IronHorse® Cast-Iron Worm Gearboxes

Cast-Iron Model Overview

IronHorse Cast-Iron Right-Hand Shaft Worm Gearbox

IronHorse Cast-Iron Left-Hand Shaft Worm Gearbox

IronHorse Cast-Iron Dual Shaft Worm Gearbox

IronHorse Cast-Iron Hollow Bore Worm Gearbox

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 losses.) For example, a 10:1 ratio gearbox outputs approximately the same motor output horsepower, motor speed divided by 10, and motor torque multiplied by 10.

Worm gearboxes contain a worm (gear type) on the input shaft, and a mating gear on the output shaft. Worm gearboxes also change the drive direction by 90°.

IronHorse worm gearboxes are manufactured in an ISO9001 certified plant by one of the leading 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 assure you the highest quality products.

As seen above, our cast-iron gearboxes are offered with right-hand, left-hand and dual (both right and left) output shafts, and with hollow-bore outputs (all the way through from one side to the other). We also offer optional gearbox mounting bases for ease of installation.

Features

- C flange input; dual shaft, right-hand shaft, left-hand shaft or hollow-bore output
- Cast iron one-piece housing
- 1045 carbon steel shaft
- AlBC3 (aluminum bronze casting) main gear; much harder than the typical phosphor bronze
- Shaft sleeves protect all shafts
- One-piece output shaft hub secures output shaft bearing
- Double bearing sets on both shaft ends
- Heavy duty bearings on the output shaft
- Interior channel guides oil to directly and constantly lube bearings
- All units filled with Mobil synthetic oil*
- Double-lipped embedded oil seals to prevent leakage
- Special anti-rust primer inside and outside the gearbox
- Special black natural dry paint
- Universally interchangeable compact design ensures easy OEM replacement
- Multiple mounting orientation options (see user manual for allowed mounting orientations)
- Radiused mounting holes
- Optional mounting plates available
- One year warranty

Applications

- Use with electric motors for reducing output speed, increasing torque, changing drive direction, or running two loads from one motor.
- Use for conveyors, packaging machines, rotary tables, etc.

NOTE: Units manufactured with first 4 serial numbers up to 2108 filled with Mobil SHC634 synthetic oil. Units manufactured with first 4 serial numbers from 2109 are filled with SHC632 synthetic oil.

IronHorse® Cast-Iron Worm Gearboxes

Specifications

Part Number *	Price	Nominal Ratio	Actual Ratio	Output RPM @ 1750 RPM Input	Nominal Motor HP [1] @ 1800 RPM	NEMA Motor Frame	Output Type [2]	Center Distance [3] (in)	Overhung Load [4] (lb)	Thrust Load [5] (lb)	Efficiency (%)	Approx Weight (lb)	Maximum Ratings @ 1750 RPM Input *						Maximum Backlash (arc-minute)
													Mechanical [6]			Thermal [7]			
													Input Power (hp)	Output Power (hp)	Output Torque (lb-in)	Input Power (hp)	Output Power (hp)	Output Torque (lb-in)	
WG-175-005-D	$199.00	5:1	5.25:1	350	1.5	56C	D	1.75	650	550	93	23	2.83	2.62	499	2.28	2.11	402	20
WG-175-005-H	$245.00					56C	H					23							
WG-175-005-R	$199.00					56C	L					22							
WG-175-005-L	$198.00					56C	R					22							
WG-175-010-D	$199.00	10:1	10.33:1	175	1	56C	D				88	23	1.57	1.38	515	1.36	1.19	445	
WG-175-010-H	$245.00					56C	H					23							
WG-175-010-R	$199.00					56C	L					22							
WG-175-010-L	$198.00					56C	R					22							
WG-175-015-D	$199.00	15:1	14.5:1	117	0.75	56C	D				85	23	1.24	1.06	554	1.13	0.96	506	
WG-175-015-H	$245.00					56C	H					23							
WG-175-015-R	$199.00					56C	L					22							
WG-175-015-L	$198.00					56C	R					22							
WG-175-020-D	$199.00	20:1	19.5:1	88	0.75	56C	D				83	23	1.02	0.85	596	0.98	0.81	572	
WG-175-020-H	$245.00					56C	H					23							
WG-175-020-R	$199.00					56C	L					22							
WG-175-020-L	$198.00					56C	R					22							
WG-175-040-D	$199.00	40:1	40:1	44	0.33	56C	D				62	23	0.74	0.49	714	0.59	0.39	558	
WG-175-040-H	$260.00					56C	H					23							
WG-175-040-R	$199.00					56C	L					22							
WG-175-040-L	$198.00					56C	R					22							
WG-175-060-D	$199.00	60:1	60:1	29	0.25	56C	D				52	23	0.38	0.20	469	0.38	0.2	469	
WG-175-060-H	$260.00					56C	H					23							
WG-175-060-R	$199.00					56C	L					22							
WG-175-060-L	$198.00					56C	R					22							

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: D = Dual Shaft; H = Hollow Bore; R = Right-Hand Shaft; L = Left-Hand Shaft

3) The Center Distance is the distance between the centerlines of the input and output shafts.

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) Thrust Load ratings are for forces along the axis of the output shaft, usually encountered in vertical-drive applications from agitators, mixers, fans, blowers, etc.

6) 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.

7) Maximum Thermal Ratings are limits for gearbox continuous use without overheating.

* Maximum Input Speed is 2500 rpm.

