

STERLING ELECTRIC, INC.



WORM GEAR PRODUCTS

STERLING

ELECTRIC, INC.



Standard Reducers

Cast Iron Construction with Gray Paint for standard applications where speed reduction is required.

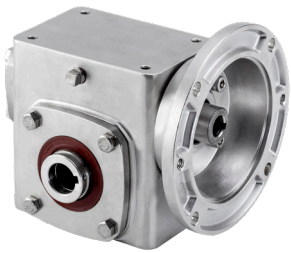
- 1.33, 1.54, 1.75, 2.06, 2.38, 2.62, 3.00, 3.25, 4.25 and 5.25 Center Distances
- 5:1 through 100:1 Single Reduction Ratios
- 75:1 through 3600:1 Double Reduction Ratios
- Carbon Steel Output Shaft Material
- 303 Stainless Steel Hollow Output Shaft Material on 1.33 – 3.25 Center Distances
- Dual Output Cover Construction for ease of maintenance or assembly conversions from left to right hand output configuration
- Mobil SHC634 Synthetic Lubrication
- Double Lip Viton® Seals with O-Rings on all input and output covers
- Available in Basic, Horizontal Base, Vertical Base, J-Bracket Base, Flange mounting configurations



Sterli-Seal Washdown Duty Reducers

Cast Iron Construction with Two Part Epoxy White Coating or Stainless Steel Pigment paint for those washdown applications where all stainless steel is not practical.

- 1.33, 1.54, 1.75, 2.06, 2.38, 2.62, 3.00, 3.25, 4.25 and 5.25 Center Distances
- 303 Stainless Steel Output Shaft Material for 1.33 – 3.25 Center Distances
- Solid or Hollow Output Shaft configurations
- Available in Basic, Horizontal Base, Vertical Base, J-Bracket Base, Flange mounting configurations
- Supplied with Mobil Cibus H1 Food Grade Lubrication
- Pressure Compensation Bladder provides a totally sealed unit from ambient conditions



Sterli-Seal Stainless Steel Washdown Reducers

ALL Stainless Steel construction for optimum corrosion protection in sanitary applications found in the Food and Beverage industries.

- 1.33, 1.75, 2.06, 2.38, 2.62 and 3.25 Center Distances
- 304 Stainless Steel Investment Cast Housing
- 303 Stainless Steel Output Shaft Material
- Solid or Hollow Output Shaft configurations
- Double Lip Viton® Seals with O-Rings on all input and output covers
- Supplied with Mobil Cibus H1 Food Grade Lubrication
- Pressure Compensation Bladder provides a totally sealed unit from ambient conditions



Sterli-Seal SMOOTH BODY Stainless Steel Washdown Reducers

ALL Stainless Steel one piece, rounded edge, smooth body construction for optimum protection in Severe Washdown applications.

- 1.75, 2.06, 2.38, 2.62 and 3.25 Center Distances
- 304 Stainless Steel Investment Cast One Piece Housing
- Rounded edges prevent pooling of water and growth of bacteria
- Hollow Output Straight Bore or Symmetrical Taper Bushing configuration
- Dual Output Seals provided for optimum sealing and prevention of water intrusion
- Stainless Steel Pop-Up Breather for relief of internal operating pressure

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A1	Part Nomenclature	
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Solid Output Shaft (Cast Iron Construction)

<u>133/2133</u> Unit Size	<u>BQ</u> Style	<u>010</u> Ratio	<u>56</u> Motor Input	<u>2</u> Assembly Position	Feature
133/2133- 1.33 C.D. 154/2154- 1.54 C.D. 175/2175- 1.75 C.D. 206/2206- 2.06 C.D. 238/2238- 2.38 C.D. 262/2262- 2.62 C.D. 300/2300- 3.00 C.D. 325/2325- 3.25 C.D. 425/2425- 4.25 C.D. 525/2525- 5.25 C.D.	BQ- Quill style input w/ solid shaft output Solid shaft input BR- w/ solid shaft output BC- Coupling style input w/solid shaft output	005- 5:1 Ratio 010- 10:1 Ratio 015- 15:1 Ratio 020- 20:1 Ratio 025- 25:1 Ratio 030- 30:1 Ratio 040- 40:1 Ratio 050- 50:1 Ratio 060- 60:1 Ratio 080- 80:1 Ratio 100- 100:1 Ratio	00- BR solid shaft input only. 56- 56C NEMA motor frame 14- 143/145TC NEMA motor frame 18- 182/184TC NEMA motor frame 21- 213/215TC NEMA motor frame 25- 254TC/256TC NEMA motor frame	1- Double output shaft 2- Single output shaft left facing input 3- Single output shaft right facing input	WD- White Washdown Duty SWD- Steel-it Washdown Duty

HOLLOW OUTPUT (Cast Iron Construction)

<u>133/2133</u> Unit Size	<u>HQ</u> Style	<u>010</u> Ratio	<u>56</u> Motor Input	<u>10 *</u> Output Bore (inches)	<u>1</u> Assembly Position	Feature
133/2133- 1.33 C.D. 154/2154- 1.54 C.D. 175/2175- 1.75 C.D. 206/2206- 2.06 C.D. 238/2238- 2.38 C.D. 262/2262- 2.62 C.D. 300/2300- 3.00 C.D. 325/2325- 3.25 C.D. 425/2425- 4.25 C.D. 525/2525- 5.25 C.D.	HQ- Quill style input w/ hollow shaft output HR- Solid shaft input w/ hollow shaft output HC- Coupling Style Input w/hollow shaft output	005- 5:1 Ratio 010- 10:1 Ratio 015- 15:1 Ratio 020- 20:1 Ratio 025- 25:1 Ratio 030- 30:1 Ratio 040- 40:1 Ratio 050- 50:1 Ratio 060- 60:1 Ratio 080- 80:1 Ratio 100- 100:1 Ratio	00- HR solid shaft input only. 56- 56C NEMA motor frame 14- 143/145TC NEMA motor frame 18- 182/184TC NEMA motor frame 21- 213/215TC NEMA motor frame 25- 254TC/256TC NEMA motor frame	62- 0.6250 18- 1.8750 68- 0.6875 19- 1.9375 75- 0.7500 20- 2.0000 87- 0.8750 21- 2.1875 10- 1.0000 22- 2.2500 11- 1.1250 24- 2.4375 118- 1.1875 25- 2.5000 12- 1.2500 26- 2.6875 14- 1.4375 29- 2.9375 15- 1.5000 30- 3.0000 16- 1.6250 31- 3.1875 168- 1.6875 34- 3.4375 17- 1.7500	1- Hollow output shaft	WD- White Wash- Down Duty SWD- Steel-It Washdown Duty

* See table for available hollow shaft bores and keyway dimensions in inches per unit size on Page A2

SOLID OUTPUT SHAFT (Stainless Steel "Original" Construction)

<u>S133/S2133</u> Unit Size	<u>BQ</u> Style	<u>010</u> Ratio	<u>56</u> Motor Input	<u>2</u> Assembly Position
S133/S2133- 1.33 C.D. S175/S2175- 1.75 C.D. S206/S2206- 2.06 C.D. S238/S2238- 2.38 C.D. S262/S2262- 2.62 C.D. S325/S2325- 3.25 C.D.	BQ- Quill style input w/ solid shaft output Solid shaft input BR- w/ solid shaft output BC- Coupling style input w/solid shaft output	005- 5:1 Ratio 010- 10:1 Ratio 015- 15:1 Ratio 020- 20:1 Ratio 025- 25:1 Ratio 030- 30:1 Ratio 040- 40:1 Ratio 050- 50:1 Ratio 060- 60:1 Ratio 080- 80:1 Ratio 100- 100:1 Ratio	00- BR solid shaft input only. 56- 56C NEMA motor frame 14- 143/145TC NEMA motor frame 18- 182/184TC NEMA motor frame 21- 213/215TC NEMA motor frame	1- Double output shaft 2- Single output shaft left facing input 3- Single output shaft right facing input

Quick Reference Model Selection

A4

Class I (1.0 Service Factor)

Input Horsepower @ 1750 RPM using SHC634 (Standard) Lubrication or Cibus 460 H1 Food Grade

Reduction Ratio	Output RPM	1/6	1/4	1/3	1/2	3/4	1	1 1/2	2	3	5	7 1/2	10	15	20
5:1	350	2133	2133	2133	2133	2133	2133	2154	2206	2238	2300	2325	2425	2425	2525
7.5:1	233	2133	2133	2133	2133	2133	2154	2175	2206	2238	2300	2325	2425	2525	2525
10:1	175	2133	2133	2133	2133	2133	2154	2206	2206	2238	2300	2425	2425	2525	
15:1	117	2133	2133	2133	2133	2154	2175	2206	2238	2300	2325	2425			
20:1	87.5	2133	2133	2133	2154	2175	2206	2238	2262	2300	2425	2525			
25:1	70	2133	2133	2133	2154	2206	2206	2238	2300	2325	2425	2525			
30:1	58.3	2133	2133	2133	2175	2206	2238	2262	2300	2325	2425	2525			
40:1	43.8	2133	2133	2154	2206	2238	2238	2300	2325	2425	2525				
50:1	35	2133	2154	2154	2206	2238	2262	2300	2425	2425	2525				
60:1	29.2	2133	2154	2206	2238	2262	2300	2325	2425	2525					
80:1	21.9	2154	2206	2238	2262	2300	2325	2425	2525						
100:1	17.5	2206	2238	2262	2300	2425	2425	2525	2525						

Input Horsepower @ 1750 RPM using Glycole PAG460 Lubrication

Reduction Ratio	Output RPM	1/6	1/4	1/3	1/2	3/4	1	1 1/2	2	3	5	7 1/2	10	15	20
5:1	350	2133	2133	2133	2133	2133	2133	2154	2175	2238	2262	2300	2325	2425	2525
7.5:1	233	2133	2133	2133	2133	2133	2133	2175	2206	2238	2262	2325	2425	2425	2525
10:1	175	2133	2133	2133	2133	2133	2154	2175	2206	2238	2300	2325	2425	2425	2525
15:1	117	2133	2133	2133	2133	2154	2175	2206	2238	2262	2325	2425	2425	2525	
20:1	87.5	2133	2133	2133	2133	2154	2206	2238	2238	2300	2425	2425	2525		
25:1	70	2133	2133	2133	2154	2175	2206	2238	2262	2300	2425	2525	2525		
30:1	58.3	2133	2133	2133	2154	2206	2206	2238	2300	2325	2425	2525			
40:1	43.8	2133	2133	2154	2175	2206	2238	2262	2300	2425	2525				
50:1	35	2133	2133	2154	2206	2238	2238	2300	2325	2425	2525				
60:1	29.2	2133	2154	2154	2206	2238	2262	2300	2425	2425					
80:1	21.9	2154	2206	2206	2238	2300	2300	2425	2425	2525					
100:1	17.5	2154	2206	2238	2300	2325	2425	2525	2525						

Class II (1.25 Service Factor)

Input Horsepower @ 1750 RPM using SHC634 (Standard) Lubrication or Cibus 460 H1 Food Grade

Reduction Ratio	Output RPM	1/6	1/4	1/3	1/2	3/4	1	1 1/2	2	3	5	7 1/2	10	15	20
5:1	350	2133	2133	2133	2133	2133	2154	2206	2206	2238	2300	2425	2425	2525	2525
7.5:1	233	2133	2133	2144	2133	2154	2175	2206	2238	2262	2325	2425	2425	2525	
10:1	175	2133	2133	2133	2133	2154	2175	2206	2238	2262	2325	2425	2425	2525	
15:1	117	2133	2133	2133	2154	2175	2206	2238	2262	2300	2425	2425	2525		
20:1	87.5	2133	2133	2133	2154	2206	2206	2238	2300	2325	2425	2425			
25:1	70	2133	2133	2154	2175	2206	2238	2262	2300	2425	2425	2525			
30:1	58.3	2133	2133	2154	2206	2238	2238	2300	2325	2425	2525	2525			
40:1	43.8	2133	2154	2175	2206	2238	2262	2325	2425	2425	2525				
50:1	35	2133	2154	2206	2238	2262	2300	2325	2425	2525					
60:1	29.2	2154	2175	2206	2238	2300	2300	2325	2425	2525					
80:1	21.9	2154	2206	2238	2300	2325	2425	2525	2525						
100:1	17.5	2206	2238	2300	2325	2425	2525	2525							

NOTE: This chart is meant only as a reference guide. For Actual Ratings see pages A6 through A15. Unit sizes shown are also reflected with a three-digit prefix reflected on the individual selection pages on A6 through A15

A5	Quick Reference Model Selection	
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Class II (1.25 Service Factor)

Input Horsepower @ 1750 RPM using Glygole PAG460 Lubrication															
Reduction Ratio	Output RPM	1/6	1/4	1/3	1/2	3/4	1	1 1/2	2	3	5	7 1/2	10	15	20
5:1	350	2133	2133	2133	2133	2133	2133	2154	2206	2238	2300	2325	2425	2525	2525
7.5:1	233	2133	2133	2133	2133	2133	2154	2175	2206	2238	2300	2425	2425	2525	2525
10:1	175	2133	2133	2133	2133	2154	2175	2206	2238	2262	2300	2425	2425	2525	
15:1	117	2133	2133	2133	2133	2175	2206	2206	2238	2300	2325	2425	2525		
20:1	87.5	2133	2133	2133	2154	2175	2206	2238	2262	2300	2425	2525	2525		
25:1	70	2133	2133	2133	2154	2206	2238	2262	2300	2325	2425	2525			
30:1	58.3	2133	2133	2154	2175	2206	2238	2262	2300	2425	2525				
40:1	43.8	2133	2154	2154	2206	2238	2262	2300	2325	2425	2525				
50:1	35	2133	2154	2175	2206	2238	2262	2325	2425	2425					
60:1	29.2	2133	2154	2206	2238	2262	2300	2425	2425	2525					
80:1	21.9	2154	2206	2238	2262	2300	2425	2425	2525						
100:1	17.5	2206	2238	2262	2300	2425	2425	2525							

Class III (2.0 Service Factor)

Input Horsepower @ 1750 RPM using SHC634 (Standard) Lubrication or Cibus 460 H1 Food Grade													
Reduction Ratio	Output RPM	1/6	1/4	1/3	1/2	3/4	1	1 1/2	2	3	5	7 1/2	10
5:1	350	2133	2133	2133	2133	2154	2206	2238	2262	2300	2425	2425	2525
7.5:1	233	2133	2133	2133	2154	2206	2206	2238	2300	2325	2425	2525	
10:1	175	2133	2133	2133	2154	2206	2206	2238	2300	2325	2425	2525	
15:1	117	2133	2133	2154	2175	2206	2238	2300	2300	2425	2525		
20:1	87.5	2133	2154	2175	2206	2238	2262	2300	2325	2425	2525		
25:1	70	2133	2154	2175	2206	2238	2300	2325	2425	2425			
30:1	58.3	2133	2175	2206	2238	2262	2300	2325	2425	2525			
40:1	43.8	2154	2206	2206	2238	2300	2325	2425	2425	2525			
50:1	35	2154	2206	2238	2262	2300	2425	2425	2525				
60:1	29.2	2206	2238	2238	2300	2325	2425	2525	2525				
80:1	21.9	2238	2262	2300	2325	2425	2525						
100:1	17.5	2262	2300	2325	2425	2525	2525						

Input Horsepower @ 1750 RPM using Glygole PAG460 Lubrication														
Reduction Ratio	Output RPM	1/6	1/4	1/3	1/2	3/4	1	1 1/2	2	3	5	7 1/2	10	15
5:1	350	2133	2133	2133	2133	2154	2175	2238	2238	2300	2325	2425	2525	2525
7.5:1	233	2133	2133	2133	2133	2175	2206	2238	2238	2300	2425	2425	2525	
10:1	175	2133	2133	2133	2154	2175	2206	2238	2262	2300	2425	2425	2525	
15:1	117	2133	2133	2154	2175	2206	2238	2262	2300	2325	2425	2525		
20:1	87.5	2133	2133	2154	2206	2238	2238	2300	2325	2425	2525			
25:1	70	2133	2154	2175	2206	2238	2262	2300	2325	2425	2525			
30:1	58.3	2133	2154	2175	2206	2238	2300	2325	2425	2425				
40:1	43.8	2154	2175	2206	2238	2262	2300	2425	2425	2525				
50:1	35	2154	2206	2206	2238	2300	2325	2425	2425					
60:1	29.2	2175	2206	2238	2262	2300	2425	2425	2525					
80:1	21.9	2206	2238	2262	2300	2425	2425	2525						
100:1	17.5	2238	2300	2300	2425	2525	2525							

NOTE: This chart is meant only as a reference guide. For Actual Ratings see pages A6 through A15. Unit sizes shown are also reflected with a three-digit prefix reflected on the individual selection pages on A6 through A15

Selection Table Size 133/2133 Single Reduction

A6

With Mobil SHC634 (Standard) Lubricant or Cibus 460 Food Grade

With Mobil PAG460 Lubricant

Ratio	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque	OHL	Input HP	Output HP	Output Torque
5:1	2500	500.0	1.247	1.140	144	419	1.535	1.428	180
	1750	350.0	1.058	0.956	172	419	1.279	1.190	214
	1150	234.0	0.826	0.735	198	419	1.003	0.918	251
	100	20.0	0.101	0.081	256	419	0.128	0.106	332
7.5:1	2500	333.3	1.064	0.963	182	419	1.238	1.139	215
	1750	233.3	0.871	0.778	210	419	1.032	0.949	257
	1150	156.0	0.662	0.581	235	419	0.771	0.700	289
	100	13.3	0.077	0.061	288	419	0.100	0.083	393
10:1	2500	250.0	0.885	0.780	197	419	1.043	0.928	234
	1750	175.0	0.733	0.634	228	419	0.869	0.773	278
	1150	117.0	0.563	0.476	257	419	0.663	0.576	315
	100	10.0	0.068	0.050	318	419	0.081	0.062	392
15:1	2500	166.7	0.663	0.558	211	419	0.784	0.659	249
	1750	116.7	0.551	0.452	244	419	0.653	0.549	297
	1150	78.0	0.425	0.339	274	419	0.522	0.421	347
	100	6.7	0.053	0.036	338	419	0.074	0.048	455
20:1	2500	125.0	0.528	0.429	216	419	0.661	0.535	270
	1750	87.5	0.437	0.344	248	419	0.551	0.446	321
	1150	58.5	0.336	0.256	275	419	0.425	0.331	362
	100	5.0	0.042	0.027	335	419	0.056	0.036	448
25:1	2500	100.0	0.447	0.344	217	419	0.540	0.416	262
	1750	70.0	0.375	0.279	251	419	0.450	0.347	313
	1150	46.8	0.293	0.208	280	419	0.350	0.257	353
	100	4.0	0.039	0.022	345	419	0.047	0.028	436
30:1	2500	83.3	0.389	0.287	217	419	0.476	0.350	265
	1750	58.3	0.328	0.232	251	419	0.397	0.292	315
	1150	39.0	0.258	0.174	281	419	0.325	0.224	368
	100	3.3	0.035	0.018	345	419	0.051	0.025	481
40:1	2500	62.5	0.308	0.214	215	419	0.406	0.276	278
	1750	43.8	0.260	0.171	247	419	0.338	0.230	330
	1150	29.3	0.204	0.127	274	419	0.270	0.173	378
	100	2.5	0.028	0.013	332	419	0.038	0.018	451
50:1	2500	50.0	0.252	0.165	208	419	0.342	0.217	274
	1750	35.0	0.211	0.131	237	419	0.285	0.181	327
	1150	23.4	0.165	0.097	261	419	0.227	0.134	369
	100	2.0	0.023	0.010	312	419	0.034	0.014	455
60:1	2500	41.7	0.214	0.131	198	419	0.298	0.175	265
	1750	29.2	0.181	0.104	226	419	0.248	0.146	316
	1150	19.5	0.144	0.077	249	419	0.204	0.110	361
	100	1.7	0.021	0.008	300	419	0.033	0.012	457
80:1	2500	31.3	0.144	0.081	163	419	0.160	0.084	169
	1750	21.9	0.121	0.064	183	419	0.133	0.070	200
	1150	14.6	0.096	0.047	201	419	0.103	0.050	219
	100	1.3	0.014	0.005	237	419	0.015	0.005	256
100:1	2500	25.0	0.100	0.051	128	419	0.113	0.054	136
	1750	17.5	0.084	0.040	143	419	0.094	0.045	161
	1150	11.7	0.067	0.029	156	419	0.074	0.032	176
	100	1.0	0.010	0.003	184	419	0.011	0.003	206

The use of PAG oils involves strict maintenance guidelines and full understanding of the limitations of the lubrication in real world use. It is the customer's responsibility to inform the end-user of the use and limitations of PAG oils in 2000RA right angle units including the following:

PAG oil is not compatible with PAO synthetics or standard mineral oils – mixing causes immediate breakdown of performance leading to premature failure. Contaminated units must be thoroughly flushed, Consult factory or Mobil for approved flushing procedures.

PAG oil is hygroscopic and does not separate from water. Water does not drop to the bottom of reservoirs but stays in solution causing immediate breakdown of performance. Units must be sealed for life or have a fully sealed pop-up breather.

PAG oil will soften paint and is not compatible with natural rubbers or standard O-ring materials – Bladder must be removed, and O-rings changed to Viton. (2000RA Reducer Seals are supplied, as standard, with Viton material)

With Mobil SHC634 (Standard)							With Mobil PAG460 Lubricant		
Lubricant or Cibus 460 Food Grade									
Ratio	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque	OHL	Input HP	Output HP	Output Torque
5:1	2500	500.0	1.872	1.717	216	517	2.351	2.186	276
	1750	350.0	1.615	1.464	263	517	1.959	1.822	328
	1150	234.0	1.317	1.174	316	517	1.604	1.465	401
	100	20.0	0.176	0.141	443	517	0.222	0.181	571
7.5:1	2500	333.3	1.387	1.240	234	517	1.831	1.643	311
	1750	233.3	1.237	1.089	294	517	1.526	1.369	370
	1150	156.0	1.007	0.867	350	517	1.242	1.094	449
	100	13.3	0.137	0.102	484	517	0.150	0.125	592
10:1	2500	250.0	1.143	0.994	250	517	1.511	1.338	337
	1750	175.0	1.021	0.869	313	517	1.259	1.115	401
	1150	117.0	0.833	0.690	372	517	0.988	0.854	467
	100	10.0	0.116	0.081	511	517	0.129	0.097	610
15:1	2500	166.7	0.862	0.709	268	517	1.175	0.990	374
	1750	116.7	0.774	0.619	334	517	0.979	0.825	445
	1150	78.0	0.637	0.490	396	517	0.786	0.638	524
	100	6.7	0.093	0.057	542	517	0.111	0.074	697
20:1	2500	125.0	0.713	0.560	282	517	1.064	0.860	434
	1750	87.5	0.639	0.484	349	517	0.887	0.717	517
	1150	58.5	0.526	0.382	411	517	0.705	0.547	600
	100	5.0	0.079	0.044	556	517	0.099	0.062	778
25:1	2500	100.0	0.606	0.456	287	517	0.865	0.668	421
	1750	70.0	0.544	0.392	353	517	0.721	0.557	501
	1150	46.8	0.449	0.308	414	517	0.572	0.421	577
	100	4.0	0.069	0.035	556	517	0.081	0.047	738
30:1	2500	83.3	0.516	0.364	275	517	0.719	0.528	399
	1750	58.3	0.472	0.317	343	517	0.599	0.440	476
	1150	39.0	0.397	0.251	406	517	0.492	0.340	559
	100	3.3	0.065	0.029	555	517	0.077	0.039	742
40:1	2500	62.5	0.427	0.279	281	517	0.634	0.430	433
	1750	43.8	0.391	0.241	347	517	0.528	0.358	516
	1150	29.3	0.330	0.190	408	517	0.430	0.273	598
	100	2.5	0.056	0.022	552	517	0.067	0.031	775
50:1	2500	50.0	0.360	0.219	276	517	0.511	0.326	411
	1750	35.0	0.331	0.188	339	517	0.426	0.272	490
	1150	23.4	0.281	0.148	398	517	0.347	0.206	564
	100	2.0	0.048	0.017	533	517	0.055	0.023	720
60:1	2500	41.7	0.307	0.175	264	517	0.433	0.254	384
	1750	29.2	0.283	0.150	323	517	0.361	0.212	458
	1150	19.5	0.242	0.117	378	517	0.290	0.158	519
	100	1.7	0.043	0.013	505	517	0.044	0.017	645
80:1	2500	31.3	0.219	0.109	220	517	0.250	0.132	266
	1750	21.9	0.204	0.093	269	517	0.208	0.110	316
	1150	14.6	0.176	0.073	314	517	0.163	0.080	349
	100	1.3	0.032	0.008	418	517	0.023	0.008	416
100:1	2500	25.0	0.155	0.069	175	517	0.179	0.078	197
	1750	17.5	0.145	0.059	213	517	0.149	0.065	235
	1150	11.7	0.126	0.046	248	517	0.116	0.047	257
	100	1.0	0.024	0.005	328	517	0.016	0.005	300

The use of PAG oils involves strict maintenance guidelines and full understanding of the limitations of the lubrication in real world use. It is the customer's responsibility to inform the end-user of the use and limitations of PAG oils in 2000RA right angle units including the following:

PAG oil is not compatible with PAO synthetics or standard mineral oils – mixing causes immediate breakdown of performance leading to premature failure. Contaminated units must be thoroughly flushed, Consult factory or Mobil for approved flushing procedures.

PAG oil is hygroscopic and does not separate from water. Water does not drop to the bottom of reservoirs but stays in solution causing immediate breakdown of performance. Units must be sealed for life or have a fully sealed pop-up breather.

PAG oil will soften paint and is not compatible with natural rubbers or standard O-ring materials – Bladder must be removed, and O-rings changed to Viton. (2000RA Reducer Seals are supplied, as standard, with Viton material)

Selection Table Size 175/2175 Single Reduction

A8

With Mobil SHC634 (Standard) With Mobil PAG460 Lubricant Lubricant or Cibus 460 Food Grade

Ratio	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque	OHL	Input HP	Output HP	Output Torque
5:1	2500	500.0	1.976	1.830	231	473	3.004	2.794	352
	1750	350.0	1.703	1.560	281	473	2.503	2.328	420
	1150	234.0	1.392	1.257	339	473	2.079	1.901	522
	100	20.0	0.186	0.152	478	473	0.294	0.242	764
7.5:1	2500	333.3	1.957	1.801	340	473	2.304	2.119	401
	1750	233.3	1.667	1.516	409	473	1.920	1.766	478
	1150	156.0	1.306	1.169	472	473	1.563	1.407	580
	100	13.3	0.160	0.130	614	473	0.189	0.156	740
10:1	2500	250.0	1.643	1.495	377	473	1.970	1.794	452
	1750	175.0	1.368	1.227	442	473	1.642	1.495	539
	1150	117.0	1.053	0.928	500	473	1.321	1.173	644
	100	10.0	0.126	0.100	628	473	0.181	0.139	879
15:1	2500	166.7	1.209	1.054	398	473	1.486	1.278	483
	1750	116.7	1.026	0.876	473	473	1.238	1.065	575
	1150	78.0	0.803	0.669	540	473	1.001	0.833	684
	100	6.7	0.102	0.073	690	473	0.142	0.098	927
20:1	2500	125.0	0.977	0.832	419	473	1.266	0.962	485
	1750	87.5	0.814	0.677	487	473	1.055	0.802	578
	1150	58.5	0.630	0.508	547	473	0.860	0.627	687
	100	5.0	0.078	0.054	679	473	0.127	0.074	930
25:1	2500	100.0	0.803	0.666	419	473	1.062	0.859	542
	1750	70.0	0.665	0.537	483	473	0.885	0.716	645
	1150	46.8	0.512	0.400	539	473	0.727	0.559	767
	100	4.0	0.064	0.042	659	473	0.111	0.066	1039
30:1	2500	83.3	0.696	0.545	412	473	0.895	0.685	518
	1750	58.3	0.597	0.451	487	473	0.746	0.571	618
	1150	39.0	0.475	0.343	555	473	0.616	0.446	734
	100	3.3	0.065	0.037	705	473	0.097	0.052	992
40:1	2500	62.5	0.554	0.416	419	473	0.743	0.535	540
	1750	43.8	0.469	0.338	486	473	0.619	0.446	641
	1150	29.3	0.369	0.253	545	473	0.518	0.348	761
	100	2.5	0.050	0.027	674	473	0.086	0.041	1030
50:1	2500	50.0	0.448	0.321	405	473	0.619	0.426	537
	1750	35.0	0.377	0.258	465	473	0.516	0.355	639
	1150	23.4	0.296	0.192	518	473	0.436	0.277	759
	100	2.0	0.040	0.020	632	473	0.075	0.033	1027
60:1	2500	41.7	0.374	0.254	384	473	0.536	0.343	519
	1750	29.2	0.317	0.204	442	473	0.447	0.286	619
	1150	19.5	0.251	0.152	492	473	0.361	0.215	707
	100	1.7	0.035	0.016	600	473	0.055	0.024	892
80:1	2500	31.3	0.247	0.156	314	473	0.277	0.163	329
	1750	21.9	0.208	0.124	356	473	0.231	0.136	392
	1150	14.6	0.164	0.091	392	473	0.183	0.100	438
	100	1.3	0.023	0.009	470	473	0.027	0.011	532
100:1	2500	25.0	0.167	0.097	245	473	0.190	0.103	260
	1750	17.5	0.141	0.077	277	473	0.158	0.086	309
	1150	11.7	0.111	0.057	304	473	0.123	0.062	340
	100	1.0	0.016	0.006	362	473	0.018	0.006	401

The use of PAG oils involves strict maintenance guidelines and full understanding of the limitations of the lubrication in real world use. It is the customer's responsibility to inform the end-user of the use and limitations of PAG oils in 2000RA right angle units including the following:

PAG oil is not compatible with PAO synthetics or standard mineral oils – mixing causes immediate breakdown of performance leading to premature failure. Contaminated units must be thoroughly flushed, Consult factory or Mobil for approved flushing procedures.

PAG oil is hygroscopic and does not separate from water. Water does not drop to the bottom of reservoirs but stays in solution causing immediate breakdown of performance. Units must be sealed for life or have a fully sealed pop-up breather.

PAG oil will soften paint and is not compatible with natural rubbers or standard O-ring materials – Bladder must be removed, and O-rings changed to Viton. (2000RA Reducer Seals are supplied, as standard, with Viton material)

Ratio	With Mobil SHC634 (Standard)						With Mobil PAG460 Lubricant		
	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque	OHL	Input HP	Output HP	Output Torque
5:1	2500	500.0	2.928	2.737	345	494	4.453	4.154	524
	1750	350.0	2.510	2.323	418	494	3.711	3.462	623
	1150	234.0	2.104	1.922	517	494	3.138	2.884	790
	100	20.0	0.293	0.243	766	494	0.455	0.380	1196
7.5:1	2500	333.3	2.715	2.518	476	494	3.443	3.151	596
	1750	233.3	2.389	2.191	592	494	2.869	2.626	709
	1150	156.0	1.918	1.733	700	494	2.336	2.102	863
	100	13.3	0.247	0.202	954	494	0.319	0.272	1290
10:1	2500	250.0	2.450	2.250	567	494	3.001	2.723	686
	1750	175.0	2.092	1.896	682	494	2.501	2.269	818
	1150	117.0	1.642	1.463	788	494	2.001	1.779	976
	100	10.0	0.203	0.163	1026	494	0.267	0.211	1329
15:1	2500	166.7	1.834	1.634	618	494	2.281	2.040	771
	1750	116.7	1.561	1.366	738	494	1.901	1.700	918
	1150	78.0	1.225	1.048	846	494	1.541	1.339	1100
	100	6.7	0.154	0.115	1090	494	0.217	0.160	1510
20:1	2500	125.0	1.457	1.259	635	494	1.903	1.608	811
	1750	87.5	1.243	1.050	756	494	1.586	1.340	966
	1150	58.5	0.978	0.803	865	494	1.278	1.043	1144
	100	5.0	0.126	0.088	1110	494	0.181	0.122	1538
25:1	2500	100.0	1.194	1.010	636	494	1.602	1.318	830
	1750	70.0	1.005	0.829	746	494	1.335	1.098	989
	1150	46.8	0.784	0.627	844	494	1.088	0.858	1176
	100	4.0	0.100	0.067	1059	494	0.161	0.101	1592
30:1	2500	83.3	1.043	0.849	642	494	1.352	1.074	813
	1750	58.3	0.896	0.706	763	494	1.127	0.895	968
	1150	39.0	0.711	0.540	872	494	0.930	0.703	1156
	100	3.3	0.096	0.059	1115	494	0.144	0.083	1579
40:1	2500	62.5	0.821	0.631	636	494	1.102	0.811	818
	1750	43.8	0.710	0.524	755	494	0.918	0.676	972
	1150	29.3	0.568	0.400	862	494	0.756	0.525	1149
	100	2.5	0.080	0.044	1102	494	0.119	0.061	1540
50:1	2500	50.0	0.659	0.488	615	494	0.918	0.643	811
	1750	35.0	0.563	0.399	719	494	0.765	0.536	966
	1150	23.4	0.448	0.302	812	494	0.640	0.418	1147
	100	2.0	0.062	0.032	1016	494	0.106	0.049	1551
60:1	2500	41.7	0.561	0.388	586	494	0.805	0.520	785
	1750	29.2	0.491	0.322	696	494	0.671	0.433	934
	1150	19.5	0.399	0.246	795	494	0.550	0.331	1086
	100	1.7	0.060	0.027	1015	494	0.087	0.037	1414
80:1	2500	31.3	0.357	0.236	476	494	0.415	0.259	522
	1750	21.9	0.304	0.190	547	494	0.346	0.216	622
	1150	14.6	0.241	0.141	609	494	0.281	0.163	713
	100	1.3	0.034	0.015	743	494	0.044	0.018	905
100:1	2500	25.0	0.251	0.150	379	494	0.283	0.163	411
	1750	17.5	0.217	0.122	439	494	0.236	0.136	489
	1150	11.7	0.175	0.091	491	494	0.192	0.102	557
	100	1.0	0.026	0.010	605	494	0.031	0.011	698

The use of PAG oils involves strict maintenance guidelines and full understanding of the limitations of the lubrication in real world use. It is the customer's responsibility to inform the end-user of the use and limitations of PAG oils in 2000RA right angle units including the following:

PAG oil is not compatible with PAO synthetics or standard mineral oils – mixing causes immediate breakdown of performance leading to premature failure. Contaminated units must be thoroughly flushed. Consult factory or Mobil for approved flushing procedures.

PAG oil is hygroscopic and does not separate from water. Water does not drop to the bottom of reservoirs but stays in solution causing immediate breakdown of performance. Units must be sealed for life or have a fully sealed pop-up breather.

PAG oil will soften paint and is not compatible with natural rubbers or standard O-ring materials – Bladder must be removed, and O-rings changed to Viton. (2000RA Reducer Seals are supplied, as standard, with Viton material)

Selection Table Size 238/2238 Single Reduction

A10

With Mobil SHC634 (Standard)							With Mobil PAG460 Lubricant		
Lubricant or Cibus 460 Food Grade									
Ratio	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque	OHL	Input HP	Output HP	Output Torque
5:1	2500	500.0	4.594	4.326	545	1107	6.043	5.665	714
	1750	350.0	3.889	3.628	653	1107	5.036	4.721	850
	1150	234.0	3.340	3.078	829	1107	4.240	3.916	1073
7.5:1	100	20.0	0.486	0.408	1286	1107	0.681	0.567	1786
	2500	333.3	4.024	3.752	709	1107	4.805	4.435	839
	1750	233.3	3.466	3.195	863	1107	4.004	3.696	999
	1150	156.0	2.872	2.609	1053	1107	3.259	2.944	1211
10:1	100	13.3	0.393	0.322	1523	1107	0.451	0.388	1838
	2500	250.0	3.484	3.215	810	1107	4.384	4.002	1009
	1750	175.0	3.083	2.809	1011	1107	3.653	3.335	1201
	1150	117.0	2.487	2.229	1200	1107	3.044	2.722	1491
15:1	100	10.0	0.325	0.261	1646	1107	0.440	0.346	2179
	2500	166.7	2.612	2.341	885	1107	3.323	2.963	1120
	1750	116.7	2.303	2.028	1095	1107	2.769	2.469	1334
	1150	78.0	1.857	1.598	1291	1107	2.309	2.001	1645
20:1	100	6.7	0.247	0.185	1749	1107	0.343	0.251	2375
	2500	125.0	2.076	1.808	911	1107	2.795	2.370	1195
	1750	87.5	1.828	1.557	1121	1107	2.329	1.975	1422
	1150	58.5	1.476	1.222	1316	1107	1.955	1.600	1753
25:1	100	5.0	0.200	0.170	1768	1107	0.302	0.201	2528
	2500	100.0	1.724	1.464	922	1107	2.362	1.939	1222
	1750	70.0	1.510	1.249	1124	1107	1.968	1.616	1455
	1150	46.8	1.215	0.973	1310	1107	1.654	1.302	1784
30:1	100	4.0	0.166	0.110	1738	1107	0.261	0.162	2550
	2500	83.3	1.484	1.218	921	1107	1.986	1.583	1198
	1750	58.3	1.319	1.049	1133	1107	1.655	1.319	1426
	1150	39.0	1.076	0.824	1330	1107	1.404	1.066	1753
40:1	100	3.3	0.155	0.095	1789	1107	0.230	0.133	2517
	2500	62.5	1.165	0.906	914	1107	1.610	1.194	1204
	1750	43.8	1.040	0.778	1121	1107	1.342	0.995	1432
	1150	29.3	0.854	0.609	1312	1107	1.152	0.805	1762
50:1	100	2.5	0.127	0.070	1756	1107	0.199	0.101	2533
	2500	50.0	0.951	0.707	891	1107	1.289	0.902	1137
	1750	35.0	0.847	0.602	1084	1107	1.074	0.752	1354
	1150	23.4	0.695	0.468	1261	1107	0.926	0.605	1659
60:1	100	2.0	0.105	0.053	1667	1107	0.165	0.075	2366
	2500	41.7	0.772	0.560	847	1107	1.048	0.733	1108
	1750	29.2	0.674	0.466	1007	1107	0.873	0.611	1319
	1150	19.5	0.545	0.357	1152	1107	0.730	0.477	1566
80:1	100	1.7	0.080	0.039	1477	1107	0.121	0.056	2116
	2500	31.3	0.520	0.348	701	1107	0.625	0.394	793
	1750	21.9	0.455	0.288	830	1107	0.521	0.328	945
	1150	14.6	0.370	0.219	946	1107	0.426	0.250	1094
100:1	100	1.3	0.056	0.024	1202	1107	0.068	0.028	1414
	2500	25.0	0.351	0.219	551	1107	0.437	0.257	647
	1750	17.5	0.307	0.180	648	1107	0.364	0.214	771
	1150	11.7	0.251	0.136	735	1107	0.297	0.161	884
	100	1.0	0.039	0.015	926	1107	0.047	0.018	1122

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PAG oil is hygroscopic and does not separate from water. Water does not drop to the bottom of reservoirs but stays in solution causing immediate breakdown of performance. Units must be sealed for life or have a fully sealed pop-up breather.

PAG oil will soften paint and is not compatible with natural rubbers or standard O-ring materials – Bladder must be removed, and O-rings changed to Viton. (2000RA Reducer Seals are supplied, as standard, with Viton material)

With Mobil SHC634 (Standard)							With Mobil PAG460 Lubricant		
Lubricant or Cibus 460 Food Grade									
Ratio	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque	OHL	Input HP	Output HP	Output Torque
5:1	2500	500.0	5.548	5.240	682	1039	8.027	7.526	949
	1750	350.0	4.804	4.496	836	1039	6.689	6.272	1129
	1150	234.0	4.052	3.747	1042	1039	5.616	5.191	1422
	100	20.0	0.608	0.513	1669	1039	0.961	0.799	2517
7.5:1	2500	333.3	4.974	4.660	881	1039	6.034	5.551	1050
	1750	233.3	4.266	3.954	1068	1039	5.028	4.626	1250
	1150	156.0	3.583	3.275	1322	1039	4.093	3.684	1515
	100	13.3	0.501	0.415	1962	1039	0.593	0.502	2382
10:1	2500	250.0	4.522	4.194	1057	1039	5.597	5.122	1291
	1750	175.0	3.903	3.575	1287	1039	4.664	4.268	1537
	1150	117.0	3.198	2.882	1552	1039	3.916	3.516	1927
	100	10.0	0.430	0.348	2193	1039	0.571	0.454	2861
15:1	2500	166.7	3.370	3.068	1160	1039	4.153	3.846	1454
	1750	116.7	2.921	2.618	1414	1039	3.461	3.205	1731
	1150	78.0	2.321	2.041	1648	1039	2.826	2.556	2100
	100	6.7	0.296	0.231	2187	1039	0.397	0.312	2947
20:1	2500	125.0	2.069	2.375	1197	1039	3.560	3.062	1544
	1750	87.5	2.371	2.051	1477	1039	2.967	2.552	1838
	1150	58.5	1.913	1.613	1737	1039	2.503	2.083	2283
	100	5.0	0.258	0.186	2345	1039	0.387	0.265	3335
25:1	2500	100.0	2.225	1.923	1211	1039	3.006	2.510	1582
	1750	70.0	1.945	1.641	1477	1039	2.505	2.092	1883
	1150	46.8	1.561	1.279	1722	1039	2.057	1.658	2271
	100	4.0	0.210	0.145	2286	1039	0.303	0.200	3152
30:1	2500	83.3	1.902	1.608	1216	1039	2.509	2.058	1557
	1750	58.3	1.654	1.362	1471	1039	2.091	1.715	1854
	1150	39.0	1.325	1.055	1705	1039	1.729	1.361	2239
	100	3.3	0.179	0.118	2238	1039	0.263	0.165	3114
40:1	2500	62.5	1.497	1.194	1203	1039	2.046	1.552	1565
	1750	43.8	1.335	1.027	1479	1039	1.705	1.293	1860
	1150	29.3	1.094	0.805	1735	1039	1.468	1.053	2305
	100	2.5	0.161	0.092	2328	1039	0.253	0.133	3355
50:1	2500	50.0	1.214	0.930	1172	1039	1.675	1.206	1520
	1750	35.0	1.076	0.792	1426	1039	1.396	1.005	1811
	1150	23.4	0.880	0.616	1659	1039	1.172	0.795	2180
	100	2.0	0.130	0.070	2193	1039	0.192	0.096	3017
60:1	2500	41.7	0.998	0.736	1114	1039	1.408	0.972	1469
	1750	29.2	0.883	0.623	1345	1039	1.173	0.810	1749
	1150	19.5	0.722	0.482	1556	1039	1.000	0.645	2119
	100	1.7	0.108	0.054	2036	1039	0.173	0.078	2965
80:1	2500	31.3	0.656	0.456	919	1039	0.821	0.534	1075
	1750	21.9	0.577	0.379	1092	1039	0.684	0.445	1279
	1150	14.6	0.469	0.289	1247	1039	0.560	0.340	1488
	100	1.3	0.070	0.032	1593	1039	0.089	0.039	1938
100:1	2500	25.0	0.441	0.286	721	1039	0.503	0.307	774
	1750	17.5	0.386	0.236	851	1039	0.419	0.256	921
	1150	11.7	0.314	0.179	966	1039	0.333	0.189	1035
	100	1.0	0.048	0.019	1222	1039	0.052	0.021	1332

The use of PAG oils involves strict maintenance guidelines and full understanding of the limitations of the lubrication in real world use. It is the customer's responsibility to inform the end-user of the use and limitations of PAG oils in 2000RA right angle units including the following:

PAG oil is not compatible with PAO synthetics or standard mineral oils – mixing causes immediate breakdown of performance leading to premature failure. Contaminated units must be thoroughly flushed, Consult factory or Mobil for approved flushing procedures.

PAG oil is hygroscopic and does not separate from water. Water does not drop to the bottom of reservoirs but stays in solution causing immediate breakdown of performance. Units must be sealed for life or have a fully sealed pop-up breather.

