Quick Connect Gearheads

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CSF/CSG-GH Series

HIGH PERFORMANCE
EASY TO USE

HARMONIC DRIVE®

Total Motion Control

Harmonic Drive® gear

Precision Gearing and Motion Control

Harmonic Drive® Precision Gear

CSF and CSG Series : Quick Connect Gearheads

The CSF-GH series and CSG-GH high torque series gearheads are designed to easily mount to any motor, yet maintain all of the benefits of Harmonic Drive® precision gearing including high accuracy and zero-backlash. The gearheads have a compact and lightweight construction.

These gearheads feature high performance precision gearing using Harmonic Drive LLC's patented technologies and manufacturing expertise.

- **Zero Backlash** The unique operating principles of Harmonic Drive® strain wave precision gearing enable the gear teeth to be continually preloaded which provides zero backlash in the tooth mesh.
- **High Moment Capacity** A high stiffness cross roller bearing is used as the output bearing. This bearing can support high radial, axial, and moment loads.
- **Easy to Use** An adapter flange and clamp-style shaft coupling allows easy assembly with a servo motor.
- **Wide Range of Sizes and Gear Ratios**
  Sizes: 14, 20, 32, 45, 65
  Ratios: 50:1, 80:1, 100:1, 120:1, 160:1
- **Peak Torque**
  CSG-GH: = 23 Nm to 3419 Nm
  CSF-GH: = 18 Nm to 2630 Nm
- **Available Output Configurations** Shaft or Flange
- **Compatible Motor Sizes** 30W ~ 5000W

CSF Rating Table

Size	Gear Ratio	Rated Torque @2000rpm		Repeated Peak Torque		Limited For Average Torque		Emergency Torque		Limit for Average Input Speed	Max Speed	Weight*		Inertia*	
		Nm	lb-in	Nm	lb-in	Nm	lb-in	Nm	lb-in	rpm	rpm	kg	lb	kgcm²	lb-in²
14	50	5.4	48	18	159	6.9	61	35	310	3500	8500	0.9	1.9	0.041	0.014
	80	7.8	69	23	204	11	97	47	416						
	100	7.8	69	28	248	11	97	54	478						
20	50	25	221	56	496	34	301	98	867	3500	6500	2.5	5.5	0.24	0.083
	80	34	301	74	655	47	416	127	1124						
	100	40	354	82	726	49	434	147	1301						
	120	40	354	87	770	49	434	147	1301						
	160	40	354	92	814	49	434	147	1301						
32	50	76	673	216	1912	108	956	382	3381	3500	4800	6.8	15	2.1	0.72
	80	118	1044	304	2691	167	1478	568	5027						
	100	137	1212	333	2948	216	1912	647	5726						
	120	137	1213	353	3124	216	1912	686	6072						
	160	137	1213	372	3292	216	1912	686	6072						
45	50	176	1558	500	4425	265	2345	950	8408	3000	3800	17	37	11	3.7
	80	313	2770	706	6249	390	3452	1270	11240						
	100	353	3124	755	6682	500	4425	1570	13895						
	120	402	3558	823	7284	620	5487	1760	15577						
	160	402	3558	882	7806	630	5576	1910	16904						
65	80	745	6594	2110	18675	1040	9205	3720	32925	1900	1900	29	65	59	20
	100	951	8417	2300	20357	1520	13453	4750	42041						
	120	951	8417	2510	22215	1570	13896	4750	42041						
	160	951	8417	2630	23277	1570	13896	4750	42041						

