

APPLICATION SERVICE FACTORS

Proper determination of an application's service factor characteristics is critical for maximum reducer life and trouble free service. See the definition of service factor in the glossary.

All LEESON reducers and LEESON Gear+Motor™ motorized reducers are sized for applications having an AGMA defined service of 1.0, unless otherwise stated. (Alternately, 1.0 service factor is sometimes expressed as "Class I Service".) Reducers in such applications operate on a continuous duty basis, for 10 hours per day or less, and are free of recurrent shock loads. When operating characteristics are different than noted, the input horsepower and torque ratings listed must be divided by the service factor selected from the table below. This table applies to reducers with an electric or hydraulic motor input.

SERVICE FACTOR TABLES

Duration of Service (Hours per day)	Uniform Load	Moderate Shock	Heavy Shock	Extreme Shock
Occasional 1/2 Hour	—*	—*	1.00	1.25
Less than 3 Hours	1.00	1.00	1.25	1.50
3 - 10 Hours	1.00	1.25	1.50	1.75
Over 10 Hours	1.25	1.50	1.75	2.00

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

When a single or multi-cylinder engine is the input power, the service factor selected from the table above should be increased by multiplying the value by the factor selected from the table below.

Service Factor Conversion Table for Engine Driven Applications

Hydraulic or Electric Motor	Single Cylinder Engines	Multi-Cylinder Engines
1.00	1.50	1.25
1.25	1.75	1.50
1.50	2.00	1.75
1.75	2.25	2.00
2.00	2.50	2.25

On the opposite page, AGMA standardized service factor data is listed for a wide variety of applications operating 3 to 10 hours per day and for 10 hours or more per day.

Special Application Considerations

CAUTION: Please contact LEESON for assistance in applications not listed or for applications with unusual characteristics. Including the following:

- Input speeds not listed in catalog
- Frequent starting or repetitive shock applications
- Selection of reducers for man lifts or people moving equipment
- High energy loads, including stalling
- Starting or momentary overloads exceeding 200% of gear reducer mechanical capacity (100% overload)

SEW CASE SIZE INTERCHANGE

The LeCENTRIC™ Inline Reducers interchange with SEW R7 Series, SEW R Series, David Brown, Nord, Hansen, and others using Interchange Base B1.

A Quick Reference Guide to the SEW case size interchange is below.

LEESON LeCENTRIC™	SEW R Series	SEW R7 Series
717	30	17
727	40	27
747	60	47
757	60	57

TORQUE AND HORSEPOWER

Torque as it is related to gear reducers is defined as a twisting motion resulting in rotational movement. Horsepower is a measure of the rate of doing work, and depends on speed of rotation and the radius of rotation.

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

SERVICE FACTOR

A service factor is selected to adjust a reducer's load carrying characteristics to reflect the application load requirements.

$$\text{Reducer Service Factor} = \frac{\text{Reducer HP Rating}}{\text{Motor HP Rating}}$$

EFFICIENCY

The efficiency of an inline helical speed reducer is dependent on input speed, quality of gearing, type of lubricant, ambient temperature and many other variables. The efficiency for a speed reducer can be easily calculated as follows.

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

Average efficiency of LEESON double reduction inline reducers: 96%
triple reduction inline reducers: 93%

OVERHUNG LOADS AND THRUST LOADS

An overhung load exists when a force is applied at right angles to a shaft beyond the shaft's outermost bearing. Pulleys, sheaves and sprockets will cause an overhung load when used as a power take-off. The amount of overhung load will vary, depending on the type of power take-off used and its mounting location on the shaft. The catalog overhung load ratings listed below and in selection tables are calculated at the centerline of the shaft.

Overhung load ratings are listed for each reducer size and should not be exceeded. If the basic reducer is selected using a service factor, that factor must also be used in the equations below.

