SURFACE GRINDING MACHINE

PROJECT SCOUT

Building on the proven base of the Iron and Steel grinding machines, Rosa Ermando has developed the new Scout configuration. The Milan-area manufacturer's traditional engineering solutions are now paired with the new Mitsubishi Electric package of CNC, motors and drives. The goal: making quality accessible.

by Davide Davò



The Scout configuration is designed for users moving from manual grinding machines to CNC machines

> THE SCOUT CONFIGURATION DELIVERS **HIGH MACHINING QUALITY** WITH A MORE SUSTAINABLE INVESTMENT FOR COMPANIES.



In the Scout configuration the machines are equipped with Mitsubishi Electric CNC

Grinding operations, when required, are almost always the final step in machining a component. This means that, whatever the complexity of the part, the machine tool must deliver a high level of precision to meet the required tolerances and avoid scrapping a component that already carries the cost of every previous operation. Even for technically simple operations, companies therefore need grinding machines built to the highest standards and fitted with the right technological equipment. Nothing more, to avoid adding unnecessary costs for systems and functions that would never be used in the customer's daily work. Nothing less, to ensure high standards of quality and safety. Rosa Ermando has struck the balance between these two needs by developing a new machine concept, applied to the Iron and Steel models in their respective Scout versions, equipped with Mitsubishi Electric CNC, motors and drives. Thanks to their size and design, these two grinding machine families fit easily into the production departments of many machine shops and are the ideal match for the Scout philosophy, which makes them even more attractive as an investment without sacrificing the technological content that has always set the solutions of the Rescaldina (MI) based manufacturer apart.

Sustainable quality

The Scout concept rests on three pillars. The first is precisely the aim of striking the right balance between performance and economic impact for the customer; the second is the ease of use of these models, designed to support companies and operators in the transition from manual grinding machines to CNC machines; the third concerns the production approach. As with the traditional versions, the strategic components of the Iron and Steel Scout configurations are machined in house, ensuring better process traceability and compliance with the standards required by the Machinery Regulation coming into force in January 2027. The machine is built entirely in Rescaldina, where Rosa Ermando has its production site. Compared with the standard IRON and STEEL setup, Scout offers a more focused range of options, while the metalwork and electrical cabinet components remain unchanged: a choice that has no impact on precision, rigidity or build quality.

Simple technology

One of the stated goals of the Scout project is to guide customers still working with manual machines towards CNC solutions. With this in mind, great care went into the machine's ease of use and into developing a user-friendly HMI, designed to help operators who do not usually work with CNC grinding machines get up to speed. The standard Rosa Ermando interface is already appreciated for its simplicity, but the Scout configuration takes usability a step further. The man-



Cutaway by Domenico Mulinello and Giovanni Mapelli

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TECHNICAL DATA

NAME	Iron Scout
TYPE	Surface grinding machine
MANUFACTURER	Rosa Ermando S.p.A. Via Monte Lungo, 16 20027, Rescaldina (MI) Tel.: +39 0331 576280 https://rosa.it/ https://favretto.it/ rosa@rosa.it service@rosa.it

WORKING RANGE	
Grinding length	850 to 2,000 mm
Grinding width	630 mm
Grinding height with new wheel	480 mm (optional 680 mm)
STROKES AND SPEEDS	
Longitudinal stroke	950 to 2,150 mm
Cross stroke	550 mm
Table to spindle centre distance	680 mm (optional 880 mm)
Longitudinal traverse speed	40 m/min
Cross traverse speed	8 m/min
Vertical traverse speed	8 m/min
WORKTABLE	
Worktable surface	800×400 to 2,000×450 mm
Max. table load	1,000 to 1,700 kg
SPINDLE AND WHEEL	
Wheel motor power	11 kW
Wheel speed	1,500 rpm
Wheel dimensions	Ø 400×30-80×Ø 127 mm
MACHINE DIMENSIONS	
Machine length	3,250 to 5,700 mm
Machine width	2,150 mm + operator panel
Machine height	2,380 mm (optional 2,580 mm)
Total weight without accessories	6,000 to 8,000 kg



