Cast-Iron Shaft Mount Gearboxes

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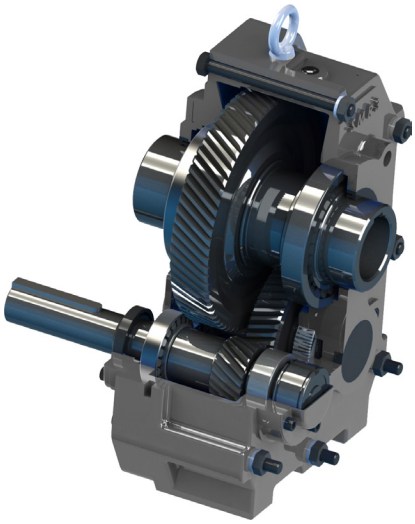
Gearbox Selection Factors

Classes of Service and Service Factors

The ratings for gear drives in this manual are based on a service factor of 1.00, for uniform load and uniform power source, up to 10 hours of operation per day. For other operating conditions, the application horsepower or torque must be multiplied by the appropriate service factor to determine the equivalent gear drive power rating. A gear drive should be selected with a rated capacity equal to or greater than the equivalent rating.



The American Gear Manufacturers Association (A.G.M.A.) bases its service factors on a uniform power source. If other power sources are used, the service factors must be converted using Table 2 below. Determine the required service factor with uniform power source. Locate that service factor in the first column and read straight across to obtain required service factor with multi-cylinder or single cylinder engines. Please refer to *page B–4* for an expanded list of classification numbers for specific industries.

- *Service factors do not need to be used with thermal ratings.*
- *Service Factor charts are for general guidelines in determining required service factors. Past experience may indicate that different service factors are required.*

Table 1 – Load Classification Numbers

Service Class	Service Factor	Total Operation Per Day		
		Up to 3 Hours	3 to 10 Hours	Over 10 Hours
I	1.0	Moderate Shock Load	Uniform Load	—
II	1.4	Heavy Shock Load	Moderate Shock Load	Uniform Load
III	2.0	—	Heavy Shock Load	Moderate Shock Load

Table 2 – Service Factor Conversion Based on Type of Power Source

Steam or Gas Turbine Hydraulic or Electric Motor	Multi-Cylinder Engine	Single Cylinder Engine
1.00	1.25	1.50
1.25	1.50	1.75
1.50	1.75	2.00
1.75	2.00	2.25
2.00	2.25	2.50
2.50	2.75	3.00
3.00	3.25	3.50

