

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
- AIBC3 (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

IronHorse Cast-Iron Worm Gearbox 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	2.83	NEMA 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					NEMA 56C	H					23									
WG-175-005-R	\$199.00					NEMA 56C	L					22									
WG-175-005-L	\$198.00					NEMA 56C	R					22									
WG-175-010-D	\$199.00	10:1	10.33:1	175	1.57	NEMA 56C	D				88	23	1.57	1.38	515	1.36	1.19	445			
WG-175-010-H	\$245.00					NEMA 56C	H					23									
WG-175-010-R	\$199.00					NEMA 56C	L					22									
WG-175-010-L	\$198.00					NEMA 56C	R					22									
WG-175-015-D	\$199.00	15:1	14.5:1	117	1.24	NEMA 56C	D				85	23	1.24	1.06	554	1.13	0.96	506			
WG-175-015-H	\$245.00					NEMA 56C	H					23									
WG-175-015-R	\$199.00					NEMA 56C	L					22									
WG-175-015-L	\$198.00					NEMA 56C	R					22									
WG-175-020-D	\$199.00	20:1	19.5:1	88	1.02	NEMA 56C	D				83	23	1.02	0.85	596	0.98	0.81	572			
WG-175-020-H	\$245.00					NEMA 56C	H					23									
WG-175-020-R	\$199.00					NEMA 56C	L					22									
WG-175-020-L	\$198.00					NEMA 56C	R					22									
WG-175-040-D	\$199.00	40:1	40:1	44	0.74	NEMA 56C	D				62	23	0.74	0.49	714	0.59	0.39	558			
WG-175-040-H	\$260.00					NEMA 56C	H					23									
WG-175-040-R	\$199.00					NEMA 56C	L					22									
WG-175-040-L	\$198.00					NEMA 56C	R					22									
WG-175-060-D	\$199.00	60:1	60:1	29	0.38	NEMA 56C	D				52	23	0.38	0.20	469	0.38	0.2	469			
WG-175-060-H	\$260.00					NEMA 56C	H					23									
WG-175-060-R	\$199.00					NEMA 56C	L					22									
WG-175-060-L	\$198.00					NEMA 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)

IronHorse Cast-Iron Worm Gearbox 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-206-005-D	\$252.00	5:1	5.75:1	350	3.62	NEMA 56C	D	2.06	700	750	92	28	3.62	3.33	685	2.57	2.36	486	17	
WG-206-005-H	\$314.00					NEMA 56C	H					28								
WG-206-005-R	\$252.00					NEMA 56C	L					27								
WG-206-005-L	\$250.00					NEMA 56C	R					27								
WG-206-010-D	\$252.00	10:1	10.33:1	175	2.77	NEMA 56C	D				90	28	2.77	2.50	935	2.10	1.89	708		
WG-206-010-H	\$314.00					NEMA 56C	H					28								
WG-206-010-R	\$252.00					NEMA 56C	L					27								
WG-206-010-L	\$250.00					NEMA 56C	R					27								
WG-206-015-D	\$252.00	15:1	15.5:1	117	2.09	NEMA 56C	D				85	28	2.09	1.78	1002	1.40	1.20	673		
WG-206-015-H	\$314.00					NEMA 56C	H					28								
WG-206-015-R	\$252.00					NEMA 56C	L					27								
WG-206-015-L	\$250.00					NEMA 56C	R					27								
WG-206-020-D	\$238.00	20:1	19.5:1	88	1.57	NEMA 56C	D				82	28	1.57	1.29	914	1.17	0.96	681		
WG-206-020-H	\$314.00					NEMA 56C	H					28								
WG-206-020-R	\$252.00					NEMA 56C	L					27								
WG-206-020-L	\$252.00					NEMA 56C	R					27								
WG-206-040-D	\$240.00	40:1	40:1	44	1.09	NEMA 56C	D	2.06	700	750	71	28	1.09	0.77	1120	0.71	0.50	726	17	
WG-206-040-H	\$314.00					NEMA 56C	H					28								
WG-206-040-R	\$252.00					NEMA 56C	L					27								
WG-206-040-L	\$252.00					NEMA 56C	R					27								
WG-206-060-D	\$238.00	60:1	60:1	29	0.6	NEMA 56C	D				58	28	0.60	0.35	750	0.48	0.28	606		
WG-206-060-H	\$314.00					NEMA 56C	H					28								
WG-206-060-R	\$252.00					NEMA 56C	L					27								
WG-206-060-L	\$252.00					NEMA 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)