IronHorse® Cast-Iron Worm Gearboxes
Specifications (continued)

Part Number *	Price	Nominal Ratio	Actual Ratio	Output RPM @ 1750 RPM Input	Nominal Motor HP [1] @ 1800 RPM	NEMA Motor Frame	Output Type [2]	Center Distance [3] (in)	Overhung Load [4] (lb)	Thrust Load [5] (lb)	Efficiency (%)	Approx Weight (lb)	Mechanical [6] Input Power (hp)	Mechanical [6] Output Power (hp)	Mechanical [6] Output Torque (lb-in)	Thermal [7] Input Power (hp)	Thermal [7] Output Power (hp)	Thermal [7] Output Torque (lb-in)	Maximum Backlash (arc-minute)
WG-206-005-D	$252.00					56C	D					28							
WG-206-005-H	$314.00	5:1	5.75:1	350	2	56C	H				92	28	3.62	3.33	685	2.57	2.36	486	
WG-206-005-R	$252.00					56C	L					27							
WG-206-005-L	$250.00					56C	R					27							
WG-206-010-D	$252.00					56C	D					28							
WG-206-010-H	$314.00	10:1	10.33:1	175	1.5	56C	H				90	28	2.77	2.50	935	2.10	1.89	708	
WG-206-010-R	$252.00					56C	L					27							
WG-206-010-L	$250.00					56C	R	2.06	700	750		27							17
WG-206-015-D	$252.00					56C	D					28							
WG-206-015-H	$314.00	15:1	15.5:1	117	1	56C	H				85	28	2.09	1.78	1002	1.40	1.20	673	
WG-206-015-R	$252.00					56C	L					27							
WG-206-015-L	$250.00					56C	R					27							
WG-206-020-D	$238.00					56C	D					28							
WG-206-020-H	$314.00	20:1	19.5:1	88	1	56C	H				82	28	1.57	1.29	914	1.17	0.96	681	
WG-206-020-R	$252.00					56C	L					27							
WG-206-020-L	$252.00					56C	R					27							
WG-206-040-D	$240.00					56C	D					28							
WG-206-040-H	$314.00	40:1	40:1	44	0.5	56C	H	2.06	700	750	71	28	1.09	0.77	1120	0.71	0.50	726	
WG-206-040-R	$252.00					56C	L					27							
WG-206-040-L	$252.00					56C	R					27							17
WG-206-060-D	$238.00					56C	D					28							
WG-206-060-H	$314.00	60:1	60:1	29	0.33	56C	H	2.06	700	750	58	28	0.60	0.35	750	0.48	0.28	606	
WG-206-060-R	$252.00					56C	L					27							
WG-206-060-L	$252.00					56C	R					27							

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: D = Dual Shaft; H = Hollow Bore; R = Right-Hand Shaft; L = Left-Hand Shaft

3) The Center Distance is the distance between the centerlines of the input and output shafts.

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) Thrust Load ratings are for forces along the axis of the output shaft, usually encountered in vertical-drive applications from agitators, mixers, fans, blowers, etc.

6) 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.

7) Maximum Thermal Ratings are limits for gearbox continuous use without overheating.

* Maximum Input Speed is 2500 rpm.

IronHorse® Cast-Iron Worm Gearboxes

Specifications (continued)

Part Number *	Price	Nominal Ratio	Actual Ratio	Output RPM @ 1750 RPM Input	Nominal Motor HP [1] @ 1800 RPM	NEMA Motor Frame	Output Type [2]	Center Distance [3] (in)	Overhung Load [4] (lb)	Thrust Load [5] (lb)	Efficiency (%)	Approx Weight (lb)	Mechanical [6] Input Power (hp)	Mechanical [6] Output Power (hp)	Mechanical [6] Output Torque (lb-in)	Thermal [7] Input Power (hp)	Thermal [7] Output Power (hp)	Thermal [7] Output Torque (lb-in)	Maximum Backlash (arc-minute)
WG-237-005-D	$286.00	5:1	5.25:1	350	3	56C	D	2.37	900	900	93	38	4.57	4.24	798	3.56	3.31	630	
WG-237-005-H	$359.00					56C	H					36							
WG-237-005-R	$303.00					56C	L					37							
WG-237-005-L	$303.00					56C	R					37							
WG-237-010-D	$286.00	10:1	10.33:1	175	1.5	56C	D	2.37	900	900	89	38	3.47	3.09	1158	2.24	1.99	746	
WG-237-010-H	$359.00					56C	H					36							
WG-237-010-R	$303.00					56C	L					37							
WG-237-010-L	$300.00					56C	R					37							
WG-237-015-D	$286.00	15:1	15.5:1	117	1	56C	D	2.37	900	900	84	38	2.64	2.22	1249	1.55	1.30	732	
WG-237-015-H	$359.00					56C	H					36							
WG-237-015-R	$303.00					56C	L					37							
WG-237-015-L	$300.00					56C	R					37							17
WG-237-020-D	$286.00	20:1	20:1	88	1	56C	D	2.37	900	900	82	38	2.06	1.69	1195	1.36	1.12	791	
WG-237-020-H	$359.00					56C	H					36							
WG-237-020-R	$303.00					56C	L					37							
WG-237-020-L	$300.00					56C	R					37							
WG-237-040-D	$286.00	40:1	40:1	44	0.5	56C	D	2.37	900	900	71	38	1.45	1.02	1483	0.83	0.58	845	
WG-237-040-H	$359.00					56C	H					36							
WG-237-040-R	$303.00					56C	L					37							
WG-237-040-L	$300.00					56C	R					37							
WG-237-060-D	$286.00	60:1	60:1	29	0.5	56C	D	2.37	900	900	61	38	0.86	0.53	1149	0.63	0.39	844	
WG-237-060-H	$359.00					56C	H					36							
WG-237-060-R	$303.00					56C	L					37							
WG-237-060-L	$300.00					56C	R					37							
WG-262-005-D	$306.00	5:1	5.25:1	350	3	182TC	D	2.62	1000	1000	93	57	5.24	4.86	924	4.32	4.00	761	
WG-262-005-H	$442.00					182TC	H					58							
WG-262-005-R	$327.00					182TC	L					56							17
WG-262-005-L	$322.00					182TC	R					56							
WG-262-010-D	$306.00	10:1	10.67:1	175	2	182TC	D	2.62	1000	1000	90	57	4.17	3.74	1445	3.06	2.75	1061	
WG-262-010-H	$442.00					182TC	H					57							
WG-262-010-R	$327.00					182TC	L					56							
WG-262-010-L	$322.00					182TC	R					56							