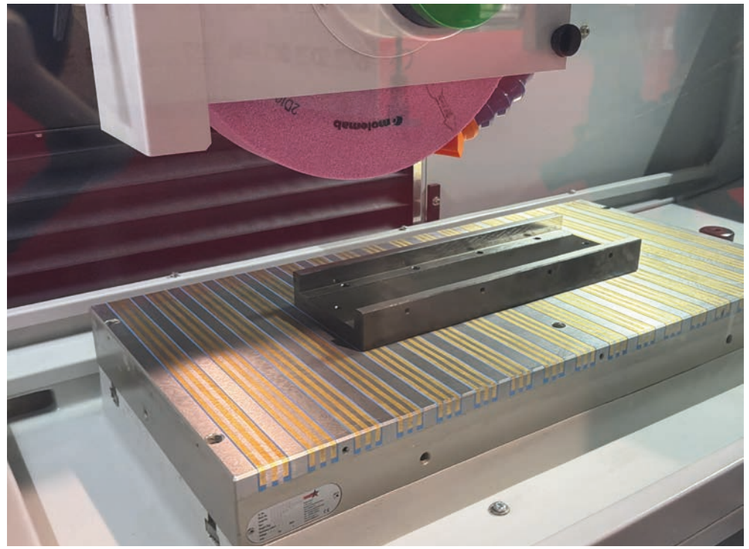
The Iron family can grind workpieces up to 2,000 mm long


The cross axis runs on flat guides, while the vertical axis is fitted with roller guides

ufacturer's new grinding machine has in fact been stripped of all unnecessary functions to make the interface leaner. A philosophy in line with the project that gave rise to Scout: a high-performing, precise and reliable machine designed for technically simple operations such as surfacing and roughing of flat surfaces. The result is software that lets any operator run the machine independently after just a couple of days of training. This is also made possible by the Mitsubishi Electric platform of numerical control, motors and drives. The CNC's conversational programming blends seamlessly with the Rosa Ermando HMI, and the full integration of all systems makes the grinding machine even easier to manage.

Seamless integration

The distinctive feature of the Scout configuration is therefore its package of numerical control, motors and drives. Specifically, the CNC belongs to the M80V family, a platform designed for applications requiring high interpolation accuracy, fast processing and process stability. The hardware architecture with a dedicated 64-bit CPU handles complex high-speed machining while maintaining excellent surface quality on the workpiece. Dedicated technology functions, error and thermal compensation and the option of integrating measuring systems all help deliver accurate results, even in machining with micrometric tolerances. The Scout configuration features MDS-E regenerative digital drives, HK series servomotors and a 15-inch industrial multitouch display. The integration of these components ensures axis synchronisation, reliability and dynamic performance, while simplifying installation and maintenance. The MDS-E drives recover the energy generated during deceleration and feed it back into the grid, reducing overall consumption. The HK motors, compact and with high torque density, also feature battery-free absolute position detection, eliminating the related periodic maintenance and reducing the risk of machine downtime. The customisable operator interface, supported by the multitouch display, makes interaction with the machine easier and enables 3D visualisation of the workpiece. The platform is completed by integrated safety functions, tools for developing PLC logic and connectivity options for the digitalisation of production processes. The joint work of Rosa Ermando and Mitsubishi Electric made it possible to configure the system optimally and refine the grinding cycles, making the most of the CNC's potential in terms of precision, productivity, energy efficiency and ease of use. Scout is available in N and CN versions, with commissioning times of one day and one and a half days from delivery respectively. Customers starting with the N version can later upgrade to CN without replacing the machine. Even in manual mode, some control functions remain active, such as automatic wheel dressing.