IronHorse Cast-Iron Worm Gearbox 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-237-005-D	\$286.00	5:1	5.25:1	350	4.57	NEMA 56C	D	2.37	900	900	93	38	4.57	4.24	798	3.56	3.31	630	17
WG-237-005-H	\$359.00					NEMA 56C	H												
WG-237-005-R	\$303.00					NEMA 56C	L												
WG-237-005-L	\$303.00					NEMA 56C	R												
WG-237-010-D	\$286.00	10:1	10.33:1	175	3.47	NEMA 56C	D	2.37	900	900	89	38	3.47	3.09	1158	2.24	1.99	746	
WG-237-010-H	\$359.00					NEMA 56C	H												
WG-237-010-R	\$303.00					NEMA 56C	L												
WG-237-010-L	\$300.00					NEMA 56C	R												
WG-237-015-D	\$286.00	15:1	15.5:1	117	2.64	NEMA 56C	D	2.37	900	900	84	38	2.64	2.22	1249	1.55	1.30	732	
WG-237-015-H	\$359.00					NEMA 56C	H												
WG-237-015-R	\$303.00					NEMA 56C	L												
WG-237-015-L	\$300.00					NEMA 56C	R												
WG-237-020-D	\$286.00	20:1	20:1	88	2.06	NEMA 56C	D	2.37	900	900	82	38	2.06	1.69	1195	1.36	1.12	791	
WG-237-020-H	\$359.00					NEMA 56C	H												
WG-237-020-R	\$303.00					NEMA 56C	L												
WG-237-020-L	\$300.00					NEMA 56C	R												
WG-237-040-D	\$286.00	40:1	40:1	44	1.45	NEMA 56C	D	2.37	900	900	71	38	1.45	1.02	1483	0.83	0.58	845	
WG-237-040-H	\$359.00					NEMA 56C	H												
WG-237-040-R	\$303.00					NEMA 56C	L												
WG-237-040-L	\$300.00					NEMA 56C	R												
WG-237-060-D	\$286.00	60:1	60:1	29	0.86	NEMA 56C	D	2.37	900	900	61	38	0.86	0.53	1149	0.63	0.39	844	
WG-237-060-H	\$359.00					NEMA 56C	H												
WG-237-060-R	\$303.00					NEMA 56C	L												
WG-237-060-L	\$300.00					NEMA 56C	R												
WG-262-005-D	\$306.00	5:1	5.25:1	350	5.24	NEMA 182TC	D	2.62	1000	1000	93	57	5.24	4.86	924	4.32	4.00	761	
WG-262-005-H	\$442.00					NEMA 182TC	H												
WG-262-005-R	\$327.00					NEMA 182TC	L												
WG-262-005-L	\$322.00					NEMA 182TC	R												
WG-262-010-D	\$306.00	10:1	10.67:1	175	4.17	NEMA 182TC	D	2.62	1000	1000	90	57	4.17	3.74	1445	3.06	2.75	1061	
WG-262-010-H	\$442.00					NEMA 182TC	H												
WG-262-010-R	\$327.00					NEMA 182TC	L												
WG-262-010-L	\$322.00					NEMA 182TC	R												

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.

