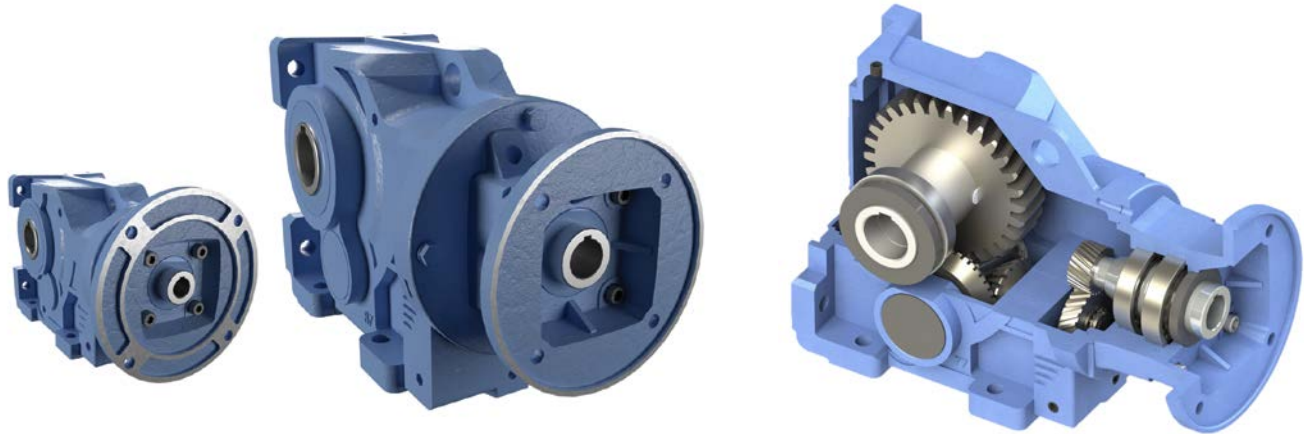


# IronHorse® Cast-Iron Helical Bevel Gearboxes

## Helical Bevel Gearbox Overview



**IronHorse Cast-Iron Helical Bevel Gearboxes**

## Gearbox Overview

Gearboxes, also known as enclosed gear drives or speed reducers, are mechanical drive components that can control a load at a reduced fixed ratio of the motor speed. The output torque is also increased by the same ratio, while the horsepower remains the same (less efficiency loss). For example, a 10:1 ratio gearbox outputs approximately the same motor output horsepower, but motor speed is divided by 10 and motor torque is multiplied by 10.

Helical bevel gearboxes use helical gears to provide quiet startup and smooth operation.

IronHorse helical bevel gearboxes are manufactured in an ISO9001-certified plant by one of the leading and most internationally acclaimed gearbox manufacturers in the world today. Only the highest quality materials are tested, certified, and used in the manufacturing process. Strict adherence to and compliance with the toughest international and U.S. testing standards and manufacturing procedures guarantees you the highest quality products.

We offer helical bevel gearboxes with cast-iron frames. The hollow-bore output accepts double or single shafts which are perpendicular to the input. Our gearboxes utilize C-face mounting interfaces for C-face motors.

## Features

- C-face and TC-face input; bevel, perpendicular output
- Universally interchangeable compact design ensures easy OEM replacement
- Flexible installation: 6 mounting positions
- FCD45 cast-iron one-piece housing
- 20CrMO alloy steel pinion and gears
- AGMA 11 & 12 rated, SCM415 pinion gears
- Gears supported by generously-sized precision ball and tapered bearings
- Double-lipped embedded oil seals to prevent leakage
- Two-year warranty

## Applications

- Use with electric motors for reducing output speed, increasing torque.
- Use for conveyors, packaging machines, rotary tables, etc.

