rotating plane
Gear teeth	JIS 3 type Standard full depth	Standard full depth
Normal pressure angle	20°	20°
Material	SCM440	CAC702 (Formerly JIS A/BC2)
Heat treatment	Teeth induction hardened after thermal refining	—
Tooth hardness	50~55HRC	—
Surface treatment	—	—
Tooth surface finish	Ground	Cut
<small>Datum reference surface for gear cutting and grinding</small>	Shaft (ground portion)	Bore
Secondary Operations	Possible except tooth area	Possible

CAUTION: A/BC2 is aluminum bronze.

Shaft dia.	Shape	Weight (kgf)	Catalog No.
Sh7			
6	W5	0.02	KWG0.5-R1
6	W5	0.02	KWG0.5-R2

Total length G	Web thickness H	Web O.D. I	Mounting distance J	Shape	Allowable torque (N-m) NOTE 1	Allowable torque (Kgf-m)	Backlash (mm)	Weight (kgf)	Catalog No.
					Surface durability	Surface durability			
12	—	—	9.5	HA	0.3	(0.03)	0.06 ~ 0.13	0.01	AG0.5-20R1 AG0.5-20R2 AG0.5-30R1 AG0.5-30R2 AG0.5-40R1
12	—	—	9.5	HA	0.27	(0.03)	0.06 ~ 0.13	0.01	
12	—	—	12	HA	0.65	(0.07)	0.06 ~ 0.13	0.01	
12	—	—	12	HA	0.6	(0.06)	0.06 ~ 0.13	0.01	
12	—	—	14.5	HA	1.15	(0.12)	0.06 ~ 0.13	0.02	
12	—	—	17	HA	1.77	(0.18)	0.06 ~ 0.13	0.04	AG0.5-50R1 AG0.5-60R1
12	—	—	19.5	HA	2.5	(0.25)	0.06 ~ 0.13	0.06	

NOTE 1: The allowable torques shown in the table are the calculated values according to the assumed usage conditions. Please see page 294 for more details. The tables below show the allowable worm wheel torques (N-m) at selected worm speeds.

Shaft dia.	Shape	Weight (kg)	Catalog No.
Sh7			
8	W5	0.04	KWG0.8-R1
8	W5	0.04	KWG0.8-R2

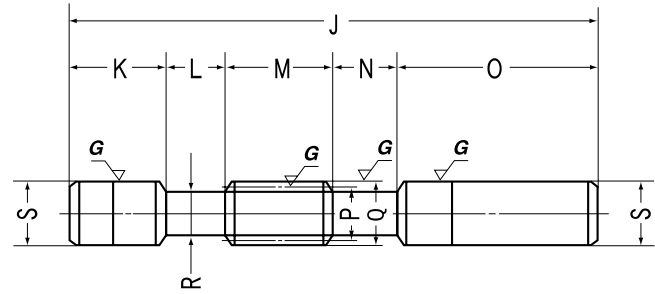
Total length G	Web thickness H	Web O.D. I	Mounting distance J	Shape	Allowable torque (N-m) NOTE 1	Allowable torque (Kgf-m)	Backlash (mm)	Weight (kgf)	Catalog No.
					Surface durability	Surface durability			
16	—	—	14	HA	1	(0.1)	0.08 ~ 0.15	0.02	AG0.8-20R1 AG0.8-20R2 AG0.8-30R1 AG0.8-30R2 AG0.8-40R1
16	—	—	14	HA	0.91	(0.09)	0.08 ~ 0.15	0.02	
16	—	—	18	HA	2.2	(0.22)	0.08 ~ 0.15	0.04	
16	—	—	18	HA	2.02	(0.21)	0.08 ~ 0.15	0.04	
16	—	—	22	HA	3.87	(0.39)	0.08 ~ 0.15	0.07	
16	—	—	26	HA	5.94	(0.61)	0.08 ~ 0.15	0.11	AG0.8-50R1 AG0.8-60R1
16	—	—	30	HA	8.39	(0.86)	0.08 ~ 0.15	0.14	

AG0.8 Allowable Worm Wheel Torques (N-m)

Catalog No.	Worms min ⁻¹						
	30	100	300	600	900	1200	1800
AG0.8-20R1	1.783	1.498	1.206	0.995	0.884	0.817	0.714
AG0.8-20R2	1.761	1.441	1.114	0.914	0.802	0.736	0.634
AG0.8-30R1	3.77	3.21	2.62	2.2	1.963	1.805	1.605
AG0.8-30R2	3.75	3.14	2.46	2.02	1.803	1.648	1.445
AG0.8-40R1	6.45	5.49	4.55	3.87	3.46	3.19	2.83
AG0.8-50R1	9.75	8.31	6.94	5.94	5.34	4.96	4.38
AG0.8-60R1	13.64	11.68	9.77	8.39	7.63	7.05	6.27

Worm Gear Pair

KWG · AG



W6 Shape

Module 1 Ground Worm Shafts

Catalog No.	Axial module <i>m</i>	Number of starts	Lead angle	Hand of thread	Total length	Shaft length (L)	Neck length (L)	Face width	Neck length (R)	Shaft length (R)	Pitch dia.	Outside dia.	Neck dia.
					J	K	L	M	N	O	P	Q	R
KWG1-R1	1	1	3°35'	R	140	35	10	30	10	55	16	18	13
KWG1-R2	1	2	7°08'	R	140	35	10	30	10	55	16	18	13

Module 1 Worm Wheels

Catalog No.	Transverse module <i>m</i>	Reduction ratio	No. of teeth	Coefficient of profile shift	Number of starts	Hand of thread	Bore	Hub dia.	Pitch dia.	Throat dia.	Outside dia.	Face width	Hub length (R)	Hub length (L)
							A _{H7}	B	C	D	D'	E	F	F'
AG1-20R1	1	1/20	20	0	1	R	6	16	20	22	23	10	10	—
AG1-20R2	1	1/10	20	0	2	R	6	16	20	22	23	10	10	—
AG1-30R1	1	1/30	30	0	1	R	6	20	30	32	33	10	10	—
AG1-30R2	1	1/15	30	0	2	R	6	20	30	32	33	10	10	—
AG1-40R1	1	1/40	40	0	1	R	8	26	40	42	43	10	10	—
AG1-50R1	1	1/50	50	0	1	R	8	30	50	52	53	10	10	—
AG1-60R1	1	1/60	60	0	1	R	10	35	60	62	63	10	10	—

