SPECIFICATIONS

TABLE OF CONTENTS

IronHorse® Cast-Iron Helical Bevel 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
** Refer to the AGMA Service Factors section (page B–5) of the "Gearbox Selection" appendix for information regarding how to determine the appropriate service factor for your application.* *** 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® Cast-Iron Helical Bevel Gearbox Specifications

IronHorse Cast-Iron Helical Bevel Gearbox Specifications												
Part Number	***Box Size***	***Nominal Ratio***	***Actual Ratio***	***Output RPM @ 1750 RPM Input***	***NEMA Motor Frame*****	***Max Input Speed (rpm)***	***Max Input Power (hp) 1) 3)***	***Max Output Torque (lb-in) 3)***	***Max OHL (lbs) 2) 3)***	***Efficiency (%)***	***Backlash (Arc Minutes)***	***Approx Weight (lb)***
HBR-37-010-A	37	10	11.09	158	56C	2,000	4.33	1,565	520	91	45	32
HBR-37-010-B		10	11.09	158	143/5TC		4.33	1,565	510			37
HBR-37-025-A		25	23.10	76	56C		2.20	1,659	635			32
HBR-37-025-B		25	23.10	76	143/5TC		2.20	1,659	610			37
HBR-37-040-A		40	37.97	46	56C		1.43	1,770	735			32
HBR-37-040-B		40	37.97	46	143TC		1.43	1,770	705			37
HBR-37-060-A		60	59.67	29	56C		0.91	1,770	815			32
HBR-47-010-A	47	10	9.95	176	56C	2,000	6.46	2,097	620	91	36	46
HBR-47-010-B		10	9.95	176	143/5TC		6.46	2,097	580			51
HBR-47-010-C		10	9.95	176	182/4TC		6.46	2,097	550			57
HBR-47-020-B		20	20.65	85	143/5TC		3.97	2,675	690			51
HBR-47-020-C		20	20.65	85	182TC		3.97	2,675	610			57
HBR-47-040-A		40	41.36	42	56C		2.50	3,372	945			46
HBR-47-040-B		40	41.36	42	143/5TC		2.50	3,372	905			51
HBR-47-060-A		60	58.99	30	56C		1.84	3,540	1030			46
HBR-47-060-B		60	58.99	30	143TC		1.84	3,540	980			51
HBR-47-085-A		85	86.89	20	56C		1.42	3,540	1110			46
HBR-67-010-B*	67	10	9.66	181	143/5TC	2,000	12.06	3,800	1500	91	33	73
HBR-67-010-C*		10	9.66	181	182/4TC		12.06	3,800	1410			80
HBR-67-020-B*		20	22.18	79	143/5TC		6.26	4,530	1760			73
HBR-67-020-C*		20	22.18	79	182/4TC		6.26	4,530	1570			80
HBR-67-040-A*		40	37.98	46	56C		4.62	5,730	2140			69
HBR-67-040-B*		40	37.98	46	143/5TC		4.62	5,730	2140			73
HBR-67-040-C*		40	37.98	46	182TC		4.62	5,730	1510			80
HBR-67-065-A*		65	64.97	27	56C		2.95	6,260	2140			69
HBR-67-065-B*		65	64.97	27	143/5TC		2.95	6,260	2140			73
HBR-67-085-A*		85	84.10	21	56C		2.46	6,760	2140			69
HBR-67-085-B*		85	84.10	21	143/5TC		2.46	6,760	2140			73
HBR-67-120-A*		120	118.14	15	56C		1.88	7,260	2140			69
HBR-67-120-B*		120	118.14	15	143TC		1.88	7,260	2140			73

** 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 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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IronHorse Cast-Iron Helical Bevel Gearbox Specifications

