

Single Reduction
Worm Gear Reducers





Double Reduction
Worm - Worm Gear Reducers

Double Reduction
Helical - Worm Gear Reducers

WASHGUARD® Reducers
and GEAR+MOTOR™

Ratio Multipliers

Accessories and
Additional Capabilities

	Style BM			Style HM	Style BMQ			Style HMQ	
									
NEMA C nput Flange ▲	Left Hand Catalog No	Right Hand Catalog No	Double Extension Catalog No	Hollow Output Catalog No *	Left Hand Catalog No	Right Hand Catalog No	Double Extension Catalog No	Hollow Output Catalog No *	Ratio
182 4TC 213 5TC 254 6TC	8420109 8420145 8420181	8420121 8420157 8420193	8420133 8420169 8420205	8420537.XX 8420549.XX 8420561.XX	8420289 8420325 8420361	8420301 8420337 8420373	8420313 8420349 8420385	8420597.XX 8420609.XX 8420621.XX	5
182 4TC 213 5TC 254 6TC	8420110 8420146 8420182	8420122 8420158 8420194	8420134 8420170 8420206	8420538.XX 8420550.XX 8420562.XX	8420290 8420326 8420362	8420302 8420338 8420374	8420314 8420350 8420386	8420598.XX 8420610.XX 8420622.XX	7.5
182 4TC 213 5TC 254 6TC	8420111 8420147 8420183	8420123 8420159 8420195	8420135 8420171 8420207	8420539.XX 8420551.XX 8420563.XX	8420291 8420327 8420363	8420303 8420339 8420375	8420315 8420351 8420387	8420599.XX 8420611.XX 8420623.XX	10
182 4TC 213 5TC	8420112 8420148	8420124 8420160	8420136 8420172	8420540.XX 8420552.XX	8420292 8420328	8420304 8420340	8420316 8420352	8420600.XX 8420612.XX	15
182 4TC 213 5TC	8420113 8420149	8420125 8420161	8420137 8420173	8420541.XX 8420553.XX	8420293 8420329	8420305 8420341	8420317 8420353	8420601.XX 8420613.XX	20
143 5TC 182 4TC 213 5TC	8420078 8420114 8420150	8420090 8420126 8420162	8420102 8420138 8420174	8420530.XX 8420542.XX 8420554.XX	8420258 8420294 8420330	8420270 8420306 8420342	8420282 8420318 8420354	8420590.XX 8420602.XX 8420614.XX	25
143 5TC 182 4TC	8420079 8420115	8420091 8420127	8420103 8420139	8420531.XX 8420543.XX	8420259 8420295	8420271 8420307	8420283 8420319	8420591.XX 8420603.XX	30
143 5TC 182 4TC	8420080 8420116	8420092 8420128	8420104 8420140	8420532.XX 8420544.XX	8420260 8420296	8420272 8420308	8420284 8420320	8420592.XX 8420604.XX	40
143 5TC 182 4TC	8420081 8420117	8420093 8420129	8420105 8420141	8420533.XX 8420545.XX	8420261 8420297	8420273 8420309	8420285 8420321	8420593.XX 8420605.XX	50
56C 143 5TC 182 4TC	8420046 8420082 8420118	8420058 8420094 8420130	8420070 8420106 8420142	8420522.XX 8420534.XX 8420546.XX	8420226 8420262 8420298	8420238 8420274 8420310	8420250 8420286 8420322	8420582.XX 8420594.XX 8420606.XX	60
56C 143 5TC	8420047 8420083	8420059 8420095	8420071 8420107	8420523.XX 8420535.XX	8420227 8420263	8420239 8420275	8420251 8420287	8420583.XX 8420595.XX	80
56C 143 5TC	8420048 8420084	8420060 8420096	8420072 8420108	8420524.XX 8420536.XX	8420228 8420264	8420240 8420276	8420252 8420288	8420584.XX 8420596.XX	100

For input/ output shaft overhung load and thrust load ratings, refer to pages 419-422.

▲ Consult Factory for other motor flanges available.

* Catalog numbers are for hollow output shaft reducers.

When ordering, substitute the XX suffix with the required output bore code.