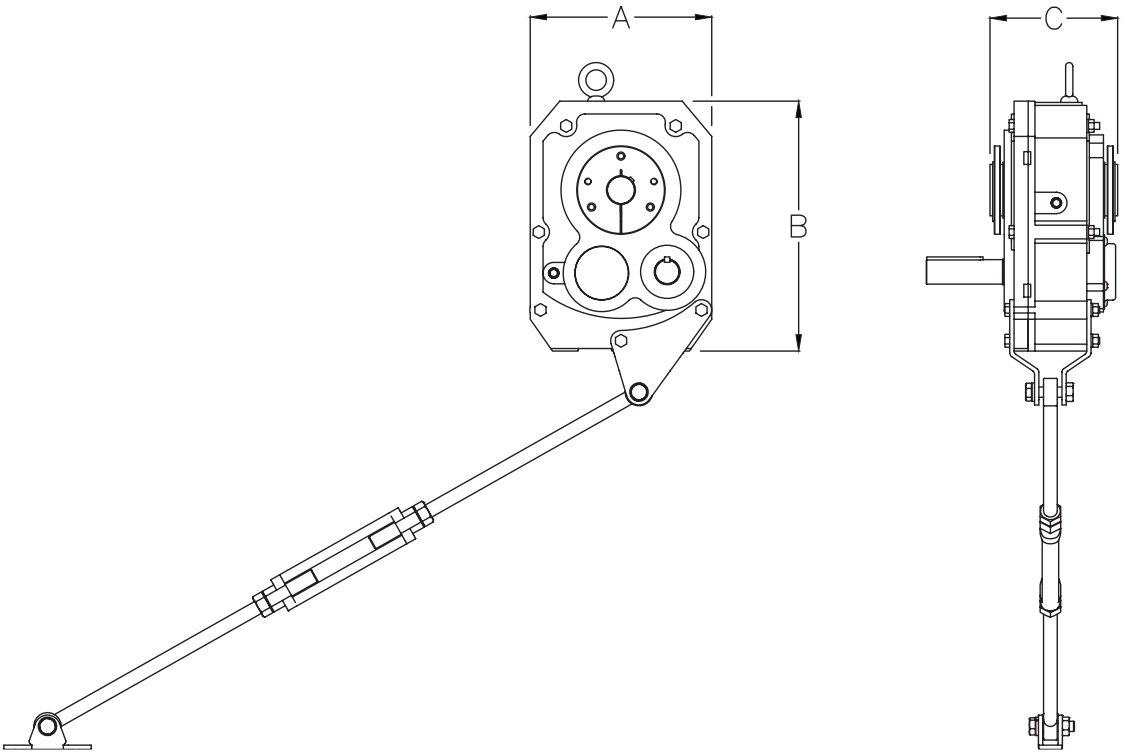
Output Shaft Overhung Load Ratings

Output Shaft Overhung Load Ratings												
Frame Size	*Shaft Size*	*Overhung Load (lb) at Various RPMs*										
		10	*20*	*30*	*50*	*80*	*100*	*120*	*140*	*160*	*180*	*200*
2	1-7/16"	2000	1510	1270	1010	840	820	720	720	710	710	700
	1-15/16"	1750	1320	1110	890	730	710	630	630	620	620	610
3	1-15/16"	5400	4250	3680	3050	2620	2440	2310	2210	2110	2040	1980
	2-3/16"	5240	4120	3570	2960	2540	2370	2240	2140	2050	1980	1920
4	2-3/16"	6520	5180	4510	3800	3230	3000	2830	2710	2600	2510	2430
	2-7/16"	6360	5060	4410	3710	3160	2930	2770	2640	2530	2450	2370
5	2-7/16"	7460	5860	5080	4280	3690	3450	3270	3110	2980	2880	2790
	2-15/16"	7060	5540	4800	4040	3490	3260	3090	2940	2820	2720	2640

Ratio to Speed

IronHorse® Cast-Iron Shaft Mount Gearbox Ratio/Speed Table						
Part Number	*Nominal Ratio 9:1*		*Nominal Ratio 15:1*		*Nominal Ratio 25:1*	
	Actual Ratio	*Max Input Speed*	*Actual Ratio*	*Max Input Speed*	*Actual Ratio*	*Max Input Speed*
SMR2-09	9.36	1872	14.04	1974	23.37	1994
SMR2-15						
SMR2-25						
SMR3-09	9.21	1842	14.87	2083	24.75	2100
SMR3-15						
SMR3-25						
SMR4-09	9.21	1842	15.13	2118	24.38	2072
SMR4-15						
SMR4-25						
SMR5-09	9.10	1820	15.4	1925	25.56	2044
SMR5-15						
SMR5-25						

Gearbox Dimensions



Dimensions						
Part Number	A		B		C	
	in	mm	in	mm	in	mm
SMR2-09	8.35	212.0	11.50	292.0	5.87	149.0
SMR2-15						
SMR2-25						
SMR3-09	9.25	235.0	12.99	330.0	7.58	192.5
SMR3-15						
SMR3-25						
SMR4-09	10.91	277.0	15.24	387.0	8.23	209.0
SMR4-15						
SMR4-25						
SMR5-09	13.15	334.0	18.23	463.0	8.78	223.0
SMR5-15						
SMR5-25						

Mechanical Ratings

IronHorse® Shaft Mount Gearbox Mechanical Ratings									
Model	Service Class I			Service Class II			Service Class III		
	Power (hp)	Output (RPM)	Output Torque (lb·in)	Power (hp)	Output (RPM)	Output Torque (lb·in)	Power (hp)	Output (RPM)	Output Torque (lb·in)
SMR2-09	7.5	78-105	5434-4037	5	78-110	3658-2594	3	58-110	2952-1556
	10	110-200	5188-2853	7.5	115-200	3722-2140	5	105-200	2717-1427
SMR2-15	2	16-24	7065-4710	1.5	18-24	4710-3532	1.5	26-34	3261-2493
	3	26-45	6521-3768	2	24-34	4710-3324	2	38-58	2975-1949
	5	46-74	6143-3819	3	38-70	4462-2422	3	58-100	2923-1695
	7.5	78-105	5434-4037	5	70-105	4037-2691	5	105-140	2691-2018
	10	105-140	5382-4037	7.5	110-140	3853-3028	—	—	—
SMR2-25	0.5	4-6	7065-4710	0.33	4-5	4663-3730	0.25	4-5	3532-2826
	0.75	6-8	7065-5298	0.5	6-8	4710-3532	0.33	6-8	3108-2331
	1	8-10	7065-5652	0.75	8-12	5298-3532	0.5	8-12	3532-2355
	1.5	12-16	7065-5298	1	12-16	4710-3532	0.75	12-16	3532-2649
	2	16-24	7065-4710	1.5	18-24	4710-3532	1	16-24	3532-2355
	3	26-45	6521-3768	2	24-34	4710-3324	1.5	26-34	3261-2493
	5	46-74	6143-3819	3	38-70	4462-2422	2	38-58	2975-1949
	7.5	78-85	5434-4987	5	70-85	4037-3324	3	58-85	2923-1995
SMR3-09	10	78-105	7246-5382	7.5	85-110	5035-3722	5	74-105	3856-2817
	15	110-140	7707-6055	10	110-150	5188-3804	7.5	110-140	3891-3057
	20	150-200	7609-5707	15	160-200	5350-4280	10	150-200	3804-2853
SMR3-15	3	28-30	6055-5652	2	16-24	7065-4710	2	24-38	4710-2975
	5	32-50	8831-5652	3	26-46	6521-3686	3	40-70	4239-2422
	7.5	52-74	8151-5728	5	50-74	5652-3819	5	74-105	3819-2691
	10	78-105	7246-5382	7.5	78-105	5434-4037	7.5	110-140	3853-3028
	15	110-140	7707-6055	10	100-140	5652-4037	—	—	—
SMR3-25	0.75	4-5	10597-8477	0.5	4-5	7065-5652	0.5	6-7	4710-4037
	1	6-7	9419-8074	0.75	6-7	7065-6055	0.75	8-10	5298-4239
	1.5	8-10	10597-8477	1	8-10	7065-5652	1	10-16	5652-3532
	2	12-16	9419-7065	1.5	12-16	7065-5298	1.5	18-24	4710-3532
	3	18-30	9419-5652	2	16-24	7065-4710	2	24-38	4710-2975
	5	32-50	8831-5652	3	26-46	6521-3686	3	40-70	4239-2422
	7.5	52-74	8151-5728	5	50-74	5652-3819	5	74-85	3819-3324
	10	78-85	7246-6649	7.5	78-85	5434-4987	—	—	—
SMR4-09	15	58-80	14616-10597	15	90-115	9511-7443	7.5	58-78	7379-5487
	20	80-110	14219-10276	20	120-140	9511-8152	10	80-115	7133-4962
	25	100-140	14129-10092	25	150-200	9511-7133	15	120-200	7133-4280
	30	120-200	14267-8560	—	—	—	—	—	—
SMR4-15	5	18-24	15699-11774	3	14-22	12111-7707	3	20-34	8477-4987
	7.5	26-34	16303-12467	5	24-34	11774-8311	5	38-54	7436-5233
	10	38-54	14873-10466	7.5	38-54	11154-7849	7.5	58-80	7308-5298
	15	58-80	14616-10597	10	54-80	10466-7065	10	80-140	765-4037
	20	80-110	14219-10276	15	85-115	9973-7372	—	—	—
	25	100-140	14129-10092	20	110-140	10276-8074	—	—	—