Module 1.5 Ground Worm Shafts

Catalog No.	Axial module <i>m</i>	Number of starts	Lead angle	Hand of thread	Total length	Shaft length (L)	Neck length (L)	Face width	Neck length (R)	Shaft length (R)	Pitch dia.	Outside dia.	Neck dia.
					J	K	L	M	N	O	P	Q	R
KWG1.5-R1	1.5	1	3°26'	R	190	50	15	40	15	70	25	28	21
KWG1.5-R2	1.5	2	6°51'	R	190	50	15	40	15	70	25	28	21

Module 1.5 Worm Wheels

Catalog No.	Transverse module <i>m</i>	Reduction ratio	No. of teeth	Coefficient of profile shift	Number of starts	Hand of thread	Bore	Hub dia.	Pitch dia.	Throat dia.	Outside dia.	Face width	Hub length (R)	Hub length (L)
							A _{H7}	B	C	D	D'	E	F	F'
AG1.5-20R1	1.5	1/20	20	0	1	R	8	22	30	33	34.5	14	10	—
AG1.5-20R2	1.5	1/10	20	0	2	R	8	22	30	33	34.5	14	10	—
AG1.5-30R1	1.5	1/30	30	0	1	R	10	30	45	48	49.5	14	10	—
AG1.5-30R2	1.5	1/15	30	0	2	R	10	30	45	48	49.5	14	10	—
AG1.5-40R1	1.5	1/40	40	0	1	R	12	35	60	63	64.5	14	10	—
AG1.5-50R1	1.5	1/50	50	0	1	R	12	45	75	78	79.5	14	10	—
AG1.5-60R1	1.5	1/60	60	0	1	R	12	50	90	93	94.5	14	10	—

CAUTION: Before assembling or performing any secondary operations, please carefully read the "Application Hints" on page 296.

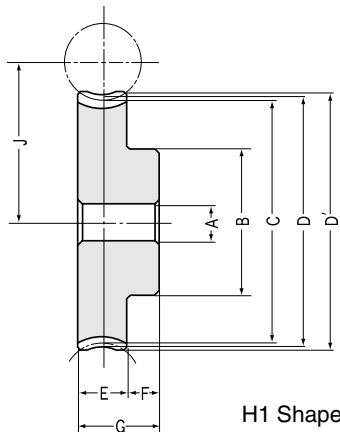
CAUTION: Do not take heavy cuts when performing secondary operations on worm shafts to avoid bending them.

AG1 Allowable Worm Wheel Torques (N·m)

Catalog No.	Worms min ⁻¹						
	30	100	300	600	900	1200	1800
AG1-20R1	3.35	2.79	2.23	1.83	1.63	1.5	1.3
AG1-20R2	3.31	2.69	2.06	1.68	1.48	1.35	1.15
AG1-30R1	7.08	5.98	4.84	4.05	3.63	3.31	2.92
AG1-30R2	7.03	5.84	4.56	3.72	3.33	3.03	2.63
AG1-40R1	12.11	10.24	8.43	7.12	6.38	5.86	5.13
AG1-50R1	18.3	15.49	12.85	10.93	9.87	9.09	7.95
AG1-60R1	25.6	21.8	18.09	15.44	14.09	12.94	11.39



Ground Worm Shafts, Worm Wheels



H1 Shape

Specifications

Catalog No.	KWG	AG
Precision grade	KHK W 001 grade 2	KHK W 002 grade 2
Reference section of gear	Axial	Rotating plane
Gear teeth	JIS 3 type Standard full depth	Standard full depth
Normal pressure angle	20°	20°
Material	SCM440	CAC702 (Formerly JIS A/BC2)
Heat treatment	Teeth induction hardened after thermal refining	—
Tooth hardness	50~55HRC	—
Surface treatment	—	—
Tooth surface finish	Ground	Cut
<small>Datum reference surface for gear cutting and grinding</small>	Shaft (ground portion)	Bore
Secondary Operations	Possible except tooth area	Possible

CAUTION: A/BC2 is aluminum bronze.

Shaft dia. <small>NOTE 1</small>	Shape	Weight (kgf)	Catalog No.
Sh7			
18	W6	0.25	KWG1-R1
18	W6	0.25	KWG1-R2

NOTE 1: The shaft O.D., S, has the tolerance +0.2/+0.1 except where ground the tolerance is +0.40/+0.35.

Total length	Web thickness	Web O.D.	Mounting distance	Shape	Allowable torque (N-m)	Allowable torque (Kgf-m)	Backlash	Weight	Catalog No.
					<small>NOTE 2</small>				
G	H	I	J		Surface durability	Surface durability	(mm)	(kgf)	
20	—	—	18	H1	1.83	(0.19)	0.1 ~ 0.17	0.05	AG1-20R1 AG1-20R2 AG1-30R1 AG1-30R2 AG1-40R1
20	—	—	18	H1	1.68	(0.17)	0.1 ~ 0.17	0.05	
20	—	—	23	H1	4.05	(0.41)	0.1 ~ 0.17	0.08	
20	—	—	23	H1	3.72	(0.38)	0.1 ~ 0.17	0.08	
20	—	—	28	H1	7.12	(0.73)	0.1 ~ 0.17	0.15	
20	—	—	33	H1	10.93	(1.11)	0.1 ~ 0.17	0.23	AG1-50R1 AG1-60R1
20	—	—	38	H1	15.44	(1.57)	0.1 ~ 0.17	0.32	

NOTE 2: The allowable torques shown in the table are the calculated values according to the assumed usage conditions. Please see page 294 for more details. The tables below show the allowable worm wheel torques (N-m) at selected worm speeds.