Available bore codes

Fraction Size	1-7/16"	1-1/2"	1-5/8"	1-11/16"	1-3/4"	1-7/8"	1-15/16"	2"	2-3/16"
Decimal Size	1.438	1.500	1.625	1.688	1.750	1.875	1.938	2.000	2.188
Output Bore Code	23	24	26	27	28	30	31	32	35

Maximum Rating Tables

Size 852 • GR, NH & EL Series



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Style B

Style H



Size 852

Ratio	nput RPM	Output RPM	nput HP	Output HP	Output Torque (lb in)	Left Hand Catalog No	Right Hand Catalog No	Double Extension Catalog No	Hollow Output Catalog No *
5	2500	500	37.08	35.61	4601	8520085	8520090	8520095	8520501.XX
	1750	350	32.51	31.17	5753				
	1170	234	27.55	26.35	7276				
	100	20	5.390	4.794	15484				
7.5	2500	333	32.21	30.68	5800	8520086	8520091	8520096	8520502.XX
	1750	233	28.10	26.70	7213				
	1170	156	23.67	22.42	9058				
	100	13	4.442	3.821	18062				
10	2500	250	26.55	24.99	6300	8520001	8520008	8520015	8520503.XX
	1750	175	23.15	21.73	7827				
	1170	117	19.50	18.23	9818				
	100	10	3.701	3.073	19367				
15	2500	166	20.77	19.05	7204	8520002	8520009	8520016	8520504.XX
	1750	116	18.11	16.55	8941				
	1170	78	15.26	13.86	11201				
	100	6.7	2.997	2.309	21826				
20	2500	125	16.69	14.95	7538	8520003	8520010	8520017	8520505.XX
	1750	87	14.56	12.98	9351				
	1170	58	12.29	10.87	11709				
	100	5.0	2.499	1.802	22716				
25	2500	100	13.95	12.18	7674	8520087	8520092	8520097	8520506.XX
	1750	70	12.19	10.57	9517				
	1170	46	10.298	8.848	11915				
	100	4.0	2.176	1.464	23068				
30	2500	83	12.056	10.264	7763	8520004	8520011	8520018	8520507.XX
	1750	58	10.538	8.910	9627				
	1170	39	8.918	7.457	12051				
	100	3.3	1.949	1.233	23305				
40	2500	62	9.258	7.533	7596	8520005	8520012	8520019	8520508.XX
	1750	43	8.105	6.538	9419				
	1170	29	6.878	5.471	11789				
	100	2.5	1.592	0.903	22772				
50	2500	50	7.727	5.990	7550	8520006	8520013	8520020	8520509.XX
	1750	35	6.777	5.199	9362				
	1170	23	5.766	4.350	11717				
	100	2.0	1.411	0.718	22622				
60	2500	41	6.621	4.912	7429	8520007	8520014	8520021	8520510.XX
	1750	29	5.816	4.263	9212				
	1170	19	4.961	3.567	11528				
	100	1.7	1.270	0.588	22251				
80	2500	31	3.226	2.217	4469	8520088	8520093	8520098	8520511.XX
	1750	21	2.906	1.902	5478				
	1170	14	2.618	1.600	6894				
	100	1.3	0.744	0.280	14089				
100	2500	25	2.285	1.504	3790	8520089	8520094	8520099	8520512.XX
	1750	17	2.072	1.291	4646				
	1170	11	1.820	1.052	5663				
100	1.0	0.515	0.180	11331					

How To Build a Part Number For Size GR852, NH852, EL852

1. Select partial catalog number from the selection table
2. Replace leading “_” with series code (GR, NH, EL)
3. For hollow output, replace “XX” suffix with bore code (see next page for codes)

Example:

Grove Gear IRONMAN, style B, 5:1 ratio, left hand output
GR-B852-5-L
GR8520085

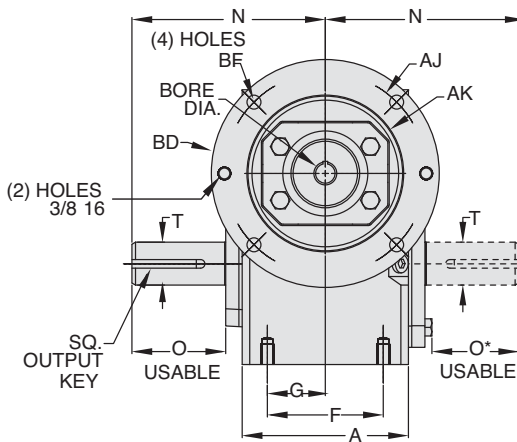
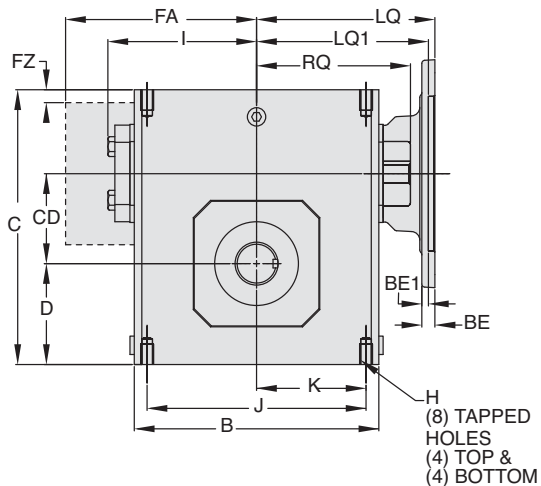


GR Series Dimensions

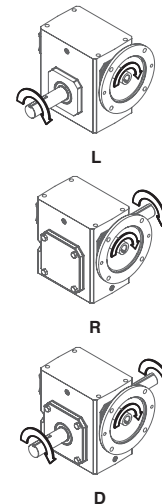
Styles: BMQ, BM, B

**CAST IRON
GR SERIES**

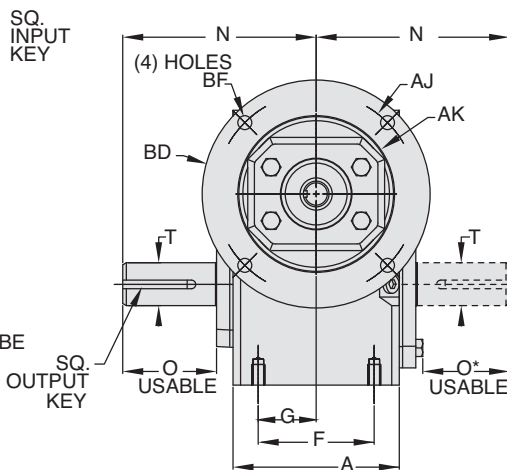
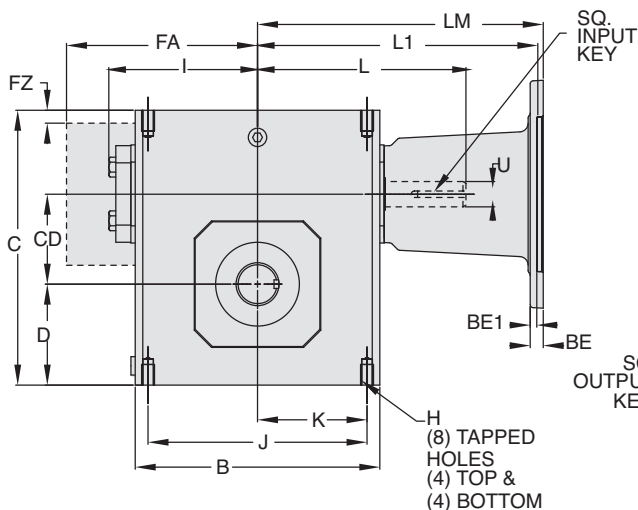
Style BMQ



