SPECIFICATIONS

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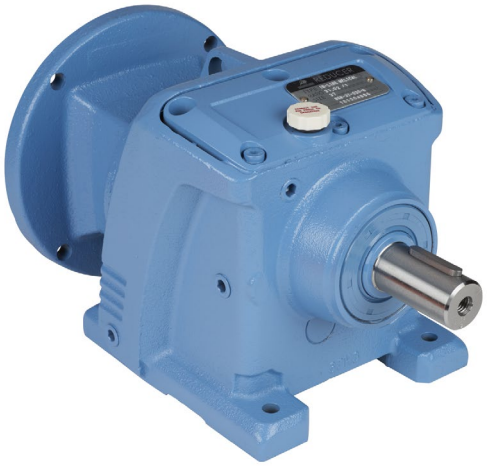


Gearbox Selection Factors

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® Cast-Iron Helical Gearbox Specifications

IronHorse Cast-Iron Helical Gearbox Specifications – Box Size 37												
Part Number	***Nominal Ratio***	***Actual Ratio***	***Output RPM @ 1750 rpm Input***	***Nominal HP @ 1.0 Service Factor 1***	***NEMA Motor Frame***	***Output Shaft Diameter (in)***	***Input Power (hp)***	***Output Torque (lb·in)***	***OHL (lbs)2***	***Stages***	***Efficiency (%)***	***Approx Weight (lb)***
HGR-37-005-A	5:1	4.88	359	1.0	56C	1	5.91	970	305	2	96	32
HGR-37-005-B				2.0	145TC							
HGR-37-010-A	10:1	10.02	175	1.0	56C		4.04	1360	388			
HGR-37-010-B				2.0	145TC							
HGR-37-015-A	15:1	15.75	111	1.0	56C		2.99	1580	451			
HGR-37-015-B				2.0	145TC							
HGR-37-020-A	20:1	19.95	88	1.0	56C		2.49	1670	489			
HGR-37-020-B				2.0	145TC							
HGR-37-030-A	30:1	31.02	56	1.5	56C		1.75	1770	565	3	94	
HGR-37-030-B				2.0	145TC							
HGR-37-040-A	40:1	40.08	44	1.0	56C		1.35	1770	615			
HGR-37-060-A	60:1	60.84	29	1.0	56C		0.89	1770	705			

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) 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 Gearbox Specifications (continued)

IronHorse Cast-Iron Helical Gearbox Specifications – Box Size 47												
Part Number	***Nominal Ratio***	***Actual Ratio***	***Output RPM @ 1750 rpm Input***	***Nominal HP @ 1.0 Service Factor 1***	***NEMA Motor Frame***	***Output Shaft Diameter (in)***	***Input Power (hp)***	***Output Torque (lb·in)***	***OHL (lbs)2***	***Stages***	***Efficiency (%)***	***Approx Weight (lb)***
HGR-47-005-B	5:1	4.85	361	2.0	145TC	1-1/4	9.59	1565	440	2	96	45
HGR-47-005-C				5.0	182/4TC							51
HGR-47-010-C	10:1	11.27	155	3.0	182TC		5.95	2255	590			
HGR-47-015-C	15:1	15.18	115	3.0	182TC		4.87	2490	650			
HGR-47-020-B	20:1	18.37	95	2.0	145TC		4.29	2650	690			45
HGR-47-020-C				3.0	182TC							51
HGR-47-030-B	30:1	31.83	55	2.0	145TC		2.73	2830	835	3	94	45
HGR-47-030-C				3.0	182/4TC							51
HGR-47-040-A	40:1	41.51	42	1.0	56C		2.09	2830	910			
HGR-47-060-A	60:1	63.37	28	1.0	56C		1.37	2830	1050			45

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) 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 GEARBOX SPECIFICATIONS (CONTINUED)

