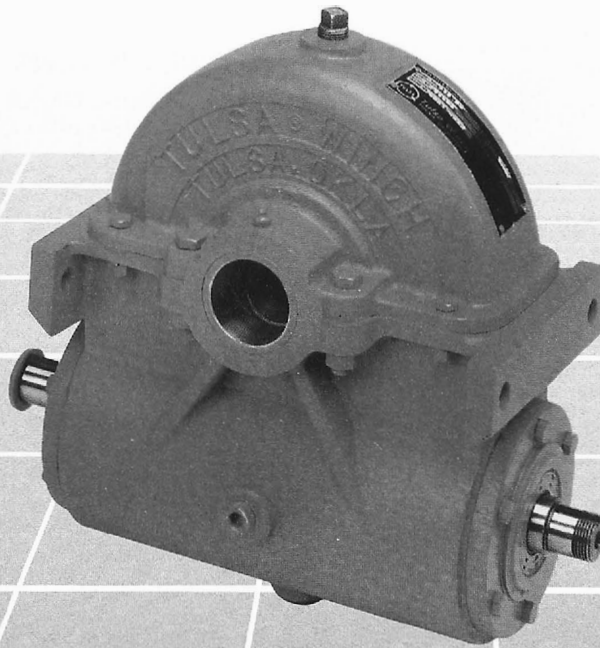




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Pacific Marine & Industrial  
[www.pacificmarine.net](http://www.pacificmarine.net)  
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# *Tulsa Winch*



***WORM GEAR  
SPEED REDUCERS*** ---

# TULSA SPEED REDUCERS



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Tulsa Winches and Speed Reducers have been proven on the job—where it counts—for over 55 years. They are engineered and manufactured to provide reliability, efficiency, and years of trouble free service in all types of applications.

- **QUALITY CONSTRUCTION**—Each component of the Tulsa Speed Reducer is carefully designed and manufactured from the finest materials to provide high strength and low weight. Worm gearing offers high reduction ratios in a close coupled, right angle arrangement.

The Worm is a heat treated alloy steel forging, machined, ground and polished to develop a smooth work surface with the bronze alloy worm gear. The worm shaft is mounted on heavy duty bearings and the output shaft rotates on bushings.

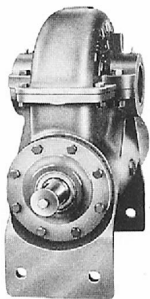
- **DEPENDABILITY**—All Tulsa Speed Reducers are warranted to be free of any defect in materials and workmanship for a period of one (1) year from date of purchase. Service parts are available worldwide through authorized distributors.

- **VERSATILE APPLICATION**—Designed for intermittent operation and available in upright, low mount and flange mounted models. Time proven applications include boom tip winch, rotation drive, conveyor drive, cranes, elevators and many other uses.

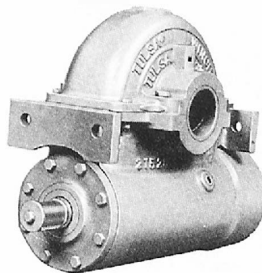
- **DRIVE OPTIONS**—Can be driven with electric or hydraulic motor or gasoline engine.

- **AUTOMATIC WORM BRAKE**—(Optional) can be provided on Tulsa Speed Reducers which automatically engages when power is removed. Oil immersed disk or shoe brakes available.

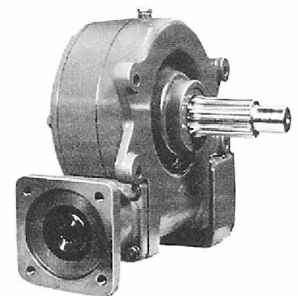
- **Not approved for personnel lifts.**



Upright Mount



Low Mount



Flange Mount

# SELECTION CRITERIA



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To select the right Tulsa Speed Reducer for your application, first determine the performance required, either from the formulas below or your own engineering data, then determine the type of mounting required, either upright, low mount, or flange mount. Finally, select the proper model from the performance chart on pages 4 and 5. If you need help with your selection please contact your Tulsa Winch sales representative.

## FORMULAS

## SAMPLE PROBLEM

T = Torque (Ft. Lbs.)

HP = Horsepower (33,000 Ft. Lbs./Min.)

RPM = Revolutions Per Minute

E = Effective Pulling Radius (In.) or  $\frac{E}{12}$  (Ft.)