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IronHorse® Shaft Mount Gearbox Mechanical Ratings

Model	Service Class I			Service Class II			Service Class III		
	Power (hp)	Output (RPM)	Output Torque (lb·in)	Power (hp)	Output (RPM)	Output Torque (lb·in)	Power (hp)	Output (RPM)	Output Torque (lb·in)
SMR4-25	1	4-5	14129-11303	0.75	4-5	10597-8477	0.5	4-5	7065-5652
	1.5	5-7	16955-12111	1	5-6	11303-9419	0.75	5-6	8477-7065
	2	6-8	18839-14129	1.5	6-8	14129-10597	1	6-8	9419-7065
	3	10-14	16955-12111	2	10-12	11303-9419	1.5	10-12	8477-7065
	5	16-24	17551-11774	3	14-22	12111-7707	2	14-18	8074-6280
	7.5	26-34	16303-12467	5	24-34	11774-8311	3	20-34	8477-4987
	10	38-54	14873-10466	7.5	38-54	11154-7849	5	38-54	7436-5233
	15	58-80	14616-10597	10	54-85	10466-6649	7.5	58-85	7308-4987
	20	80-85	14129-13298	—	—	—	—	—	—
SMR5-09	25	70-95	20184-14873	20	85-115	13427-9925	15	85-115	10071-7443
	30	85-115	19947-14743	25	105-125	13587-11413	20	115-200	7443-4280
	40	110-200	20752-11413	30	125-200	13696-8560	—	—	—
SMR5-15	7.5	22-24	19267-17661	7.5	24-34	17661-12467	5	24-34	11774-8311
	10	24-34	23548-16622	10	38-54	14873-10466	7.5	38-52	11154-8151
	15	38-54	22309-15699	15	58-80	14616-10597	10	54-80	10466-7065
	20	54-78	20932-14491	20	78-110	11491-10276	15	85-110	9973-7707
	25	70-95	20184-14873	25	100-125	14129-11303	20	110-125	10276-9043
	30	85-115	19947-14743	—	—	—	—	—	—
	40	110-125	20551-18085	—	—	—	—	—	—
SMR5-25	2	4-5	28258-22606	1.5	4-5	21194-16955	1	4-5	14129-11303
	3	6-8	28258-21194	2	5-6	22606-18839	1.5	6-7	14129-12111
	5	10-14	28258-20184	3	8-14	21194-12111	2	8-12	14129-9419
	7.5	16-24	26492-17661	5	16-24	17661-11774	3	14-22	12111-7707
	10	24-34	23548-16622	7.5	24-34	17661-12467	5	24-34	11774-8311
	15	38-54	22309-15699	10	38-54	14873-10466	7.5	38-52	11154-8151
	20	54-78	20932-14491	15	58-80	14616-10597	10	54-78	10466-7246
	25	70-80	20184-17661	20	78-80	14491-14129	—	—	—