IronHorse Cast-Iron Helical Gearbox Specifications – Box Size 67												
Part Number	***Nominal Ratio***	***Actual Ratio***	***Output RPM @ 1750 rpm Input***	***Nominal HP @ 1.0 Service Factor 1***	***NEMA Motor Frame***	***Output Shaft Diameter (in)***	***Input Power (hp)***	***Output Torque (lb·in)***	***OHL (lbs)2***	***Stages***	***Efficiency (%)***	***Approx Weight (lb)***
HGR-67-005-B	5:1	5.23	335	2.0	145TC	1-3/8	15.38	2710	710	2	96	63
HGR-67-005-C				5.0	182/4TC							69
HGR-67-010-C	10:1	9.90	177	5.0	182/4TC		12.39	4130	880			
HGR-67-015-B	15:1	15.41	114	2.0	145TC		9.23	4785	1020			63
HGR-67-015-C				3.0	182TC							69
HGR-67-020-C	20:1	22.90	76	5.0	182/4TC		6.87	4720	1165	3	94	
HGR-67-030-B	30:1	32.02	55	2.0	145TC		4.83	5045	1305			63
HGR-67-040-B	40:1	41.22	42	2.0	145TC		3.75	5045	1420			
HGR-67-060-A	60:1	63.07	28	1.0	56C		2.45	5045	1480			

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) 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 GEARBOX SPECIFICATIONS (CONTINUED)

IronHorse Cast-Iron Helical Gearbox Specifications – Box Size 77												
Part Number	***Nominal Ratio***	***Actual Ratio***	***Output RPM @ 1750 rpm Input***	***Nominal HP @ 1.0 Service Factor 1***	***NEMA Motor Frame***	***Output Shaft Diameter (in)***	***Input Power (hp)***	***Output Torque (lb·in)***	***OHL (lbs)2***	***Stages***	***Efficiency (%)***	***Approx Weight (lb)***
HGR-77-005-C	5:1	4.78	366	5.0	182/4TC	1-5/8	25.13	4040	785	2	96	82
HGR-77-005-D				7.5	213/5TC							93
HGR-77-010-D	10:1	10.91	160	7.5	213/5TC		16.89	6205	1035			
HGR-77-020-C	20:1	23.31	75	5.0	182/4TC		7.84	6150	1330			82
HGR-77-030-C	30:1	31.97	55	5.0	182/4TC		6.36	6640	1480	3	94	
HGR-77-040-C	40:1	39.31	45	3.0	182TC		5.49	6640	1555			
HGR-77-060-B	60:1	57.73	30	2.0	145TC		3.52	6640	1800			76

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) 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 Gearbox Specifications (continued)

IronHorse Cast-Iron Helical Gearbox Specifications – Box Size 87												
Part Number	**Nominal Ratio**	**Actual Ratio**	**Output RPM @ 1750 rpm Input**	**Nominal HP @ 1.0 Service Factor 1**	**NEMA Motor Frame**	**Output Shaft Diameter (in)**	**Input Power (hp)**	**Output Torque (lb·in)**	**OHL (lbs)2**	**Stages**	**Efficiency (%)**	**Approx Weight (lb)**
HGR-87-005-D	5:1	4.73	370	10.0	213/5TC	2-1/8	38.49	6120	1800	2	96	163
HGR-87-005-E				20.0	254/6TC							169
HGR-87-010-D	10:1	10.66	164	10.0	213/5TC		27.28	9790	2375			163
HGR-87-015-D	15:1	15.29	114	10.0	213/5TC		21.45	11040	2680			
HGR-87-020-C	20:1	20.06	87	5.0	182/4TC		15.13	9915	2925	3	94	156
HGR-87-020-D				10.0	213/5TC							163
HGR-87-030-C	30:1	31.73	55	5.0	182/4TC		11.15	11550	3010			156
HGR-87-040-C	40:1	38.20	46	5.0	182/4TC		11.36	14170	3010			
HGR-87-060-B	60:1	61.54	28	2.0	145TC		7.05	14170	3010			150
HGR-87-060-C				5.0	182/4TC							156