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: D = Dual Shaft; H = Hollow Bore; R = Right-Hand Shaft; L = Left-Hand Shaft
3) The Center Distance is the distance between the centerlines of the input and output shafts.
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) Thrust Load ratings are for forces along the axis of the output shaft, usually encountered in vertical-drive applications from agitators, mixers, fans, blowers, etc.
6) 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.
7) Maximum Thermal Ratings are limits for gearbox continuous use without overheating.
* Maximum Input Speed is 2500 rpm.

IronHorse® Cast-Iron Worm Gearboxes
Specifications (continued)

| | | | | | | | | | | | | | Maximum Ratings @ 1750 RPM Input * | | | | | | |
| | | | | | | | | | | | | | Mechanical [6] | | | Thermal [7] | | | |
Part Number *	Price	Nominal Ratio	Actual Ratio	Output RPM @ 1750 RPM Input	Nominal Motor HP [1] @ 1800 RPM	NEMA Motor Frame	Output Type [2]	Center Distance [3] (in)	Overhung Load [4] (lb)	Thrust Load [5] (lb)	Efficiency (%)	Approx Weight (lb)	Input Power (hp)	Output Power (hp)	Output Torque (lb-in)	Input Power (hp)	Output Power (hp)	Output Torque (lb-in)	Maximum Backlash (arc-minute)
WG-262-015-D	$306.00	15:1	15.5:1	117	2	56C	D	2.62	1000	1000	87	50	3.22	2.81	1577	2.47	2.16	1212	17
WG-262-015-H	$442.00					56C	H					50							
WG-262-015-R	$327.00					56C	L					49							
WG-262-015-L	$322.00					56C	R					49							
WG-262-020-D	$306.00	20:1	19.5:1	88	1.5	56C	D	2.62	1000	1000	83	50	2.67	2.21	1563	1.84	1.53	1078	
WG-262-020-H	$442.00					56C	H					50							
WG-262-020-R	$327.00					56C	L					49							
WG-262-020-L	$322.00					56C	R					49							
WG-262-040-D	$306.00	40:1	40:1	44	0.75	56C	D	2.62	1000	1000	72	50	1.85	1.32	1919	1.11	0.80	1153	
WG-262-040-H	$442.00					56C	H					50							
WG-262-040-R	$327.00					56C	L					49							
WG-262-040-L	$322.00					56C	R					49							
WG-262-060-D	$306.00	60:1	60:1	29	0.75	56C	D	2.62	1000	1000	66	50	1.16	0.77	1670	0.94	0.62	1346	
WG-262-060-H	$442.00					56C	H					51							
WG-262-060-R	$327.00					56C	L					49							
WG-262-060-L	$322.00					56C	R					49							

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6) 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 Worm Gearboxes

Specifications (continued)

Part Number *	Price	Nominal Ratio	Actual Ratio	Output RPM @ 1750 RPM Input	Nominal Motor HP [1] @ 1800 RPM	NEMA Motor Frame	Output Type [2]	Center Distance [3] (in)	Overhung Load [4] (lb)	Thrust Load [5] (lb)	Efficiency (%)	Approx Weight (lb)	Maximum Ratings @ 1750 RPM Input *						Maximum Backlash (arc-minute)
													Mechanical [6]			Thermal [7]			
													Input Power (hp)	Output Power (hp)	Output Torque (lb-in)	Input Power (hp)	Output Power (hp)	Output Torque (lb-in)	
WG-325-010-DC	$483.00	10:1	10.33:1	169	5	182/4TC	D	3.25	1200	1100	90	91	7.19	6.46	2419	4.63	4.16	1558	
WG-325-010-HC	$633.00					182/4TC	H					90							
WG-325-010-LC	$483.00					182/4TC	L					90							
WG-325-010-RC	$483.00					182/4TC	R					90							
WG-325-015-DC	$483.00	15:1	15.5:1	113	5	182/4TC	D	3.25	1200	1100	85	91	5.45	4.65	2611	3.19	2.72	1527	
WG-325-015-HC	$633.00					182/4TC	H					90							
WG-325-015-LC	$483.00					182/4TC	L					90							
WG-325-015-RC	$483.00					182/4TC	R					90							
WG-325-020-DC	$483.00	20:1	19.5:1	90	3	182TC	D	3.25	1200	1100	86	91	4.74	4.07	2875	3.31	2.85	2011	15
WG-325-020-HC	$633.00					182TC	H					90							
WG-325-020-LC	$483.00					182TC	L					90							
WG-325-020-RC	$483.00					182TC	R					90							
WG-325-030-DA	$483.00	30:1	30:1	58	2	56C	D	3.25	1200	1100	77	88	3.66	2.80	3045	2.00	1.53	1661	
WG-325-030-DB	$483.00			90		145TC	D					88							
WG-325-030-HA	$633.00					56C	H					87							
WG-325-030-HB	$633.00					145TC	H					87							
WG-325-030-LA	$483.00			58		56C	L					87							
WG-325-030-LB	$483.00					145TC	L					87							
WG-325-030-LC	$483.00				3	182TC	L					87							
WG-325-030-RA	$483.00				2	56C	R					87							
WG-325-030-RB	$483.00					145TC	R					87							
WG-325-030-RC	$483.00				3	182TC	R					87							

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* Maximum Input Speed is 2500 rpm.

