

ALUMINUM WORM GEARBOXES



CHAPTER

3

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IRONHORSE® ALUMINUM WORM GEARBOXES



GEARBOX SELECTION FACTORS

SERVICE FACTORS AND K FACTORS

Service Factors for Selecting Gearboxes (when used with electric motors)				
Service Continuity (per day)	Load Characteristics			
	Uniform	Moderate Shock*	Heavy Shock*	Extreme Shock*
Occasional 1/2 hour	1.00	1.00	1.00	1.25
Less than 3 hours	1.00	1.00	1.25	1.50
3-10 hours	1.00	1.25	1.50	1.75
More than 10 hours	1.25	1.50	1.75	2.00

* Shock results from sudden increases in the torque demand of the load, such as: sudden stopping, restarting, and/or reversing; significantly heavy loads dropped onto a moving conveyor; impact loads such as punch press operations.

Depending upon the load characteristics, divide the gearbox HP, Overhung Load, and Maximum Mechanical Capacity ratings by the applicable service factor.

Overhung Load K Factors for Various Drive Types	
Chain & Sprocket	1.00
Gear	1.25
V-belt	1.50
Flat Belt	2.50
Variable Pitch Belt	3.50

Divide gearbox OHL ratings by the applicable OHL K factors.

IRONHORSE® ALUMINUM WORM GEARBOX SPECIFICATIONS

FRAME SIZES 30, 40, 50 MM SPECIFICATIONS

IronHorse Aluminum Worm Gearbox Specifications – Frame Sizes 30, 40, 50 mm															
Part Number	Ratio	Output RPM @ 1750 rpm Input	Nominal Motor HP 1 @ 1800 rpm	NEMA Motor Frame	Output Type 2	Center Distance 3 (mm)	Overhung Load 4 (lb)	Efficiency (%)	Approx Weight (lb)	Maximum Ratings @ 1750 rpm Input			Maximum Input Speed (rpm)		
										Mechanical 5					
										Input Power (hp)	Output Power (hp)	Output Torque (lb-in)			
WGA-30M-010-H1	10:1	175	0.5	56C	H	30	142	80	3	0.54	0.43	150	2,000		
WGA-30M-020-H1	20:1	88	0.25				179	72		0.30	0.22	150			
WGA-30M-030-H1	30:1	58	0.25				205	62		0.25	0.16	177			
WGA-30M-040-H1	40:1	44	0.2				225	55		0.19	0.10	150			
WGA-30M-060-H1	60:1	29	0.12				259	46		0.12	0.06	142			
WGA-40M-010-H1	10:1	175	1			40	279	83	5	1.15	0.95	354			
WGA-40M-020-H1	20:1	88	0.5				350	78		0.61	0.48	345			
WGA-40M-030-H1	30:1	58	0.5				403	68		0.53	0.36	389			
WGA-40M-040-H1	40:1	44	0.33				441	65		0.39	0.25	363			
WGA-40M-060-H1	60:1	29	0.25				507	56		0.25	0.14	319			
WGA-40M-080-H1	80:1	22	0.12				556	50		0.19	0.10	283			
WGA-40M-100-H1	100:1	17.5	0.12				595	47		0.15	0.07	257			
WGA-50M-010-H1	10:1	175	2				50	406		84	8	2.06		1.73	628
WGA-50M-020-H1	20:1	88	1					510		78		1.13		0.88	646
WGA-50M-030-H1	30:1	58	0.75					586		70		0.95		0.67	734
WGA-50M-040-H1	40:1	44	0.75	643	65	0.70		0.46	664						
WGA-50M-060-H1	60:1	29	0.33	739	57	0.46		0.26	602						
WGA-50M-080-H1	80:1	22	0.33	810	50	0.38		0.19	566						
WGA-50M-100-H1	100:1	17.5	0.25	866	46	0.28		0.13	487						

1) Nominal Motor HP is the highest HP 1800 rpm motor to be used with the gearbox under conditions of 1.0 service factor. Gearbox input power capacity decreases as motor speed decreases and as service factor increases.

2) Output Type: H = Hollow Bore.

3) The Center Distance is the distance between the centerlines of the input and output shafts/bores; serves as the gearbox frame size.

