

Heavy Duty Slide System

OFFERS VERSATILITY & FLEXIBILITY
IN MOTION CONTROL

If the general rule is “bigger and better,” then manufacturers of linear motion products appear to be following suit. In order to meet increased load and life requirements, HepcoMotion has released an advanced version of its Heavy Duty model called the HDS2. The heavy duty linear motion system, available in North America from Bishop-Wisecarver, addresses new markets in material handling involving larger x-z gantry systems.

“HDS2 really provides an exceptionally flexible program for arduous applications,” says Chris Rees, sales director at HepcoMotion. “The additions to the range will enhance its performance and will provide customers with far more application possibilities.”

The introduction of specific components reduces the engineering time required to get the system up and running. The components include larger bearings with an increased load capacity, three sizes of construction beams, single edge V-slides and flat tracks and a range of drive options. Stainless steel or corrosion resistant material help the HDS2 handle most high-load applications.

The HDS2 can be supplied in component form or as a ready-mounted assembly complete with rack-driven carriages. Customers have the option of choosing commercial slides for general use or high-precision ground slides where greater accuracy and smoothness are required.

The slides and tracks are available in single-piece construction up to four meters long and supplied in single- or double-edge formats. Driving forces for heavier loads are achieved through a range of spur or helical rack and pinion options. An engineering package includes a range of rack-driven carriages, with automatic lubrication facility and helical-bevel gearboxes that can be driven by AC or servo motors.

For design flexibility, the HDS2 features versatile construction beams. A larger aluminum beam is available that eliminates the need for the customer to machine a steel structure, and a compact beam is an option if space is limited. This beam can also be used to create a high capacity lifting z axis. The ability

to mount directly to HepcoMotion Standard back plates is also available.

HDS2 has an increased range of bearing sizes, including a 150 mm diameter vee bearing and a 144 mm diameter roller, incorporating high capacity taper bearings. The maximum bearing capacity is now 50 kN, and they are available in removable format for easier replacement in case of failure. These double-row bearings are tolerant to debris, according to the company's press release. Low friction cap wipers expel dirt in harsh environments and provide automatic lubrication for a longer service life. A removable cover allows system adjustments without disassembly.

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Short Inductive Proximity Sensors

FIT INTO CRAMPED SPACES

A family of ultra-short inductive proximity sensors designed by Balluff Inc. for OEM applications fits into tight spaces, allowing for more flexible machine design. The Balluff SuperShorty sensors are low in mass, affording sudden acceleration and deceleration without adding excessive inertial load on dynamic, fast-moving equipment.

"These sensors are so small that OEM engineers now have free reign to



integrate sensing functionality in areas that previously couldn't accommodate any conventional sensor," says Henry Menke, product marketing specialist. "As rugged inductive sensors, they can survive in close proximity to industrial processes where shock, vibration and liquid or particulate contamination would quickly take optical sensors out of action."

The SuperShorties come in 6.5 mm smooth and M08 threaded housings. Balluff offers them in 10 mm length or 6 mm, and connectorized models are 18 mm long. Each variation has a 1.5 mm sensing range. "The sensing electronics are fully integrated into the miniature housings, so no bulky external amplifiers are required," says Jeff Himes, product specialist. "Despite the SuperShorty sensors' extremely small size, their electrical outputs are fully protected against short circuits and polarity reversal—plus they have a current rating of 150 mA."

The SuperShorty sensors are designed for high-speed pick-and-place equipment, miniature grippers, linear slides, miniature valves, compact actuators and other compact, precision mechanisms.

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Linear Actuator Designs

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CONFINED SPACES

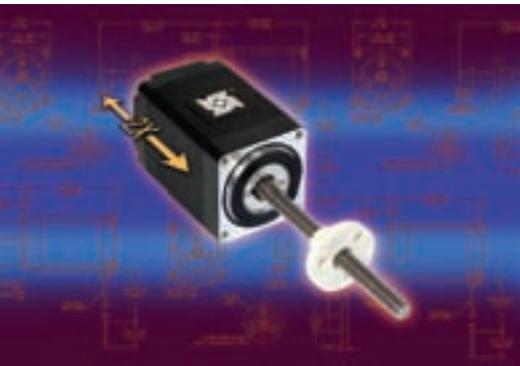
Haydon Switch and Instrument, Inc. introduced two size 11 hybrid linear actuators: external and double-stack non-captive. Both designs offer a range of resolutions from 0.003175 mm to 0.0508 mm per step and deliver thrusts of up to 133 N.

