



Release: Immediate
Contact: Mr. Kevin Shults
Director of Marketing
Hydromat, Inc.
11600 Adie Road
St. Louis, MO 63043

Phone: 314.432.4644
Fax: 314.692.9186
kshults@hydromat.com

Hydromat Inc. Introduces the New “Eclipse”, a Larger, More Powerful Rotary Transfer Machine at IMTS 2016

ST. LOUIS, MO – At IMTS 2016 Hydromat Inc. will present the new Eclipse concept, a unique 12 station Rotary Transfer machine. The Eclipse is a ground up re-design of the famous Hydromat concept with all new components. The machine has a heavy casting mounted on a frame of sturdy, welded, steel construction. The machine casting is 2m in diameter, nearly twice as large as the traditional 12 station Hydromat machine. This new ductile iron casting is designed for the use of semi-permanent tool spindles, each having 3-axis capability as standard; eliminating the need to change tool spindle sizes for different cutting processes or adding 3-axis flanges for that capability. The new Eclipse features all electric servo spindles and slides. No hydraulics are needed for tool spindle motion as in previous Hydromat machines. These new technologies along with the beefier base yield better accuracy and repeatability.

The bar fed collet version of the Eclipse 12-100 has a maximum workpiece diameter of 65mm (2.5”) and features a maximum workpiece length of 180mm (7”) with 127mm (5”) of material outside the collet. The Eclipse will also be available in an Indexing Chuck version that will feature a table with vertical chucks capable of 360° rotation of the workpiece. This system is ideal for mid to high-volume, precision production of irregular-shaped castings or forgings and is designed with the flexibility to easily accommodate families of parts. The Eclipse Indexing Chuck machine will utilize hydraulically-actuated, self-centering two- or three-jaw chucks, or custom clamp fixtures, to provide the highest accuracy and part clamping rigidity. Workpieces are mounted in the chucks by robotics or pneumatic loaders.

A revolutionary new cut-off saw was designed by Hydromat Inc. engineers at their headquarters in St. Louis, Missouri. It features bar and workpiece spacing prior to saw blade retraction after the cut, moving both the saw blade away from the workpiece in the collet and the bar stock away from the blade, to eliminate the blade dragging during the

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saw’s return to home position. A two-speed drive motor with belt reduction yields a highly

rigid system which features a single configuration for all surface speeds. The saw utilizes standard size 360mm diameter carbide brazed saw blades. The blades are flanked by replaceable guide supporting pads to dampen blade harmonics. A high pressure flush to clean the blade gullets of chips is standard.

A new CNC head, also designed by Hydromat, features an outside diameter of 160mm with a radial stroke of 25mm. The Eclipse features quick-change, presettable tool heads for easy changeovers.

The tool spindles are larger than previous Hydromat spindles to accommodate the heavier cuts and larger parts and machined with this platform. They are designated as 55/200 units, referring to the 55mm front bearing size and a 200mm stroke at the Z axis. The units utilize HSK 50 tool holders, and they are a stout design weighing in at 536 kg total mass. These units are direct drive powered by a Fanuc aiT6/12000HV motor with a KTR GS38 coupler. This motor continuous rating is 5.5kW at 7.4HP and a 30 minute rating at 7.5kW at 10HP. It has dual windings and pumps out 35 Nm at low speeds and 13.2 Nm at high speeds. The high resolution encoders and the latest servo and spindle HRV Control realize Nano Control Servo system with high speed, high precision and high efficiency. The ai series motors are best suited to large size machine tools because it has high power up to high speed, and has high torque at low speed, well suited to the milling axis of large machines and large lathes.

An optional 20,000 RPM tool spindle powered by the same Fanuc aiT2/20000 is also available. It features a proportionally lower cutting force related to the higher speed. The bearing configuration is the same as the 12,000 RPM version, but features a KTR GS28 coupler on this configuration. Both the 12,000 and 20,000 RPM Eclipse units are through spindle coolant capable.

The Eclipse tool spindles have a Y-axis driven by a Fanuc aiS 12/4000 HV with a brake, a KTR Rotex GS28 coupler on a 10mm pitch/32mm diameter ball screw with a 20m per minute maximum rapid. Featuring a +/- 50mm stroke, the accelerated load on the motor/screw is 437 kg. The radial cutting load design criteria is 1845 N with a 110mm tool tip distance, and the Z-axis extended.

The X-axis motion is driven by a Fanuc DiS 15/1000 built in motor with the ball screw thrust bearing in the front position. It features a Renishaw Rexa encoder system. The ball screw is
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a 20mm pitch/32mm diameter with a hollow shaft with a shrink disk coupling featuring +/- 40mm stroke and 20m per minute max rapid. The accelerated load on the motor/screw is 437 kg.

The Z-axis is driven by a Fanuc aiS 8/4000HV series motor driving a 20mm pitch/32mm diameter ball screw, with the two are connected with a KTR Rotex GS28 coupler the assembly yields a 40m per minute maximum rapid, speeds faster than the previous Hydromat machines. The stroke is a healthy 200mm, while the accelerated load on the motor/screw is 217kg.

The Eclipse 12-100 machine is the solution for the elimination of secondary operations by producing parts complete from barstock, castings, forgings or cold formed blanks. The new Eclipse machining platform eliminates secondary operations and reduces work in progress. Additional cost reduction occurs due to extremely short remnants and thin cutoff for significant material saving.

This multi-station transfer technology enables load and unload processes on station one, and simultaneous machining on the other 11 stations, making the Eclipse ideal for medium to high production of complex work pieces requiring multiple operations, complex cuts, and where tight tolerances are critical. The Hydromat Eclipse engineering team embodies a rich history of manufacturing disciplines and they work closely with the customer to develop an innovative production solution. The Eclipse supports Lean Manufacturing principles and competitive manufacturing at small, medium and large production quantities.

Hydromat, Inc., is the industry leader in the manufacture and assembly of precision transfer machines — Rotary, Inline, and Trunnion models, as well as the ICON 6-250 Productivity Center and ICON 6-150 & 8-150 Mill/Turn Centers — and has a reputation built on a commitment to product quality, customer service, and technological innovation.

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Sales Contact: Mr. Matthias Walter
Chief Sales Officer
Hydromat, Inc.
11600 Adie Road
St. Louis, MO 63043

Phone: 314.432.4644
Fax: 314.432.7552

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Kevin Shults: 314.810.3848 • kshults@hydromat.com Doug Welker: 314.810.3989 • dwelker@hydromat.com
11600 Adie Road • Saint Louis , MO 63043 • p 314.432.4644 • f 314.692.9186 • www.hydromat.com