Shaft dia. <small>NOTE 1</small>	Shape	Weight (kgf)	Catalog No.
S			
26	W6	0.74	KWG1.5-R1
26	W6	0.74	KWG1.5-R2

Total length	Web thickness	Web O.D.	Mounting distance	Shape	Allowable torque (N-m)	Allowable torque (Kgf-m)	Backlash	Weight	Catalog No.
					<small>NOTE 2</small>				
G	H	I	J		Surface durability	Surface durability	(mm)	(kgf)	
24	—	—	27.5	H1	5.3	(0.54)	0.12 ~ 0.19	0.09	AG1.5-20R1 AG1.5-20R2 AG1.5-30R1 AG1.5-30R2 AG1.5-40R1 AG1.5-40R2
24	—	—	27.5	H1	4.87	(0.5)	0.12 ~ 0.19	0.09	
24	—	—	35	H1	11.71	(1.19)	0.12 ~ 0.19	0.27	
24	—	—	35	H1	10.76	(1.1)	0.12 ~ 0.19	0.27	
24	—	—	42.5	H1	20.59	(2.1)	0.12 ~ 0.19	0.43	
24	—	—	50	H1	31.6	(3.22)	0.12 ~ 0.19	0.68	
24	—	—	57.5	H1	44.65	(4.55)	0.12 ~ 0.19	0.95	AG1.5-50R1 AG1.5-60R1

AG1.5 Allowable Worm Wheel Torques (N-m)

Catalog No.	Worms min ⁻¹						
	30	100	300	600	900	1200	1800
AG1.5-20R1	9.84	8.18	6.4	5.3	4.68	4.25	3.68
AG1.5-20R2	9.72	7.87	5.92	4.87	4.25	3.83	3.27
AG1.5-30R1	20.8	17.5	13.89	11.71	10.4	9.4	8.28
AG1.5-30R2	20.7	17.12	13.08	10.76	9.56	8.58	7.46
AG1.5-40R1	35.6	30	24.2	20.6	18.3	16.62	14.58
AG1.5-50R1	53.8	45.4	36.9	31.6	28.3	25.8	22.6
AG1.5-60R1	75.3	63.8	51.9	44.7	40.4	36.7	32.4

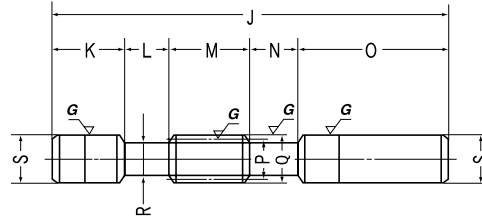
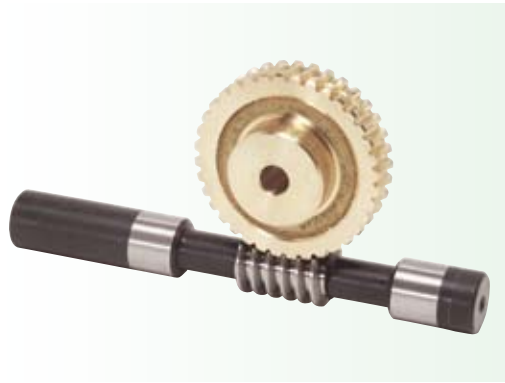
Worm Gear Pair

KWG · AG

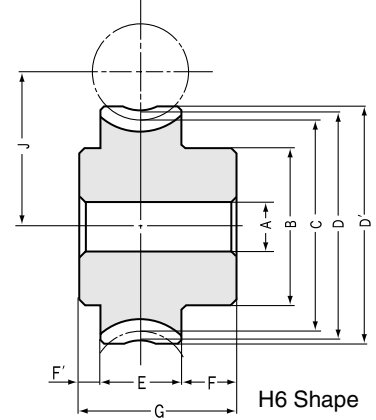


KWG Ground Worm Shafts, AGF Worm Wheels

Axial Modules **2~2.5**



W6 Shape



H6 Shape

Module 2 Ground Worm Shafts

Catalog No.	Axial module <i>m</i>	Number of starts	Lead angle	Hand of thread	Total length	Shaft length (L)	Neck length (L)	Face width	Neck length (R)	Shaft length (R)	Pitch dia.	Outside dia.	Neck dia.
					J	K	L	M	N	O	P	Q	R
KWG2-R1	2	1	5°12'	R	200	35	25	40	25	75	22	26	17
KWG2-R2	2	2	10°18'	R	200	35	25	40	25	75	22	26	17

Module 2 Worm Wheels

Catalog No.	Transverse module <i>m</i>	Reduction ratio	No. of teeth	Coefficient of profile shift <small>NOTE 1</small>	Number of starts	Hand of thread	Bore	Hub dia.	Pitch dia.	Throat dia.	Outside dia.	Face width	Hub length (R)	Hub length (L)
							AH7	B	C	D	D'	E	F	F'
AGF2-20R1	2	1/20	20	-0.5	1	R	12	32	40	42	44	18	12	5
AGF2-20R2	2	1/10	20	-0.5	2	R	12	32	40	42	44	18	12	5
AGF2-25R1	2	1/25	25	-0.5	1	R	12	35	50	52	54	18	12	5
AGF2-30R1	2	1/30	30	-0.5	1	R	12	38	60	62	64	18	12	5
AGF2-30R2	2	1/15	30	-0.5	2	R	12	38	60	62	64	18	12	5
AGF2-36R1	2	1/36	36	0	1	R	12	40	72	76	78	18	12	5
AGF2-40R1	2	1/40	40	-0.5	1	R	12	45	80	82	84	18	12	5
AGF2-48R1	2	1/48	48	+0.5	1	R	12	50	96	102	104	18	12	5
AGF2-50R1	2	1/50	50	-0.5	1	R	12	50	100	102	104	18	12	5
AGF2-60R1	2	1/60	60	-0.5	1	R	12	50	120	122	124	18	12	5

CAUTION: Before assembling or performing any secondary operations, please carefully read the "Application Hints" on page 296.

NOTE 1: These worm wheels are profile shifted except the 36 tooth gear.

Module 2.5 Ground Worm Shafts

Catalog No.	Axial module <i>m</i>	Number of starts	Lead angle	Hand of thread	Total length	Shaft length (L)	Neck length (L)	Face width	Neck length (R)	Shaft length (R)	Pitch dia.	Outside dia.	Neck dia.
					J	K	L	M	N	O	P	Q	R
KWG2.5-R1	2.5	1	4°46'	R	250	50	27	46	27	100	30	35	23
KWG2.5-R2	2.5	2	8°28'	R	250	50	27	46	27	100	30	35	23