R = Ratio of Unit

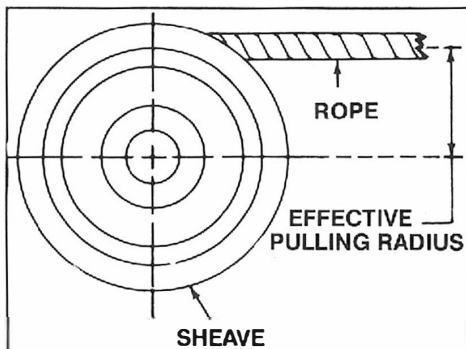
F = Force (Lbs.)

$$\text{Output Torque} = T = E \times F \left( \text{in Lbs. or Ft. Lbs. } \left( \frac{E}{12} \right) \right)$$

$$\text{Horsepower} = \text{HP} = \frac{T \times \text{RPM}}{5252 \text{ (constant)}}$$

$$\text{Line Speed} = S = .524 \text{ (constant)} \times E \times \text{RPM}$$

$$\text{Torque (out)} = T \text{ (in)} \times R \times \text{Efficiency (Decimal)}$$



Select the proper Tulsa Speed Reducer to move a 4,000 pound load at a rate of 25 feet per minute using an 8" diameter sheave and a 1" diameter rope:

Effective Pulling Radius = Sheave radius (4") plus rope radius ( $\frac{1}{2}$ ") = 4.5"

$$\text{Torque} = T = \frac{4.5''}{12} \times 4000 = 1,500 \text{ Ft. Lbs.}$$

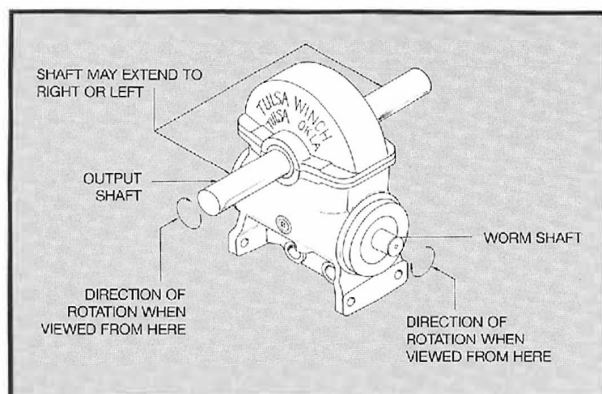
With a known output speed (25 F.P.M.), the line speed formula can be used to solve for output R.P.M.

$$\text{Line Speed} = S = .524 \times E \times \text{RPM}$$

$$\text{RPM} = \frac{S}{.524 \times E} = \frac{25}{.524 \times 4.5} = 10.60 \text{ RPM}$$

From the performance data chart, a G8S, G1000S or G6S Reducer can be selected based on mounting requirement. The data chart shows that the required output speed (10.6 RPM) is approximately 600 RPM input speed, and requires 6.3 input horsepower.

## HOW TO ORDER



### SPECIFY:

1. Model (G10S, G12S, etc.)
2. Side from which shaft is to extend. (View reducer from input shaft end).
3. Worm shaft rotation (clockwise or counterclockwise) when output shaft rotation is clockwise or counterclockwise. Example shown has left hand gear set.
4. With or less output shaft.
5. Automatic brake—if required.
6. Hydraulic adaptation—if required.

