

A schematic cutaway drawing of a two-stage planetary gearbox with one spur gear stage.



Modular RN bearings from NKE are specially designed for wind turbine planetary gearbox applications.

## Wind Turbine Bearing System

### SIMPLIFIES LOGISTICS

NKE Austria developed a modular bearing system for use alongside planetary gears in wind turbine gearboxes. The bearing assemblies offer reduced diversity of parts and simpler logistics.

The modularity is based on single-row cylindrical roller bearings in the RN range, which don't have an outer ring. They are outfitted with a single-piece solid brass cage guided by the inner ring. The cage has inspection grooves for endoscopic inspection of the inner raceways. The bearings can be assembled in sets of two, three or four bearings depending on the load and design parameters of a specific gearbox.

The bearing sets are supplied ready to install. Each bearing has an overall height with tight tolerances for even distribution of radial loads. The sets include all necessary components for locking the bearings axially in the planetary gears. NKE can adapt the overall width of a bearing set to operating conditions if required.

According to NKE, some of the benefits of the modular bearing concept include simpler planetary bearing designs, reduced required number of bearing variants and simpler adaptation of bearing set characteristics to each gear stage requirement. Other advantages include the quality of rolling element guidance during rapid acceleration due to the brass cage and improved lubrication from lubrication grooves.

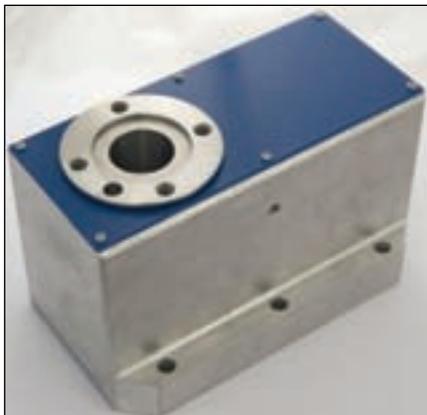
### For more information:

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## Rotary Table

### OPTIMIZES SMALL SPACES

Techno, Inc. Linear Motion Systems' Rotary Table ZR20 is a small



footprint stepper motor rotary table. It is powered by a two-phase stepper motor with a 20:1 ratio. The motor withstands a maximum load of 10 kg, and the resolution is 2.7 arc/minutes at 200 steps per revolution, half step.

“Our new rotary table is great for machine builders and in-house manufacturing engineers that need a powerful unit but are limited to a smaller space,” says Joe Griffin, Linear Motion Systems sales manager. “The ZR20 is ideal for countless automation applications that include pick and place, assembly, testing, inspection, dispensing and part transferring. A prime example of use would be rotating a part in and out of a UV curing station or paint booth.”

The ZR20 comes with an internal limit switch for homing functions. The stepper motor is prewired into a DB9

connector, minimizing setup time. It measures 138 mm by 86 mm wide by 88 mm high, uses a NEMA 17 frame motor and can be mounted to any assembly via six through holes on the mount flanges. The AR20 can be used by itself or in any combination of linear slides and other rotary tables.

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## ThreeAxis Motion Controller, Driver

### IMPROVED WITH USB

The ESP301 from Newport Corporation is a three-axis motion controller and driver that adds a USB interface and integrated manual front panel interface to improve on its predecessor, the ESP300. It provides maximum backward compatibility to integrate into new or existing motion systems by the ESP stage auto-detection and auto-configuration combined with two-character software commands.

Up to three axes of motion are controlled by the ESP301 using DC or two-phase stepper motors up to 3A per axis. Control is synchronized by a 64-bit, floating point, DSP processor. Velocity profile tracking is ensured by a digital PID-feed forward servo loop. Smooth, low-speed stepper-positioning capability is provided by a 1,000x programmable micro-step resolution. An 18-bit DC motor command output allows for

stability in applications requiring precision.

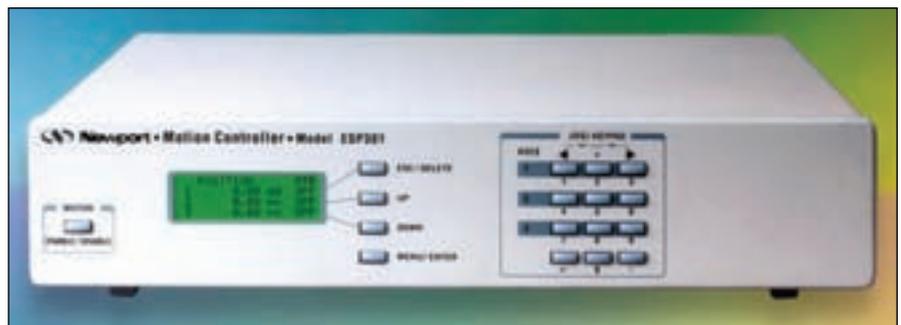
Several positioning modes are provided by the ESP301, including synchronized and non-synchronized point-to-point, jogging, linear or circular interpolation and continuous path contouring. Other features include on-the-fly position, velocity, or trajectory changes in complex motion and alignment routines; advanced origin search routine, which includes encoder index pulse consideration for precision homing; and backlash and linear error compensation eliminate repeatable system errors.