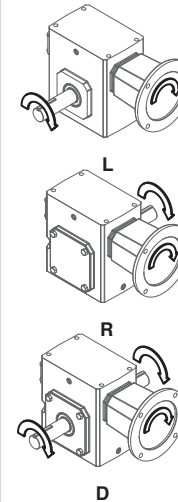
ASSEMBLIES



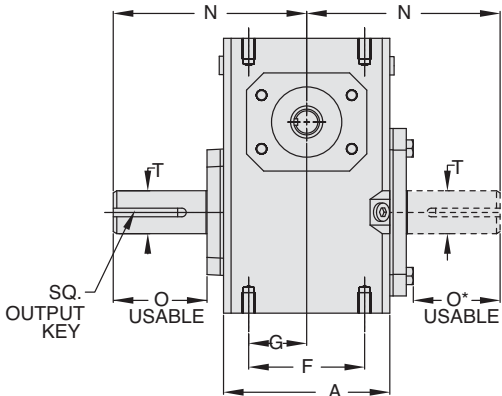
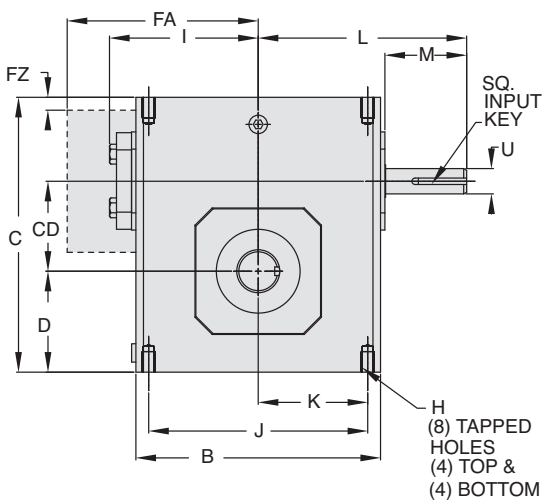
Style BM



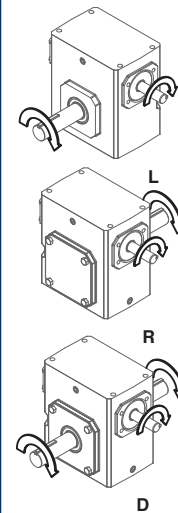
ASSEMBLIES



Style B



ASSEMBLIES



REVERSE ALL ARROWS
FOR OPPOSITE INPUT SHAFT
ROTATION. CONTACT FACTORY
FOR OTHER MOUNTINGS OR
ASSEMBLY POSITIONS.

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STYLE BMQ, BM, B DIMENSIONS (Inches)

Size	A	B	C	D	CD	F	FA ▼	FZ ▼	G	H		I	J	K	L	M	N	O	O*	T +0.000 -0.0015	U +0.000 -0.0015	Input Key*	Output Key
										Tap Size	Depth												
GR813	2.82	3.80	4.66	1.72	1.33	2.00	N/A	N/A	1.00	5/16-18 UNC	.50	2.61	3.25	1.63	3.82	1.76	4.00	2.16	1.94	.625	.500	1/8 X 1.00	3/16 X 1.50
GR815	3.44	4.88	5.38	1.91	1.54	2.75	N/A	N/A	1.38	5/16-18 UNC	.63	3.14	4.19	2.09	4.35	1.76	4.31	2.11	1.90	.750	.625	3/16 X 1.38	3/16 X 1.50
GR818	3.56	5.06	5.75	2.06	1.75	2.75	N/A	N/A	1.38	5/16-18 UNC	.63	3.24	4.19	2.09	4.45	1.76	4.31	2.05	1.84	.875	.625	3/16 X 1.38	3/16 X 1.38
GR821	3.81	5.80	6.38	2.28	2.06	▲	N/A	N/A	1.44	5/16-18 UNC	.63	3.61	▲	2.50	4.82	1.76	4.68	2.29	2.08	1.000	.625	3/16 X 1.38	1/4 X 1.44
GR824	4.06	6.12	6.94	2.50	2.38	2.88	N/A	N/A	1.44	3/8-16 UNC	.69	3.77	5.00	2.50	5.51	2.38	5.14	2.66	2.44	1.125	.750	3/16 X 1.63	1/4 X 1.75
GR826	4.84	7.12	8.00	2.94	2.63	3.38	N/A	N/A	1.69	3/8-16 UNC	.69	4.34	6.38	3.19	6.07	2.38	5.63	2.73	2.52	▲	.750	3/16 X 1.63	1/4 X 1.75
GR830	5.25	8.12	8.88	3.25	3.00	4.00	N/A	N/A	2.00	7/16-14 UNC	.88	4.84	7.00	3.50	6.57	2.38	6.75	3.60	3.36	1.250	.875	3/16 X 1.63	1/4 X 1.75
GR832	5.75	8.50	9.38	3.50	3.25	4.00	N/A	N/A	2.00	7/16-14 UNC	.88	5.02	7.50	3.75	6.76	2.38	7.06	3.66	3.42	▲	.875	3/16 X 1.63	▲
GR842	6.13	10.25	11.38	4.44	4.25	5.00	N/A	N/A	2.50	5/8-11 UNC	1.00	6.10	8.50	4.25	9.57	3.47	8.12	4.50	4.21	1.875	1.250	1/4 X 2.50	1/2 X 3.06
GR852	7.19	13.00	14.00	5.12	5.25	5.81	N/A	N/A	2.91	5/8-11 UNC	1.25	7.50	11.00	5.50	10.88	3.38	9.06	4.78	4.53	2.000	1.250	1/4 X 3.00	1/2 X 3.50
GR860	8.13	14.25	16.50	6.50	6.00	6.38	11.13	0.33	3.19	5/8-11 UNC	1.00	N/A	12.75	6.38	11.78	3.41	10.00	4.65	4.65	2.500	1.500	3/8 X 3.00	5/8 X 4.00
GR870	7.63	14.88	18.91	7.59	7.00	5.50	11.37	0.35	2.75	1-8 UNC	1.56	N/A	12.50	6.25	11.50	2.97	11.76	5.65	5.65	2.750	1.625	3/8 x 2.87**	5/8 x 4.00**
GR880	8.63	17.00	20.96	8.86	8.00	6.50	12.52	0.57	3.25	1-8 UNC	1.66	N/A	14.25	7.13	12.50	2.84	12.25	5.98	5.98	3.000	1.875	1/2 x 2.81**	3/4 x 4.50**
GR8100	9.53	20.88	25.47	10.36	10.00	6.88	14.69	0.51	3.44	1-1/4 -7 UNC	2.04	N/A	17.75	8.88	15.50	3.76	14.75	6.76	6.76	3.750	2.250	1/2 x 3.69**	7/8 x 5.00**