# PERFORMANCE DATA



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	Upright Mount	Model		Gear Ratio	Maximum Output Torque (Lb. Ft.) *	Efficiency %		WORM SPEED—RPM (See Note Below)						
		Low Mount	Flange Mounted			Static	Dynamic	200	400	500	600	800	1000	1200
Output HP		<b>G338</b>		<b>38.0</b>	<b>425</b>	<b>32</b>	<b>49</b>	0.4	0.9	1.1	1.3	1.7	2.1	2.6
Output RPM								5.3	10.5	13.2	15.8	21.1	26.3	31.6
Input HP								0.9	1.7	2.2	2.6	3.5	4.3	5.2
Output HP	<b>OBSELETE</b>	<b>G5S</b>		<b>60.0</b>	<b>1300</b>	<b>32</b>	<b>52</b>	0.8	1.7	2.1	2.5	3.3	4.1	5.0
Output RPM								3.3	6.7	8.3	10.0	13.3	16.7	20.0
Input HP								1.6	3.2	4.0	4.8	6.3	7.9	9.5
Output HP	<b>OBSELETE</b>	<b>G5D</b>		<b>30.0</b>	<b>1300</b>	<b>49</b>	<b>69</b>	1.7	3.3	4.1	5.0	6.6	8.3	9.9
Output RPM								6.7	13.3	16.7	20.0	26.7	33.3	40.0
Input HP								2.4	4.8	6.0	7.2	9.6	12.0	14.3
Output HP	<b>OBSELETE</b>	<b>G5T</b>		<b>20.0</b>	<b>1300</b>	<b>58</b>	<b>76</b>	2.5	5.0	6.2	7.4	9.9	12.4	14.9
Output RPM								10.0	20.0	25.0	30.0	40.0	50.0	60.0
Input HP								3.2	6.5	8.1	9.7	13.0	16.2	19.4
Output HP		<b>G1060</b>	<b>G6S</b>	<b>60.0</b>	<b>1700</b>	<b>32</b>	<b>52</b>	1.1	2.2	2.7	3.2	4.3	5.4	6.5
Output RPM								3.3	6.7	8.3	10.0	13.3	16.7	20.0
Input HP								2.1	4.1	5.2	6.2	8.3	10.4	12.4
Output HP		<b>G1030</b>	<b>G6D</b>	<b>30.0</b>	<b>1700</b>	<b>49</b>	<b>69</b>	2.2	4.3	5.4	6.5	8.6	10.8	12.9
Output RPM								6.7	13.3	16.7	20.0	26.7	33.3	40.0
Input HP								3.1	6.3	7.8	9.4	12.5	15.7	18.8
Output HP		<b>G1020</b>	<b>G6T</b>	<b>20.0</b>	<b>1700</b>	<b>58</b>	<b>76</b>	3.2	6.5	8.1	9.7	12.9	16.2	19.4
Output RPM								10.0	20.0	25.0	30.0	40.0	50.0	60.0
Input HP								4.2	8.5	10.6	12.7	16.9	21.2	25.4
Output HP		<b>G1242</b>	<b>G9S</b>	<b>42.0</b>	<b>2500</b>	<b>42</b>	<b>60</b>	2.6	5.3	6.6	7.9	10.6		
Output RPM								5.6	11.1	13.9	16.7	22.2		
Input HP								4.4	8.8	11.0	13.2	17.6		
Output HP		<b>G1221</b>	<b>G9D</b>	<b>21.0</b>	<b>2500</b>	<b>56</b>	<b>74</b>	5.3	10.6	13.2	15.9	21.2		
Output RPM								11.1	22.2	27.8	33.3	44.4		
Input HP								7.1	14.3	17.9	21.4	28.6		
Output HP	<b>G10S</b>	<b>G12S</b>		<b>27.0</b>	<b>2750</b>	<b>45</b>	<b>65</b>	3.9	7.8	9.7	11.6			
Output RPM								7.4	14.8	18.5	22.2			
Input HP								6.0	11.9	14.9	17.9			
Output HP	<b>G10D</b>	<b>G12D</b>		<b>14.5</b>	<b>2750</b>	<b>66</b>	<b>82</b>	7.2	14.4	18.1	21.7			
Output RPM								13.8	27.6	34.5	41.4			
Input HP								8.9	17.6	22.0	26.4			
Output HP	<b>G19S</b>	<b>G18S</b>	<b>G2030</b>	<b>30.0</b>	<b>6000</b>	<b>44</b>	<b>64</b>	7.6	15.2	19.0	22.8			
Output RPM								6.7	13.3	16.7	20.0			
Input HP								11.8	23.7	29.6	35.5			
Output HP	<b>G19D</b>	<b>G18D</b>	<b>G2017</b>	<b>16.5</b>	<b>6000</b>	<b>60</b>	<b>77</b>	13.8	27.7	34.6	41.5			
Output RPM								12.1	24.2	30.3	36.4			
Input HP								17.9	35.9	44.8	53.8			
Output HP	<b>G23S</b>			<b>30.0</b>	<b>6500</b>	<b>44</b>	<b>64</b>	8.3	16.5	20.6				
Output RPM								6.7	13.3	16.7				
Input HP								12.8	25.6	32.0				



