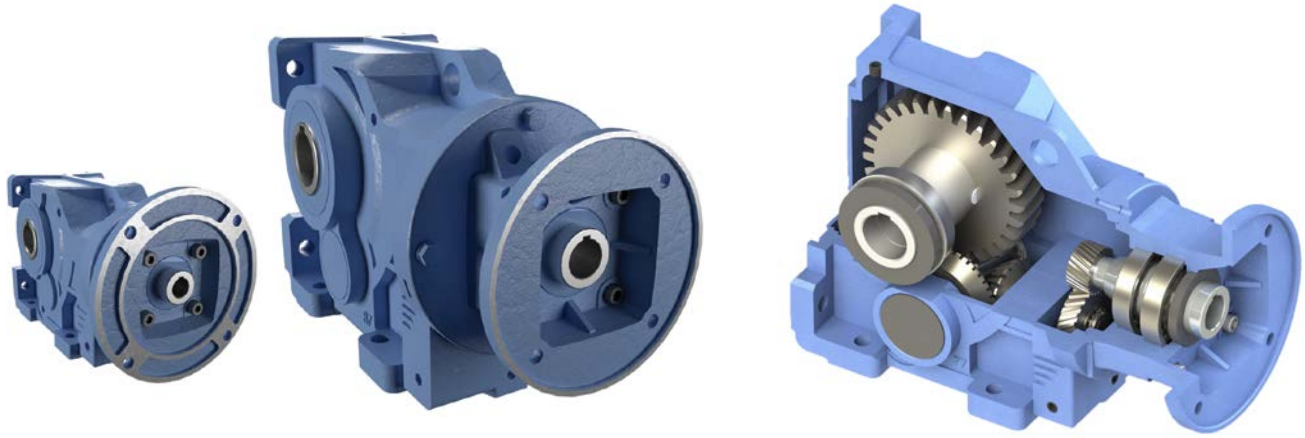
IronHorse® Cast-Iron Helical Bevel Gearboxes

Helical Bevel Gearbox Overview



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Gearbox Overview

Gearboxes, also known as enclosed gear drives or speed reducers, are mechanical drive components that can control a load at a reduced fixed ratio of the motor speed. The output torque is also increased by the same ratio, while the horsepower remains the same (less efficiency loss). For example, a 10:1 ratio gearbox outputs approximately the same motor output horsepower, but motor speed is divided by 10 and motor torque is multiplied by 10.

Helical bevel gearboxes use helical gears to provide quiet startup and smooth operation.

IronHorse helical bevel gearboxes are manufactured in an ISO9001-certified plant by one of the leading and most internationally acclaimed gearbox manufacturers in the world today. Only the highest quality materials are tested, certified, and used in the manufacturing process. Strict adherence to and compliance with the toughest international and U.S. testing standards and manufacturing procedures guarantees you the highest quality products.

We offer helical bevel gearboxes with cast-iron frames. The hollow-bore output accepts double or single shafts which are perpendicular to the input. Our gearboxes utilize C-face mounting interfaces for C-face motors.

Features

- C-face and TC-face input; bevel, perpendicular output
- Universally interchangeable compact design ensures easy OEM replacement
- Flexible installation: 6 mounting positions
- FCD45 cast-iron one-piece housing
- 20CrMO alloy steel pinion and gears
- AGMA 11 & 12 rated, SCM415 pinion gears
- Gears supported by generously-sized precision ball and tapered bearings
- Double-lipped embedded oil seals to prevent leakage
- Two-year warranty

Applications

- Use with electric motors for reducing output speed, increasing torque.
- Use for conveyors, packaging machines, rotary tables, etc.

