Poweratio® 2000

HIGH EFFICIENCY HELICAL BEVEL RIGHT ANGLE DRIVES

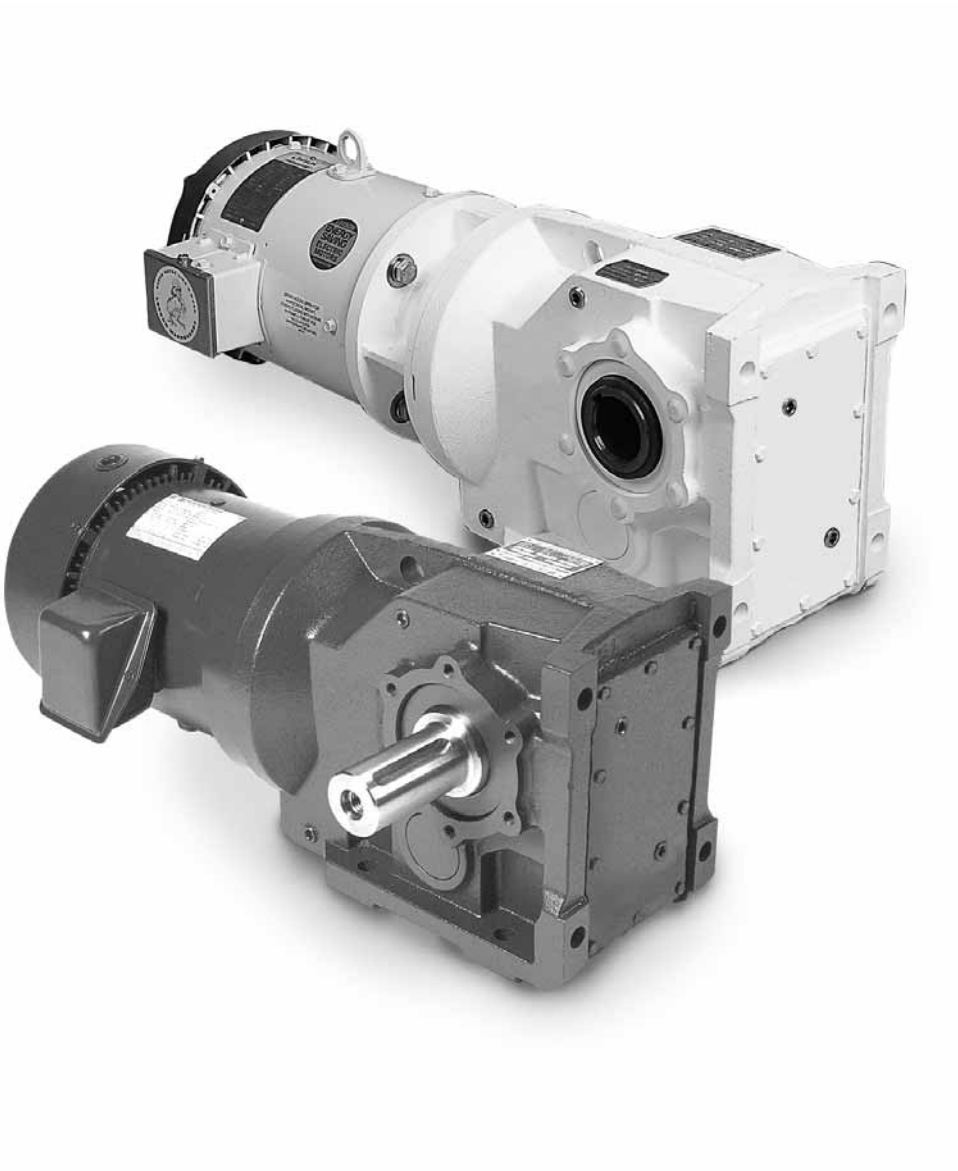
Advanced design with competitive interchangeability.

Basic Specifications

- Power Ratings from 1/4 to 55 hp
- Output Torque 38,000 inch/lbs.
- Ratios from 6.1 through 3413:1
- Output speeds .5 rpm to 280 rpm

Standard Features

- Universal Base, Flange and Hollow Bore Mounting with Competitive Interchange Capability
- Precision Carburized and Hardened Spiral Bevel and Crowned Helical Gearing
- Double Lip Spring Loaded Seals with Precision Ground Seal Journals
- High Capacity Ball and Tapered Bearings with Splash Lubrication, Factory Filled
- Enhanced High Tensile Strength Steel Shafting with Low Notch Sensitivity
- Optimum Structural Designed Housings made of High Strength Alloy Cast Iron