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Specifications (continued)

												Maximum Ratings @ 1750 RPM Input *						
												Mechanical [6]			Thermal [7]			
Part Number *	Price	Nominal Ratio	Actual Ratio	Output RPM @ 1750 RPM Input	Nominal Motor HP [1] @ 1800 RPM	NEMA Motor Frame	Output Type [2]	Center Distance [3] (in)	Overhung Load [4] (lb)	Thrust Load [5] (lb)	Efficiency (%)	Approx Weight (lb)	Input Power (hp)	Output Power (hp)	Output Torque (lb-in)	Input Power (hp)	Output Power (hp)	Output Torque (lb-in)	Maximum Backlash (arc-minute)
WG-325-040-DA	$483.00	40:1	40:1	44	2	56C	D	3.25	1200	1100	76	88	3.35	2.55	3692	1.96	1.49	2156	15
WG-325-040-DB	$483.00					145TC	D					88							
WG-325-040-HA	$633.00					56C	H					87							
WG-325-040-HB	$633.00					145TC	H					87							
WG-325-040-LA	$483.00					56C	L					87							
WG-325-040-LB	$483.00					145TC	L					87							
WG-325-040-RA	$483.00					56C	R					87							
WG-325-040-RB	$483.00					145TC	R					87							
WG-325-060-DA	$483.00	60:1	60:1	29	2	56C	D	3.25	1200	1100	71	88	2.03	1.44	3127	1.61	1.14	2476	
WG-325-060-DB	$483.00					145TC	D					88							
WG-325-060-HA	$633.00					56C	H					87							
WG-325-060-HB	$633.00					145TC	H					87							
WG-325-060-LA	$483.00					56C	L					87							
WG-325-060-LB	$483.00					145TC	L					87							
WG-325-060-RA	$483.00					56C	R					87							
WG-325-060-RB	$483.00					145TC	R					87							

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: D = Dual Shaft; H = Hollow Bore; R = Right-Hand Shaft; L = Left-Hand Shaft
3) The Center Distance is the distance between the centerlines of the input and output shafts.
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) Thrust Load ratings are for forces along the axis of the output shaft, usually encountered in vertical-drive applications from agitators, mixers, fans, blowers, etc.
6) 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.
7) Maximum Thermal Ratings are limits for gearbox continuous use without overheating.
* Maximum Input Speed is 2500 rpm.

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.