# IronHorse® Cast-Iron Helical Bevel Gearboxes

## Specifications

| IronHorse Cast-Iron Helical Bevel Gearbox Specifications |            |          |               |              |                                   |                       |                                  |                                    |                        |                |                           |                       |                     |
|----------------------------------------------------------|------------|----------|---------------|--------------|-----------------------------------|-----------------------|----------------------------------|------------------------------------|------------------------|----------------|---------------------------|-----------------------|---------------------|
| Part Number                                              | PriceCode  | Box Size | Nominal Ratio | Actual Ratio | Output RPM<br>@ 1750 RPM<br>Input | NEMA Motor<br>Frame** | Max Input<br>Power (hp)<br>1) 3) | Max Output<br>Torque (lb-in)<br>3) | Max OHL<br>(lbs) 2) 3) | Efficiency (%) | BackMash<br>(Arc Minutes) | Approx<br>Weight (lb) | Drawing Links       |
| <a href="#">HBR-37-010-A</a>                             | \$1,272.00 | 37       | 10            | 11.09        | 158                               | 56C                   | 4.33                             | 1,565                              | 520                    | 91             | 45                        | 32                    | <a href="#">PDF</a> |
| <a href="#">HBR-37-010-B</a>                             | \$1,272.00 |          | 10            | 11.09        | 158                               | 143/5TC               | 4.33                             | 1,565                              | 510                    |                |                           | 37                    | <a href="#">PDF</a> |
| <a href="#">HBR-37-025-A</a>                             | \$1,272.00 |          | 25            | 23.10        | 76                                | 56C                   | 2.20                             | 1,659                              | 635                    |                |                           | 32                    | <a href="#">PDF</a> |
| <a href="#">HBR-37-025-B</a>                             | \$1,272.00 |          | 25            | 23.10        | 76                                | 143/5TC               | 2.20                             | 1,659                              | 610                    |                |                           | 37                    | <a href="#">PDF</a> |
| <a href="#">HBR-37-040-A</a>                             | \$1,272.00 |          | 40            | 37.97        | 46                                | 56C                   | 1.43                             | 1,770                              | 735                    |                |                           | 32                    | <a href="#">PDF</a> |
| <a href="#">HBR-37-040-B</a>                             | \$1,272.00 |          | 40            | 37.97        | 46                                | 143TC                 | 1.43                             | 1,770                              | 705                    |                |                           | 37                    | <a href="#">PDF</a> |
| <a href="#">HBR-37-060-A</a>                             | \$1,272.00 |          | 60            | 59.67        | 29                                | 56C                   | 0.91                             | 1,770                              | 815                    |                |                           | 32                    | <a href="#">PDF</a> |
| <a href="#">HBR-47-010-A</a>                             | \$1,393.00 | 47       | 10            | 9.95         | 176                               | 56C                   | 6.46                             | 2,097                              | 620                    | 91             | 36                        | 46                    | <a href="#">PDF</a> |
| <a href="#">HBR-47-010-B</a>                             | \$1,393.00 |          | 10            | 9.95         | 176                               | 143/5TC               | 6.46                             | 2,097                              | 580                    |                |                           | 51                    | <a href="#">PDF</a> |
| <a href="#">HBR-47-010-C</a>                             | \$1,393.00 |          | 10            | 9.95         | 176                               | 182/4TC               | 6.46                             | 2,097                              | 550                    |                |                           | 57                    | <a href="#">PDF</a> |
| <a href="#">HBR-47-020-B</a>                             | \$1,393.00 |          | 20            | 20.65        | 85                                | 143/5TC               | 3.97                             | 2,675                              | 690                    |                |                           | 51                    | <a href="#">PDF</a> |
| <a href="#">HBR-47-020-C</a>                             | \$1,393.00 |          | 20            | 20.65        | 85                                | 182TC                 | 3.97                             | 2,675                              | 610                    |                |                           | 57                    | <a href="#">PDF</a> |
| <a href="#">HBR-47-040-A</a>                             | \$1,393.00 |          | 40            | 41.36        | 42                                | 56C                   | 2.50                             | 3,372                              | 945                    |                |                           | 46                    | <a href="#">PDF</a> |
