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**KOLLMORGEN**



# Direct Drive Solutions

*Five decades of direct drive  
innovations*

## The DDR (Direct Drive Rotary) birthplace

In the early 1950's, Kollmorgen Inland Motor developed the very first torque motor.

The large-diameter, thin-ring motor was designed for use in light weight, high torque applications, such as stabilized platforms for inertial guidance systems. Today, 50 years of intense research and development has created a superior line of torque motors designed for applications as varied as semiconductor processing systems, injection molding machines, and tank turret systems. We created torque motors, and we're continually pushing the technology to achieve new performance benchmarks. When it comes to zero maintenance, high performance servo solutions, the original is still the best.

### MOTION CONTROL APPLICATIONS

Converting  
Printing  
Semiconductor wafer fabrication  
Coating and film processing  
High speed electronic assembly  
Injection molding  
Packaging  
Pedestal azimuth and elevation





## CONVENTIONAL MOTOR / TRANSMISSION SYSTEMS

Conventional servo systems with mechanical transmissions limit servo performance and reliability. They typically suffer from bulkier designs (due to use of transmissions), belt/pulley adjustments and replacements, and more extensive maintenance – all of which costs time and money. With direct drive systems, you get improved performance, greater reliability, and more accurate control. All in a space-saving, and time-saving system.

### Design / integration costs

- Positioning inaccuracy from transmission compliance
- Mounting and alignment of gearbox/belt/bracket
- Servo tuning difficulties caused by compliance and backlash
- Pulley installation and tensioning
- Oversize motor for inertia matching
- Extra components – clutch, output shaft feedback device
- Motor/gearbox mounting bracket
- High parts count
  - Purchasing and BOM
  - Inventory and inspection
  - Coordinate multiple lead times

### Life cycle costs

- Machine maintenance
  - Belt tensioning
  - Belt replacement
  - Gearbox lubrication
  - Gearbox replacement
- Increased backlash due to wearing gears
- Costs to support field failures
- Unscheduled down time
  - Belt breakage
  - Belt slippage
  - Gearbox failure
- Reduced throughput due to settling time



## FRAMELESS DDR

Superior performance in a streamlined, space-saving design – that's what you get with our frameless motor system. By eliminating all gears, pulleys, chains and belts, our frameless direct drive system simplifies your machine design. That means reduced component count and lower overall system costs. Plus, our direct drive technology eliminates backlash, dramatically improving response time and positioning accuracy in a smaller, lighter package.

## Benefits

- Zero maintenance
- Reduced down time
- Zero backlash
- Zero compliance
- Repeatability better than one arc second
- Up to 50 times more accurate
- No belt or gearbox
- Improved velocity regulation and stability
- Quiet operation (up to 20db reduction)
- Most compact mechanical design
- Hollow shaft

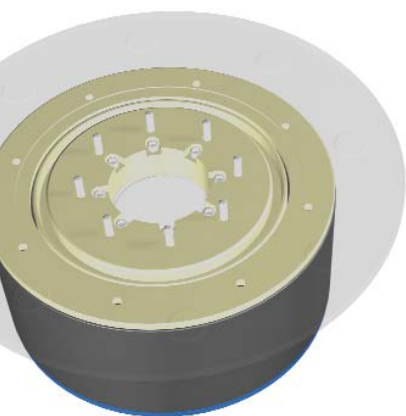


## CARTRIDGE DDR™

This direct drive system is the first in the industry to blend the space-saving and performance benefits of our Frameless DDR system with the ease of installation of a full-frame motor. Consisting of a rotor, stator, and factory-aligned high-resolution feedback device, the CARTRIDGE DDR™ motor uses the machine's bearings to support the rotor, saving space and design time and simplifying the overall system.