Optional Features

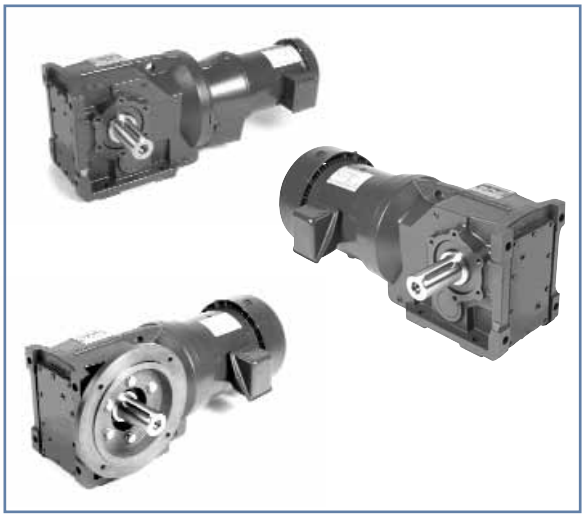
- Modified Standard and Custom Designs
- Hollow or Solid Output Shafts in Metric Sizes
- Brake or Inverter Duty Motors (50/60 hz)
- Washdown and BISSC Configurations

Integral Gearmotors

- 4 Sizes Available Up To 5 hp.
- Motors Produced By Marathon Electric for High Efficiency, Reliability and Durability

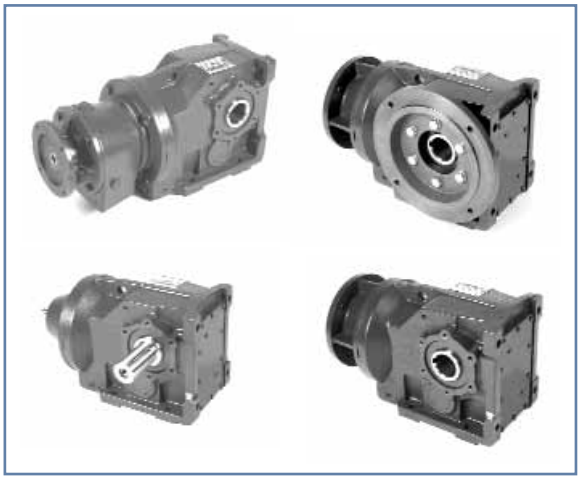
CALL: (605) 225-0360 HUBCITY FAX: (605) 225-0567

Helical Bevel Drives



Integral Gearmotors

Triple Reduction
Quin Reduction
- *Foot Mount*
- *Flange Mount*
- *Shaft Mount*



Reducers

Triple Reduction
Quin Reduction
- *NEMA C-Frame Quill Input*
- *Shaft Input*
  - *Foot Mount*
  - *Flange Mount*
  - *Shaft Mount*

Cleanline™ premium washdown duty and metric versions available, See Section O or Consult Factory for details and specifications.

Selection Procedure

Hub City provides two methods of selection for Reducers and Gearmotors.

On pages K-9 to K-19, the Selection Tables by Input H.P. can be used whenever the Input H.P. requirement is known. This method is commonly used for Gearmotors, but can also be used for Reducers.

On pages K-24 to K-27, the Input H.P. and Output Torque Ratings are provided for each model. These rating tables can be used for Reducers and Gearmotors.

SELECTION BY INPUT H.P.

For selection by Input H.P, determine the Input H.P., Output Speed and Load Classification (Service Factor) requirements. (See pages K-5, A-2 and A-5 to A-8 for AGMA Load Classification and Service Factors.) Then refer to Selection Tables by Input H.P., locate the required H.P. and Output Speed, and read across to the required foot or flange mount unit.

These tables also list the Service Factor for the unit indicated. In many cases, more than one unit is listed, to provide different service factors. Select the unit with a service factor that meets or exceeds the requirement of the application.

Check the Output Overhung Load or Output Thrust rating and Output Torque to verify they meet the requirements. (The Output Torque listed is the actual torque obtained with the motor H.P. listed, not the rated torque.) Then refer to the dimension tables to check the unit dimensions.

If a Reducer with C-Frame input is desired, the available frame sizes for each Reducer model are shown in the dimension tables, and also on page K-38. Specify the description as shown on page K-6.

If a Motorized Reducer is desired, make the motor selection with compatible C-Frame size, from the motors listed in Section H. Specify either the catalog number or the complete description of the motor, in addition to the Reducer description.