PAG oil will soften paint and is not compatible with natural rubbers or standard O-ring materials – Bladder must be removed, and O-rings changed to Viton. (2000RA Reducer Seals are supplied, as standard, with Viton material)

Selection Table Size 300/2300 Single Reduction

A12

With Mobil SHC634 (Standard)							With Mobil PAG460 Lubricant		
Lubricant or Cibus 460 Food Grade									
Ratio	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque	OHL	Input HP	Output HP	Output Torque
5:1	2500	500.0	7.726	7.325	923	1518	10.592	10.010	1262
	1750	350.0	6.683	6.285	1131	1518	8.827	8.342	1502
	1150	234.0	5.645	5.249	1413	1518	7.369	6.875	1884
	100	20.0	0.918	0.779	2454	1518	1.293	1.095	3449
7.5:1	2500	333.3	7.145	6.713	1269	1518	8.602	8.024	1517
	1750	233.3	6.049	5.624	1519	1518	7.168	6.687	1806
	1150	156.0	5.210	4.779	1930	1518	5.806	5.299	2179
	100	13.3	0.765	0.636	3003	1518	0.872	0.742	3517
10:1	2500	250.0	6.344	5.897	1486	1518	7.750	7.121	1795
	1750	175.0	5.450	5.005	1802	1518	6.458	5.934	2137
	1150	117.0	4.586	4.144	2232	1518	5.442	4.907	2689
	100	10.0	0.649	0.526	3312	1518	0.857	0.681	4290
15:1	2500	166.7	4.858	4.404	1665	1518	5.982	5.323	2013
	1750	116.7	4.207	3.751	2026	1518	4.985	4.436	2396
	1150	78.0	3.507	3.062	2473	1518	4.184	3.638	2990
	100	6.7	0.498	0.378	3573	1518	0.619	0.466	4407
20:1	2500	125.0	3.720	3.288	1657	1518	4.860	4.180	2107
	1750	87.5	3.233	2.799	2015	1518	4.050	3.483	2509
	1150	58.5	2.717	2.291	2467	1518	3.418	2.855	3130
	100	5.0	0.400	0.284	3584	1518	0.523	0.365	4607
25:1	2500	100.0	3.170	2.737	1724	1518	4.145	3.482	2195
	1750	70.0	2.768	2.332	2099	1518	3.454	2.902	2612
	1150	46.8	2.319	1.895	2551	1518	2.822	2.299	3149
	100	4.0	0.345	0.232	3653	1518	0.406	0.277	4368
30:1	2500	83.3	2.717	2.287	1729	1518	3.521	2.834	2145
	1750	58.3	2.382	1.949	2105	1518	2.934	2.362	2555
	1150	39.0	2.004	1.582	2556	1518	2.491	1.927	3171
	100	3.3	0.305	0.193	3656	1518	0.399	0.245	4629
40:1	2500	62.5	2.063	1.645	1659	1518	2.699	2.078	2096
	1750	43.8	1.822	1.402	2018	1518	2.249	1.732	2493
	1150	29.3	1.557	1.144	2464	1518	1.932	1.415	3100
	100	2.5	0.252	0.141	3559	1518	0.327	0.180	4541
50:1	2500	50.0	1.727	1.320	1663	1518	2.310	1.675	2112
	1750	35.0	1.535	1.125	2026	1518	1.925	1.396	2521
	1150	23.4	1.312	0.912	2456	1518	1.603	1.103	3032
	100	2.0	0.217	0.111	3505	1518	0.255	0.132	4187
60:1	2500	41.7	1.430	1.045	1580	1518	1.915	1.331	2011
	1750	29.2	1.279	0.891	1924	1518	1.596	1.109	2393
	1150	19.5	1.100	0.722	2332	1518	1.397	0.908	2981
	100	1.7	0.188	0.088	3327	1518	0.256	0.116	4379
80:1	2500	31.3	0.972	0.671	1352	1518	1.247	0.815	1641
	1750	21.9	0.895	0.585	1684	1518	1.039	0.679	1954
	1150	14.6	0.757	0.463	1996	1518	0.880	0.536	2346
	100	1.3	0.126	0.054	2731	1518	0.151	0.064	3231
100:1	2500	25.0	0.656	0.424	1069	1518	0.844	0.515	1298
	1750	17.5	0.603	0.367	1321	1518	0.703	0.429	1544
	1150	11.7	0.511	0.289	1554	1518	0.594	0.335	1835
	100	1.0	0.087	0.033	2100	1518	0.103	0.039	2483

The use of PAG oils involves strict maintenance guidelines and full understanding of the limitations of the lubrication in real world use. It is the customer's responsibility to inform the end-user of the use and limitations of PAG oils in 2000RA right angle units including the following:

PAG oil is not compatible with PAO synthetics or standard mineral oils – mixing causes immediate breakdown of performance leading to premature failure. Contaminated units must be thoroughly flushed, Consult factory or Mobil for approved flushing procedures.

PAG oil is hygroscopic and does not separate from water. Water does not drop to the bottom of reservoirs but stays in solution causing immediate breakdown of performance. Units must be sealed for life or have a fully sealed pop-up breather.

PAG oil will soften paint and is not compatible with natural rubbers or standard O-ring materials – Bladder must be removed, and O-rings changed to Viton. (2000RA Reducer Seals are supplied, as standard, with Viton material)

Ratio	With Mobil SHC634 (Standard) Lubricant or Cibus 460 Food Grade						With Mobil PAG460 Lubricant		
	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque	OHL	Input HP	Output HP	Output Torque
5:1	2500	500.0	10.562	10.034	1306	1464	14.228	13.474	1698
	1750	350.0	9.135	8.611	1602	1464	11.857	11.228	2022
	1150	234.0	7.694	7.172	1995	1464	9.808	9.176	2515
	100	20.0	1.289	1.097	3571	1464	1.800	1.529	4820
7.5:1	2500	333.3	9.053	8.527	1612	1464	11.154	10.396	1966
	1750	233.3	7.844	7.317	1976	1464	9.295	8.663	2332
	1150	156.0	6.642	6.114	2469	1464	7.669	7.074	2898
	100	13.3	1.136	0.949	4075	1464	1.224	1.024	4835
10:1	2500	250.0	8.232	7.701	1941	1464	10.002	9.202	2320
	1750	175.0	7.034	6.507	2343	1464	8.335	7.668	2762
	1150	117.0	5.974	5.446	2932	1464	7.022	6.347	3479
	100	10.0	0.857	0.704	4437	1464	1.108	0.889	5601
15:1	2500	166.7	6.161	5.603	2118	1464	7.460	6.715	2539
	1750	116.7	5.277	4.724	2551	1464	6.217	5.596	3021
	1150	78.0	4.531	3.971	3107	1464	5.438	4.779	3926
	100	6.7	0.682	0.518	4895	1464	0.875	0.657	6209
20:1	2500	125.0	4.836	4.306	2170	1464	6.234	5.461	2754
	1750	87.5	4.188	3.658	2633	1464	5.195	4.551	3278
	1150	58.5	3.547	3.020	3253	1464	4.563	3.878	4251
	100	5.0	0.528	0.381	4802	1464	0.759	0.531	6698
25:1	2500	100.0	3.977	3.468	2185	1464	5.302	4.523	2850
	1750	70.0	3.465	2.953	2658	1464	4.418	3.769	3393
	1150	46.8	2.914	2.413	3248	1464	3.800	3.121	4276
	100	4.0	0.434	0.298	4701	1464	0.679	0.439	6910
30:1	2500	83.3	3.452	2.903	2195	1464	4.441	3.664	2772
	1750	58.3	3.003	2.454	2651	1464	3.701	3.053	3301
	1150	39.0	2.604	2.052	3315	1464	3.279	2.594	4268
	100	3.3	0.425	0.265	5007	1464	0.577	0.354	6689
40:1	2500	62.5	2.669	2.157	2174	1464	3.523	2.762	2786
	1750	43.8	2.348	1.834	2641	1464	2.936	2.302	3312
	1150	29.3	2.019	1.509	3251	1464	2.628	1.956	4283
	100	2.5	0.330	0.189	4769	1464	0.488	0.267	6717
50:1	2500	50.0	2.152	1.674	2110	1464	2.969	2.221	2800
	1750	35.0	1.907	1.426	2568	1464	2.474	1.851	3333
	1150	23.4	1.634	1.163	3130	1464	2.182	1.532	4199
	100	2.0	0.270	0.143	4510	1464	0.443	0.215	6766
60:1	2500	41.7	1.764	1.323	2001	1464	2.525	1.817	2746
	1750	29.2	1.573	1.128	2437	1464	2.104	1.514	3272
	1150	19.5	1.346	0.913	2951	1464	1.801	1.221	4015
	100	1.7	0.225	0.111	4201	1464	0.309	0.152	5745
80:1	2500	31.3	1.122	0.796	1605	1464	1.360	0.918	1848
	1750	21.9	1.030	0.695	2000	1464	1.133	0.765	2201
	1150	14.6	0.869	0.551	2371	1464	0.970	0.611	2673
	100	1.3	0.143	0.064	3246	1464	0.170	0.075	3756
100:1	2500	25.0	0.754	0.503	1268	1464	0.946	0.594	1497
	1750	17.5	0.691	0.435	1567	1464	0.788	0.495	1783
	1150	11.7	0.584	0.343	1846	1464	0.673	0.391	2144
	100	1.0	0.097	0.040	2496	1464	0.119	0.047	2961

The use of PAG oils involves strict maintenance guidelines and full understanding of the limitations of the lubrication in real world use. It is the customer's responsibility to inform the end-user of the use and limitations of PAG oils in 2000RA right angle units including the following:

PAG oil is not compatible with PAO synthetics or standard mineral oils – mixing causes immediate breakdown of performance leading to premature failure. Contaminated units must be thoroughly flushed, Consult factory or Mobil for approved flushing procedures.

PAG oil is hygroscopic and does not separate from water. Water does not drop to the bottom of reservoirs but stays in solution causing immediate breakdown of performance. Units must be sealed for life or have a fully sealed pop-up breather.

PAG oil will soften paint and is not compatible with natural rubbers or standard O-ring materials – Bladder must be removed, and O-rings changed to Viton. (2000RA Reducer Seals are supplied, as standard, with Viton material)

Selection Table Size 425/2425 Single Reduction

A14

Ratio	With Mobil SHC634 (Standard) Lubricant or Cibus 460 Food Grade						With Mobil PAG460 Lubricant		
	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque	OHL	Input HP	Output HP	Output Torque
5:1	2500	500.0	18.002	17.182	2237	2018	22.109	21.004	2648
	1750	350.0	15.548	14.745	2742	2204	18.424	17.503	3256
	1150	234.0	13.208	12.406	3451	2265	15.553	14.618	4138
	100	20.0	2.520	2.164	7043	2265	3.288	2.799	9111
7.5:1	2500	333.3	16.257	15.425	2915	2265	19.998	18.878	3570
	1750	233.3	14.063	13.237	3574	2265	16.665	15.732	4250
	1150	156.0	11.740	10.923	4411	2265	13.567	12.583	5175
	100	13.3	2.098	1.772	8371	2265	2.633	2.295	10880
10:1	2500	250.0	14.886	14.024	3534	2265	18.022	16.903	4261
	1750	175.0	12.897	12.035	4332	2265	15.018	14.086	5073
	1150	117.0	10.918	10.052	5413	2265	12.342	11.384	6239
	100	10.0	1.791	1.485	9358	2265	2.458	1.985	12510
15:1	2500	166.7	10.691	9.826	3714	2265	13.226	12.167	4600
	1750	116.7	9.301	8.432	4553	2265	11.022	10.139	5476
	1150	78.0	7.916	7.042	5688	2265	9.261	8.333	6849
	100	6.7	1.354	1.044	9862	2265	1.766	1.350	12756
20:1	2500	125.0	8.692	7.833	3948	2265	11.154	10.037	5061
	1750	87.5	7.588	6.722	4840	2265	9.295	8.364	6024
	1150	58.5	6.491	5.618	6050	2265	7.783	6.799	7452
	100	5.0	1.100	0.804	10136	2265	1.656	1.160	14615
25:1	2500	100.0	7.129	6.308	3974	2265	9.300	8.137	5128
	1750	70.0	6.242	5.413	4872	2265	7.750	6.781	6105
	1150	46.8	5.352	4.518	6082	2265	6.569	5.552	7607
	100	4.0	0.899	0.628	9898	2265	1.391	0.917	14451
30:1	2500	83.3	5.942	5.093	3850	2265	7.762	6.618	5007
	1750	58.3	5.226	4.370	4720	2265	6.468	5.515	5962
	1150	39.0	4.516	3.652	5899	2265	5.537	4.541	7471
	100	3.3	0.837	0.534	10092	2265	1.161	0.727	13760
40:1	2500	62.5	4.752	3.923	3954	2265	6.176	5.026	5068
	1750	43.8	4.204	3.366	4847	2265	5.147	4.188	6026
	1150	29.3	3.659	2.813	6059	2265	4.410	3.409	7464
	100	2.5	0.684	0.399	10067	2265	1.063	0.578	14562
50:1	2500	50.0	3.815	3.045	3837	2265	4.996	3.922	4943
	1750	35.0	3.392	2.613	4704	2265	4.163	3.268	5886
	1150	23.4	2.966	2.180	5870	2265	3.618	2.678	7339
	100	2.0	0.555	0.302	9497	2265	0.876	0.441	13893
60:1	2500	41.7	3.115	2.407	3639	2265	4.020	3.055	4618
	1750	29.2	2.696	2.001	4322	2265	3.350	2.546	5495
	1150	19.5	2.441	1.719	5555	2265	2.943	2.096	6882
	100	1.7	0.460	0.234	8828	2265	0.715	0.337	12717
80:1	2500	31.3	2.019	1.486	2995	2265	2.498	1.783	3591
	1750	21.9	1.790	1.257	3620	2265	2.082	1.486	4276
	1150	14.6	1.585	1.049	4519	2265	1.849	1.231	5390
	100	1.3	0.290	0.135	6804	2265	0.389	0.173	8735
100:1	2500	25.0	1.341	0.933	2351	2265	1.607	1.061	2674
	1750	17.5	1.201	0.792	2852	2265	1.339	0.884	3185
	1150	11.7	1.062	0.655	3527	2265	1.211	0.742	4066
	100	1.0	0.197	0.0833	5219	2265	0.243	0.099	6236

The use of PAG oils involves strict maintenance guidelines and full understanding of the limitations of the lubrication in real world use. It is the customer's responsibility to inform the end-user of the use and limitations of PAG oils in 2000RA right angle units including the following:

PAG oil is not compatible with PAO synthetics or standard mineral oils – mixing causes immediate breakdown of performance leading to premature failure. Contaminated units must be thoroughly flushed, Consult factory or Mobil for approved flushing procedures.

PAG oil is hygroscopic and does not separate from water. Water does not drop to the bottom of reservoirs but stays in solution causing immediate breakdown of performance. Units must be sealed for life or have a fully sealed pop-up breather.

PAG oil will soften paint and is not compatible with natural rubbers or standard O-ring materials – Bladder must be removed, and O-rings changed to Viton. (2000RA Reducer Seals are supplied, as standard, with Viton material)

Ratio	With Mobil SHC634 (Standard) Lubricant or Cibus 460 Food Grade						With Mobil PAG460 Lubricant		
	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque	OHL	Input HP	Output HP	Output Torque
5:1	2500	500.0	32.648	31.284	4040	2193	40.052	38.004	4790
	1750	350.0	28.166	26.846	4953	2384	33.377	31.670	5845
	1150	234.0	23.897	22.587	6233	2591	28.127	26.450	7428
	100	20.0	5.487	4.773	14009	2752	6.566	5.618	18146
7.5:1	2500	333.3	27.783	26.438	4997	2506	33.774	32.082	6067
	1750	233.3	24.006	22.687	6125	2724	28.145	26.735	7222
	1150	156.0	20.409	19.088	7709	2752	23.295	22.119	9094
	100	13.3	4.077	3.455	16323	2752	4.959	4.337	20548
10:1	2500	250.0	22.412	21.066	5309	2752	27.811	26.114	6583
	1750	175.0	19.402	18.077	6508	2752	23.176	21.762	7837
	1150	117.0	16.541	15.210	8190	2752	19.641	18.175	9960
	100	10.0	3.341	2.721	17142	2752	4.158	3.382	21315
15:1	2500	166.7	16.500	15.131	5720	2752	20.850	19.056	7205
	1750	116.7	14.338	12.984	7012	2752	17.375	15.880	8576
	1150	78.0	12.290	10.925	8824	2752	14.819	13.262	10899
	100	6.7	2.556	1.929	18228	2752	3.329	2.486	23497
20:1	2500	125.0	12.981	11.612	5852	2752	17.480	15.583	7857
	1750	87.5	11.321	9.964	7174	2752	14.567	12.986	9355
	1150	58.5	9.754	8.383	9028	2752	12.489	10.846	11889
	100	5.0	2.100	1.473	18561	2752	2.835	1.985	25019
25:1	2500	100.0	10.712	9.350	5891	2752	14.594	12.697	8002
	1750	70.0	9.375	8.024	7221	2752	12.162	10.581	9526
	1150	46.8	8.117	6.751	9088	2752	10.480	8.837	12107
	100	4.0	1.808	1.184	18641	2752	2.440	1.602	25243
30:1	2500	83.3	9.160	7.806	5902	2752	12.181	10.354	7834
	1750	58.3	8.043	6.699	7235	2752	10.151	8.628	9328
	1150	39.0	6.997	5.636	9104	2752	8.801	7.206	11855
	100	3.3	1.608	0.987	18653	2752	2.210	1.342	25397
40:1	2500	62.5	7.122	5.793	5840	2752	9.563	7.745	7810
	1750	43.8	6.292	4.971	7159	2752	7.969	6.454	9287
	1150	29.3	5.520	4.183	9009	2752	6.968	5.390	11803
	100	2.5	1.342	0.732	18434	2752	1.797	0.982	24736
50:1	2500	50.0	5.784	4.499	5669	2752	7.877	6.065	7645
	1750	35.0	5.138	3.861	6950	2752	6.564	5.054	9101
	1150	23.4	4.543	3.248	8746	2752	5.785	4.221	11567
	100	2.0	1.159	0.568	17886	2752	1.549	0.763	24053
60:1	2500	41.7	4.777	3.560	5383	2752	6.566	4.859	7344
	1750	29.2	4.265	3.055	6598	2752	5.472	4.049	8750
	1150	19.5	3.797	2.570	8304	2752	4.688	3.276	10773
	100	1.7	1.009	0.449	16976	2752	1.202	0.569	21516
80:1	2500	31.3	3.226	2.217	4469	2752	3.786	2.498	5031
	1750	21.9	2.906	1.902	5478	2752	3.155	2.082	5991
	1150	14.6	2.618	1.600	6894	2752	2.758	1.702	7452
	100	1.3	0.744	0.280	14089	2752	0.708	0.283	14270
100:1	2500	25.0	2.285	1.504	3790	2752	2.710	1.706	4302
	1750	17.5	2.072	1.291	4646	2752	2.258	1.422	5122
	1150	11.7	1.820	1.052	5663	2752	2.004	1.171	6417
	100	1.0	0.515	0.180	11331	2752	0.510	0.188	11833

The use of PAG oils involves strict maintenance guidelines and full understanding of the limitations of the lubrication in real world use. It is the customer's responsibility to inform the end-user of the use and limitations of PAG oils in 2000RA right angle units including the following:

PAG oil is not compatible with PAO synthetics or standard mineral oils – mixing causes immediate breakdown of performance leading to premature failure. Contaminated units must be thoroughly flushed, Consult factory or Mobil for approved flushing procedures.

PAG oil is hygroscopic and does not separate from water. Water does not drop to the bottom of reservoirs but stays in solution causing immediate breakdown of performance. Units must be sealed for life or have a fully sealed pop-up breather.

PAG oil will soften paint and is not compatible with natural rubbers or standard O-ring materials – Bladder must be removed, and O-rings changed to Viton. (2000RA Reducer Seals are supplied, as standard, with Viton material)

Selection Table Size 154/2154 Double Reduction

A16

Ratio	With Mobil SHC634 (Standard)						With Mobil PAG460 Lubricant		
	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque		Input HP	Output HP	Output Torque
75:1	1750	23.3	.302	.187	504	517	0.350	0.195	527
	1150	15.6	.220	.129	522	517	0.249	0.137	562
	850	11.6	.173	.098	531	517	0.193	0.104	581
100:1	1750	17.5	.252	.144	518	517	0.312	0.163	588
	1150	11.7	.184	.099	535	517	0.222	0.114	627
	850	8.70	.145	.075	544	517	0.172	0.087	648
150:1	1750	11.7	.184	.099	535	517	0.201	0.107	579
	1150	7.80	.132	.068	547	517	0.143	0.075	614
	850	5.80	.104	.051	553	517	0.111	0.057	630
200:1	1750	8.75	.149	.076	544	517	0.179	0.090	646
	1150	5.85	.107	.051	553	517	0.128	0.063	686
	850	4.35	.084	.039	558	517	0.099	0.047	703
250:1	1750	7.00	.124	.060	545	517	0.145	0.073	657
	1150	4.68	.087	.041	553	517	0.104	0.051	700
	850	3.48	.068	.031	558	517	0.081	0.039	719
300:1	1750	5.83	.110	.051	553	517	0.143	0.058	628
	1150	3.90	.079	.035	559	517	0.106	0.042	693
	850	2.90	.062	.026	562	517	0.086	0.033	740
400:1	1750	4.38	.088	.039	558	517	0.107	0.041	592
	1150	2.93	.062	.026	562	517	0.073	0.027	589
	850	2.18	.049	.019	565	517	0.056	0.019	576
500:1	1750	3.50	.076	.031	561	517	0.090	0.039	703
	1150	2.34	.055	.021	564	517	0.062	0.026	703
	850	1.74	.043	.016	566	517	0.047	0.019	703
600:1	1750	2.92	.068	.026	562	517	0.083	0.032	691
	1150	1.95	.050	.017	565	517	0.057	0.021	687
	850	1.45	.040	.013	567	517	0.042	0.015	652
750:1	1750	2.33	.060	.021	562	517	0.070	0.025	664
	1150	1.56	.044	.014	566	517	0.048	0.016	664
	850	1.16	.035	.010	567	517	0.037	0.012	664
:1	1750	1.94	.056	.017	561	517	0.061	0.020	664
	1150	1.30	.041	.012	565	517	0.043	0.013	664
	850	.967	.033	.009	566	517	0.033	0.010	664
1000:1	1750	1.75	.048	.016	566	517	0.055	0.020	703
	1150	1.17	.035	.011	568	517	0.039	0.013	703
	850	.870	.028	.008	569	517	0.030	0.009	703
1200:1	1750	1.46	.045	.013	567	517	0.050	0.015	664
	1150	.975	.033	.009	569	517	0.035	0.010	664
	850	.725	.027	.007	569	517	0.027	0.007	664
1500:1	1750	1.17	.040	.010	567	517	0.042	0.012	664
	1150	.780	.030	.007	569	517	0.030	0.008	664
	850	.580	.024	.005	569	517	0.023	0.006	664
1800:1	1750	.972	.037	.008	566	517	0.043	0.010	664
	1150	.650	.027	.006	568	517	0.030	0.007	664
	850	.483	.022	.004	569	517	0.023	0.005	664
2400:1	1750	.729	.029	.006	563	517	0.037	0.008	703
	1150	.488	.021	.004	564	517	0.026	0.005	703
	850	.363	.017	.003	565	517	0.020	0.004	703
3000:1	1750	.583	.023	.005	544	517	0.030	0.006	652
	1150	.390	.017	.003	545	517	0.022	0.004	652
	850	.290	.014	.003	546	517	0.017	0.003	652
3600:1	1750	.486	.020	.004	514	517	0.024	0.004	579
	1150	.325	.015	.003	516	517	0.017	0.003	579
	850	.242	.012	.002	517	517	0.013	0.002	579

The use of PAG oils involves strict maintenance guidelines and full understanding of the limitations of the lubrication in real world use. It is the customer's responsibility to inform the end-user of the use and limitations of PAG oils in 2000RA right angle units including the following:

PAG oil is not compatible with PAO synthetics or standard mineral oils – mixing causes immediate breakdown of performance leading to premature failure. Contaminated units must be thoroughly flushed. Consult factory or Mobil for approved flushing procedures.

PAG oil is hygroscopic and does not separate from water. Water does not drop to the bottom of reservoirs but stays in solution causing immediate breakdown of performance. Units must be sealed for life or have a fully sealed pop-up breather.

PAG oil will soften paint and is not compatible with natural rubbers or standard O-ring materials – Bladder must be removed, and O-rings changed to Viton. (2000RA Reducer Seals are supplied, as standard, with Viton material)

Ratio	With Mobil SHC634 (Standard)						With Mobil PAG460 Lubricant		
	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque		Input HP	Output HP	Output Torque
75:1	1750	23.3	.348	.241	651	473	0.448	0.259	700
	1150	15.6	.248	.166	669	473	0.319	0.181	746
	850	11.6	.192	.125	678	473	0.247	0.138	770
100:1	1750	17.5	.268	.179	646	473	0.394	0.192	692
	1150	11.7	.191	.123	661	473	0.282	0.135	742
	850	8.70	.148	.092	669	473	0.219	0.104	769
150:1	1750	11.7	.197	.126	678	473	0.257	0.142	767
	1150	7.80	.139	.085	687	473	0.183	0.099	814
	850	5.80	.108	.064	692	473	0.141	0.075	834
200:1	1750	8.75	.152	.093	669	473	0.228	0.106	766
	1150	5.85	.107	.063	676	473	0.164	0.075	817
	850	4.35	.083	.047	681	473	0.127	0.057	839
250:1	1750	7.00	.129	.072	650	473	0.198	0.092	830
	1150	4.68	.087	.049	657	473	0.143	0.065	891
	850	3.48	.068	.036	660	473	0.111	0.049	917
300:1	1750	5.83	.124	.064	693	473	0.181	0.078	839
	1150	3.90	.089	.044	703	473	0.134	0.056	924
	850	2.90	.069	.033	707	473	0.108	0.044	986
400:1	1750	4.38	.088	.047	680	473	0.137	0.056	804
	1150	2.93	.064	.031	684	473	0.094	0.036	800
	850	2.18	.050	.024	686	473	0.071	0.026	782
500:1	1750	3.50	.077	.038	683	473	0.115	0.047	839
	1150	2.34	.056	.026	686	473	0.080	0.031	839
	850	1.74	.044	.019	688	473	0.061	0.023	839
600:1	1750	2.92	.073	.033	707	473	0.105	0.043	921
	1150	1.95	.053	.022	712	473	0.072	0.028	916
	850	1.45	.042	.016	714	473	0.053	0.020	870
750:1	1750	2.33	.064	.026	710	473	0.088	0.033	885
	1150	1.56	.046	.017	714	473	0.061	0.022	885
	850	1.16	.037	.013	716	473	0.046	0.016	885
900:1	1750	1.94	.057	.022	712	473	0.077	0.027	885
	1150	1.30	.042	.015	715	473	0.054	0.018	885
	850	.967	.034	.011	716	473	0.042	0.013	885
1000:1	1750	1.75	.049	.019	688	473	0.070	0.023	839
	1150	1.17	.036	.013	689	473	0.049	0.015	839
	850	.870	.029	.010	690	473	0.039	0.011	839
1200:1	1750	1.46	.047	.017	714	473	0.062	0.020	885
	1150	.975	.034	.011	716	473	0.044	0.013	885
	850	.725	.027	.008	718	473	0.034	0.010	885
1500:1	1750	1.17	.041	.013	716	473	0.053	0.016	885
	1150	.780	.030	.009	717	473	0.038	0.011	885
	850	.580	.024	.007	718	473	0.030	0.008	836
1800:1	1750	.972	.038	.011	716	473	0.054	0.014	885
	1150	.650	.029	.007	718	473	0.038	0.009	885
	850	.483	.023	.006	719	473	0.030	0.007	885
2400:1	1750	.729	.033	.008	683	473	0.048	0.011	930
	1150	.488	.025	.005	685	473	0.034	0.007	930
	850	.363	.020	.004	685	473	0.026	0.005	930
3000:1	1750	.583	.029	.006	640	473	0.042	0.009	936
	1150	.390	.022	.004	641	473	0.030	0.006	936
	850	.290	.018	.003	642	473	0.023	0.004	936
3600:1	1750	.486	.026	.005	608	473	0.030	0.006	817
	1150	.325	.019	.003	609	473	0.022	0.004	817
	850	.242	.016	.002	609	473	0.017	0.003	817

The use of PAG oils involves strict maintenance guidelines and full understanding of the limitations of the lubrication in real world use. It is the customer's responsibility to inform the end-user of the use and limitations of PAG oils in 2000RA right angle units including the following:

PAG oil is not compatible with PAO synthetics or standard mineral oils – mixing causes immediate breakdown of performance leading to premature failure. Contaminated units must be thoroughly flushed. Consult factory or Mobil for approved flushing procedures.

PAG oil is hygroscopic and does not separate from water. Water does not drop to the bottom of reservoirs but stays in solution causing immediate breakdown of performance. Units must be sealed for life or have a fully sealed pop-up breather.

PAG oil will soften paint and is not compatible with natural rubbers or standard O-ring materials – Bladder must be removed, and O-rings changed to Viton. (2000RA Reducer Seals are supplied, as standard, with Viton material)

Selection Table Size 206/2206 Double Reduction

A18

Ratio	With Mobil SHC634 (Standard)						With Mobil PAG460 Lubricant		
	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque		Input HP	Output HP	Output Torque
75:1	1750	23.3	.528	.381	1028	494	0.689	0.425	1149
	1150	15.6	.376	.261	1056	494	0.490	0.298	1223
	850	11.6	.291	.197	1072	494	0.378	0.227	1261
100:1	1750	17.5	.428	.291	1047	494	0.571	0.322	1160
	1150	11.7	.306	.200	1076	494	0.407	0.226	1237
	850	8.70	.238	.151	1091	494	0.314	0.172	1277
150:1	1750	11.7	.309	.201	1086	494	0.394	0.233	1256
	1150	7.80	.210	.134	1086	494	0.281	0.162	1329
	850	5.80	.163	.101	1094	494	0.216	0.122	1361
200:1	1750	8.75	.243	.152	1091	494	0.327	0.177	1273
	1150	5.85	.172	.103	1106	494	0.234	0.123	1350
	850	4.35	.133	.077	1113	494	0.180	0.093	1384
250:1	1750	7.00	.193	.116	1042	494	0.288	0.156	1402
	1150	4.68	.136	.078	1055	494	0.207	0.109	1497
	850	3.48	.105	.059	1062	494	0.160	0.083	1539
300:1	1750	5.83	.177	.102	1106	494	0.270	0.124	1345
	1150	3.90	.125	.069	1116	494	0.199	0.090	1476
	850	2.90	.097	.052	1121	494	0.160	0.071	1574
400:1	1750	4.38	.141	.077	1113	494	0.196	0.086	1232
	1150	2.93	.101	.052	1121	494	0.134	0.056	1225
	850	2.18	.078	.039	1125	494	0.102	0.040	1199
500:1	1750	3.50	.122	.062	1118	494	0.164	0.077	1384
	1150	2.34	.088	.042	1124	494	0.113	0.051	1384
	850	1.74	.069	.031	1127	494	0.087	0.037	1384
600:1	1750	2.92	.107	.052	1121	494	0.156	0.068	1470
	1150	1.95	.078	.035	1126	494	0.106	0.044	1462
	850	1.45	.062	.026	1129	494	0.079	0.031	1388
750:1	1750	2.33	.093	.042	1123	494	0.131	0.052	1412
	1150	1.56	.068	.028	1129	494	0.090	0.034	1412
	850	1.16	.053	.021	1132	494	0.069	0.025	1412
900:1	1750	1.94	.082	.035	1126	494	0.114	0.044	1412
	1150	1.30	.060	.023	1131	494	0.080	0.029	1412
	850	.967	.048	.017	1134	494	0.062	0.021	1412
1000:1	1750	1.75	.076	.031	1127	494	0.100	0.038	1384
	1150	1.17	.056	.021	1130	494	0.071	0.025	1384
	850	.870	.044	.016	1132	494	0.055	0.019	1384
1200:1	1750	1.46	.068	.026	1130	494	0.093	0.033	1412
	1150	.975	.050	.018	1134	494	0.065	0.021	1412
	850	.725	.040	.013	1136	494	0.050	0.016	1412
1500:1	1750	1.17	.059	.021	1132	494	0.079	0.026	1412
	1150	.780	.043	.014	1135	494	0.056	0.017	1412
	850	.580	.034	.011	1137	494	0.044	0.011	1241
1800:1	1750	.972	.054	.018	1134	494	0.080	0.022	1412
	1150	.650	.040	.012	1136	494	0.057	0.014	1412
	850	.483	.032	.009	1137	494	0.044	0.011	1412
2400:1	1750	.729	.046	.013	1120	494	0.066	0.016	1384
	1150	.488	.034	.009	1123	494	0.047	0.011	1384
	850	.363	.027	.007	1124	494	0.036	0.008	1384
3000:1	1750	.583	.036	.009	1031	494	0.059	0.013	1390
	1150	.390	.027	.006	1033	494	0.042	0.008	1390
	850	.290	.021	.005	1034	494	0.032	0.006	1390
3600:1	1750	.486	.035	.008	1031	494	0.048	0.010	1259
	1150	.325	.026	.005	1034	494	0.034	0.006	1259
	850	.242	.021	.004	1035	494	0.027	0.005	1259

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PAG oil is hygroscopic and does not separate from water. Water does not drop to the bottom of reservoirs but stays in solution causing immediate breakdown of performance. Units must be sealed for life or have a fully sealed pop-up breather.

PAG oil will soften paint and is not compatible with natural rubbers or standard O-ring materials – Bladder must be removed, and O-rings changed to Viton. (2000RA Reducer Seals are supplied, as standard, with Viton material)

Ratio	With Mobil SHC634 (Standard) Lubricant or Cibus 460 Food Grade						With Mobil PAG460 Lubricant		
	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque		Input HP	Output HP	Output Torque
75:1	1750	23.3	.835	.603	1629	1107	1.071	0.656	1773
	1150	15.6	.599	.417	1684	1107	0.767	0.462	1900
	850	11.6	.465	.315	1712	1107	0.594	0.353	1964
100:1	1750	17.5	.670	.458	1650	1107	0.926	0.516	1859
	1150	11.7	.482	.316	1704	1107	0.667	0.365	2003
	850	8.70	.376	.239	1733	1107	0.518	0.280	2078
150:1	1750	11.7	.477	.311	1712	1107	0.618	0.362	1957
	1150	7.80	.337	.215	1740	1107	0.442	0.253	2081
	850	5.80	.261	.162	1755	1107	0.342	0.192	2136
200:1	1750	8.75	.385	.240	1732	1107	0.539	0.287	2070
	1150	5.85	.273	.163	1760	1107	0.389	0.202	2216
	850	4.35	.212	.123	1775	1107	0.301	0.154	2280
250:1	1750	7.00	.319	.189	1704	1107	0.463	0.247	2223
	1150	4.68	.226	.129	1730	1107	0.335	0.174	2390
	850	3.48	.176	.096	1744	1107	0.260	0.133	2463
300:1	1750	5.83	.281	.163	1760	1107	0.427	0.198	2138
	1150	3.90	.200	.110	1779	1107	0.318	0.144	2360
	850	2.90	.155	.082	1789	1107	0.255	0.113	2522
400:1	1750	4.38	.224	.123	1775	1107	0.326	0.143	2062
	1150	2.93	.160	.083	1789	1107	0.223	0.094	2051
	850	2.18	.124	.062	1796	1107	0.170	0.068	2006
500:1	1750	3.50	.194	.099	1783	1107	0.274	0.127	2280
	1150	2.34	.139	.067	1795	1107	0.189	0.083	2280
	850	1.74	.110	.050	1801	1107	0.144	0.062	2280
600:1	1750	2.92	.174	.083	1795	1107	0.249	0.109	2356
	1150	1.95	.125	.056	1809	1107	0.170	0.071	2343
	850	1.45	.097	.042	1817	1107	0.126	0.050	2224
750:1	1750	2.33	.150	.067	1804	1107	0.209	0.084	2263
	1150	1.56	.109	.045	1815	1107	0.144	0.055	2263
	850	1.16	.086	.034	1821	1107	0.110	0.041	2263
900:1	1750	1.94	.133	.056	1809	1107	0.182	0.070	2263
	1150	1.30	.097	.038	1819	1107	0.128	0.046	2263
	850	.967	.077	.028	1824	1107	0.099	0.034	2263
1000:1	1750	1.75	.122	.050	1801	1107	0.166	0.063	2280
	1150	1.17	.089	.034	1806	1107	0.118	0.042	2280
	850	.870	.071	.025	1809	1107	0.092	0.031	2280
1200:1	1750	1.46	.110	.042	1817	1107	0.148	0.052	2263
	1150	.975	.081	.028	1824	1107	0.103	0.034	2263
	850	.725	.064	.021	1828	1107	0.080	0.025	2263
1500:1	1750	1.17	.095	.034	1821	1107	0.127	0.042	2263
	1150	.780	.070	.023	1827	1107	0.090	0.028	2263
	850	.580	.056	.017	1830	1107	0.070	0.018	1982
1800:1	1750	.972	.087	.028	1824	1107	0.127	0.035	2263
	1150	.650	.065	.019	1829	1107	0.091	0.023	2263
	850	.483	.052	.014	1832	1107	0.070	0.017	2263
2400:1	1750	.729	.073	.021	1790	1107	0.110	0.027	2292
	1150	.488	.054	.014	1795	1107	0.079	0.017	2292
	850	.363	.043	.010	1797	1107	0.061	0.013	2292
3000:1	1750	.583	.061	.016	1698	1107	0.091	0.020	2127
	1150	.390	.045	.011	1703	1107	0.065	0.013	2127
	850	.290	.036	.008	1705	1107	0.050	0.010	2127
3600:1	1750	.486	.046	.012	1501	1107	0.067	0.015	1906
	1150	.325	.034	.008	1505	1107	0.048	0.010	1906
	850	.242	.028	.006	1507	1107	0.037	0.007	1906

The use of PAG oils involves strict maintenance guidelines and full understanding of the limitations of the lubrication in real world use. It is the customer's responsibility to inform the end-user of the use and limitations of PAG oils in 2000RA right angle units including the following:

PAG oil is not compatible with PAO synthetics or standard mineral oils – mixing causes immediate breakdown of performance leading to premature failure. Contaminated units must be thoroughly flushed. Consult factory or Mobil for approved flushing procedures.

PAG oil is hygroscopic and does not separate from water. Water does not drop to the bottom of reservoirs but stays in solution causing immediate breakdown of performance. Units must be sealed for life or have a fully sealed pop-up breather.

PAG oil will soften paint and is not compatible with natural rubbers or standard O-ring materials – Bladder must be removed, and O-rings changed to Viton. (2000RA Reducer Seals are supplied, as standard, with Viton material)

Selection Table Size 262/2262 Double Reduction

A20

Ratio	With Mobil SHC634 (Standard)						With Mobil PAG460 Lubricant		
	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque		Input HP	Output HP	Output Torque
75:1	1750	23.3	1.02	.758	2047	1039	1.266	0.833	2251
	1150	15.6	.724	.522	2111	1039	0.900	0.582	2394
	850	11.6	.561	.395	2145	1039	0.694	0.443	2465
100:1	1750	17.5	.865	.607	2186	1039	1.188	0.681	2454
	1150	11.7	.622	.419	2258	1039	0.855	0.482	2644
	850	8.70	.484	.317	2297	1039	0.665	0.370	2742
150:1	1750	11.7	.619	.418	2259	1039	0.723	0.455	2457
	1150	7.80	.439	.286	2308	1039	0.514	0.316	2594
	850	5.80	.341	.215	2334	1039	0.396	0.239	2655
200:1	1750	8.75	.496	.319	2296	1039	0.692	0.379	2732
	1150	5.85	.351	.217	2334	1039	0.498	0.267	2923
	850	4.35	.272	.163	2353	1039	0.386	0.203	3006
250:1	1750	7.00	.404	.249	2241	1039	0.545	0.299	2690
	1150	4.68	.286	.169	2276	1039	0.391	0.209	2866
	850	3.48	.222	.127	2294	1039	0.302	0.159	2942
300:1	1750	5.83	.361	.216	2334	1039	0.496	0.249	2689
	1150	3.90	.257	.146	2359	1039	0.365	0.179	2940
	850	2.90	.199	.109	2373	1039	0.292	0.141	3129
400:1	1750	4.38	.288	.163	2353	1039	0.418	0.199	2867
	1150	2.93	.206	.110	2372	1039	0.286	0.130	2852
	850	2.18	.159	.082	2382	1039	0.218	0.094	2789
500:1	1750	3.50	.249	.131	2365	1039	0.351	0.167	3006
	1150	2.34	.179	.088	2380	1039	0.242	0.110	3006
	850	1.74	.141	.066	2388	1039	0.185	0.081	3006
600:1	1750	2.92	.220	.110	2372	1039	0.284	0.135	2923
	1150	1.95	.159	.074	2385	1039	0.194	0.088	2907
	850	1.45	.126	.055	2392	1039	0.144	0.062	2759
750:1	1750	2.33	.180	.086	2311	1039	0.239	0.104	2808
	1150	1.56	.131	.058	2323	1039	0.165	0.068	2808
	850	1.16	.104	.043	2329	1039	0.126	0.050	2808
900:1	1750	1.94	.154	.070	2261	1039	0.209	0.087	2808
	1150	1.30	.112	.047	2273	1039	0.146	0.057	2808
	850	.967	.089	.035	2278	1039	0.114	0.042	2808
1000:1	1750	1.75	.156	.066	2388	1039	0.213	0.083	3006
	1150	1.17	.114	.091	2396	1039	0.151	0.055	3006
	850	.870	.090	.033	2400	1039	0.118	0.041	3006
1200:1	1750	1.46	.142	.055	2392	1039	0.169	0.065	2808
	1150	.975	.104	.037	2398	1039	0.118	0.043	2808
	850	.725	.083	.028	2402	1039	0.091	0.032	2808
1500:1	1750	1.17	.116	.043	2329	1039	0.145	0.052	2808
	1150	.780	.086	.029	2335	1039	0.102	0.034	2808
	850	.580	.068	.021	2338	1039	0.080	0.020	2267
1800:1	1750	.972	.100	.035	2278	1039	0.146	0.043	2808
	1150	.650	.074	.024	2284	1039	0.104	0.028	2808
	850	.483	.059	.018	2287	1039	0.080	0.021	2808
2400:1	1750	.729	.091	.027	2374	1039	0.140	0.035	3018
	1150	.488	.068	.018	2380	1039	0.100	0.023	3018
	850	.363	.054	.014	2384	1039	0.077	0.017	3018
3000:1	1750	.583	.075	.021	2234	1039	0.106	0.025	2723
	1150	.390	.055	.014	2240	1039	0.076	0.017	2723
	850	.290	.045	.010	2242	1039	0.059	0.012	2723
3600:1	1750	.486	.062	.016	2073	1039	0.096	0.020	2655
	1150	.325	.046	.011	2078	1039	0.068	0.013	2655
	850	.242	.037	.008	2081	1039	0.053	0.010	2655

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PAG oil is hygroscopic and does not separate from water. Water does not drop to the bottom of reservoirs but stays in solution causing immediate breakdown of performance. Units must be sealed for life or have a fully sealed pop-up breather.

