

# Quick Connect Gearheads

Quick Connect Gearheads  
CSF-GH Series

HIGH PERFORMANCE  
EASY TO USE



*The Leader in  
Precision Motion*

harmonic drive gearing

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# HARMONIC DRIVE GEARING

## CSF SERIES : QUICK CONNECT GEARHEADS

The CSF-GH series gearhead has been designed to easily mount to any motor, yet maintain all of the benefits of harmonic drive gearing including high accuracy and zero-backlash. The gearhead has a compact and lightweight construction.

This gearhead features high performance harmonic drive gearing which uses HD Systems' patented technologies and manufacturing expertise.



- **ZERO BACKLASH** The unique operating principles of harmonic drive 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
- **AVAILABLE OUTPUT CONFIGURATIONS** Shaft or Flange
- **COMPATIBLE MOTOR SIZES** 30w ~ 5000w

**Rating Table**

Size	Gear Ratio	Rated Torque @2000rpm		Repeated Peak Torque		Limited For Average Torque		Emergency Torque		Limit for Average Input Speed rpm	Max Speed rpm	Weight*		Inertia*	
		Nm	lb-in	Nm	lb-in	Nm	lb-in	Nm	lb-in			kg	lb	kgcm <sup>2</sup>	lb-in <sup>2</sup>
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						
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						
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						
65	50	745	6594	2110	18675	1040	9205	3720	32925	1900	1900	29	65	59	20
	80	745	6594	2110	18675	1040	9205	3720	32925						
	100	951	8417	2300	20357	1520	13453	4750	42041						
	120	951	8417	2510	22215	1570	13896	4750	42041						

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

## Motor Power vs. Gearhead Size & Gear Ratio

Motor Power (w)	Gear Ratio				
	1/50	1/80	1/100	1/120	1/160
30			# 14		
50			# 14		
100			# 14		
200			# 20		
400			# 20		
600			# 32		
750			# 32		
1000			# 32		
1500			# 45		
2000			# 45		
2500			# 45		
3000			# 65		
3500			# 65		
4000			# 65		
4500			# 65		
5000			# 65		



SHAFT OUTPUT



FLANGE OUTPUT

## Dimensions

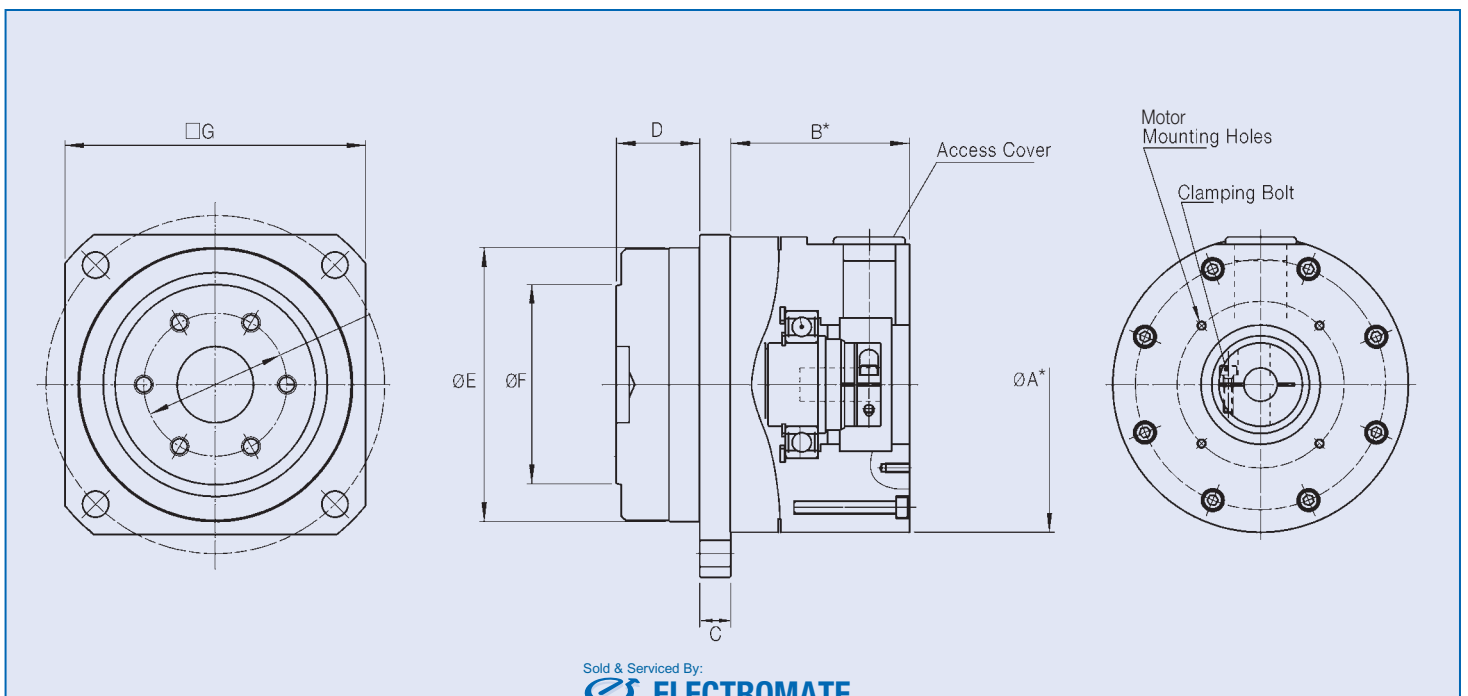
unit: mm

Size	14	20	32	45	65
ΦA	-	-	-	-	-
B	-	-	-	-	-
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
weight (g)	-	-	-	-	-

## 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.



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## Starting Torque

[ N-cm ]

Size	14		20		32		45	65
Ratio	Standard Adapter	Using Small Motor Adapter	Using Large Motor Adapter	Using Small Motor Adapter	Using Large Motor Adapter	Standard Adapter	Standard Adapter	
50	8.2	13	20	50	58	123	-	
80	6.9	10	17	38	46	95	186	
100	6.6	9.6	16	37	45	89	166	
120	-	9.1	16	34	42	85	156	
160	-	8.6	15	33	41	79	139	

## Output Bearing Specifications

Size	Pitch circle dp	Offset R	Basic Load	
			Dynamic Load Rating C	Static Load Rating Co
	m	m	N	N
14	0.0405	0.011	5110	7060
20	0.064	0.0115	10600	17300
32	0.085	0.014	20500	32800
45	0.123	0.019	41600	76000
65	0.170	0.0225	81600	149000

Size	Permissible dynamic tilting moment	Moment Stiffness	Permissible Axial Load	Permissible Radial Load
	Nm	*10 <sup>4</sup> Nm/rad	N	N
14	27	3.0	1093	732
20	145	17	2267	1519
32	258	42	4385	2938
45	797	100	8899	5962
65	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 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 HD Systems P/N for a ready-to-mount gearhead.
	20	50 80 100 120 160			
	32				
	45				
	65	80 100 120 160			

CSF - 20 - 160 - GH - F0 - XXX

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