Output Shaft OHL =

$$\frac{126000 \times \text{Input HP} \times \text{Overhung Load Factor} \times \text{Efficiency}}{\text{Pitch Diameter (of sprocket, pulley or sheave)} \times \text{Output RPM}}$$

Input Shaft OHL =

$$\frac{126000 \times \text{Input HP} \times \text{Overhung Load Factor}}{\text{Pitch Diameter (of sprocket, pulley or sheave)} \times \text{Input RPM}}$$

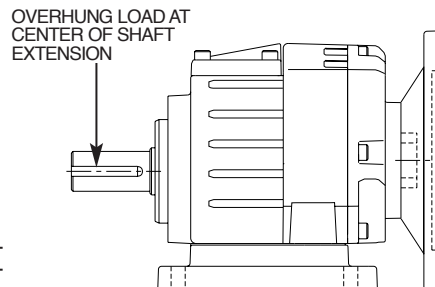
Overhung Load Factors—

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

Maximum Overhung Load Capacities

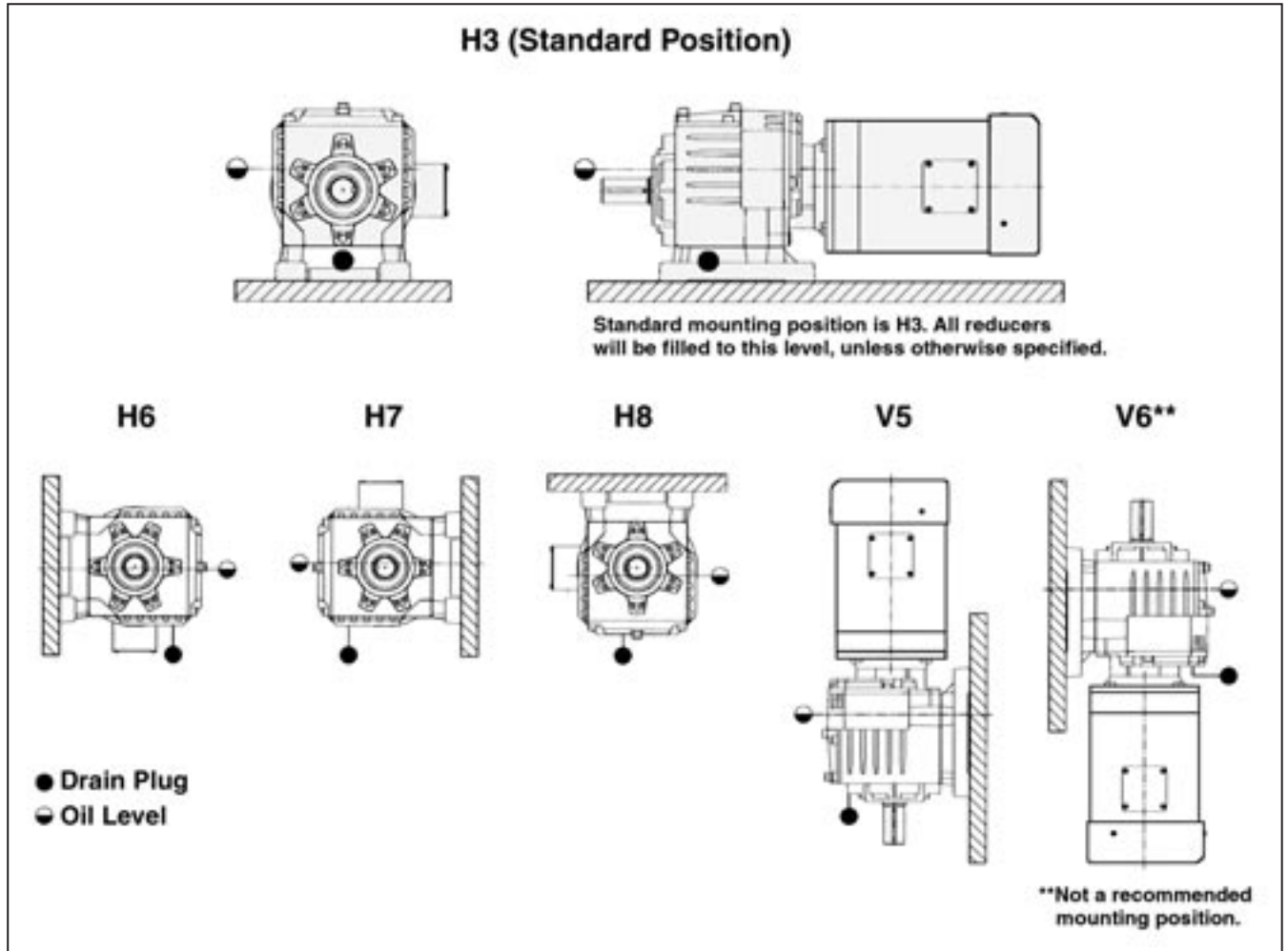
External Load Applied	Drive Size				
	717	727	747	757	
Input Shaft OHL (lbs.)	2-Stage	112	112	180	180
	3-Stage	100	100	135	135
Output Shaft OHL (lbs.)	Refer to Selection Tables for overhung load variable by output RPM.				