IronHorse® Cast-Iron Worm Gearboxes

Gearbox Dimensions – Cast-Iron Solid-Shaft Output Gearboxes

Output Shaft View

Rear View

Left View
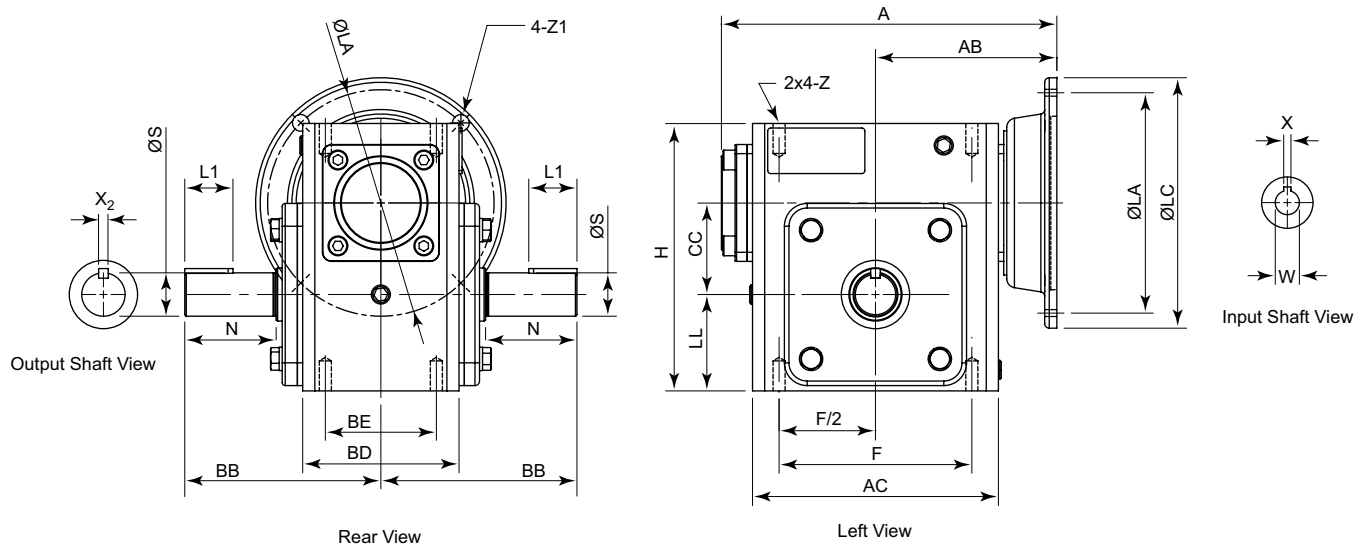
Input Shaft View

Dimensions (inches) – IronHorse Cast-Iron Worm Gearboxes – Solid-Shaft Outputs																					
Part Number	Frame	A	AB	AC	BB	BD	BE	CC	F	H	LL	Z (UNC)	Flange			Input Shaft		Output Shaft			
													LA	LC	Z1	W	X	L1	N	S	X2
WG-175-xxx-D/L/R		7.29	4.035	5.06	4.311	3.56	2.75	1.75	4.188	5.75	2.062	5/16-18						1	1.781	7/8	3/16
WG-206-xxx-D/L/R	56C	7.95	4.37	5.75	4.69	3.82	2.88	2.062	5	6.38	2.281		5.875	6.496	0.433	5/8	3/16	1.25	2.09	1	
WG-237-xxx-D/L/R		8.71	4.705	6.38	5.087	4.06	2.88	2.375	5	6.94	2.5							1.25	2.37		
WG-262-005-D/L/R	182TC	10.57	6.24										7.25	9	0.551	1-1/8	1/4				1/4
WG-262-010-D/L/R																				1-1/8	
WG-262-015-D/L/R				7.17	5.63	4.69	3.375	2.625	6.375	8	2.938	3/8-16						2	2.626		
WG-262-020-D/L/R	56C	9.41	5.059										5.875	6.496	0.433	5/8	3/16				
WG-262-040-D/L/R																					
WG-262-060-D/L/R																					
WG-325-010-xC	182/4TC	12.60	7.24										7.25	9.00	0.55	1-1/8	1/4				
WG-325-015-xC																					
WG-325-020-xC	182TC																				
WG-325-030-xA	56C	11.42	6.06	9.02	7.06	5.75	4.00	3.25	7.50	9.38	3.50	7/16-14	5.875	6.50	0.41	5/8	3/16	2.44	3.25	1-3/8	5/16
WG-325-030-xB	145TC															7/8					
WG-325-030-xC	182TC	12.60	7.24										7.25	9.00	0.55	1-1/8	1/4				
WG-325-040-xA	56C															5/8					
WG-325-040-xB	145TC	11.42	6.06										5.875	6.50	0.41	7/8	3/16				
WG-325-060-xA	56C															5/8					
WG-325-060-xB	145TC															7/8					

Dual-shaft output gearboxes have BB, L1, N, S, X2 dimensions on both sides.
Left-hand shaft gearboxes have output shafts only on the left side, as viewed looking into the input shaft (dimensions BB, L1, N, S, X2).
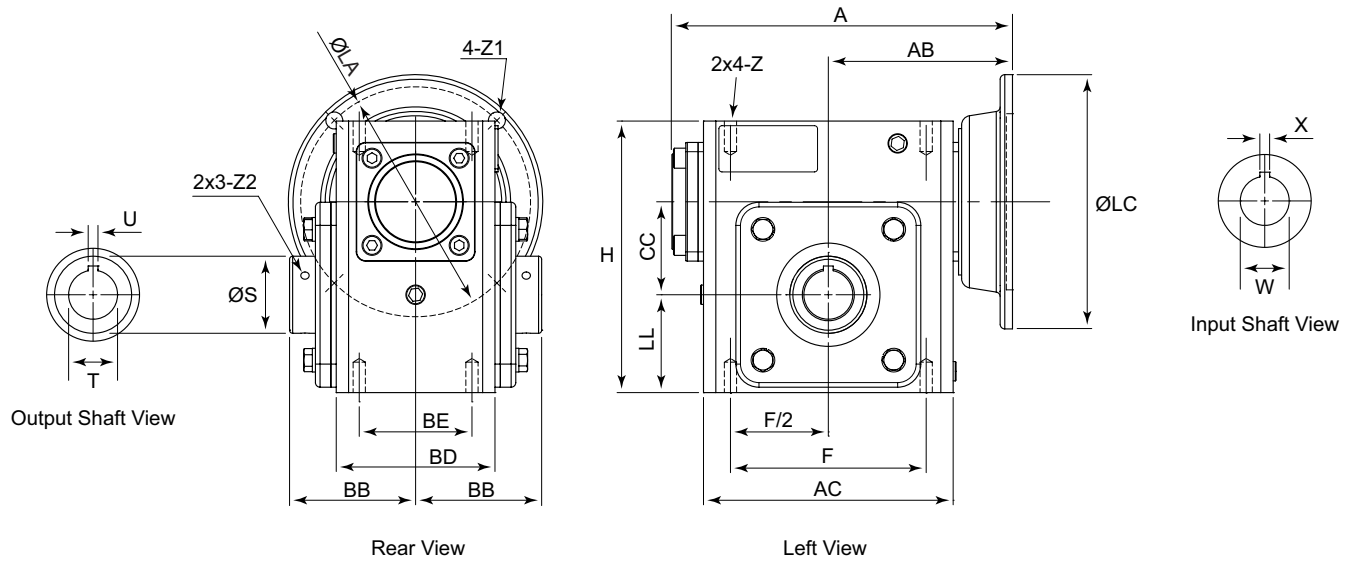Right-hand shaft gearboxes have output shafts only on the right side, as viewed looking into the input shaft (dimensions BB, L1, N, S, X2).
See our website: www.AutomationDirect.com for complete engineering drawings.

