

The Dynaserv Series



Direct Drive Brushless Servo Systems

Each Dynaserv system consists of a brushless servo motor, microprocessor-based drive, power supply, and a brushless resolver or encoder for position feedback. The primary benefit of the Dynaserv System is high accuracy and torque without speed reducers. Additional advantages include:

- Faster settling time than a traditional servo motor and speed reducer system
- Smooth rotation at slow speeds
- A flat speed/torque curve for high controllability
- Ability to operate in a position, speed or torque control mode
- Built-in test mode simplifies optimum tuning

The Dynaserv Family

DR Series — Lowest Cost!

- Brushless resolver feedback
- 13 models; 6, 8 or 10 inch diameter
- Resolutions to 819,200 steps/rev
- Torques to 295 ft-lb (400 Nm)
- Repeatability of ± 5 arc seconds

DR5000 Series — Highest Power!

- Brushless resolver feedback
- 4 models, 6- or 10-inch diameter
- Resolutions to 425,984 steps/rev
- Torques to 370 lb-ft (500 Nm)
- Speeds to 4 rps

DM Series — Best Accuracy and Repeatability!

- Incremental encoder feedback
- 7 models; 6 or 10 inch diameter
- Resolutions to 1,024,000 steps/rev
- Torques to 150 ft-lb (200 Nm)
- Repeatability of ± 2 arc seconds
- Clean room operation

DM1004 Series — Most Compact Motors and Drives!

- Incremental encoder feedback
- 2 models; 4 or 6 inch diameter
- Resolution of 655,360 steps/rev
- Torque of 3 lb-ft (4 Nm)
- Maximum speed of 2.5 rps
- Clean room operation
- Axial and radial run-out of 0.01 mm, a factor of 10 better than the standard DR and DM Series

M-Type — Drive/Controller in a Single Package

- Autotuning
- Controls most DR and DM motors
- Position feed forward (faster settling)
- PLC mode
- Non-volatile RAM
- Configuration replication (flash memory)

CE (LVD and EMC*)

* EMC with proper filter and installation procedures.

Integrate Direct Drive Servo Systems Into Your Next Application. Call 1-800-358-9070 Today.

Introduction

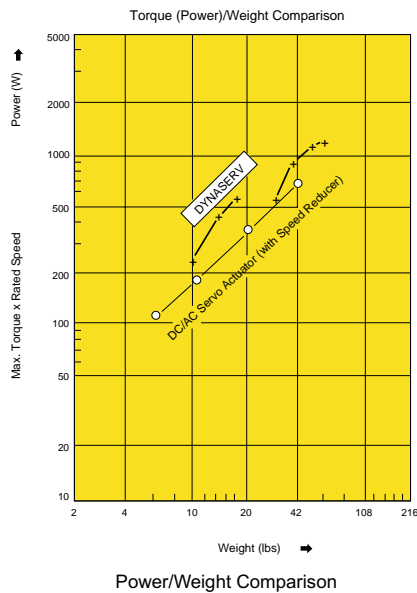
The Dynaserv System Allows the User to Operate in One of Three Modes of Control:

- Position control – up to 1,024,000 steps/rev
- Speed control – $\pm 10V$ Velocity command input
- Torque control – stable response at $\pm 8V$ input

This type of flexibility combined with a high torque/weight ratio, high accuracy, faster settling times, high torque at high speed, smooth rotation, optimum tuning and clean operation all add up to cost effective high performance alternative to the traditional motor and speed reducer combinations.

High Torque/Weight Ratio

The Dynaserv motors are designed with a permanent magnet constructed of rare-earth materials located at the center of the stator core.

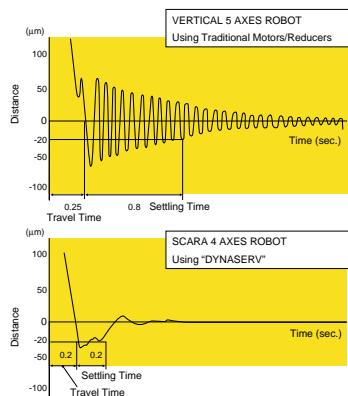


High Precision

Dynaserv motors eliminate the backlash or hysteresis inevitable in using any speed reducer. Absolute positioning of 30 arc-sec is typical with a repeatability of ± 2 arc-sec.

Faster Settling Time

The Dynaserv system reduces machine cycle times by decreasing settling times. This result is realized because of the "gearless" design and sophisticated "I-PD" control algorithm.



Settling Time comparison in Robot Application

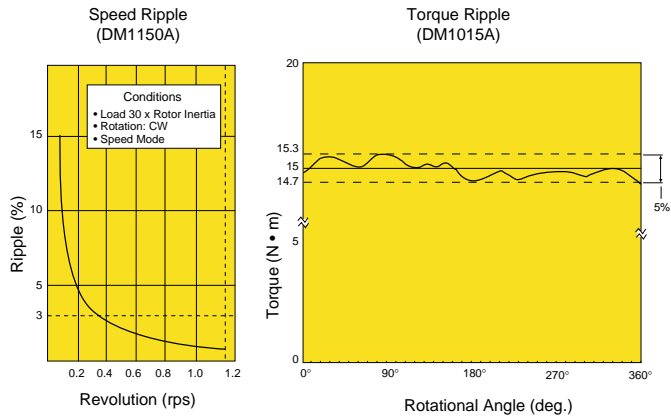
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High Torque at High Speed

The torque/speed curve of the various Dynaserv models is very flat. This results in high acceleration at high speeds (4.0 rps) with good controllability.

Smooth Rotation

The very low velocity and torque ripple of the Dynaserv contribute to its excellent speed controllability.