| <a href="#">HBR-47-040-B</a>                             | \$1,393.00 |          | 40            | 41.36        | 42                                | 143/5TC               | 2.50                             | 3,372                              | 905                    |                |                           | 51                    | <a href="#">PDF</a> |
| <a href="#">HBR-47-060-A</a>                             | \$1,393.00 |          | 60            | 58.99        | 30                                | 56C                   | 1.84                             | 3,540                              | 1030                   |                |                           | 46                    | <a href="#">PDF</a> |
| <a href="#">HBR-47-060-B</a>                             | \$1,393.00 |          | 60            | 58.99        | 30                                | 143TC                 | 1.84                             | 3,540                              | 980                    |                |                           | 51                    | <a href="#">PDF</a> |
| <a href="#">HBR-47-085-A</a>                             | \$1,393.00 |          | 85            | 86.89        | 20                                | 56C                   | 1.42                             | 3,540                              | 1110                   |                |                           | 46                    | <a href="#">PDF</a> |
| <a href="#">HBR-67-010-B *</a>                           | \$1,741.00 |          | 67            | 10           | 9.66                              | 181                   | 143/5TC                          | 12.06                              | 3,800                  |                |                           | 1500                  | 91                  |
| <a href="#">HBR-67-010-C *</a>                           | \$1,741.00 | 10       |               | 9.66         | 181                               | 182/4TC               | 12.06                            | 3,800                              | 1410                   | 80             | <a href="#">PDF</a>       |                       |                     |
| <a href="#">HBR-67-020-B *</a>                           | \$1,741.00 | 20       |               | 22.18        | 79                                | 143/5TC               | 6.26                             | 4,530                              | 1760                   | 73             | <a href="#">PDF</a>       |                       |                     |
| <a href="#">HBR-67-020-C *</a>                           | \$1,741.00 | 20       |               | 22.18        | 79                                | 182/4TC               | 6.26                             | 4,530                              | 1570                   | 80             | <a href="#">PDF</a>       |                       |                     |
| <a href="#">HBR-67-040-A *</a>                           | \$1,741.00 | 40       |               | 37.98        | 46                                | 56C                   | 4.62                             | 5,730                              | 2140                   | 69             | <a href="#">PDF</a>       |                       |                     |
| <a href="#">HBR-67-040-B *</a>                           | \$1,741.00 | 40       |               | 37.98        | 46                                | 143/5TC               | 4.62                             | 5,730                              | 2140                   | 73             | <a href="#">PDF</a>       |                       |                     |
| <a href="#">HBR-67-040-C *</a>                           | \$1,741.00 | 40       |               | 37.98        | 46                                | 182TC                 | 4.62                             | 5,730                              | 1510                   | 80             | <a href="#">PDF</a>       |                       |                     |
| <a href="#">HBR-67-065-A *</a>                           | \$1,741.00 | 65       |               | 64.97        | 27                                | 56C                   | 2.95                             | 6,260                              | 2140                   | 69             | <a href="#">PDF</a>       |                       |                     |
| <a href="#">HBR-67-065-B *</a>                           | \$1,741.00 | 65       |               | 64.97        | 27                                | 143/5TC               | 2.95                             | 6,260                              | 2140                   | 73             | <a href="#">PDF</a>       |                       |                     |
| <a href="#">HBR-67-085-A *</a>                           | \$1,741.00 | 85       |               | 84.10        | 21                                | 56C                   | 2.46                             | 6,760                              | 2140                   | 69             | <a href="#">PDF</a>       |                       |                     |
| <a href="#">HBR-67-085-B *</a>                           | \$1,741.00 | 85       |               | 84.10        | 21                                | 143/5TC               | 2.46                             | 6,760                              | 2140                   | 73             | <a href="#">PDF</a>       |                       |                     |
| <a href="#">HBR-67-120-A *</a>                           | \$1,741.00 | 120      |               | 118.14       | 15                                | 56C                   | 1.88                             | 7,260                              | 2140                   | 69             | <a href="#">PDF</a>       |                       |                     |
| <a href="#">HBR-67-120-B *</a>                           | \$1,741.00 | 120      |               | 118.14       | 15                                | 143TC                 | 1.88                             | 7,260                              | 2140                   | 73             | <a href="#">PDF</a>       |                       |                     |