NOTE: The overhung load capacities in the catalog are calculated at centerline of shaft extension with no thrust load.



REDUCER MOUNTING POSITIONS

Carefully follow lubrication instructions and installation manuals furnished with the gear reducer. All standard LeCENTRIC™ Inline Reducers are factory filled with Mobilgear SHC 320 synthetic oil. The mounting position is stamped on all LeCENTRIC™ Reducer nameplates. Position H3 is standard. Specify mounting position of reducer for correct oil fill at LEESON. Positions H3-H8 are horizontal mounts. Positions V5 and V6 are vertical mounts.



Lube Quantities (Ounces)

Reducer Size		H3	H6	H7	H8	V5	V6
717	2-Stage	8.5	10.0	13.5	13.5	13.5	17.0
	3-Stage	10.0	12.0	15.0	15.0	15.0	18.5
727	2-Stage	8.5	10.0	13.5	13.5	13.5	17.0
	3-Stage	10.0	12.0	15.0	15.0	15.0	18.5
747	2-Stage	15.0	19.0	37.0	37.0	37.0	39.0
	3-Stage	25.5	25.5	39.0	40.5	40.5	40.5
757	2-Stage	19.0	29.0	40.5	40.5	40.5	42.0
	3-Stage	25.5	30.5	42.0	44.0	44.0	46.0

Note: Multiply the above quantities by 0.06 to obtain the equivalent weight of oil in pounds.

APPROXIMATE WEIGHTS (LBS.)

Reducer Style	Size			
	717	727	747	757
2-Stage				
Motorized 56C/140TC - W/ Base	13	13	26	33
Motorized 180TC - W/ Base	N/A	N/A	28	35
Shaft Input W/ Base	13	13	26	33
Motorized 56C/140TC - W/ Output Flange	12	12	26	33
Motorized 180TC - W/ Flange	N/A	N/A	28	35
Shaft Input W/ Output Flange	12	12	26	33
3-Stage				
Motorized 56C/140TC - W/ Base	14	14	27	32
Shaft Input W/ Base	14	14	27	32
Motorized 56C/140TC - W/ Output Flange	13	13	27	32
Shaft Input W/ Output Flange	13	13	27	32
Accessories				
Base	2	2	3	3
Output Flange	1	1	3	3
Torque Foot	1	1	2	2

AVAILABLE MOTOR FRAMES

Reducer Size	# of Stages	56C	143-5TC	182-4TC
717	2-Stage	X	X	
	3-Stage	X		
727	2-Stage	X	X	
	3-Stage	X		
747	2-Stage	X	X	X
	3-Stage	X	X	
757	2-Stage	X	X	X
	3-Stage	X	X	

AVAILABLE INPUT & OUTPUT SHAFTS

Output Shaft Options

Reducer Size	U	UY	V	KEY	M	
	+0.000/ -0.001				TAP	DEPTH
717	0.750	0.83	1.57	3/16 x 1.12 SQ	1/4-20	0.62
727	1.000	1.11	1.97	1/4 x 1.62 SQ	5/16-18	0.75
747	1.250	1.36	2.36	1/4 x 2.00 SQ	5/16-18	0.75
757	1.250	1.36	2.36	1/4 x 2.00 SQ	5/16-18	0.75
	1.375**	1.51	2.76	5/16 x 2.25 SQ	3/8-16	0.88

**Optional size. Contact LEESON for availability. The standard shaft diameters are shown in dimensional pages.

Input Shaft Options

Reducer Size	U	UY	V	KEY	M	
	+0.000/ -0.001				TAP	DEPTH
717	0.625	0.70	1.57	3/16 x 1.12	1/4-20	0.62
727	0.625	0.70	1.57	3/16 x 1.12	1/4-20	0.62
747	0.750	0.83	1.97	3/16 x 1.50	5/16-18	0.75
	0.875**					
757	0.750	0.83	1.97	3/16 x 1.50	5/16-18	0.75
	0.875**					

**Optional size. Contact LEESON for availability. The standard shaft diameters are shown in dimensional pages.