In the external design, the lead screw is part of the motor, using a mating nut to translate along the screw. The motor steps, and the lead screw rotates but does not advance. The external actuator integrates a motor, coupler, lead screw and nut into one part. The ends of the lead screw can be machined to use outboard bearing support for longer lead screw lengths. The external linear actuator is designed for linear travel in restrictive spaces.

The double-stack, non-captive design has the lead screw placed axially through the motor's center. It requires restraining from rotating, which can be accomplished by attaching the screw to a non-rotating member of the mechanical assembly, according to Haydon's press release. The internal threaded rotor will rotate, and the lead screw moves axially but does not rotate. The external actuator was designed for long linear travel and applications where both ends of the lead screw are held. These

continued





applications include medical equipment, semiconductor handling, valve control, x-y tables, handheld instruments and telecommunications.

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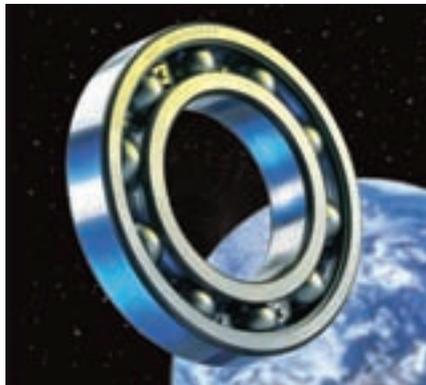
OPERATE SMOOTHLY, QUIETLY

SKF Explorer deep groove ball bearings feature raceways and cage geometry that provide smooth, quiet operation, accuracy, speed, low friction, low operating temperatures and longer service life, according to the company's press release. They can be used in electric motors, gearboxes and rotating equipment like those in packaging, food and beverage, medical, general manufacturing and construction industries.

The Explorer bearings offer a running accuracy up to ISO tolerance class P5, dimensional accuracy to ISO tolerance class 6 and exceed the ISO width tolerance class Normal. The tight width tolerances allow designers to

minimize the tolerance stackup in shaft systems.

High grease retention is possible due to the sealing designs, which also protect the bearings from contamination without compromising speed. The deep groove bearings are constructed from steel with low oxygen content; this prevents fatigue-inducing oxide that may form in the material. The Explorer bearings are available in a range of bore sizes and dimensions, and SKF can customize them for specific requirements.



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Enhanced Stepper Motor

DELIVERS
25 PERCENT MORE TORQUE

A stator-enhanced model of Portescap's h3 Series Step Motors features magnets in the stator, which provide 25 percent more torque output across the entire speed range. The original h3 models deliver up



to 40 percent more torque than the typical hybrid step motor, according to Portescap.

"The increased torque is achieved through additional stator magnets that are inserted between each stator tooth," says Dave Beckstoffer, Portescap product specialist, stepper technologies. "These block the magnetic field from flowing around the stator teeth, which forces more of the magnetic field to flow through each tooth to produce the highest torque output of any hybrid step motor available today."

The 1.8-degree step motors have an aluminum housing to improve heat dissipation, neodymium iron boron magnets to increase the torque density and a bearing retainer and o-ring that reduce motor noise, according to the company's press release. With a larger bearing the motor can handle higher side and radial loads. The h3 Series Step Motors come in NEMA 17, 23 and 34 frame sizes, and several stack lengths are available for each frame size. Windings can be customized for specific needs.

By using a smaller motor that delivers the same performance as larger hybrid steppers, machine builders can make the size and weight of their machines smaller with the h3. This also enables machine builders to use smaller drives to lessen power requirements and costs of the entire system. An RoHS-compliant hybrid

step motor, the h3 Series Step Motor can be used in applications including semiconductor equipment, medical devices and laboratory instrumentation.