\* Due to size and/or weight restrictions, gearboxes HBR-67-xxx-x through HBR-87-xxx-x must ship via Freight.

\*\* Although physical mounting to other motors is possible, please use only the motors as specified in this table.

- 1) Max Input Power is the highest HP 1800 rpm motor to be used with the gearbox under conditions of 1.0 service factor. Gearbox input power capacity decreases as motor speed decreases and as service factor increases.
- 2) OHL= Overhung Load ratings are for forces perpendicular to the output shaft and located at the shaft midpoint, such as from a gear, pulley, or sprocket with a belt or chain. Divide OHL ratings by the applicable OHL K factors shown separately in the Selection Factors tables. OHL ratings should also be divided by applicable service factors.
- 3) Maximum Mechanical Ratings are limits based on the strength and durability of gearbox components; applicable when operating time is short and stopped time is greater than or equal to operating time. These ratings are applicable for 1.0 service factor loads and may require modification depending upon characteristics of the applicable driven loads. Refer to the "Service Factors" table for more information.

# IronHorse® Cast-Iron Helical Bevel Gearboxes

## Specifications (continued)

| IronHorse Cast-Iron Helical Bevel Gearbox Specifications |            |          |               |              |                                   |                       |                                  |                                    |                        |                |                           |                       |                     |
|----------------------------------------------------------|------------|----------|---------------|--------------|-----------------------------------|-----------------------|----------------------------------|------------------------------------|------------------------|----------------|---------------------------|-----------------------|---------------------|
| Part Number                                              | Price Code | Box Size | Nominal Ratio | Actual Ratio | Output RPM<br>@ 1750 RPM<br>Input | NEMA Motor<br>Frame** | Max Input<br>Power (hp)<br>1) 3) | Max Output<br>Torque (lb-in)<br>3) | Max OHL<br>(lbs) 2) 3) | Efficiency (%) | Backlash<br>(Arc Minutes) | Approx<br>Weight (lb) | Drawing Links       |
| <a href="#">HBR-77-010-C *</a>                           | \$2,646.00 | 77       | 10            | 9.96         | 176                               | 182/4TC               | 24.02                            | 7,800                              | 1860                   | 91             | 29                        | 132                   | <a href="#">PDF</a> |
| <a href="#">HBR-77-010-D *</a>                           | \$2,646.00 |          | 10            | 9.96         | 176                               | 213/5TC               | 24.02                            | 7,800                              | 1690                   |                |                           | 148                   | <a href="#">PDF</a> |
| <a href="#">HBR-77-020-C *</a>                           | \$2,646.00 |          | 20            | 20.24        | 86                                | 182/4TC               | 14.78                            | 9,765                              | 2080                   |                |                           | 132                   | <a href="#">PDF</a> |
| <a href="#">HBR-77-020-D *</a>                           | \$2,646.00 |          | 20            | 20.24        | 86                                | 213/5TC               | 14.78                            | 9,765                              | 1740                   |                |                           | 148                   | <a href="#">PDF</a> |
| <a href="#">HBR-77-040-C *</a>                           | \$2,646.00 |          | 40            | 39.76        | 44                                | 182/4TC               | 9.21                             | 11,955                             | 2050                   |                |                           | 132                   | <a href="#">PDF</a> |
| <a href="#">HBR-77-040-D *</a>                           | \$2,646.00 |          | 40            | 39.76        | 44                                | 213TC                 | 9.21                             | 11,955                             | 1390                   |                |                           | 148                   | <a href="#">PDF</a> |
| <a href="#">HBR-77-060-C *</a>                           | \$2,646.00 |          | 60            | 57.05        | 31                                | 182/4TC               | 7.16                             | 13,325                             | 1860                   |                |                           | 132                   | <a href="#">PDF</a> |
| <a href="#">HBR-77-080-B *</a>                           | \$2,646.00 |          | 80            | 78.07        | 22                                | 143/5TC               | 5.38                             | 13,710                             | 3080                   |                |                           | 128                   | <a href="#">PDF</a> |
| <a href="#">HBR-77-080-C *</a>                           | \$2,646.00 |          | 80            | 78.07        | 22                                | 182TC                 | 5.38                             | 13,710                             | 2570                   |                |                           | 132                   | <a href="#">PDF</a> |
| <a href="#">HBR-77-120-B *</a>                           | \$2,646.00 |          | 120           | 122.94       | 14                                | 143TC                 | 3.42                             | 12,480                             | 3090                   |                |                           | 128                   | <a href="#">PDF</a> |
| <a href="#">HBR-87-020-D *</a>                           | \$4,121.00 | 87       | 20            | 20.90        | 84                                | 213/5TC               | 25.88                            | 17,650                             | 2780                   | 91             | 25                        | 230                   | <a href="#">PDF</a> |
| <a href="#">HBR-87-020-E *</a>                           | \$4,121.00 |          | 20            | 20.90        | 84                                | 254/6TC               | 25.88                            | 17,650                             | 1940                   |                |                           | 257                   | <a href="#">PDF</a> |
| <a href="#">HBR-87-040-C *</a>                           | \$4,121.00 |          | 40            | 43.31        | 40                                | 182/4TC               | 14.76                            | 20,870                             | 3450                   |                |                           | 208                   | <a href="#">PDF</a> |
| <a href="#">HBR-87-040-D *</a>                           | \$4,121.00 |          | 40            | 43.31        | 40                                | 213/5TC               | 14.76                            | 20,870                             | 2930                   |                |                           | 230                   | <a href="#">PDF</a> |
| <a href="#">HBR-87-060-C *</a>                           | \$4,121.00 |          | 60            | 61.42        | 28                                | 182/4TC               | 11.11                            | 22,270                             | 3510                   |                |                           | 208                   | <a href="#">PDF</a> |
| <a href="#">HBR-87-060-D *</a>                           | \$4,121.00 |          | 60            | 61.42        | 28                                | 213/5TC               | 11.11                            | 22,270                             | 2780                   |                |                           | 230                   | <a href="#">PDF</a> |
| <a href="#">HBR-87-080-C *</a>                           | \$4,121.00 |          | 80            | 82.86        | 21                                | 182/4TC               | 8.72                             | 23,570                             | 4260                   |                |                           | 208                   | <a href="#">PDF</a> |
| <a href="#">HBR-87-120-C *</a>                           | \$4,121.00 |          | 120           | 117.56       | 15                                | 182TC                 | 6.23                             | 23,900                             | 4370                   |                |                           | 208                   | <a href="#">PDF</a> |

