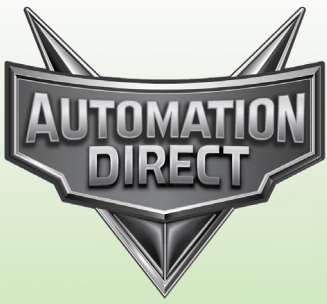




DC GEARMOTORS BUYING GUIDE

WHAT DO THEY DO?

DC gearmotors combine a DC motor with an integrated gearbox, providing controlled speed and higher torque for industrial automation tasks. They enable reliable, compact power transmission in applications where precise motion and load handling are critical.

Core Features

- **Speed Reduction:** Gearmotors combine the motor and gearbox into one package, saving space and installation effort while providing greater mechanical advantage.
 - **Torque Boost:** By reducing speed, gearmotors deliver higher torque needed for moving heavier loads or driving machinery.
 - **Compact Integration:** Combining motor and gearbox saves space and simplifies mounting in tight industrial layouts.
 - **Permanent Magnet Efficiency:** The IronHorse gearmotor series utilize PMDC designs for improved power density and consistent performance.
 - **Load Handling:** Gearmotors manage varying load demands without excessive wear by matching gear ratios to application needs.
- **Direction Control:** Reversible DC gearmotors support forward and reverse operation for application flexibility.
 - **Durability:** Rugged housings and tight tolerance gearing withstand demanding environments and high duty cycles.
 - **Precision Positioning:** Controlled output speed aids in accurate operation of equipment or materials.
 - **Versatile Output Formats:** Shaft and mounting configurations accommodate diverse application needs.
 - **Reduced Maintenance:** Integrated design minimizes alignment issues and extends service life compared to separate motor and gearbox setups.
 - **Energy Use Optimization:** Lower operating speed reduces mechanical stress and can improve efficiency.
 - **Application-Specific Fit:** A wide selection of PMDC gearmotors ensures an appropriate match for torque, speed, and physical constraints.

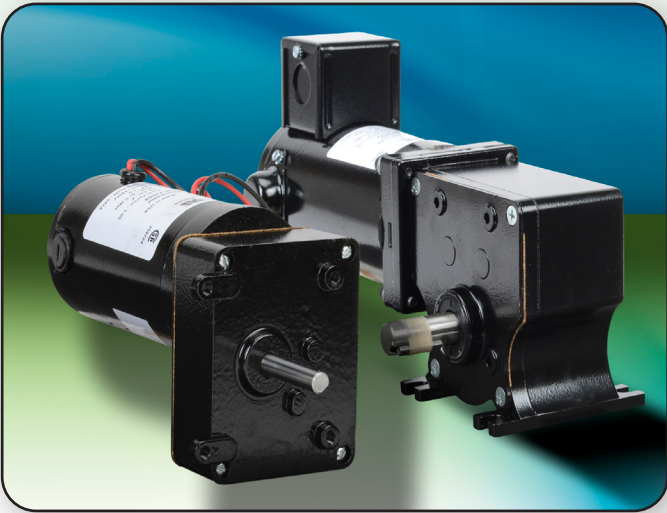
Topics

- » [What Do They Do?](#)
- » [How to Choose](#)
- » [Gear Reduction Torque Advantage](#)
- » [Product Lineup](#)