Module 2.5 Worm Wheels

Catalog No.	Transverse module <i>m</i>	Reduction ratio	No. of teeth	Coefficient of profile shift	Number of starts	Hand of thread	Bore	Hub dia.	Pitch dia.	Throat dia.	Outside dia.	Face width	Hub length (R)	Hub length (L)
							AH7	B	C	D	D'	E	F	F'
AGF2.5-20R1	2.5	1/20	20	0	1	R	12	35	50	55	57.5	20	15	5
AGF2.5-20R2	2.5	1/10	20	0	2	R	12	35	50	55	57.5	20	15	5
AGF2.5-25R1	2.5	1/25	25	0	1	R	12	40	62.5	67.5	70	20	15	5
AGF2.5-30R1	2.5	1/30	30	0	1	R	12	40	75	80	82.5	20	15	5
AGF2.5-30R2	2.5	1/15	30	0	2	R	12	40	75	80	82.5	20	15	5
AGF2.5-36R1	2.5	1/36	36	0	1	R	12	45	90	95	97.5	20	15	5
AGF2.5-40R1	2.5	1/40	40	0	1	R	12	45	100	105	107.5	20	15	5
AGF2.5-48R1	2.5	1/48	48	0	1	R	12	50	120	125	127.5	20	15	5
AGF2.5-50R1	2.5	1/50	50	0	1	R	12	55	125	130	132.5	20	15	5
AGF2.5-60R1	2.5	1/60	60	0	1	R	12	60	150	155	157.5	20	15	5

CAUTION: Do not take heavy cuts when performing secondary operations on worm shafts to avoid bending them.

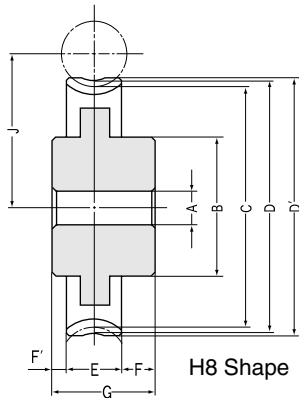
AGF2 Allowable Worm Wheel Torques (N·m)

Catalog No.	Worms min ⁻¹						
	30	100	300	600	900	1200	1800
AGF2-20R1	19.43	16.14	12.75	10.48	9.3	8.49	7.31
AGF2-20R2	19.9	16.1	12.21	9.99	8.75	7.92	6.74
AGF2-25R1	29.4	24.5	19.57	16.28	14.42	13.17	11.43
AGF2-30R1	41.1	34.5	27.7	23.2	20.7	18.75	16.44
AGF2-30R2	42.3	35	27	22.1	19.68	17.74	15.35
AGF2-36R1	57.8	48.6	39.3	33.2	29.6	27	23.6
AGF2-40R1	70.3	59.2	48.1	40.7	36.4	33.2	28.9
AGF2-48R1	98.5	83	68	57.9	51.9	47.5	41.3
AGF2-50R1	106.3	89.5	73.4	62.5	56.2	51.5	44.9
AGF2-60R1	148.6	125.9	103.3	88.4	80.3	73.3	64.2

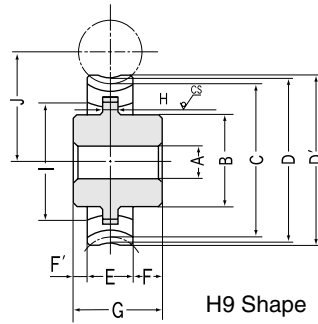
Worm Gear Pair KGW · FG A



Ground Worm Shafts, Worm Wheels



H8 Shape



H9 Shape

*CS has a sand mold casting finish. The dimensional tolerance of CS parts are the very coarse grade of JIS B 0405.

Specifications

Catalog No.	KWG	AGF
Precision grade	KHK W 001 grade 2	KHK W 002 grade 2
Reference section of gear	Axial	Rotating plane
Gear teeth	JIS 3 type Standard full depth	Standard full depth
Normal pressure angle	20°	20°
Material	SCM440	CAC702(Formerly A & BC2) (Hub of H8, H9 shape is FC200)
Heat treatment	Teeth induction hardened after thermal refining	—
Tooth hardness	50~55HRC	—
Surface treatment	—	—
Tooth surface finish	Ground	Cut
Datum reference surface for gear cutting and grinding	Shaft (ground portion)	Bore
Secondary operations	Possible except tooth area	Possible

CAUTION: A & BC2 is aluminum bronze.

Shaft dia. NOTE 2	Shape	Weight (kgf)	Catalog No.
S			
25	W6	0.7	KWG2-R1
25	W6	0.7	KWG2-R2

NOTE 2: The shaft O.D., S, has the tolerance +0.2/+0.1 except where ground the tolerance is +0.40/+0.35.

Total length G	Web thickness H	Web O.D. I	Mounting distance J	Shape NOTE 4	Allowable torque (N-m) NOTE 3		Backlash (mm)	Weight (kgf)	Catalog No.
					Surface durability	Surface durability			
35	—	—	30	H6	10.48	(1.07)	0.14 ~ 0.21	0.25	AGF2-20R1 AGF2-20R2 AGF2-25R1 AGF2-30R1 AGF2-30R2
35	—	—	30	H6	9.99	(1.02)	0.14 ~ 0.21	0.25	
35	—	—	35	H6	16.28	(1.66)	0.14 ~ 0.21	0.35	
35	—	—	40	H6	23.17	(2.36)	0.14 ~ 0.21	0.5	
35	—	—	40	H6	20.08	(2.25)	0.14 ~ 0.21	0.5	
35	10	62	47	H6	33.19	(3.38)	0.14 ~ 0.21	0.7	AGF2-36R1 AGF2-40R1 AGF2-48R1 AGF2-50R1 AGF2-60R1
35	—	—	50	H8	40.74	(4.15)	0.14 ~ 0.21	0.8	
35	10	76	60	H9	57.85	(5.9)	0.14 ~ 0.21	1.1	
35	12	81	60	H9	62.53	(6.38)	0.14 ~ 0.21	1.1	
35	12	96	70	H9	88.36	(9.01)	0.14 ~ 0.21	1.5	

NOTE 3: The allowable torques shown in the table are the calculated values according to the assumed usage conditions. Please see page 294 for more details. The tables below show the allowable worm wheel torques (N-m) at selected worm speeds.