4) Overhung Load ratings are for forces perpendicular to the output shaft and located at the shaft midpoint, such as from a gear, pulley, or sprocket with a belt or chain. Divide OHL ratings by the applicable OHL K factors shown separately in the Selection Factors tables. OHL ratings should also be divided by applicable service factors.

5) Maximum Mechanical Ratings are limits based on strength and durability of gearbox components; applicable when operating time is short and stopped time is greater than or equal to operating time. These ratings are applicable for 1.0 service factor loads, and may require modification depending upon characteristics of the applicable driven loads. Refer to the "Service Factors" table for more information.

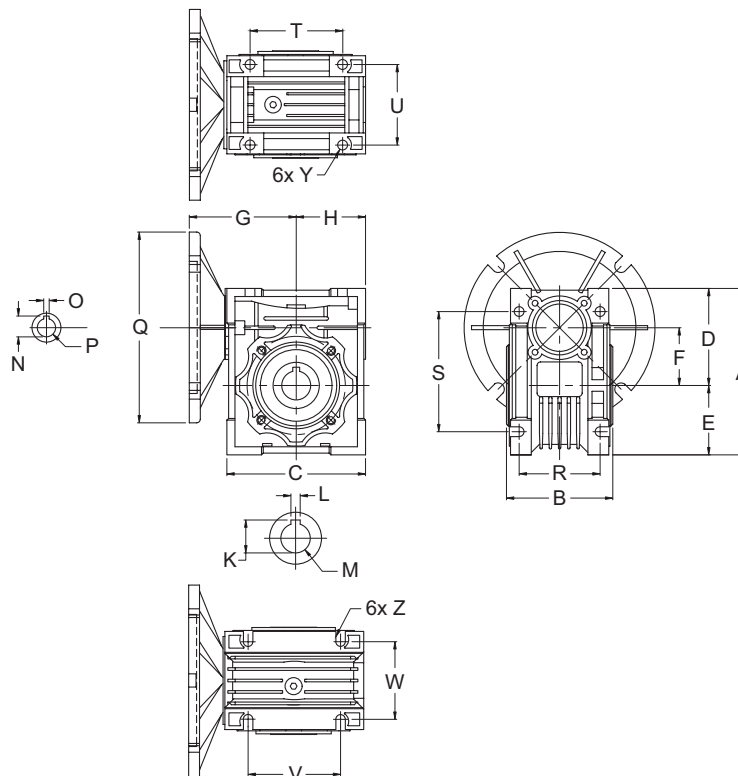
IRONHORSE® ALUMINUM WORM GEARBOX SPECIFICATIONS (CONTINUED)

FRAME SIZES 63, 75 MM SPECIFICATIONS

IronHorse Aluminum Worm Gearbox Specifications – Frame Sizes 63, 75 mm															
Part Number	Ratio	Output RPM @ 1750 rpm Input	Nominal Motor HP ¹ @ 1800 rpm	NEMA Motor Frame	Output Type ²	Center Distance ³ (mm)	Overhung Load ⁴ (lb)	Efficiency (%)	Approx Weight (lb)	Maximum Ratings @ 1750 rpm Input			Maximum Input Speed (rpm)		
										Mechanical ⁵					
										Input Power (hp)	Output Power (hp)	Output Torque (lb-in)			
WGA-63M-010-H1	10:1	175	3	56C	H	63	510	86	13	3.67	3.16	1141	2,000		
WGA-63M-010-H2	10:1	175	3	145TC						510	86	3.67		3.16	1141
WGA-63M-020-H1	20:1	88	2	56C						641	80	2.04		1.63	1186
WGA-63M-020-H2	20:1	88	2	145TC						641	80	2.04		1.63	1186
WGA-63M-030-H1	30:1	58	1.5	56C						736	73	1.76		1.28	1416
WGA-63M-040-H1	40:1	44	1	56C						807	70	1.26		0.88	1274
WGA-63M-060-H1	60:1	29	0.75	56C						928	59	0.86		0.51	1141
WGA-63M-080-H1	80:1	22	0.5	56C						1017	53	0.67		0.36	1071
WGA-63M-100-H1	100:1	18	0.5	56C						1088	48	0.57		0.27	1035
WGA-75M-010-H1	10:1	175	5	56C						H	75	604		86	19
WGA-75M-010-H2	10:1	175	5	145TC	604	86	5.44	4.68	1717						
WGA-75M-010-H3	10:1	175	5	182/4TC	604	86	5.44	4.68	1717						
WGA-75M-020-H1	20:1	88	3	56C	759	79	3.14	2.48	1849						
WGA-75M-020-H2	20:1	88	3	145TC	759	79	3.14	2.48	1849						
WGA-75M-030-H1	30:1	58	2	56C	873	72	2.48	1.79	2026						
WGA-75M-040-H1	40:1	44	1.5	56C	957	68	1.88	1.28	1947						
WGA-75M-060-H1	60:1	29	1	56C	1099	62	1.26	0.78	1770						
WGA-75M-080-H1	80:1	22	0.75	56C	1205	58	0.97	0.56	1672						
WGA-75M-100-H1	100:1	18	0.75	56C	1289	52	0.80	0.42	1593						