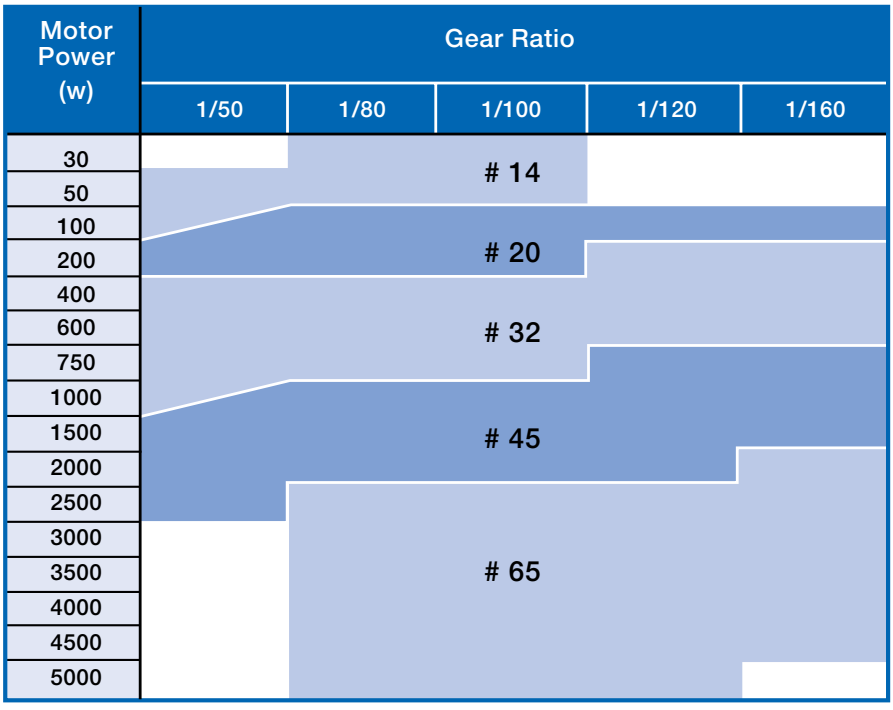
* Values are approximate and are determined by adapter, shaft coupling, and output flange/shaft configurations.

CSG Rating Table

Size	Gear Ratio	Rated Torque @2000rpm		Repeated Peak Torque		Limited For Average Torque		Emergency Torque		Limit for Average Input Speed	Max Speed	Weight*		Inertia*	
		Nm	lb-in	Nm	lb-in	Nm	lb-in	Nm	lb-in	rpm	rpm	kg	lb	$kgcm^2$	$lb\text{-}in^2$
14	50	7.0	62	23	204	9.0	80	46	407	3500	8500	0.9	1.9	0.041	0.014
	80	10	89	30	266	14	124	61	540						
	100	10	89	36	319	14	124	70	620						
20	50	33	292	73	646	44	389	127	1124	3500	6500	2.5	5.5	0.24	0.083
	80	44	389	96	850	61	540	165	1460						
	100	52	460	107	947	64	566	191	1690						
	120	52	460	113	1000	64	566	191	1690						
	160	52	460	120	1062	64	566	191	1,690						
32	50	99	876	281	2487	140	1239	497	4399	3500	4800	6.8	15	2.1	0.72
	80	153	1354	395	3496	217	1921	738	6532						
	100	178	1575	433	3832	281	2487	812	7187						
	120	178	1575	459	4062	281	2487	812	7187						
	160	178	1575	484	4284	281	2487	812	7187						
45	50	229	2027	650	5753	345	3054	1235	10931	3000	3800	17	37	11	0.72
	80	407	3602	918	8125	507	4487	1651	14613						
	100	459	4062	982	8691	650	5753	2033	17994						
	120	523	4629	1070	9470	806	7134	2033	17994						
	160	523	4629	1147	10152	819	7249	2033	17994						
65	80	969	8576	2743	24278	1352	11966	4836	42802	1900	1900	29	65	59	20
	100	1236	10940	2990	26464	1976	17489	5174	45794						
	120	1236	10940	3263	28880	2041	18064	5174	5794						
	160	1236	10940	3419	30261	2041	18064	5174	45794						

* Values are approximate and are determined by adapter, shaft coupling, and output flange/shaft configurations.