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Specifications

IronHorse Cast-Iron Helical Bevel Gearbox Specifications													
Part Number	PriceCode	Box Size	Nominal Ratio	Actual Ratio	Output RPM @ 1750 RPM Input	NEMA Motor Frame**	Max Input Power (hp) 1) 3)	Max Output Torque (lb·in) 3)	Max OHL (lbs) 2) 3)	Efficiency (%)	Backlash (Arc Minutes)	Approx Weight (lb)	Drawing Links
HBR-37-010-A	.00	37	10	11.09	158	56C	4.33	1,565	520	91	45	32	PDF
HBR-37-010-B	.00		10	11.09	158	143/5TC	4.33	1,565	510			37	PDF
HBR-37-025-A	.00		25	23.10	76	56C	2.20	1,659	635			32	PDF
HBR-37-025-B	.00		25	23.10	76	143/5TC	2.20	1,659	610			37	PDF
HBR-37-040-A	.00		40	37.97	46	56C	1.43	1,770	735			32	PDF
HBR-37-040-B	.00		40	37.97	46	143TC	1.43	1,770	705			37	PDF
HBR-37-060-A	.00		60	59.67	29	56C	0.91	1,770	815			32	PDF
HBR-47-010-A	.00	47	10	9.95	176	56C	6.46	2,097	620	91	36	46	PDF
HBR-47-010-B	.00		10	9.95	176	143/5TC	6.46	2,097	580			51	PDF
HBR-47-010-C	.00		10	9.95	176	182/4TC	6.46	2,097	550			57	PDF
HBR-47-020-B	.00		20	20.65	85	143/5TC	3.97	2,675	690			51	PDF
HBR-47-020-C	.00		20	20.65	85	182TC	3.97	2,675	610			57	PDF
HBR-47-040-A	.00		40	41.36	42	56C	2.50	3,372	945			46	PDF
HBR-47-040-B	.00		40	41.36	42	143/5TC	2.50	3,372	905			51	PDF
HBR-47-060-A	.00		60	58.99	30	56C	1.84	3,540	1030			46	PDF
HBR-47-060-B	.00		60	58.99	30	143TC	1.84	3,540	980			51	PDF
HBR-47-085-A	.00		85	86.89	20	56C	1.42	3,540	1110			46	PDF
HBR-67-010-B *	.00	67	10	9.66	181	143/5TC	12.06	3,800	1500	91	33	73	PDF
HBR-67-010-C *	.00		10	9.66	181	182/4TC	12.06	3,800	1410			80	PDF
HBR-67-020-B *	.00		20	22.18	79	143/5TC	6.26	4,530	1760			73	PDF
HBR-67-020-C *	.00		20	22.18	79	182/4TC	6.26	4,530	1570			80	PDF
HBR-67-040-A *	.00		40	37.98	46	56C	4.62	5,730	2140			69	PDF
HBR-67-040-B *	.00		40	37.98	46	143/5TC	4.62	5,730	2140			73	PDF
HBR-67-040-C *	.00		40	37.98	46	182TC	4.62	5,730	1510			80	PDF
HBR-67-065-A *	.00		65	64.97	27	56C	2.95	6,260	2140			69	PDF
HBR-67-065-B *	.00		65	64.97	27	143/5TC	2.95	6,260	2140			73	PDF
HBR-67-085-A *	.00		85	84.10	21	56C	2.46	6,760	2140			69	PDF
HBR-67-085-B *	.00		85	84.10	21	143/5TC	2.46	6,760	2140			73	PDF
HBR-67-120-A *	.00		120	118.14	15	56C	1.88	7,260	2140			69	PDF
HBR-67-120-B *	.00		120	118.14	15	143TC	1.88	7,260	2140			73	PDF

* Due to size and/or weight restrictions, gearboxes HBR-67-xxx-x through HBR-87-xxx-x must ship via Freight.

** Although physical mounting to other motors is possible, please use only the motors as specified in this table.

1) Max Input Power 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) OHL= 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.

3) Maximum Mechanical Ratings are limits based on the 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.

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Specifications (continued)

IronHorse Cast-Iron Helical Bevel Gearbox Specifications

Part Number	PriceCode	Box Size	Nominal Ratio	Actual Ratio	Output RPM @ 1750 RPM Input	NEMA Motor Frame **	Max Input Power (hp) 1) 3)	Max Output Torque (lb-in) 3)	Max OHL (lbs) 2) 3)	Efficiency (%)	Backlash (Arc Minutes)	Approx Weight (lb)	Drawing Links
HBR-77-010-C *	.00	77	10	9.96	176	182/4TC	24.02	7,800	1860	91	29	132	PDF
HBR-77-010-D *	.00		10	9.96	176	213/5TC	24.02	7,800	1690			148	PDF
HBR-77-020-C *	.00		20	20.24	86	182/4TC	14.78	9,765	2080			132	PDF
HBR-77-020-D *	.00		20	20.24	86	213/5TC	14.78	9,765	1740			148	PDF
HBR-77-040-C *	.00		40	39.76	44	182/4TC	9.21	11,955	2050			132	PDF
HBR-77-040-D *	.00		40	39.76	44	213TC	9.21	11,955	1390			148	PDF
HBR-77-060-C *	.00		60	57.05	31	182/4TC	7.16	13,325	1860			132	PDF
HBR-77-080-B *	.00		80	78.07	22	143/5TC	5.38	13,710	3080			128	PDF
HBR-77-080-C *	.00		80	78.07	22	182TC	5.38	13,710	2570			132	PDF
HBR-77-120-B *	.00		120	122.94	14	143TC	3.42	12,480	3090			128	PDF
HBR-87-020-D *	.00	87	20	20.90	84	213/5TC	25.88	17,650	2780	91	25	230	PDF
HBR-87-020-E *	.00		20	20.90	84	254/6TC	25.88	17,650	1940			257	PDF
HBR-87-040-C *	.00		40	43.31	40	182/4TC	14.76	20,870	3450			208	PDF
HBR-87-040-D *	.00		40	43.31	40	213/5TC	14.76	20,870	2930			230	PDF
HBR-87-060-C *	.00		60	61.42	28	182/4TC	11.11	22,270	3510			208	PDF
HBR-87-060-D *	.00		60	61.42	28	213/5TC	11.11	22,270	2780			230	PDF
HBR-87-080-C *	.00		80	82.86	21	182/4TC	8.72	23,570	4260			208	PDF
HBR-87-120-C *	.00		120	117.56	15	182TC	6.23	23,900	4370			208	PDF

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2) OHL= 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.
3) Maximum Mechanical Ratings are limits based on the 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.

Gearbox Selection Factors

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.

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.

NOTE: For more detailed information regarding service factors and gearbox selection, please refer to our HBR Gearbox User Manual which is available for free download from our website at _____.