IronHorse® Cast-Iron Worm Gearboxes

Gearbox Dimensions – Cast-Iron Hollow-Bore Output Gearboxes

Output Shaft View

Rear View

Left View

Input Shaft View

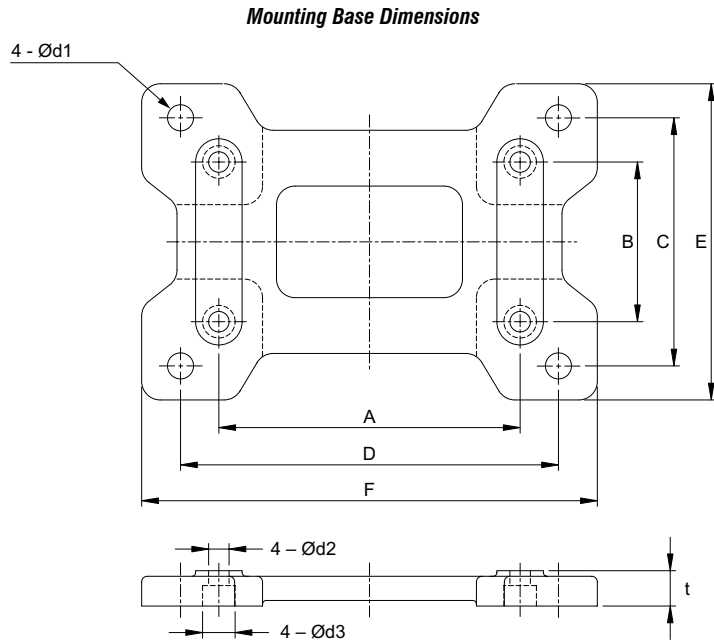| Dimensions (inches) – IronHorse Cast-Iron Worm Gearboxes – Hollow-Bore Outputs																				
Part Number	Frame	A	AB	AC	BB	BD	BE	CC	F	H	LL	Z (UNC)	Flange			Input Shaft		Output Bore		
													LA	LC	Z1	W	X	S	T	U	Z2 (UNF)
WG-175-xxx-H		7.28	4.035	5.059	3.091	3.563	2.750	1.75	4.188	5.75	2.062		5.875	6.496	0.433	5/8	3/16	1.575	1.0		#10-32
WG-206-xxx-H	56C	7.95	4.370	5.748	3.219	3.819	2.880	2.062	5.000	6.375	2.281		5.875	6.496	0.433	5/8	3/16	1.772	1.125	1/4	
WG-237-xxx-H		8.68	4.705	6.378	3.220	4.055	2.880	2.375	5.000	6.937	2.500							1.969	1.250		1/4-28
WG-262-005-H	182TC	10.59	6.240									3/8-16	7.25	9.000	0.551	1-1/8	1/4				
WG-262-010-H																					
WG-262-015-H				7.165	3.500	4.685	3.375	2.625	6.375	8.000	2.938							2.362	1.437	3/8	
WG-262-020-H	56C	9.41	5.059										5.875	6.496	0.433	5/8	3/16				
WG-262-040-H																					
WG-262-060-H																					
WG-325-010-HC	182/4TC	12.60	7.24									7/16-14	7.25	9.00	0.55	1.125	1/4				
WG-325-015-HC																					
WG-325-020-HC	182TC																				
WG-325-030-HA	56C			9.02	4.38	5.75	4.00	3.25	7.50	9.38	3.50					0.625		2.76	1.938	1/2	5/16-24
WG-325-030-HB	145TC															0.875					
WG-325-040-HA	56C	11.42	6.06										5.875	6.50	0.41	0.625	3/16				
WG-325-040-HB	145TC															0.875					
WG-325-060-HA	56C															0.625					
WG-325-060-HB	145TC															0.875					

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

IronHorse® Cast-Iron Worm Gearboxes

Accessories – Mounting Base

IronHorse Worm Gearbox Mounting Base

Mounting Base Dimensions

IronHorse Cast-Iron Worm Gearbox Mounting Bases													
Part Number	Price	Fits Gearbox Numbers	Approx Weight (lb)	Dimensions (in)									
				A	B	C	D	E	F	t	d1	d2	d3
WG-175-BASE	$19.00	WG-175-xxx-x	4.0	4.19	2.76	4.50	5.75	5.69	7.00	0.69	0.43	0.35	0.55
WG-206-BASE	$23.00	WG-206-xxx-x	4.8	5.00	2.88	4.69	6.38	5.91	7.76	0.72	0.47	0.43	0.69
WG-237-BASE	$26.00	WG-237-xxx-x	6.2	5.00	2.88	4.88	7.06	6.22	8.50	0.75	0.47	0.43	0.69
WG-262-BASE	$31.00	WG-262-xxx-x	7.5	6.38	3.38	5.25	8.00	6.69	9.65	0.75	0.55	0.43	0.69
WG-325-BASE	$44.00	WG-325-xxx-xx	12	7.50	4.00	6.13	9.50	7.66	11.19	0.88	0.50	0.47	0.71