Motor Power vs. Gearhead Size & Gear Ratio

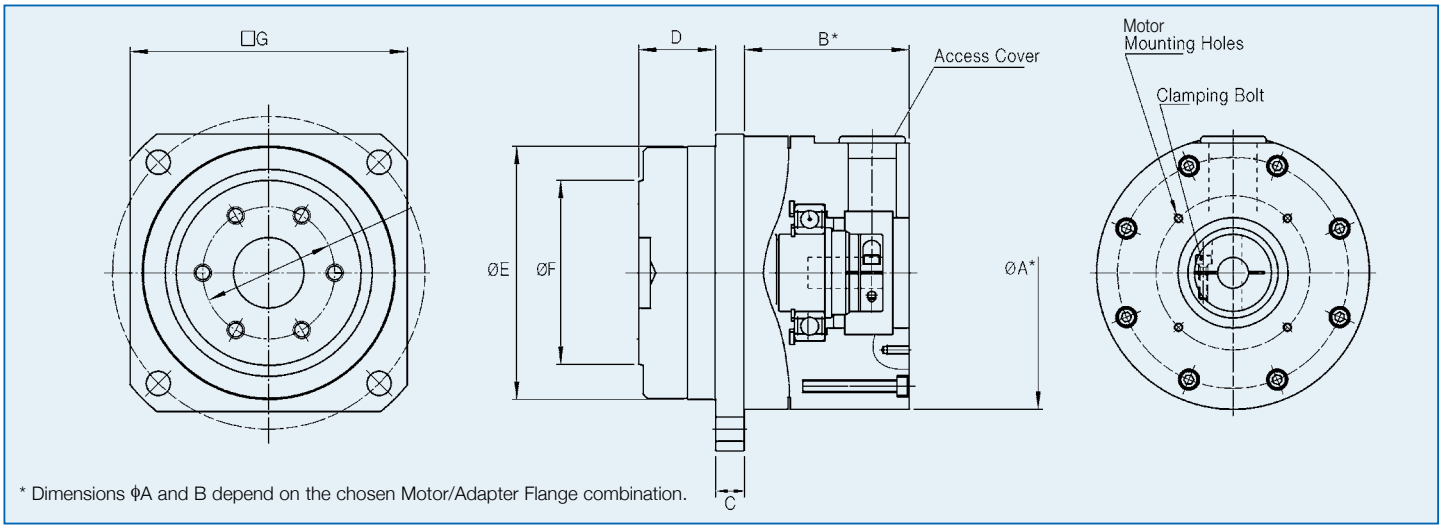


SHAFT OUTPUT

FLANGE OUTPUT

Positional Accuracy

Size	14	20	32	45	65
arc-min	1.5	1	1	1	1



* Dimensions ϕA and B depend on the chosen Motor/Adapter Flange combination.

Dimensions

unit: mm

Size	14	20	32	45	65
C	8	10	13	16	25
D	21	27	35	53	57
ϕE	56 h7	85 h7	115 h7	165 h8	220 h8
ϕF	40	59	84	122	168
G	60	90	120	170	230

Output Bearing Specifications

Size	Pitch circle dp	Offset R	Basic Load Dynamic Load Rating C	Basic Load Static Load Rating Co	Permissible dynamic tilting moment	Moment Stiffness	Permissible Axial Load	Permissible Radial Load
	m	m	N	N	Nm	*10^4 Nm/rad	N	N
14	0.0405	0.011	5110	7060	27	3.0	1093	732
20	0.064	0.0115	10600	17300	145	17	2267	1519
32	0.085	0.014	20500	32800	258	42	4385	2938
45	0.123	0.019	41600	76000	797	100	8899	5962
65	0.170	0.0225	81600	149000	1992	412	17454	11693

[in-lb] = [Nm] x 8.85 [lb] = [N] x 0.225

ORDERING INFORMATION

Quick Connect Gearheads	Size	Gear Ratio	Quick Connect Configuration	Output	Motor
CSF/CSG Series	14	50 80 100	GH	F0: Flange Output J2: Shaft Output, No Keyway or Tapped Hole J6: Shaft Output, Key and Tapped Hole	Please provide the model number of the motor being coupled to this gearhead so we can specify a unique Harmonic Drive LLC P/N for a ready-to-mount gearhead.
	20 32 45	50 80 100 120 160			
	65	80 100 120 160			

CSF - 20 - 160 - GH - F0 - XXX

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