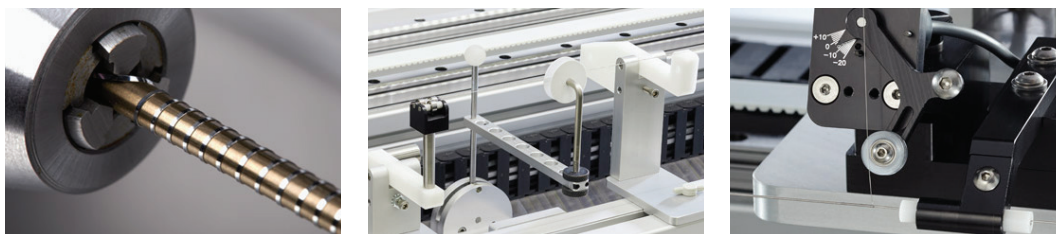


ROTHGREAVES®

Medical 
Coil Winders

Supporting Medical Device Manufacturing Around the World





RothGreaves has been leading the Medical Coil Winder industry for over 30 years. We listen to our customers and address their needs through continuous improvement and innovation. Our proprietary EasyWind™ Software has created a simple environment for building complex coils to meet—and exceed our customers’ high standards. We’ve built our reputation on understanding the industry and by building superior machines using the highest quality materials and components.

Headquartered in Minneapolis, MN, USA, RothGreaves supports its global customers with service and training as well as “virtual” programming. RothGreaves is recognized for our unwavering dedication to customer service and training. We deliver the best possible machines along with the tools and education to enable our customers to use their machines to their fullest capabilities and benefit.

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4000 Series



4000 Series Manual Winder

The 4000 Series Manual Winder is our most popular model. A standard Manual winder can produce an 80-inch coil and has a maximum chuck-to-chuck distance of 96". Offering an adjustable tailstock, movable to within 15 inches of the headstock, making it adaptable for any production line with the ability to make long or short coils whenever desired. This model continues to be an economical addition to virtually any production line.

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4000 Series

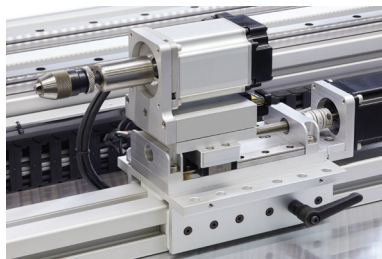
4000 Manual Winder

This 4000 Series Manual machine requires the operator to start each coil run manually and unload each coil run by hand. Several types of filament tensioning are available to operate on this model, these include our standard options:

- Static hysteresis brakes
- Torque Servos/Servos with load cell control
- Active payout (also available with load cell)

All of our machines operate on our proprietary EasyWind™ programming platform. The EasyWind™ software includes operation for multi-segment, multi-pitch, multi-speed CNC programming. This machine can be configured to wind wire diameters ranging from 0.0005" up to 0.025" with the proper filament tension. It can accept mandrel diameters from 0.003" to 0.250" and larger if needed.

Mandrel tension options available are pneumatic or closed loop actuator with load cell force feedback.



Actuator style mandrel tension with closed loop load cell force feedback (shown with the cover removed).



Quick change tooling base with two pin guide tooling. Also shown is the roller-style mandrel damper.



Our custom EasyWind software has the ability to teach any operator and is adaptable to most production lines with easy to use coil profile development.

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4500 Series



4500 Series Mini-Winders

Have you ever needed a coil winder but didn't have enough space? We know floor space is expensive which is why we created the 4500 Mini Winder. The 4500 is a high precision coil winder in a fraction of the floor space. This model is the same as our 4000 Manual Winder with all the same features and functions, so there is no compromising when downsizing. This machine is great for R & D labs.

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4500 Series

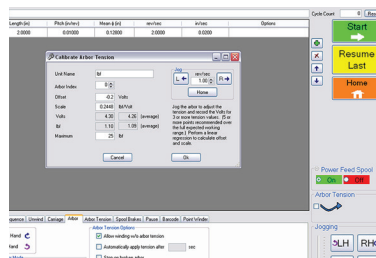
4500 Mini-Winders

The 4500 model is a shorter version of the hard working 4000 Series machine and can be equipped with the same options as it's bigger brother. When space is at a premium, the 4500 Series is a perfect choice capable of producing any short or delicate coil making it ideal for production runs or for any R&D lab.

Like all of our winders, the 4500 Mini-Winder runs “recipes” programmed using our proprietary EasyWind™ software. All of the programming options are available to build any coil configuration from simple to complex. The 4500 Series Mini-Winders can coil wire diameters ranging from 0.0005" up to 0.025" and run mandrel diameters from 0.003" to 0.250" and larger if needed.



The angle control compensator is designed to fit directly onto the quick change tooling base.



EasyWind™ software makes building coil recipes simple with the intuitive interface. All available segment options can be added to any line of the recipe.



Servo filament tensioning is available in range of motor sizes. The proper motor size makes a difference in the quality of the coil.

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4800 Series



4800 Series Bunk Bed Winders

These space-saving machines are actually two high-precision winders, doubling your company's production with the same floor space as one. This design allows for easy front access of the coiling process for both upper and lower levels allowing a single operator to efficiently run each machine from one spot. Each station is illuminated with LED lighting to aid in operating and viewing process, optional safety light curtain is available for operator safety on any model. The force feedback arbor tension paired with our active payout tensioning control makes this machine ideal for small diameter wire.

