

Intelligent Drivesystems



92 Series Helical Bevel

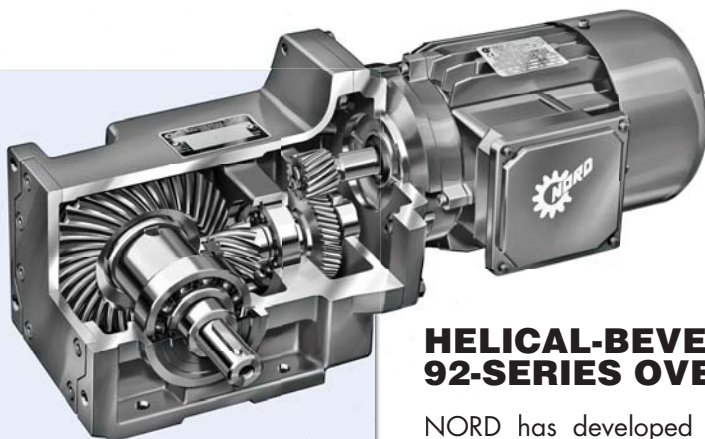
Gearmotors and Speed Reducers

F1142



92 Series Helical Bevel

PREMIUM EFFICIENCY WITH WEAR FREE GEARING



CONCEPTS THAT HELPED ACHIEVE THIS INNOVATIVE PRODUCT

Optimal computerized design – NORD has invested in the latest design and manufacturing tools to ensure maximum performance and price.

Reduced parts counts – most helical-bevel reducers are 3-stage: input helical, middle bevel stage, final stage helical. NORD has developed a two-stage helical-bevel reducer: first stage helical and output stage bevel. This reduces the number of parts required to build a gear unit - 2 fewer gears, 2 fewer bearings, 1 less shaft, other minor parts. This allows NORD to achieve significant cost reduction while maintaining the ultra high quality of a helical-bevel design.

GEARBOX STANDARD FEATURES

- UNICASE™ one piece heavy duty housing design
- High quality gearing
- Tough class 35 gray iron gear cases
- High grade bearings
- Heavy press fits on internal components
- Low backlash gearing
- Oil installed by the factory to maximize internal lubrication
- Stainless Steel Paint for a tough durable coating and USDA incidental contact approval

NORD's UNICASE™ design concept consists of a torsionally stiff housing in which all bearing seats are located in the one-piece casting. There are no splits or bolt-on carriers that weaken the housing or allow leakage. Shaft bores are machined in the same chucking ensuring excellent positioning of the gear tooth profiles, bearings and seals. As a result, the life of all components including the oil lubrication is enhanced. High quality gearing (up to AGMA Class 13) results in low operational noise coupled with wear free operation.

HELICAL-BEVEL 92-SERIES OVERVIEW

NORD has developed a unique class of high performance right-angle speed reducers. The 92-series helical-bevel drives are available as gearmotors and speed reducers with many mounting options. The 92-series bevel units provide high performance right-angle helical-bevel gear units at the cost effectiveness of a single worm system.

92-BEVEL ADVANTAGES COMPARED TO SINGLE WORM UNITS

- **High efficiency** – 97% gear efficiency compared to 40-90% of worm units (depending on the ratio)
- **Long gear life** – 92-gears are wear-free for infinite life – worms are designed to need replacement.
- **Many more ratios** – over 21 ratios per case size vs. worm's 9 ratios up to 60:1. May reduce the need for additional components – belts, chains, guards...
- **UNICASE™ quiet leak-free design** – worm reducers are notorious for leaking oil
- **Runs cooler due to the high efficiency** – worm gear units generate high heat and run at excessive temperatures
- **NORD motor advantages** - inverter/vector duty, many options: brakes, encoders, forced vent fans....

92-BEVEL ADVANTAGES COMPARED TO COMPETITOR HELICAL-BEVEL DESIGNS

- The cost is up to 40% lower than traditional helical-bevel designs
- There are Lower gear ratios available that produce higher output speeds

QUIET
LEAK-FREE
DURABLE
GREAT VALUE



DRIVESYSTEMS

POWER 1/6 TO 7.5 hp • TORQUE TO 5,840 lb-in RATIOS 4.1:1 TO 72:1

BENEFITS OF UNICASE™ CONSTRUCTION

- Leak free design
- Low operational noise
- High output torque
- High overhung and thrust load capacity
- Long maintenance intervals
- Long life

REDUCER OPTIONS

Other options available to solve nearly every need include

- 20+ ratio choices for each size for exact output speeds
- Heavy duty output bearings to handle high OHL and thrust loads
- Flanged mounting
- Solid input shaft
- C-Faced motor adapters
- Metric shafts
- Choice of mounting positions
- Custom shafts and flanges
- Washdown/Outdoor duty protection (NSD)
- Custom paint colors

NORD MOTOR FEATURES

Features that allow our motors to operate anywhere in the world

- Integrally designed for space saving
- Terminal block wiring connections
- Fan cooled (TEFC)
- Adjustable conduit box positions and cable entry locations
- Low rotational inertia
- High starting torque
- Inverter/Vector duty rated per NEMA MG1-1998 31.4.4.2 voltage spikes
- 575 volt conforms to NRCan high efficiencies
- International certifications:



BENEFITS OF INTEGRAL MOTORS

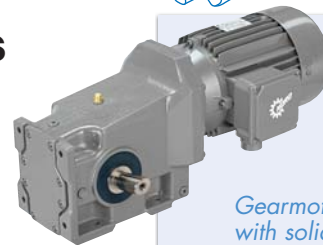
- Compact dimensions
- Corrosion resistant
- Reliable and simple power terminal connections
- Low operating temperatures
- Operation anywhere in the world
- Flexible mounting orientations for your application
- High start/stop capacity
- High output torque
- Long service life with Inverter/Vector Drives
- Reduced power consumption

INTEGRAL MOTOR OPTIONS

Customize each motor to your specifications

- Voltages of the world (200, 230, 400, 460 or 575)
- Frequency (50 or 60 Hz)
- EPACT conforming efficiencies
- Brakes
- Washdown/Outdoor duty protection (NSD+ & NSD-X3)
- Temperature monitors for thermal protection
- Blowers for low speed inverter duty
- Encoder feedback
- Space heaters to remove moisture
- Quick disconnect power plug
- Multiple speeds
- And more....

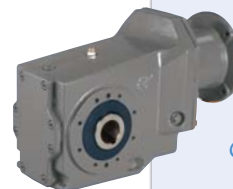
INVERTER DUTY MOTOR



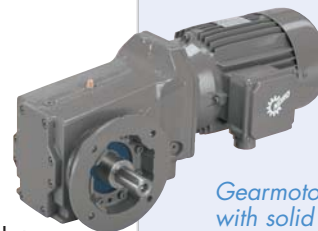
Gearmotor, foot mounted, with solid output shaft.



Gearmotor, shaft mounted, with shrink disc hollow output shaft and torque arm.



C-Face speed reducer, flange mounted, with hollow output shaft.



Gearmotor, flange mounted, with solid output shaft.

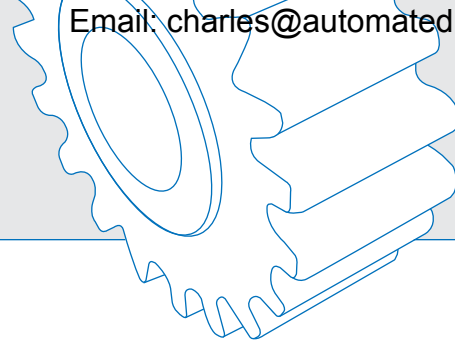


Speed reducer, foot mounted, with solid input shaft and double output shaft.



DRIVESYSTEMS

Premium Efficiency Wear Free Gearing



COMPARISON

Following is an example of the cost savings that might be expected by selecting a NORD 92-series helical-bevel gearmotor instead of a worm only design.

PREMIUM EFFICIENT

NORD research and development is focused on energy efficiency. The design of our gearboxes, motors and frequency inverters will dramatically reduce energy consumption. The 92-series helical-bevel gear unit was developed with a gear efficiency of 97%. Typical right angle worm reducers range in efficiency from 40% to 90%, depending on size, ratio and output speed. NORD offers motors of either standard efficiency or of the energy efficient design to suit your needs. Lowering our customers' operating expenses is one of our primary goals.

BENEFITS:

- Reduced energy consumption
- Lower operating costs

	NORD GEARMOTOR		COMPETITOR WORM GEAR
	ENERGY EFFICIENT	STANDARD EFFICIENT	ENERGY EFFICIENT
Model	SK92772-90LH/4	SK92772-90L/4	5.16 inch CD worm
Motor power	2	2	3
Gear ratio	52.48	52.48	50
Output speed (hp)	33	33	35
Output torque (rpm)	3823	3823	3780
Gear efficiency	97%	97%	70%
Motor efficiency	84.0%	75.0%	87.5%
Operating hours per year	4000	4000	4000
Price of electricity (¢/kWh)	5	5	5
Energy cost per year	\$55.24	\$397.87	\$511.54
Savings per year	\$156.30	\$113.68	
Percent energy savings	31%	22%	
Price of electricity (¢/kWh)	10	10	10
Energy cost per year	\$710.48	\$795.73	\$1,023.09
Savings per year	\$312.61	\$227.35	
Percent energy savings	31%	22%	
Price of electricity (¢/kWh)	15	15	5
Energy cost per year	\$1,065.71	\$1,193.60	\$1,534.63
Savings per year	\$468.91	\$341.03	
Percent energy savings	31%	22%	

RESULTS

The NORD gearmotor can do the same job at 2 hp as the competitors worm reducer does with 3 hp. Both produce approximately the same amount of output torque. This is due to the higher NORD gear efficiency. The NORD Energy Efficient gearmotor also produces a 31% reduction in consumed electricity. This produces an annual cost savings of \$312.61 per year at 10 cents per kilowatt-hour energy cost. The savings are even greater at higher energy costs.



DRIVESYSTEMS

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