For more information:

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Sales.america@portescap.com
www.portescap.com

Transmission Torque, Shaft Misalignments

MINIMIZED BY ZERO-MAX
COUPLINGS

The Control-Flex couplings from Zero-Max are designed for precision

feedback requirements of encoder applications. They feature clamp-style zero-backlash hubs, and electrically insulating components provide low weight and inertia. They are recommended for use wherever encoders are found: applications such as machine tool, conveying and automated assembly systems, medical device and packaging, according to Zero-Max.

The Control-Flex couplings are constructed with two hubs for attaching to the system shafts and a center flex member, which is attached to the hubs through pins. Zero-Max offers two versions of the couplings. The single-flex disc design is for standard torque capacity, and the two-flex disc design provides higher torque capacity and torque stiffness.

"Control-Flex couplings satisfy the high performance requirements of today's encoders that convert rotational speed into precise electrical signals," says Robert Mainz, sales manager for Zero-Max. "They are a better option for these high-precision applications than



standard beam style couplings, which tend to vibrate, loosen and produce inaccurate encoder readings."

For more information:

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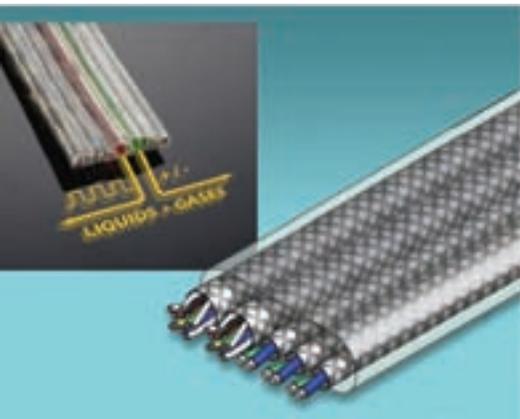
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Silicone Cables

DESIGNED FOR HIGH-PERFORMANCE MOTION CONTROL SYSTEMS

The Motion Series PLUS (MS+) flat power/signal cables from Cicoil integrate six power conductors and 20 signal wires in a flat cable 0.80" x 0.2".

"Motion Series PLUS cables add an extra level of versatility to our Motion Series line," says Howard Lind, president of Cicoil. "For multi-axis applications, the new configuration of the Motion Series Plus allows designers to place the cables side-by-side for maximum flexibility, or stack them for a very condensed and compact cable bundle."



The Motion Series PLUS cables come in two feature options. Cicoil can integrate Teflon tubing for fluid or gas transmission. The second option is Cicoil's StripMount integrated mounting aid, which is embedded in the cable. The StripMount eliminates the need for cable management systems that can be bulky and expensive. The mounting aid inserts fasteners through the cable to fasten it to most surfaces.

The cables have a single-axis design that can be ganged for one to three servo motion axes. Silicone encapsulation provides a one-piece construction, and the cable has a 10 million-cycle service life. The silicone process also allows for temperatures from -65°C to +260°C. The cables resist water, steam and

chemicals, and are suited for vacuum or clean room environments, according to the company's press release. Custom designs are available.

For more information:

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Bellows Couplings

MULTIPLY LATERAL MISALIGNMENT TOLERANCE

A series of double flex bellows couplings from R+W America accommodates more than a few thousandths of an inch of shaft offset. The BKL-DOUBLEFLEX couplings are designed to avoid the lateral and/or angular misalignment that can occur from tolerance stack-up in machined interfaces between motor frames, gearboxes and their driven shafts, according to the company's press release.

The BKL-DOUBLEFLEX demonstrates higher flexibility in the angular directions of each bellows, which enables the coupling to increase lateral misalignment tolerance. Depending on the coupling size, the BKL-DOUBLEFLEX provides five times more lateral misalignment, high torque stiffness with no backlash and low inertia. The model can be used for servo drives in packaging equipment and special machinery applications.