Part Number	Box Size	Nominal Ratio	Actual Ratio	Output RPM @ 1750 RPM Input	NEMA Motor Frame**	Max Input Speed (rpm)	Max Input Power (hp) 1) 3)	Max Output Torque (lb-in) 3)	Max OHL (lbs) 2) 3)	Efficiency (%)	Backlash (Arc Minutes)	Approx Weight (lb)
HBR-77-010-C*	77	10	9.96	176	182/4TC	2,000	24.02	7,800	1860	91	29	132
HBR-77-010-D*		10	9.96	176	213/5TC		24.02	7,800	1690			148
HBR-77-020-C*		20	20.24	86	182/4TC		14.78	9,765	2080			132
HBR-77-020-D*		20	20.24	86	213/5TC		14.78	9,765	1740			148
HBR-77-040-C*		40	39.76	44	182/4TC		9.21	11,955	2050			132
HBR-77-040-D*		40	39.76	44	213TC		9.21	11,955	1390			148
HBR-77-060-C*		60	57.05	31	182/4TC		7.16	13,325	1860			132
HBR-77-080-B*		80	78.07	22	143/5TC		5.38	13,710	3080			128
HBR-77-080-C*		80	78.07	22	182TC		5.38	13,710	2570			132
HBR-77-120-B*		120	122.94	14	143TC		3.42	12,480	3090			128
HBR-87-020-D*	87	20	20.90	84	213/5TC	2,000	25.88	17,650	2780	91	25	230
HBR-87-020-E*		20	20.90	84	254/6TC		25.88	17,650	1940			257
HBR-87-040-C*		40	43.31	40	182/4TC		14.76	20,870	3450			208
HBR-87-040-D*		40	43.31	40	213/5TC		14.76	20,870	2930			230
HBR-87-060-C*		60	61.42	28	182/4TC		11.11	22,270	3510			208
HBR-87-060-D*		60	61.42	28	213/5TC		11.11	22,270	2780			230
HBR-87-080-C*		80	82.86	21	182/4TC		8.72	23,570	4260			208
HBR-87-120-C*		120	117.56	15	182TC		6.23	23,900	4370			208

** 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 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® Cast-Iron Helical Bevel Gearbox Accessories

Output Shafts

Single Output Shaft (typical)

Double Output Shaft (typical)

IronHorse Cast-Iron Helical Bevel Gearbox Output Shafts		
Part Number	***Description***	***For Use With:***
HBR-37-DS	IronHorse double output shaft, 1.000in. For use with HBR-37 series gearboxes. (4) keys, (1) spacer and (1) retaining ring included.	HBR-37-xx
HBR-37-S	IronHorse single output shaft, 1.000in. For use with HBR-37 series gearboxes. (3) keys, (1) end plate, (1) lock washer and (1) bolt included.	
HBR-47-DS	IronHorse double output shaft, 1.250in. For use with HBR-47 series gearboxes. (4) keys, (1) spacer and (1) retaining ring included.	HBR-47-xx
HBR-47-S	IronHorse single output shaft, 1.250in. For use with HBR-47 series gearboxes. (3) keys, (1) end plate, (1) lock washer and (1) bolt included.	
HBR-67-DS	IronHorse double output shaft, 1.500in. For use with HBR-67 series gearboxes. (4) keys, (1) spacer and (1) retaining ring included.	HBR-67-xx
HBR-67-S	IronHorse single output shaft, 1.500in. For use with HBR-67 series gearboxes. (3) keys, (1) end plate, (1) lock washer and (1) bolt included.	
HBR-77-DS	IronHorse double output shaft, 2.000in. For use with HBR-77 series gearboxes. (4) keys, (1) spacer and (1) retaining ring included.	HBR-77-xx
HBR-77-S	IronHorse single output shaft, 2.000in. For use with HBR-77 series gearboxes. (3) keys, (1) end plate, (1) lock washer and (1) bolt included.	
HBR-87-DS	IronHorse double output shaft, 2.375in. For use with HBR-87 series gearboxes. (4) keys, (1) spacer and (1) retaining ring included.	HBR-87-xx
HBR-87-S	IronHorse single output shaft, 2.375in. For use with HBR-87 series gearboxes. (3) keys, (1) end plate, (1) lock washer and (1) bolt included.	

Breather Plugs (Spare/Replacement)

Breather Plug (typical)

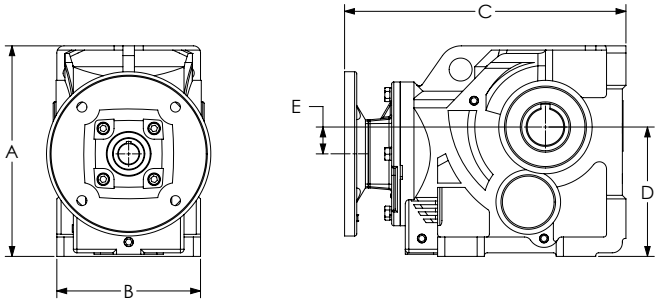
IronHorse Cast-Iron Helical Bevel Gearbox Breather Plugs *		
Part Number	***Description***	***For Use With:***
HBR-3777V	IronHorse breather plug, replacement. For use with size 37 through 77 HGR- and HBR-series gearboxes.	HB(G)R-37-xx through HB(G)R-77-xx
HBR-8797V	IronHorse breather plug, replacement. For use with size 87 and larger HGR- and HBR-series gearboxes.	HB(G)R-87-xx
** These items are included with the gearboxes, and are also available separately as spare or replacement parts.*		