The worktable can carry components weighing up to 1,700 kg

> THE INVERTED-T CAST-IRON BASE FEATURES A **DOUBLE-CAGE HONEYCOMB STRUCTURE WITH 20 MM THICK WALLS.**

Robust structure

To see how the concept translates into the machine, take the IRON Scout model as an example. The machine's inverted-T base features a double-cage honeycomb structure with 20 mm thick walls. The ribbing provides the rigidity needed to handle workpieces from 1,000 kg up to 1,700 kg and grinding lengths ranging from 850 mm to 2,000 mm. Grinding height with a new wheel is 480 mm, extendable to 680 mm as an option, while grinding width is 630 mm. At the front of the base is the X axis, along which the worktable travels its full longitudinal stroke without overhang. The table is driven hydraulically by two opposed single-acting cylinders, an architecture that keeps the footprint to a minimum. The cylinders under the table are fully insulated so that no heat is transferred to the base, ensuring thermal and geometric stability while the machine is running. The magnetic chuck can be

supplied in traditional steel/brass or in steel/resin, as the customer prefers.

Roller guides and flat guides

At the rear of the base is the cast-iron column fitted with recirculating roller guides, which ensure smooth and precise movement of the vertical axis and prevent stick-slip. They are also barely affected by deformations of the structure caused by changing workshop temperatures over the year, and therefore need fewer adjustments than other technical solutions. The Z axis moves the cast-iron cross-beam along which the Y axis travels on flat guides that absorb vibration and give the system rigidity. Both axes are driven by brushless motors coupled to ball screws. The wheelhead travels along the cross-beam and is equipped with a spindle rated from 11 kW to 22 kW, which can take either conventional diamond wheels or CBN wheels. Tool dimensions range from 400 mm diameter and 30 mm width up to 450 mm diameter. Iron Scout is completed by a wheel dressing system that extends tool life while always ensuring a high level of machining quality.

Maximum ergonomics

The design choices show that the Scout configuration was conceived to deliver high machining quality with a more sustainable investment for companies. In terms of accessories and auxiliary systems, too, this grinding machine comes with complete equipment including filtration units and heat exchangers, as well as inverters on the hydraulic unit motor that optimise energy consumption according to the power actually needed in each machining phase. Attention to detail with a focus on maximum safety is evident in the guarding, designed to deliver a fourfold benefit. First, it contains the dust generated during machining, which does not spread into the surrounding area, improving working conditions in the shop. With the machine closed, the large window in the front door gives excellent visibility of the working area. The sliding door also clears the space at the top of the machine, so heavy components can be loaded with an overhead crane. Finally, it is designed for maximum ergonomics, with panels positioned to make maintenance easier and to provide access to the various areas.



The large front window gives an excellent view of the working area



The guarding features an ergonomic design

Preserving value

As with all Rosa Ermando grinding machines, GrindTech Service+ is also available for Iron Scout: the digital services ecosystem developed to extend the value of machines throughout their life cycle and support their day-to-day management. The system combines the mechanical solidity of the grinding machines with connected tools for monitoring, technical support and maintenance, with the aim of increasing operational continuity and reducing downtime. When necessary, the Rosa Ermando service team can access the information available to the operator, view alarms and notifications, analyse anomalies and adjust parameters, even at PLC level. The connection also enables application support, for example when setting up grinding cycles. The edge device communicates with a web platform that centralises data, documentation and service requests. Manuals and technical information can be archived in the cloud, while a ticketing system tracks every request from assignment to closure. Chat, video calls and an interactive whiteboard also make it possible to share and edit drawings and diagrams in real time. Also worth highlighting is the virtual recovery disk, which restores the machine management software without physical media such as CD-ROMs or USB sticks, which can be damaged or lost over the years. The ecosystem also includes performance monitoring functions. Energy Monitoring tracks energy consumption, while the Event Recorder stores the history of machine events, including critical events such as collisions. Vibration Analysis uses dedicated sensors to monitor vibrations of components fitted with bearings and assess their condition against their service life, supporting predictive maintenance strategies. Finally, AI Assistance supports Rosa technicians in analysing the most common anomalies, speeding up diagnosis and prognosis without replacing their expertise.



The Mitsubishi Electric control and the Rosa Ermando interface make the machine easy to operate

> THE MITSUBISHI ELECTRIC M80V CNC IS DESIGNED FOR APPLICATIONS REQUIRING **HIGH PRECISION, FAST PROCESSING AND PROCESS STABILITY.**

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