PAG oil will soften paint and is not compatible with natural rubbers or standard O-ring materials – Bladder must be removed, and O-rings changed to Viton. (2000RA Reducer Seals are supplied, as standard, with Viton material)

Ratio	With Mobil SHC634 (Standard)						With Mobil PAG460 Lubricant		
	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque		Input HP	Output HP	Output Torque
75:1	1750	23.3	1.61	1.19	3206	1518	1.943	1.225	3308
	1150	15.6	1.19	.845	3412	1518	1.392	0.861	3540
	850	11.6	.934	.641	3483	1518	1.078	0.657	3655
100:1	1750	17.5	1.31	.912	3284	1518	1.615	0.944	3399
	1150	11.7	.950	.635	3420	1518	1.163	0.667	3655
	850	8.70	.746	.482	3492	1518	0.904	0.511	3787
150:1	1750	11.7	.970	.644	3482	1518	1.205	0.619	3345
	1150	7.80	.694	.440	3552	1518	0.873	0.449	3689
	850	5.80	.540	.330	3589	1518	0.682	0.339	3771
200:1	1750	8.75	.775	.485	3491	1518	0.942	0.524	3773
	1150	5.85	.556	.331	3563	1518	0.677	0.368	4029
	850	4.35	.435	.248	3600	1518	0.524	0.279	4141
250:1	1750	7.00	.665	.396	3563	1518	0.737	0.410	3694
	1150	4.68	.479	.270	3633	1518	0.527	0.286	3919
	850	3.48	.375	.203	3669	1518	0.407	0.217	4018
300:1	1750	5.83	.580	.332	3589	1518	0.751	0.368	3972
	1150	3.90	.417	.224	3625	1518	0.557	0.266	4378
	850	2.90	.327	.168	3643	1518	0.451	0.211	4702
400:1	1750	4.38	.467	.250	3599	1518	0.566	0.262	3773
	1150	2.93	.336	.169	3636	1518	0.388	0.171	3748
	850	2.18	.264	.126	3655	1518	0.296	0.123	3646
500:1	1750	3.50	.402	.204	3669	1518	0.474	0.230	4141
	1150	2.34	.290	.138	3705	1518	0.327	0.151	4141
	850	1.74	.229	.103	3723	1518	0.250	0.112	4141
600:1	1750	2.92	.357	.170	3671	1518	0.432	0.200	4318
	1150	1.95	.258	.115	3707	1518	0.296	0.130	4289
	850	1.45	.203	.086	3725	1518	0.219	0.091	4040
750:1	1750	2.33	.313	.137	3705	1518	0.362	0.154	4169
	1150	1.56	.229	.092	3729	1518	0.249	0.101	4169
	850	1.16	.184	.069	3742	1518	0.190	0.075	4169
900:1	1750	1.94	.278	.114	3707	1518	0.317	0.129	4169
	1150	1.30	.203	.077	3731	1518	0.221	0.085	4169
	850	.967	.164	.057	3743	1518	0.171	0.062	4169
1000:1	1750	1.75	.262	.103	3723	1518	0.287	0.115	4141
	1150	1.17	.195	.069	3741	1518	0.203	0.076	4141
	850	.870	.156	.052	3751	1518	0.158	0.056	4141
1200:1	1750	1.46	.233	.086	3725	1518	0.257	0.096	4169
	1150	.975	.174	.058	3743	1518	0.181	0.063	4169
	850	.725	.139	.043	3742	1518	0.141	0.047	4169
1500:1	1750	1.17	.211	.069	3741	1518	0.219	0.077	4169
	1150	.780	.158	.046	3754	1518	0.155	0.051	4169
	850	.580	.127	.035	3760	1518	0.121	0.031	3439
1800:1	1750	.972	.188	.058	3743	1518	0.220	0.064	4169
	1150	.650	.142	.039	3755	1518	0.156	0.042	4169
	850	.483	.114	.029	3762	1518	0.121	0.031	4169
2400:1	1750	.729	.158	.042	3646	1518	0.180	0.047	4084
	1150	.488	.120	.028	3659	1518	0.128	0.031	4084
	850	.363	.097	.021	3665	1518	0.099	0.023	4084
3000:1	1750	.583	.137	.033	3588	1518	0.141	0.035	3744
	1150	.390	.104	.019	3600	1518	0.100	0.023	3744
	850	.290	.084	.017	3606	1518	0.077	0.017	3744
3600:1	1750	.486	.120	.026	3406	1518	0.141	0.030	3948
	1150	.325	.091	.018	3417	1518	0.100	0.020	3948
	850	.242	.074	.013	3423	1518	0.078	0.015	3948

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Selection Table Size 325/2325 Double Reduction

A22

Ratio	With Mobil SHC634 (Standard)						With Mobil PAG460 Lubricant		
	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque		Input HP	Output HP	Output Torque
75:1	1750	23.3	1.61	1.19	3214	1464	2.675	1.681	4542
	1150	15.6	1.32	.933	3770	1464	1.935	1.194	4909
	850	11.6	1.09	.749	4070	1464	1.506	0.916	5094
100:1	1750	17.5	1.61	1.14	4114	1464	2.283	1.337	4814
	1150	11.7	1.25	.849	4574	1464	1.659	0.954	5230
	850	8.70	.984	.645	4675	1464	1.296	0.734	5445
150:1	1750	11.7	1.33	.842	4547	1464	1.688	0.867	4682
	1150	7.80	.984	.588	4755	1464	1.237	0.635	5224
	850	5.80	.781	.448	4867	1464	0.972	0.483	5373
200:1	1750	8.75	1.02	.649	4673	1464	1.350	0.753	5422
	1150	5.85	.734	.443	4773	1464	0.979	0.533	5841
	850	4.35	.574	.333	4825	1464	0.761	0.406	6024
250:1	1750	7.00	.838	.509	4581	1464	1.191	0.664	5977
	1150	4.68	.603	.347	4673	1464	0.872	0.475	6505
	850	3.48	.472	.261	4722	1464	0.681	0.363	6736
300:1	1750	5.83	.811	.450	4865	1464	1.070	0.523	5655
	1150	3.90	.589	.308	4975	1464	0.803	0.383	6299
	850	2.90	.463	.232	5033	1464	0.652	0.305	6794
400:1	1750	4.38	.616	.335	4824	1464	0.822	0.380	5471
	1150	2.93	.444	.226	4876	1464	0.562	0.248	5435
	850	2.18	.349	.169	4902	1464	0.429	0.178	5287
500:1	1750	3.50	.528	.270	4855	1464	0.688	0.335	6024
	1150	2.34	.382	.182	4896	1464	0.474	0.220	6024
	850	1.74	.300	.136	4918	1464	0.362	0.162	6024
600:1	1750	2.92	.497	.233	5032	1464	0.625	0.289	6239
	1150	1.95	.361	.157	5088	1464	0.428	0.188	6198
	850	1.45	.285	.118	5118	1464	0.316	0.131	5838
750:1	1750	2.33	.429	.188	5066	1464	0.523	0.223	6024
	1150	1.56	.313	.127	5111	1464	0.361	0.147	6024
	850	1.16	.247	.095	5135	1464	0.275	0.108	6024
900:1	1750	1.94	.389	.157	5088	1464	0.458	0.186	6024
	1150	1.30	.286	.106	5127	1464	0.320	0.122	6024
	850	.967	.228	.079	5146	1464	0.248	0.090	6024
1000:1	1750	1.75	.334	.134	4821	1464	0.416	0.167	6024
	1150	1.17	.244	.090	4861	1464	0.294	0.110	6024
	850	.870	.192	.067	4882	1464	0.230	0.081	6024
1200:1	1750	1.46	.327	.118	5117	1464	0.372	0.139	6024
	1150	.975	.241	.079	5146	1464	0.261	0.092	6024
	850	.725	.196	.059	5161	1464	0.203	0.068	6024
1500:1	1750	1.17	.287	.095	5134	1464	0.316	0.112	6024
	1150	.780	.216	.064	5158	1464	0.224	0.073	6024
	850	.580	.175	.048	5169	1464	0.175	0.045	4973
1800:1	1750	.972	.261	.079	5146	1464	0.318	0.093	6024
	1150	.650	.199	.053	5165	1464	0.225	0.061	6024
	850	.483	.161	.040	5175	1464	0.175	0.045	6024
2400:1	1750	.729	.206	.057	4892	1464	0.269	0.070	6058
	1150	.488	.156	.038	4909	1464	0.191	0.046	6058
	850	.363	.126	.028	4918	1464	0.148	0.034	6058
3000:1	1750	.583	.170	.043	4620	1464	0.244	0.056	6098
	1150	.390	.129	.029	4636	1464	0.173	0.037	6098
	850	.290	.105	.021	4644	1464	0.135	0.027	6098
3600:1	1750	.486	.143	.033	4300	1464	0.170	0.040	5173
	1150	.325	.109	.022	4314	1464	0.121	0.026	5173
	850	.242	.088	.017	4321	1464	0.094	0.019	5173

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Ratio	With Mobil SHC634 (Standard)						With Mobil PAG460 Lubricant		
	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque		Input HP	Output HP	Output Torque
<u>75:1</u>	1750	23.3	2.51	1.92	5199	2265	5.123	3.288	8881
	1150	15.6	2.10	1.55	6273	2265	3.766	2.381	9788
	850	11.6	1.77	1.27	6891	2265	2.949	1.843	10249
<u>100:1</u>	1750	17.5	2.51	1.85	6653	2265	4.598	2.704	9739
	1150	11.7	2.10	1.48	7995	2265	3.429	1.987	10889
	850	8.70	1.77	1.21	8759	2265	2.710	1.552	11506
<u>150:1</u>	1750	11.7	2.39	1.69	9153	2265	3.025	1.888	10198
	1150	7.80	1.80	1.22	9866	2265	2.206	1.350	11094
	850	5.80	1.41	.926	10058	2265	1.715	1.033	11486
<u>200:1</u>	1750	8.75	1.98	1.36	9776	2265	2.776	1.588	11438
	1150	5.85	1.42	.933	10053	2265	2.057	1.153	12636
	850	4.35	1.10	.704	10199	2265	1.609	0.887	13160
<u>250:1</u>	1750	7.00	1.61	1.06	9566	2265	2.326	1.330	11978
	1150	4.68	1.16	.729	9822	2265	1.726	0.968	13257
	850	3.48	.903	.550	9957	2265	1.351	0.745	13817
<u>300:1</u>	1750	5.83	1.44	.930	10053	2265	2.033	1.039	11231
	1150	3.90	1.03	.634	10244	2265	1.545	0.774	12727
	850	2.90	.797	.476	10343	2265	1.249	0.616	13699
<u>400:1</u>	1750	4.38	1.15	.708	10197	2265	1.715	0.836	12050
	1150	2.93	.824	.480	10340	2265	1.167	0.545	11948
	850	2.18	.640	.360	10416	2265	0.885	0.394	11690
<u>500:1</u>	1750	3.50	.967	.571	10283	2265	1.409	0.731	13160
	1150	2.34	.688	.386	10399	2265	0.966	0.480	13160
	850	1.74	.534	.289	10459	2265	0.737	0.355	13160
<u>600:1</u>	1750	2.92	.854	.478	10340	2265	1.202	0.586	12672
	1150	1.95	.612	.320	10438	2265	0.818	0.382	12565
	850	1.45	.477	.241	10489	2265	0.605	0.269	11979
<u>750:1</u>	1750	2.33	.742	.379	10245	2265	0.988	0.458	12371
	1150	1.56	.532	.257	10365	2265	0.677	0.301	12371
	850	1.16	.415	.192	10428	2265	0.517	0.222	12371
<u>900:1</u>	1750	1.94	.657	.318	10305	2265	0.853	0.382	12371
	1150	1.30	.475	.215	10406	2265	0.589	0.251	12371
	850	.967	.371	.160	10458	2265	0.451	0.185	12371
<u>1000:1</u>	1750	1.75	.607	.284	10211	2265	0.827	0.365	13160
	1150	1.17	.437	.192	10324	2265	0.583	0.240	13160
	850	.870	.341	.143	10383	2265	0.453	0.177	13160
<u>1200:1</u>	1750	1.46	.541	.240	10381	2265	0.690	0.286	12371
	1150	.975	.392	.162	10457	2265	0.481	0.188	12371
	850	.725	.310	.121	10496	2265	0.371	0.139	12371
<u>1500:1</u>	1750	1.17	.460	.193	10427	2265	0.580	0.229	12371
	1150	.780	.333	.130	10488	2265	0.409	0.150	12371
	850	.580	.267	.097	10519	2265	0.317	0.090	10007
<u>1800:1</u>	1750	.972	.420	.161	10457	2265	0.542	0.191	12371
	1150	.650	.311	.108	10508	2265	0.384	0.125	12371
	850	.483	.249	.081	10535	2265	0.300	0.093	12371
<u>2400:1</u>	1750	.729	.346	.120	10411	2265	0.497	0.152	13114
	1150	.488	.258	.081	10459	2265	0.351	0.100	13114
	850	.363	.206	.060	10484	2265	0.274	0.074	13114
<u>3000:1</u>	1750	.583	.282	.091	9805	2265	0.409	0.116	12507
	1150	.390	.211	.061	9848	2265	0.289	0.076	12507
	850	.290	.169	.045	9870	2265	0.226	0.056	12507
<u>3600:1</u>	1750	.486	.235	.070	9103	2265	0.334	0.088	11469
	1150	.325	.177	.047	9141	2265	0.236	0.058	11469
	850	.242	.142	.035	9161	2265	0.185	0.043	11469

The use of PAG oils involves strict maintenance guidelines and full understanding of the limitations of the lubrication in real world use. It is the customer's responsibility to inform the end-user of the use and limitations of PAG oils in 2000RA right angle units including the following:

PAG oil is not compatible with PAO synthetics or standard mineral oils – mixing causes immediate breakdown of performance leading to premature failure. Contaminated units must be thoroughly flushed. Consult factory or Mobil for approved flushing procedures.

PAG oil is hygroscopic and does not separate from water. Water does not drop to the bottom of reservoirs but stays in solution causing immediate breakdown of performance. Units must be sealed for life or have a fully sealed pop-up breather.

PAG oil will soften paint and is not compatible with natural rubbers or standard O-ring materials – Bladder must be removed, and O-rings changed to Viton. (2000RA Reducer Seals are supplied, as standard, with Viton material)

Selection Table Size 525/2525 Double Reduction

A24

Ratio	With Mobil SHC634 (Standard)						With Mobil PAG460 Lubricant		
	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque		Input HP	Output HP	Output Torque
75:1	1750	23.3	4.80	3.70	10325	2752	8.909	5.586	15088
	1150	15.6	4.05	3.00	12505	2752	6.736	4.161	17102
	850	11.6	3.47	2.49	13984	2752	5.352	3.268	18172
100:1	1750	17.5	4.80	3.51	13053	2752	7.540	4.433	15963
	1150	11.7	4.05	2.83	15747	2752	5.705	3.323	18211
	850	8.70	3.47	2.33	17474	2752	4.541	2.614	19381
150:1	1750	11.7	4.27	2.98	16089	2752	5.464	3.361	18155
	1150	7.80	3.32	2.21	17819	2752	4.080	2.462	20240
	850	5.80	2.63	1.69	18346	2752	3.200	1.902	21152
200:1	1750	8.75	3.63	2.44	17573	2752	4.635	2.673	19252
	1150	5.85	2.66	1.70	18332	2752	3.471	1.964	21525
	850	4.35	2.09	1.29	18738	2752	2.725	1.519	22519
250:1	1750	7.00	3.10	1.96	17654	2752	3.962	2.285	20571
	1150	4.68	2.28	1.37	18413	2752	2.982	1.687	23114
	850	3.48	1.81	1.04	18818	2752	2.346	1.307	24227
300:1	1750	5.83	2.66	1.70	18332	2752	3.691	1.846	19942
	1150	3.90	1.93	1.17	18861	2752	2.884	1.415	23263
	850	2.90	1.51	.881	19138	2752	2.363	1.142	25396
400:1	1750	4.38	2.16	1.30	18731	2752	2.884	1.378	19856
	1150	2.93	1.56	.888	19131	2752	1.959	0.896	19642
	850	2.18	1.22	.668	19342	2752	1.485	0.645	19139
500:1	1750	3.50	1.83	1.05	18972	2752	2.376	1.251	22519
	1150	2.34	1.32	.716	19295	2752	1.618	0.822	22519
	850	1.74	1.03	.537	19465	2752	1.228	0.607	22519
600:1	1750	2.92	1.60	.885	19131	2752	2.248	1.074	23217
	1150	1.95	1.15	.600	19405	2752	1.527	0.698	22968
	850	1.45	.897	.450	19547	2752	1.129	0.490	21818
750:1	1750	2.33	1.38	.711	19211	2752	1.852	0.845	22836
	1150	1.56	.998	.482	19485	2752	1.261	0.556	22836
	850	1.16	.782	.361	19627	2752	0.957	0.411	22836
900:1	1750	1.94	1.24	.593	19222	2752	1.572	0.705	22836
	1150	1.30	.895	.402	19495	2752	1.076	0.463	22836
	850	.967	.703	.301	19637	2752	0.821	0.342	22836
1000:1	1750	1.75	1.15	.539	19418	2752	1.378	0.869	31280
	1150	1.17	.832	.364	19624	27252	0.961	0.411	22519
	850	.870	.654	.272	19729	2752	0.742	0.304	22519
1200:1	1750	1.46	1.03	.450	19428	2752	1.275	0.528	22836
	1150	.975	.748	.304	19633	2752	0.886	0.347	22836
	850	.725	.589	.227	19738	2752	0.684	0.257	22836
1500:1	1750	1.17	.866	.363	19624	2752	1.074	0.423	22836
	1150	.780	.632	.245	19763	2752	0.749	0.278	22836
	850	.580	.505	.183	19835	2752	0.578	0.171	19048
1800:1	1750	.972	.779	.303	19633	2752	0.991	0.352	22836
	1150	.650	.570	.204	19772	2752	0.698	0.231	22836
	850	.483	.456	.152	19844	2752	0.543	0.171	22836
2400:1	1750	.729	.662	.225	19401	2752	0.806	0.258	22281
	1150	.488	.486	.151	19538	2752	0.567	0.169	22281
	850	.363	.391	.113	19608	2752	0.442	0.125	22281
3000:1	1750	.583	.579	.174	18822	2752	0.694	0.200	21640
	1150	.390	.427	.117	18955	2752	0.489	0.132	21640
	850	.290	.345	.088	19024	2752	0.381	0.097	21640
3600:1	1750	.486	.510	.138	17865	2752	0.539	0.149	19365
	1150	.325	.377	.093	17991	2752	0.379	0.098	19365
	850	.242	.305	.069	18056	2752	0.295	0.073	19365

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PAG oil will soften paint and is not compatible with natural rubbers or standard O-ring materials – Bladder must be removed, and O-rings changed to Viton. (2000RA Reducer Seals are supplied, as standard, with Viton material)

Ratio	With Mobil SHC634 (Standard)						With Mobil PAG460 Lubricant		
	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque		Input HP	Output HP	Output Torque
10:1	1750	175.0	1.12	.964	347	517	1.299	1.169	421
	1170	117.0	.834	.705	380	517	0.947	0.844	463
	870	87.0	.659	.549	398	517	0.742	0.634	470
15:1	1750	116.7	.854	.709	383	517	1.004	0.870	470
	1170	78.0	.638	.517	418	517	0.728	0.616	506
	870	58.0	.506	.402	437	517	0.555	0.465	518
20:1	1750	87.5	.708	.564	406	517	0.786	0.666	480
	1170	58.5	.532	.410	442	517	0.564	0.472	518
	870	43.5	.423	.320	463	517	0.438	0.350	519
25:1	1750	70.0	.548	.454	409	517	0.639	0.546	492
	1170	46.8	.388	.315	424	517	0.445	0.363	497
	870	34.8	.298	.239	433	517	0.338	0.276	511
30:1	1750	58.3	.546	.400	432	517	0.632	0.500	541
	1170	39.0	.413	.291	470	517	0.461	0.358	588
	870	29.0	.330	.226	492	517	0.362	0.261	581
40:1	1750	43.8	.426	.321	462	517	0.449	0.358	516
	1170	29.3	.306	.224	483	517	0.320	0.241	528
	870	21.8	.238	.170	493	517	0.242	0.182	539
50:1	1750	38.9	.415	.291	471	517	0.466	0.362	587
	1170	26.0	.305	.205	498	517	0.334	0.241	595
	870	19.3	.240	.157	513	517	0.265	0.191	638
60:1	1750	35.0	.353	.263	474	517	0.375	0.299	539
	1170	23.4	.252	.182	491	517	0.260	0.195	535
	870	17.4	.194	.138	500	517	0.197	0.148	549
75:1	1750	29.2	.333	.227	491	517	0.370	0.267	577
	1170	19.5	.241	.159	513	517	0.269	0.179	589
	870	14.5	.188	.121	524	517	0.204	0.136	604
80:1	1750	23.3	.277	.175	505	517	0.312	0.225	609
	1170	15.6	.199	.129	522	517	0.219	0.146	600
	870	11.6	.155	.098	531	517	0.167	0.111	619
100:1	1750	21.9	.277	.175	505	517	0.330	0.224	646
	1170	14.6	.202	.122	526	517	0.239	0.150	656
	870	10.9	.158	.093	538	517	0.181	0.114	674
125:1	1750	17.5	.232	.144	518	517	0.268	0.171	615
	1170	11.7	.167	.099	535	517	0.194	0.112	616
	870	8.7	.130	.075	544	517	0.147	0.086	634
150:1	1750	14.0	.200	.115	519	517	0.226	0.144	648
	1170	9.4	.145	.080	536	517	0.158	0.092	629
	870	7.0	.113	.060	545	517	0.121	0.070	651
200:1	1750	11.7	.185	.096	516	517	0.207	0.118	639
	1170	7.8	.135	.066	533	517	0.147	0.074	612
	870	5.8	.106	.050	543	517	0.113	0.057	638
250:1	1750	8.75	.156	.071	514	517	0.181	0.094	675
	1170	5.85	.114	.049	531	517	0.129	0.059	652
	870	4.35	.090	.037	540	517	0.099	0.046	679
300:1	1750	7.00	.134	.055	498	517	0.146	0.069	623
	1170	4.68	.099	.038	514	517	0.104	0.043	596
	870	3.48	.078	.029	523	517	0.080	0.034	623

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Selection Table Size 175/2175 Helical Worm

A26

Ratio	With Mobil SHC634 (Standard)						With Mobil PAG460 Lubricant		
	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque		Input HP	Output HP	Output Torque
10:1	1750	175.0	1.18	1.03	372	473	1.694	1.529	551
	1170	117.0	.882	.759	409	473	1.242	1.111	609
	870	87.0	.697	.592	429	473	0.975	0.840	622
15:1	1750	116.7	1.08	.940	508	473	1.264	1.119	605
	1170	78.0	.792	.675	545	473	0.915	0.780	641
	870	58.0	.618	.521	566	473	0.698	0.584	650
20:1	1750	87.5	.867	.739	532	473	1.062	0.926	667
	1170	58.5	.628	.525	566	473	0.771	0.664	727
	870	43.5	.489	.404	585	473	0.603	0.493	731
25:1	1750	70.0	.579	.490	441	473	0.842	0.725	652
	1170	46.8	.409	.340	458	473	0.588	0.484	663
	870	34.8	.314	.257	466	473	0.447	0.368	682
30:1	1750	58.3	.669	.535	578	473	0.809	0.655	708
	1170	39.0	.491	.382	617	473	0.591	0.471	774
	870	29.0	.385	.294	639	473	0.464	0.346	769
40:1	1750	43.8	.492	.405	584	473	0.617	0.504	727
	1170	29.3	.353	.280	603	473	0.445	0.341	749
	870	21.8	.264	.211	612	473	0.336	0.258	766
50:1	1750	38.9	.492	.381	618	473	0.598	0.476	772
	1170	26.0	.353	.266	645	473	0.429	0.319	788
	870	19.3	.274	.203	660	473	0.340	0.253	845
60:1	1750	35.0	.403	.330	595	473	0.519	0.424	764
	1170	23.4	.281	.227	610	473	0.362	0.278	761
	870	17.4	.214	.171	618	473	0.275	0.211	783
75:1	1750	29.2	.388	.295	638	473	0.475	0.354	764
	1170	19.5	.275	.204	660	473	0.344	0.238	781
	870	14.5	.212	.154	671	473	0.261	0.180	802
80:1	1750	23.3	.319	.241	651	473	0.400	0.298	806
	1170	15.6	.225	.166	669	473	0.280	0.194	796
	870	11.6	.172	.125	678	473	0.214	0.148	821
100:1	1750	21.9	.300	.220	634	473	0.415	0.264	760
	1170	14.6	.212	.152	653	473	0.304	0.177	776
	870	10.9	.163	.114	663	473	0.231	0.135	798
125:1	1750	17.5	.246	.179	646	473	0.356	0.234	844
	1170	11.7	.173	.123	661	473	0.262	0.156	855
	870	8.7	.133	.092	669	473	0.200	0.119	882
150:1	1750	14.0	.200	.140	629	473	0.303	0.199	898
	1170	9.4	.141	.095	642	473	0.215	0.128	874
	870	7.0	.108	.072	650	473	0.165	0.098	908
200:1	1750	11.7	.198	.124	667	473	0.261	0.157	851
	1170	7.8	.141	.085	684	473	0.185	0.099	817
	870	5.8	.109	.064	694	473	0.143	0.077	852
250:1	1750	8.75	.151	.089	641	473	0.226	0.123	886
	1170	5.85	.108	.061	656	473	0.162	0.077	846
	870	4.35	.083	.046	664	473	0.125	0.060	885
300:1	1750	7.00	.122	.067	603	473	0.194	0.097	875
	1170	4.68	.087	.046	616	473	0.140	0.062	844
	870	3.48	.067	.034	623	473	0.109	0.048	886

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PAG oil will soften paint and is not compatible with natural rubbers or standard O-ring materials – Bladder must be removed, and O-rings changed to Viton. (2000RA Reducer Seals are supplied, as standard, with Viton material)

Ratio	With Mobil SHC634 (Standard)						With Mobil PAG460 Lubricant		
	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque		Input HP	Output HP	Output Torque
10:1	1750	175.0	1.78	1.54	574	494	1.800	1.635	589
	1170	117.0	1.20	1.01	564	494	1.210	1.090	597
	870	87.0	.895	.746	558	494	0.903	0.786	583
15:1	1750	116.7	1.61	1.41	762	494	1.800	1.603	866
	1170	78.0	1.19	1.03	829	494	1.210	1.065	875
	870	58.0	.895	.760	826	494	0.903	0.766	852
20:1	1750	87.5	1.36	1.18	847	494	1.604	1.404	1011
	1170	58.5	.998	.845	910	494	1.159	1.003	1100
	870	43.5	.780	.652	945	494	0.903	0.749	1111
25:1	1750	70.0	.907	.751	699	494	1.000	0.870	784
	1170	46.8	.643	.525	730	494	0.658	0.550	753
	870	34.8	.495	.399	746	494	0.486	0.406	752
30:1	1750	58.3	1.00	.843	911	494	1.431	1.198	1294
	1170	39.0	.714	.591	955	494	1.035	0.815	1339
	870	29.0	.552	.451	979	494	0.823	0.648	1441
40:1	1750	43.8	.786	.655	944	494	0.925	0.767	1104
	1170	29.3	.554	.454	979	494	0.663	0.524	1149
	870	21.8	.425	.344	997	494	0.500	0.395	1173
50:1	1750	38.9	.749	.600	973	494	0.920	0.770	1247
	1170	26.0	.537	.420	1018	494	0.659	0.519	1279
	870	19.3	.415	.320	1043	494	0.522	0.411	1370
60:1	1750	35.0	.646	.536	965	494	0.776	0.643	1158
	1170	23.4	.452	.369	993	494	0.538	0.425	1166
	870	17.4	.345	.278	1008	494	0.408	0.323	1196
75:1	1750	29.2	.590	.466	1007	494	0.729	0.574	1241
	1170	19.5	.417	.322	1042	494	0.529	0.390	1282
	870	14.5	.321	.244	1061	494	0.401	0.295	1314
80:1	1750	23.3	.485	.381	1028	494	0.615	0.484	1308
	1170	15.6	.341	.261	1056	494	0.430	0.317	1305
	870	11.6	.261	.197	1072	494	0.328	0.242	1345
100:1	1750	21.9	.476	.356	1026	494	0.604	0.440	1267
	1170	14.6	.338	.246	1061	494	0.438	0.295	1295
	870	10.9	.261	.186	1080	494	0.333	0.224	1329
125:1	1750	17.5	.393	.291	1047	494	0.525	0.361	1299
	1170	11.7	.277	.200	1076	494	0.384	0.241	1320
	870	8.7	.213	.151	1091	494	0.292	0.183	1359
150:1	1750	14.0	.311	.223	1004	494	0.445	0.306	1377
	1170	9.4	.219	.153	1029	494	0.314	0.197	1348
	870	7.0	.168	.115	1042	494	0.240	0.151	1397
200:1	1750	11.7	.293	.195	1053	494	0.390	0.251	1359
	1170	7.8	.208	.134	1081	494	0.277	0.160	1311
	870	5.8	.161	.101	1096	494	0.213	0.123	1364
250:1	1750	8.75	.240	.145	1041	494	0.318	0.185	1335
	1170	5.85	.171	.099	1069	494	0.227	0.116	1273
	870	4.35	.133	.075	1084	494	0.175	0.090	1328
300:1	1750	7.00	.188	.107	964	494	0.279	0.147	1326
	1170	4.68	.134	.073	987	494	0.200	0.092	1265
	870	3.48	.104	.055	1000	494	0.155	0.071	1324

The use of PAG oils involves strict maintenance guidelines and full understanding of the limitations of the lubrication in real world use. It is the customer's responsibility to inform the end-user of the use and limitations of PAG oils in 2000RA right angle units including the following:

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PAG oil is hygroscopic and does not separate from water. Water does not drop to the bottom of reservoirs but stays in solution causing immediate breakdown of performance. Units must be sealed for life or have a fully sealed pop-up breather.

PAG oil will soften paint and is not compatible with natural rubbers or standard O-ring materials – Bladder must be removed, and O-rings changed to Viton. (2000RA Reducer Seals are supplied, as standard, with Viton material)

Selection Table Size 238/2238 Helical Worm

A28

Ratio	With Mobil SHC634 (Standard)						With Mobil PAG460 Lubricant		
	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque		Input HP	Output HP	Output Torque
10:1	1750	175.0	2.92	2.60	935	1107	3.568	3.256	1173
	1170	117.0	2.23	1.96	1054	1107	2.700	2.442	1338
	870	87.0	1.79	1.55	1121	1107	2.155	1.877	1392
15:1	1750	116.7	2.46	2.16	1166	1107	2.636	2.373	1282
	1170	78.0	1.85	1.60	1289	1107	1.953	1.721	1415
	870	58.0	1.47	1.25	1357	1107	1.526	1.312	1459
20:1	1750	87.5	2.11	1.82	1309	1107	2.486	2.187	1575
	1170	58.5	1.56	1.32	1426	1107	1.830	1.591	1744
	870	43.5	1.23	1.03	1491	1107	1.441	1.195	1773
25:1	1750	70.0	1.49	1.29	1160	1107	1.882	1.640	1476
	1170	46.8	1.06	.904	1217	1107	1.334	1.111	1522
	870	34.8	.821	.689	1247	1107	1.020	0.849	1574
30:1	1750	58.3	1.52	1.32	1427	1107	1.976	1.650	1783
	1170	39.0	1.10	.935	1511	1107	1.407	1.105	1818
	870	29.0	.853	.716	1556	1107	1.109	0.871	1937
40:1	1750	43.8	1.23	1.03	1490	1107	1.473	1.222	1761
	1170	29.3	.872	.722	1555	1107	1.073	0.844	1850
	870	21.8	.672	.549	1590	1107	0.813	0.639	1896
50:1	1750	38.9	1.14	.941	1525	1107	1.413	1.180	1912
	1170	26.0	.826	.665	1611	1107	1.022	0.803	1980
	870	19.3	.643	.508	1657	1107	0.815	0.640	2136
60:1	1750	35.0	1.02	.849	1529	1107	1.246	1.034	1862
	1170	23.4	.720	.587	1582	1107	0.874	0.687	1882
	870	17.4	.552	.445	1610	1107	0.665	0.523	1940
75:1	1750	29.2	.922	.735	1589	1107	1.128	0.886	1914
	1170	19.5	.658	.512	1656	1107	0.826	0.605	1988
	870	14.5	.508	.389	1691	1107	0.627	0.459	2042
80:1	1750	23.3	.769	.603	1629	1107	0.957	0.752	2030
	1170	15.6	.544	.417	1684	1107	0.674	0.493	2026
	870	11.6	.418	.315	1712	1107	0.515	0.377	2095
100:1	1750	21.9	.738	.559	1611	1107	0.971	0.702	2023
	1170	14.6	.528	.389	1677	1107	0.717	0.477	2091
	870	10.9	.409	.295	1712	1107	0.546	0.363	2155
125:1	1750	17.5	.617	.458	1650	1107	0.827	0.566	2037
	1170	11.7	.438	.316	1704	1107	0.613	0.381	2086
	870	8.7	.338	.239	1733	1107	0.468	0.291	2155
150:1	1750	14.0	.509	.361	1627	1107	0.706	0.483	2175
	1170	9.4	.362	.249	1678	1107	0.502	0.312	2135
	870	7.0	.279	.188	1704	1107	0.386	0.240	2220
200:1	1750	11.7	.465	.309	1669	1107	0.612	0.395	2132
	1170	7.8	.333	.213	1724	1107	0.437	0.253	2079
	870	5.8	.258	.161	1752	1107	0.337	0.195	2170
250:1	1750	8.75	.376	.228	1640	1107	0.519	0.298	2145
	1170	5.85	.271	.157	1693	1107	0.373	0.189	2076
	870	4.35	.211	.119	1721	1107	0.289	0.147	2176
300:1	1750	7.00	.308	.174	1562	1107	0.423	0.222	2003
	1170	4.68	.223	.120	1610	1107	0.306	0.139	1904
	870	3.48	.174	.090	1635	1107	0.238	0.108	2003

The use of PAG oils involves strict maintenance guidelines and full understanding of the limitations of the lubrication in real world use. It is the customer's responsibility to inform the end-user of the use and limitations of PAG oils in 2000RA right angle units including the following:

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PAG oil is hygroscopic and does not separate from water. Water does not drop to the bottom of reservoirs but stays in solution causing immediate breakdown of performance. Units must be sealed for life or have a fully sealed pop-up breather.

PAG oil will soften paint and is not compatible with natural rubbers or standard O-ring materials – Bladder must be removed, and O-rings changed to Viton. (2000RA Reducer Seals are supplied, as standard, with Viton material)

Ratio	With Mobil SHC634 (Standard)						With Mobil PAG460 Lubricant		
	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque		Input HP	Output HP	Output Torque
10:1	1750	175.0	3.57	3.30	1187	1039	4.801	4.385	1579
	1170	117.0	2.75	2.50	1349	1039	3.688	3.339	1830
	870	87.0	2.21	2.21	1441	1039	2.967	2.588	1919
15:1	1750	116.7	3.09	2.73	1474	1039	3.311	2.930	1583
	1170	78.0	2.34	2.03	1641	1039	2.461	2.148	1766
	870	58.0	1.86	1.60	1734	1039	1.936	1.660	1846
20:1	1750	87.5	2.73	2.37	1707	1039	3.208	2.837	2043
	1170	58.5	2.04	1.74	1875	1039	2.369	2.071	2270
	870	43.5	1.62	1.36	1968	1039	1.867	1.562	2317
25:1	1750	70.0	1.86	1.66	1495	1039	2.607	2.274	2047
	1170	46.8	1.33	1.17	1574	1039	1.861	1.547	2120
	870	34.8	1.02	.892	1616	1039	1.428	1.187	2201
30:1	1750	58.3	1.99	1.74	1876	1039	2.490	2.183	2359
	1170	39.0	1.44	1.24	1997	1039	1.790	1.491	2451
	870	29.0	1.12	.949	2062	1039	1.421	1.184	2633
40:1	1750	43.8	1.61	1.36	1966	1039	1.909	1.597	2301
	1170	29.3	1.15	.957	2061	1039	1.392	1.107	2427
	870	21.8	.886	.729	2111	1039	1.055	0.839	2487
50:1	1750	38.9	1.40	1.19	1925	1039	1.692	1.483	2404
	1170	26.0	1.01	.836	2026	1039	1.211	1.009	2488
	870	19.3	.780	.638	2080	1039	0.958	0.798	2663
60:1	1750	35.0	1.34	1.12	2023	1039	1.616	1.352	2435
	1170	23.4	.949	.780	2100	1039	1.133	0.901	2470
	870	17.4	.728	.591	2141	1039	0.863	0.686	2545
75:1	1750	29.2	1.18	.948	2048	1039	1.341	1.117	2414
	1170	19.5	.856	.669	2162	1039	0.972	0.764	2511
	870	14.5	.667	.511	2223	1039	0.735	0.578	2571
80:1	1750	23.3	.936	.758	2047	1039	1.131	0.942	2544
	1170	15.6	.658	.523	2111	1039	0.790	0.621	2553
	870	11.6	.504	.395	2145	1039	0.602	0.473	2629
100:1	1750	21.9	.954	.740	2133	1039	1.246	0.923	2660
	1170	14.6	.682	.516	2222	1039	0.920	0.630	2761
	870	10.9	.528	.392	2269	1039	0.700	0.480	2845
125:1	1750	17.5	.797	.607	2186	1039	0.994	0.712	2563
	1170	11.7	.565	.419	2258	1039	0.727	0.480	2631
	870	8.7	.435	.317	2297	1039	0.553	0.365	2705
150:1	1750	14.0	.649	.475	2139	1039	0.843	0.603	2716
	1170	9.4	.460	.328	2206	1039	0.594	0.392	2684
	870	7.0	.354	.248	2241	1039	0.454	0.300	2776
200:1	1750	11.7	.551	.389	2100	1039	0.720	0.495	2675
	1170	7.8	.391	.268	2163	1039	0.510	0.320	2628
	870	5.8	.302	.202	2196	1039	0.391	0.245	2728
250:1	1750	8.75	.478	.302	2174	1039	0.660	0.393	2831
	1170	5.85	.343	.208	2244	1039	0.475	0.250	2737
	870	4.35	.267	.157	2281	1039	0.368	0.193	2868
300:1	1750	7.00	.385	.228	2054	1039	0.509	0.286	2579
	1170	4.68	.278	.157	2118	1039	0.364	0.182	2494
	870	3.48	.216	.119	2151	1039	0.281	0.141	2605

The use of PAG oils involves strict maintenance guidelines and full understanding of the limitations of the lubrication in real world use. It is the customer's responsibility to inform the end-user of the use and limitations of PAG oils in 2000RA right angle units including the following:

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PAG oil will soften paint and is not compatible with natural rubbers or standard O-ring materials – Bladder must be removed, and O-rings changed to Viton. (2000RA Reducer Seals are supplied, as standard, with Viton material)

Selection Table Size 300/2300 Helical Worm

A30

Ratio	With Mobil SHC634 (Standard)						With Mobil PAG460 Lubricant		
	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque		Input HP	Output HP	Output Torque
10:1	1750	175.0	5.08	4.57	1645	1518	6.347	5.859	2110
	1170	117.0	4.01	3.55	1911	1518	4.909	4.497	2465
	870	87.0	3.25	2.85	2065	1518	3.963	3.507	2600
15:1	1750	116.7	4.56	4.03	2180	1518	4.732	4.247	2294
	1170	78.0	3.49	3.04	2458	1518	3.641	3.184	2618
	870	58.0	2.80	2.41	2615	1518	2.925	2.505	2786
20:1	1750	87.5	3.97	3.45	2488	1518	4.541	4.034	2906
	1170	58.5	3.01	2.57	2769	1518	3.413	2.998	3286
	870	43.5	2.40	2.02	2927	1518	2.717	2.281	3382
25:1	1750	70.0	2.75	2.40	2157	1518	3.489	3.088	2781
	1170	46.8	1.98	1.70	2290	1518	2.497	2.115	2898
	870	34.8	1.54	1.30	2362	1518	1.918	1.624	3010
30:1	1750	58.3	2.93	2.56	2771	1518	3.681	3.103	3352
	1170	39.0	2.15	1.84	2976	1518	2.726	2.183	3589
	870	29.0	1.68	1.42	3088	1518	2.204	1.765	3926
40:1	1750	43.8	2.39	2.03	2924	1518	2.775	2.329	3356
	1170	29.3	1.72	1.43	3085	1518	2.054	1.632	3578
	870	21.8	1.33	1.09	3171	1518	1.561	1.241	3680
50:1	1750	38.9	2.23	1.87	3026	1518	2.566	2.163	3506
	1170	26.0	1.63	1.33	3234	1518	1.854	1.485	3662
	870	19.3	1.28	1.03	3347	1518	1.477	1.183	3946
60:1	1750	35.0	2.00	1.68	3020	1518	2.368	1.988	3580
	1170	23.4	1.42	1.17	3152	1518	1.676	1.332	3650
	870	17.4	1.10	.890	3223	1518	1.282	1.019	3778
75:1	1750	29.2	1.82	1.47	3181	1518	2.047	1.639	3542
	1170	19.5	1.31	1.03	3344	1518	1.497	1.127	3706
	870	14.5	1.02	.790	3432	1518	1.136	0.855	3804
80:1	1750	23.3	1.52	1.21	3279	1518	1.735	1.390	3754
	1170	15.6	1.09	.845	3412	1518	1.220	0.919	3775
	870	11.6	.838	.641	3483	1518	0.931	0.701	3899
100:1	1750	21.9	1.43	1.10	3186	1518	1.695	1.278	3681
	1170	14.6	1.04	.778	3351	1518	1.248	0.871	3819
	870	10.9	.808	.594	3440	1518	0.950	0.663	3932
125:1	1750	17.5	1.21	.912	3284	1518	1.350	0.992	3571
	1170	11.7	.864	.635	3420	1518	0.983	0.671	3675
	870	8.7	.669	.482	3492	1518	0.746	0.509	3772
150:1	1750	14.0	1.03	.746	3359	1518	1.142	0.838	3774
	1170	9.4	.740	.519	3493	1518	0.801	0.546	3744
	870	7.0	.574	.394	3564	1518	0.611	0.417	3865
200:1	1750	11.7	.903	.622	3362	1518	1.076	0.726	3922
	1170	7.8	.651	.433	3495	1518	0.766	0.470	3864
	870	5.8	.506	.328	3566	1518	0.589	0.362	4023
250:1	1750	8.75	.728	.453	3266	1518	0.860	0.532	3834
	1170	5.85	.530	.315	3398	1518	0.617	0.340	3724
	870	4.35	.415	.239	3469	1518	0.477	0.263	3896
300:1	1750	7.00	.619	.358	3226	1518	0.684	0.398	3581
	1170	4.68	.452	.249	3352	1518	0.487	0.252	3453
	870	3.48	.355	.189	3420	1518	0.375	0.194	3600

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PAG oil is hygroscopic and does not separate from water. Water does not drop to the bottom of reservoirs but stays in solution causing immediate breakdown of performance. Units must be sealed for life or have a fully sealed pop-up breather.

PAG oil will soften paint and is not compatible with natural rubbers or standard O-ring materials – Bladder must be removed, and O-rings changed to Viton. (2000RA Reducer Seals are supplied, as standard, with Viton material)

Ratio	With Mobil SHC634 (Standard)						With Mobil PAG460 Lubricant		
	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque		Input HP	Output HP	Output Torque
10:1	1750	175.0	6.99	6.30	2343	1464	8.547	7.914	2850
	1170	117.0	5.55	4.93	2743	1464	6.685	6.143	3366
	870	87.0	4.53	3.98	2976	1464	5.428	4.823	3576
15:1	1750	116.7	5.92	5.26	2839	1464	6.282	5.755	3109
	1170	78.0	4.61	4.03	3256	1464	4.827	4.331	3560
	870	58.0	3.73	3.22	3495	1464	3.864	3.274	3641
20:1	1750	87.5	5.19	4.56	3287	1464	5.869	5.231	3768
	1170	58.5	3.95	3.41	3678	1464	4.416	3.895	4270
	870	43.5	3.16	2.69	3897	1464	3.515	2.972	4407
25:1	1750	70.0	3.83	3.35	3117	1464	4.800	4.264	3839
	1170	46.8	2.77	2.39	3320	1464	3.452	2.932	4018
	870	34.8	2.15	1.83	3430	1464	2.656	2.256	4183
30:1	1750	58.3	3.85	3.41	3680	1464	4.880	4.150	4484
	1170	39.0	2.83	2.45	3966	1464	3.596	2.891	4753
	870	29.0	2.21	1.90	4122	1464	2.904	2.335	5193
40:1	1750	43.8	3.14	2.70	3894	1464	3.590	3.036	4373
	1170	29.3	2.26	1.91	4118	1464	2.658	2.133	4676
	870	21.8	1.75	1.46	4240	1464	2.021	1.621	4808
50:1	1750	38.9	2.97	2.50	4044	1464	3.465	2.946	4775
	1170	26.0	2.19	1.80	4365	1464	2.542	2.044	5040
	870	19.3	1.73	1.39	4541	1464	2.048	1.646	5494
60:1	1750	35.0	2.64	2.24	4028	1464	3.065	2.591	4666
	1170	23.4	1.88	1.56	4213	1464	2.169	1.741	4770
	870	17.4	1.45	1.19	4312	1464	1.659	1.331	4935
75:1	1750	29.2	2.44	1.98	4284	1464	2.792	2.245	4850
	1170	19.5	1.77	1.40	4536	1464	2.076	1.559	5125
	870	14.5	1.38	1.08	4673	1464	1.581	1.187	5283
80:1	1750	23.3	2.06	1.64	4434	1464	2.389	1.920	5186
	1170	15.6	1.47	1.15	4642	1464	1.697	1.274	5237
	870	11.6	1.14	.875	4754	1464	1.301	0.977	5434
100:1	1750	21.9	1.89	1.47	4247	1464	2.374	1.805	5200
	1170	14.6	1.37	1.04	4477	1464	1.776	1.243	5448
	870	10.9	1.07	.794	4601	1464	1.357	0.950	5632
125:1	1750	17.5	1.59	1.22	4385	1464	2.047	1.463	5270
	1170	11.7	1.14	.849	4574	1464	1.553	1.004	5502
	870	8.7	.882	.645	4675	1464	1.192	0.771	5716
150:1	1750	14.0	1.30	.958	4312	1464	1.771	1.266	5699
	1170	9.4	.933	.667	4488	1464	1.276	0.825	5654
	870	7.0	.724	.506	4582	1464	0.988	0.639	5922
200:1	1750	11.7	1.23	.842	4547	1464	1.507	1.028	5552
	1170	7.8	.895	.589	4755	1464	1.085	0.666	5472
	870	5.8	.700	.448	4867	1464	0.840	0.515	5731
250:1	1750	8.75	.951	.606	4361	1464	1.244	0.772	5563
	1170	5.85	.692	.422	4546	1464	0.903	0.494	5414
	870	4.35	.542	.321	4644	1464	0.702	0.384	5698
300:1	1750	7.00	.772	.460	4141	1464	1.089	0.614	5527
	1170	4.68	.563	.320	4308	1464	0.800	0.388	5317
	870	3.48	.442	.243	4398	1464	0.627	0.304	5640

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PAG oil is hygroscopic and does not separate from water. Water does not drop to the bottom of reservoirs but stays in solution causing immediate breakdown of performance. Units must be sealed for life or have a fully sealed pop-up breather.