IronHorse® Cast-Iron Helical Bevel Gearbox Dimensions

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

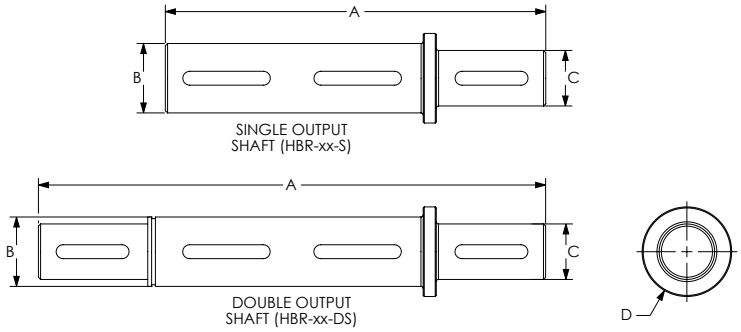
Dimensions = inches [mm]

Gearbox Dimensions



IronHorse Cast-Iron Helical Bevel Gearboxes						
Part Number	**Frame**	**A**	**B**	**C**	**D**	**E**
HBR-37-xxx-A	56C	6.46 [164.1]	4.72 [119.9]	10.35 [262.9]	3.94 [100.1]	0.31 [7.9]
HBR-47-xxx-A		7.32 [185.9]	5.91 [150.1]	11.56 [293.6]	4.41 [112.0]	0.20 [5.1]
HBR-67-xxx-A		8.98 [228.1]	7.09 [180.1]	12.42 [315.5]	5.51 [140.0]	0.75 [19.1]
HBR-37-xxx-B	143/5TC	6.46 [164.1]	4.72 [119.9]	10.75 [273.1]	3.94 [100.1]	0.31 [7.9]
HBR-47-xxx-B		7.32 [185.9]	5.91 [150.1]	11.95 [303.5]	4.41 [112.0]	0.20 [5.1]
HBR-67-xxx-B		8.98 [228.1]	7.09 [180.1]	13.13 [333.5]	5.51 [140.0]	0.75 [19.1]
HBR-77-xxx-B		11.54 [293.1]	8.27 [210.1]	14.69 [373.1]	7.09 [180.1]	1.47 [37.3]
HBR-47-xxx-C	182/4TC	7.32 [185.9]	5.91 [150.1]	12.68 [322.1]	4.41 [112.0]	0.20 [5.1]
HBR-67-xxx-C		8.98 [228.1]	7.09 [180.1]	13.86 [352.0]	5.51 [140.0]	0.75 [19.1]
HBR-77-xxx-C		11.54 [293.1]	8.27 [210.1]	15.41 [391.4]	7.09 [180.1]	1.47 [37.3]
HBR-87-xxx-C		13.39 [340.1]	9.45 [240.0]	17.99 [456.9]	8.35 [212.1]	1.24 [31.5]
HBR-77-xxx-D	213/5TC	11.54 [293.1]	8.27 [210.1]	17.68 [449.1]	7.09 [180.1]	1.47 [37.3]
HBR-87-xxx-D		13.39 [340.1]	9.45 [240.0]	20.26 [514.6]	8.35 [212.1]	1.24 [31.5]
HBR-87-xxx-E	254/6TC	13.39 [340.1]	9.45 [240.0]	21.24 [539.5]	8.35 [212.1]	1.24 [31.5]

Gearbox Shaft Dimensions



IronHorse Cast-Iron Helical Bevel Gearbox Shafts				
Part Number	**A**	**B**	**C**	**D**
HBR-37-DS	9.14 [232.1]	Ø 1.25 [31.8]	Ø 1.00 [25.4]	Ø 1.61 [41.0]
HBR-37-S	6.85 [174.0]			
HBR-47-DS	11.10 [281.9]	Ø 1.38 [34.9]	Ø 1.25 [31.8]	Ø 1.73 [44.0]
HBR-47-S	8.42 [213.9]			
HBR-67-DS	13.94 [354.0]	Ø 1.50 [38.1]	Ø 1.50 [38.1]	Ø 1.89 [48.0]
HBR-67-S	10.43 [265.0]			
HBR-77-DS	16.78 [426.2]	Ø 2.00 [50.8]	Ø 2.00 [50.8]	Ø 2.40 [61.0]
HBR-77-S	12.44 [316.1]			
HBR-87-DS	19.52 [495.8]	Ø 2.38 [60.3]	Ø 2.38 [60.3]	Ø 2.80 [71.0]
HBR-87-S	14.41 [365.9]			