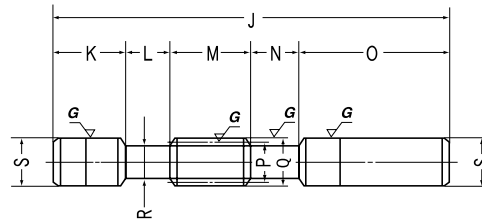
Shaft dia. NOTE 2	Shape	Weight (kgf)	Catalog No.
S			
30	W6	1.3	KWG2.5-R1
30	W6	1.3	KWG2.5-R2

Total length G	Web thickness H	Web O.D. I	Mounting distance J	Shape NOTE 4	Allowable torque (N-m) NOTE 3		Backlash (mm)	Weight (kgf)	Catalog No.
					Surface durability	Surface durability			
40	—	—	40	H6	18.62	(1.9)	0.17 ~ 0.24	0.4	AGF2.5-20R1 AGF2.5-20R2 AGF2.5-25R1 AGF2.5-30R1 AGF2.5-30R2
40	—	—	40	H6	17.11	(1.74)	0.17 ~ 0.24	0.4	
40	—	—	46.25	H6	28.92	(2.95)	0.17 ~ 0.24	0.6	
40	10	60	52.5	H6	41.16	(4.2)	0.17 ~ 0.24	0.8	
40	10	60	52.5	H6	37.81	(3.86)	0.17 ~ 0.24	0.8	
40	—	—	60	H8	58.97	(6.01)	0.17 ~ 0.24	1.2	
40	12	80	65	H9	72.38	(7.38)	0.17 ~ 0.24	1.3	
40	13	97	75	H9	102.8	(10.48)	0.17 ~ 0.24	1.7	
40	13	100	77.5	H9	111.1	(11.33)	0.17 ~ 0.24	1.9	
40	13	125	90	H9	157	(16.01)	0.17 ~ 0.24	2.6	

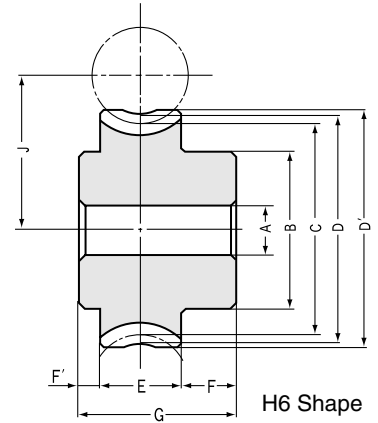
NOTE 4: Please avoid secondary operations that affect the strength of the joint between CAC702 and FC200. Also, there may be space in the casting between the two materials, but it will not affect the joint strength.

AGF2.5 Allowable Worm Wheel Torques (N-m)

Catalog No.	Worms min ⁻¹						
	30	100	300	600	900	1200	1800
AGF2.5-20R1	35.1	29	22.6	18.62	16.29	14.83	12.77
AGF2.5-20R2	34.6	27.9	20.9	17.11	14.77	13.35	11.33
AGF2.5-25R1	53	43.9	34.8	28.9	25.3	23	19.97
AGF2.5-30R1	74.1	62	49.1	41.2	36.7	32.8	28.7
AGF2.5-30R2	73.6	60.6	46.2	37.8	33.2	29.9	25.8
AGF2.5-36R1	104.2	87.4	69.8	59	51.8	47.1	41.2
AGF2.5-40R1	126.8	106.3	85.4	72.4	63.7	57.9	50.5
AGF2.5-48R1	177.8	149.1	120.7	102.8	90.8	83.1	72.2
AGF2.5-50R1	191.7	160.8	130.3	111.1	98.4	90	78.3
AGF2.5-60R1	268	226	183.4	157	140.5	128	112.2



W6 Shape



H6 Shape

Module 3 Ground Worm Shafts

Catalog No.	Axial module <i>m</i>	Number of starts	Lead angle	Hand of thread	Total length	Shaft length (L)	Neck length (L)	Face width	Neck length (R)	Shaft length (R)	Pitch dia.	Outside dia.	Neck dia.
					J	K	L	M	N	O	P	Q	R
KWG3-R1	3	1	4°31'	R	300	55	30	60	30	125	38	44	30
KWG3-R2	3	2	8°58'	R	300	55	30	60	30	125	38	44	30

Module 3 Worm Wheels

Catalog No.	Transverse module <i>m</i>	Reduction ratio	No. of teeth	Coefficient of profile shift <small>NOTE 1</small>	Number of starts	Hand of thread	Bore	Hub dia.	Pitch dia.	Throat dia.	Outside dia.	Face width	Hub length (R)	Hub length (L)
							AH7	B	C	D	D'	E	F	F'
AGF3-20R1	3	1/20	20	+0.333	1	R	20	50	60	68	71	25	17.5	7.5
AGF3-20R2	3	1/10	20	+0.333	2	R	20	50	60	68	71	25	17.5	7.5
AGF3-25R1	3	1/25	25	0	1	R	20	55	75	81	84	25	17.5	7.5
AGF3-30R1	3	1/30	30	+0.333	1	R	20	55	90	98	101	25	17.5	7.5
AGF3-30R2	3	1/15	30	+0.333	2	R	20	55	90	98	101	25	17.5	7.5
AGF3-36R1	3	1/36	36	+0.333	1	R	20	60	108	116	119	25	17.5	7.5
AGF3-40R1	3	1/40	40	+0.333	1	R	20	65	120	128	131	25	17.5	7.5
AGF3-48R1	3	1/48	48	+0.333	1	R	20	70	144	152	155	25	17.5	7.5
AGF3-50R1	3	1/50	50	+0.333	1	R	20	75	150	158	161	25	17.5	7.5
AGF3-60R1	3	1/60	60	+0.333	1	R	20	80	180	188	191	25	17.5	7.5

CAUTION: Before assembling or performing any secondary operations, please carefully read the "Application Hints" on page 296.

NOTE 1: These worm wheels are profile shifted except the 25 tooth gear.

Module 4 Ground Worm Shafts

Catalog No.	Axial module <i>m</i>	Number of starts	Lead angle	Hand of thread	Total length	Shaft length (L)	Neck length (L)	Face width	Neck length (R)	Shaft length (R)	Pitch dia.	Outside dia.	Neck dia.
					J	K	L	M	N	O	P	Q	R
KWG4-R1	4	1	5°43'	R	360	70	32.5	75	32.5	150	40	48	29
KWG4-R2	4	2	11°19'	R	360	70	32.5	75	32.5	150	40	48	29