PAG oil will soften paint and is not compatible with natural rubbers or standard O-ring materials – Bladder must be removed, and O-rings changed to Viton. (2000RA Reducer Seals are supplied, as standard, with Viton material)

Selection Table Size 425/2425 Helical Worm

A32

Ratio	With Mobil SHC634 (Standard)						With Mobil PAG460 Lubricant		
	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque		Input HP	Output HP	Output Torque
10:1	1750	175.0	11.9	10.8	4036	2265	13.086	12.182	4387
	1170	117.0	8.91	7.99	4449	2265	10.784	9.965	5462
	870	87.0	6.63	5.88	4402	2265	9.051	8.083	5993
15:1	1750	116.7	10.8	9.74	5263	2265	11.450	10.560	5705
	1170	78.0	8.75	7.75	6261	2265	9.206	8.442	6940
	870	58.0	6.63	5.80	6303	2265	7.646	6.806	7570
20:1	1750	87.5	9.83	8.74	6295	2265	10.921	9.931	7153
	1170	58.5	7.75	6.78	7302	2265	8.690	7.818	8569
	870	43.5	6.31	5.44	7884	2265	7.130	6.123	9080
25:1	1750	70.0	6.11	5.39	5017	2265	6.100	5.448	4905
	1170	46.8	4.08	3.55	4938	2265	4.306	3.666	5022
	870	34.8	3.04	2.61	4881	2265	3.022	2.572	4768
30:1	1750	58.3	7.71	6.76	7308	2265	9.293	8.099	8750
	1170	39.0	5.79	4.99	8068	2265	7.212	5.931	9752
	870	29.0	4.59	3.91	8491	2265	6.027	4.957	11026
40:1	1750	43.8	6.31	5.47	7874	2265	7.260	6.235	8982
	1170	29.3	4.62	3.94	8480	2265	5.614	4.534	9939
	870	21.8	3.62	3.04	8812	2265	4.312	3.482	10329
50:1	1750	38.9	5.66	4.75	7691	2265	6.403	5.580	9044
	1170	26.0	4.28	3.50	8495	2265	4.847	3.986	9831
	870	19.3	3.41	2.74	8944	2265	3.990	3.282	10949
60:1	1750	35.0	5.34	4.57	8234	2265	6.100	5.238	9433
	1170	23.4	3.85	3.24	8738	2265	4.306	3.478	9529
	870	17.4	2.99	2.49	9010	2265	3.022	2.440	9047
75:1	1750	29.2	4.66	3.84	8290	2265	5.269	4.333	9362
	1170	19.5	3.44	2.76	8932	2265	4.043	3.090	10162
	870	14.5	2.71	2.14	9284	2265	3.104	2.373	10555
80:1	1750	23.3	3.95	3.21	8672	2265	4.588	3.773	10191
	1170	15.6	2.88	2.28	9205	2265	3.323	2.540	10440
	870	11.6	2.25	1.75	9494	2265	2.572	1.966	10932
100:1	1750	21.9	3.77	2.99	8613	2265	4.676	3.616	10419
	1170	14.6	2.78	2.14	9237	2265	3.661	2.564	11242
	870	10.9	2.19	1.65	9577	2265	2.832	1.984	11768
125:1	1750	17.5	3.20	2.49	8985	2265	3.914	2.880	10372
	1170	11.7	2.33	1.76	9501	2265	3.062	2.018	11061
	870	8.7	1.82	1.35	9780	2265	2.371	1.563	11590
150:1	1750	14.0	2.61	1.96	8833	2265	3.445	2.535	11411
	1170	9.4	1.90	1.38	9312	2265	2.532	1.669	11436
	870	7.0	1.49	1.06	9570	2265	1.980	1.305	12097
200:1	1750	11.7	2.35	1.65	8902	2265	2.872	2.023	10929
	1170	7.8	1.73	1.17	9436	2265	2.110	1.322	10864
	870	5.8	1.36	.895	9724	2265	1.651	1.034	11497
250:1	1750	8.75	1.90	1.24	8941	2265	2.489	1.576	11352
	1170	5.85	1.40	.877	9447	2265	1.863	1.013	11103
	870	4.35	1.11	.671	9720	2265	1.474	0.802	11886
300:1	1750	7.00	1.53	.943	8487	2265	2.036	1.207	10871
	1170	4.68	1.14	.664	8942	2265	1.527	0.769	10531
	870	3.48	.899	.507	9187	2265	1.210	0.609	11294

The use of PAG oils involves strict maintenance guidelines and full understanding of the limitations of the lubrication in real world use. It is the customer's responsibility to inform the end-user of the use and limitations of PAG oils in 2000RA right angle units including the following:

PAG oil is not compatible with PAO synthetics or standard mineral oils – mixing causes immediate breakdown of performance leading to premature failure. Contaminated units must be thoroughly flushed, Consult factory or Mobil for approved flushing procedures.

PAG oil is hygroscopic and does not separate from water. Water does not drop to the bottom of reservoirs but stays in solution causing immediate breakdown of performance. Units must be sealed for life or have a fully sealed pop-up breather.

PAG oil will soften paint and is not compatible with natural rubbers or standard O-ring materials – Bladder must be removed, and O-rings changed to Viton. (2000RA Reducer Seals are supplied, as standard, with Viton material)

Ratio	With Mobil SHC634 (Standard)						With Mobil PAG460 Lubricant		
	Input Rpm	Output Rpm	Input HP	Output HP	Output Torque		Input HP	Output HP	Output Torque
10:1	1750	175.0	13.3	12.5	4615	2752	13.340	12.440	4480
	1170	117.0	8.91	8.06	4450	2752	9.348	8.660	4746
	870	87.0	6.63	5.93	4405	2752	7.056	6.331	4694
15:1	1750	116.7	13.3	12.1	6513	2752	13.340	12.525	6766
	1170	78.0	8.91	7.94	6418	2752	9.348	8.628	7093
	870	58.0	6.63	5.84	6342	2752	7.056	6.293	6999
20:1	1750	87.5	13.3	11.8	8518	2752	13.340	12.186	8778
	1170	58.5	8.91	7.76	8364	2752	9.348	8.456	9268
	870	43.5	6.63	5.69	8242	2752	7.056	6.103	9050
25:1	1750	70.0	6.11	5.44	5022	2752	6.100	5.474	4928
	1170	46.8	4.08	3.58	4945	2752	6.100	5.219	7151
	870	34.8	3.04	2.63	4888	2752	3.022	2.585	4793
30:1	1750	58.3	11.2	9.54	10303	2752	12.638	11.104	11998
	1170	39.0	8.91	7.42	11990	2752	10.472	9.073	14917
	870	29.0	6.63	5.41	11751	2752	8.837	7.187	15986
40:1	1750	43.8	8.91	7.32	10549	2752	10.744	9.121	13140
	1170	29.3	7.59	6.05	13033	2752	8.877	7.408	16239
	870	21.8	6.46	5.01	14539	2752	7.484	6.245	18522
50:1	1750	38.9	9.42	7.88	12770	2752	10.563	9.151	14831
	1170	26.0	7.24	5.89	14276	2752	8.383	6.817	16813
	870	19.3	5.38	4.29	13977	2752	7.118	5.789	19315
60:1	1750	35.0	7.44	5.90	10621	2752	9.064	7.440	13396
	1170	23.4	6.38	4.87	13110	2752	7.510	6.040	16552
	870	17.4	5.45	4.04	14618	2752	6.347	5.105	18927
75:1	1750	29.2	7.39	6.06	13086	2752	7.390	6.010	12987
	1170	19.5	4.94	3.94	12718	2752	4.972	3.713	12210
	870	14.5	3.67	2.86	12452	2752	2.320	1.732	7707
80:1	1750	23.3	6.11	4.92	13302	2752	6.100	4.961	13400
	1170	15.6	4.08	3.20	12925	2752	4.306	3.216	13218
	870	11.6	3.04	2.33	12656	2752	3.022	2.257	12549
100:1	1750	21.9	6.45	5.04	14512	2752	7.390	5.716	16468
	1170	14.6	4.94	3.72	16028	2752	4.972	3.482	15265
	870	10.9	3.67	2.69	15615	2752	2.320	1.624	9635
125:1	1750	17.5	5.62	4.30	15468	2752	6.100	4.492	16177
	1170	11.7	4.08	3.01	16227	2752	4.306	2.827	15495
	870	8.7	3.04	2.18	15815	2752	3.022	1.984	14710
150:1	1750	14.0	4.76	3.45	15548	2752	5.765	4.245	19112
	1170	9.4	3.61	2.51	16914	2752	4.315	2.833	19410
	870	7.0	2.89	1.95	17667	2752	3.405	2.235	20719
200:1	1750	11.7	4.17	2.88	15564	2752	5.035	3.504	18927
	1170	7.8	3.18	2.10	16914	2752	3.815	2.316	19042
	870	5.8	2.55	1.63	17667	2752	3.033	1.842	20485
250:1	1750	8.75	3.39	2.14	15389	2752	4.041	2.580	18584
	1170	5.85	2.61	1.55	16734	2752	3.072	1.679	18399
	870	4.35	2.11	1.21	17475	2752	2.450	1.339	19856
300:1	1750	7.00	2.86	1.66	14934	2752	3.424	2.005	18056
	1170	4.68	2.22	1.21	16238	2752	2.616	1.289	17654
	870	3.48	1.80	.936	16956	2752	2.095	1.032	19128

The use of PAG oils involves strict maintenance guidelines and full understanding of the limitations of the lubrication in real world use. It is the customer's responsibility to inform the end-user of the use and limitations of PAG oils in 2000RA right angle units including the following:

PAG oil is not compatible with PAO synthetics or standard mineral oils – mixing causes immediate breakdown of performance leading to premature failure. Contaminated units must be thoroughly flushed. Consult factory or Mobil for approved flushing procedures.

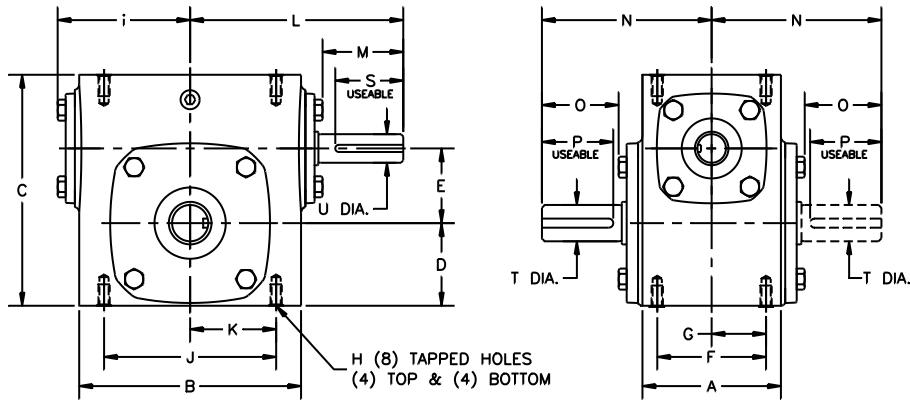
PAG oil is hygroscopic and does not separate from water. Water does not drop to the bottom of reservoirs but stays in solution causing immediate breakdown of performance. Units must be sealed for life or have a fully sealed pop-up breather.

PAG oil will soften paint and is not compatible with natural rubbers or standard O-ring materials – Bladder must be removed, and O-rings changed to Viton. (2000RA Reducer Seals are supplied, as standard, with Viton material)

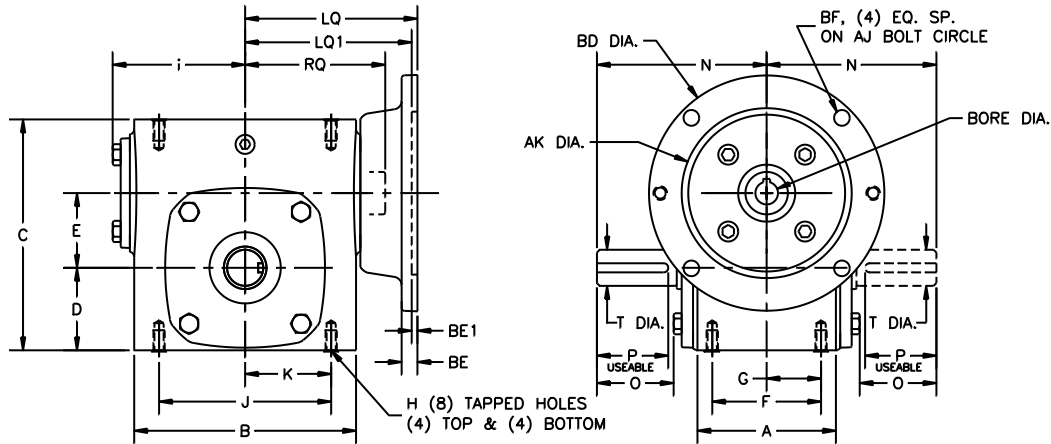
Style BR/BQ Style Solid Output Shaft

A34

BR STYLE SOLID INPUT



BQ STYLE SOLID SHAFT OUTPUT



UNIT	A	B	C	D	E	F	G	H	H DEPTH	I	J	K	L	M	N
133/2133	2.88	4.00	4.66	1.72	1.333	2.00	1.00	5/16-18	0.50	2.13	3.25	1.63	3.88	1.32	4.00
154/2154	3.50	5.00	5.38	1.91	1.540	2.75	1.38	5/16-18	0.63	3.25	4.19	2.09	4.50	1.25	4.31
175/2175	3.66	5.38	5.75	2.06	1.750	2.75	1.38	5/16-18	0.63	3.33	4.19	2.09	4.75	1.42	4.33
206/2206	3.90	6.12	6.38	2.28	2.063	3.00	1.50	5/16-18	0.63	3.72	4.75	2.38	5.13	1.42	4.69
238/2238	4.06	6.34	6.94	2.50	2.375	2.88	1.44	3/8-16	0.56	3.82	5.00	2.50	5.75	1.93	5.07
262/2262	4.45	7.46	8.00	2.94	2.625	3.38	1.69	3/8-16	0.69	4.38	6.38	3.19	6.25	1.87	5.63
300/2300	5.28	8.12	8.88	3.25	3.000	4.00	2.00	7/16-14	0.88	4.71	7.00	3.50	6.57	1.87	6.75
325/2325	5.75	8.75	9.38	3.50	3.250	4.00	2.00	7/16-14	0.88	5.02	7.50	3.75	7.00	1.98	7.06
425/2425	6.13	10.25	11.38	4.44	4.250	5.00	2.50	5/8-11	1.00	5.77	8.50	4.25	9.57	3.65	8.12
525/2525	7.19	13.00	14.00	5.12	5.250	5.81	2.91	5/8-11	1.25	7.40	11.00	5.50	10.87	3.48	9.06

NEMA C-Face Flange Locations

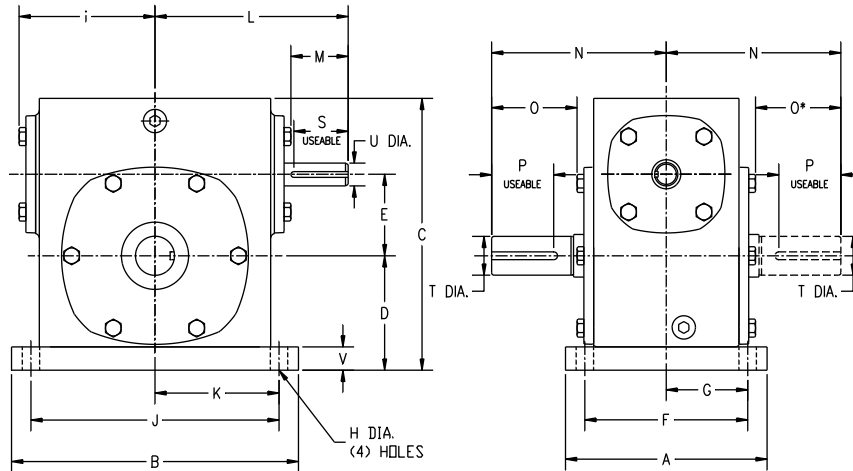
UNIT	O	P**	S**	T	U	56C/140TC		180TC		210TC	
						RQ	LQ	RQ	LQ1	RQ	LQ
133/2133	1.97	1/8 X 1.00	1/8 X 1.44	0.625	0.625	3.21	3.62	N/A	N/A	N/A	N/A
154/2154	1.90	3/16 X 1.50	3/16 X 1.00	0.750	0.625	3.72	4.29	N/A	N/A	N/A	N/A
175/2175	1.83	3/16 X 1.38	3/16 X 1.50	0.875	0.625	3.75	4.37	N/A	N/A	N/A	N/A
206/2206	2.12	1/4 X 1.44	3/16 X 1.50	1.000	0.625	4.15	4.76	N/A	N/A	N/A	N/A
238/2238	2.38	1/4 X 1.75	3/16 X 1.75	1.125	0.750	4.18	4.86	4.89	5.48	N/A	N/A
262/2262	2.75	1/4 X 2.00	3/16 X 1.75	1.250	0.750	4.94	5.62	5.42	5.86	N/A	N/A
300/2300	3.46	1/4 X 2.25	3/16 X 1.75	1.250	0.875	5.31	5.94	5.78	6.18	5.94	6.49
325/2325	3.51	3/8 X 2.62	3/16 X 1.75	1.500	0.875	5.58	6.26	6.10	6.50	6.25	6.80
425/2425	4.26	1/2 X 3.06	1/4 X 2.88	1.875	1.250	6.15	6.54	6.42	6.97	6.42	6.97
525/2525	4.36	1/2 X 3.50	1/4 X 3.00	2.000	1.250	7.63	8.05	8.02	8.57	8.02	8.57

NEMA Motor C-Face Mounting Dimensions

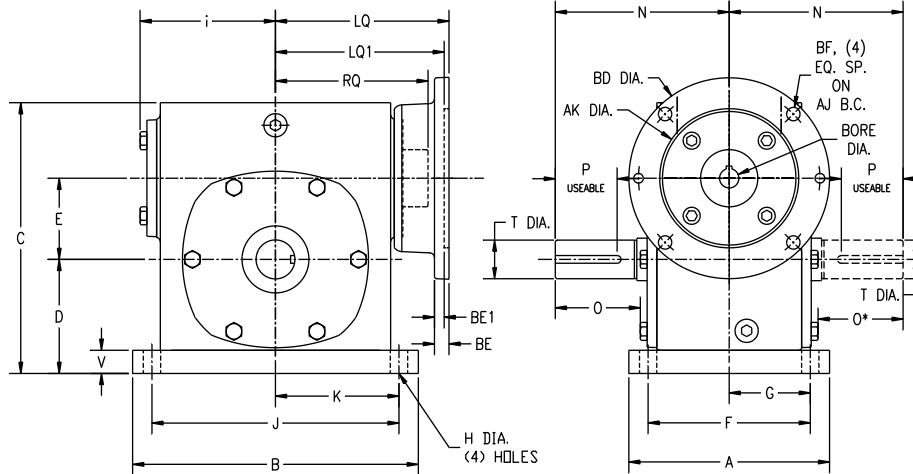
FRAME	AJ	AK	BD	BE	BE1	BF	BORE	KEYWAY****
56C	5.88	4.50	6.50	0.38	N/A	0.41	0.625	3/16 X 3/32
140TC	5.88	4.50	6.50	0.38	N/A	0.41	0.875	3/16 X 3/32
180TC	7.25	8.50	9.00	N/A	.50	0.53	1.125	1/4 X 1/8
210TC	7.25	8.50	9.00	N/A	.50	0.53	1.375	5/16 X 5/32

*** Keyway width by depth

AR STYLE SOLID SHAFT OUTPUT



AQ STYLE SOLID SHAFT OUTPUT



UNIT	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P**
133/2133	5.38	5.37	5.19	2.25	1.333	3.31	1.66	.34	2.13	4.37	2.19	3.88	1.32	4.00	1/8 X 1.00
154/2154	5.56	6.50	5.97	2.50	1.540	4.31	2.16	.41	3.25	5.25	2.63	4.50	1.25	4.31	3/16 X 1.50
175/2175	5.75	6.99	6.44	2.75	1.750	4.50	2.25	.41	3.33	5.75	2.88	4.75	1.42	4.33	3/16 X 1.38
206/2206	6.00	7.69	7.09	3.00	2.063	4.69	2.34	.47	3.72	6.38	3.19	5.13	1.42	4.69	1/4 X 1.44
238/2238	6.19	8.37	7.69	3.25	2.375	4.88	2.44	.47	3.82	7.06	3.53	5.75	1.93	5.07	1/4 X 1.75
262/2262	6.50	9.25	8.75	3.69	2.625	5.25	2.63	.53	4.38	8.00	4.00	6.25	1.87	5.63	1/4 X 2.00
300/2300	7.50	10.00	9.63	4.00	3.000	5.88	2.94	.53	4.71	8.44	4.22	6.57	1.87	6.75	1/4 X 2.25
325/2325	7.75	11.12	10.25	4.38	3.250	6.13	3.06	.53	5.02	9.50	4.75	7.00	1.98	7.06	3/8 X 2.62
425/2425	9.75	13.24	12.38	5.44	4.250	7.63	3.81	.66	5.77	11.12	5.56	9.57	3.65	8.12	1/2 X 3.06
525/2525	10.50	16.24	15.13	6.25	5.250	8.38	4.19	.78	7.40	14.12	7.06	10.87	3.48	9.06	1/2 X 3.50

NEMA Motor C-Face Flange Locations

UNIT	O	S**	T	U	V	56C/140TC		180TC		210TC	
						RQ	LQ	RQ	LQ1	RQ	LQ
133/2133	1.97	1/8 x 1.44	0.625	.500	0.984	3.21	3.62	N/A	N/A	N/A	N/A
154/2154	1.90	3/16 x 1.50	0.750	.625	1.181	3.72	4.29	N/A	N/A	N/A	N/A
175/2175	1.83	3/16 x 1.50	0.875	.625	1.575	3.75	4.37	N/A	N/A	N/A	N/A
206/2206	2.12	3/16 x 1.50	1.000	.625	1.969	4.15	4.76	N/A	N/A	N/A	N/A
238/2238	2.38	3/16 x 1.75	1.125	.750	2.165	4.18	4.86	4.89	5.48	N/A	N/A
262/2262	2.75	3/16 x 1.75	1.250	.750	2.165	4.94	5.62	5.42	5.86	N/A	N/A
300/2300	3.46	3/16 x 1.75	1.250	.875	2.756	5.31	5.94	5.78	6.18	5.94	6.49
325/2325	3.51	3/16 x 1.75	1.500	.875	2.756	5.58	6.26	6.10	6.50	6.25	6.80
425/2425	4.26	1/4 x 2.88	1.875	1.250	3.150	6.15	6.54	6.42	6.97	6.42	6.97
525/2525	4.36	1/4 x 3.00	2.000	1.250	4.724	7.63	8.05	8.02	8.57	8.02	8.57

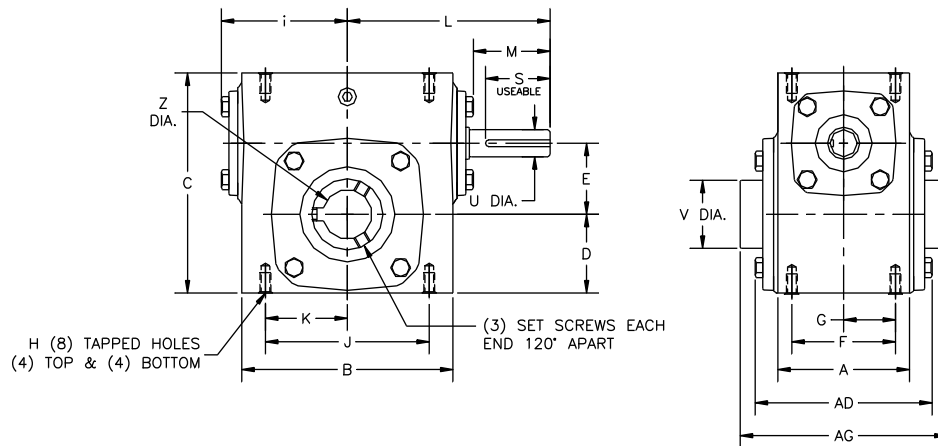
** Keyway width by length

NEMA Motor C-Face Mounting Dimensions

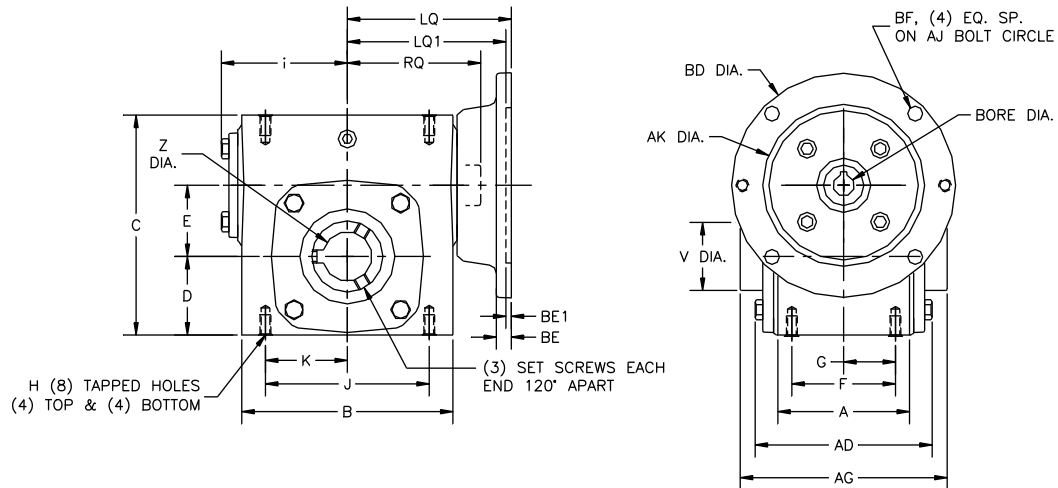
FRAME	AJ	AK	BD	BE	BE1	BF	BORE	KEYWAY****
56C	5.88	4.50	6.50	0.38	N/A	0.41	0.625	3/16 X 3/32
140TC	5.88	4.50	6.50	0.38	N/A	0.41	0.875	3/16 X 3/32
180TC	7.25	8.50	9.00	N/A	.50	0.53	1.125	1/4 X 1/8
210TC	7.25	8.50	9.00	N/A	.50	0.53	1.375	5/16 X 5/32

**** Keyway width by depth

HR STYLE HOLLOW SHAFT OUTPUT



HQ STYLE HOLLOW SHAFT OUTPUT



UNIT	A	B	C	D	E	F	G	H	H DEPTH	I	J	K	L	M	S**
133/2133	2.88	4.00	4.66	1.72	1.333	2.00	1.00	5/16-18	0.50	2.13	3.25	1.63	3.88	1.32	1/8 X 1.44
154/2154	3.50	5.00	5.38	1.91	1.540	2.75	1.38	5/16-18	0.63	3.25	4.19	2.09	4.50	1.25	3/16 X 1.00
175/2175	3.66	5.38	5.75	2.06	1.750	2.75	1.38	5/16-18	0.63	3.33	4.19	2.09	4.75	1.42	3/16 X 1.50
206/2206	3.90	6.12	6.38	2.28	2.063	3.00	1.50	5/16-18	0.63	3.72	4.75	2.38	5.13	1.42	3/16 X 1.50
238/2238	4.06	6.34	6.94	2.50	2.375	2.88	1.44	3/8-16	0.56	3.82	5.00	2.50	5.75	1.93	3/16 X 1.75
262/2262	4.45	7.46	8.00	2.94	2.625	3.38	1.69	3/8-16	0.69	4.38	6.38	3.19	6.25	1.87	3/16 X 1.75
300/2300	5.28	8.12	8.88	3.25	3.000	4.00	2.00	7/16-14	0.88	4.71	7.00	3.50	6.57	1.87	3/16 X 1.75
325/2325	5.75	8.75	9.38	3.50	3.250	4.00	2.00	7/16-14	0.88	5.02	7.50	3.75	7.00	1.98	3/16 X 1.75
425/2425	6.13	10.25	11.38	4.44	4.250	5.00	2.50	5/8-11	1.00	5.77	8.50	4.25	9.57	3.65	1/4 X 2.88
525/2525	7.19	13.00	14.00	5.12	5.250	5.81	2.91	5/8-11	1.25	7.40	11.00	5.50	10.87	3.48	1/4 X 3.00

NEMA Motor C-Face Flange Locations

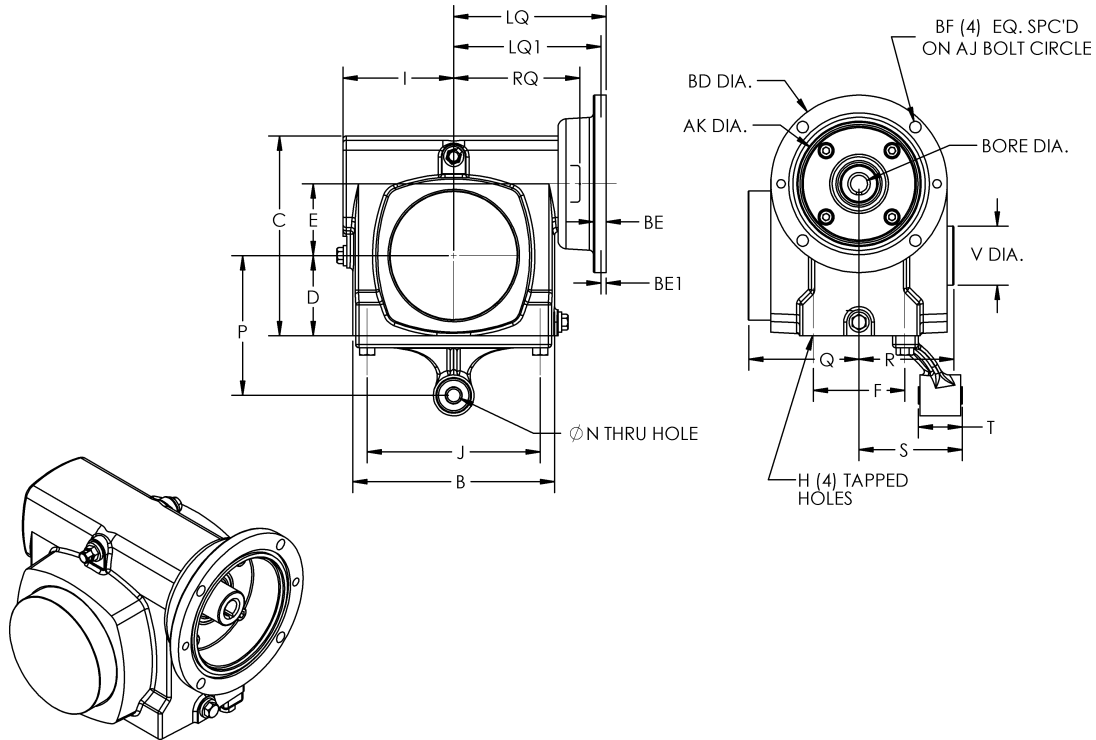
UNIT	U	V	Z-max	Z- kwy***	AD	AG	56C/140TC		180TC		210TC	
							RQ	LQ	RQ	LQ1	RQ	LQ
133/2133	0.625	0.984	0.625	3/16 X 3/32	4.06	4.75	3.21	3.62	N/A	N/A	N/A	N/A
154/2154	0.625	1.181	0.625	3/16 X 3/32	4.81	5.42	3.72	4.29	N/A	N/A	N/A	N/A
175/2175	0.625	1.575	1.000	1/4 X 1/8	5.00	5.50	3.75	4.37	N/A	N/A	N/A	N/A
206/2206	0.625	1.969	1.438	3/8 X 3/16	5.13	6.00	4.15	4.76	N/A	N/A	N/A	N/A
238/2238	0.750	2.165	1.438	3/8 X 3/16	5.38	6.00	4.18	4.86	4.89	5.48	N/A	N/A
262/2262	0.750	2.165	1.438	3/8 X 3/16	5.76	7.00	4.94	5.62	5.42	5.86	N/A	N/A
300/2300	0.875	2.756	1.938	1/2 X 1/4	6.58	7.50	5.31	5.94	5.78	6.18	5.94	6.49
325/2325	0.875	2.756	1.938	1/2 X 1/4	7.11	7.87	5.58	6.26	6.10	6.50	6.25	6.80
425/2425	1.250	2.756	2.188	1/2 X 1/4	7.72	8.50	6.15	6.54	6.42	6.97	6.42	6.97
525/2525	1.250	4.724	3.438	7/8 X 7/16	9.07	11.09	7.63	8.05	8.02	8.57	8.02	8.57

*** Keyway width by depth

NEMA Motor C-Face Mounting Dimensions

FRAME	AJ	AK	BD	BE	BE1	BF	BORE	KEYWAY****
56C	5.88	4.50	6.50	0.38	N/A	0.41	0.625	3/16 X 3/32
140TC	5.88	4.50	6.50	0.38	N/A	0.41	0.875	3/16 X 3/32
180TC	7.25	8.50	9.00	N/A	.50	0.53	1.125	1/4 X 1/8
210TC	7.25	8.50	9.00	N/A	.50	0.53	1.375	5/16 X 5/32

*** Keyway width by depth



UNIT	B	C	D	E	F	H	H DEPTH	I	J	N	P
SS175/SS2175	5.13	5.31	2.06	1.750	2.75	5/16-18	0.63	3.03	4.19	0.46	5.12
SS206/SS2206	5.71	5.96	2.28	2.063	3.00	5/16-18	0.63	3.42	4.75	0.46	5.12
SS238/SS2238	6.20	6.49	2.50	2.375	2.88	3/8-16	0.56	3.52	5.00	0.46	5.12
SS262/SS2262	7.09	7.31	2.94	2.625	3.38	3/8-16	0.69	4.08	6.38	0.46	5.12
SS325/SS2325	8.38	8.50	3.50	3.250	4.00	7/16-14	0.88	4.72	7.50	0.46	6.30

UNIT	Q	R	S	T	V	56C/140TC		180TC		210TC	
						RQ	LQ	RQ	LQ1	RQ	LQ
SS175/SS2175	2.84	2.78	3.02	1.625	1.575	3.75	4.37	N/A	N/A	N/A	N/A
SS206/SS2206	3.09	2.85	3.15	1.625	1.969	4.15	4.76	N/A	N/A	N/A	N/A
SS238/SS2238	3.44	3.24	3.49	1.625	2.165	4.18	4.86	4.89	5.48	N/A	N/A
SS262/SS2262	4.07	3.50	3.74	1.625	2.165	4.94	5.62	5.42	5.86	N/A	N/A
SS325/SS2325	4.26	3.69	3.95	1.625	2.756	5.58	6.26	6.10	6.50	6.25	6.80

NEMA Motor C-Face Mounting Dimensions

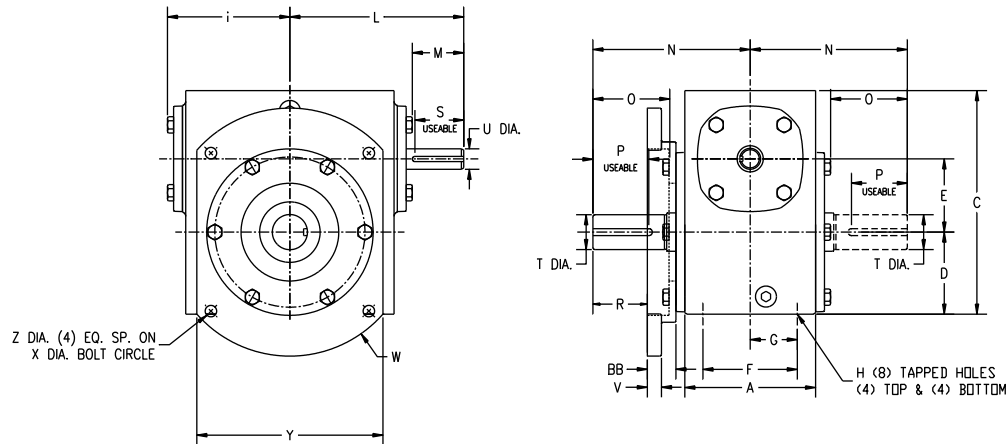
FRAME	AJ	AK	BD	BE	BE1	BF	BORE	KEYWAY****
56C	5.88	4.50	5.88	0.38	N/A	0.41	0.625	3/16 X 3/32
140TC	5.88	4.50	5.88	0.38	N/A	0.41	0.875	3/16 X 3/32
180TC	7.25	8.50	9.00	N/A	.50	0.53	1.125	1/4 X 1/8
210TC	7.25	8.50	9.00	N/A	.50	0.53	1.375	5/16 X 5/32

*** Keyway width by depth

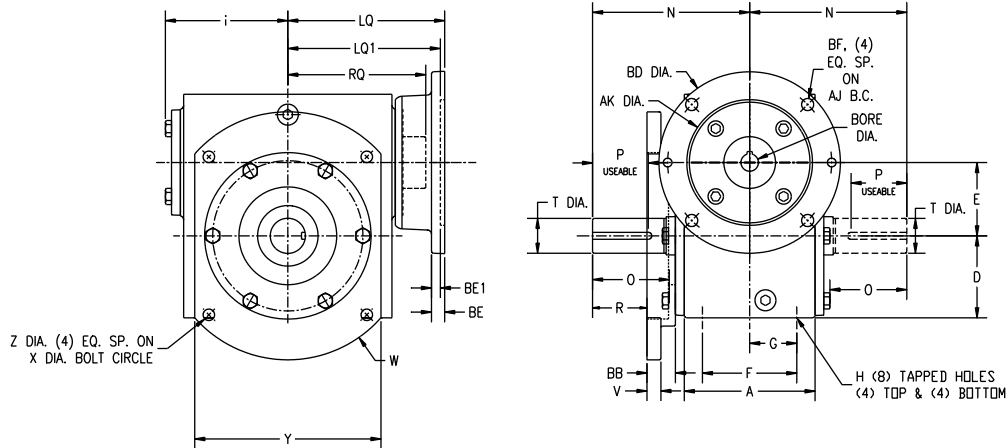
Style FR/FQ Style Flange Mounted Solid Output Shaft

A38

FR STYLE SOLID SHAFT OUTPUT



FQ STYLE SOLID SHAFT OUTPUT



UNIT	A	BB	C	D	E	F	G	H	H DEPTH	I	L	M	N	O	P**	R
133/2133	2.88	.70	4.66	1.72	1.333	2.00	1.00	5/16-18	0.50	2.13	3.88	1.32	4.00	1.97	1/8 X 1.00	1.43
154/2154	3.50	1.83	5.38	1.91	1.540	2.75	1.38	5/16-18	0.63	3.25	4.50	1.25	4.31	1.90	3/16 X 1.50	.30
175/2175	3.66	1.22	5.75	2.06	1.750	2.75	1.38	5/16-18	0.63	3.33	4.75	1.42	4.33	1.83	3/16 X 1.38	.83
206/2206	3.90	1.41	6.38	2.28	2.063	3.00	1.50	5/16-18	0.63	3.72	5.13	1.42	4.69	2.12	1/4 X 1.44	.94
238/2238	4.06	1.26	6.94	2.50	2.375	2.88	1.44	3/8-16	0.56	3.82	5.75	1.93	5.07	2.38	1/4 X 1.75	1.34
262/2262	4.45	1.05	8.00	2.94	2.625	3.38	1.69	3/8-16	0.69	4.38	6.25	1.87	5.63	2.75	1/4 X 2.00	1.92
300/2300	5.28	.73	8.88	3.25	3.000	4.00	2.00	7/16-14	0.88	4.71	6.57	1.87	6.75	3.46	1/4 X 2.25	2.95
325/2325	5.75	.70	9.38	3.50	3.250	4.00	2.00	7/16-14	0.88	5.02	7.00	1.98	7.06	3.51	3/8 X 2.62	3.03
425/2425	6.13	.98	11.38	4.44	4.250	5.00	2.50	5/8-11	1.00	5.77	9.57	3.65	8.12	4.26	1/2 X 3.06	3.62
525/2525	7.19	1.38	14.00	5.12	5.250	5.81	2.91	5/8-11	1.25	7.40	10.87	3.48	9.06	4.36	1/2 X 3.50	3.47

** Keyway width by length

NEMA Motor C-Face Flange Locations

UNIT	S**	T	U	V	W	X	Y	Z	NEMA Motor C-Face Flange Locations					
									56C/140TC		180TC		210TC	
									RQ	LQ	RQ	LQ1	RQ	LQ
2133	1/8 X 1.44	0.625	0.625	.38	5.79	5.00	4.17	.35	3.21	3.62	N/A	N/A	N/A	N/A
2154	3/16 X 1.50	0.750	0.625	.38	6.69	5.88	4.96	.35	3.72	4.29	N/A	N/A	N/A	N/A
2175	3/16 X 1.50	0.875	0.625	.38	6.69	5.88	5.35	.35	3.75	4.37	N/A	N/A	N/A	N/A
2206	3/16 X 1.50	1.000	0.625	.44	7.95	7.00	5.98	.41	4.15	4.76	N/A	N/A	N/A	N/A
2238	3/16 X 1.75	1.125	0.750	.44	8.43	7.50	6.46	.41	4.18	4.86	4.89	5.48	N/A	N/A
2262	3/16 X 1.75	1.250	0.750	.50	8.94	8.00	7.32	.41	4.94	5.62	5.42	5.86	N/A	N/A
2300	3/16 X 1.75	1.250	0.875	.50	9.96	9.00	7.95	.41	5.31	5.94	5.78	6.18	5.94	6.49
2325	3/16 X 1.75	1.500	0.875	.50	9.84	9.00	8.35	.41	5.58	6.26	6.10	6.50	6.25	6.80
2425	1/4 X 2.88	1.875	1.250	.63	12.95	11.50	9.65	.56	6.15	6.54	6.42	6.97	6.42	6.97
2525	1/4 X 3.00	2.000	1.250	.79	15.50	14.00	11.75	.69	7.03	8.05	8.02	8.57	8.02	8.57

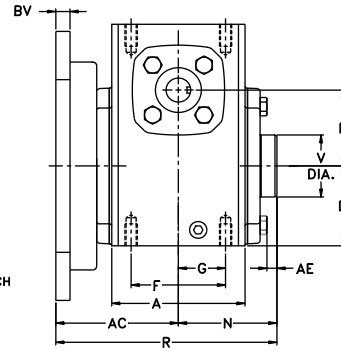
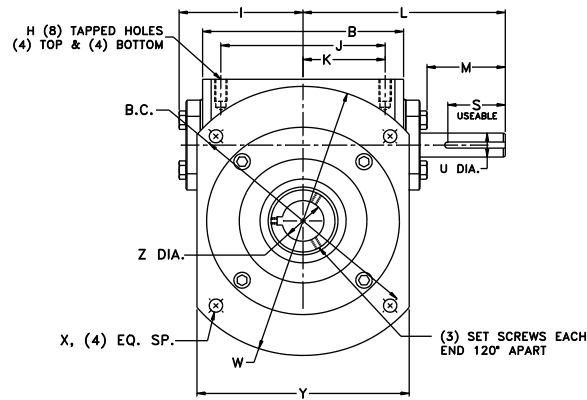
** Keyway width by length

NEMA Motor C-Face Mounting Dimensions

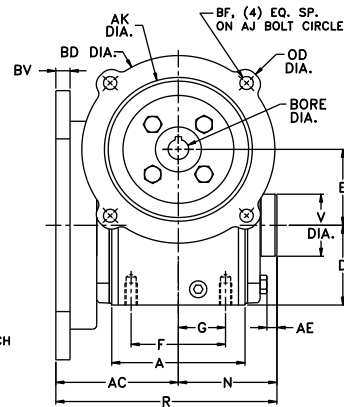
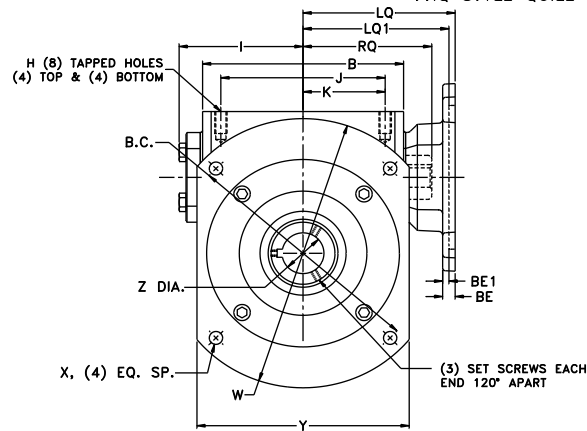
FRAME	AJ	AK	BD	BE	BE1	BF	BORE	KEYWAY****
56C	5.88	4.50	6.50	0.38	N/A	0.41	0.625	3/16 X 3/32
140TC	5.88	4.50	6.50	0.38	N/A	0.41	0.875	3/16 X 3/32
180TC	7.25	8.50	9.00	N/A	.50	0.53	1.125	1/4 X 1/8
210TC	7.25	8.50	9.00	N/A	.50	0.53	1.375	5/16 X 5/32

**** Keyway width by depth

FHR STYLE SOLID SHAFT INPUT



FHQ STYLE QUILL SHAFT INPUT



UNIT	A	B	D	E	F	G	H	H DEPTH	I	J	K	L	M	N	R	S**
133/2133	2.88	4.00	1.72	1.333	2.00	1.00	5/16-18	0.50	2.13	3.25	1.63	3.88	1.32	2.38	4.95	1/8 X 1.44
154/2154	3.50	5.00	1.91	1.540	2.75	1.38	5/16-18	0.63	3.25	4.19	2.09	4.50	1.25	2.71	6.72	3/16 X 1.50
175/2175	3.66	5.38	2.06	1.750	2.75	1.38	5/16-18	0.63	3.33	4.19	2.09	4.75	1.42	2.75	6.25	3/16 X 1.50
206/2206	3.90	6.12	2.28	2.063	3.00	1.50	5/16-18	0.63	3.72	4.75	2.38	5.13	1.42	3.00	6.75	3/16 X 1.50
238/2238	4.06	6.34	2.50	2.375	2.88	1.44	3/8-16	0.56	3.82	5.00	2.50	5.75	1.93	3.00	6.73	3/16 X 1.75
262/2262	4.45	7.46	2.94	2.625	3.38	1.69	3/8-16	0.69	4.38	6.38	3.19	6.25	1.87	3.50	7.21	3/16 X 1.75
300/2300	5.28	8.12	3.25	3.000	4.00	2.00	7/16-14	0.88	4.71	7.00	3.50	6.57	1.87	3.75	7.55	3/16 X 1.75
325/2325	5.75	8.75	3.50	3.250	4.00	2.00	7/16-14	0.88	5.02	7.50	3.75	7.00	1.98	3.94	7.97	3/16 X 1.75
425/2425	6.13	10.25	4.44	4.250	5.00	2.50	5/8-11	1.00	5.77	8.50	4.25	9.57	3.65	4.50	8.81	1/4 X2.88
525/2525	7.19	13.00	5.12	5.250	5.81	2.91	5/8-11	1.25	7.40	11.00	5.50	10.87	3.48	5.55	10.87	1/4 x3.00