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) 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 Gearbox Accessories

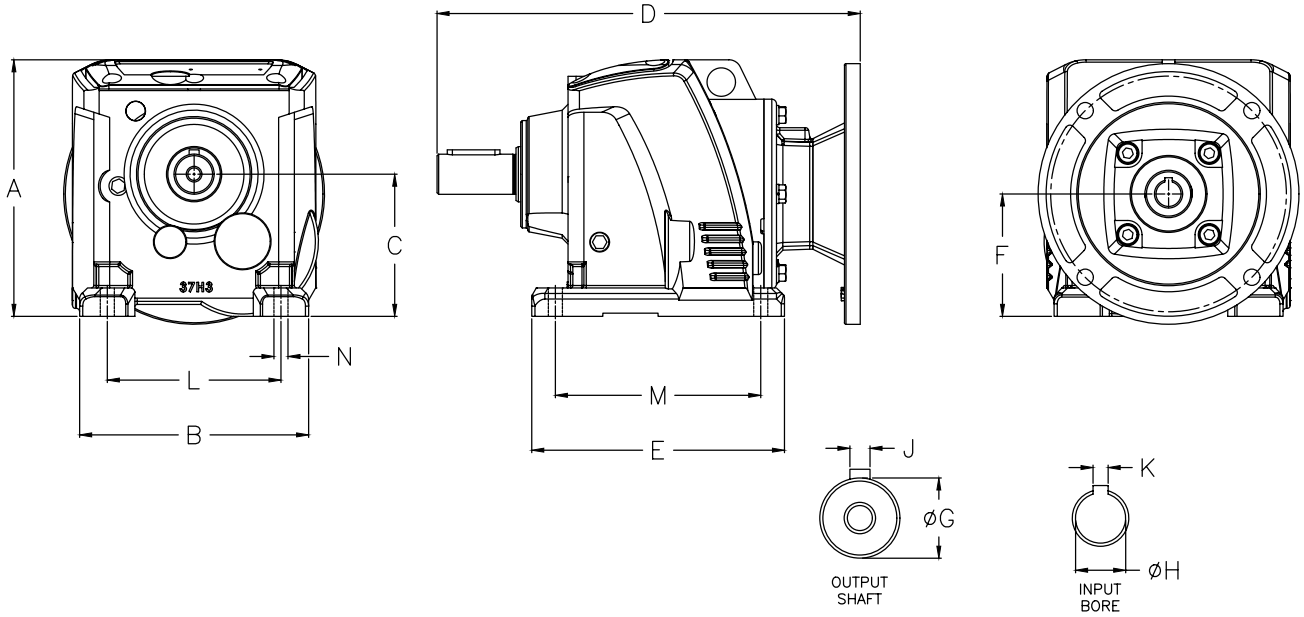
Breather Plugs (Spare/Replacement)

Breather Plug (typical)

IronHorse Cast-Iron Helical 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 Gearbox Dimensions