## Benefits

- Zero maintenance
- Reduced down time
- Zero backlash
- Zero compliance
- Repeatability better than one arc second
- Up to 50 times more accurate
- No belt or gearbox
- Improved velocity regulation and stability
- Quiet operation (up to 20db reduction)
- Compact mechanical design
- Hollow shaft option
- Easy installation
- Single part number



## KOLLMORGEN GOLDLINE® DDR

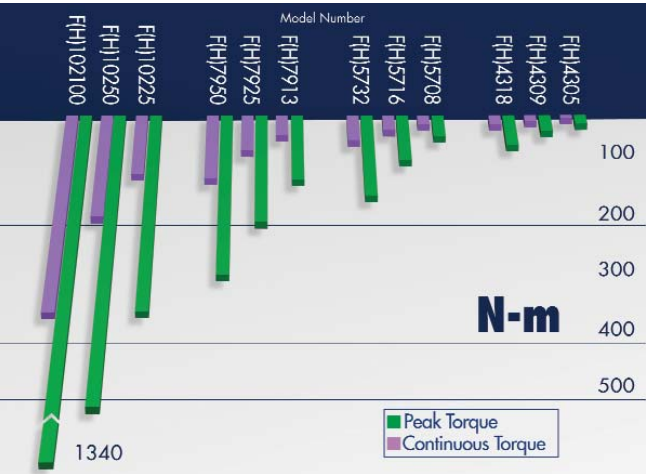
A housed motor assembly, the Kollmorgen **GOLDLINE®** DDR features a factory-aligned high-resolution feedback device and precision bearings that allow it to function as the core of rotary indexing and rate table applications. The system can also be used as a flexible indexer, providing programmable, rapid indexing far exceeding the throughput and accuracy of conventional mechanical or variable reluctance technology indexers.

## Benefits

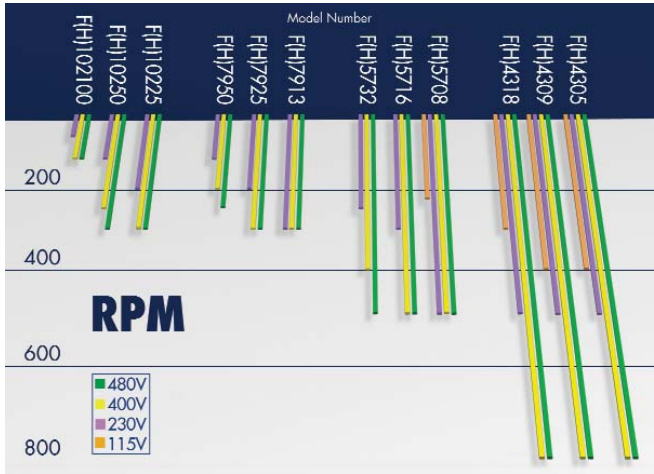
- Zero maintenance
- Reduced down time
- Zero backlash
- Zero compliance
- Repeatability better than one arc second
- Up to 50 times more accurate
- No belt or gearbox
- Improved velocity regulation and stability
- Quiet operation (up to 20db reduction)
- Compact mechanical design
- Hollow shaft
- Easy installation
- Single part number