▲ See feature comparison chart.

FEATURE COMPARISON (821, 826, 832)

Size	Output Shaft Diameter Needed?	Mounting Footprint Needed?	Output Key Needed?	All Other Features	Grove Gear Flexaline Interchange	LEESON IRONMAN Interchange	Replace With Series Code Below:
821	Identical	(F)3.00" x (J)4.75"	Identical	Identical	✓	✓	GRG
		(F)2.88" x (J)5.00"					GRL
826	1.250"	Identical	Identical	Identical	✓	✓	GRG
	1.125"						GRL
832	1.500"	Identical	3/8 x 2.63	Identical	✓	✓	GRG
	1.375"		5/16 x 2.63				GRL

Motor Mounting Dimensions

NEMA DIMENSIONS (Inches)

Size	LM		180TC/210TC	L1	250TC	LQ		180TC	LQ1	210TC	250TC	RQ			
	48CZ	56C/140TC				48CZ/56C/140TC	180TC					210TC	250TC	48CZ/56C/140TC	180TC
GR813	5.63	6.07	N/A	N/A	3.46	N/A	N/A	N/A	3.09	N/A	N/A	N/A	N/A	N/A	N/A
GR815	6.16	6.60	N/A	N/A	3.99	N/A	N/A	N/A	3.62	N/A	N/A	N/A	N/A	N/A	N/A
GR818	6.26	6.70	N/A	N/A	4.09	N/A	N/A	N/A	3.59	N/A	N/A	N/A	N/A	N/A	N/A
GR821*	6.63	7.07	N/A	N/A	4.46	N/A	N/A	N/A	4.06	N/A	N/A	N/A	N/A	N/A	N/A
GR824	N/A	7.76	8.76	N/A	4.63	5.06	N/A	N/A	4.09	4.56	N/A	N/A	N/A	N/A	N/A
GR826*	N/A	8.32	9.32	N/A	5.19	5.62	N/A	N/A	4.82	5.13	N/A	N/A	N/A	N/A	N/A
GR830	N/A	8.82	9.82	N/A	5.95	6.15	6.56	N/A	5.32	5.63	6.06	N/A	N/A	N/A	N/A
GR832*	N/A	9.01	10.01	N/A	6.14	6.34	6.75	N/A	5.51	5.81	6.25	N/A	N/A	N/A	N/A
GR842	N/A	11.81	12.90	13.46	6.45	7.21	7.21	7.77	6.04	6.68	6.68	7.24	N/A	N/A	N/A
GR852	N/A	13.21	14.30	14.86	7.85	8.61	8.61	9.17	7.35	7.98	7.98	8.54	N/A	N/A	N/A
GR860	N/A	N/A	15.88	16.50	10.45	9.33	9.33	9.94	10.01	8.69	8.69	8.69	N/A	N/A	N/A
GR870	N/A	N/A	15.50	15.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
GR880	N/A	N/A	16.58	16.58	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