The selection tables indicate which units are available as Integral Gearmotors. if an Integral Gearmotor is desired, refer to the dimension tables on pages K-20 to K-23 for dimensions with all available motor sizes. Specify the motor H.P. in addition to the Reducer description.

Reducers may be ordered with other C-Frame sizes. The available frame sizes for each reducer model are shown in the dimension tables, and also on page K-38.

SELECTION FROM UNIT RATING TABLES BY INPUT H.P. OR OUTPUT TORQUE

Determine the actual Input H.P. or Output Torque required, Output Speed, and required Service Factor. Multiply the actual H.P. or torque by the required service factor to obtain the required rating of the Reducer. Refer to the Unit Rating Tables by Model and Output Speed, until you locate the model that meets or exceeds the required H.P. or Torque rating.

The actual service factor can be determined by dividing the unit rating by the actual H.P. or Torque.

Check the Input and Output overhung load ratings, and thrust rating to verify they meet the requirement. Then refer to the dimension tables to check the unit dimensions.

Available motor C-Frame sizes for each reducer model are shown in the dimension tables, and also on page K-38.

EFFICIENCY

Helical Gearing and Ball or Tapered Roller Bearings provide a drive with very high efficiency. The approximate efficiency is 97.5% per gear stage.

OVERHUNG LOADS AND THRUST LOADS

Overhung Load and Thrust ratings are listed in the Selection and Rating Tables. Note that OHL and Thrust Ratings cannot be applied simultaneously. Consult Hub City for applications with combined OHL and thrust load.

BRAKEMOTORS

Braking torque must not exceed the rated capacity of the unit.

Service Factors

Load Classification Numbers and Service Factors are used in the selection of Gearmotors and Reducers. The relationship between load class numbers and service factors is shown in Table 2.

The Load Class Numbers are designated for Gearmotors which have a uniform power source (i.e. Electric Motor). They consider the type of load and also the duration of service.

The Service Factors are designated for Reducers and consider other power sources (such as Internal Combustion Engines), as well as the type of load and duration of service.

Table 1 and Table 2 list Service Factors and Load Classes for general use.

AGMA Load Classification and Service Factor tables on pages A-5 to A-8 provide approximate service factors for various types of machinery. The service factors are based on uniform power source (i.e. electric motor). Use the service factor conversion table on page A-2 to obtain service factors for internal combustion engines.

All the Class Number and Service Factor charts are to be used as general guidelines for assistance in determining the required service factor. Rely on past experience as well. Consult the factory for severe applications, when there are safety considerations, or a need for extra high reliability.

Refer to page A-2 for further information and cautions on the selection of proper service factors.

Occasional starting loads up to 200% of catalog rating are permissible.

TABLE 1 – SERVICE FACTORS

		Driven Machine Load Classification		
Prime Mover	Duration of Service Per Day (1)	Uniform	Medium Shock	Heavy Shock
Electric Motor	Occasional 1/2 hr.	*	*	1.25
	Intermittent 3 hrs.	*	1.00	1.50
	3 - 10 hours	1.00	1.25	1.75
	Over 10 hours	1.25	1.50	2.00
Electric Motor With Frequent Starts and Stops (2)	Occasional 1/2 hr.	*	1.00	1.50
	Intermittent 3 hrs.	1.00	1.25	1.75
	3 - 10 hours	1.25	1.50	2.00
	Over 10 hours	1.50	1.75	2.25
Multi-Cylinder Internal Combustion Engine	Occasional 1/2 hr.	*	1.00	1.50
	Intermittent 3 hrs.	1.00	1.25	1.75
	3 - 10 hours	1.25	1.50	2.00
	Over 10 hours	1.50	1.75	2.25
Single Cylinder Internal Combustion Engine	Occasional 1/2 hr.	1.00	1.25	1.75
	Intermittent 3 hrs.	1.25	1.50	2.00
	3 - 10 hours	1.50	1.75	2.25
	Over 10 hours	1.75	2.00	2.50
Reversing Service Application		Consult Factory		

* Unspecified service factors should be 1.0 or as agreed upon by user and manufacturer.

Explanatory Notes

1. Time specified for intermittent and occasional service refers to total operating time per day.
2. Term "frequent starts and stops" refers to more than 10 starts per hour.

TABLE 2 – LOAD CLASSIFICATION NUMBERS

Load Class (S.F.)	Up to 3 hrs. total operation per Day	3 to 10 hrs. total operation per Day	Over 10 hrs. total operation per Day
I (1.0)	Moderate Shock Load	Uniform Load	
II (1.4)	Heavy Shock Load	Moderate Shock Load	Uniform Load
III (2.0)		Heavy Shock Load	Moderate Shock Load