\* Due to size and/or weight restrictions, gearboxes HBR-67-xxx-x through HBR-87-xxx-x must ship via Freight.

\*\* Although physical mounting to other motors is possible, please use only the motors as specified in this table.

- 1) Max Input Power is the highest HP 1800 rpm motor to be used with the gearbox under conditions of 1.0 service factor. Gearbox input power capacity decreases as motor speed decreases and as service factor increases.
- 2) OHL= Overhung Load ratings are for forces perpendicular to the output shaft and located at the shaft midpoint, such as from a gear, pulley, or sprocket with a belt or chain. Divide OHL ratings by the applicable OHL K factors shown separately in the Selection Factors tables. OHL ratings should also be divided by applicable service factors.
- 3) Maximum Mechanical Ratings are limits based on the strength and durability of gearbox components; applicable when operating time is short and stopped time is greater than or equal to operating time. These ratings are applicable for 1.0 service factor loads and may require modification depending upon characteristics of the applicable driven loads. Refer to the "Service Factors" table for more information.

## Gearbox Selection Factors

| Overhung Load K Factors for Various Drive Types |      |
|-------------------------------------------------|------|
| Chain & Sprocket                                | 1.00 |
| Gear                                            | 1.25 |
| V-belt                                          | 1.50 |
| Flat Belt                                       | 2.50 |
| Variable Pitch Belt                             | 3.50 |

Divide gearbox OHL ratings by the applicable OHL K factors.

## Service Factors for Selecting Gearboxes (when used with electric motors)

| Service Continuity<br>(per day) | Load Characteristics |                 |              |                |
|---------------------------------|----------------------|-----------------|--------------|----------------|
|                                 | Uniform              | Moderate Shock* | Heavy Shock* | Extreme Shock* |
| Occasional 1/2 hour             | 1.00                 | 1.00            | 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           |
| More than 10 hours              | 1.25                 | 1.50            | 1.75         | 2.00           |

\* Shock results from sudden increases in the torque demand of the load, such as: sudden stopping, restarting, and/or reversing; significantly heavy loads dropped onto a moving conveyor; impact loads such as punch press operations.

Depending upon the load characteristics, divide the gearbox HP, Overhung Load, and Maximum Mechanical Capacity ratings by the applicable service factor.



**NOTE:** For more detailed information regarding service factors and gearbox selection, please refer to our HBR Gearbox User Manual which is available for free download from our website at [www.AutomationDirect.com](http://www.AutomationDirect.com).