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

Cast-Iron Worm Gearbox Cross Reference

IronHorse Cast-Iron Worm Gearbox Cross Reference *										
AutomationDirect IronHorse™	WG-175-xxx-		WG-206-xxx-		WG-237-xxx-		WG-262-xxx-		WG-325-xxx-	
	D/L/R	H	D/L/R	H	D/L/R	H	D/L/R	H	D/L/R	H
Alling Lander	17UF	17YF	20UF	20YF	23UF	23YF	26UF	26YF	32UF	32YF
Baldor	F918	HF918	F921	HF921	F924	HF924	F926	HF926	F932	HF932
Boston	F718	HF718	F721	HF721	F724	HF724	F726	HF726	F732	HF732
Browning-Raider	Q175	QH175	Q206	QH206	Q237	QH237	Q262	QH262	Q325	QH325
Dodge-Tigear	Q175	–	Q200	–	–	–	Q262	–	–	–
Falk-Omnibox	1175WBM	1175WBQM	1206WBM	1206WBQM	1238WBM	1238WBQM	1262WBM	1262WBQM	1325WBM	1325WBQM
Grove (new)	BMQ218	HMQ218	BMQ220	HMQ220	BMQ224	HMQ224	BMQ226	HMQ226	BMQ232	HMQ232
Grove (old)	BMQ1175	HMQ1175	BMQ1206	HMQ1206	BWQ1238	HMQ1238	BMQ1262	HMQ1262	BMQ1325	HMQ1325
Leeson	BMQ618	HMQ618	BMQ621	HMQ621	BMQ624	HMQ624	BMQ626	HMQ626	BMQ632	HMQ632
Morse Raider	718F	718SF	721F	721SF	724F	724SF	726F	726SF	732F	732SF
Ohio Gear	BMQ2175	SM2175MQ	BMQ2206	SM2206MQ	BMQ2238	SM2238MQ	BMQ2262	SM2262MQ	BMQ2325	SM2325MQ

* **IronHorse Series Gear Drives are designed to be functionally interchangeable with these and many other manufacturer's drives. This chart is intended to be a guide only. Customers should compare the appropriate manufacturer's specifications for exact details regarding ratings and dimensions.**

IronHorse® Worm Gearboxes
Gearbox Selection

Gearbox Selection Steps

1) Determine the torque and speed required for the load.

2) Determine the overall speed ratio of motor speed to load speed.

3) Determine the gearbox ratio as well as any reduction outside the gearbox (pulleys, gears, etc.).

4) Determine the applicable service factor and overhung load K factor.

5) Determine the gearbox real output torque required, and select a gearbox with a higher Maximum Thermal output Torque rating (for WG cast-iron gearboxes; not applicable for WGA aluminum gearboxes).

6) Determine the gearbox design output torque required (torque with service factor applied), and select a gearbox with a higher Maximum Mechanical Output Torque rating. (Gearbox must also meet requirement #5.)

7) Determine the required sizes of pulleys, gears, etc., and determine the overhung load force. Select a gearbox with a higher Overhung Load rating. (Gearbox must also meet requirements #5 & #6.)

8) Confirm that the selected gearbox meets the applicable system requirements.

9) Select a compatible motor.

Gearbox Selection Example (Refer to the specifications tables for gearbox specifications, service factors, and K factors.)
A conveyor will run 10 hours/day with moderate shock loading. The conveyor will be driven by a V-belt and needs to be driven at approximately 20 rpm. The motor to be used will have a nominal speed of 1800 rpm (1725 rpm actual speed). The conveyor will require 2700 in·lb of torque.

1) Required **torque** = 2700 in·lb; required **speed** = 20 rpm.

2) Determine the **overall speed ratio** of motor speed to load speed:
Overall speed ratio = motor speed / load speed = 1725 / 20 = 86.25 [about 86:1]

3) Determine **pulley ratios** at available **gearbox ratios**:
Gearbox ratio = (overall speed ratio) / (pulley ratio)
Pulley ratio = (overall speed ratio) / (gearbox ratio)
For ~~5:1 gearbox~~:   pulley ratio = 86.25 / 5 = ~~17.25~~ [17.25" pulley ratio is prohibitively large]
For 10:1 gearbox: pulley ratio = 86.25 / 10 = 8.63
For 15:1 gearbox: pulley ratio = 86.25 / 15 = 5.75
For 20:1 gearbox: pulley ratio = 86.25 / 20 = 4.31
For 30:1 gearbox: pulley ratio = 86.25 / 30 = 2.88
For 40:1 gearbox: pulley ratio = 86.25 / 40 = 2.16
For 60:1 gearbox: pulley ratio = 86.25 / 60 = 1.44
Pulley ratio = (conveyor pulley diameter) / (gearbox pulley diameter)

4) Determine **service factor (SF)** and **overhung load factor (K)** from applicable tables:
SF = 1.25   due to moderate shock loading and 3-10 hours/day operation
K = 1.5   due to V-belt

5) Use specifications table to select gearbox with **Maximum Thermal* Torque rating > required real torque**:
Gearbox required real torque = (final torque) / (pulley ratio)
For 10:1 gearbox: (2700 in·lb) / 8.63 = 312.86 in·lb;   use WG-175-x or larger
For 15:1 gearbox: (2700 in·lb) / 5.75 = 469.57 in·lb;   use WG-175-x or larger
For 20:1 gearbox: (2700 in·lb) / 4.31 = 626.45 in·lb;   use WG-206-x or larger
For 30:1 gearbox: (2700 in·lb) / 2.88 = 937.50 in·lb;   use WG-325-x or WGA-63M*
For 40:1 gearbox: (2700 in·lb) / 2.16 = 1250.0 in·lb;   use WG-325-x
For 60:1 gearbox: (2700 in·lb) / 1.44 = 1875.0 in·lb;   use WG-325-x
* Aluminum gearboxes do not have thermal ratings; use mechanical ratings.