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IronHorse® Cast-Iron Worm Gearboxes

Specifications (continued)

IronHorse Cast-Iron Worm Gearbox 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-262-015-D	\$306.00	15:1	15.5:1	117	3.22	NEMA 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					NEMA 56C	H													50	
WG-262-015-R	\$327.00					NEMA 56C	L														49
WG-262-015-L	\$322.00					NEMA 56C	R														
WG-262-020-D	\$306.00	NEMA 56C	D	50																	
WG-262-020-H	\$442.00	NEMA 56C	H		50																
WG-262-020-R	\$327.00	NEMA 56C	L			49															
WG-262-020-L	\$322.00	NEMA 56C	R																		
WG-262-040-D	\$306.00	NEMA 56C	D	50																	
WG-262-040-H	\$442.00	NEMA 56C	H		50																
WG-262-040-R	\$327.00	NEMA 56C	L			49															
WG-262-040-L	\$322.00	NEMA 56C	R																		
WG-262-060-D	\$306.00	NEMA 56C	D	50																	
WG-262-060-H	\$442.00	NEMA 56C	H		51																
WG-262-060-R	\$327.00	NEMA 56C	L			49															
WG-262-060-L	\$322.00	NEMA 56C	R																		

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IronHorse® Cast-Iron Worm Gearboxes

Specifications (continued)

IronHorse Cast-Iron Worm Gearbox 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-325-010-DC	\$483.00	10:1	10.33:1	169	7.19	NEMA 182/4TC	D	3.25	1200	1100	90	91	7.19	6.46	2419	4.63	4.16	1558	15
WG-325-010-HC	\$633.00					NEMA 182/4TC	H					90							
WG-325-010-LC	\$483.00					NEMA 182/4TC	L					90							
WG-325-010-RC	\$483.00					NEMA 182/4TC	R					90							
WG-325-015-DC	\$483.00	15:1	15.5:1	113	5.45	NEMA 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					NEMA 182/4TC	H					90							
WG-325-015-LC	\$483.00					NEMA 182/4TC	L					90							
WG-325-015-RC	\$483.00					NEMA 182/4TC	R					90							
WG-325-020-DC	\$483.00	20:1	19.5:1	90	4.74	NEMA 182TC	D	3.25	1200	1100	86	91	4.74	4.07	2875	3.31	2.85	2011	
WG-325-020-HC	\$633.00					NEMA 182TC	H					90							
WG-325-020-LC	\$483.00					NEMA 182TC	L					90							
WG-325-020-RC	\$483.00					NEMA 182TC	R					90							
WG-325-030-DA	\$483.00	30:1	30:1	58	3.66	NEMA 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		NEMA 145TC	D					88							
WG-325-030-HA	\$633.00			58		NEMA 56C	H					87							
WG-325-030-HB	\$633.00					NEMA 145TC	H					87							
WG-325-030-LA	\$483.00					NEMA 56C	L					87							
WG-325-030-LB	\$483.00					NEMA 145TC	L					87							
WG-325-030-LC	\$483.00			3.66	NEMA 182TC	L	87												
WG-325-030-RA	\$483.00				3.66	NEMA 56C	R					87							
WG-325-030-RB	\$483.00			NEMA 145TC		R	87												
WG-325-030-RC	\$483.00			3.66	NEMA 182TC	R	87												

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Specifications (continued)

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WG-325-040-DA	\$483.00	40:1	40:1	44	3.35	NEMA 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					NEMA 145TC	D					88							
WG-325-040-HA	\$633.00					NEMA 56C	H					87							
WG-325-040-HB	\$633.00					NEMA 145TC	H					87							
WG-325-040-LA	\$483.00					NEMA 56C	L					87							
WG-325-040-LB	\$483.00					NEMA 145TC	L					87							
WG-325-040-RA	\$483.00					NEMA 56C	R					87							
WG-325-040-RB	\$483.00					NEMA 145TC	R					87							
WG-325-060-DA	\$483.00	60:1	60:1	29	2.03	NEMA 56C	D	3.25	1200	1100	71	88	2.03	1.44	3127	1.61	1.14	2476	
WG-325-060-DB	\$483.00					NEMA 145TC	D					88							
WG-325-060-HA	\$633.00					NEMA 56C	H					87							
WG-325-060-HB	\$633.00					NEMA 145TC	H					87							
WG-325-060-LA	\$483.00					NEMA 56C	L					87							
WG-325-060-LB	\$483.00					NEMA 145TC	L					87							
WG-325-060-RA	\$483.00					NEMA 56C	R					87							
WG-325-060-RB	\$483.00					NEMA 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.