1) Nominal Motor HP is the highest HP 1800 rpm motor to be used with the gearbox under conditions of 1.0 service factor. Gearbox input power capacity decreases as motor speed decreases and as service factor increases.
 2) Output Type: H = Hollow Bore.
 3) The Center Distance is the distance between the centerlines of the input and output shafts/bore; serves as the gearbox frame size.
 4) Overhung Load ratings are for forces perpendicular to the output shaft and located at the shaft midpoint, such as from a gear, pulley, or sprocket with a belt or chain. Divide OHL ratings by the applicable OHL K factors shown separately in the Selection Factors tables. OHL ratings should also be divided by applicable service factors.
 5) Maximum Mechanical Ratings are limits based on strength and durability of gearbox components; applicable when operating time is short and stopped time is greater than or equal to operating time. These ratings are applicable for 1.0 service factor loads, and may require modification depending upon characteristics of the applicable driven loads. Refer to the "Service Factors" table for more information.




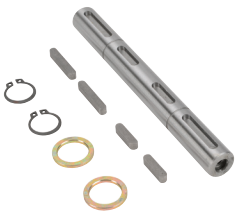

IRONHORSE® ALUMINUM WORM GEARBOX DIMENSIONS



Dimensions (inches) – IronHorse Aluminum Worm Gearboxes																
Part Number	NEMA Motor Face	A	B	C	D	E	F	G	H	Output Bore			Input Shaft			ØQ
										K	L	ØM	N	O	ØP	
WGA-30M-xxx-H1	56C	3.82	2.48	3.15	2.24	1.57	1.18	2.89	1.57	0.720	0.20	0.625	0.73	0.19	0.625	6.50
WGA-40M-xxx-H1		4.78	3.07	3.94	2.81	1.97	1.57	3.18	1.97	0.840	0.20	0.750	0.71	0.19	0.625	6.50
WGA-50M-xxx-H1		5.67	3.62	4.72	3.31	2.36	1.97	3.58	2.36	1.110	0.24	1.000	0.71	0.19	0.625	6.50
WGA-63M-xxx-H1		6.87	4.42	5.69	4.00	2.87	2.48	4.06	2.84	1.250	0.31	1.125	0.71	0.19	0.625	6.50
WGA-63M-xxx-H2	145TC	6.87	4.42	5.69	4.00	2.87	2.48	4.06	2.84	1.250	0.31	1.125	0.97	0.19	0.875	6.50
WGA-75M-xxx-H1	56C	8.07	4.72	6.77	4.69	3.39	2.95	4.68	3.39	1.375	0.31	1.250	0.71	0.19	0.625	6.50
WGA-75M-xxx-H2	145TC	8.07	4.72	6.77	4.69	3.39	2.95	4.68	3.39	1.375	0.31	1.250	1.24	0.25	1.125	6.50
WGA-75M-xxx-H3	182/4TC	8.07	4.72	6.77	4.69	3.39	2.95	4.68	3.39	1.375	0.31	1.250	1.24	0.25	1.125	8.97
Part Number	NEMA Motor Face	R	S	T	U	V	W	Y	Z							
WGA-30M-xxx-H1	56C	1.73	2.80	2.13	1.73	2.13	1.73	0.26 x 0.33	0.26 x 0.33							
WGA-40M-xxx-H1		2.36	3.57	2.76	2.37	2.76	2.37	0.26	0.24 x 0.33							
WGA-50M-xxx-H1		2.76	4.09	3.16	2.74	3.15	2.65	0.33	0.33 x 0.48							
WGA-63M-xxx-Hx	56C, 145TC	3.35	5.12	3.94	3.35	3.94	3.35	0.33	0.33							
WGA-75M-xxx-Hx	56C, 145TC, 182/4TC	3.54	6.02	4.72	3.54	4.72	3.54	0.43	0.43							

See our website: www.AutomationDirect.com for complete Engineering drawings.