	Upright Mount	Model Low Mount	Flange Mounted	Gear Ratio	Maximum Output Torque (Lb. Ft.) *	Efficiency %		WORM SPEED—RPM (See Note Below)						
						Static	Dynamic	200	400	500	600	800	1000	1200
Output HP	G23D			16.5	6500	60	77	15.0	30.0	37.5				
Output RPM								12.1	24.2	30.3				
Input HP								19.4	38.9	48.6				
Output HP	G34S	G24S		32.0	9700	44	64	11.5	23.1					
Output RPM								6.3	12.5					
Input HP								18.0	36.1					
Output HP	G34D	G24D		17.5	9700	60	77	21.1	42.2					
Output RPM								11.4	22.9					
Input HP								27.3	54.7					
Output HP	G64S			34.0	16700	44	64	18.7	37.4					
Output RPM								5.9	11.8					
Input HP								29.2	58.5					
Output HP	G70S			43.0	23700	44	64	21.0	42.0					
Output RPM								4.7	9.3					
Input HP								32.8	65.6					
Output HP	G80S			50.0	36500	44	64	27.8	55.6					
Output RPM								4.0	8.0					
Input HP								43.4	86.9					

\*Torque ratings are based on intermittent winch applications only.  
 Consult Tulsa Winch for other applications and for additional engineering information.

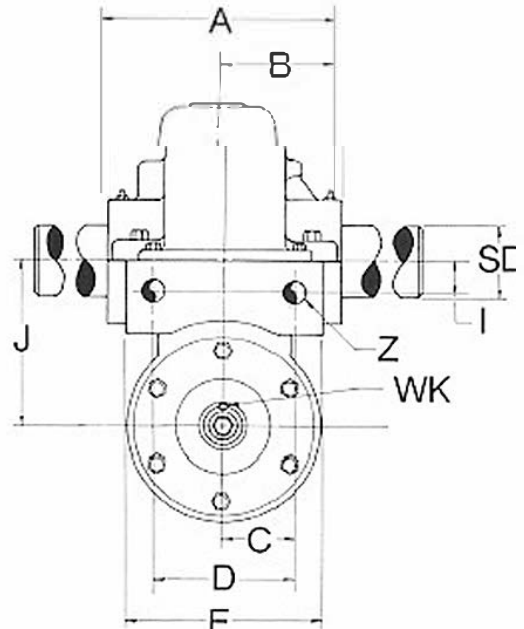
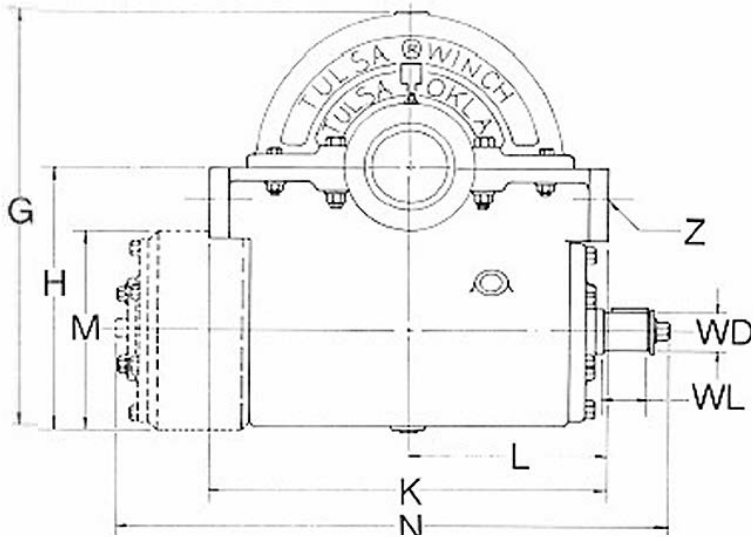
For applications where worm speeds are faster than those shown, contact Tulsa Winch or your Tulsa sales representative.