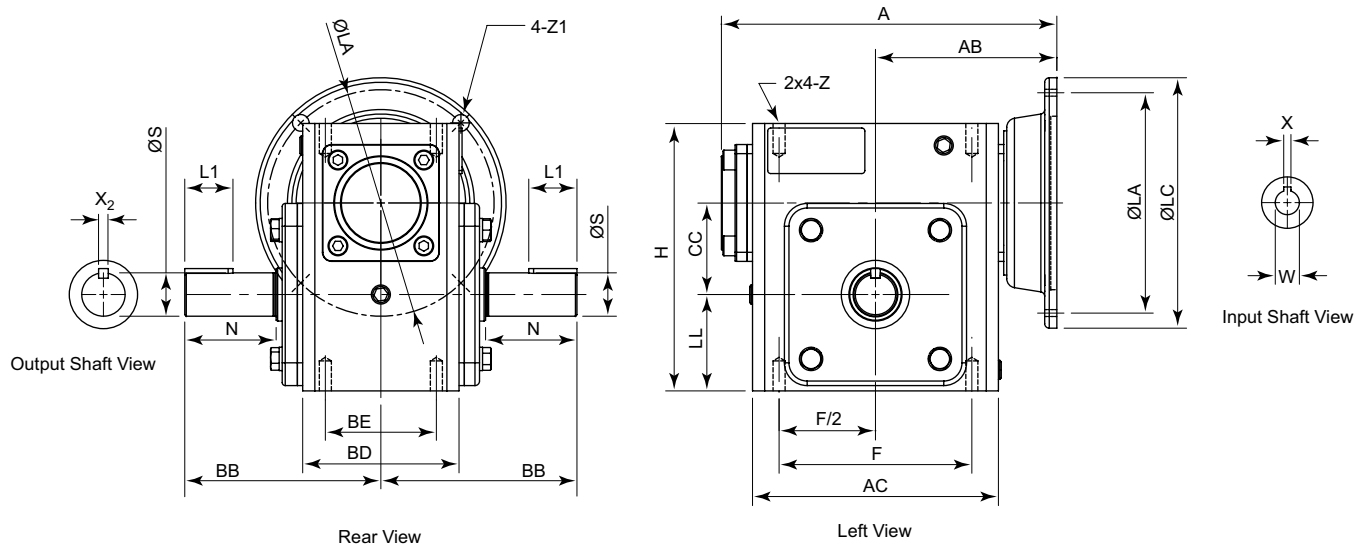
Service Factors for Selecting Gearboxes (when used with electric motors)				
Service Continuity (per day)	Load Characteristics			
	Uniform	Moderate Shock*	Heavy Shock*	Extreme Shock*
Occasional 1/2 hour	1.00	1.00	1.00	1.25
Less than 3 hours	1.00	1.00	1.25	1.50
3-10 hours	1.00	1.25	1.50	1.75
More than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



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	X ₂																								
WG-175-xxx-D/L/R	56C	7.29	4.035	5.06	4.311	3.56	2.75	1.75	4.188	5.75	2.062	5/16-18	3/8-16	5.875	6.496	0.433	5/8	3/16	1	1.781	7/8	3/16																							
WG-206-xxx-D/L/R		7.95	4.37	5.75	4.69	3.82	2.88	2.062	5	6.38	2.281	3/8-16		5.875	6.496	0.433	5/8	3/16	1.25	2.09	1	1-1/8	1/4																						
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			5.875	6.496	0.433	5/8	3/16	1.25	2.37																									
WG-262-005-D/L/R	182TC	10.57	6.24	7.17	5.63	4.69	3.375	2.625	6.375	8	2.938		3/8-16	7.25	9	0.551	1-1/8	1/4	2	2.626	1-1/8			1/4																					
WG-262-010-D/L/R												56C		9.41	5.059	7.17	5.63	4.69				3.375	2.625		6.375	8	2.938	3/8-16	5.875	6.496	0.433	5/8	3/16												
WG-262-015-D/L/R	56C	9.41	5.059	7.17	5.63	4.69	3.375	2.625	6.375	8	2.938		3/8-16						5.875	6.496	0.433			5/8					3/16																
WG-262-020-D/L/R																			56C	9.41	5.059			7.17					5.63	4.69	3.375	2.625	6.375	8	2.938	3/8-16	5.875	6.496	0.433	5/8	3/16				
WG-262-040-D/L/R																																					56C	9.41	5.059	7.17	5.63	4.69	3.375	2.625	6.375
WG-262-060-D/L/R												56C		9.41	5.059	7.17	5.63	4.69				3.375	2.625		6.375	8	2.938	3/8-16																	
WG-325-010-xC	182/4TC	12.60	7.24	9.02	7.06	5.75	4.00	3.25	7.50	9.38	3.50		7/16-14																																
WG-325-015-xC																			7.25	9.00	0.55			1-1/8					1/4																
WG-325-020-xC	182TC	11.42	6.06	9.02	7.06	5.75	4.00	3.25	7.50	9.38	3.50		7/16-14						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-xA	56C											5.875		6.50	0.41	5/8	3/16																												
WG-325-030-xB	145TC	11.42	6.06	9.02	7.06	5.75	4.00	3.25	7.50	9.38	3.50	7/16-14	7/16-14	7.25	9.00	0.55	1-1/8	1/4	2.44	3.25	1-3/8	5/16																							
WG-325-030-xC	182TC													7.25	9.00	0.55	1-1/8	1/4																											
WG-325-040-xA	56C													5.875	6.50	0.41	5/8	3/16																											
WG-325-040-xB	145TC																7/8																												
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.