Dynaserv Velocity/Torque Ripple

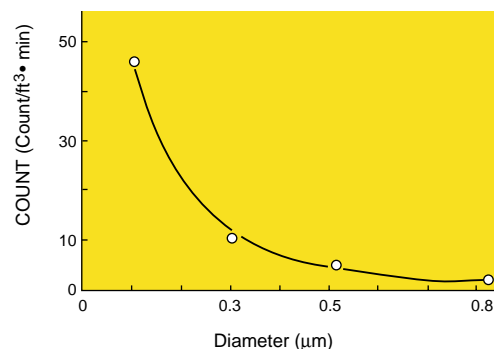
Optimum Tuning

Dynaserv systems offer the user a tuning mode that simplifies the setting of optimum parameters for the actual load. Turning on the "test" switch on the front panel of the drive produces a test signal. Utilizing an oscilloscope the gain settings are quickly optimized by adjusting the digital switches and potentiometers on the front panel.

Clean Operation

The Dynaserv system is brushless and gearless which results in a maintenance-free operation. With preparation, the DM Series can operate in Class 10 environments.

Measured by: LPC-101 Particle Counter
 Made by: PMS Corp.
 Source: He-Ne Lazor Light
 Min. Resolution: 0.1 micro meter (Particle Diameter)
 Sampling: 0.1 Cubic feet/min.



Dust from Dynaserv (DM1045B)

Introduction

The Dynaserv has provided solutions to a variety of applications such as:

Assembly

- Base machine
- Pick and place
- Inserter/mounter

Robots

- Handling
- Clean room
- Universal

Transport

- Turn table
- Belt conveyor
- Three-dimensional warehouse

Inspection and Measuring

- Three dimensional measuring
- Goniometer
- Non-destructive x-ray

Work

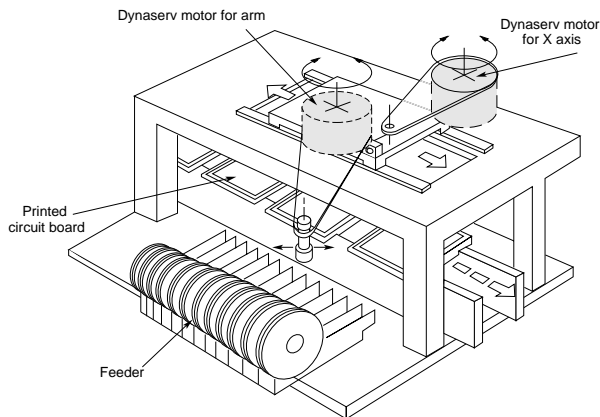
- Machining center work table
- Press roll feed
- Grinder table

Commercial

- Printing machines
- Medical equipment
- Follow-up equipment

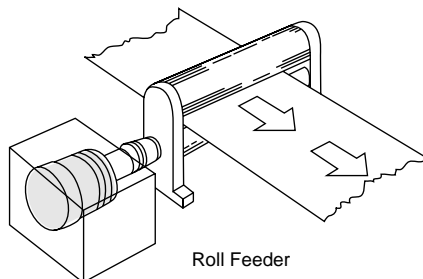
Material Handling

By attaching a small arm or linkage to the Dynaserv, very high velocities can be attained. This type of design has been used on a wide variety of equipment, such as a chip mounting machine. On this machine accuracies of 30 arc-sec are maintained with very high arm speed.



Feed-to-Length

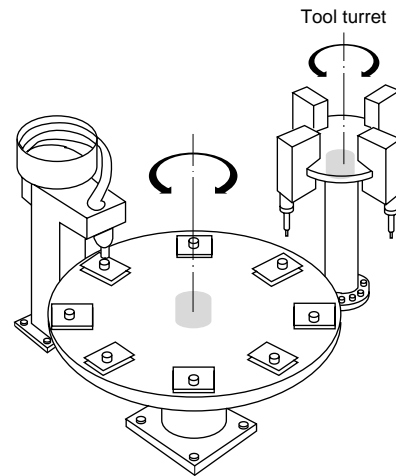
The Dynaserv system eliminates the need for gear reduction and allows for direct control of the nip roll in most feed-to-length applications. The ability to effectively control loads up to 100 times its own rotor inertia allows the Dynaserv to be applied in a variety of machines. The net result of specifying a Dynaserv system is increased repeatability of the feed material.



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Indexing/Rotary Positioning

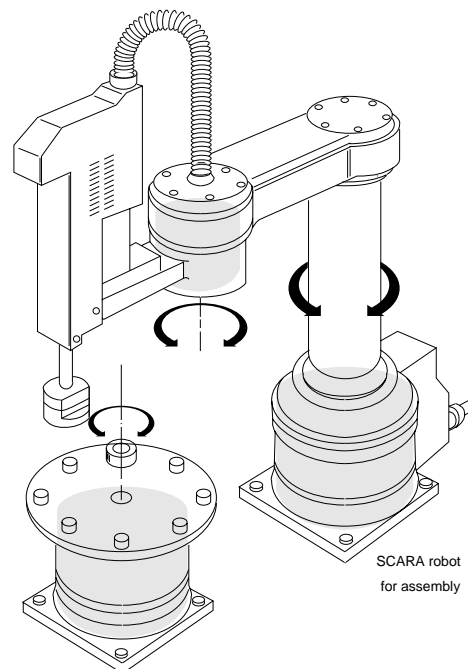
The Dynaserv has high accelerations lending itself to high speed point-to-point positioning applications requiring low cycle time. In scanning and inspection applications the outstanding low speed performance will be of merit.



Rotary table for assembly

Robotics

Dynaserv direct drive motors were first developed to drive SCARA (Selective Compliance Assembly Robot Arm) in applications requiring repetitive and physically taxing operations.



Peripherals for robot

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