** Keyway width by length

NEMA Motor C-Face Flange Locations

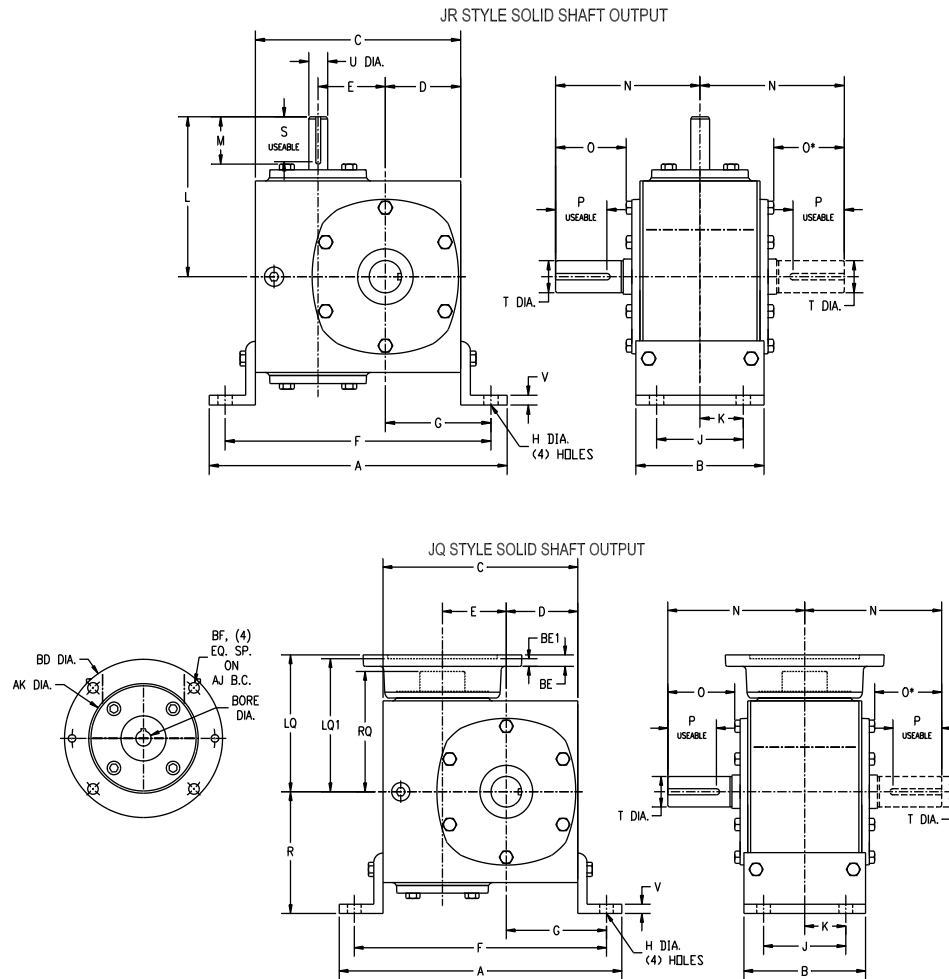
UNIT	U	V	W	X	B.C.	Y	Z max	Z- kwy***	AC	AE	BV	56C/140TC		180TC		210TC	
												RQ	LQ	RQ	LQ1	RQ	LQ
133/2133	0.625	0.984	5.79	.35	5.00	4.17	0.625	3/16 X 3/32	2.57	.35	.38	3.21	3.62	N/A	N/A	N/A	N/A
154/2154	0.625	1.181	6.69	.35	5.88	4.96	0.625	3/16 X 3/32	4.01	.31	.38	3.72	4.29	N/A	N/A	N/A	N/A
175/2175	0.625	1.575	6.69	.35	5.88	5.35	1.000	1/4 X 1/8	3.50	.25	.38	3.75	4.37	N/A	N/A	N/A	N/A
206/2206	0.625	1.969	7.95	.41	7.00	5.98	1.438	3/8 X 3/16	3.75	.44	.44	4.15	4.76	N/A	N/A	N/A	N/A
238/2238	0.750	2.165	8.43	.41	7.50	6.46	1.438	3/8 X 3/16	3.73	.31	.44	4.18	4.86	4.89	5.48	N/A	N/A
262/2262	0.750	2.165	8.94	.41	8.00	7.32	1.438	3/8 X 3/16	3.71	.62	.50	4.94	5.62	5.42	5.86	N/A	N/A
300/2300	0.875	2.756	9.96	.41	9.00	7.95	1.938	1/2 X 1/4	3.80	.46	.50	5.31	5.94	5.78	6.18	5.94	6.49
325/2325	0.875	2.756	9.84	.41	9.00	8.35	1.938	1/2 X 1/4	4.03	.38	.50	5.58	6.26	6.10	6.50	6.25	6.80
425/2425	1.250	2.756	12.95	.56	11.50	9.65	2.188	1/2 X 1/4	4.56	.64	.63	6.15	6.54	6.42	6.97	6.42	6.97
525/2525	1.250	4.330	15.50	.69	14.00	11.75	3.438	7/8 X 7/16	5.59	1.01	.79	7.03	8.05	8.02	8.57	8.02	8.57

*** Keyway width by depth

NEMA Motor C-Face Mounting Dimensions

FRAME	AJ	AK	BD	BE	BE1	BF	BORE	KEYWAY****
56C	5.88	4.50	6.50	0.38	N/A	0.41	0.625	3/16 X 3/32
140TC	5.88	4.50	6.50	0.38	N/A	0.41	0.875	3/16 X 3/32
180TC	7.25	8.50	9.00	N/A	.50	0.53	1.125	1/4 X 1/8
210TC	7.25	8.50	9.00	N/A	.50	0.53	1.375	5/16 X 5/32

**** Keyway width by depth



UNIT	A	B	C	D	E	F	G	H	I	J	K	N	P**	O
133/2133	7.42	2.75	4.66	1.72	1.333	6.42	2.60	.38	2.13	2.00	1.00	4.00	1/8 X 1.00	1.97
154/2154	8.14	3.50	5.38	1.91	1.540	7.08	2.76	.44	3.25	2.75	1.38	4.31	3/16 X 1.50	1.90
175/2175	8.51	3.50	5.75	2.06	1.750	7.45	2.91	.44	3.33	2.75	1.38	4.33	3/16 X 1.38	1.83
206/2206	9.76	4.00	6.38	2.28	2.063	8.62	3.40	.50	3.72	2.75	1.38	4.69	1/4 X 1.44	2.12
238/2238	10.31	4.00	6.94	2.50	2.375	9.19	3.63	.50	3.82	2.88	1.44	5.07	1/4 X 1.75	2.38
262/2262	11.62	5.00	8.00	2.94	2.625	10.38	4.13	.56	4.38	3.38	1.69	5.63	1/4 X 2.00	2.75
300/2300	12.64	5.50	8.88	3.25	3.000	11.38	4.50	.56	4.71	3.88	1.94	6.75	1/4 X 2.25	3.46
325/2325	13.14	6.00	9.38	3.50	3.250	11.88	4.75	.56	5.02	3.88	1.94	7.06	3/8 X 2.62	3.51
425/2425	16.38	7.00	11.38	4.44	4.250	14.88	6.19	.69	5.77	5.00	2.50	8.12	1/2 X 3.06	4.26
525/2525	19.00	7.00	14.00	5.12	5.250	17.50	6.87	.69	7.40	5.81	2.91	9.06	1/2 X 3.50	4.36

** Keyway width by length

NEMA Motor C-Face Flange Locations

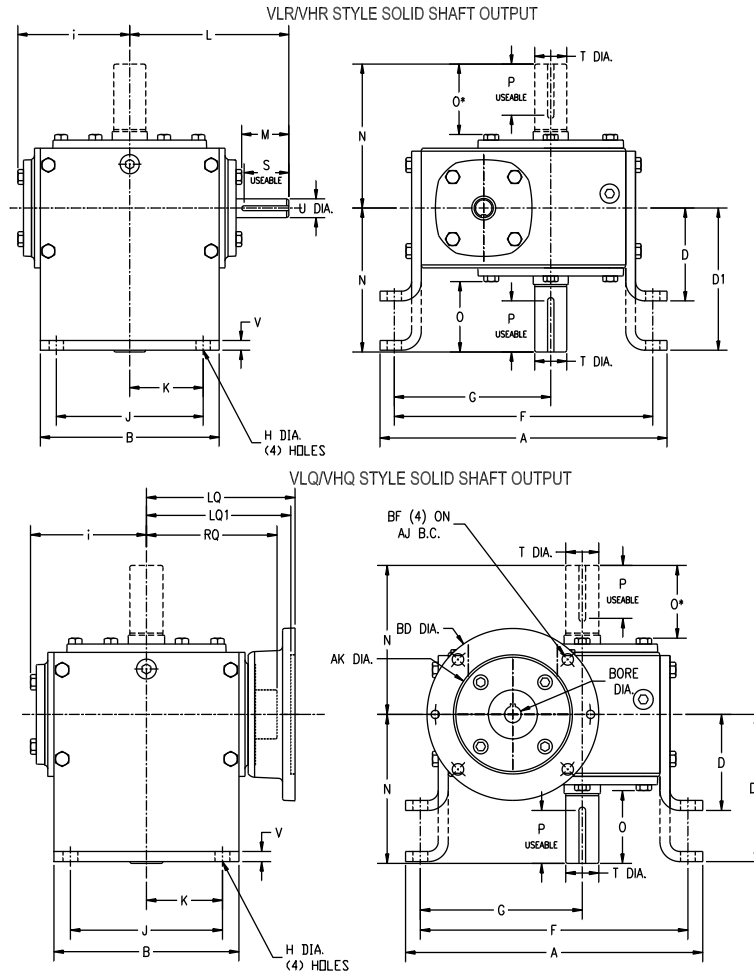
UNIT	S**	T	U	V	56C/140TC		180TC		210TC	
					RQ	LQ	RQ	LQ1	RQ	LQ
133/2133	1/8 x 1.44	0.625	.500	.25	3.21	3.62	N/A	N/A	N/A	N/A
154/2154	3/16 x 1.50	0.750	.625	.25	3.72	4.29	N/A	N/A	N/A	N/A
175/2175	3/16 x 1.50	0.875	.625	.25	3.75	4.37	N/A	N/A	N/A	N/A
206/2206	3/16 x 1.50	1.000	.625	.38	4.15	4.76	N/A	N/A	N/A	N/A
238/2238	3/16 x 1.75	1.125	.750	.38	4.18	4.86	4.89	5.48	N/A	N/A
262/2262	3/16 x 1.75	1.250	.750	.38	4.94	5.62	5.42	5.86	N/A	N/A
300/2300	3/16 x 1.75	1.250	.875	.38	5.31	5.94	5.78	6.18	5.94	6.49
325/2325	3/16 x 1.75	1.500	.875	.38	5.58	6.26	6.10	6.50	6.25	6.80
425/2425	1/4 x 2.88	1.875	1.250	.50	6.15	6.54	6.42	6.97	6.42	6.97
525/2525	1/4 x 3.00	2.000	1.250	.50	7.63	8.05	8.02	8.57	8.02	8.57

** Keyway width by length

NEMA Motor C-Face Mounting Dimensions

FRAME	AJ	AK	BD	OD	BE	BE1	BF	BORE	KEYWAY****
56C	5.88	4.50	5.88	6.64	0.38	N/A	0.41	0.625	3/16 X 3/32
140TC	5.88	4.50	5.88	6.64	0.38	N/A	0.41	0.875	3/16 X 3/32
180TC	7.25	8.50	9.00	N/A	N/A	.50	0.53	1.125	1/4 X 1/8
210TC	7.25	8.50	9.00	N/A	N/A	.50	0.53	1.375	5/16 X 5/32

**** Keyway width by depth



UNIT	A	B	D	D1	F	G	H	I	J	K	L	M	N	P**	O
133/2133	7.26	4.00	2.63	3.56	6.50	3.86	.38	2.13	3.00	1.50	3.82	1.32	4.00	3/16 X 1.50	1.97
154/2154	7.88	5.00	3.00	4.38	7.00	4.28	.44	3.25	4.00	2.00	4.35	1.25	4.31	3/16 X 1.50	1.90
175/2175	8.25	5.00	3.00	4.38	7.37	4.50	.44	3.33	4.00	2.00	4.45	1.42	4.33	3/16 X 1.38	1.83
206/2206	9.38	6.00	3.13	4.88	8.38	5.09	.50	3.72	4.88	2.44	4.82	1.42	4.69	1/4 X 1.44	2.12
238/2238	9.94	6.00	3.38	5.25	8.81	5.38	.50	3.82	4.88	2.44	5.51	1.93	5.07	1/4 X 1.75	2.38
262/2262	11.24	7.00	3.63	5.56	10.12	6.12	.56	4.38	5.75	2.88	6.07	1.87	5.63	1/4 X 2.00	2.75
300/2300	12.50	8.00	3.94	5.88	11.13	6.75	.56	4.71	6.00	3.00	6.57	1.87	6.75	1/4 X 2.25	3.46
325/2325	13.00	8.50	4.69	6.25	11.88	7.13	.56	5.02	6.13	3.06	6.76	1.98	7.06	3/8 X 2.62	3.51
425/2425	16.26	10.00	5.00	7.50	14.88	8.69	.69	5.77	7.88	3.94	9.57	3.65	8.12	1/2 X 3.06	4.26
525/2525	19.62	13.00	5.16	9.16	18.00	10.88	.78	7.40	10.00	5.00	10.88	3.48	9.06	1/2 X 3.50	4.36

** Keyway width by length

NEMA Motor C-Face Flange Locations

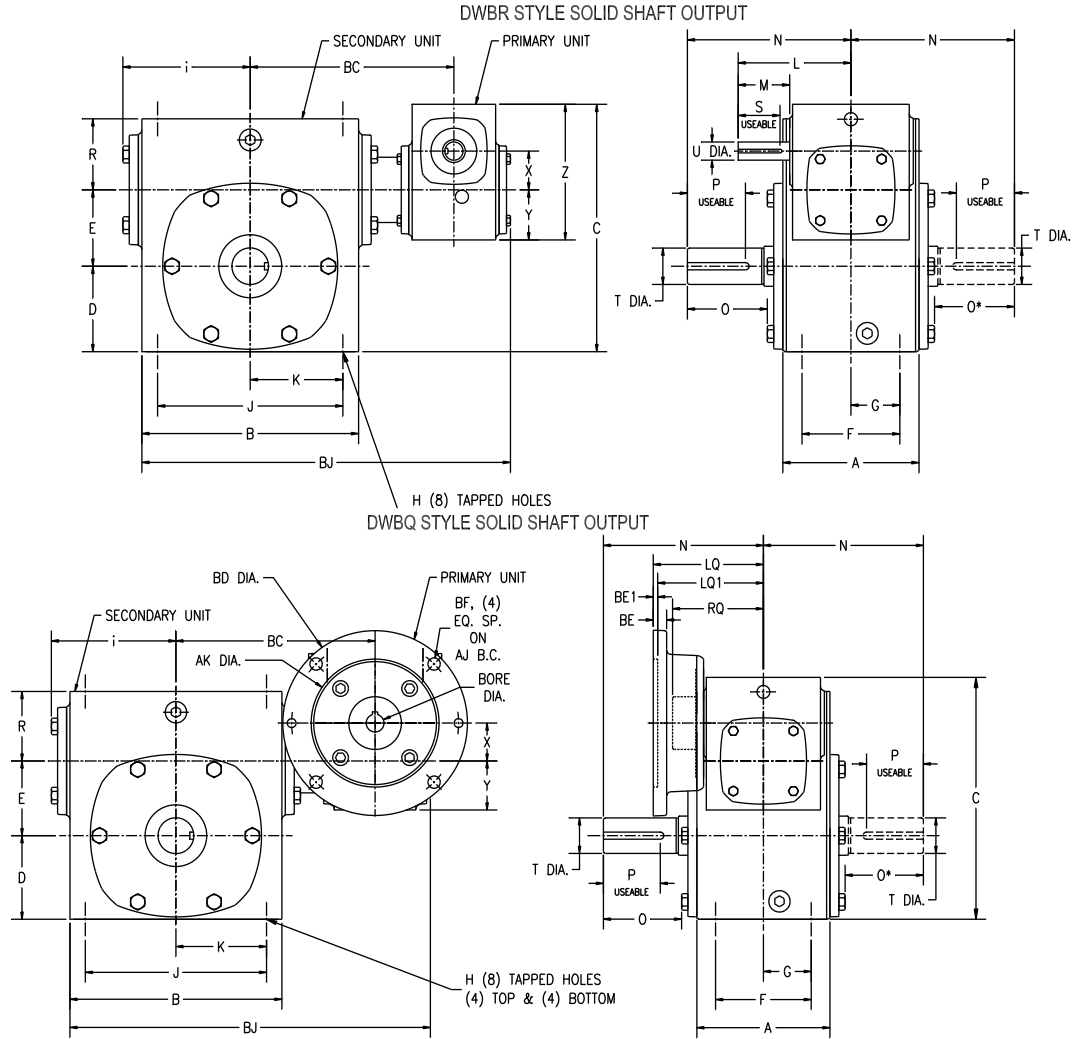
UNIT	S**	T	U Dia.	V	56C/140TC		180TC		210TC	
					RQ	LQ	RQ	LQ1	RQ	LQ
133/2133	1/8 x 1.44	0.625	.500	0.984	3.21	3.62	N/A	N/A	N/A	N/A
154/2154	3/16 x 1.50	0.750	.625	1.181	3.72	4.29	N/A	N/A	N/A	N/A
175/2175	3/16 x 1.50	0.875	.625	1.575	3.75	4.37	N/A	N/A	N/A	N/A
206/2206	3/16 x 1.50	1.000	.625	1.969	4.15	4.76	N/A	N/A	N/A	N/A
238/2238	3/16 x 1.75	1.125	.750	2.165	4.18	4.86	4.89	5.48	N/A	N/A
262/2262	3/16 x 1.75	1.250	.750	2.165	4.94	5.62	5.42	5.86	N/A	N/A
300/2300	3/16 x 1.75	1.250	.875	2.756	5.31	5.94	5.78	6.18	5.94	6.49
325/2325	3/16 x 1.75	1.500	.875	2.756	5.58	6.26	6.10	6.50	6.25	6.80
425/2425	1/4 x 2.88	1.875	1.250	3.150	6.15	6.54	6.42	6.97	6.42	6.97
525/2525	1/4 x 3.00	2.000	1.250	4.724	7.63	8.05	8.02	8.57	8.02	8.57

*** Keyway width by depth

NEMA Motor C-Face Mounting Dimensions

FRAME	AJ	AK	BD	BE	BE1	BF	BORE	KEYWAY****
56C	5.88	4.50	6.50	0.38	N/A	0.41	0.625	3/16 X 3/32
140TC	5.88	4.50	6.50	0.38	N/A	0.41	0.875	3/16 X 3/32
180TC	7.25	8.50	9.00	N/A	.50	0.53	1.125	1/4 X 1/8
210TC	7.25	8.50	9.00	N/A	.50	0.53	1.375	5/16 X 5/32

**** Keyway width by depth



UNIT	A	B	BC	BJ	C	D	E	F	G	H	I	J	K	L	M	N	O
154/2154	3.44	4.88	5.65	11.31	6.38	1.91	1.540	2.75	1.38	.41	3.25	4.19	2.09	3.88	1.32	4.31	1.90
175/2175	3.56	5.06	6.27	12.10	6.75	2.06	1.750	2.75	1.38	.41	3.33	4.19	2.09	3.88	1.32	4.33	1.83
206/2206	3.81	5.80	6.66	12.95	7.28	2.28	2.063	3.00	1.50	.47	3.72	4.75	2.38	3.88	1.32	4.69	2.12
238/2238	4.06	6.12	6.76	13.27	7.81	2.50	2.375	2.88	1.44	.47	3.82	5.00	2.50	3.88	1.32	5.07	2.38
262/2262	4.84	7.12	7.51	14.77	8.50	2.94	2.625	3.38	1.69	.53	4.38	6.38	3.19	3.88	1.32	5.63	2.75
300/2300	5.25	8.12	8.23	16.24	9.72	3.25	3.000	4.00	2.00	.53	4.71	7.00	3.50	4.50	1.25	6.75	3.46
325/2325	5.75	8.50	8.54	17.12	10.22	3.50	3.250	4.00	2.00	.53	5.02	7.50	3.75	4.50	1.25	7.06	3.51
425/2425	6.13	10.25	8.96	18.59	12.78	4.44	4.250	5.00	2.50	.66	5.77	8.50	4.25	5.13	1.42	8.12	4.26
525/2525	7.19	13.00	10.86	22.80	15.43	5.12	5.250	5.81	2.91	.78	7.40	11.00	5.50	6.25	1.87	9.06	4.36

NEMA Motor C-Face Flange Locations

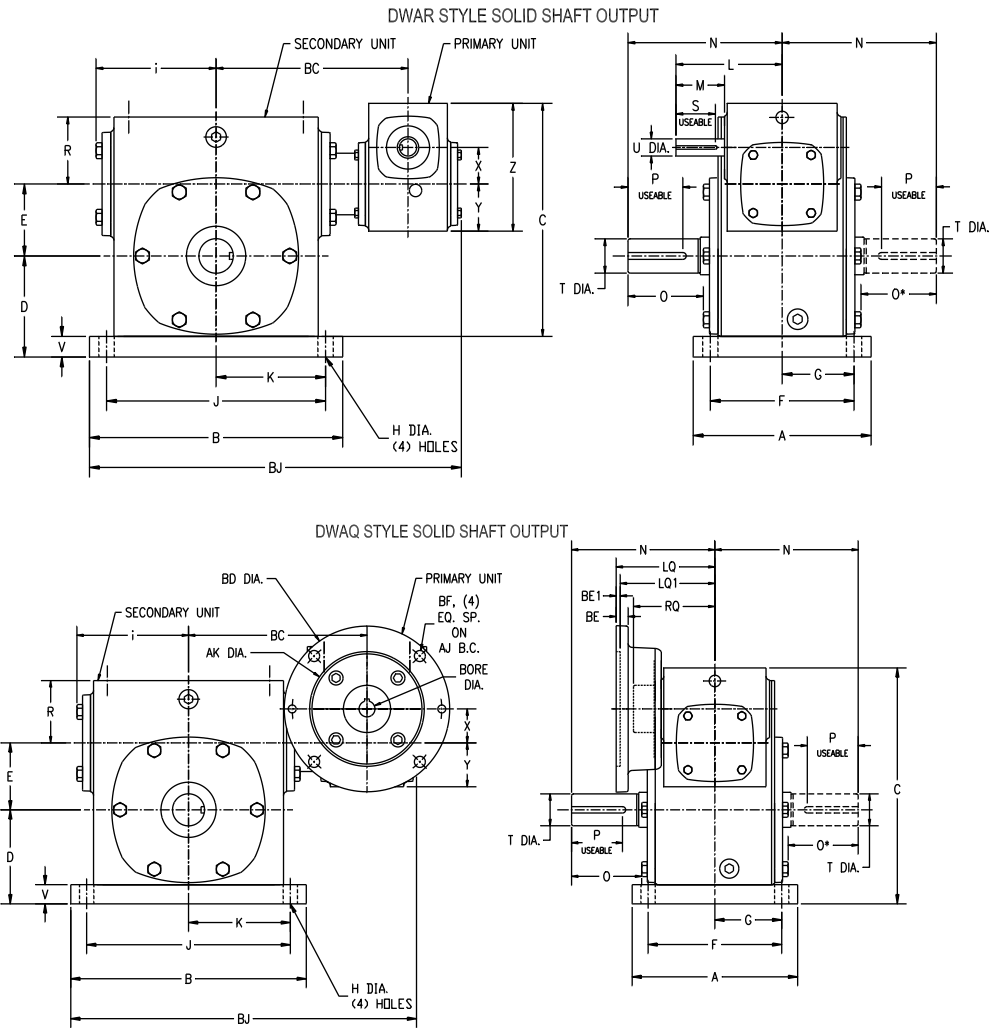
UNIT	P**	S**	T	U	X	Y	Z	56C/140TC		180TC	
								RQ	LQ	RQ	LQ1
154/2154	3/16 X 1.50	1/8 x 1.44	0.750	.500	1.33	1.72	4.66	3.21	3.62	N/A	N/A
175/2175	3/16 X 1.38	1/8 x 1.44	0.875	.500	1.33	1.72	4.66	3.21	3.62	N/A	N/A
206/2206	1/4 X 1.44	1/8 x 1.44	1.000	.500	1.33	1.72	4.66	3.21	3.62	N/A	N/A
238/2238	1/4 X 1.75	1/8 x 1.44	1.125	.500	1.33	1.72	4.66	3.21	3.62	N/A	N/A
262/2262	1/4 X 2.00	1/8 x 1.44	1.250	.500	1.33	1.72	4.66	3.21	3.62	N/A	N/A
300/2300	1/4 X 2.25	3/16 x 1.50	1.250	.625	1.54	1.91	5.38	3.72	4.29	N/A	N/A
325/2325	3/8 X 2.62	3/16 x 1.50	1.500	.625	1.54	1.91	5.38	3.72	4.29	N/A	N/A
425/2425	1/2 X 3.06	3/16 x 1.50	1.875	.625	2.06	2.28	6.38	4.15	4.76	N/A	N/A
525/2525	1/2 X 3.50	1/2 x 3.50	2.000	.750	2.62	2.94	8.00	4.94	5.62	5.42	5.86

** Keyway width by length

NEMA Motor C-Face Mounting Dimensions

FRAME	AJ	AK	BD	BE	BE1	BF	BORE	KEYWAY****
56C	5.88	4.50	6.50	0.38	N/A	0.41	0.625	3/16 X 3/32
140TC	5.88	4.50	6.50	0.38	N/A	0.41	0.875	3/16 X 3/32
180TC	7.25	8.50	9.00	N/A	.50	0.53	1.125	1/4 X 1/8

**** Keyway width by depth



UNIT	A	B	BC	BJ	C	D	E	F	G	H	I	J	K	L	M	N	O
154/2154	5.56	6.50	5.65	11.31	6.98	2.50	1.540	4.31	2.16	.41	3.25	5.25	2.63	3.88	1.32	4.31	1.90
175/2175	5.75	6.99	6.27	12.10	7.44	2.75	1.750	4.50	2.25	.41	3.33	5.75	2.88	3.88	1.32	4.33	1.83
206/2206	6.00	7.69	6.66	12.95	8.00	3.00	2.063	4.69	2.34	.47	3.72	6.38	3.19	3.88	1.32	4.69	2.12
238/2238	6.19	8.37	6.76	13.27	8.56	3.25	2.375	4.88	2.44	.47	3.82	7.06	3.53	3.88	1.32	5.07	2.38
262/2262	6.50	9.25	7.51	14.77	9.25	3.69	2.625	5.25	2.63	.53	4.38	8.00	4.00	3.88	1.32	5.63	2.75
300/2300	7.50	10.00	8.23	16.24	10.47	4.00	3.000	5.88	2.94	.53	4.71	8.44	4.22	4.50	1.25	6.75	3.46
325/2325	7.75	11.12	8.54	17.12	11.09	4.38	3.250	6.13	3.06	.53	5.02	9.50	4.75	4.50	1.25	7.06	3.51
425/2425	9.75	13.24	8.96	18.59	13.78	5.44	4.250	7.63	3.81	.66	5.77	11.12	5.56	5.13	1.42	8.12	4.26
525/2525	10.50	16.24	10.86	22.80	16.56	6.25	5.250	8.38	4.19	.78	7.40	14.12	7.06	6.25	1.87	9.06	4.36

NEMA Motor C-Face Flange Locations

UNIT	P**	S**	T	U	V	X	Y	Z	56C/140TC		180TC		210TC	
									RQ	LQ	RQ	LQ	RQ	LQ
154/2154	3/16 X 1.50	1/8 x 1.44	0.750	.500	.59	1.33	1.72	4.66	3.72	3.62	N/A	N/A	N/A	N/A
175/2175	3/16 X 1.38	1/8 x 1.44	0.875	.500	.69	1.33	1.72	4.66	3.75	3.62	N/A	N/A	N/A	N/A
206/2206	1/4 X 1.44	1/8 x 1.44	1.000	.500	.72	1.33	1.72	4.66	4.15	3.62	N/A	N/A	N/A	N/A
238/2238	1/4 X 1.75	1/8 x 1.44	1.125	.500	.75	1.33	1.72	4.66	4.18	3.62	N/A	N/A	N/A	N/A
262/2262	1/4 X 2.00	1/8 x 1.44	1.250	.500	.75	1.33	1.72	4.66	4.94	3.62	N/A	N/A	N/A	N/A
300/2300	1/4 X 2.25	3/16 x 1.50	1.250	.625	.75	1.54	1.91	5.38	5.31	4.29	N/A	N/A	N/A	N/A
325/2325	3/8 X 2.62	3/16 x 1.50	1.500	.625	.88	1.54	1.91	5.38	5.58	4.29	N/A	N/A	N/A	N/A
425/2425	1/2 X 3.06	3/16 x 1.50	1.875	.625	1.00	2.06	2.28	6.38	6.15	4.76	N/A	N/A	N/A	N/A
525/2525	1/2 X 3.50	1/2 x 3.50	2.000	.750	1.13	2.62	2.94	8.00	7.63	5.62	5.42	5.86	N/A	N/A

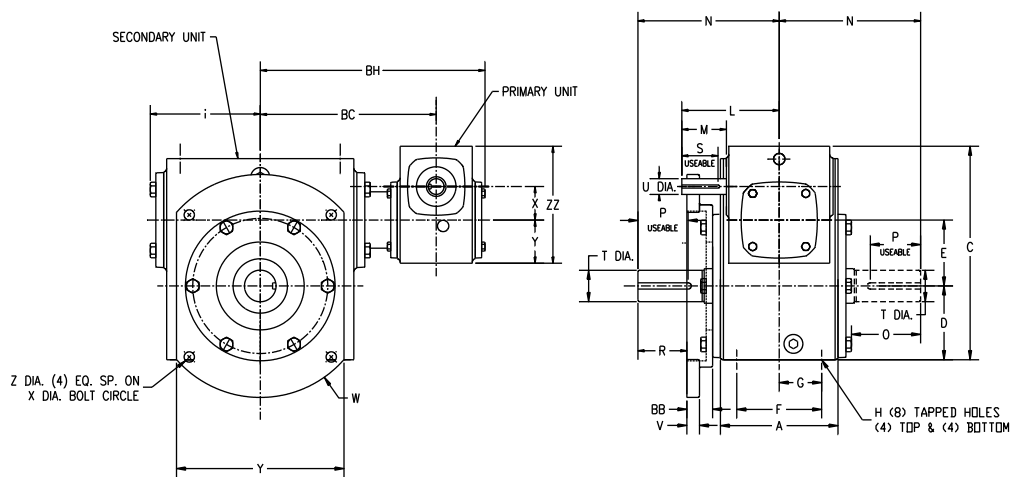
** Keyway width by length

NEMA Motor C-Face Mounting Dimensions

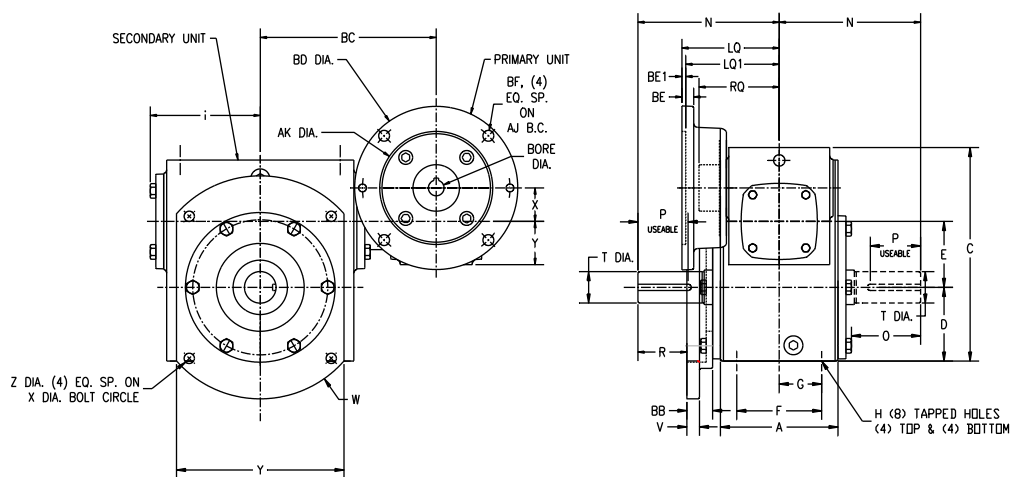
FRAME	AJ	AK	BD	BE	BE1	BF	BORE	KEYWAY****
56C	5.88	4.50	6.50	0.38	N/A	0.41	0.625	3/16 X 3/32
140TC	5.88	4.50	6.50	0.38	N/A	0.41	0.875	3/16 X 3/32
180TC	7.25	8.50	9.00	N/A	.50	0.53	1.125	1/4 X 1/8

**** Keyway width by depth

DWFR STYLE SOLID SHAFT OUTPUT



DWFQ STYLE SOLID SHAFT OUTPUT



UNIT	A	BB	C	D	E	F	G	H	I	L	M	N	O	P**	R
154/2154	3.44	1.83	6.38	1.91	1.540	2.75	1.38	5/16-18	3.25	3.88	1.32	4.31	1.90	3/16 X 1.50	.30
175/2175	3.56	1.22	6.75	2.06	1.750	2.75	1.38	5/16-18	3.33	3.88	1.32	4.33	1.83	3/16 X 1.38	.83
206/2206	3.81	1.41	7.28	2.28	2.063	3.00	1.50	5/16-18	3.72	3.88	1.32	4.69	2.12	1/4 X 1.44	.94
238/2238	4.06	1.26	7.81	2.50	2.375	2.88	1.44	3/8-16	3.82	3.88	1.32	5.07	2.38	1/4 X 1.75	1.34
262/2262	4.84	1.05	8.50	2.94	2.625	3.38	1.69	3/8-16	4.38	3.88	1.32	5.63	2.75	1/4 X 2.00	1.92
300/2300	5.25	.73	9.72	3.25	3.000	4.00	2.00	7/16-14	4.71	4.50	1.25	6.75	3.46	1/4 X 2.25	2.95
325/2325	5.75	.70	10.22	3.50	3.250	4.00	2.00	7/16-14	5.02	4.50	1.25	7.06	3.51	3/8 X 2.62	3.03
425/2425	6.13	.98	12.78	4.44	4.250	5.00	2.50	5/8-11	5.77	5.13	1.42	8.12	4.26	1/2 X 3.06	3.56
525/2525	7.19	1.38	15.43	5.12	5.250	5.81	2.91	5/8-11	7.40	6.25	1.87	9.06	4.36	1/2 X 3.50	3.47

** Keyway width by length

NEMA Motor C-Face Flange Locations

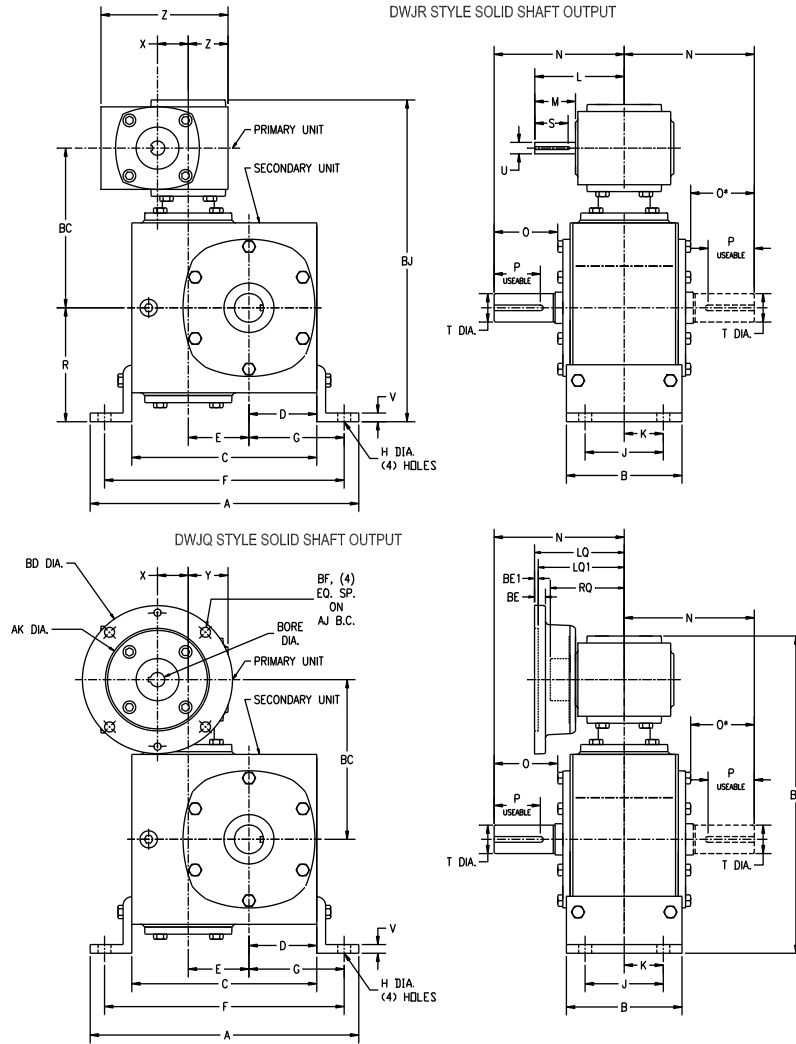
UNIT	S**	T	U	V	W	X	XX	Y	YY	Z	ZZ	56C/140TC		180TC		210TC	
												RQ	LQ	RQ	LQ1	RQ	LQ1
154/2154	1/8 x 1.44	0.750	.500	.38	5.88	5.00	1.33	4.50	1.72	.34	4.66	3.72	3.62	N/A	N/A	N/A	N/A
175/2175	1/8 x 1.44	0.875	.500	.38	6.64	5.88	1.33	5.00	1.72	.34	4.66	3.75	3.62	N/A	N/A	N/A	N/A
206/2206	1/8 x 1.44	1.000	.500	.44	7.88	7.00	1.33	5.99	1.72	.41	4.66	4.15	3.62	N/A	N/A	N/A	N/A
238/2238	1/8 x 1.44	1.125	.500	.44	8.39	7.50	1.33	6.27	1.72	.41	4.66	4.18	3.62	N/A	N/A	N/A	N/A
262/2262	1/8 x 1.44	1.250	.500	.50	8.88	8.00	1.33	6.67	1.72	.41	4.66	4.94	3.62	N/A	N/A	N/A	N/A
300/2300	3/16 x 1.50	1.250	.625	.50	9.89	9.00	1.54	7.37	1.91	.41	5.38	5.31	4.29	N/A	N/A	N/A	N/A
325/2325	3/16 x 1.50	1.500	.625	.50	9.89	9.00	1.54	7.37	1.91	.41	5.38	5.58	4.29	N/A	N/A	N/A	N/A
425/2425	3/16 x 1.50	1.875	.625	.63	12.95	11.50	2.06	9.65	2.28	.56	6.38	6.15	4.76	N/A	N/A	N/A	N/A
525/2525	1/2 x 3.50	2.000	.750	.79	15.50	14.00	2.62	11.75	2.94	.69	8.00	7.63	5.62	5.42	5.86	N/A	N/A

** Keyway width by length

NEMA Motor C-Face Mounting Dimensions

FRAME	AJ	AK	BD	BE	BE1	BF	BORE	KEYWAY****
56C	5.88	4.50	6.50	0.38	N/A	.41	0.625	3/16 X 3/32
140TC	5.88	4.50	6.50	0.38	N/A	.41	0.875	3/16 X 3/32
180TC	7.25	8.50	9.00	N/A	.50	.53	1.125	1/4 X 1/8
210TC	7.25	8.50	9.00	N/A	.50	.53	1.375	5/16 X 5/32

**** Keyway width by depth



UNIT	A	B	BC	BJ	C	D	E	F	G	H	J	K	L	M	N	O
154/2154	8.14	3.50	5.65	11.56	5.38	1.91	1.540	7.08	2.76	.44	2.75	1.38	3.88	1.32	4.31	1.90
175/2175	8.51	3.50	6.27	12.27	5.75	2.06	1.750	7.45	2.91	.44	2.75	1.38	3.88	1.32	4.33	1.83
206/2206	9.76	4.00	6.66	13.24	6.38	2.28	2.063	8.62	3.40	.50	2.75	1.38	3.88	1.32	4.69	2.12
238/2238	10.31	4.00	6.76	13.51	6.94	2.50	2.375	9.19	3.63	.50	2.88	1.44	3.88	1.32	5.07	2.38
262/2262	11.62	5.00	7.51	15.39	8.00	2.94	2.625	10.38	4.13	.56	3.38	1.69	3.88	1.32	5.63	2.75
300/2300	12.64	5.50	8.23	17.14	8.88	3.25	3.000	11.38	4.50	.56	3.88	1.94	4.50	1.25	6.75	3.46
325/2325	13.14	6.00	8.54	17.73	9.38	3.50	3.250	11.88	4.75	.56	3.88	1.94	4.50	1.25	7.06	3.51
425/2425	16.38	7.00	8.96	19.32	11.38	4.44	4.250	14.88	6.19	.69	5.00	2.50	5.13	1.42	8.12	4.26
525/2525	19.00	7.00	10.86	23.15	14.00	5.12	5.250	17.50	6.87	.69	5.81	2.91	6.25	1.87	9.06	4.36

NEMA Motor C-Face Flange Locations

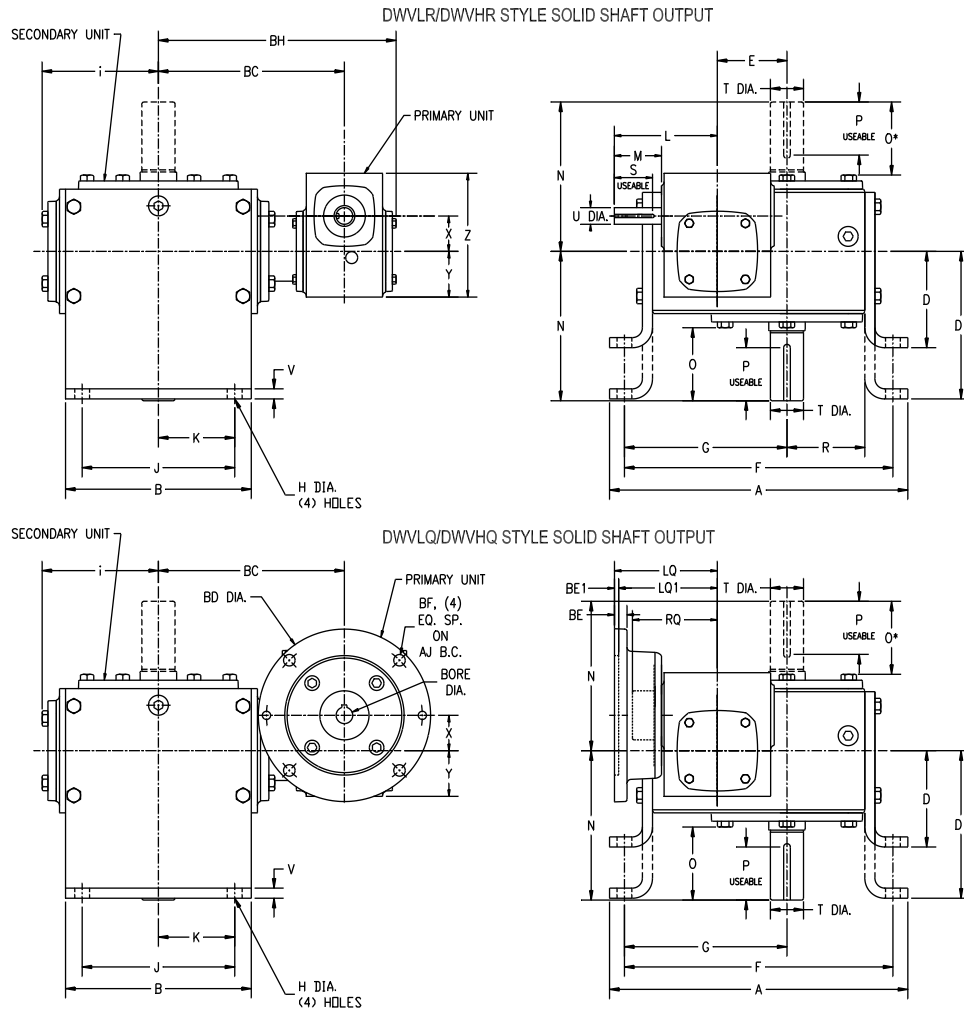
UNIT	P**	R	S**	T	U	V	X	Y	Z	56C/140TC		180TC		210TC	
										RQ	LQ	RQ	LQ1	RQ	LQ1
154/2154	3/16 X 1.50	3.50	1/8 x 1.44	0.750	.500	.25	1.33	1.72	4.66	3.72	3.62	N/A	N/A	N/A	N/A
175/2175	3/16 X 1.38	3.50	1/8 x 1.44	0.875	.500	.25	1.33	1.72	4.66	3.75	3.62	N/A	N/A	N/A	N/A
206/2206	1/4 X 1.44	4.01	1/8 x 1.44	1.000	.500	.38	1.33	1.72	4.66	4.15	3.62	N/A	N/A	N/A	N/A
238/2238	1/4 X 1.75	4.06	1/8 x 1.44	1.125	.500	.38	1.33	1.72	4.66	4.18	3.62	N/A	N/A	N/A	N/A
262/2262	1/4 X 2.00	5.00	1/8 x 1.44	1.250	.500	.38	1.33	1.72	4.66	4.94	3.62	N/A	N/A	N/A	N/A
300/2300	1/4 X 2.25	5.62	3/16 x 1.50	1.250	.625	.38	1.54	1.91	5.38	5.31	4.29	N/A	N/A	N/A	N/A
325/2325	3/8 X 2.62	5.63	3/16 x 1.50	1.500	.625	.38	1.54	1.91	5.38	5.58	4.29	N/A	N/A	N/A	N/A
425/2425	1/2 X 3.06	6.50	3/16 x 1.50	1.875	.625	.50	2.06	2.28	6.38	6.15	4.76	N/A	N/A	N/A	N/A
525/2525	1/2 X 3.50	7.75	1/2 x 3.50	2.000	.750	.50	2.62	2.94	8.00	7.63	5.62	5.42	5.86	N/A	N/A

** Keyway width by length

NEMA Motor C-Face Mounting Dimensions

FRAME	AJ	AK	BD	BE	BE1	BF	BORE	KEYWAY****
56C	5.88	4.50	6.50	0.38	N/A	0.41	0.625	3/16 X 3/32
140TC	5.88	4.50	6.50	0.38	N/A	0.41	0.875	3/16 X 3/32
180TC	7.25	8.50	9.00	N/A	.50	0.53	1.125	1/4 X 1/8
210TC	7.25	8.50	9.00	N/A	.50	0.53	1.375	5/16 X 5/32