Module 4 Worm Wheels

Catalog No.	Transverse module <i>m</i>	Reduction ratio	No. of teeth	Coefficient of profile shift	Number of starts	Hand of thread	Bore	Hub dia.	Pitch dia.	Throat dia.	Outside dia.	Face width	Hub length (R)	Hub length (L)
							AH7	B	C	D	D'	E	F	F'
AGF4-20R1	4	1/20	20	0	1	R	20	60	80	88	92	30	20	10
AGF4-20R2	4	1/10	20	0	2	R	20	60	80	88	92	30	20	10
AGF4-25R1	4	1/25	25	0	1	R	20	65	100	108	112	30	20	10
AGF4-30R1	4	1/30	30	0	1	R	20	65	120	128	132	30	20	10
AGF4-30R2	4	1/15	30	0	2	R	20	65	120	128	132	30	20	10
AGF4-36R1	4	1/36	36	0	1	R	20	70	144	152	156	30	20	10
AGF4-40R1	4	1/40	40	0	1	R	20	80	160	168	172	30	20	10
AGF4-48R1	4	1/48	48	0	1	R	20	90	192	200	204	30	20	10
AGF4-50R1	4	1/50	50	0	1	R	20	90	200	208	212	30	20	10
AGF4-60R1	4	1/60	60	0	1	R	160	—	240	248	252	30	15	7

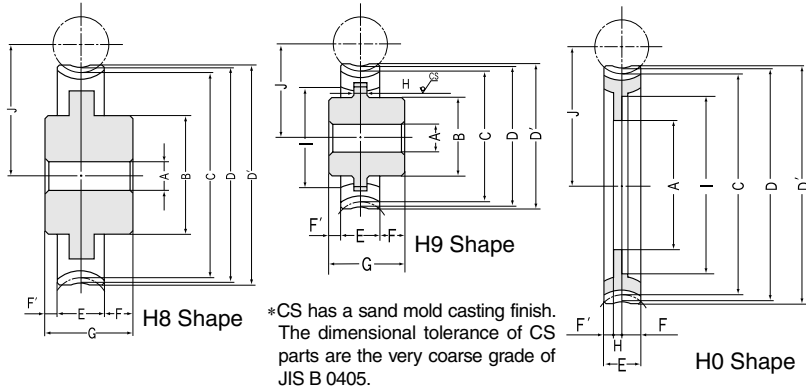
CAUTION: Do not take heavy cuts when performing secondary operations on worm shafts to avoid bending them.

AGF3 Allowable Worm Wheel Torques (N·m)

Catalog No.	Worms min ⁻¹						
	30	100	300	600	900	1200	1800
AGF3-20R1	59.7	49.1	38.3	31.5	27.5	25.1	21.5
AGF3-20R2	60.2	48.2	36.1	29.5	25.4	23	19.42
AGF3-25R1	90.2	74.3	58.8	48.9	42.6	39	33.5
AGF3-30R1	126.2	105	83.1	69.6	61	55.4	48.2
AGF3-30R2	128	104.7	79.8	65.2	57.2	51.6	44.3
AGF3-36R1	177.5	147.8	118.1	99.7	87.5	79.7	69.1
AGF3-40R1	216	179.9	144.5	122.4	107.5	98	84.9
AGF3-48R1	303	252	204	173.8	153.3	140.5	121.3
AGF3-50R1	326	272	220	187.9	166.1	152.2	131.6
AGF3-60R1	457	383	310	265	237	217	188.4



Ground Worm Shafts, Worm Wheels



Specifications

Catalog No.	KWG	AGF
Precision grade	KHK W 001 grade 2	KHK W 002 grade 2
Reference section of gear	Axial	Rotating plane
Gear teeth	JIS 3 type Standard full depth	Standard full depth
Normal pressure angle	20°	20°
Material	SCM440	CAC702(Formerly A & BC2) (Hub of H8, H9 shape is FC200)
Heat treatment	Teeth induction hardened after thermal refining	—
Tooth hardness	50~55HRC	—
Surface treatment	—	—
Tooth surface finish	Ground	Cut
datum reference surface for gear cutting and grinding	Shaft (ground portion)	Bore
Secondary Operations	Possible except tooth area	Possible

CAUTION: A & BC2 is aluminum bronze.

Shaft dia. NOTE 2	Shape	Weight (kgf)	Catalog No.
S			
40	W6	2.8	KWG3-R1 KWG3-R2
40	W6	2.8	

NOTE 2: The shaft O.D., S, has the tolerance +0.2/+0.1 except where ground the tolerance is +0.40/+0.35.

Total length G	Web thickness H	Web O.D. I	Mounting distance J	Shape NOTE 4	Allowable torque (N-m) NOTE 3		Backlash (mm)	Weight (kgf)	Catalog No.
					Surface durability	Surface durability			
50	—	—	50	H6	31.49	(3.21)	0.19 ~ 0.26	0.9	AGF3-20R1 AGF3-20R2 AGF3-25R1 AGF3-30R1 AGF3-30R2
50	—	—	50	H6	29.52	(3.01)	0.19 ~ 0.26	0.9	
50	—	—	56.5	H6	48.9	(4.99)	0.19 ~ 0.26	1.4	
50	—	—	65	H8	69.6	(7.1)	0.19 ~ 0.26	1.6	
50	—	—	65	H8	65.23	(6.65)	0.19 ~ 0.26	1.6	
50	—	—	74	H8	99.71	(10.17)	0.19 ~ 0.26	2.2	
50	16	95	80	H9	122.4	(12.48)	0.19 ~ 0.26	2.4	AGF3-36R1 AGF3-40R1 AGF3-48R1 AGF3-50R1 AGF3-60R1
50	15	120	92	H9	173.8	(17.72)	0.19 ~ 0.26	3.3	
50	15	125	95	H9	187.9	(19.16)	0.19 ~ 0.26	3.6	
50	15	155	110	H9	265.5	(27.07)	0.19 ~ 0.26	4.8	

NOTE 3: The allowable torques shown in the table are the calculated values according to the assumed usage conditions. Please see page 294 for more details. The tables below show the allowable worm wheel torques (N-m) at selected worm speeds.

NOTE 4: Please avoid secondary operations that affect the strength of the joint between CAC702 and FC200. Also, there may be space in the casting between the two materials, but it will not effect the joint strength.