6) Use specifications table to select gearbox with **Maximum Mechanical Torque rating > required design torque**:
Gearbox required design torque = (real gearbox torque)(service factor)
For 10:1 gearbox: (312.86 in·lb)(1.25) = 391.08 in·lb;   use WG-175-x or larger
For 15:1 gearbox: (469.57 in·lb)(1.25) = 586.96 in·lb;   use WG-206-x or larger
For 20:1 gearbox: (646.45 in·lb)(1.25) = 808.06 in·lb;   use WG-206-x or larger
For 30:1 gearbox: (937.50 in·lb)(1.25) = 1178.88 in·lb;   use WG-325-x or WGA-63M or larger
For 40:1 gearbox: (1250.0 in·lb)(1.25) = 1562.50 in·lb;   use WG-325-x
For 60:1 gearbox: (1875.0 in·lb)(1.25) = 2343.75 in·lb;   use WG-325-x

(continued on next page)

IronHorse® Worm Gearboxes

Gearbox Selection Example (continued)
(Refer to the specifications tables for gearbox specifications, service factors, and K factors.)
[Load requirements: Conveyor to run 10 hours/day; moderate shock loading; driven by V–belt @ approx 20 rpm;
requires 2700 in·lb of torque. Motor speed 1725 rpm (1800 rpm nominal).

7) Use the gearbox overhung load ratings from the specifications table to determine the minimum allowable pulley diameters.
   Select gearbox with **Overhung Load rating > overhung load force**:
   Gearbox required OHL rating = (gearbox real torque)(K)(SF)/(gearbox pulley diameter / 2)
   Minimum gearbox pulley diameter = (T)(K)(SF)(2)/(OHL rating)
   Conveyor pulley diameter = (gearbox pulley diameter)(pulley ratio)
   <u>For 10:1</u>, WG-175-010-x gearbox:
     Minimum gearbox pulley diameter = (312.86 in·lb)(1.5)(1.25)(2)/(650 lb) = 1.8" [use 2"]
     Conveyor pulley diameter = (2")(8.63) = ~~17.26"~~ [17.26" pulley size is prohibitively large]
     Determine pulley sizes and OHL for next larger gearbox ratio.
   <u>For 15:1</u>, WG-206-015-x gearbox:
     Minimum gearbox pulley diameter = (469.57 in·lb)(1.5)(1.25)(2)/(700 lb) = 2.5" [use 2.5"]
     Conveyor pulley diameter = (2.5")(5.75) = 14.38" [use 14.4"]
     Select **WG-206-015-x gearbox, 2.5" gearbox pulley**, and **14.4" conveyor pulley**.
   <u>For 20:1</u>, WG-206-020-x gearbox:
     N/A – larger ratio of same frame size GB is same price, yet provides lower efficiency and power characteristics
   <u>For 30:1</u>, WGA-63M-030-H1 gearbox:
     Minimum gearbox pulley diameter = (937.50 in·lb)(1.5)(1.25)(2)/(736 lb) = 4.78" [use 5"]
     Conveyor pulley diameter = (5")(2.88) = 14.40" [use 14.4"]
     N/A – WGA-63M & WG-325 gearboxes costs more than WG-206
   <u>For 40:1</u>, N/A – WG-325-xxx gearboxes cost more than WG-206 at any ratio
   <u>For 60:1</u>, N/A – WG-325-xxx gearboxes cost more than WG-206 at any ratio

8) **Check results** against original speed and torque requirements:
   a) Conveyor speed = (motor speed) / (gearbox ratio)(pulley ratio) = (1725 rpm) / (15)(14.4"/2.5") = 20 rpm
   b) Maximum real torque available at conveyor = (gearbox thermal torque)(pulley ratio) = (673 in·lb)(14.4"/2.5") = 3876 in·lb
   c) Maximum design torque available at conveyor = (gearbox mechanical torque)(pulley ratio) / (service factor)
                            = (1002 in·lb)(14.4"/2.5") / 1.25 = 4617 in·lb
   The speed is correct as required, and both maximum torque values are greater than the 2700 in·lb required by the load.

9) **Select a motor** and check torque transmitted to the load:
   From the gearbox spec tables, WG-206-015-x efficiency = 85%.
         maximum thermal input power = 1.40 hp
         maximum mechanical input power @ 1.0 SF = 2.09 hp
         maximum mechanical input power @ 1.25 SF = (rated max mechanical input power) / (SF) = 2.09 hp / 1.25 = 1.67 hp
         maximum allowable motor power = 1.40 hp; select nominal 1hp motor
   Select **1hp motor**, and check for adequate torque at the load:
         Torque = Power / Speed   **[conversion factor: (1hp) = (63,025 in·lb·rpm)]**
         Torque load = (63,025 in·lb·rpm / hp)(gearbox input hp)(gearbox efficiency) / (motor rpm / (gearbox ratio)(pulley ratio))
                  = (63,025)(1)(0.85) / (1725 / (15/1)(14.4/2.5)) = ~~2683 in·lb~~ [insufficient torque at load]
                  This torque value is less than the 2700 in·lb required by the load.
         So, select and check the next larger nominal motor size, which is 1-1/2 hp.
         Since the 206 frame size 15 ratio gearboxes do not meet the 1-1/2 hp thermal rating, choose the WG-237-015-x gearbox.
   Select **1-1/2 hp motor** and **WG-237-015-x gearbox**, and check for adequate torque:
      WG-237-015-x gearbox efficiency = 84%
         maximum thermal input power = 1.55 hp
         maximum mechanical input power @ 1.25 SF = 2.64 hp / 1.25 = 2.11 hp
         maximum allowable motor power = 1.55 hp; select nominal 1-1/2 hp motor
         gearbox ratio is still 15:1, and OHL rating is increased to 900 lb, so the previous pulley calculations [step 7] remain sufficient
                  [smaller pulleys can be calculated and selected for this gearbox, if desired]
         Tload = (63,025 in·lb·rpm/hp) (1.5hp) (84%) / (1725 rpm / (15/1)(14.4/2.5)) = 3977 in·lb > 2700 in·lb; sufficient torque at load

Final gearbox and motor selection: 1-1/2 hp motor   WG-237-015-x gearbox