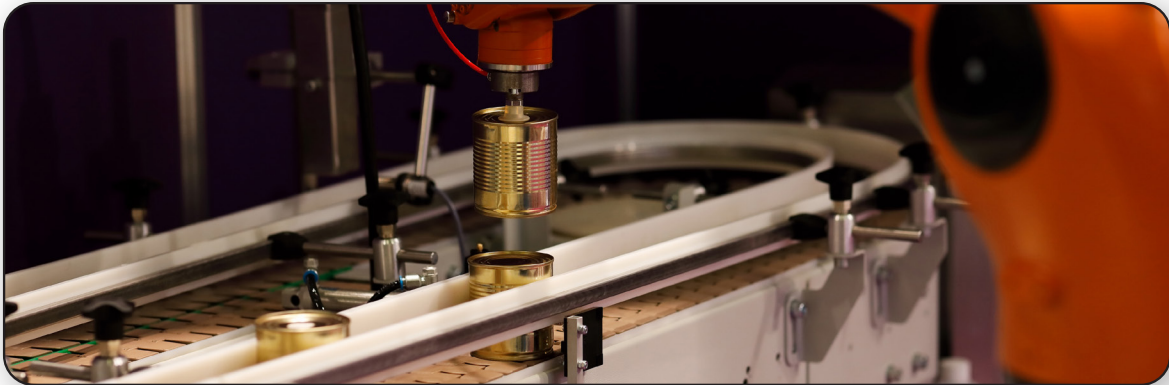
HOW TO CHOOSE

Selecting the right DC gearmotor requires matching performance, duty cycle, and environmental factors to your automation needs. Prioritize permanent magnet DC gearmotors for high torque and compact size, but assess accessories for mounting, control, and protection.

- 1. Voltage Rating: Ensure the gearmotor matches your available DC supply, commonly 12, 24, or 90 VDC, to prevent underperformance or damage.
- 2. Torque Requirement: Choose a gearmotor with appropriate torque output based on load and process specifications.
- 3. Gear Ratio: Gear reduction increases torque but reduces output speed; balance both to meet your application needs.
- 4. Housing Material: Verify material durability against environmental stresses like moisture or corrosive agents.
- 5. Mounting Configuration: Ensure compatibility with your equipment's mechanical interface for correct fit.
- 6. Duty Cycle: Confirm the gearmotor can meet required run times without overheating or wear issues.
- 7. Shaft Size: Match shaft dimensions to driven components, avoiding radial loads and mismatched couplings.
- 8. Agency Approvals: Verify that the selected gearmotor meets or exceeds required agency approvals (e.g., UL, CSA, etc.) for the installation location.



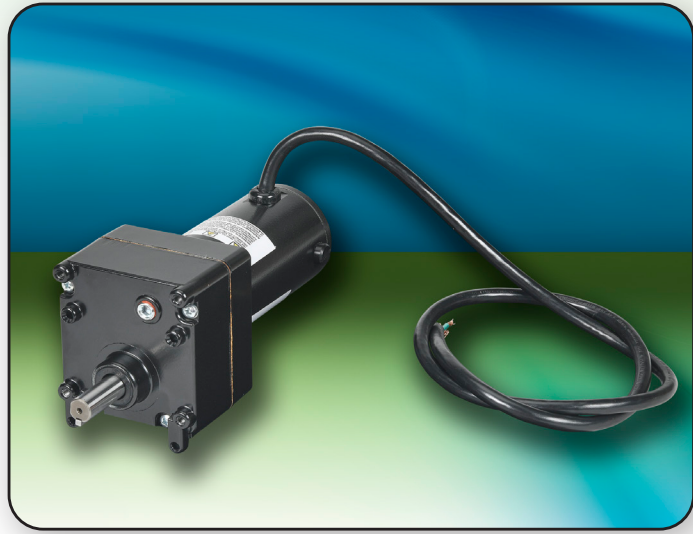
- 9. Bearings: Choose gearmotors with quality bearings for longevity under continuous or intermittent load conditions.
- 10. Environmental Rating: Consider IP protection for dust and moisture in harsh environments.
- 11. Maintenance Needs: Opt for models with minimal service requirements to reduce downtime.
- 12. Control Options: Identify gearmotor compatibility with your drive or controller for precise operation.
- 13. Accessories Compatibility: Ensure selected accessories fit model specifications for mounting or enhanced functions.
- 14. Weight Constraints: Factor in the unit's mass for handling, transport, or structural load limitations.



TORQUE ADVANTAGE WITH GEAR REDUCTION

Gear reduction boosts torque output by using mechanical advantage from gearing, allowing smaller motors to handle heavier loads and operate efficiently in demanding industrial tasks. By reducing output speed, DC gearmotors maintain strong torque at low speeds, making them ideal for conveyors, indexing systems, lift tables, and other precision automation equipment.