NEMA DIMENSIONS (Inches)

Frame	Ajb	AK	BD	BE	BE1	Bore Dia.	Keyway	BFB
48CZ	3.75	3.00	4.36	0.38	N/A	.500	1/8 X 1/16	0.28
56C	5.88	4.50	6.50	0.38	N/A	.625	3/16 X 3/32	0.41
140TC	5.88	4.50	6.50	0.38	N/A	.875	3/16 X 3/32	0.41
180TC	7.25	8.50	9.00	N/A	0.50	1.125	1/4 X 1/8	0.53
210TC	7.25	8.50	9.00	N/A	0.50	1.375	5/16 X 5/32	0.53
250TC	7.25	8.50	9.00	N/A	0.50	1.625	3/8 X 3/16	0.53

IEC B5 & B3/B5 METRIC DIMENSIONS (Inches)*

Size	LQ1					RQ						
	D63D	D71D	D80D	D90D	D100LD/D112MD	D132D	D63D	D71D	D80D	D90D	D100LD/D112MD	D132D
GR813	2.62	2.65	2.89	N/A	N/A	N/A	2.45	2.47	2.71	N/A	N/A	N/A
GR815	3.15	3.18	3.42	N/A	N/A	N/A	2.98	3.00	3.24	N/A	N/A	N/A
GR818	3.25	3.28	3.52	N/A	N/A	N/A	2.95	2.97	3.21	N/A	N/A	N/A
GR821*	3.62	3.65	3.89	N/A	N/A	N/A	3.43	3.44	3.68	N/A	N/A	N/A
GR824	N/A	3.72	4.34	N/A	N/A	N/A	3.46	3.71	N/A	N/A	N/A	N/A
GR826*	N/A	4.28	4.90	4.90	5.30	N/A	N/A	4.09	4.72	4.72	5.07	N/A
GR830	N/A	4.78	5.41	5.41	5.88	N/A	N/A	4.59	5.22	5.22	5.57	N/A
GR832*	N/A	4.97	5.59	5.59	6.07	N/A	N/A	4.78	5.41	5.41	5.76	N/A
GR842	N/A	N/A	N/A	6.38	6.39	7.17	N/A	N/A	N/A	6.16	6.14	6.93
GR852	N/A	N/A	N/A	7.78	7.78	8.57	N/A	N/A	N/A	7.46	7.45	8.24

IEC B5 & B3/B5 METRIC DIMENSIONS (MM)

Frame	AJ	AK	BD	BE	Bore Dia.	Keyway	BF TAP	OD
D63D	115	95	117	10	11	4 X 2	M8 X 1.25	131
D71D	130	110	132	11	14	5 X 2.5	M8 X 1.25	146
D80D	165	130	165	15	19	6 X 3	M10 X 1.50	184
D90D	165	130	165	15	24	8 X 3.5	M10 X 1.50	184
D100LD/D112MD	215	180	216	18	28	8 X 3.5	M12 X 1.75	237
D132D	265	230	267	18	38	10 X 4	M12 X 1.75	290

* Applies to double output shaft

** Key not provided with gear reducer. Keyway dimension shown.

◆ Keyway width by depth

⊙ Mounting holes rotated 45 degrees from positions shown on Size GR860, Style BM with frame sizes 180TC-250TC.

■ 48CZ not available

● 180TC not available

⊕ Metric IEC B5 input flange options are available only on quill input styles.

* Dimensions same for GRG and GRL Series

⊙ Style B and BM only.

▼ Sizes 860-8100 are supplied with a fan. Dimensions refer to fan guard location.

WARNING

For safety, purchaser or user should provide protective guards over shaft extensions and any couplings, sheaves and belts, sprockets and chains, etc., mounted thereon.

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