Shaft dia. NOTE 2	Shape	Weight (kgf)	Catalog No.
S			
45	W6	3.9	KWG4-R1 KWG4-R2
45	W6	3.9	

Total length G	Web thickness H	Web O.D. I	Mounting distance J	Shape NOTE 4	Allowable torque (N-m) NOTE 3		Backlash (mm)	Weight (kgf)	Catalog No.
					Surface durability	Surface durability			
60	—	—	60	H6	64.59	(6.59)	0.22 ~ 0.29	1.7	AGF4-20R1 AGF4-20R2 AGF4-25R1 AGF4-30R1 AGF4-30R2
60	—	—	60	H6	61.85	(6.31)	0.22 ~ 0.29	1.7	
60	—	—	70	H6	100.3	(10.23)	0.22 ~ 0.29	2.6	
60	—	—	80	H8	142.8	(14.56)	0.22 ~ 0.29	3.2	
60	—	—	80	H8	136.7	(13.94)	0.22 ~ 0.29	3.2	
60	20	113	92	H9	204.5	(20.85)	0.22 ~ 0.29	4.8	
60	23	128	100	H9	251	(25.59)	0.22 ~ 0.29	5.1	AGF4-36R1 AGF4-40R1 AGF4-48R1 AGF4-50R1 AGF4-60R1
60	20	160	116	H9	356.4	(36.34)	0.22 ~ 0.29	7.1	
60	20	168	120	H9	385.3	(39.29)	0.22 ~ 0.29	7.4	
60	20	204	140	H0	544.4	(55.51)	0.22 ~ 0.29	3.7	

AGF4 Allowable Worm Wheel Torques (N-m)

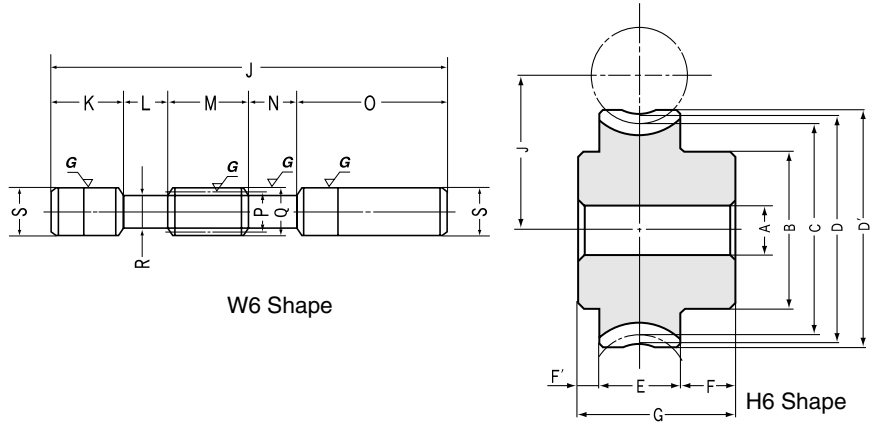
Catalog No.	Worms min ⁻¹						
	30	100	300	600	900	1200	1800
AGF4-20R1	123.1	101	78.8	64.6	56.3	51.5	43.8
AGF4-20R2	126.8	101.3	76	61.9	53.2	48.3	40.5
AGF4-25R1	186	153	121	100.3	87.3	79.9	68.5
AGF4-30R1	260	216	171	142.8	125	113.7	98.4
AGF4-30R2	270	220	167.9	136.7	119.7	108.2	92.2
AGF4-36R1	366	304	243	204	179.3	163.5	141.1
AGF4-40R1	445	370	297	251	220	201	173.3
AGF4-48R1	624	519	420	356	314	288	248
AGF4-50R1	673	560	454	385	340	312	269
AGF4-60R1	941	788	638	544	486	444	385

Worm Gear Pair

K W G · A G F



KWG Ground Worm Shafts, AGF Worm Wheels Axial Modules 5~6



Module 5 Ground Worm Shafts

Catalog No.	Axial module <i>m</i>	Number of starts	Lead angle	Hand of thread	Total length	Shaft length (L)	Neck length (L)	Face width	Neck length (R)	Shaft length (R)	Pitch dia.	Outside dia.	Neck dia.
					J	K	L	M	N	O	P	Q	R
KWG5-R1	5	1	5°43'	R	400	75	30	90	30	175	50	60	36

Module 5 Worm Wheels

Catalog No.	Transverse module <i>m</i>	Reduction ratio	No. of teeth	Coefficient of profile shift	Number of starts	Hand of thread	Bore	Hub dia.	Pitch dia.	Throat dia.	Outside dia.	Face width	Hub length (R)	Hub length (L)
							AH7	B	C	D	D'	E	F	F'
AGF5-20R1	5	1/20	20	0	1	R	22	75	100	110	115	35	23	12
AGF5-25R1	5	1/25	25	0	1	R	22	75	125	135	140	35	23	12
AGF5-30R1	5	1/30	30	0	1	R	22	75	150	160	165	35	23	12
AGF5-36R1	5	1/36	36	0	1	R	22	90	180	190	195	35	23	12
AGF5-40R1	5	1/40	40	0	1	R	22	110	200	210	215	35	23	12
AGF5-48R1	5	1/48	48	0	1	R	140	—	240	250	255	35	17.5	7.5
AGF5-50R1	5	1/50	50	0	1	R	150	—	250	260	265	35	17.5	7.5
AGF5-60R1	5	1/60	60	0	1	R	200	—	300	310	315	35	17.5	7.5

CAUTION: Before assembling or performing any secondary operations, please carefully read the "Application Hints" on page 296.

Module 6 Ground Worm Shafts

Catalog No.	Axial module <i>m</i>	Number of starts	Lead angle	Hand of thread	Total length	Shaft length (L)	Neck length (L)	Face width	Neck length (R)	Shaft length (R)	Pitch dia.	Outside dia.	Neck dia.
					J	K	L	M	N	O	P	Q	R
KWG6-R1	6	1	5°43'	R	400	60	40	100	40	160	60	72	44

Module 6 Worm Wheels

Catalog No.	Transverse module <i>m</i>	Reduction ratio	No. of teeth	Coefficient of profile shift	Number of starts	Hand of thread	Bore	Hub dia.	Pitch dia.	Throat dia.	Outside dia.	Face width	Hub length (R)	Hub length (L)
							AH7	B	C	D	D'	E	F	F'
AGF6-20R1	6	1/20	20	0	1	R	25	85	120	132	138	40	23	12
AGF6-25R1	6	1/25	25	0	1	R	25	90	150	162	168	40	23	12
AGF6-30R1	6	1/30	30	0	1	R	25	100	180	192	198	40	23	12
AGF6-36R1	6	1/36	36	0	1	R	25	110	216	228	234	40	23	12
AGF6-40R1	6	1/40	40	0	1	R	130	—	240	252	258	40	20	8
AGF6-48R1	6	1/48	48	0	1	R	180	—	288	300	306	40	20	8
AGF6-50R1	6	1/50	50	0	1	R	190	—	300	312	318	40	20	8
AGF6-60R1	6	1/60	60	0	1	R	250	—	360	372	378	40	20	8

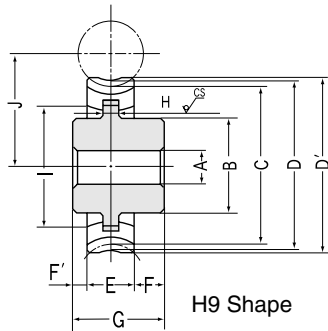
CAUTION: Do not take heavy cuts when performing secondary operations on worm shafts to avoid bending them.