- 1. Low-Speed Stability: Maintains torque at low speeds, crucial for conveyors and indexing systems.
- 2. Load Handling Efficiency: Gear reduction allows DC gearmotors to lift or move heavier loads when compared to non-gearmotor designs of the same size.
- 3. Lower Cost: DC gearmotors are less expensive than a comparable, separately purchased DC motor/gear reducer combination.
- 4. Speed Control Precision: Lower output speed from reduction gearing enables smoother, precise control in automation systems.
- 5. Motor Longevity: Reduced load stress on the motor increases operational life and decreases failure rates.
- 6. Compact Power: Delivers high torque in a smaller footprint for tight machine spaces.
- 7. Permanent Magnet Strength: Small PMDC gearmotors deliver strong torque output in a compact package by eliminating field windings and external gear reducers.



- 8. Shock Management: Lower shaft speeds from gear reduction reduce mechanical shock at motor start and stop.
- 9. Continuous Duty Support: Gear reduction reduces the load on the motor, allowing for extended run times.
- 10. Versatile Mounting: Smaller torque-optimized units have multiple mounting options.
- 11. High Torque Applications: Perfect for presses, feeders, and extruders that need sustained force.
- 12. Smooth Acceleration: Controlled torque avoids sudden jerks and erratic movements.
- 13. Predictable Stopping Points: Granular movement allows for more precise stopping points during indexing applications.
- 14. Load Matching: Gear reduction allows motor selection tailored to application torque needs.





IRONHORSE®

DC GEARMOTORS

Series Name	Best For	Key Attributes	Primary Benefit	Price Tier
IronHorse VP1 Series Parallel-Shaft DC Gearmotors	Conveyors, turntables, pick-and-place equipment, and indexing applications	Compact parallel-shaft design, integrated gearing, adjustable-speed operation, multiple frame sizes, SCR-rated	Broad range of speed and torque options makes it easy to match performance to general-purpose automation applications.	\$
IronHorse MTGR Series Right-Angle DC Gearmotors (Dual-Shaft)	Compact conveyors, indexing equipment, and machines requiring power from both shaft ends	Right-angle gearbox, dual-shaft output, space-saving design, reversible operation	Delivers installation flexibility and dual-output capability in applications where machine space is limited.	\$\$
IronHorse MTGR Series Right-Angle DC Gearmotors (Single-Shaft)	Material handling, packaging equipment, and industrial automation systems requiring high torque in tight spaces	Right-angle power transmission, single-shaft output, efficient gear design, rugged construction	Maximizes usable machine space while providing dependable torque and simplified power transmission.	\$\$\$
IronHorse MTGP Series Parallel-Shaft DC Gearmotors	OEM equipment, positioning systems, light material handling, and machinery requiring inline power transmission	Parallel-shaft configuration, multiple voltage options, flexible mounting styles, serviceable design	Provides an economical geared DC motion solution with a wide range of mounting and performance options.	\$

IRONHORSE VP1 SERIES PARALLEL-SHAFT DC GEARMOTORS

STARTING AT \$261.00 (VP1C-90V-1007)

IronHorse VP1 series parallel-shaft DC gearmotors provide compact speed reduction and torque multiplication for conveyors, turntables, indexers, pick-and-place systems, and other small-machine applications. The family includes several frame sizes covering low-speed, high-torque operation through higher-speed duty while maintaining a common 90 VDC platform and parallel-shaft gearbox architecture.

- Motor ratings from 1/50 to 1/4hp support a wide range of fractional-horsepower motion and power transmission requirements
- Output speeds from 7 to 165 rpm and gear ratios from 11:1 to 386:1 enable selection of the appropriate balance between speed and torque
- Torque ratings from 13 to 280 lb-in accommodate applications ranging from light-duty positioning to higher-load conveying duties
- Shaft sizes of 5/16", 1/2" and 5/8" available for multiple load connection options
- Metal gear trains, double-shielded bearings, permanent lubrication, Class F insulation, and TENV construction contribute to long service life in industrial environments



IRONHORSE MTGP SERIES PARALLEL-SHAFT DC GEARMOTORS

STARTING AT \$268.00 (MTGP-P06-1J050)

IronHorse MTGP series parallel-shaft DC gearmotors are designed for conveyors, turntables, indexing systems, pick-and-place equipment, and other machinery requiring reduced output speed with increased torque. The product family spans compact fractional-horsepower units through larger AGMA-based gearbox designs, allowing selection based on voltage, mechanical loading, mounting requirements, and desired output performance.