**** Keyway width by depth



UNIT	A	B	BC	BH	D	D1	E	F	G	H	I	J	K	L	M	N	O
133/2133	7.26	4.00	5.57	7.60	2.63	3.56	1.333	6.50	3.86	.38	2.13	3.00	1.50	3.88	1.32	4.00	1.97
154/2154	7.88	5.00	5.65	8.06	3.00	4.38	1.540	7.00	4.28	.44	3.25	4.00	2.00	3.88	1.32	4.31	1.90
175/2175	8.25	5.00	6.27	8.77	3.00	4.38	1.750	7.37	4.50	.44	3.33	4.00	2.00	3.88	1.32	4.33	1.83
206/2206	9.38	6.00	6.66	9.23	3.13	4.88	2.063	8.38	5.09	.50	3.72	4.88	2.44	3.88	1.32	4.69	2.12
238/2238	9.94	6.00	6.76	9.45	3.38	5.25	2.375	8.81	5.38	.50	3.82	4.88	2.44	3.88	1.32	5.07	2.38
262/2262	11.24	7.00	7.51	10.39	3.63	5.56	2.625	10.12	6.12	.56	4.38	5.75	2.88	3.88	1.32	5.63	2.75
300/2300	12.50	8.00	8.23	11.52	3.94	5.88	3.000	11.13	6.75	.56	4.71	6.00	3.00	4.50	1.25	6.75	3.46
325/2325	13.00	8.50	8.54	12.10	4.69	6.25	3.250	11.88	7.13	.56	5.02	6.13	3.06	4.50	1.25	7.06	3.51
425/2425	16.26	10.00	8.96	12.82	5.00	7.50	4.250	14.88	8.69	.69	5.77	7.88	3.94	5.13	1.42	8.12	4.26
525/2525	19.62	13.00	10.86	15.40	5.16	9.16	5.250	18.00	10.88	.78	7.40	10.00	5.00	6.25	1.87	9.06	4.36

NEMA Motor C-Face Flange Locations

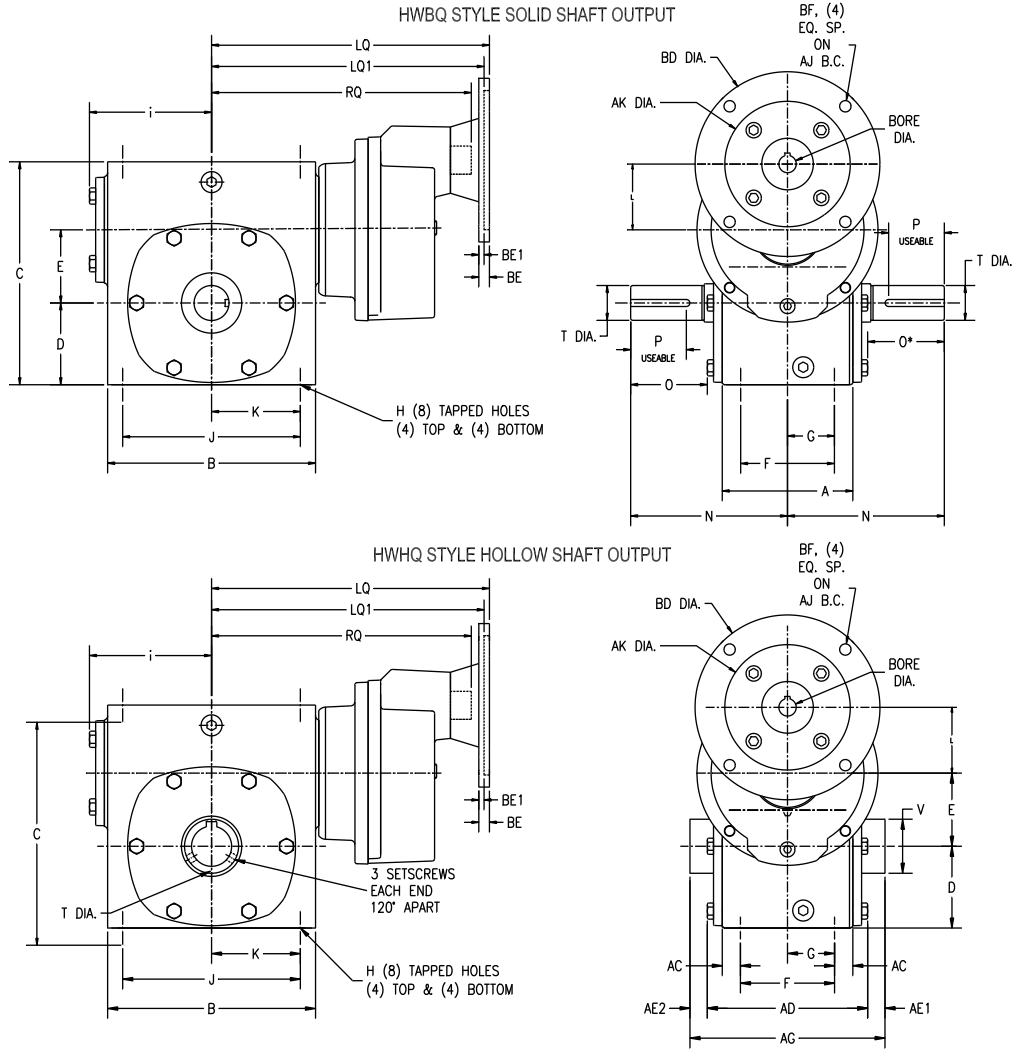
UNIT	P**	R	S**	T	U	V	X	Y	Z	56C/140TC		180TC	
										RQ	LQ	RQ	LQ1
133/2133	3/16 X 1.50	1.72	1/8 x 1.44	0.625	.500	.25	1.33	1.72	4.66	3.21	3.62	N/A	N/A
154/2154	3/16 X 1.50	1.91	1/8 x 1.44	0.750	.500	.25	1.33	1.72	4.66	3.21	3.62	N/A	N/A
175/2175	3/16 X 1.38	2.06	1/8 x 1.44	0.875	.500	.25	1.33	1.72	4.66	3.21	3.62	N/A	N/A
206/2206	1/4 X 1.44	2.28	1/8 x 1.44	1.000	.500	.38	1.33	1.72	4.66	3.21	3.62	N/A	N/A
238/2238	1/4 X 1.75	2.50	1/8 x 1.44	1.125	.500	.38	1.33	1.72	4.66	3.21	3.62	N/A	N/A
262/2262	1/4 X 2.00	2.94	1/8 x 1.44	1.250	.500	.38	1.33	1.72	4.66	3.21	3.62	N/A	N/A
300/2300	1/4 X 2.25	3.25	3/16 x 1.50	1.250	.625	.38	1.54	1.91	5.38	3.72	4.29	N/A	N/A
325/2325	3/8 X 2.62	3.50	3/16 x 1.50	1.500	.625	.38	1.54	1.91	5.38	3.72	4.29	N/A	N/A
425/2425	1/2 X 3.06	4.44	3/16 x 1.50	1.875	.625	.50	2.06	2.28	6.38	4.15	4.76	N/A	N/A
525/2525	1/2 X 3.50	5.12	1/2 x 3.50	2.000	.750	.50	2.62	2.94	8.00	4.94	5.62	5.42	5.86

*** Keyway width by length

NEMA Motor C-Face Mounting Dimensions

FRAME	AJ	AK	BD	BE	BE1	BF	BORE	KEYWAY****
56C	5.88	4.50	6.50	0.38	N/A	0.41	0.625	3/16 X 3/32
140TC	5.88	4.50	6.50	0.38	N/A	0.41	0.875	3/16 X 3/32
180TC	7.25	8.50	9.00	N/A	.50	0.53	1.125	1/4 X 1/8

**** Keyway width by depth



UNIT	A	B	C	D	E	F	G	H	H DEPTH	I	J	K	L	N	P**
175/2175	3.66	5.38	5.75	2.06	1.750	2.75	1.38	5/16-18	0.63	3.33	4.19	2.09	2.875	4.33	3/16 x 1.38
206/2206	3.90	6.12	6.38	2.28	2.063	3.00	1.50	5/16-18	0.63	3.72	4.75	2.38	2.875	4.69	1/4 x 1.44
238/2238	4.06	6.34	6.94	2.50	2.375	2.88	1.44	3/8-16	0.56	3.82	5.00	2.50	2.875	5.07	1/4 x 1.75
262/2262	4.45	7.46	8.00	2.94	2.625	3.38	1.69	3/8-16	0.69	4.38	6.38	3.19	2.875	5.63	1/4 x 2.00
300/2300	5.28	8.12	8.88	3.25	3.000	4.00	2.00	7/16-14	0.88	4.71	7.00	3.50	2.875	6.75	1/4 x 2.25
325/2325	5.75	8.75	9.38	3.50	3.250	4.00	2.00	7/16-14	0.88	5.02	7.50	3.75	2.875	7.06	3/8 x 2.62
425/2425	6.13	10.25	11.38	4.44	4.250	5.00	2.50	5/8-11	1.00	5.77	8.50	4.25	2.875	8.12	1/2 x 3.06
525/2525	7.19	13.00	14.00	5.12	5.250	5.81	2.91	5/8-11	1.25	7.40	11.00	5.50	2.875	9.06	1/2 x 3.50

** Keyway width by length

NEMA Motor C-Face Flange Locations

UNIT	O	T	V	Z-max	Z- kwy***	AD	AG	56C/140TC		56C/140TC ÷		180TC	
								RQ	LQ	RQ	LQ	RQ	LQ1
175/2175	1.83	0.875	1.575	1.000	1/4 X 1/8	5.00	5.50	8.76	9.37	9.91	10.28	N/A	N/A
206/2206	2.12	1.000	1.969	1.438	3/8 X 3/16	5.13	6.00	9.15	9.76	10.30	10.67	N/A	N/A
238/2238	2.38	1.125	2.165	1.438	3/8 X 3/16	5.38	6.00	9.25	9.86	10.39	10.77	N/A	N/A
262/2262	2.75	1.250	2.165	1.438	3/8 X 3/16	5.76	7.00	10.01	10.62	11.13	11.50	N/A	N/A
300/2300	3.46	1.250	2.756	1.938	1/2 X 1/4	6.58	7.50	10.33	10.94	NA	NA	N/A	N/A
325/2325	3.51	1.500	2.756	1.938	1/2 X 1/4	7.11	7.87	10.65	11.26	11.79	12.17	N/A	N/A
425/2425	4.26	1.875	3.150	2.188	1/2 X 1/4	7.72	9.00	N/A	N/A	NA	NA	12.98	13.48
525/2525	4.36	2.000	4.724	3.438	7/8 X 7/16	9.07	11.09	N/A	N/A	NA	NA	14.58	15.08

*** Keyway width by depth ÷ Dimensions apply to Stainless Steel Constructed units ONLY

NEMA Motor C-Face Mounting Dimensions

FRAME	AJ	AK	BD	BE	BE1	BF	BORE	KEYWAY****
56C	5.88	4.50	6.50	0.38	N/A	0.41	0.625	3/16 X 3/32
140TC	5.88	4.50	6.50	0.38	N/A	0.41	0.875	3/16 X 3/32
180TC	7.25	8.50	9.00	N/A	.50	0.53	1.125	1/4 X 1/8

**** Keyway width by depth

**Unique Symmetrical Taper Bushing Style ALL Stainless Steel
Smooth Body Worm Reducer**



Sterling Electric has the design and manufacturing experience to supply outstanding products to meet our customer demands. Our unique Symmetrical Worm Gear product provides our customers the ability to utilize our symmetrical tapered bushings in our Helical Bevel product in addition to our worm reducer product offering. This ability provides reduced inventory and increased flexibility where the application utilizes a right-angle worm reducer or a right-angle helical bevel reducer, with being able to maintain one bushing for use in either product.

Sterling Electric understands inventory costs and the number of items that it takes to operate production facilities in today's highly competitive markets. Let our knowledgeable sales staff assist your organization with our abilities and ideas to provide cost savings to your company today.

Our Symmetrical bushing style worm reducer is available in two different sizes to accommodate the use of a bushed output mounting. Reference input/output horsepower and torque ratings on pages A11 and A13 of this catalog for units sizes SS262/SS2262 and SS325/SS2325.



MODEL NUMBER SELECTION

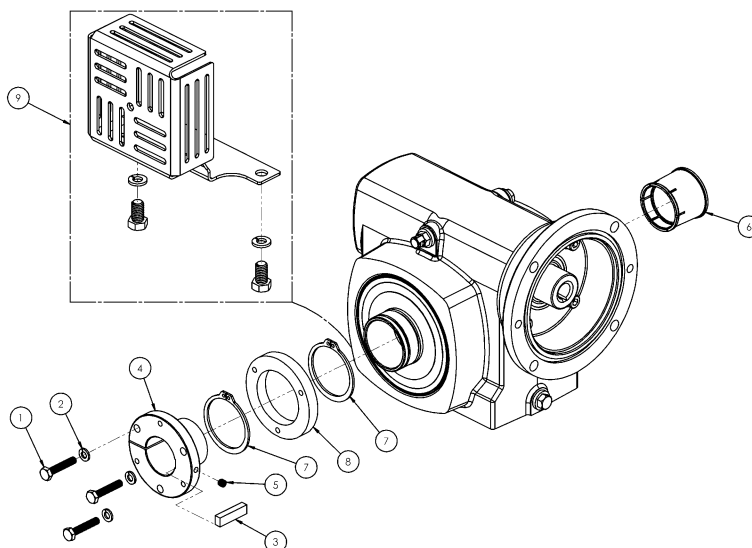
C-Face Quill Input	Shaft Cover Kit	Taper Bushing Kit *	Torque Arm Kit
SS262/SS2262UHQ	SS2262SCKIT	SSK24-X.XXXUTBK	SSB2262TAKIT
SS325/SS2325UHQ	SS2325SCKIT	SSK36-X.XXXUTBK	SSB2325TAKIT
C-Face Coupling Input			
SS262/SS2262UHC	SS2262SCKIT	SSK24-X.XXXUTBK	SSB2262TAKIT
SS325/SS2325UHC	SS2325SCKIT	SSK36-X.XXXUTBK	SSB2325TAKIT

- Complete Model Number by inserting Bushing Bore Sizes in place of X.XXX

INSTALLATION – SMOOTH BODY WORM REDUCER WITH UNIVERSAL TAPER LOCK BUSHING

B3

The following procedure is recommended for all shaft mounted units using the universal taper lock bushing and standard torque arm. All taper lock bushing kits are supplied with bushing, pull-up ring, mounting hardware, snap-in centering ring, retaining rings, and shaft key. Refer to illustration below when installing units with universal taper lock bushings. Note that the shaft cover kit is sold separately.



Item No.	Description	Qty	Item No.	Description	Qty
1	Hex Head Screw	3	6	Snap-In Centering Ring	1
2	Lock Washer	3	7	External Retaining Ring	2
3	Shaft Key	1	8	Pull-up Ring	1
4	Taper Lock Bushing	1	9	Shaft Cover Kit (sold separately)	1
5	Set Screw	1			

1. Clean driven shaft extension and output bore of the unit.
2. Determine which side of the unit is to be the location of the taper lock bushing and which side is going to be the location of the snap-in centering ring.
3. Install the snap-in centering ring.

WARNING: Once the snap-in centering ring is installed, it cannot be removed without destroying it and a new one must be obtained from the factory.

4. Install the external retaining ring in the groove closest to the housing on the side that is to be the location of the taper lock bushing. Install the pull-up ring. Install the second external retaining ring so that the pull-up ring is located between the two retaining rings.
5. Install the supplied shaft key.

CAUTION: Taper lock bushings are meant to be dry mounted. **DO NOT USE** lubricants, anti-seize, or anti-fretting compounds on the bushing and shaft mounting area.

6. Align tapped holes in pull-up ring with the through holes in tapered bushing.
7. Insert hex head screws (supplied) through the holes in the tapered bushing and thread loosely into tapped holes in pull-ring.

INSTALLATION – SMOOTH BODY WORM REDUCER WITH UNIVERSAL TAPER LOCK BUSHING

8. Position assembly on driven shaft. Make sure the key is in contact with the full length of the tapered busing. Tighten hex head screws in a progressive and uniformly manner to the torque value listed below.

Unit size	Screw Size	Tightening Torque
SS262/SS2262	1/4-20	9 ft-lbs
SS325/SS2325	5/16-18	15 ft-lbs

WARNING: The tightening force on the hex head screws is multiplied many times by the wedging action of the tapered surface. If extreme tightening force is applied, or if a lubricant is used, bursting pressures will be created in the hollow shaft hub of the mating part.

9. Install set screw over shaft key and tighten.
10. Anchor the unit to a secure point on the structure by means of the torque arm.
11. Fit guards in accordance with the relevant state and local safety regulations.
12. Check the oil level and install the breather vent (if required) as described in **LUBRICATION**.
13. Install the shaft cover (sold separately).
14. Install the motor as described in **MOTOR INSTALLATION**.

REMOVAL – UNIVERSAL TAPER LOCK BUSHING

WARNING: Hot oil or gear units can cause severe burns. Use extreme care when removing lubrication plugs and vents.

WARNING: Make certain that the power supply is disconnected before attempting to service or remove any components. Lock out the power supply and tag it to prevent unexpected application of power.

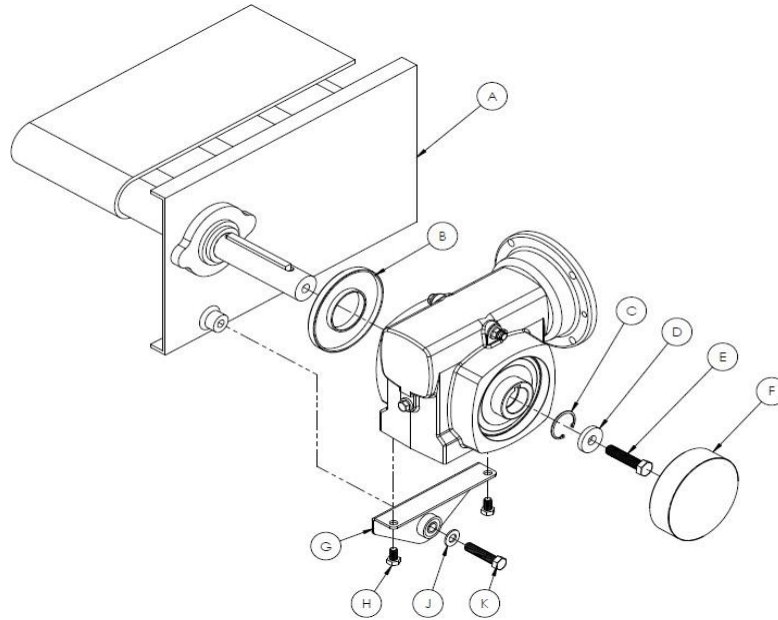
1. Remove shaft cover (if installed).
2. To remove the unit, loosen set screw over the shaft key.
3. Loosen and remove hex head screws. These will be used as jack screws in the tapped holes in the taper lock bushing.
4. Insert hex head screws in the tapped holes in the taper lock bushing making sure the pull-up ring is oriented such that the hex head screws push against it. Progressively tighten each one until the taper bushing comes loose from the reducer output shaft.
5. Remove the taper lock bushing.
6. Remove unit using caution and proper lifting techniques.

NOTE: Shaft Covers and Bushings are sold separately.

B5

1. Refer to the following assembly diagram for proper mounting. Note that the following instructions assume the customer shaft is made to the dimensions noted above for the appropriate bore size and that the optional torque arm is being used.
2. Once the orientation of the reducer is decided, the supplied extra seal (B) needs to be installed on the inboard side of the reducer closest to the conveyor (A). A generous amount of food grade grease (not supplied) needs to be applied to the inside diameter of the seal as well as the space in between the two seals to ensure the seal lip is properly lubricated during operation.
3. Clean driven shaft extension and output bore of the unit.
4. Apply anti-seize or anti-fretting compound (not supplied) to the hollow bore of the unit to aid removal at a later date.
5. Locate the unit in position onto the driven shaft by using the supplied mounting hardware kit and optional torque arm (sold separately). The mounting kit consists of a snap ring, washer (D), and bolt. The optional torque arm consists of the torque arm with rubber bushing (G) and mounting bolts (H). The mounting bolt (J) and washer (K) used to attach the torque arm to the conveyor structure is supplied by the customer. Refer to the exploded view drawing on Page B5 pertaining to torque arm mounting.

1. Install the shaft cover (F) to keep the hollow bore clean and free of any contaminants.
2. Check the oil level referring to the **LUBRICATION** section.
3. Install the motor using the supplied hardware and O-ring. Make sure the O-Ring is properly located in the motor input flange groove.
4. If necessary, relocate the breather to the proper location. Make sure to remove the breather transportation lock as described in the **VENT PLUG LOCATION** section on Pages B7 and B8..
5. Fit guards in accordance with the relevant state and local safety regulations.



WARNING: **DO NOT RIGID MOUNT UNIT.** Mounting should be such to allow freedom of movement of the reducer to pivot around the driven shaft centerline without imposing excessive loads than can lead to driven shaft breakage, premature reducer bearing failure, cracking of the conveyor structure, and leaks. Consult factory if needed.

WARNING: For shipment, solid plugs are installed in the unit along with a vent plug with a transportation lock which is pre-installed assuming standard horizontal mounting (M1). The vent plug will need to be removed and relocated if the unit is to be mounted in any position other than the standard horizontal position as shown in the chart under **LUBRICATION**. After the unit is mounted, completely remove the transportation lock from the vent plug as directed under **VENT PLUG LOCATION**. Failure to vent the unit can cause premature seal wear or loss of seal and oil. These conditions are not covered under warranty. Check for correct oil level. Contact the factory for level and vent recommendations on non-standard mounting positions.

WARNING: Depending upon gear geometry and operating conditions worm gear reducers may or may not back drive. Special consideration should be given to high inertia loads connected to the output shaft. Consult the factory for further details.

CAUTION: **DO NOT CHANGE MOUNTING POSITIONS WITHOUT CONTACTING FACTORY.** Altering the mounting position may require special lubrication provisions that must be factory installed.

CAUTION: Do not operate the reducer without making sure it contains the correct amount of oil. Do not overfill or underfill with oil, or injury to personnel, reducer or other equipment may result.

CAUTION: A unit cannot be used as an integral part of a machine superstructure which would impose additional loads on the unit other than those imposed by the torque being transmitted either through a shaft-mounted arrangement, and any shaft mounted power transmitting device. (e.g. sprockets, pulleys, couplings)

CAUTION: For safe operation and to maintain the unit warranty, when changing a factory installed fastener for any reason, it becomes the responsibility of the person making the change to properly account for fastener grade, thread engagement, load, tightening torque and the means of torque retention.

LUBRICATION

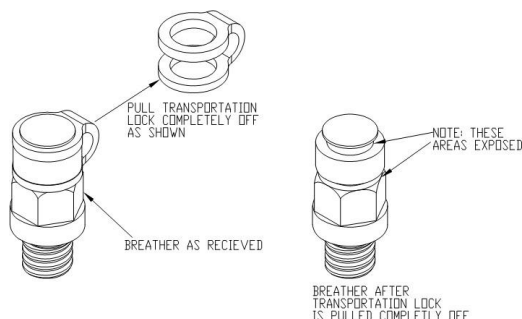
All Sterling Electric 2000RA smooth body right angle worm reducers supplied from the factory with Mobil Cibus 460 PAO Synthetic H1 Food Grade oil as standard. The design of the unit is such that it can be mounted in any position without adding additional oil. Oil level should still be checked after installation and before start-up to ensure it is at the proper level.

WARNING: PAO synthetic oils are not compatible with PAG synthetic oils. Mixing will cause immediate breakdown of performance causing catastrophic failure. The unit must be thoroughly flushed if a PAG synthetic oil is going to be used. Consult with the lubrication supplier regarding the use of PAG synthetics.

VENT PLUG LOCATION

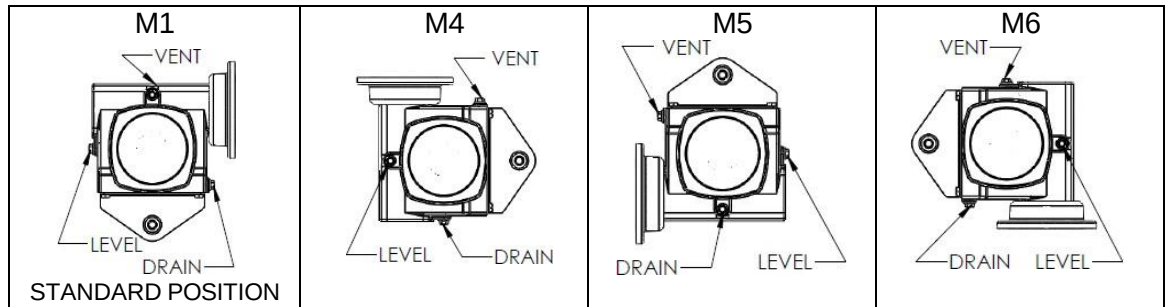
Sterling Electric 2000RA smooth body right angle worm reducers under continuous operation require ventilation of the oil bath in order to relieve excessive pressure build up due to normal operating temperatures.

Units are supplied with a Heinrichs Breather with a rubber transportation lock. The transportation lock must be completely removed before operation. Failure to do so may cause the unit to leak. See below.



Before putting the unit into operation, it may be necessary to relocate the vent plug for positions other than standard (M1). Substitute the vent plug for the solid plug at the position desired. Install the solid plug in the location the vent plug was removed from. Refer to the following chart for the recommended vent plug locations based on mounting position

VENT/ LEVEL/ DRAIN LOCATIONS



OIL & WEIGHT SPECIFICATIONS

RECOMMENDED LUBRICATION OIL (ISO 460)		
Mineral Oil	PAO† Synthetic	PAO† Synthetic H1 Food Grade
Mobilgear 600XP-460	Mobil SHC 460	Mobil Cibus 460

OIL CAPACITIES (FLUID OUNCE)					
UNIT SIZE	175/2175	206/2206	238/2238	262/2262	325/2325
FL-OZ	15	20	24	37	52

†Do not mix with PAG synthetic oil or failure will occur.

Note: Some gear lubricants contain EP additives that can be corrosive to gear bronze. Avoid lubricants that are compounded with sulfur and/or chlorine.

Change Intervals: Synthetic lubricants should be changed every two years or 6000 hours, whichever comes first.

CAUTION: Oil should be changed more often if reducer is used in a severe environment. (*i.e. dusty, humid*)

CAUTION: In the Food and Drug Industry (including animal food), consult the lubrication supplier for recommendation of lubricants which are acceptable to the Food and Drug Administration and/or other authoritative bodies having jurisdiction.

SPECIAL LUBRICATION CONSIDERATIONS

If the unit will be run with sustained input speeds less than 900 RPM, it should be specified with the order. The unit can then be modified to assure proper lubrication.

The maximum input HP rating as shown in the published Rating Tables is based on using a PAO synthetic lubrication and a stabilized oil bath temperature not exceeding 200° F for normal ambient temperatures.

Higher oil bath temperatures or continued operation, in excess of rated input HP, will tend to shorten the useful life of the lubricant. For high ambient temperatures in excess of 100° F, special lubricants or de-rating of the Gearmotor may be required. Consult the Factory or Local Office with complete application engineering data if this occurs.

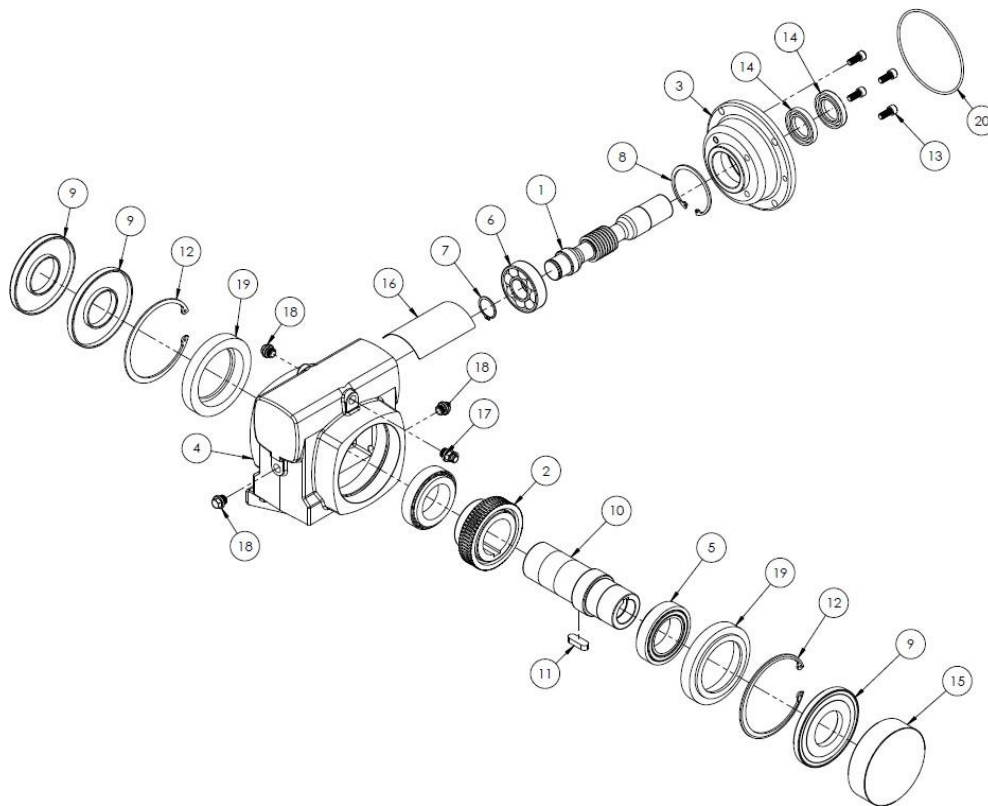
Use of PAG synthetic oil will increase the efficiency of the unit resulting in a higher overall input horsepower rating and output torque rating. PAG synthetics require extra care as they can be easily contaminated, are hygroscopic, and are not compatible with standard mineral based oils or PAO synthetic oils. Reference rating tables using PAG synthetics in the rating tables section of this catalog. If a PAG synthetic is going to be used to replace a mineral based or PAO synthetic, the unit must be thoroughly flushed or catastrophic failure may occur. Consult with the lubrication supplier regarding the use of PAG synthetics.

SMOOTH BODY WORM REDUCER PARTS LIST

B9

Item No.	Description	Qty	Item No.	Description	Qty
1	Quill Input Worm Shaft	1	11	Metric Key	1
2	Hollow Output Gear	1	12	Internal Beveled Snap Ring	2
3	Motor Input Flange	1	13	Socket Head Cap Screw	4
4	Smooth Body Housing	1	14	Input Seal	2
5	Tapered Roller Bearing	2	15	Shaft Cover	1
6	Ball Bearing	1	16	Splash Guard	1
7	External Snap Ring	1	17	Breather	1
8	Internal Snap Ring	1	18	Seal Plug	3
9	Output Seal	3	19	Bearing Carrier*	2
10	Hollow Output Shaft	1	20	O-Ring	1

*Bearing carrier not used on SS175/SS2175



B10	SMOOTH BODY WORM REDUCER PARTS LIST	
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SEAL AND BEARING SIZES

Input Bearings

Unit Size	Bearing Part Number and Size				
	Series	OD (mm)	ID (mm)	Width (mm)	Sterling P/N
SS175/SS2175	6304	52	20	15	400-0020-8
SS206/SS2206	6305	62	25	17	400-0495-5
SS238/SS2238	6305	62	25	17	400-0495-5
SS262/SS2262	6306	72	30	19	400-0022-4
SS325/SS2325	30306	72	30	20.75	400-0496-4

Unit Size	Bearing Part Number and Size				
	Series	OD (mm)	ID (mm)	Width (mm)	Sterling P/N
SS175/SS2175	30208	80	40	19.75	400-0503-7
SS206/SS2206	32010	80	50	20	400-0505-5
SS238/SS2238	32011	90	55	23	400-0513-7
SS262/SS2262	32011	90	55	23	400-0513-7
SS325/SS2325	32014	110	70	25	400-0514-6

Hollow Shaft Output Bearings

Quill Style Input Seals

Unit Size	Seal Part Number and Size				
	NEMA Input	Shaft (mm)	Bore (mm)	Width (mm)	Sterling P/N
SS175/SS2175	56C	30	45	7	404-0444-6
	140TC	35	45	7	404-0331-9
SS206/SS2206	56C	30	50	7	404-0291-9
	140TC	35	50	8	404-0292-8
SS238/SS2238	56C	30	50	7	404-0291-9
	140TC	35	50	8	404-0292-8
	180TC	45	60	8	404-0295-5
SS262/SS2262	56C/140TC	35	55	8	404-0294-6
	180TC	45	60	8	404-0295-5
SS325/SS2325	56C/140TC	35	55	8	404-0294-6
	180TC	45	60	8	404-0295-5
	210TC	55	70	8	404-0235-5

Hollow Shaft Output Seals

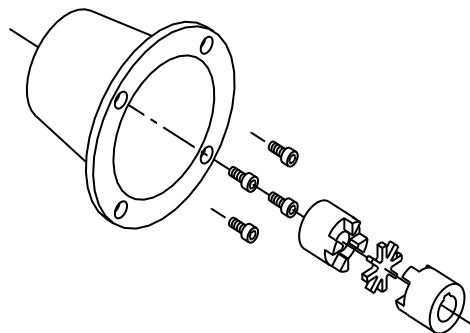
Unit Size	Seal Part Number and Size			
	Shaft (mm)	Bore (mm)	Width (mm)	Sterling P/N
SS175/SS2175	40	80.5	8	404-0465-5
SS206/SS2206	50	90	10	404-0433-7
SS238/SS2238	55	105	10	404-0462-8
SS262/SS2262†	55	120	10	404-0453-7
SS325/SS2325	70	145	10	404-0456-4

† Early units have a 120.5mm OD seal part number 404-0460-0. Check seal OD before ordering from factory.

2000RA C-FACE COUPLED STYLE INPUT KITS

C-face coupled style kits include mounting hardware, input flange, and coupling

Unit Size	NEMA Motor Frame Size Kit No.			
	56C	140TC	180TC	210TC
133/2133	2133CK56			
154/2154	2154CK56	2154CK14		
175/2175	2175CK56	2175CK14		
206/2206	2206CK56	2206CK14		
238/2238	2238CK56	2238CK14		
262/2262	2262CK56	2262CK14	2262CK18	2262CK21
300/2300	2300CK56	2300CK14	2300CK18	2300CK21
325/2325	2325CK56	2325CK14	2325CK18	2325CK21
425/2425	Contact Factory			
525/2525	Contact Factory			

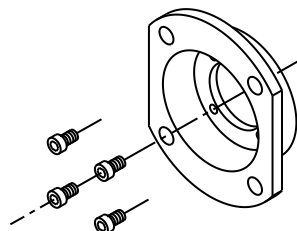


2000RA HOLLOW OUTPUT FLANGE KITS

Hollow output kits include mounting hardware and output flange. Can be used on solid shaft output units also.

Unit Size	Kit No.
133/2133	2133FHK
154/2154	2154FHK
175/2175	2175FHK
206/2206	2206FHK
238/2238	2238FHK

Unit Size	Kit No.
262/2262	2262FHK
300/2300	2300FHK
325/2325	2325FHK
425/2425	2425FHK
525/2525	2525FHK

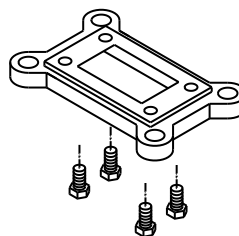


2000RA BASE MOUNT KITS

Base mount kits include mounting hardware and base.

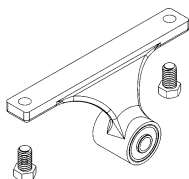
Unit Size	Kit No.
133/2133	2133BK
154/2154	2154BK
175/2175	2175BK
206/2206	2206BK
238/2238	2238BK

Unit Size	Kit No.
262/2262	2262BK
300/2300	2300BK
325/2325	2325BK
425/2425	2425BK
525/2525	2525BK



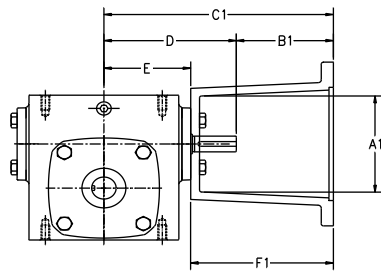
2000RA TORQUE ARM KITS

All Kits are Stainless Steel Construction and can be utilized on Cast Iron Model Reducers

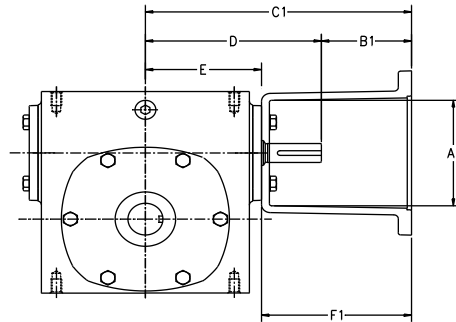


Unit Size	Kit Number
175/2175	CSSB2175TAKIT
206/2206	CSSB2206TAKIT
238/2238	CSSB2238TAKIT
262/2262	CSSB2262TAKIT
325/2325	CSSB2325TAKIT

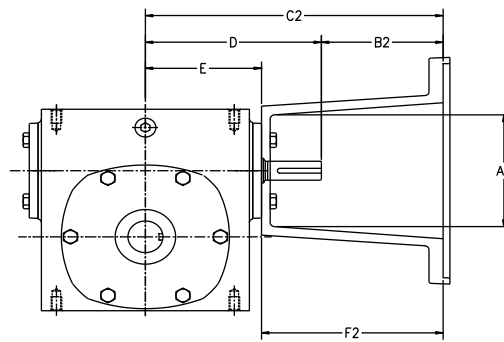
1.33CD ~ 2.38CD 56C/140TC INPUT



2.62CD ~ 5.25CD 56C/140TC INPUT



2.62CD ~ 5.25CD 180TC/210TC INPUT



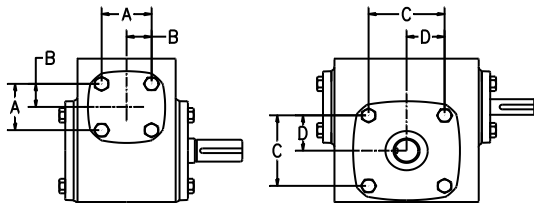
UNIT			56C/140TC (DIMENSIONS ARE MINIMUMS)				180TC/210TC (DIMENSIONS ARE MINIMUMS)			
	E	D	A1	B1	C1	F1	A2	B2	C2	F2
133/2133	2.32	3.88	3.43	2.50	6.38	4.06				
154/2154*	3.03	4.50	3.43	2.42	6.92	3.89				
175/2175*	3.11	4.75	3.43	2.25	7.00	3.89				
206/2206**	3.50	5.13	3.82	2.77	7.90	4.40				
238/2238**	3.60	5.75	3.82	2.25	8.00	4.40				
262/2262***	4.16	6.25	4.17	2.36	8.61	4.45	4.45	3.36	9.61	5.45
300/2300***	4.49	6.57	4.17	2.37	8.94	4.45	4.45	3.37	9.94	5.45
325/2325***	4.80	7.00	4.17	2.25	9.25	4.45	4.45	3.25	10.25	5.45
425/2425	5.39	9.57					4.45	3.74	13.31	7.92
525/2525	6.87	10.87					4.45	3.74	14.61	7.74

* 154/2154 and 175/2175 share the same input C-Face coupled adapter flange.

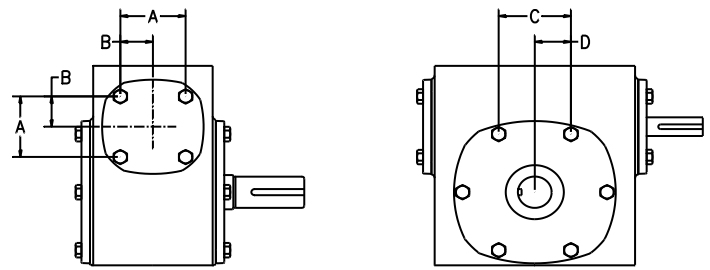
** 206/2206 and 238/2238 share the same input C-Face coupled adapter flange.

*** 262/2262, 2300 and 2325 share the same input C-Face coupled adapter flange.

	Input and Output BOLT CIRCLE DIMENSIONS	C3
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UNIT SIZE 2133 ~ 2238



UNIT SIZE 2262~ 2425

Input Cover				
Unit Size	A	B	Bolt Circle	Bolt Size
133/2133	1.503	.752	2.126	M6 x 1.00P
154/2154	1.858	.929	2.628	M8 x 1.25P
175/2175	1.858	.929	2.628	M8 x 1.25P
206/2206	2.121	1.061	3.000	M8 x 1.25P
238/2238	2.121	1.061	3.000	M8 x 1.25P
262/2262	2.430	1.215	3.437	M8 x 1.25P
300/2300	2.430	1.215	3.437	M8 x 1.25P
325/2325	2.430	1.215	3.437	M8 x 1.25P
425/2425	2.784	1.392	3.937	M10 x 1.50P
525/2525	3.563	1.782	5.039	M12 X 1.75P

Output Cover*				
Unit Size	C	D	Bolt Circle	Bolt Size
133/2133	2.116	1.058	2.992	M6 x 1.00P
154/2154	2.561	1.281	3.622	M8 x 1.25P
175/2175	2.840	1.420	4.016	M8 x 1.25P
206/2206	3.090	1.545	4.370	M8 x 1.25P
238/2238	3.494	1.747	4.941	M8 x 1.25P
262/2262	2.689	1.345	5.378	M8 x 1.25P
300/2300	3.189	1.595	6.378	M8 x 1.25P
325/2325	3.284	1.642	6.567	M8 x 1.25P
425/2425	4.272	2.136	8.543	M10 x 1.50P
525/2525	4.921	2.461	9.843	M12 X 1.75P

Direction of Rotation
Solid Shaft and Hollow Shaft Outputs

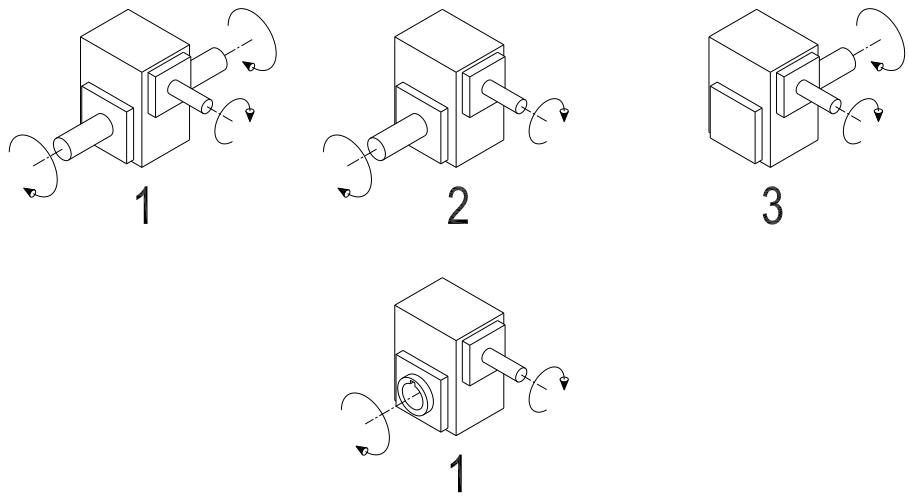
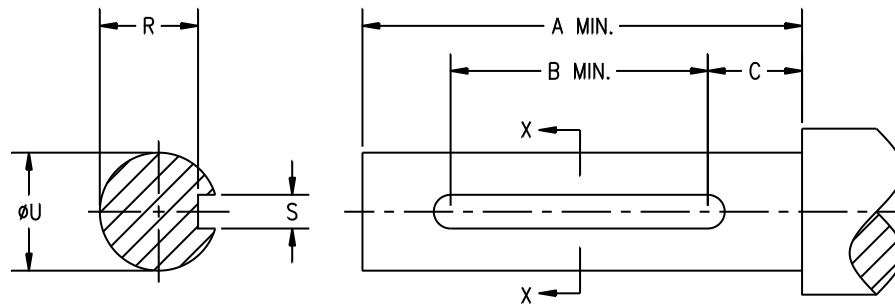


Figure 1

C4

Customer Shaft Requirements for HOLLOW OUTPUT SHAFT STYLE REDUCERS



SECTION X-X

U +.000 -.001	S +.002 -.000	R +.000 -.015	133/2133			154/2154			175/2175			206/2206			238/2238		
			A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
0.625	0.188	0.517	2.38	2.03	0.13	2.71	2.36	0.13	2.75	2.40	0.13						
0.688	0.188	0.581							2.75	2.40	0.13						
0.750	0.188	0.644							2.75	2.40	0.13						
0.875	0.188	0.771							2.75	2.40	0.13						
1.000	0.250	0.859							2.75	2.37	0.13	3.00	2.62	0.13	3.00	2.62	0.13
1.125	0.250	0.986										3.00	2.62	0.13	3.00	2.62	0.13
1.187	0.250	1.049										3.00	2.62	0.13	3.00	2.62	0.13
1.250	0.250	1.112										3.00	2.62	0.13	3.00	2.62	0.13
1.437	0.375	1.225										3.00	2.55	0.13	3.00	2.55	0.13

U +.000 -.001	S +.002 -.000	R +.000 -.015	262/2262			300/2300			325/2325			425/2425			525/2525		
			A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
1.000	0.250	0.859	3.00	2.62	0.13												
1.125	0.250	0.986	3.00	2.62	0.13												
1.187	0.250	1.049	3.00	2.62	0.13	3.75	3.37	0.13	3.75	3.37	0.13						
1.250	0.250	1.112	3.00	2.62	0.13	3.75	3.37	0.13	3.75	3.37	0.13						
1.437	0.375	1.225	3.00	2.55	0.13	3.75	3.30	0.13	3.75	3.30	0.13	4.50	4.05	0.13			
1.500	0.375	1.289				3.75	3.30	0.13	3.75	3.30	0.13	4.50	4.05	0.13			
1.625	0.375	1.416				3.75	3.30	0.13	3.75	3.30	0.13	4.50	4.05	0.13			
1.687	0.375	1.478				3.75	3.30	0.13	3.75	3.30	0.13	4.50	4.05	0.13			
1.750	0.375	1.542				3.75	3.30	0.13	3.75	3.30	0.13	4.50	4.05	0.13			
1.875	0.500	1.591				3.75	3.24	0.13	3.75	3.24	0.13	4.50	3.99	0.13			
1.937	0.500	1.654				3.75	3.24	0.13	3.75	3.24	0.13	4.50	3.99	0.13			
2.000	0.500	1.718							3.75	3.24	0.13	4.50	3.99	0.13			
2.187	0.500	1.908										4.50	3.99	0.13	5.55	5.04	0.13
2.250	0.500	1.972													5.55	5.04	0.13
2.437	0.625	2.084													5.55	4.98	0.13
2.500	0.625	2.148													5.55	4.98	0.13
2.687	0.625	2.338													5.55	4.98	0.13
2.937	0.750	2.513													5.55	4.92	0.13
3.000	0.750	2.577													5.55	4.92	0.13
3.187	0.750	2.767													5.55	4.92	0.13
3.437*	0.875	2.943													5.55	4.85	0.13

Notes:

- Above customer shaft dimensions are based on standard hollow shaft bore sizes as stated in the catalog and assume square keys. For other types of mounting, special bore sizes, or rectangular keys, contact factory.* 2525 units with max bore size require a 7/8 x 11/16 rectangular key in place of square key.
- Dimension B is minimum usable keyway length.
- Dimension A is minimum customer shaft engagement.
- The dimensions stated as minimum are to be used as a guideline only. Good engineering practice and safety considerations may require longer customer shaft engagement and key lengths.

