

INGRAMATIC

GUIDE TO THE SYSTEM

Micro Threaders :

The smallest threader inspired by the I-Thread concept, the **Micro threaders**, #00/#000 die sizes is available for the high-speed production of very **precise miniature screws**. The machine is equipped with the latest technologies available as an innovative tool holder, an introduction system driven by a **torque motor** for a ultra-precise introduction of the miniature blanks into the dies. The most innovative feature is the **slide body running on linear guides** (with ball circulation skates) in order to ensure a very high accuracy for the rolling operation allowing the production of the parts with an extreme precision and reliability. The drive transmission of the RP020 is made by an innovative double helical drive belt connecting the Brushless main motor with an absolute master encoder. This new type of drive with double helical belt favors higher torque and precision.



The machine is equipped with the same advanced functions of the Ingramatic I-Thread machines, like for example, the **self-learning adjustments** of the starter unit. The introducer stroke can be adjusted by the operator panel or by means of the electronic handwheel, so technicians don't need to make any manual adjustment with service wrenches, ensuring speed and accuracy of measure change. To guaranty durability and precision, the frame is made of spheroidal cast iron and the **SC-Matic interface** ensure the management of the **motorized adjustments**.

The Micro Threader is equipped with an innovative sound proof enclosure making the machine nice and modern for the new generation factory Industry 4.0.

Single Starter Unit Threaders :

The new thread rolling machine equipped with a single starter unit are available from #1015 to #20 size to run **fasteners for any kind of industry**. The threaders can thread roll self-tapping screw, automotive parts, heat-treated parts and special profiles. The most important features of the machines are the starter unit driven by a **Direct Drive motor** and the bed frame which is made of **pearlitic spheroidal cast iron** including the contrast block making the machine the precise thread roller. The new drive unit is powered by a high-precision **planetary gearbox** with clutch brake which is unique for this machine size. This new type of drive with **epicyclic reduction gear** provides a cascade reduction ratio of the gear and favors higher torque and precision to run hardened parts. The feeding rails and



the vibratory feeder have the motorization of the height positioning to facilitate the adjustment according the length of the parts. The machine comes with a **vibratory feeder** as standard feeding system included in the sound proof enclosure.

The most innovative feature is the brand new starter unit. The control of the introduction system is obtained by a **torque motor**. The introducer stroke can be adjusted by the operator panel or by means of the electronic handwheel avoiding any manual adjustment with service wrenches, ensuring speed and accuracy of measure change. The quality is manage by mean of a rejection gate to reject parts when the load monitor detect deviations allowing the production of perfect parts.

The modular system permits to install the machine with **washer assembly units R1 or R2** and to integrate a station to **feed head less** parts automatically with a control of the orientation of the blank by video camera and a station to flip the parts in case of wrong orientation before the introduction into the starter unit.

Double Starter Unit Threaders :

The new Double Starter Threaders are furnished with the patented **double starter unit driven by servomotors** and the revolutionary self-learning adjustments of the starter fingers. The machine is extremely **rigid and robust** thanks to its brand new exclusive designs and reinforced bed frame. Starting from the **#30 to #70**, Ingramatic installs a system of **hydrostatic slide liners** optimized for a high load capacity providing significant damping of the rolling load from automotive bolts threaded after heat treatment, special profiles rolling, and parts rolled from exotic materials. **Pressurized lubrication** is fed to special bronze liners through a distributor to allow the hydrostatic pockets to create an oil film, equally distributing the rolling load and the absorption of the high forces generated during the rolling of the part between the dies. There are two solutions to feed blanks into the feeding rails with a **V-Group** consisting in a vibratory feeder unit connected to the threader for blanks up to 140mm under head or a **vertical elevator** with a vibrating hopper for longer parts up to 440mm to load smoothly and quickly the threader.



The Thread rollers issued with Double Starter Units are equipped with the **“M-Group”** which it provides the motorization of the drive unit and slide body position for quick and accurate control of the die match. All the adjustments are stored for each parts and can be recall to proceed with the automatic set up of the machine.

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Warm Forming Threaders :

To compliment the Sacma warm former line, Ingramatic features the **Warm Forming Threaders**. Combining the heavy duty design and features of the revolutionary I-Thread, the WF provides a significant increase in **thread quality, productivity and efficiency** by rolling all shapes of bolts, screws, and parts made of **materials difficult to roll**, such as Waspaloy®, Titanium alloy, A286 and Inconel®. The machine features include dedicated feeding rails for the installation of an induction coil with an exclusive design, a generator, a chiller, a high frequency inverter box, an optical pyrometer, and a cooled stationary die holder. A set of selectors manages the parts through the induction coil to ensure the parts are consistently rolled at the correct temperature. The repeatability of the heating is assured by using a longer induction coil compare what it is existing on the market with the home-made solution or a rollers adapted with a heating unit. As per Sacma headers, the induction coil design allows the system to warm wide range of materials with only one induction coil. Consequently, this Warm Forming roller provides **quick changeover** making it ideal for the small lot sizes in the Aerospace fastener market. The machine is equipped with a **rejection gate** to reject parts when the load monitor detect deviations or the optical pyrometer read a blank not at the right temperature. This device allows to ensure an absolute **production quality**.



Maxi Threaders :

The large profile rolling and threading machine **model RP920 (W70/TR9)** for the production of large and heavy fasteners. The RP920 has a unique bed frame design integrating the reaction block and the patented double starter unit. The machine is equipped with a new cabin design and all the I-Thread features that make the machine the most innovative and precise large thread roller in the world consisting of: exclusive design and reinforced bed frame, self-learning & fully motorized adjustments, double starter unit driven by servomotors, new SC-Matic panel, drive unit with planetary gear box, motorized die match adjustment, slide body with hydrostatic guide system and quick diameter changeover system.