- Motor ratings from 1/17 to 1/5hp support applications ranging from light-duty positioning tasks to heavier-duty power transmission requirements
- Output speeds from 8 to 165 rpm and gear ratios from 11:1 to 386:1 simplify matching motor performance to machine cycle requirements
- Full-load torque ratings to 280 lb-in provide additional mechanical advantage for conveying, indexing, and material handling equipment
- Overhung load capacities to 150 lb and thrust load capacities to 200 lb accommodate higher shaft loading in driven systems
- Grease- and oil-lubricated gearbox designs, combined with face- or foot-mount configurations, support selection based on installation and duty-cycle requirements



IRONHORSE MTGR SERIES RIGHT-ANGLE DC GEARMOTORS (DUAL-SHAFT)

STARTING AT \$437.00 (MTGR-P07-1J084)

IronHorse MTGR dual-shaft right-angle DC gearmotors combine permanent-magnet DC motor technology with worm-gear speed reduction in applications where space constraints require power transmission through a 90-degree drive path. The dual-shaft configuration supports compact conveyor, transfer, positioning, and automation equipment requiring accessible output shafts on both sides of the gearbox.

- Motor ratings from 1/19 to 1/15hp provide a compact solution for light-duty motion control and power transmission applications
- Output speeds from 36 to 197 rpm and gear ratios from 9.75:1 to 50:1 allow selection based on required speed reduction and output torque
- Torque ratings to 50 lb-in support positioning, conveying, and transfer applications requiring moderate output force
- Dual 0.5-inch output shafts simplify mechanical integration where power transmission or accessory mounting is needed from either side of the gearbox
- Permanently lubricated worm-gear construction with ball bearings supports face- or foot-mounted installations while minimizing maintenance requirements

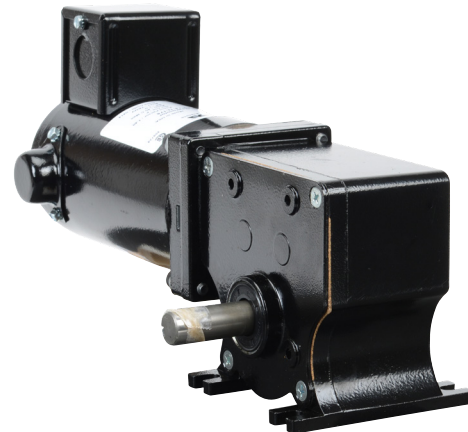


IRONHORSE MTGR SERIES RIGHT-ANGLE DC GEARMOTORS (SINGLE-SHAFT)

STARTING AT \$500.00 (MTGR-P14-1L022)

IronHorse MTGR single-shaft right-angle DC gearmotors are designed for applications requiring higher output torque, increased shaft loading capability, and efficient right-angle power transmission. The bevel-gear design is well suited for conveyors, indexing equipment, material-handling systems, and machinery where a compact footprint and robust 0.625 inch shaft are important selection criteria.

- Motor ratings from 1/7 to 1/5hp provide increased output capability for demanding power-transmission applications
- Output speeds from 22 to 178 rpm and gear ratios from 10:1 to 82:1 support a wide range of speed-reduction requirements
- Torque ratings to 280 lb-in deliver increased mechanical advantage for conveying, lifting, and positioning equipment
- Overhung load capacities to 150 lb and thrust load capacities to 200 lb support heavier driven loads and shaft-mounted components
- Bevel-gear construction provides gearbox efficiencies of 80 to 90% and permits backdriving in applications where reverse power flow is required



DC GEARMOTOR ACCESSORIES

Accessories and replacement parts for DC gearmotors include DC motor brushes and spare parts kits. All DC gearmotors are shipped with brushes installed.



DC Motor Brushes

Brushes commutate the incoming current in a DC electric motor. When changing motor brushes, always change them as a set.



DC Gearmotor Spare Parts Kit

Includes metal brush cap covers, terminal box, and two sizes of shaft keys.