# DIMENSIONAL DATA

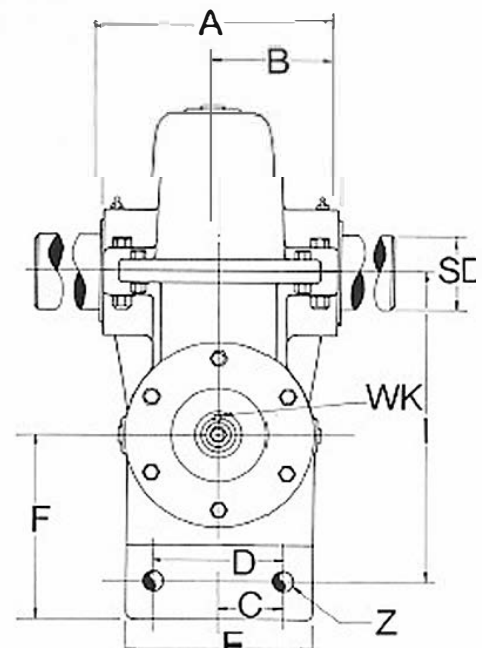
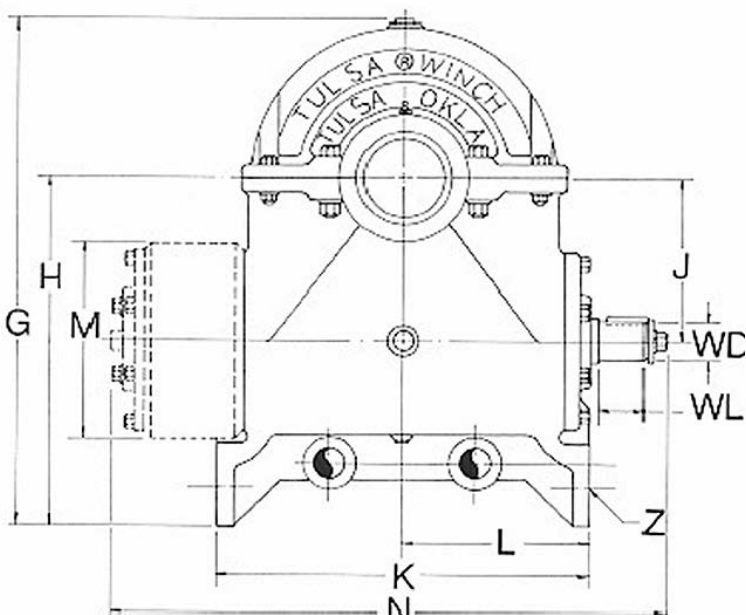