The BKL-DOUBLEFLEX series comes in torque ratings from 15-500 Nm, and it can accept English or metric shafts from 8-62 mm. For problematic encoder coupling installations, special mini versions are available.



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Heavy-Duty Linear Drive

REVERSES WITHOUT DRIVE MOTOR

Amacoil/Uhing's model RG80 linear drive supplies up to 800 pounds of side thrust for heavy-load, linear motion applications. The drive eliminates a need for electronic controls and a reversible motor using "rolling ring" linear motion engineering, which enables mechanical control over reversal. Linear pitch can be adjusted manually without gear



reduction or adjusting the drive motor speed.

The RG80 drive is a friction drive, so it needs to run on a case-hardened, ground shaft. The speed and travel direction are determined by the angle of the rolling ring bearings relative to the drive shaft. The drive contacts an end stop once a stroke is finished. The end stop pivots the bearings, reversing their direction, but the drive motor continues to rotate without changing direction, gears or other controls. Applications include linear motion in packaging and converting equipment as well as other production machinery needing a reciprocating linear motion component, such as spraying, slitting, scanning and winding. The RG80 drive is sold in a complete assembly with shaft, pillow block end supports, bearings and adjustable end stops, or separately.

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www.amacoil.com

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The Econobelt belt tension tester measures tension using sound waves instead

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For more information:

Quality Transmission Components,
A Division of Designatronics, Inc.
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Bodine Electric Company's Pacesetter models 2994 and 2998 are three-phase AC motor speed controls for driving 230 VAC, 50 or 60 Hz, inverter-duty, three-phase gearmotors and motors from 1/8 hp to 1 hp. Both models are operated by a single-phase 115 or 208/230 VAC line voltage.

The NEMA-4X/IP-65 rated enclosure positions the 2994 model for high protection in harsh environments like industrial or food processing conveyor systems, feeders, pumps and outdoor applications. The stock model has a speed potentiometer and power switch in the control's front panel. Several motor overload protection features are incorporated, including RMS current limit, short circuits and AC inrush at startup. The control shuts down automatically in the event the AC line input voltage varies from the operating range. The control is protected by input-transient suppression that absorbs power spikes. A line filter is built into the 2994, meaning it is CE approved, and it is also RoHS compliant.

Housed in a NEMA-1/IP40



enclosure, the Pacesetter 2998 offers a basic environmental protection suited for applications like packaging equipment, conveyor systems and other industrial uses. No programming is necessary, and motor horsepower, AC line input voltage and output frequency are jumper selectable. The model 2998 offers the same protective features as the 2994, in addition to the same panel features and CE certification.

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www.bodine-electric.com

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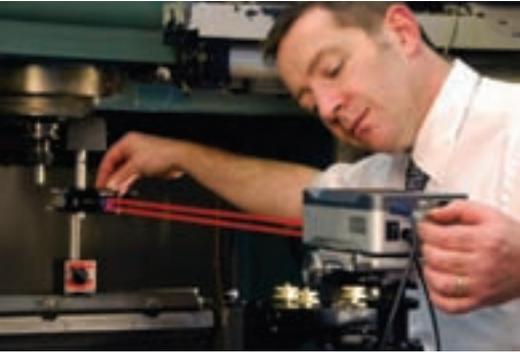
Renishaw introduced the "lean design" XL-80 system, a laser interferometer calibration system that allows four times faster slew rate, 10 times higher dynamic data capture rate and improved total system accuracy in portable packaging. The XL-80 is capable of linear measurement speed to

4 m/s, provides resolution of 1 nm and warms up in less than six minutes.

The XL-80 analyzes nanometer-level motion in calibration, error-mapping and compensation ranging from lab equipment, semiconductor processing machinery and radiosurgery tools to coordinate measuring machines, lithography equipment, advanced machine tools, robots and assembly systems. A signal gain switch provides an optional 80 m linear range or increased signal strength at shorter ranges.

The system has an accuracy of ± 0.5





ppm, which is sustained over the entire operating range of 0–40°C. The system ensures accuracy when experiencing variations in temperature, pressure and humidity because it updates the environment factor after seven seconds using a USB link.