“We are very pleased to announce the ESP301 because we believe it provides significant benefits to our cus-

tomers,” says Beda Espinoza, product line manager for Newport’s motion products. “Affordable and easy to operate, it offers faster USB communication and a new, intuitive front panel menu. The ESP301 features the same industry-leading reliability as the ESP300 with excellent functionality and robust construction.”

### For more information:

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## Dodge Bearing

INSTALLS, REMOVES QUICKLY

The Dodge Imperial HD mounted roller bearing from Baldor Electric Company features a cast-steel housing and is designed for heavy-duty applications. The steel housings are available in pillow block, flange, edger flange and piloted flange configurations.

The bearing is easy to mount and dismount because of an adapter mount system. The adapter nut is turned clockwise to tighten the adapter on the shaft using the Imperial insert. The adapter nut is held in place by a lock plate, and feeler gauges are unnecessary in setting the bearing's clearance. While operating, the adapter sleeve aids concentricity and minimizes vibration.

The Imperial's insert has a built-in bearing puller, so the shaft is easy to remove by taking out the lock plate and turning the nut counter-clockwise, so the bearing slides off the shaft.



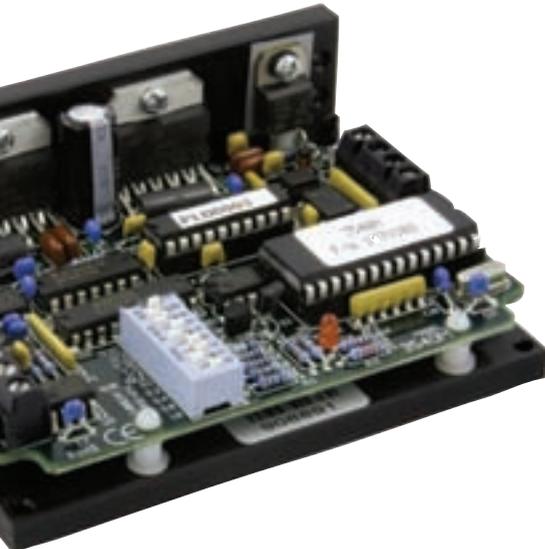
The bearing elements are shielded by a nitrile, multiple-lip seal that resists heat and chemical breakdown. High-temperature and high-speed capabilities are achieved when an optional metallic labyrinth seal is paired with the standard steel cage. End caps are also an option for added protection.

### For more information:

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## Stepper Drive

TAKES LOW-FRILLS APPROACH  
TO MOTION CONTROL



The Compumotor Open Frame Stepper (OFS) microstepping drives stand as an affordable alternative for less demanding, point-to-point applications—low-frill and high-value, according to Parker's Electromechanical Automation Division in a press release.

"Many high-end, multi-axis automated machines require only two or three highly coordinated, high-precision axes out of the group. There may be another six, eight or dozen axes that rarely move, except for setup and periodic alignment of various elements of the machine," says Marc Feyh, stepper drive product manager. "For these setup and alignment axes, a simple, easy-to-use and inexpensive stepper drive can hold position just as well as an expensive one that requires a commissioning process with installed software

and programming just to get started. OEMs can save both time and money by applying the right level of step drive complexity to their machines, focusing valuable resources where they're really required—on the core high-precision axes."

The OFS step drives have three-state, PWM, MOSFET H-Bridge technology. They are capable of providing 3.5 amps peak current per phase and can drive from size 11 through size 34 step motors.

### For more information:

Parker Electromechanical Automation  
5500 Business Park Dr.  
Rohnert Park, CA 94928  
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[www.parkermotion.com](http://www.parkermotion.com)

## High Performance Linear Drive

OVERCOMES HIGH INERTIA MISMATCHED STAGES

The TA333 high power linear drive from Trust Automation includes a Class-AB linear amplifier with pure analog throughput at currents up to 25 A. The drive can be used with a brushless motor with external sinusoidal commutation, an internally commutated brushless motor with Hall Effect sensor feedback for smooth trapezoidal operation, a two-phase stepper motor or



up to two voice coil motors. The TA333 can be used in applications that include extremely high-resolution inspection systems, metrology instruments and medical applications.

The drive overcomes issues like high inertia mismatched stages and low inductance motors. The configuration flexibility allows designers to integrate developments in sinusoidal motor control and its benefits, which include zero cogging, no torque ripple and smooth motion.

An external 24 VDC for the internal logic is used in applications that depend on very low electrical noise, and for applications not as sensitive, the TA333 can use an internal 24 VDC source.

The TA333 can interface with any

**continued**

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## Power Up!



If you have a background in gears, bearings, motors, belts, couplings, sensors or actuators, we'd like to talk to you. Power Play, the back page feature in *PTE*, is all about your industry. If you've got a funny anecdote, an interesting observation or perhaps a limerick on motion control, feel free to send it our way. This column is dedicated to the stories too radical to make the cut in industry or product news. We need story ideas, and we're confident you can provide them.