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## LOW MOUNTED TYPE

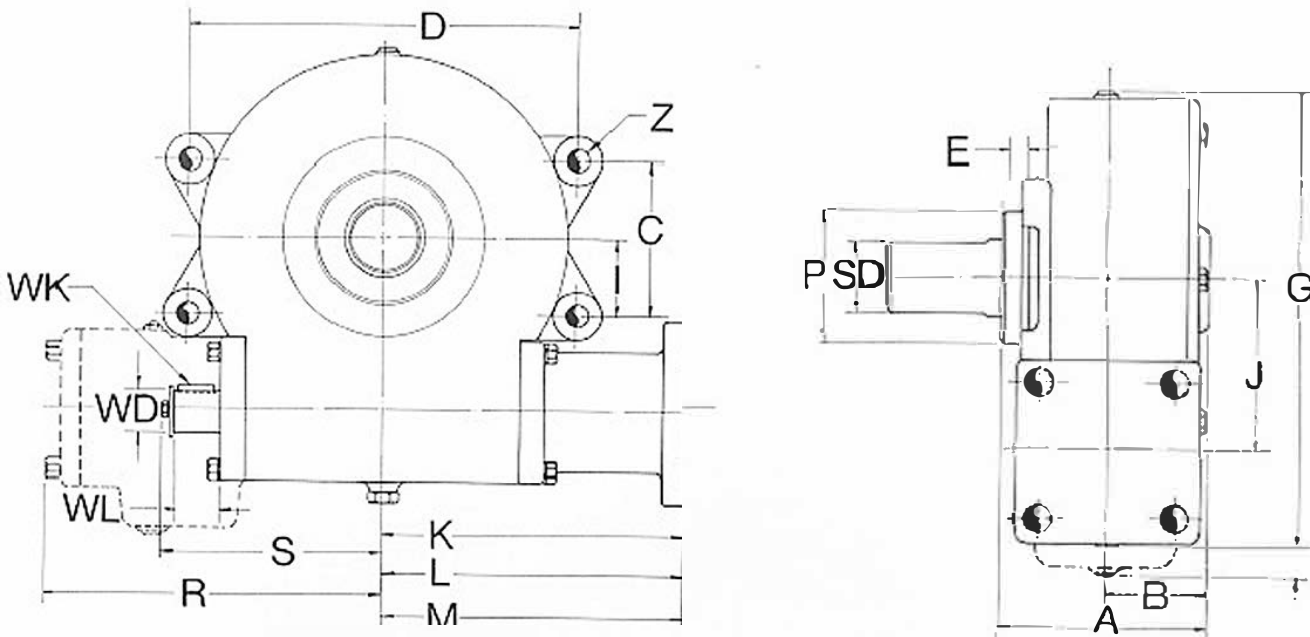


## UPRIGHT TYPE





### FLANGE MOUNTED TYPE



Type	Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Z
Flange Mount	G6	5.28	2.75	4.00	10.00	0.53				2.00	4.44					0.53
	G9	5.12	2.37	4.00	10.00	0.50				2.00	4.50					0.53
	G2000	3.38	9.13	4.38	12.00	1.00				2.19	6.00					0.53
Low Mount	G300	3.25	1.63	1.06	2.12	3.25		7.56	4.63	0.00	2.75	5.75	2.88	4X4	11.00	.31-18NC
	G5	5.13	2.78	1.25	2.38	4.36		11.50	6.38	0.00	4.44	8.69	4.34	5X6	10.50	5-13NC
	G1000	5.78	3.03	1.50	3.00	4.19		11.25	6.62	0.00	4.44	10.00	5.00	4X5	13.54	5-13NC
	G1200	5.78	3.03	1.50	3.00	4.19		11.25	6.62	0.00	4.44	10.00	5.00	4X5	13.54	5-13NC
	G12	6.25	3.13	1.50	3.00	4.75		12.38	7.69	0.00	4.71	16.75	8.38	6.75	17.45	0.53
	G18	8.07	4.04	3.00	6.00	7.50		15.25	9.69	1.19	5.98	13.50	6.75	6.75	20.43	0.64
	G24	8.84	4.42	2.63	5.25	7.50		15.88	10.00	1.13	6.25	15.00	7.50	6.75	20.88	0.78
Upright	G8	5.28	2.53	1.38	2.75	4.13	3.44	12.50	7.88	7.13	4.44	7.50	3.75	4X4	12.34	0.53
	G10	6.25	3.13	2.00	4.00	5.50	4.67	14.44	9.75	8.44	4.71	9.75	4.88	6.75	14.13	0.53
	G19	8.08	4.04	2.75	5.50	7.63	6.28	18.06	12.25	11.00	5.97	14.00	7.00	6.75	20.59	0.64
	G23	8.08	4.04	2.75	5.50	7.63	6.28	18.06	12.25	11.00	5.97	14.00	7.00	6.75	20.59	0.64
	G34	8.84	4.42	2.38	4.75	7.00	6.75	18.94	13.00	11.75	6.25	14.00	7.00	6.75	20.84	0.78
	G64	10.00	5.00	2.75	5.50	8.50	8.78	23.38	17.75	15.99	7.47	18.50	9.25	9.03	26.36	1.03
	G70	10.00	5.00	2.75	5.50	8.50	8.66	26.44	17.63	15.75	8.97	18.50	9.25	9.03	26.36	1.03
G80	11.38	5.69	3.19	6.38	10.50	11.34	32.00	21.50	19.13	10.14	21.50	10.75	10.50	27.00	1.16	

Type	Model	WD	WL	WK	SD	Output Shaft	Type	Model	WD	WL	WK	SD	Output Shaft
Shaft Mount	G6	1.00	1.00	0.25	1.88		Shaft	G8	1.00	1.25	0.25	1.88	
	G9	1.00	1.00	0.25	2.25			G10	1.25	1.50	0.31	1.75	
	G2000	1.25	1.75	0.31	2.25			G19	1.25	1.50	0.31	2.25	
Low Mount	G300	1.00	1.25	0.25	1.25		Upright	G23	1.25	1.50	0.31	2.44	
	G5	0.75	0.94	0.19	1.25			G34	1.50	1.75	0.31	2.88	
	G1000	1.25	1.38	0.25	1.88			G64	1.75	2.25	0.38	3.25	Per
	G1200	1.25	1.38	0.25	1.88			G70	1.75	2.25	0.38	3.63	Customer
	G12	1.25	1.50	0.31	1.75	Per		G80	2.00	2.25	0.38	3.88	Request
	G18	1.25	1.50	0.31	2.25	Customer							
	G24	1.50	1.75	0.31	2.88	Request							



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