	WORM/WORM and HELICAL WORM RATIO COMBINATIONS	C5
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Worm / Worm Ratio Combinations

Total Ratio	154/2154DW		175/2175DW		206/2206DW		238/2238DW		262/2262DW		300/2300DW		325/2325DW		425/2425DW		525/2525DW	
	P	S	P	S	P	S	P	S	P	S	P	S	P	S	P	S	P	S
	133/2133	154/2154	133/2133	175/2175	133/2133	206/2206	133/2133	238/2238	133/2133	262/2262	154/2154	300/2300	154/2154	325/2325	206/2206	425/2425	262/2262	525/2525
75:1	5	15	5	15	5	15	5	15	5	15	5	15	5	15	5	15	5	15
100:1	5	20	5	20	5	20	5	20	5	20	5	20	5	20	5	20	5	20
150:1	10	15	10	15	10	15	10	15	10	15	10	15	10	15	10	15	10	15
200:1	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20
250:1	10	25	10	25	10	25	10	25	10	25	10	25	10	25	10	25	10	25
300:1	10	30	10	30	10	30	10	30	10	30	10	30	10	30	10	30	10	30
400:1	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
500:1	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20
600:1	20	30	20	30	20	30	20	30	20	30	20	30	20	30	20	30	20	30
750:1	25	30	25	30	25	30	25	30	25	30	25	30	25	30	25	30	25	30
900:1	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
1000:1	50	20	50	20	50	20	50	20	50	20	50	20	50	20	50	20	50	20
1200:1	40	30	40	30	40	30	40	30	40	30	40	30	40	30	40	30	40	30
1500:1	50	30	50	30	50	30	50	30	50	30	50	30	50	30	50	30	50	30
1800:1	60	30	60	30	60	30	60	30	60	30	60	30	60	30	60	30	60	30
2400:1	60	40	60	40	60	40	60	40	60	40	60	40	60	40	60	40	60	40
3000:1	60	50	60	50	60	50	60	50	60	50	60	50	60	50	60	50	60	50
3600:1	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60

P = Primary (Input) unit.

S = Secondary (output) unit

Note: Actual ratio combination supplied by factory may vary from above depending on application and manufacturing requirements.

When ordering replacement parts, provide complete serial number and part number.

Helical/ Worm Ratio Combinations

Total Ratio	154/2154HW		175/2175HW		206/2206HW		238/2238HW		262/2262HW		300/2300HW		325/2325HW		425/2425HW		525/2525HW	
	P	S	P	S	P	S	P	S	P	S	P	S	P	S	P	S	P	S
	2	154/2154	2	175/2175	2	206/2206	2	238/2238	2	262/2262	2	300/2300	2	325/2325	3	425/2425	3	525/2525
10:1	2:1	5:1	2:1	5:1	2:1	5:1	2:1	5:1	2:1	5:1	2:1	5:1	2:1	5:1	2:1	5:1	2:1	5:1
20:1	2:1	10:1	2:1	10:1	2:1	10:1	2:1	10:1	2:1	10:1	2:1	10:1	2:1	10:1	2:1	10:1	2:1	10:1
25:1	5:1	5:1	5:1	5:1	5:1	5:1	5:1	5:1	5:1	5:1	5:1	5:1	5:1	5:1	5:1	5:1	5:1	5:1
30:1	2:1	15:1	2:1	15:1	3:1	10:1	3:1	10:1	3:1	10:1	3:1	10:1	3:1	10:1	3:1	10:1	2:1	15:1
40:1	4:1	10:1	4:1	10:1	4:1	10:1	4:1	10:1	4:1	10:1	4:1	10:1	4:1	10:1	4:1	10:1	2:1	20:1
45:1	3:1	15:1	3:1	15:1	3:1	15:1	3:1	15:1	3:1	15:1	3:1	15:1	3:1	15:1	3:1	15:1	3:1	15:1
50:1	5:1	10:1	5:1	10:1	5:1	10:1	5:1	10:1	5:1	10:1	5:1	10:1	5:1	10:1	5:1	10:1	2:1	25:1
60:1	4:1	15:1	4:1	15:1	4:1	15:1	4:1	15:1	3:1	20:1	4:1	15:1	4:1	15:1	4:1	15:1	4:1	15:1
75:1	5:1	15:1	5:1	15:1	5:1	15:1	5:1	15:1	5:1	15:1	5:1	15:1	5:1	15:1	5:1	15:1	5:1	15:1
80:1	4:1	20:1	4:1	20:1	4:1	20:1	4:1	20:1	4:1	20:1	4:1	20:1	4:1	20:1	4:1	20:1	4:1	20:1
100:1	4:1	25:1	4:1	25:1	4:1	25:1	4:1	25:1	5:1	20:1	5:1	20:1	5:1	20:1	5:1	20:1	5:1	20:1
125:1	5:1	25:1	5:1	25:1	5:1	25:1	5:1	25:1	5:1	25:1	5:1	25:1	5:1	25:1	5:1	25:1	5:1	25:1
150:1	5:1	30:1	5:1	30:1	5:1	30:1	5:1	30:1	5:1	30:1	5:1	30:1	5:1	30:1	5:1	30:1	5:1	30:1
200:1	5:1	40:1	5:1	40:1	5:1	40:1	5:1	40:1	5:1	40:1	5:1	40:1	5:1	40:1	5:1	40:1	5:1	40:1
250:1	5:1	50:1	5:1	50:1	5:1	50:1	5:1	50:1	5:1	50:1	5:1	50:1	5:1	50:1	5:1	50:1	5:1	50:1
300:1	5:1	60:1	5:1	60:1	5:1	60:1	5:1	60:1	5:1	60:1	5:1	60:1	5:1	60:1	5:1	60:1	5:1	60:1

P = Primary (Input) unit.

S = Secondary (output) unit

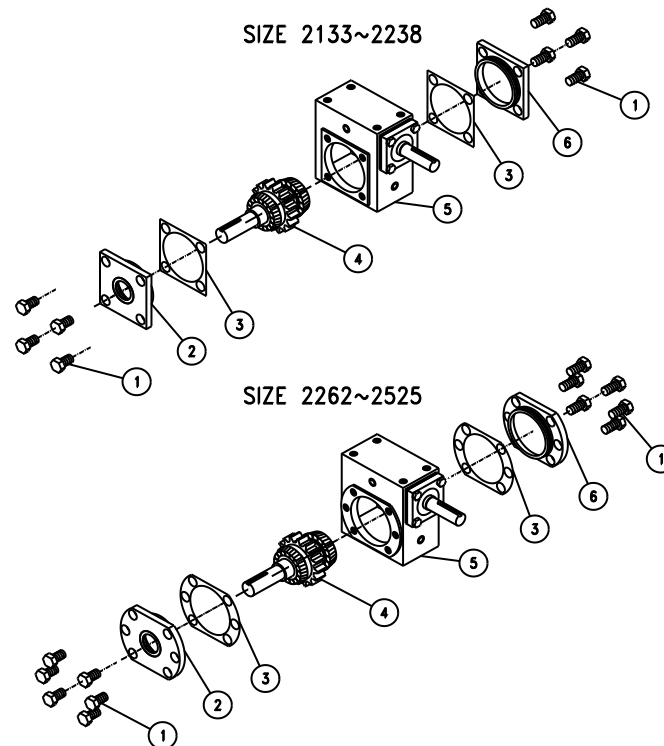
Note: Actual ratio combination supplied by factory may vary from above depending on application and manufacturing requirements.

When ordering replacement parts, provide complete serial number and part number.

SOLID OUTPUT SHAFT ASSEMBLY CONVERSION INSTRUCTIONS

Instructions for changing assembly position of single end solid output shaft 2000RA style BQ and BR right angle reducers.

1. Tape the shaft keyway using masking tape to ensure the output cover seal does not get damaged during the disassembly and reassemble process.
2. Drain oil from the unit into clean container for reuse.
3. Remove the output cover bolts (item 1) on both sides of the unit.
4. Using a rubber mallet or equal, tap the end of the output shaft until the opposite side output cover (item 6) comes loose. Carefully remove the output cover. Take extra care not to damage the O-ring or shim(s) (Item 3)*.
5. Once the opposite side output cover is removed, the output shaft assembly can be removed from the unit (item 4). Place the output shaft assembly on a clean rag or other soft surface as not to damage the bronze gear or contaminate the bearings.
6. Carefully remove the drive end output cover with the seal (item 2). Take extra care not to damage the O-ring or shim(s) (Item 3)*.
7. Reinstall the opposite side output cover and shim(s) (Item 6 and item 3) in the proper location for the desired assembly position.
8. Install and tighten the mounting bolts on the opposite side output cover.
9. Carefully lay the unit on its side with the reinstalled cover on the bottom and the open side of the housing (item 4) facing up.
10. Reinstall the output shaft assembly.
11. Refill the unit with oil.
12. Reinstall the drive end output cover and shim(s).
13. Install and tighten the mounting bolts on the drive end output cover.
14. Remove the tape from the output shaft.
15. Install the unit in the and double check the oil level. Be sure to follow all procedures and cautions and warnings as described in the O & M manual.

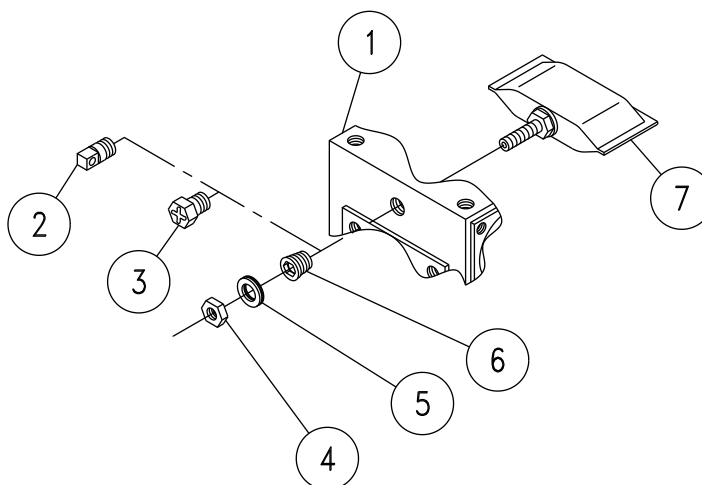


*Note: Sterling Electric 2000RA reducers are properly shimmed at the factory to set the proper bearing pre-load. When changing assembly positions, it is very important to reinstall all of the shims removed during disassembly in the same location. Failure to do so will cause premature bearing failure and overheating. Failure to follow the above procedures will void the warranty.

Sterling Electric 2000RA right angle worm reducers operating under continuous operation require ventilation of the oil bath to relieve excessive pressure build up due to normal operating temperatures. Standard cast iron units are supplied with a plastic breather that allows free exchange of air between the oil chamber and the outside environment. This type of breather is suitable for most reducer applications and must be installed in the proper location based on the mounting position of the reducer – refer to the instruction manual for further details. Other vent options must be ordered separately unless otherwise specified and include the following;

Pressure vent – This type of vent remains closed until a specified pressure is reached inside the reducer oil chamber. Once the pressure is reached, the vent will open and equalize the oil chamber pressure with that of the surrounding environment. Since this type of vent remains closed until it opens for an instant to equalize the pressure, it is recommended for applications where contamination of the oil chamber is possible if a traditional type of breather is used. Like the standard breather, the pressure vent must be installed in the proper location based on the mounting position of the reducer – refer to the instruction manual for further details.

Bladder System – This type of vent consists of an internal bladder that seals the oil chamber from the outside environment at all times. As pressure builds inside the unit, the bladder contracts keeping the internal pressure to a minimum. The advantage to this type of vent system is that the internal oil chamber is completely sealed from the outside environment ensuring that contamination does not enter the oil chamber or that oil is not released causing contamination in the application. Since this vent system is sealed, the reducer can be mounted in any position without effecting the performance of the bladder. This type of vent is standard on all washdown units up to 3.25CD and all stainless-steel constructed units. 4.25 CD and 5.25 CD units use the pressure vent for washdown applications.



Item No.	Description	Part Number	Reducer Size
1	Reducer Housing		
2	Standard Plastic Breather*	499 2561 9	All
3	Pressure Vent*	499 2580 0	All
4	Nut	418 1592 8	133/2133-325/2325
5	Seal Washer	418 1593 7	133/2133-325/2325
6	Adapter plug	299 7877 3	133/2133-325/2325
7	Internal Bladder	499 2590 0	133/2133-154/2154
		499 2591 9	175/2175-238/2238
		499 2592 8	262/2262-325/2325

*Note: With the exception of the bladder type vent system, the breather vent whether standard or pressure, will need to be installed by the customer in the proper location as noted by the instruction manual. Failure to install the breather vent will cause the unit to overheat and the oil seals to leak voiding the warranty.

C8	PRODUCT SELECTION INFORMATION	
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Read ALL instructions prior to operating the reducer. Improper maintenance or operation may cause injury to personnel or reducer failure.

Written authorization from Sterling Electric is required to operate or use reducers in man lift or people moving devices.

Check to make certain application does not exceed the allowable load capacities published in the current catalog.

Buyer shall be solely responsible for determining the adequacy of the product for any and all uses to which buyer shall apply the product. The application by buyer shall not be subject to any implied warranty of fitness for a particular purpose. Information contained in this section is considered correct at the time of publication and is subject to change without notice.

SAFETY ALERT

- WARNING:** For safety, purchaser or user should provide protective guards over all shaft extensions and any moving apparatus mounted thereon. The user is responsible for checking all applicable safety codes in his area and providing suitable guards. Failure to do so may result in bodily injury and/or damage to equipment.
- WARNING:** Hot oil or reducers can cause severe burns. Use extreme care when removing lubrication plugs and vents.
- WARNING:** Make certain that the power supply is disconnected before attempting to service or remove any components. Lock out the power supply and tag it to prevent unexpected application of power.
- WARNING:** Reducers are not to be considered fail safe or self-locking devices. If these features are required, a properly sized, independent holding device should be utilized.
- WARNING:** Any brakes that are used in conjunction with a reducer must be sized or positioned in such a way as to not subject the reducer to loads beyond the catalog rating.
- CAUTION:** Test run unit to verify operation. If the unit tested is a prototype, that unit must be of current production.
- CAUTION:** If the speed reducer cannot be located in a clear and dry area with access to adequate cooling air supply, then precautions must be taken to avoid the ingestion of contaminants such as water and the reduction in cooling ability due to exterior contaminants. Reducers located in confined spaces may require forced air-cooling.

CLASS OF SERVICE

All capacity ratings are based on American Gear Manufacturers Association (AGMA) Standards. The worm gear speed reducer ratings in this catalog are for a 1.00 service factor or Class I Service. A 1.00 service factor applies when the use of the reducer is for continuous service free from recurrent shock loading and does not exceed 10 hours per day. When operating conditions are different from those described above, the input horsepower and torque ratings shown in this catalog must be divided by the appropriate service factor indicated in the table below. The catalog ratings may be used without adjustments if the actual driven machine horsepower and torque requirements are multiplied by the appropriate service factor indicated in the table below.

Service Factors
Service Factors for Electric and Hydraulic motors

Duration of Service (Hours per Day)	Uniform Load	Moderate Shock	Heavy Shock	Extreme Shock
Occasional ½ Hour	*	*	1.0	1.25
Less than 3 Hours	1.0	1.0	1.25	1.50
3 – 10 Hours	1.0	1.25	1.50	1.75
Over 10 Hours	1.25	1.50	1.75	2.00

* Unspecified service factors should be 1.00 or as agreed by the user and manufacturer

Engineering Data

Torque and Horsepower

The feature that distinguishes torque from horsepower is that torque is independent of speed or time while horsepower is a function of velocity which in turn is a factor of both radius and speed of rotation. There are several useful formulas that express this relationship, as follows.

$$HP = \frac{\text{Torque} \times \text{Speed (RPM)}}{63025}$$

$$\text{Torque} = \frac{HP \times 63025}{\text{RPM}}$$

Efficiency

The efficiency of a Worm Gear Speed Reducer is dependent on input speed, lead angle of the worm, type of lubricant, temperature and many other variables. The efficiency for a speed reducer can be easily calculated as follows.

$$\text{Efficiency} = \frac{\text{Output HP}}{\text{Input HP}}$$

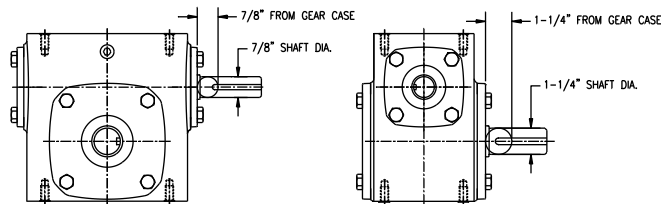
Overhung Load

Overhung load is the radial force exerted on a shaft at some position along its extension. The overhung load is usually imposed by either a sprocket, pinion, sheave, or pulley. When one of these items is mounted on the output shaft of the reducer, a calculation should be made to determine whether the resulting overhung load exceeds the reducers rated overhung load capacity.

$$OHL = \frac{\text{Output Torque} \times \text{Overhung Load Factor}}{\text{Radius (of Sprocket, Pinion, Sheave or Pulley)}}$$

Overhung Load Factor

Sprocket	1.00
Gear Pinion	1.25
V Belt Sheave or Pulley	1.50
Flat Belt	2.50



NOTE: The Overhung load ratings in the catalog are calculated at one shaft diameter out from the gear case housing

C10	PRODUCT SELECTION INFORMATION	
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Important Information

In the event of the resale of any of the goods, in whatever form, Resellers/Buyers will include the following language in a conspicuous place and in a conspicuous manner in a written agreement covering such sale:

The manufacturer makes no warranty or representations, expressed or implied, by operation of law or otherwise, as to the merchantability or fitness for a particular purpose of the good sold hereunder. The Buyer acknowledges that it alone has determined that the goods purchased hereunder will suitably meet the requirements of their intended use. In no event will the manufacturer be liable for consequential, incidental or other damages.

Resellers/Buyers agree to also include this entire document including the warnings above in a conspicuous place and in a conspicuous manner in writing to instruct users on the safe usage of the product.

This instruction manual should be read together with all other printed information such as catalogs, supplied by Sterling Electric.

GENERAL OPERATION

1. Run the motor, which drives the reducer, and check the direction of reducer output rotation. Consult motor nameplates for instructions to reverse the direction of rotation.
2. Attaching the load: On direct-coupled installations, check shaft and coupling alignment between speed reducer and loading mechanism. On chain/sprocket and belt/pulley installation, locate the sprocket or pulley as close to the oil seal as possible to minimize overhung load. Check to verify that the overhung load does not exceed specifications published in the catalog.
3. High momentum loads: If coasting to a stop is undesirable, a braking mechanism should be provided to the speed reducer output or the driven mechanism.

CAUTION: The system of connected rotating parts must be free from critical speed, torsional or other type vibration, no matter how induced. The responsibility for this system analysis lies with the purchaser of the speed reducer.

RUN-IN PERIOD

The maximum efficiency of worm reducers is obtained after a "Run-In" period. The length of time required will depend on the load applied and could be two to four hours at rated load and will be considerably longer at lighter loads. Overloading will not decrease the "Run-In" time but will cause severe wear and damage to the unit. During "Run-In", higher than normal motor current and temperatures along with lower efficiency and output torque can be expected.

SELF-LOCKING ABILITY

Under no condition should Sterling Electric, Inc. worm gear reducers be considered to hold a load at rest. The statement is made to cover the broad spectrum of variables affecting self-locking characteristics of a particular gear set in a particular application. Theoretically, a worm gear will not back drive if the friction angle is greater than the worm lead angle. However, the actual surface finish and lubrication may reduce this significantly. More important, vibration may cause motion at the point of mesh with further reduction in friction angle. No guarantee should be made, and the customer should be advised that if these features are required, a properly sized, independent holding device, such as a brake, should be utilized to maintain a safe working environment. Sterling Electric, Inc. cannot accept liability for any damage to personnel or property that may occur from the application of worm gear reducers in which the self-locking ability is utilized to hold a load.

Installation Instructions

1. Mount the unit to a rigid flat surface using grade 5 or higher fasteners. The mounting fasteners should be the largest standard size that will fit in the base mounting hole. Shim as required under flange or base feet that do not lie flat against the mounting surface.
2. For shipment, pipe plugs are installed in the unit and a vent plug is packed separately. After mounting the unit in position, remove the appropriate pipe plug and install the vent plug in the location shown in the chart under **LUBRICATION**. On double reduction units both the primary and the secondary must be vented. Failure to vent the unit can cause premature seal wear or loss of seal and oil. These conditions are not covered by warranty. Check for correct oil level. Contact the factory for level and vent recommendations on non-standard mounting positions.
3. Connect motor to speed reducer.

WARNING: Depending upon gear geometry and operating conditions worm gear reducers may or may not back drive. Special consideration should be given to high inertia loads connected to the output shaft. Consult the factory for further details.

CAUTION: DO NOT CHANGE MOUNTING POSITIONS WITHOUT CONTACTING FACTORY. Altering the mounting position may require special lubrication provisions that must be factory installed.

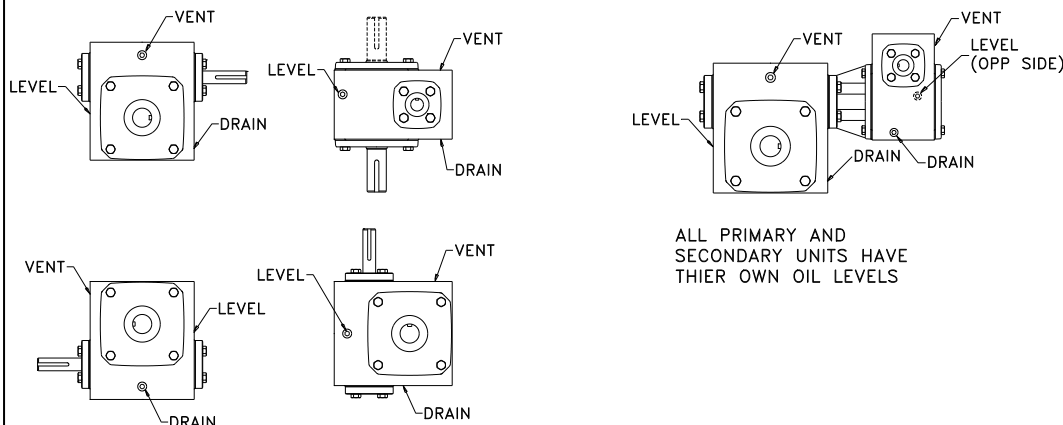
CAUTION: Do not operate the reducer without making sure it contains the correct amount of oil. Do not overfill or under fill with oil, or injury to personnel, reducer or other equipment may result.

CAUTION: A unit cannot be used as an integral part of a machine superstructure which would impose additional loads on the unit other than those imposed by the torque being transmitted either through a shaft-mounted arrangement, and any shaft mounted power transmitting device. (e.g. sprockets, pulleys, couplings)

CAUTION: For safe operation and to maintain the unit warranty, when changing a factory installed fastener for any reason, it becomes the responsibility of the person making the change to properly account for fastener grade, thread engagement, load, tightening torque and the means of torque retention.

Lubrication Instructions

STANDARD SPEED REDUCER MOUNTING POSITIONS VENT, LEVEL, AND DRAIN PLUG LOCATIONS



C12	PRODUCT SELECTION INFORMATION	
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RECOMMENDED LUBRICATION OILS

Manufacturer	30° F to 100° F Ambient Temperature AGMA #7 (ISO 460)	30° F to 125° F Ambient Temperature AGMA #8 (ISO 680)
Amoco Oil Co.	Worm Gear Oil	Cylinder Oil #680
Chevron USA, Inc.	Cylinder Oil #460X	Cylinder Oil #680X
Exxon CO. USA	Cylesstik TK-460	Cylesstik TK-680
Gulf Oil Co.	Senate 460	Senate 680D
Mobil Oil Co.	600 W Super Cylinder	Extra Hecla Super
Shell Oil Co.	Valvata Oil J460	Valvata Oil J680
Sun Oil Co.	Gear Oil 7C	Gear Oil 8C
Texaco	Honor Cylinder Oil	650T Cylinder Oil
Union Oil of CA	Steaval A	Worm Gear Lube 140

Note: Some gear lubricants contain EP additives that can be corrosive to gear bronze. Avoid lubricants that are compounded with sulfur and/or chlorine. For temperature ranges not shown, contact factory. For lubrication requirements of helical reducers of helical/worm combinations, contact factory.

OIL CAPACITIES (FLUID OUNCE)

Mounting Position	UNIT SIZE									
	133/ 2133	154/ 2154	175/ 2175	206/ 2206	238/ 2238	262/ 2262	300/ 2300	325/ 2325	425/ 2425	525/ 2525
Worm Over	6	11	12	18	22	33	55	60	100	178
Worm Under	11	18	20	28	31	54	74	108	140	303
Vertical Output	10	17	17	26	29	51	67	91	105	220
Vertical Input	7	14	16	22	25	44	60	81	116	240

16 fl oz = 1 pint
2 pints = 1 quart
4 quarts = 1 US gallon

Synthetic Lubricants

All standard reducers ordered from the factory are shipped with Mobil SHC 634 or equal synthetic oil. Double reduction units have separate oil sumps and must be filled and checked independently. Synthetic lubricants provide the potential for numerous benefits including wider operating temperature range and increased interval between changes. Use of synthetics can cause problems if they are not compatible with the seals or conventional lubes they replace. The synthetic lubrication provided with the reducer is good for ambient temperature ranges of -10° F to 105° F and is compatible with standard compounded oil. For synthetic oil used in helical reducers of helical/worm combinations, contact factory. **Prior to startup, verify that the oil is at the level shown on the drawings above.** If the ambient temperature is outside the range for the lubricant installed at the factory, drain and refill the reducer with the proper viscosity lubricant prior to use. Consult the chart above or the factory for alternate lubricants.

Change Intervals: Standard compounded lubricants should be changed every six months or 2500 operating hours, whichever comes first. Synthetic lubricants should be changed every two years or 6000 hours, whichever comes first.

CAUTION: Oil should be changed more often if reducer is used in a severe environment. (*i.e. dusty, humid*)

CAUTION: In the Food and Drug Industry (including animal food), consult the lubrication supplier for recommendation of lubricants, which are acceptable to the Food and Drug Administration and/or other authoritative bodies having jurisdiction.

SPECIAL LUBRICATION REQUIREMENTS – SIZES 175/2175 & LARGER

Units shipped from the factory are assembled to properly lubricate all internal components based on a specific assumed horizontal mounting orientation, worm over. If a size 175/2175 or larger unit will be mounted in a different orientation, or ran with sustained input speeds less than 900 RPM, it should be specified with the order. The unit can then be modified to assure proper lubrication.

The maximum input HP rating as shown in the published Rating Tables is based on a stabilized oil bath temperature not exceeding 200° F for normal ambient temperatures. Higher oil bath temperatures or continued operation in excess of rated input HP will tend to shorten the useful life of a lubricant. For high ambient temperatures in excess of 100° F, special lubricants or de-rating of the Gearmotor may be required. Consult the Factory or Local Office with complete application engineering data if this occurs.

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MAINTENANCE

Your Sterling Electric reducer has been tested and adjusted at the factory. Dismantling or replacement of components must be done by Sterling Electric to maintain the warranty.

Frequently check the oil level of the reducer. If oil level is low, (refer to reducer vent and level position chart) add proper lubrication through the filler plug until it comes out the oil level plug.

Inspect vent plug often to insure it is clean and operating.

CAUTION: Mounting bolts should be routinely checked to ensure that the unit is firmly anchored for proper operation.

Seals: The Sterling Electric line of speed reducers utilizes premium quality Viton® seals, which are the state-of-the-art in sealing technology. Seals are, however, a wear item and eventually need to be replaced. Seal kits are available and contain all the necessary seals, O-rings, and shims for a given reducer size based on style. Refer to the parts list for available kits. Replacement of the seals can be easily accomplished by following the steps below:

1. Remove the worn seal without damaging the shaft surface or the seal bore. This can be done by drilling a .062 diameter hole in the seal casing (being careful not to drill into the bearing behind the seal). Screw a #10 sheet metal screw into the hole and pry out the seal.
2. Clean the seal bore of sealant.
3. Before installing the new seal, use electrical tape to cover any keyways on the shaft to prevent seal lip damage.
4. Grease the seal lips with bearing grease and apply a sealant to the seal bore.
5. Slide the seal into the shaft being careful not to fold the inner lip over on any shaft steps.
6. Press the seal into its bore with a sleeve that presses on the seal casing, being careful to keep the seal square in its bore.

LONG-TERM STORAGE (6 MONTHS UP)

Units must be stored indoors, in a dry, warm temperature.

Completely fill the unit with oil.

Rotate the input shaft so that the output shaft rotates at least one revolution per month.

Completely cover the input and output shaft with grease.

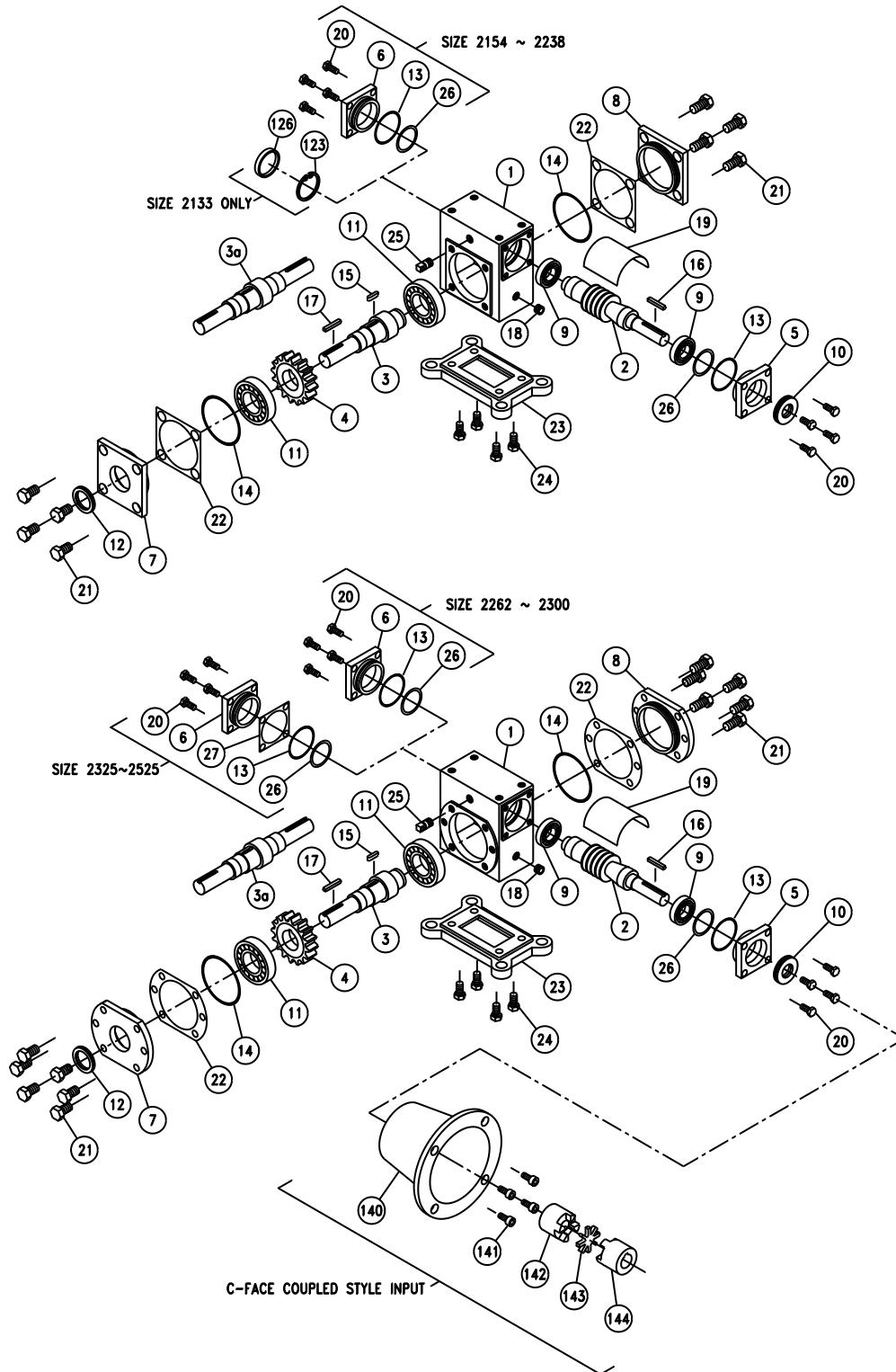
At the time of start up, drain the storage oil, install the breather, and fill to the proper oil level with correct lubricant for the operating condition.

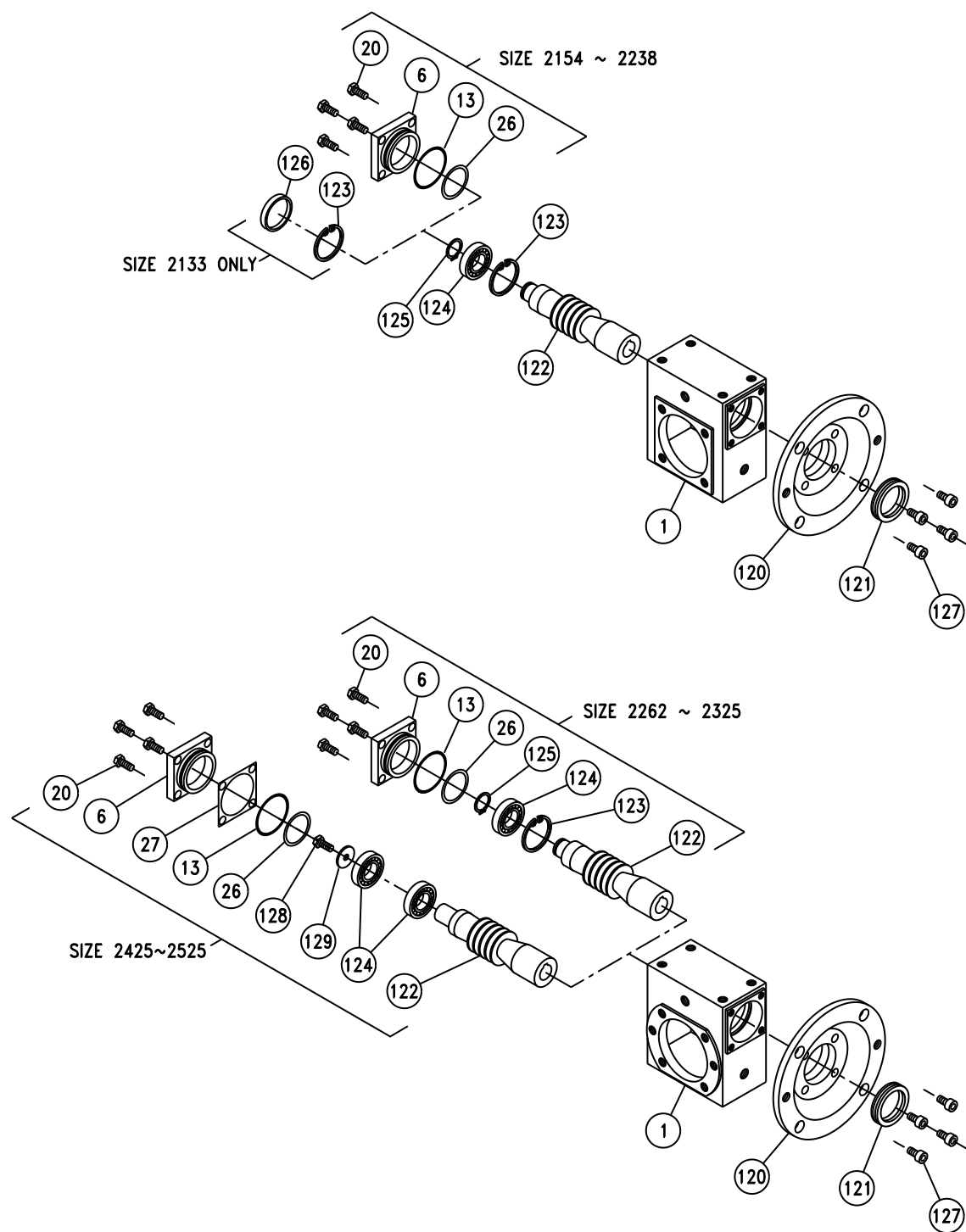
WARRANTY (LIMITED)

The warranty will cover all of the parts in the gearmotor or reducer unit for 12 months from the date of shipment.

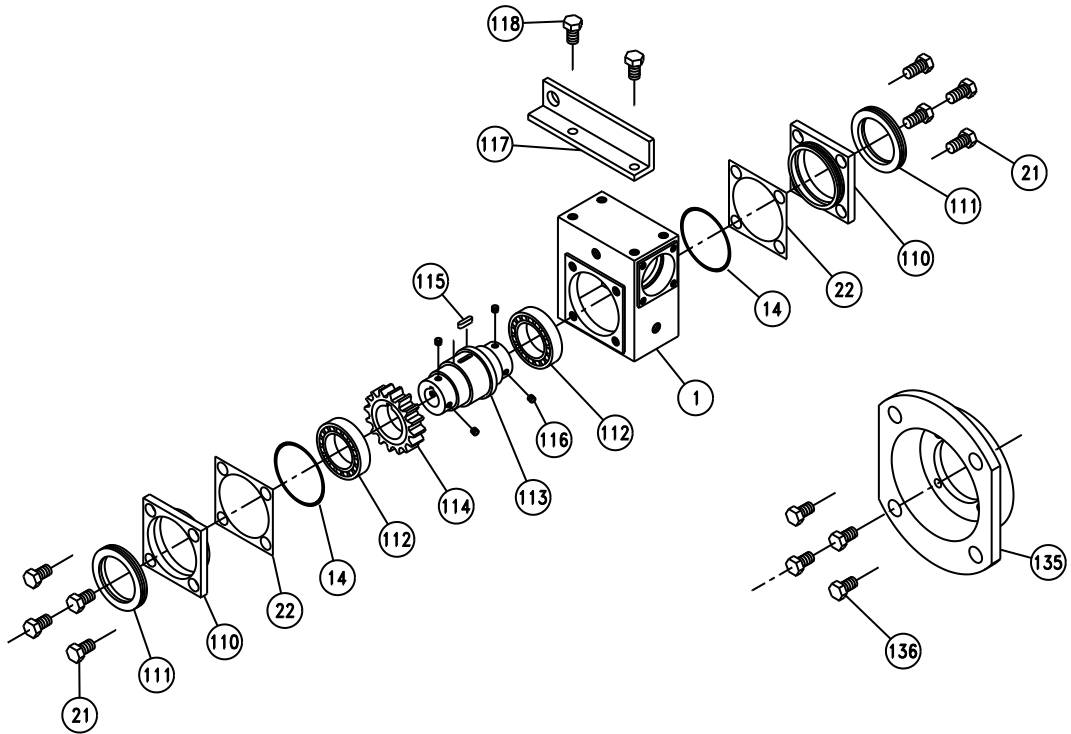
The warranty is only for parts and labor. In no event shall our liability exceed the original price of the unit, nor does it cover cost of on-site repair, installation, or freight.

Contact the service department for a complete explanation as to the full warranty policies and conditions of sale. All dimensions designs and specifications are subject to Change Without Notice.

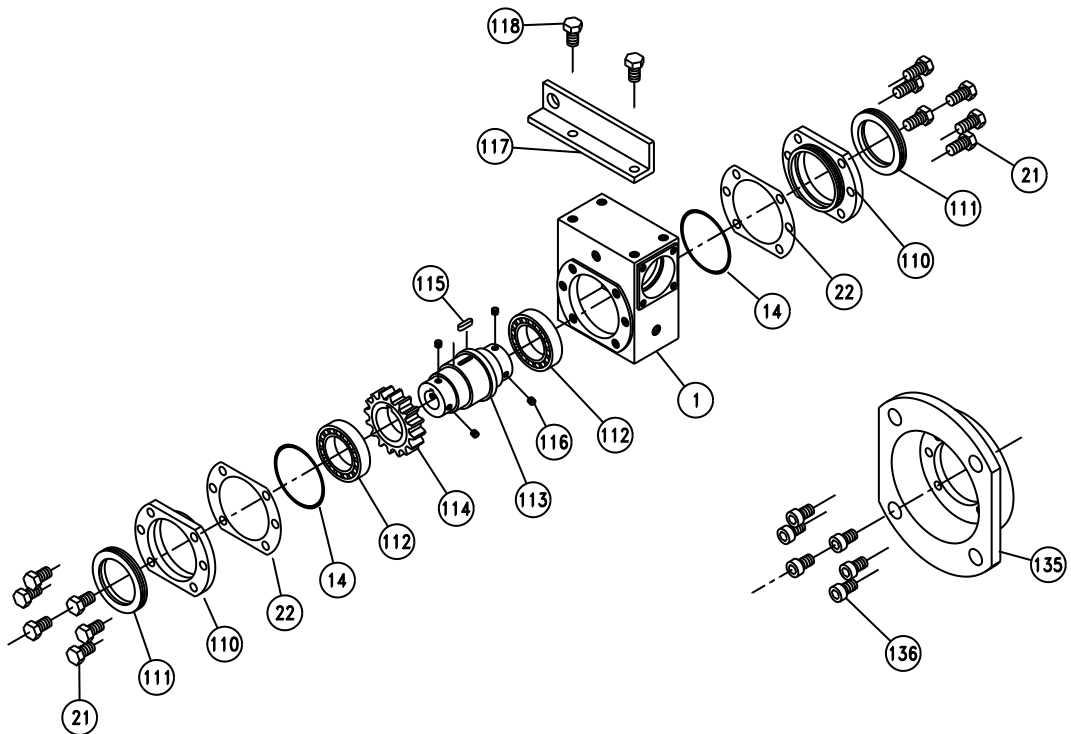




SIZE 2133~2238



SIZE 2262~2525



	SINGLE REDUCTION PARTS LIST	C17
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Item No.	Description	Qty	Item No.	Description	Qty
1	Housing	1	110	Hollow Output Shaft Cover	2
2	Solid Input Worm Shaft	1	111	Hollow Output Shaft Seal	2
3	Single Solid Output Shaft	1	112	Hollow Shaft Output Bearing	2
3a	Double Solid Output Shaft	1	113	Hollow Output Shaft	1
4	Solid Output Worm Gear	1	114	Hollow Output Worm Gear	1
5	DE Solid Shaft Input Cover	1	115	Key	1
6	ODE Input Shaft Cover (2154 and Larger)	1	116	Set Screw	6
7	DE Solid Shaft Output Cover	1	117	Torque Arm	1
8	ODE Solid Output Shaft Cover	1	118	Bolt	2
9	Solid Shaft Input Bearing	2	120	Quill Style Input Flange	1
10	Input Oil Seal	1	121	Flange Input Oil Seal	1
11	Solid Shaft Output Bearing	2	122	Quill Style Input Worm Shaft	1
12	Output Oil Seal	1	123	Retaining Ring (Housing)	1
13	Input O-Ring	2	124	Quill Style Input Bearing	1
14	Output O-Ring	2	125	Retaining Ring (Shaft)	1
15	Key	1	126	Seal End Plug (2133 Only)	1
16	Key	1	127	Socket Head Cap Screw	4
17	Key	1	128	Bolt	1
18	NPT Plug	4	129	Washer	1
19	Internal Baffle (Splash Guard)	1			
20	Bolt	8	135	Output Flange	1
21	Bolt	8	136	Socket Head Cap Screw	4
22	Output Shim Gasket	AR*	140	C-Face Input Flange	1
23	Horizontal Base	1	141	Socket Head Cap Screw	4
24	Bolt	4	142	Bore Coupling Half	1
25	Breather Plug	1	143	Coupling Insert	1
26	Bearing Shim	AR*	144	Bore Coupling Half	1
27	Input Shim Gasket	AR*			

* AR= As Required

Notes:

- Shims are used as required.
- Qty (2) of Item #123, Retaining Ring is required on unit size 133/2133 with Item #126, Seal End Plug.
- Qty (2) of Item # 5, DE Solid Output Shaft Cover is required when using Item #3a, Double Output Shaft.
- Qty (12) of Item #21, Bolt is required on unit size 262/2262 to 525/2525.
- Qty (6) of Item #131, Socket Head Cap Screw is required in unit size 262/2262 to 525/2525.
- Qty (2) of item #124, Quill Style Input Bearing is required on unit size 425/2425 to 525/2525.