AGF5 Allowable Worm Wheel Torques (N·m)

Catalog No.	Worms min ⁻¹						
	30	100	300	600	900	1200	1800
AGF5-20R1	211	172.4	134.2	108.3	95	86.2	72.7
AGF5-25R1	319	261	206	168.2	147.3	133.9	113.7
AGF5-30R1	446	369	291	239	211	190.5	163.5
AGF5-36R1	627	519	414	343	302	274	234
AGF5-40R1	763	632	506	421	371	337	288
AGF5-48R1	1070	886	715	598	530	483	411
AGF5-50R1	1153	956	772	646	574	523	446
AGF5-60R1	1614	1344	1087	913	820	744	639

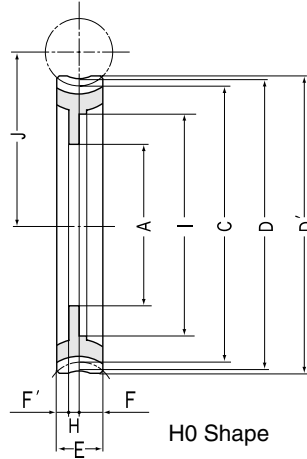


Ground Worm Shafts, Worm Wheels



H9 Shape

*CS has a sand mold casting finish. The dimensional tolerance of CS parts are the very coarse grade of JIS B 0405.



H0 Shape

Specifications

Catalog No.	KWG	AGF
Precision grade	KHK W 001 grade 2	KHK W 002 grade 2
Reference section of gear	Axial	Rotating plane
Gear teeth	JIS 3 type Standard full depth	Standard full depth
Normal pressure angle	20°	20°
Material	SCM440	CAC702(Formerly A & BC2) (Hub of H9 shape is FC200)
Heat treatment	Teeth induction hardened after thermal refining	—
Tooth hardness	50~55HRC	—
Surface treatment	—	—
Tooth surface finish	Ground	Cut
Datum reference surface for gear cutting and grinding	Shaft (ground portion)	Bore
Secondary Operations	Possible except tooth area	Possible

CAUTION: A & BC2 is aluminum bronze.

Shaft dia. NOTE 1	Shape	Weight (kgf)	Catalog No.
S			
50	W6	7.8	KWG5-R1

NOTE 1: The shaft O.D., S, has the tolerance +0.2/+0.1 except where ground the tolerance is +0.40/+0.35.

Total length G	Web thickness H	Web O.D. I	Mounting distance J	Shape NOTE 3	Allowable torque (N·m) NOTE 2		Backlash (mm)	Weight (kgf)	Catalog No.
					Surface durability	Surface durability			
70	—	—	75	H6	108.3	(11.05)	0.25 ~ 0.32	3.3	AGF5-20R1 AGF5-25R1 AGF5-30R1
70	—	—	87.5	H6	168.2	(17.15)	0.25 ~ 0.32	4.4	
70	25	115	100	H9	239.4	(24.41)	0.25 ~ 0.32	5.4	
70	25	140	115	H9	343	(34.97)	0.25 ~ 0.32	7.7	AGF5-36R1 AGF5-40R1 AGF5-48R1 AGF5-50R1 AGF5-60R1
70	26	162	125	H9	421	(42.93)	0.25 ~ 0.32	10	
35	10	195	145	H0	597.8	(60.96)	0.25 ~ 0.32	5.1	
35	10	205	150	H0	646.2	(65.9)	0.25 ~ 0.32	5.3	
35	10	255	175	H0	913.1	(93.11)	0.25 ~ 0.32	6.5	

NOTE 2: The allowable torques shown in the table are the calculated values according to the assumed usage conditions. Please see page 294 for more details. The tables below show the allowable worm wheel torques (N·m) at selected worm speeds.

NOTE 3: Please avoid secondary operations that affect the strength of the joint between CAC702 and FC200. Also, there may be space in the casting between the two materials, but it will not affect the joint strength.

Shaft dia. NOTE 1	Shape	Weight (kgf)	Catalog No.
S			
60	W6	8.2	KWG6-R1

Total length G	Web thickness H	Web O.D. I	Mounting distance J	Shape NOTE 3	Allowable torque (N·m) NOTE 2		Backlash (mm)	Weight (kgf)	Catalog No.
					Surface durability	Surface durability			
75	—	—	90	H6	166.7	(17)	0.27 ~ 0.34	4.5	AGF6-20R1 AGF6-25R1 AGF6-30R1
75	—	—	105	H6	258.8	(26.39)	0.27 ~ 0.34	7.2	
75	30	135	120	H9	368.4	(37.57)	0.27 ~ 0.34	9.1	
75	30	172	138	H9	527.8	(53.82)	0.27 ~ 0.34	13	AGF6-36R1 AGF6-40R1 AGF6-48R1 AGF6-50R1 AGF6-60R1
40	12	190	150	H0	647.8	(66.05)	0.27 ~ 0.34	6.3	
40	12	240	174	H0	919.8	(93.8)	0.27 ~ 0.34	7.7	
40	12	250	180	H0	994.4	(101.4)	0.27 ~ 0.34	8.2	
40	12	310	210	H0	1405	(143.3)	0.27 ~ 0.34	10.1	

AGF6 Allowable Worm Wheel Torques (N·m)

Catalog No.	Worms min ⁻¹						
	30	100	300	600	900	1200	1800
AGF6-20R1	329	268	208	166.7	146.4	131.2	110.3
AGF6-25R1	497	405	319	259	227	204	172.5
AGF6-30R1	696	572	451	368	325	290	248
AGF6-36R1	978	806	641	528	466	417	355
AGF6-40R1	1190	981	784	648	572	513	436
AGF6-48R1	1669	1376	1108	920	816	735	623
AGF6-50R1	1799	1484	1196	994	885	796	676
AGF6-60R1	2520	2090	1684	1405	1260	1133	969