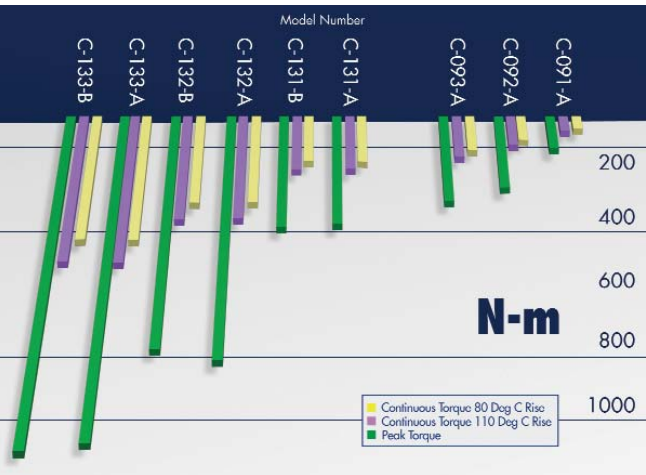
Torque



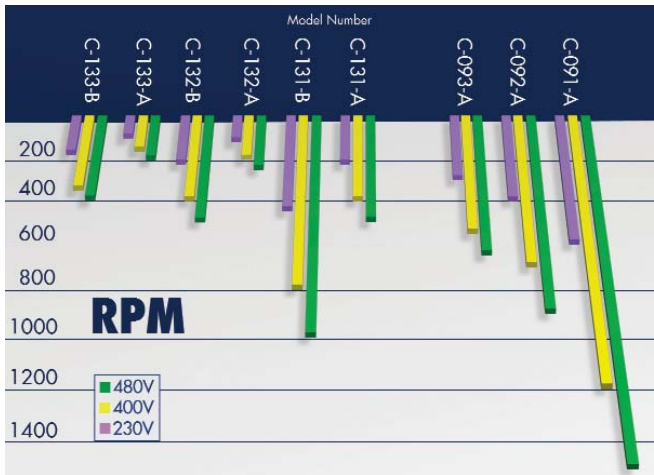
Speed



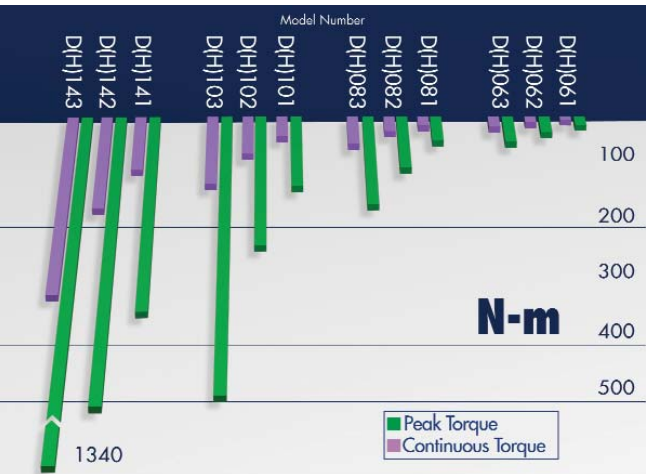
Torque



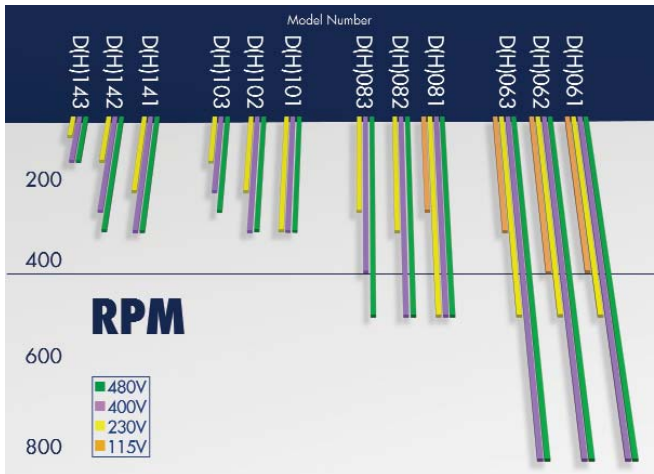
Speed



Torque



Speed



## S SERIES DIGITAL AMPLIFIERS / CONTROLLERS

Our S Series digital amplifiers offer superior flexibility in a compact design. These innovative amplifiers offer a common solution for your system, whether Frameless DDR, CARTRIDGE DDR™, Kollmorgen **GOLDLINE**® DDR (direct drive rotary), Conventional Rotary or **PLATINUM**® DDL (direct drive linear). No need to match the motor to the amplifier. No custom electronics required. No hassles with learning, stocking, and supporting several drive types. Just outstanding system performance that saves time and money.

## S600 and S300 Series



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