Compared to Renishaw's previous ML-10 system, bandwidth was improved from 5 kHz to 50 kHz, allowing the XL-80 to capture detailed data of small, high-frequency movements. Weight was reduced by 70 percent to less than 3 kg, which includes connecting cables, power supply and sensors. The tripod and stage have also been reduced in size. A multi-signal connector facility provides a standard trigger signal-in for data capture, an analog voltage-out facility and optional quadrature signal output.

For more information:

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2D Encoder

COMPENSATES
FOR ERRORS IMMEDIATELY

Heidenhain's 1Dplus encoder measures linear guiding and thermal drift errors while the stage or machine is moving, so the two-dimensional encoder

immediately processes and compensates for errors. Applications include any type of motion stage such as stacked stages, gantries, wafer processing and large flat panel display production and tests.

The 1Dplus encoders have gratings in two dimensions and no friction. They

can measure the x and y directions at the same time with models that have two or three scanning units, which allow the calculation of the rotation angle of the bracket housing them.

The accuracy grade for x-axis measurement is $\pm 1 \mu\text{m}$ and has a **continued**

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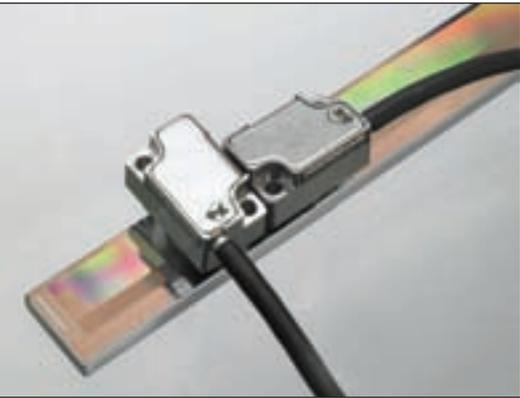
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reference mark. The encoder has a grating period of 8 μm and a signal period of 4 μm . Current measuring length is 300 x 2 mm, and the 1Dplus scale is 20 x 4.9 mm.

For more information:

Heidenhain Corporation
333 E. State Parkway
Schaumburg, IL 60173
Phone: (847) 490-1191
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Linear Actuator

REDUCED IN HEIGHT
AND WEIGHT



The DryLin ZLW-0630 linear actuator from igus inc. has a smaller mounting height and lower weight than its predecessor for designing a compact

linear drive system. The actuator is 1.22 inches high and weighs 1.76 pounds. The unit is made of a toothed-belt linear drive with a hard-anodized aluminum profile, a compact linear guide, plastic sliding elements and plastic end blocks.

The DryLin ZLW is for applications with high speeds up to 6.5 feet per second and those that require quick positioning of small loads in industries such as packaging, automation, medical technology and food and beverage manufacturing.



“The compact version of DryLin ZLW, igus’ first linear actuator, is an impressive addition to the DryLin product line,” says Matt Mowry, DryLin product manager for igus. “This new system is lightweight, maintenance-free and can be used in a wide array of applications requiring a high speed, compact linear unit.”

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Photovoltaic Panel Scribing System

CONFIGURES
SPLIT AXIS OR GANTRY



The SolarScribe automation series from Aerotech has both mechanical and air-bearing versions of split-axis and gantry-style systems to accommodate all PV/FPD scribing applications, according to the company’s press release. With direct-drive linear motor stages capable of traveling up to 2.5 meters, the SolarScribe systems also offer multihead scan axes, z and theta correction axes and machine base/isolation arrangements. Other options include single- or multiple- step axis carriages, several z-axis choices, a theta stage with integral brake, passive or active vibration isolation, a machine base and a control enclosure.

Aerotech’s Automation 3200 control system allows the SolarScribe series advanced trajectory generation options,



such as multi-block look-ahead, which helps avoid dynamic errors. The A3200 is entirely digital, and it features position-based laser firing output that matches the laser pulse frequency to the current scribing speed automatically; this enables an added jolt in throughput. Motion Designer software is capable of generating or importing motion trajectories, then running and evaluating the trajectory.

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