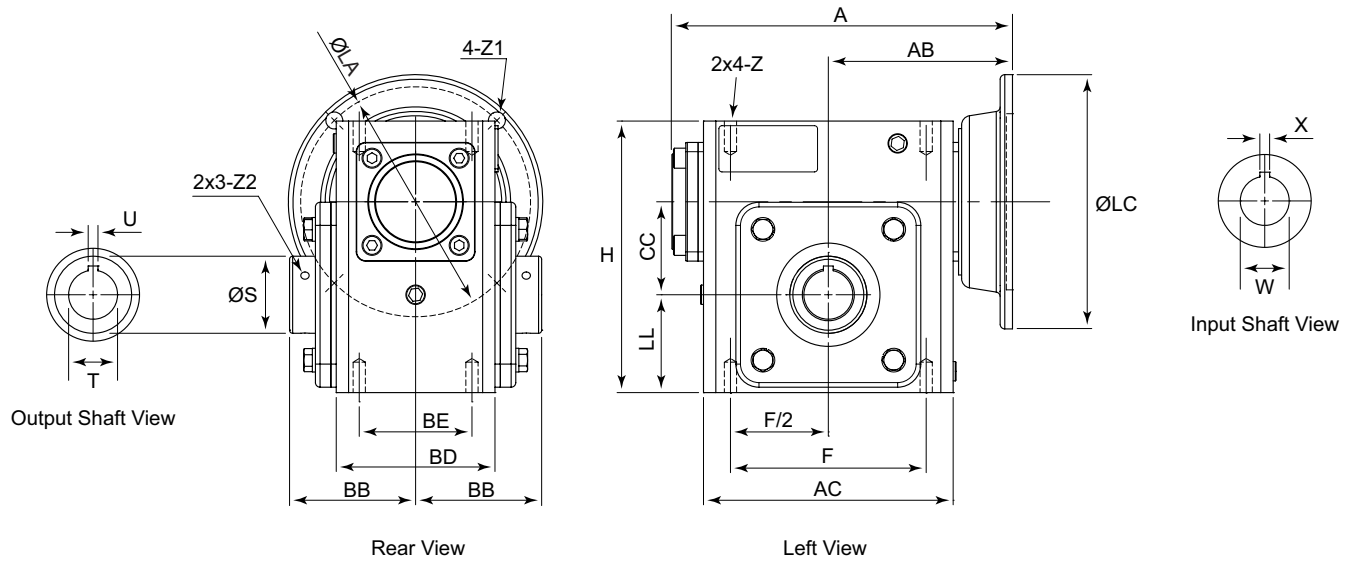
Left-hand shaft gearboxes have output shafts only on the left side, as viewed looking into the input shaft (dimensions BB, L1, N, S, X₂).