The rules are quite simple: submit a story idea about the power transmission industry, make it entertaining as well as informative, and become a *PTE* magazine editor-at-large today (salary not included). Submit your award-winning material to [publisher@powertransmission.com](mailto:publisher@powertransmission.com).

# product news

motion controller with a  $\pm 10$  VDC command output. It features dynamic transconductance selection (DTS) control. This permits torque control to be altered at any time for high-resolution control without losing power.

Measuring 14.9 inches by 7.7 inches by 4.7 inches, the TA333 features integral thermally controlled, variable speed, forced air cooling; ribbon connectors; SMB coaxial connectors; and plug-gable-terminal connectors.

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## Low-Voltage Gearmotors, Controls

### APPLY TO SOLAR APPLICATIONS

Bodine Electric Company released a line of 12 volt permanent magnet DC gearmotors, motors and DC motor

speed controls for continuous duty OEM applications. They are compact and perform for low-voltage, battery powered, remote location or solar applications. Together, the products are a complete, single-source motion control system.

The PMDC gearmotors and motors come in 24A and 33A frame motor sizes and can be combined with most of Bodine's parallel shaft, hollow shaft or right-angle gearheads. They generate

up to 310 lb-in torque and have horsepower from 1/50 to 1/8 hp. Custom models are available with encoders, special output shafts, cords and mounting configurations.

The Type WPM 12 VDC speed control features a pulse-width-modulation speed control for cool motor operation, long brush life, lower noise and a wide speed range. The control is easily calibrated for different motor sizes by DIP switches. The control is intended for battery powered, solar powered and other low-voltage applications that call for basic, single-direction speed control.

"A customer recently selected our low-voltage 12 VDC product to drive solar powered pumps on pipelines," says Terry Auchstetter, manager for custom product development. "Because these pumps are used in some of the world's most remote locations, it was critical that the motors did not drain the back-up battery when solar power was not available. By choosing the most efficient winding, gear ratio and control combination, we were able to create a dependable system that is already being used in over 500 systems worldwide."

## For more information:

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## Linear Drive

### RUNS WITHOUT CONTROL SYSTEM

The Uhing RG linear drives, supplied by Amacoil, Inc., use mechanical control over travel direction and linear speed to eliminate the need for an electronic control system. The RG linear drive is a motion system that can be used in packaging, converting, textile, wire/cable and automotive applications.

Regardless of the speed or rotational direction of the shaft, travel direction reversal is automatic. End stops set manually are used to change travel length. A manual control on the drive unit can regulate travel speed without necessitating changes to the motor speed or gearing. The RG drive requires minimal lubrication once every month, according to Amacoil.

The RG drive comes in 17 sizes meeting thrust requirements from 7



to 800 pounds. Rolling ring bearings maintain constant point-contact with the shaft to eliminate backlash. Rotary motion is converted to linear motion output as soon as the shaft rotates, and there is no play or free movement between shaft and bearings.

Built-in overload protection is provided by the smooth shaft, so if the system becomes overloaded, the nut will slip instead of churning or grinding over threads, where debris could be trapped and clogs or jams could occur. Amacoil provides the RG linear drives

separately or as part of custom fabricated assemblies with shaft and end supports.

### For more information:

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## Linear Actuator Upgrade

### PROVIDES EXTRA MUSCLE

Macron Dynamics Inc. is offering an optional heavy beam extrusion upgrade to the Macron 14 series linear actuators, providing strength and rigidity in heavy-duty linear motion applications. The extrusion adds a thicker internal structure and extra weight to the Macron 14's beam.

"The upgrade allows our already heavy-duty Macron 14 actuators to be used in applications with higher moment loads and in support of heavy loads over greater distances," says Craig Marshall, executive vice president at Macron Dynamics, on the company's website. "The Macron 14 actuator has become the workhorse of our belt drives and linear actuator product line. It provides the greatest versatility in horizontal,

vertical or any mounting plane for professional grade, robust industrial linear motion applications."

Macron Dynamics recently enhanced the actuators' design with a die-cast housing for both idler and drive and pulley assemblies. The die-casting allows two radial bearings to be added on the idler assembly and an extra bearing on the drive end. Thermal conductivity and pulley assembly damping characteristics are improved with the new design. The actuators operate cooler and quieter.

The Macron 14 actuators can be coupled with other Macron 14, Macron 135 and Macron 6 linear actuators or "Z" variants—vertical actuators—to create custom gantry or Cartesian robotic systems.

Available in three models, the Macron 14 linear actuator is customizable for user specifications. The standard model is capable of motion up to 400 inches per second. The Macron 14

H model is designed more rugged and for heavier duty applications featuring wide belt and pulley assemblies with a larger, more rigid cart design. The Macron Z model is designed for vertical motion applications. The Macron 14 actuators travel up to 250 feet or 20 feet vertically.

"Whether moving heavy loads, performing high-speed motion, integration into clean, dirty or corrosive environments or multi-axis applications, the Macron 14 provides the versatility to meet many different specifications," says Joe Baird, national sales manager.

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