Seal Kits

When rebuilding or refurbishing a unit, it is recommended that a seal kit be installed as it contains all necessary seals and O-rings for a given reducer style. If any internal parts are to be replaced other than bearings, it will be necessary to adjust the bearing pre-load by measuring and installing shims. Shims are available from the factory.

Unit Size	BR Seal Kit No.	BQ Seal Kit No.	HR Seal Kit No.	HQ Seal Kit No.
133/2133	2133BRSKIT	2133BQSKIT	2133HRSKIT	2133HQSKIT
154/2154	2154BRSKIT	2154BQSKIT	2154HRSKIT	2154HQSKIT
175/2175	2175BRSKIT	2175BQSKIT	2175HRSKIT	2175HQSKIT
206/2206	2206BRSKIT	2206BQSKIT	2206HRSKIT	2206HQSKIT
238/2238	2238BRSKIT	2238BQSKIT	2238HRSKIT	2238HQSKIT
262/2262	2262BRSKIT	2262BQSKIT	2262HRSKIT	2262HQSKIT
300/2300	2300BRSKIT	2300BQSKIT	2300HRSKIT	2300HQSKIT
325/2325	2325BRSKIT	2325BQSKIT	2325HRSKIT	2325HQSKIT
425/2425	Contact Factory			
525/2525	Contact Factory			

NOTE: FOR DOUBLE END SOLID SHAFT OUTPUT, AN EXTRA OUTPUT SEAL IS REQUIRED (NOT INCLUDED). REFER TO PAGE 8 FOR SIZE AND PART NUMBER BASED ON FRAME SIZE AND STYLE.

C18	SINGLE REDUCTION PARTS LIST	
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SEAL AND BEARING SIZES

Input Quill or Solid Shaft Bearings

Unit Size	Bearing Part Number and Size				
	Series	OD (mm)	ID (mm)	Width (mm)	Sterling P/N
133/2133	6203	40	17	12	40000046
154/2154	6304	52	20	15	40000208
175/2175	6304	52	20	15	40000208
206/2206	6305	62	25	17	40004955
238/2238	6305	62	25	17	40004955
262/2262	6306	72	30	19	40000224
300/2300	6306	72	30	19	40000224
325/2325	Solid	30306	30	20.75	40004964
	Quill	5306	30	30.2	40004973
425/2425†	Solid	30208	80	19.75	40005028
	Quill	30208	80	19.75	40005028
525/2525‡	Solid	30309	100	27.25	40005082
	Quill	30309	100	27.25	40005082

† For input speeds greater than 2400RPM or use with mechanical variable speed drives, 7208 angular contact bearings are used.

‡ For input speeds greater than 2400RPM or use with mechanical variable speed drives, 7309 angular contact bearings are used.

Solid Shaft Output Bearings

Unit Size	Bearing Part Number and Size				
	Series	OD (mm)	ID (mm)	Width (mm)	Sterling P/N
133/2133	30204	47	20	15.25	40004982
154/2154	30204	47	20	15.25	40004982
175/2175	30205	52	25	16.25	40004991
206/2206	30206	62	30	17.25	40005000
238/2238	30206	62	30	17.25	40005000
262/2262	30207	72	35	18.25	40005019
300/2300	30207	72	35	18.25	40005019
325/2325	30208	80	40	19.75	40005028
425/2425	32210	90	50	24.75	40005091
525/2525	32211	100	55	26.75	40005100

Hollow Shaft Output Bearings

Unit Size	Bearing Part Number and Size				
	Series	OD (mm)	ID (mm)	Width (mm)	Sterling P/N
133/2133	32005	47	25	15	40005119
154/2154	32006	55	30	17	40005128
175/2175	32008	68	40	19	40005037
206/2206	32010	80	50	20	40005055
238/2238	32011	90	55	23	40005137
262/2262	32011	90	55	23	40005137
300/2300	32014	110	70	25	40005146
325/2325	32014	110	70	25	40005146
425/2425	30214	125	70	26.25	40005355
525/2525	32022	170	110	38	40005328

Solid Shaft Input Seals*

Unit Size	Seal Part Number and Size			
	Shaft (mm)	Bore (mm)	Width (mm)	Sterling P/N
133/2133	17	30	7	40402855
154/2154	20	35	7	40402864
175/2175	20	35	7	40402864
206/2206	22	40	7	40402873
238/2238	22	40	7	40402873
262/2262	25	40	7	40402882
300/2300	25	40	7	40402882
325/2325	25	40	7	40402882
425/2425	35	55	8	40402946
525/2525	45	60	8	40402955

Quill Style Input Seals

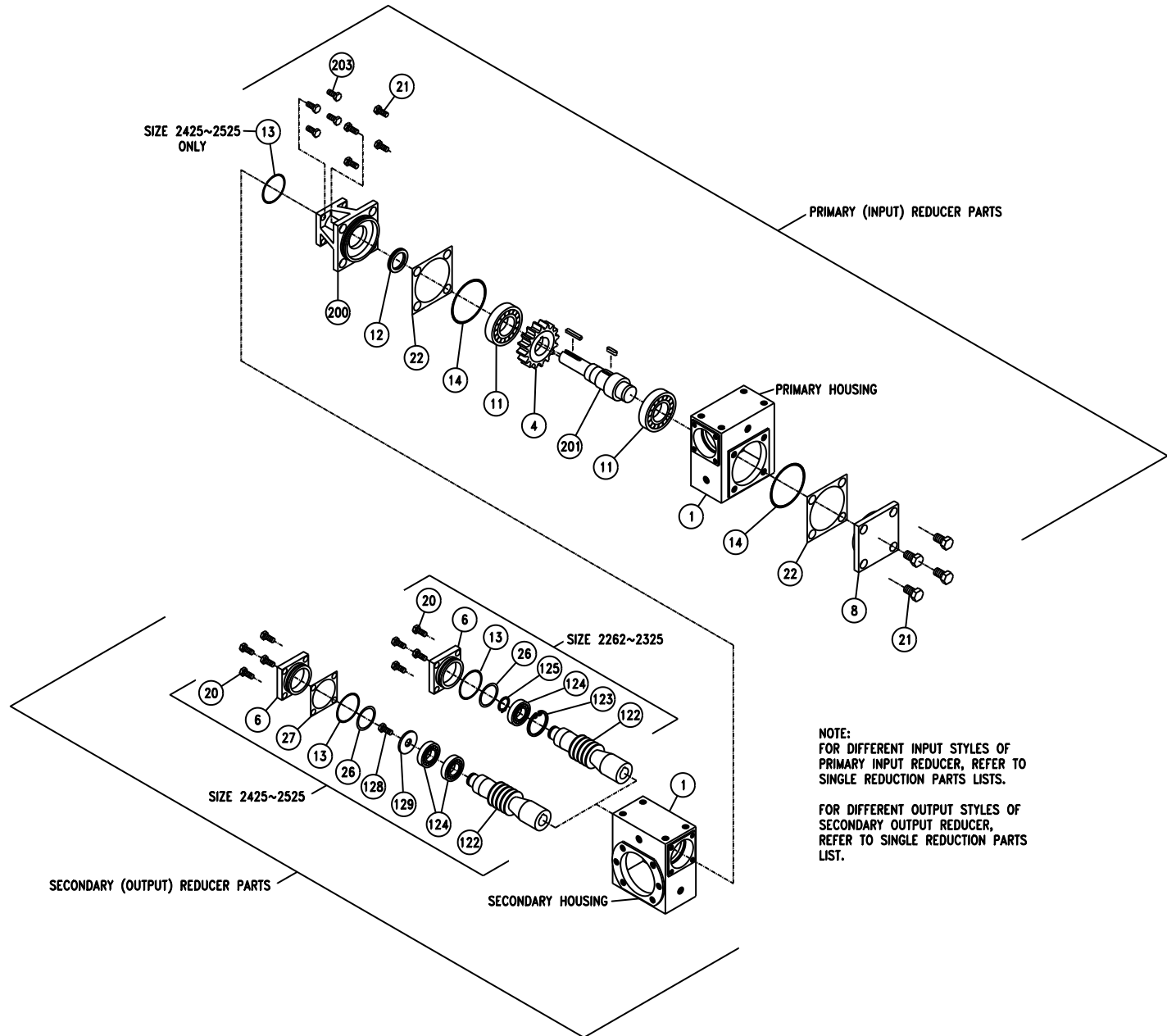
Unit Size	Seal Part Number and Size				
	NEMA Input	Shaft (mm)	Bore (mm)	Width (mm)	Sterling P/N
133/2133	56C	25	35	7	40402891
154/2154	56C	30	40	7	40404500
175/2175	56C	30	40	7	40404500
	140TC	35	45	7	40403319
206/2206	56C	30	50	7	40402919
	140TC	35	50	8	40402928
238/2238	56C	30	50	7	40402919
	140TC	35	50	8	40402928
	180TC	45	60	8	40402955
262/2262	56C/140TC	35	55	8	40402946
	180TC	45	60	8	40402955
300/2300	56C/140TC	35	55	8	40402946
	180TC	45	60	8	40402955
	210TC	55	70	8	40402355
325/2325	56C/140TC	35	55	8	40402946
	180TC	45	60	8	40402955
	210TC	55	70	8	40402355
425/2425	56C/140TC	45	60	8	40402955
	180TC/210TC	55	80	8	40402973
525/2525	56C/140TC	45	60	8	40402955
	180TC/210TC	55	80	8	40402973

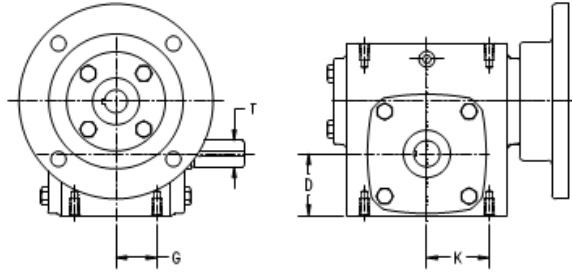
Solid Shaft Output Seals

Unit Size	Seal Part Number and Size			
	Shaft (mm)	Bore (mm)	Width (mm)	Sterling P/N
133/2133	20	35	7	40402864
154/2154	20	35	7	40402864
175/2175	25	40	7	40402882
206/2206	30	50	7	40402919
238/2238	30	50	7	40402919
262/2262	35	55	8	40402946
300/2300	35	55	8	40402946
325/2325	40	62	7	40402937
425/2425	50	65	8	40402964
525/2525	55	80	8	40402973

Hollow Shaft Output Seals

Unit Size	Seal Part Number and Size			
	Shaft (mm)	Bore (mm)	Width (mm)	Sterling P/N
133/2133	25	35	7	40402891
154/2154	30	40	7	40402900
175/2175	40	62	7	40402937
206/2206	50	65	8	40402964
238/2238	55	80	8	40402973
262/2262	55	80	8	40402973
300/2300	70	100	10	40402982
325/2325	70	100	10	40402982
425/2425	70	100	10	40402982
525/2525	110	130	12	40403446



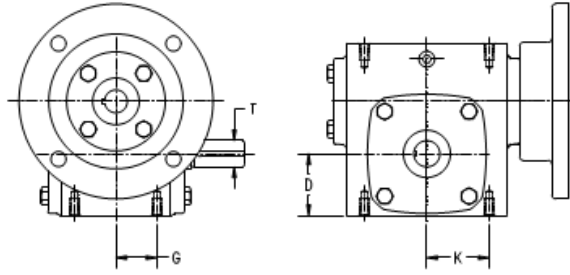


Center Distance	Manufacturer	Model Number	D	K	G	T	Interchange Yes/No
1.33	Sterling Electric	133/2133BQ	1.72	1.63	1.00	.625	-
	Baldor	F913	1.72	1.63	1.00	.625	Yes
	Boston Gear	F713	1.72	1.63	1.00	.625	Yes
	Browning (Raider	133Q	1.72	1.63	1.00	.625	Yes
	Dodge (Tigear)	133	1.72	1.63	1.00	.625	Yes
	Falk (Omnibox)	1133WBQ	1.72	1.63	1.00	.625	Yes
	Grove Gear	BMQ813	1.72	1.63	1.00	.625	Yes
	Leeson Ironman	BMQ813	1.72	1.63	1.00	.625	Yes
	Morse (Raider)	133Q	1.72	1.63	1.00	.625	Yes
1.54	Sterling Electric	154/2154BQ	1.91	2.09	1.38	.750	-
	Baldor	F915	1.91	2.09	1.38	.750	Yes
	Boston Gear	F715	1.91	2.09	1.38	.750	Yes
	Browning (Raider	154Q	1.91	2.09	1.38	.750	Yes
	Dodge (Tigear)	150	1.88*	1.75**	1.12	.750	No (See Footnote)
	Falk (Omnibox)	1154WBQ	1.91	2.09	1.38	.750	Yes
	Grove Gear	BMQ815	1.91	2.09	1.38	.750	Yes
	Leeson Ironman	BMQ815	1.91	2.09	1.38	.750	Yes
	Morse (Raider)	115Q	1.91	2.09	1.38	.750	Yes
1.75	Sterling Electric	175/2175BQ	2.06	2.09	1.38	.875	-
	Baldor	F918	2.06	2.09	1.38	.875	Yes
	Boston Gear	F718	2.06	2.09	1.38	.875	Yes
	Browning (Raider	175Q	2.06	2.09	1.38	.875	Yes
	Dodge (Tigear)	175	2.00*	2.09	1.38	.875	No (See Footnote)
	Falk (Omnibox)	1175WBQ	2.06	2.09	1.38	.875	Yes
	Grove Gear	BMQ818	2.06	2.09	1.38	.875	Yes
	Leeson Ironman	BMQ818	2.06	2.09	1.38	.875	Yes
	Morse (Raider)	175Q	2.06	2.09	1.38	.875	Yes
2.06	Sterling Electric	206/2206BQ	2.28	2.38	1.50	1.00	-
	Baldor	F920	2.28	2.50**	1.44Y	1.00	No (See Footnote)
	Boston Gear	F720	2.28	2.50**	1.44Y	1.00	No (See Footnote)
	Browning (Raider	206Q	2.28	2.50**	1.44Y	1.00	No (See Footnote)
	Dodge (Tigear)	200	2.25	2.50**	1.44Y	1.00	No (See Footnote)
	Falk (Omnibox)	1206WBQ	2.28	2.38	1.50	1.00	Yes
	Grove Gear	BMQ820	2.28	2.38	1.50	1.00	Yes
	Leeson Ironman	BMQ820	2.28	2.38	1.50	1.00	Yes
	Morse (Raider)	206Q	2.28	2.50**	1.44Y	1.00	No (See Footnote)
2.38	Sterling Electric	238/2238BQ	2.50	2.50	1.44	1.125	-
	Baldor	F924	2.50	2.50	1.44	1.125	Yes
	Boston Gear	F724	2.50	2.50	1.44	1.125	Yes
	Browning (Raider	237Q	2.50	2.50	1.44	1.125	Yes
	Dodge (Tigear)	N/A	-	-	-	-	-
	Falk (Omnibox)	1238WBQ	2.50	2.50	1.44	1.125	Yes
	Grove Gear	BMQ824	2.50	2.50	1.44	1.125	Yes
	Leeson Ironman	BMQ824	2.50	2.50	1.44	1.125	Yes
	Morse (Raider)	237Q	2.50	2.50	1.44	1.125	Yes

* Difference in Shaft Height (Dimension "D")

** Difference in Dimension "K"

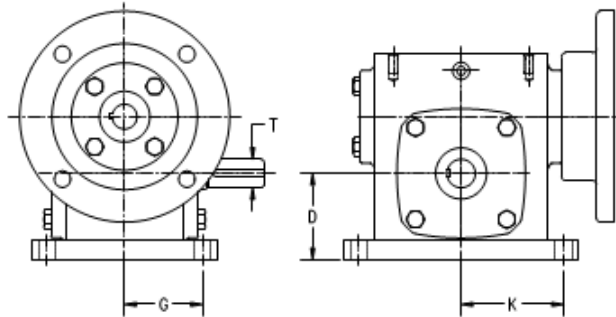
Y Difference in Dimension "G"



Center Distance	Manufacturer	Model Number	D	K	G	T	Interchange Yes/No
2.62	Sterling Electric	262/2262BQ	2.94	3.19	1.69	1.250	-
	Baldor	F926	2.94	3.19	1.69	1.125 _f	No (See Footnote)
	Boston Gear	F726	2.94	3.19	1.69	1.125 _f	No (See Footnote)
	Browning (Raider)	262Q	2.94	3.19	1.69	1.125 _f	No (See Footnote)
	Dodge (Tigear)	262	2.88*	3.19	1.69	1.125 _f	No (See Footnote)
	Falk (Omnibox)	1262WBQ	2.94	3.19	1.69	1.125 _f	No (See Footnote)
	Grove Gear	BMQ826	2.94	3.19	1.69	1.250	Yes
	Leeson Ironman	BMQ826	2.94	3.19	1.69	1.250	Yes
	Morse (Raider)	262Q	2.94	3.19	1.69	1.125 _f	No (See Footnote)
3.00	Sterling Electric	300/2300BQ	3.25	3.50	2.00	1.250	-
	Baldor	N/A	-	-	-	-	-
	Boston Gear	F730	3.25	3.50	2.00	1.250	Yes
	Browning (Raider)	300Q	3.25	3.50	2.00	1.250	Yes
	Dodge (Tigear)	N/A	-	-	-	-	-
	Falk (Omnibox)	1300WBQ	3.25	3.50	2.00	1.250	Yes
	Grove Gear	BMQ830	3.25	3.50	2.00	1.250	Yes
	Leeson Ironman	BMQ830	3.25	3.50	2.00	1.250	Yes
	Morse (Raider)	300Q	3.25	3.50	2.00	1.250	Yes
3.25	Sterling Electric	325/2325BQ	3.50	3.75	2.00	1.500	-
	Baldor	F932	3.50	3.75	2.00	1.500	Yes
	Boston Gear	F732	3.50	3.75	2.00	1.375 _f	No (See Footnote)
	Browning (Raider)	325Q	3.50	3.75	2.00	1.375 _f	No (See Footnote)
	Dodge (Tigear)	N/A	-	-	-	-	-
	Falk (Omnibox)	1325WBQ	3.50	3.75	2.00	1.375 _f	No (See Footnote)
	Grove Gear	BMQ832	3.50	3.75	2.00	1.500	Yes
	Leeson Ironman	BMQ832	3.50	3.75	2.00	1.500	Yes
	Morse (Raider)	325Q	3.50	3.75	2.00	1.375 _f	No (See Footnote)
4.25	Sterling Electric	425/2425BQ	4.44	4.25	2.50	1.875	-
	Baldor	N/A	-	-	-	-	-
	Boston Gear	N/A	-	-	-	-	-
	Browning (Raider)	N/A	-	-	-	-	-
	Dodge (Tigear)	N/A	-	-	-	-	-
	Falk (Omnibox)	1425WBQ	4.44	4.25	2.50	1.875	Yes
	Grove Gear	BMQ842	4.44	4.25	2.50	1.875	Yes
	Leeson Ironman	BMQ842	4.44	4.25	2.50	1.875	Yes
	Morse (Raider)	N/A	-	-	-	-	-
5.25	Sterling Electric	525/2525BQ	5.12	5.50	2.91	2.00	-
	Baldor	N/A	-	-	-	-	-
	Boston Gear	N/A	-	-	-	-	-
	Browning (Raider)	N/A	-	-	-	-	-
	Dodge (Tigear)	N/A	-	-	-	-	-
	Falk (Omnibox)	1525WBQ	5.12	5.50	2.91	2.00	Yes
	Grove Gear	BMQ852	5.12	5.50	2.91	2.00	Yes
	Leeson Ironman	BMQ852	5.12	5.50	2.91	2.00	Yes
	Morse (Raider)	N/A	-	-	-	-	-

* Difference in Shaft Height (Dimension "D")
 † Difference in Dimension "G"

** Difference in Dimension "K"
 ‡ Difference in Shaft Diameter (Dimension T)

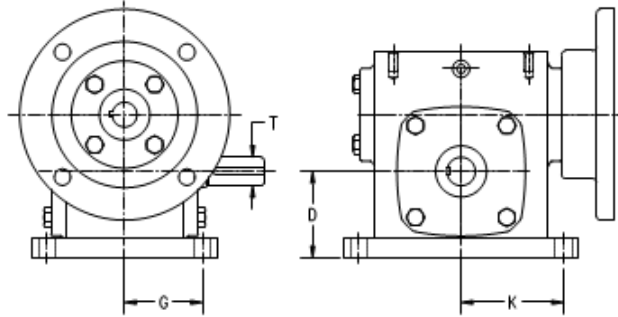


Center Distance	Manufacturer	Model Number	D	K	G	T	Interchange Yes/No
1.33	Sterling Electric	133/2133AQ	2.25	2.19	1.66	.625	-
	Baldor	F913 w/Base	2.25	2.19	1.66	.625	Yes
	Boston Gear	F713B	2.25	2.19	1.66	.625	Yes
	Browning (Raider	133QT	2.25	2.19	1.66	.625	Yes
	Dodge (Tigear)	133 w/Base	2.25	2.19	1.66	.625	Yes
	Falk (Omnibox)	1133WQM	2.25	2.19	1.66	.625	Yes
	Grove Gear	TMQ813	2.25	2.19	1.66	.625	Yes
	Leeson Ironman	TMQ813	2.25	2.19	1.66	.625	Yes
	Morse (Raider)	133Q w/Base	2.25	2.19	1.66	.625	Yes
1.54	Sterling Electric	154/2154AQ	2.50	2.63	2.16	.750	-
	Baldor	F915 w/Base	2.50	2.63	2.16	.750	Yes
	Boston Gear	F715B	2.50	2.63	2.16	.750	Yes
	Browning (Raider	154QT	2.50	2.63	2.16	.750	Yes
	Dodge (Tigear)	150 w/Base	2.50	2.63	2.16	.750	Yes
	Falk (Omnibox)	1154 WQM	2.50	2.63	2.16	.750	Yes
	Grove Gear	TMQ815	2.50	2.63	2.16	.750	Yes
	Leeson Ironman	TMQ815	2.50	2.63	2.16	.750	Yes
	Morse (Raider)	115Q w/Base	2.50	2.63	2.16	.750	Yes
1.75	Sterling Electric	175/2175AQ	2.75	2.88	2.25	.875	-
	Baldor	F918 w/Base	2.75	2.88	2.25	.875	Yes
	Boston Gear	F718B	2.75	2.88	2.25	.875	Yes
	Browning (Raider	175QT	2.75	2.88	2.25	.875	Yes
	Dodge (Tigear)	175 w/Base	2.75	2.88	2.25	.875	Yes
	Falk (Omnibox)	1175WQM	2.75	2.88	2.25	.875	Yes
	Grove Gear	TMQ818	2.75	2.88	2.25	.875	Yes
	Leeson Ironman	TMQ818	2.75	2.88	2.25	.875	Yes
	Morse (Raider)	175Q w/Base	2.75	2.88	2.25	.875	Yes
2.06	Sterling Electric	206/2206AQ	3.00	3.19	2.34	1.00	-
	Baldor	F920 w/Base	3.00	3.19	2.34	1.00	Yes
	Boston Gear	F720B	3.00	3.19	2.34	1.00	Yes
	Browning (Raider	206QT	3.00	3.19	2.34	1.00	Yes
	Dodge (Tigear)	200 w/Base	3.00	3.19	2.34	1.00	Yes
	Falk (Omnibox)	1206WQM	3.00	3.19	2.34	1.00	Yes
	Grove Gear	TMQ820	3.00	3.19	2.34	1.00	Yes
	Leeson Ironman	TMQ820	3.00	3.19	2.34	1.00	Yes
	Morse (Raider)	206Q w/Base	3.00	3.19	2.34	1.00	Yes
2.38	Sterling Electric	238/2238AQ	3.25	3.53	2.44	1.125	-
	Baldor	F924 w/Base	3.25	3.53	2.44	1.125	Yes
	Boston Gear	F724B	3.25	3.53	2.44	1.125	Yes
	Browning (Raider	237QT	3.25	3.53	2.44	1.125	Yes
	Dodge (Tigear)	N/A				-	-
	Falk (Omnibox)	1238WQM	3.25	3.53	2.44	1.125	Yes
	Grove Gear	TMQ824	3.25	3.53	2.44	1.125	Yes
	Leeson Ironman	TMQ824	3.25	3.53	2.44	1.125	Yes
	Morse (Raider)	237Q w/Base	3.25	3.53	2.44	1.125	Yes

* Difference in Shaft Height (Dimension "D")

** Difference in Dimension "K"

Y Difference in Dimension "G"

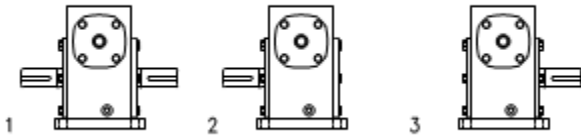


Center Distance	Manufacturer	Model Number	D	K	G	T	Interchange Yes/No
2.62	Sterling Electric	262/2262AQ	3.69	4.00	2.63	1.250	-
	Baldor	F926 w/Base	3.69	4.00	2.63	1.125 ^f	No (See Footnote)
	Boston Gear	F726B	3.69	4.00	2.63	1.125 ^f	No (See Footnote)
	Browning (Raider)	262QT	3.69	4.00	2.63	1.125 ^f	No (See Footnote)
	Dodge (Tigear)	262 w/Base	3.69	4.00	2.63	1.125 ^f	No (See Footnote)
	Falk (Omnibox)	1262WQM	3.69	4.00	2.63	1.125 ^f	No (See Footnote)
	Grove Gear	TMQ826	3.69	4.00	2.63	1.250	Yes
	Leeson Ironman	TMQ826	3.69	4.00	2.63	1.250	Yes
	Morse (Raider)	262Q w/Base	3.69	4.00	2.63	1.125 ^f	No (See Footnote)
3.00	Sterling Electric	300/2300AQ	4.00	4.22	2.94	1.250	-
	Baldor	N/A	-	-	-	-	-
	Boston Gear	F730B	4.00	4.22	2.94	1.250	Yes
	Browning (Raider)	300QT	4.00	4.22	2.94	1.250	Yes
	Dodge (Tigear)	N/A	-	-	-	-	-
	Falk (Omnibox)	1300WQM	4.00	4.22	2.94	1.250	Yes
	Grove Gear	TMQ830	4.00	4.22	2.94	1.250	Yes
	Leeson Ironman	TMQ830	4.00	4.22	2.94	1.250	Yes
	Morse (Raider)	300Q w/Base	4.00	4.22	2.94	1.250	Yes
3.25	Sterling Electric	325/2325AQ	4.38	4.75	3.06	1.500	-
	Baldor	F932 w/Base	4.38	4.75	3.06	1.500	Yes
	Boston Gear	F732B	4.38	4.75	3.06	1.375 ^f	No (See Footnote)
	Browning (Raider)	325QT	4.38	4.75	3.06	1.375 ^f	No (See Footnote)
	Dodge (Tigear)	N/A	-	-	-	-	-
	Falk (Omnibox)	1325WQM	4.38	4.75	3.06	1.375 ^f	No (See Footnote)
	Grove Gear	TMQ832	4.38	4.75	3.06	1.500	Yes
	Leeson- Ironman	TMQ832	4.38	4.75	3.06	1.500	Yes
	Morse (Raider)	325Q w/Base	4.38	4.75	3.06	1.375 ^f	No (See Footnote)
4.25	Sterling Electric	425/2425AQ	5.44	5.56	3.81	1.875	-
	Baldor	N/A	-	-	-	-	-
	Boston Gear	N/A	-	-	-	-	-
	Browning (Raider)	N/A	-	-	-	-	-
	Dodge (Tigear)	N/A	-	-	-	-	-
	Falk (Omnibox)	1425WQM	5.44	5.56	3.81	1.875	Yes
	Grove Gear	TMQ842	5.44	5.56	3.81	1.875	Yes
	Leeson Ironman	TMQ842	5.44	5.56	3.81	1.875	Yes
	Morse (Raider)	N/A	-	-	-	-	-
5.25	Sterling Electric	525/2525AQ	6.25	7.06	4.19	2.00	-
	Baldor	N/A	-	-	-	-	-
	Boston Gear	N/A	-	-	-	-	-
	Browning (Raider)	N/A	-	-	-	-	-
	Dodge (Tigear)	N/A	-	-	-	-	-
	Falk (Omnibox)	1525WQM	6.25	7.06	4.19	2.00	Yes
	Grove Gear	TMQ852	6.25	7.06	4.19	2.00	Yes
	Leeson Ironman	TMQ852	6.25	7.06	4.19	2.00	Yes
	Morse (Raider)	N/A	-	-	-	-	-

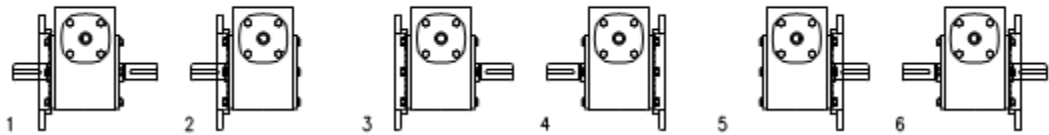
* Difference in Shaft Height (Dimension "D")
 † Difference in Dimension "G"

** Difference in Dimension "K"
^f Difference in Shaft Diameter (Dimension T)

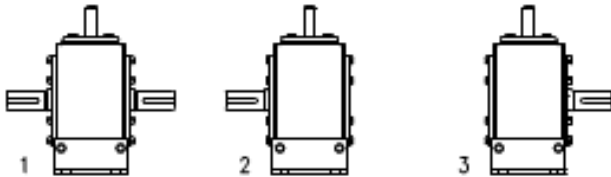
STYLES - BR/BQ/AR/AQ



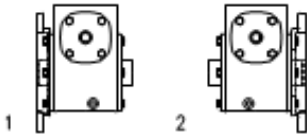
STYLES - FR/FQ



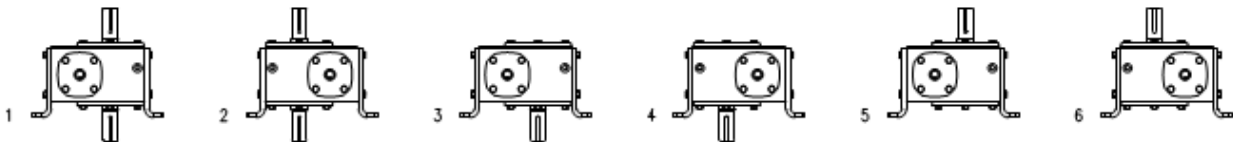
STYLES - JR/JQ

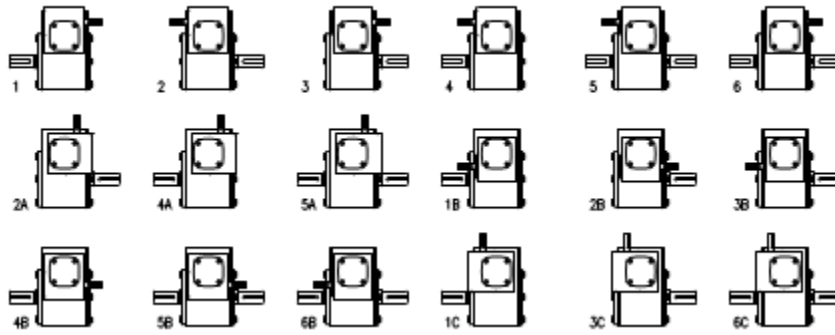
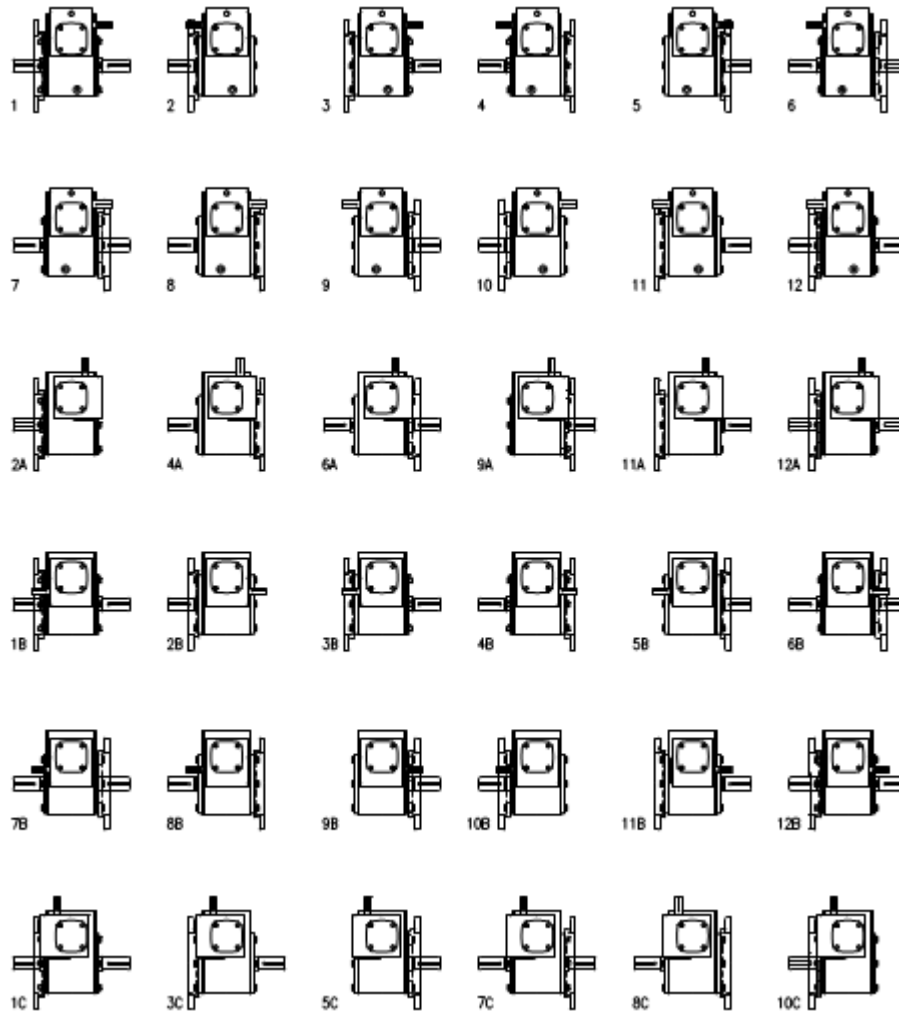


STYLES - FHR/FHQ

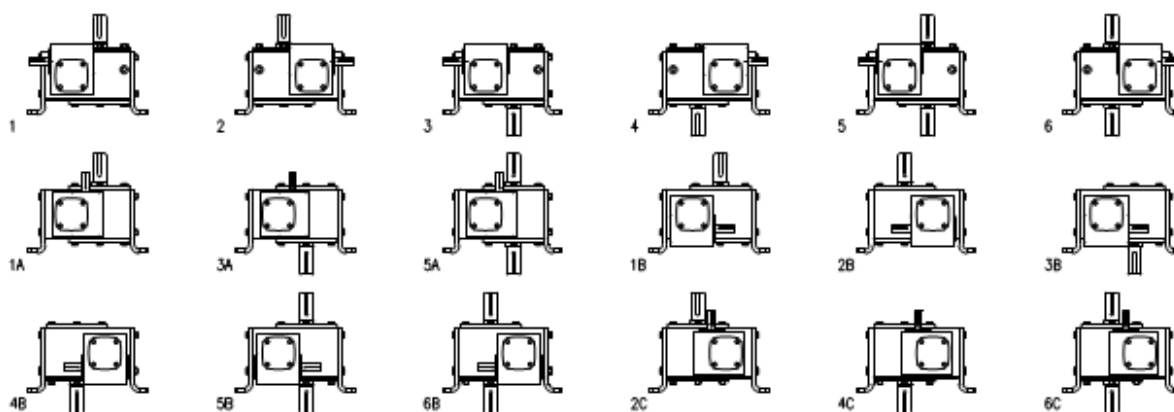


STYLES - VLR/VHR/VLQ/VHQ

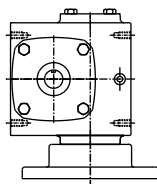


STYLES - DWBR/DWBQ/DWAR/DWAQ/DWHR/DWHQ**STYLES - DWFR/DWFQ/DWFHR/DWFHQ**

STYLES - DWVLR/DWVHR/DWVLQ/DWVHQ



ASSEMBLY POSITION NOTES



Single Reduction or Double Reduction Assemblies with a Vertical Shaft Up Input Motor (shown above) require a Double Input Seal arrangement to prevent leakage. Consult with our inside customer service representatives for assistance.

For Assembly Positions that are not shown in these pages, please contact our inside customer service representatives for assistance.

[illegible]

[illegible]

[illegible]

CONDITIONS OF SALE

Acceptance of your order is subject to the following terms and conditions as well as the condition of sale stated in the Price Book, which may not be superseded or modified in any manner by the terms of your purchase order unless specifically agreed to in writing by Sterling Electric, Inc. ("the Company");

1. **WARRANTY** - The Company warrants that all of its own manufactured products will be of the kind and quality described in the specifications established at time of purchase, and no other warranty, except of title, is herein expressed and none shall be implied. The conditions of any test of the products shall be mutually agreed upon, and the Company shall be notified of and may be represented at all tests that may be made. If any failure to comply with the specifications appears within one year from the date of shipment the Purchaser shall notify the Company thereof immediately. Failure to notify the Company within such period shall relieve said Company from any and all obligations. The liability of the Company (except as to title) arising out of the supplying of said products or their use, whether on warranties or otherwise, shall not in any case exceed the least of the cost or correcting defects in the products, by repair or by supplying a replacement, f.o.b. factory, of the defective part or parts. Upon expiration of (1) year from the date of shipment all such liability shall terminate.

THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, WITH RESPECT TO THE PRODUCT. INCLUDING ANY IMPLIED OR STATUTORY WARRANTY OF MERCHANTABILITY OR FITNESS FOR PURPOSE. NEITHER COMPANY NOR ITS SUPPLIERS SHALL BE LIABLE, WHETHER IN CONTRACT OR IN TORT OR UNDER ANY OTHER LEGAL THEORY, FOR LOSS OF USE, REVENUE OR PROFIT, OR FOR COST OF CAPITAL OR OF SUBSTITUTE USE OR PERFORMANCE, OR FOR INCIDENTAL, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES, OR FOR ANY OTHER LOSS OR COST OF SIMILAR TYPE, OR FOR CLAIMS BY PURCHASER FOR DAMAGES OR PURCHASER'S CUSTOMERS.

The Company is not responsible for damage to products or injury to persons or property due to abuse, improper installation or storage, alteration or modification, use other than for which originally sold, or through operations above rated load, either intentionally or otherwise, of any product or part. Further the Company shall not under any circumstances, be liable for the fault, negligence, or wrongful acts of purchaser or Purchaser's employees, or Purchaser's other contractors or suppliers. If any Purchaser fails to comply with the stipulated conditions of operation, or fails to permit the Company to inspect defects before repairing, or alters the product in any way, or fails to maintain the equipment in as-is shipped condition in storage, the Company's responsibility shall terminate.

2. **CHANGE OF PRICES/ORDERS** - A minimum charge of \$50.00 shall be charged on any order. Any order changes requested by Purchaser after order has been entered shall incur a minimum charge of \$50.00. In addition, charges will be made to cover the cost of re-engineering, drafting, parts scrapped because of the change and Price Book modifications caused by the change.

In the event of a price change, prices on the unshipped portions of all orders are subject to the price in effect at the time of shipment. Exceptions to these terms are stated in the Price Book Conditions of Sale.

3. **SHIPPING AND STORAGE** - Products shall be shipped f.o.b. point of shipment, no freight allowed. Shipping methods or carriers are at the discretion of the Company. Date of shipment shall be the date shown on bill of lading for receipt of shipment by initial carrier. The Company is not responsible for any damage incurred during delivery by common carrier. Purchaser shall file claim against the carrier. All storage claims must be filled within (10) days of the receipt of shipment.

Special storage preparation is recommended for products that will not be put in service within ninety days of shipment. Charges for this service are specified in the catalog Conditions of Sale. Failure to request such storage preparation will void the warranty on products stored over ninety days.

4. **TERMS OF PAYMENT** - Unless otherwise arranged, terms of payment are cash in full within thirty days of invoice date. Payment will be in U.S. Dollars. On late payments, in the contract price shall, without prejudice to the Company's right to immediate payment, be increased 1½% per month on the unpaid balance, but not to exceed the maximum permitted by law.

If at anytime in the Company's judgment the Purchaser may be or may become unable or unwilling to meet the terms specified, the Company may require satisfactory assurances, full or partial payment, as a condition to commencing or continuing manufacture of making shipment, and may, if shipment has been made, recover the product(s) from the carrier, pending receipt of such assurances.

5. **CANCELLATION** - Cancellation of this order may be made by written notice to Company provided that payment of cost incurred by the Company, to the time such notice is received, is made by Purchaser.

6. **PATENTS** - The Company shall defend any suit or proceeding brought against the Purchaser so far as based on a claim that any product, or any part thereof, furnished under this contract constitutes an infringement of any patent of the United States. If notified promptly in writing and given authority, information and assistance (at the Company's expense) for the defense of same, and the Company shall pay all damages and cost awarded therein against the Purchaser. In case said product, or any part thereof, is in such suit held to constitute infringement and the use of said product or part is enjoined, the Company shall, at its own expense, either procure for the Purchaser the right to continue using said product or part; or replace same with non-infringing product; or modify it so that it becomes non-infringing or remove said product and refund the purchase price and the transportation and installation costs thereof. The foregoing states the entire liability of the company for patent infringement by said product or any part thereof.

7. **DELIVERY/DELAY** - Shipping dates are estimates and are based upon prompt receipt of all necessary information. The Company shall not be liable for delay due to causes beyond its reasonable control, including but not limited to acts of God, acts of failure to act of government, acts or regulations of the federal or state governments, acts or omissions of the Purchaser, acts of civil or military authorities, priorities, fires, strikes, blizzards, earthquakes, tornadoes, floods, epidemics, quarantine restrictions, war, riots, delays in transportation, car, shortages, and inability, due to reasons beyond its reasonable control, to obtain necessary labor, material, or manufacturing facilities. In the event of any such delay, the date of the delivery shall be extended for a period equal to the time lost by reason of the delay and its consequences. Delay caused by Purchaser's request or amendment or addition to order shall cause the Company to apply those prices and price policy clauses in effect as of the date said order is finally released.

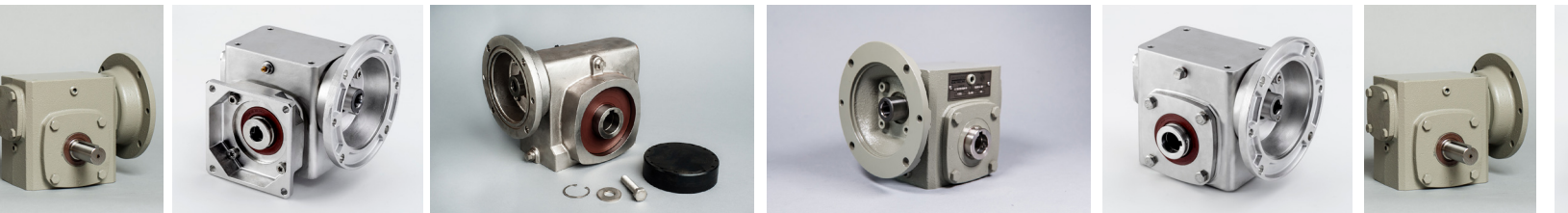
8. **TAXES** - The Company's prices do not include sales, use, excise, license or similar taxes. Consequently, in addition to the price specified herein, the amount of any present or future sales, use, excise, license or other similar tax applicable to the sale of the equipment, parts or accessories hereunder shall be paid by the Purchaser, or in lieu thereof the Purchaser shall provide the Company with a tax exemption certificate acceptable to the taxing authorities.

9. **TITLE** - The title and right of possession of the equipment, parts or accessories sold hereunder shall remain with the Company and such equipment shall remain personal property until all payments hereunder (including deferred payments, whether evidenced by notes or otherwise) shall have been made in full in cash and the Purchaser agrees to do all acts necessary to protect and maintain such right and title in the Company.

10. **WAIVER/INDEMNITY** - No waiver or modification of any of these terms and conditions of sale shall be valid unless it is made in writing and signed by both Company and Purchaser. Failure by the Company to enforce any right possessed under the foregoing terms and conditions shall not constitute a waiver thereof or establish a custom. Purchaser shall protect, defend, indemnify and hold harmless the Company for all loss, cost or expense arising out of any breach of these Conditions of Sale or negligent act of the Purchaser.

11. **LAWS/LIMITATIONS** - The Company will comply with all applicable Federal, State and local laws, and hereby represents that any goods to be delivered hereunder will be produced in compliance with the requirements of the Fair Labor Standards Act of 1938, as amended. The laws of the State of California shall govern the validity, interpretation and enforcement of this contract. No action, regardless of form, arising out of the sale or use of the products which are the subject of this contract may be brought by either party more than one year after the cause of action has accrued, except on action for nonpayment of the purchase price brought within one year after the last payment due date.

Prices or Data Subject to Change Without Notice



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