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



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	56C	7.28	4.035	5.059	3.091	3.563	2.750	1.75	4.188	5.75	2.062	3/8-16	5.875	6.496	0.433	5/8	3/16	1.575	1.0	1/4	#10-32
WG-206-xxx-H		7.95	4.370	5.748	3.219	3.819	2.880	2.062	5.000	6.375	2.281							1.772	1.125		
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		
WG-262-005-H	182TC	10.59	6.240	7.165	3.500	4.685	3.375	2.625	6.375	8.000	2.938	3/8-16	7.25	9.000	0.551	1-1/8	1/4	2.362	1.437	3/8	1/4-28
WG-262-010-H																					
WG-262-015-H																					
WG-262-020-H	56C	9.41	5.059	7.165	3.500	4.685	3.375	2.625	6.375	8.000	2.938	3/8-16	5.875	6.496	0.433	5/8	3/16	2.362	1.437	3/8	1/4-28
WG-262-040-H																					
WG-262-060-H																					
WG-325-010-HC	182/4TC	12.60	7.24	9.02	4.38	5.75	4.00	3.25	7.50	9.38	3.50	7/16-14	7.25	9.00	0.55	1.125	1/4	2.76	1.938	1/2	5/16-24
WG-325-015-HC																					
WG-325-020-HC																					
WG-325-030-HA	56C	11.42	6.06	9.02	4.38	5.75	4.00	3.25	7.50	9.38	3.50	7/16-14	5.875	6.50	0.41	0.625	3/16	2.76	1.938	1/2	5/16-24
WG-325-030-HB	145TC																				
WG-325-040-HA	56C																				
WG-325-040-HB	145TC																				
WG-325-060-HA	56C																				
WG-325-060-HB	145TC																				

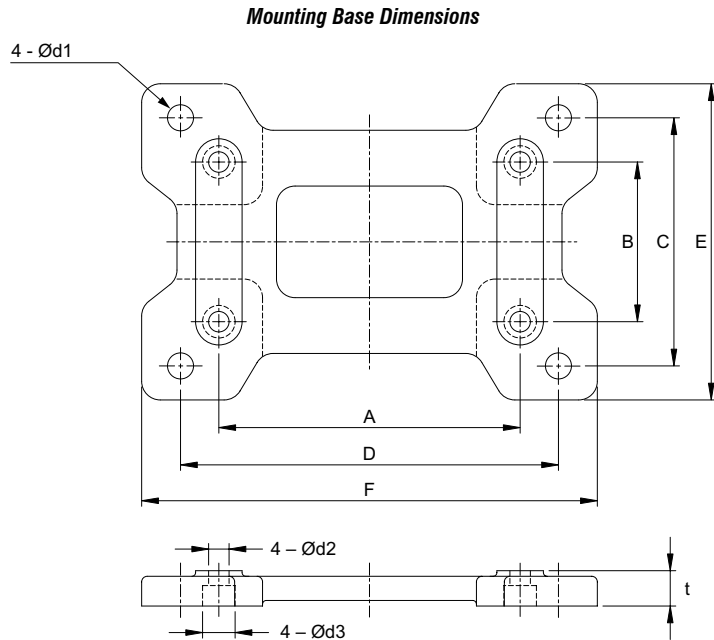
See our website: www.AutomationDirect.com for complete engineering drawings.

IronHorse® Cast-Iron Worm Gearboxes

Accessories – Mounting Base



IronHorse Worm Gearbox Mounting Base



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 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)

For 10:1, 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.

For 15:1, 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.**

For 20:1, WG-206-020-x gearbox:

N/A – larger ratio of same frame size GB is same price, yet provides lower efficiency and power characteristics

For 30:1, 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

For 40:1, N/A – WG-325-xxx gearboxes cost more than WG-206 at any ratio

For 60:1, 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

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)

For 10:1, 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.

For 15:1, 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.**

For 20:1, WG-206-020-x gearbox:

N/A – larger ratio of same frame size GB is same price, yet provides lower efficiency and power characteristics

For 30:1, 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

For 40:1, N/A – WG-325-xxx gearboxes cost more than WG-206 at any ratio

For 60:1, 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