IRONHORSE® ALUMINUM WORM GEARBOX ACCESSORIES

IronHorse Aluminum Worm Gearbox Accessories		
Part Number	Description	Typical Photo
WGA-30M-ACC1	Output flange, for aluminum WGA-30M series gearboxes. Includes (4) mounting screws.	
WGA-40M-ACC1	Output flange, for aluminum WGA-40M series gearboxes. Includes (4) mounting screws.	
WGA-50M-ACC1	Output flange, for aluminum WGA-50M series gearboxes. Includes (4) mounting screws.	
WGA-63M-ACC1	Output flange, for aluminum WGA-63M series gearboxes. Includes (8) mounting screws.	
WGA-75M-ACC1	Output flange, for aluminum WGA-75M series gearboxes. Includes (8) mounting screws.	
WGA-30M-ACC2	Torque arm, for aluminum WGA-30M series gearboxes. Includes (4) mounting screws.	
WGA-40M-ACC2	Torque arm, for aluminum WGA-40M series gearboxes. Includes (4) mounting screws.	
WGA-50M-ACC2	Torque arm, for aluminum WGA-50M series gearboxes. Includes (4) mounting screws.	
WGA-63M-ACC2	Torque arm, for aluminum WGA-63M series gearboxes. Includes (8) mounting screws.	
WGA-75M-ACC2	Torque arm, for aluminum WGA-75M series gearboxes. Includes (8) mounting screws.	
WGA-30M-ACC3	Single output shaft, Ø0.625 in, for aluminum WGA-30M series gearboxes. Includes (3) keys, (1) spacer, and (1) retaining ring.	
WGA-40M-ACC3	Single output shaft, Ø0.75 in, for aluminum WGA-40M series gearboxes. Includes (3) keys, (1) spacer, and (1) retaining ring.	
WGA-50M-ACC3	Single output shaft, Ø1.0 in, for aluminum WGA-50M series gearboxes. Includes (3) keys, (1) spacer, and (1) retaining ring.	
WGA-63M-ACC3	Single output shaft, Ø1.125 in, for aluminum WGA-63M series gearboxes. Includes (3) keys, (1) spacer, and (1) retaining ring.	
WGA-75M-ACC3	Single output shaft, Ø1.25 in, for aluminum WGA-75M series gearboxes. Includes (3) keys, (1) spacer, and (1) retaining ring.	
WGA-30M-ACC4	Double output shaft, Ø0.625 in, for aluminum WGA-30M series gearboxes. Includes (4) keys, (2) spacers, and (2) retaining rings.	
WGA-40M-ACC4	Double output shaft, Ø0.75 in, for aluminum WGA-40M series gearboxes. Includes (4) keys, (2) spacers, and (2) retaining rings.	
WGA-50M-ACC4	Double output shaft, Ø1.0 in, for aluminum WGA-50M series gearboxes. Includes (4) keys, (2) spacers, and (2) retaining rings.	
WGA-63M-ACC4	Double output shaft, Ø1.125 in, for aluminum WGA-63M series gearboxes. Includes (4) keys, (2) spacers, and (2) retaining rings.	
WGA-75M-ACC4	Double output shaft, Ø1.25 in, for aluminum WGA-75M series gearboxes. Includes (4) keys, (2) spacers, and (2) retaining rings.	
WGA-30M-ACC5	Output cover, for aluminum WGA-30M series gearboxes. Includes (4) mounting screws.	
WGA-40M-ACC5	Output cover, for aluminum WGA-40M series gearboxes. Includes (4) mounting screws.	
WGA-50M-ACC5	Output cover, for aluminum WGA-50M series gearboxes. Includes (4) mounting screws.	
WGA-63M-ACC5	Output cover, for aluminum WGA-63M series gearboxes. Includes (4) mounting screws.	
WGA-75M-ACC5	Output cover, for aluminum WGA-75M series gearboxes. Includes (4) mounting screws.	