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



Dimensions – inches [mm] – IronHorse Cast-Iron Helical Gearboxes														
Part Number	***Frame***	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***	***J***	***K***	***L***	***M***	***N***
HGR-37-xxx-A	56C	6.40 [162.5]	5.71 [145.0]	3.54 [90.0]	10.55 [268.0]	6.30 [160.0]	3.05 [77.5]	1.00 [25.4]	0.63 [15.9]	0.25 [6.4]	0.19 [4.8]	4.33 [110.0]	5.12 [130.0]	0.35 [8.9]
HGR-47-xxx-A		8.25 [209.5]	6.69 [170.0]	4.53 [115.0]	11.63 [295.4]	7.68 [195.0]	3.98 [101.0]	1.25 [31.8]				5.31 [134.9]	6.50 [165.1]	0.55 [14.0]
HGR-67-xxx-A		8.89 [226.0]	8.27 [210.0]	5.12 [130.0]	13.13 [333.5]	9.25 [235.0]	4.45 [113.0]	1.38 [34.9]		0.31 [7.9]		5.91 [150.1]	7.68 [195.1]	
HGR-37-xxx-B	145TC	6.40 [162.5]	5.71 [145.0]	3.54 [90.0]	10.94 [278.0]	6.30 [160.0]	3.05 [77.5]	1.00 [25.4]	0.88 [22.2]	0.25 [6.4]		4.33 [110.0]	5.12 [130.0]	0.35 [8.9]
HGR-47-xxx-B		8.25 [209.5]	6.69 [170.0]	4.53 [115.0]	12.03 [305.5]	7.68 [195.0]	3.98 [101.0]	1.25 [31.8]				5.31 [134.9]	6.50 [165.1]	0.55 [14.0]
HGR-67-xxx-B		8.89 [226.0]	8.27 [210.0]	5.12 [130.0]	13.52 [343.5]	9.25 [235.0]	4.45 [113.0]	1.38 [34.9]		0.31 [7.9]		5.91 [150.1]	7.68 [195.1]	
HGR-77-xxx-B		10.04 [255.0]	9.06 [230.0]	5.51 [140.0]	14.23 [361.5]	9.65 [245.0]	6.38 [162.0]	1.63 [41.4]		0.38 [9.7]		6.69 [170.0]	8.07 [205.0]	0.71 [18.0]
HGR-87-xxx-B		12.99 [330.0]	11.42 [290.0]	7.09 [180.0]	17.20 [437.0]	12.20 [310.0]	8.05 [204.5]	2.13 [54.1]		0.50 [12.7]		8.46 [215.0]	10.24 [260.0]	
HGR-47-xxx-C	182/4TC*	8.25 [209.5]	6.69 [170.0]	4.53 [115.0]	12.76 [324.0]	7.68 [195.0]	3.98 [101.0]	1.25 [31.8]	1.13 [28.7]	0.25 [6.4]	0.25 [6.4]	5.31 [134.9]	6.50 [165.1]	0.55 [14.0]
HGR-67-xxx-C		8.89 [226.0]	8.27 [210.0]	5.12 [130.0]	14.25 [362.0]	9.25 [235.0]	4.45 [113.0]	1.38 [34.9]		0.31 [7.9]		5.91 [150.1]	7.68 [195.1]	
HGR-77-xxx-C		10.04 [255.0]	9.06 [230.0]	5.51 [140.0]	14.96 [380.0]	9.65 [245.0]	6.38 [162.0]	1.63 [41.4]		0.38 [9.7]		6.69 [170.0]	8.07 [205.0]	0.71 [18.0]
HGR-87-xxx-C		12.99 [330.0]	11.42 [290.0]	7.09 [180.0]	17.32 [440.0]	12.20 [310.0]	8.05 [204.5]	2.13 [54.1]		0.50 [12.7]		8.46 [215.0]	10.24 [260.0]	
HGR-77-xxx-D	213/5TC	10.04 [255.0]	9.06 [230.0]	5.51 [140.0]	17.22 [437.5]	9.65 [245.0]	6.38 [162.0]	1.63 [41.4]	1.38 [35.0]	0.38 [9.7]	0.31 [7.9]	6.69 [170.0]	8.07 [205.0]	0.71 [18.0]
HGR-87-xxx-D		12.99 [330.0]	11.42 [290.0]	7.09 [180.0]	19.59 [497.5]	12.20 [310.0]	8.05 [204.5]	2.13 [54.1]		0.50 [12.7]		8.46 [215.0]	10.24 [260.0]	
HGR-87-xxx-E	254/6TC	12.99 [330.0]	11.42 [290.0]	7.09 [180.0]	20.57 [522.5]	12.20 [310.0]	8.05 [204.5]	2.13 [54.1]	1.63 [41.4]	0.50 [12.7]	0.38 [9.7]	8.46 [215.0]	10.24 [260.0]	0.71 [18.0]

**Note: 184TC motor frame sizes where applicable. See gearbox specifications for more information.*