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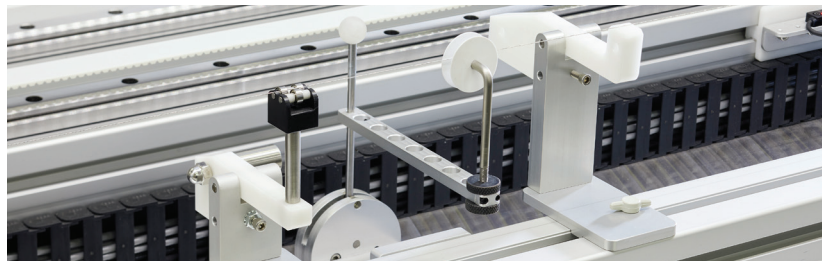
4800 Series

4800 Bunk Bed Coil Winder

RothGreaves has developed our proprietary EasyWind software; this custom software was created for multi-pitch, multi-segment, multi-speed coil profiling. This is the most advanced software on the market today. EasyWind advanced features have recipe development and full security level control. All of our machines are operated by a CNC servo controller for extreme accuracy and reliability.



Each station has its own independent monitor and keyboard for running completely separate operations.



A number of different types of mandrel dampers are available to calm down oscillating mandrels during the winding process to help make your process more productive.



Active payout is programmable using a load cell for direct reading in grams. The active payout is also available without the load cell as a cost saving option.



RothGreaves manufactures most of our coil winder parts, making availability a sure thing.

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5500 Series

**Cutting Station sold separately*



5500 Series Automatic Winders

Our full-featured automatic coil winders may be the only mandrel winding machine you'll ever need! This model is capable of repeating the coiling cycle by automatically winding, unloading, cutting the coil, and starting the cycle over again. This model produces high-quality coils for guidewire and other specialized medical devices and has proven it's accuracy by measuring its coil quality over and over again.

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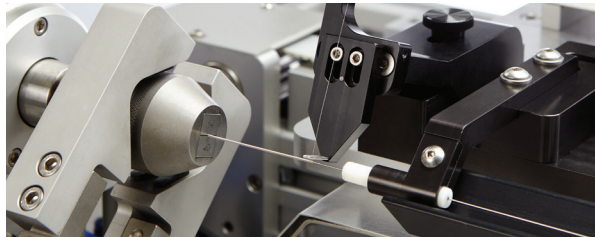
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5500 Series

5500 Automatic Winders

The most amazing winder, the 5500 Series can operate automatically; starting, coiling, unloading, and cutting, all without the need for an operator.

RothGreaves has developed our proprietary EasyWind software; this custom software was created for multi-pitch, multi-segment, multi-speed coil profiling. This is the most advanced software on the market today. EasyWind advanced features have recipe development and full security level control. All of our machines are operated by a CNC servo controller for extreme accuracy and reliability.



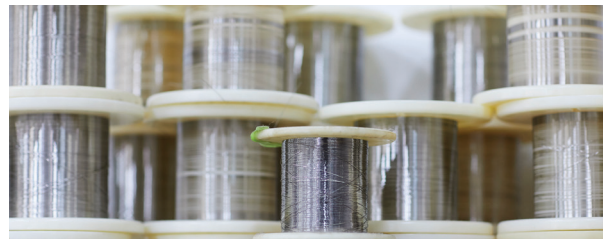
Automatic machines have a specially designed collet chuck for automatic operation. The collets are available in a range of sizes and are interchangeable.



All RothGreaves winders are clean room compatible for operation in medical device manufacturing.



This Automatic cutting machine is the perfect addition to your winder. It is sold separately.



Our coil winders can run a wide range of different wire sizes with tensioning systems for the best coil production.

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6000 Series



6000 Series SideWinder Hybrid

The innovative design of the RothGreaves SideWinder machine allows direct-to-mandrel coiling at the diameter of the mandrel—perfect for reinforced catheter manufacturers. Depending on the diameter of the mandrel, we have two processes that are used to transfer the coil for a tight-to-the-mandrel coil.

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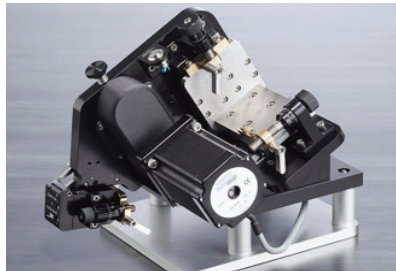
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6000 Series

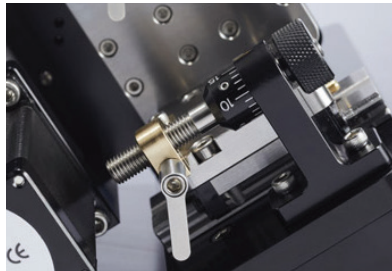
6000 SideWinder Hybrid

Method 1: **direct transfer** from a pre-coil and helical transfer directly onto a mandrel. The direct transfer operation pre-forms a coil from the deflection winder and then transfers it to the mandrel using a pitch guide. The coil is now on the mandrel at the diameter of the mandrel and ready for the next process step.

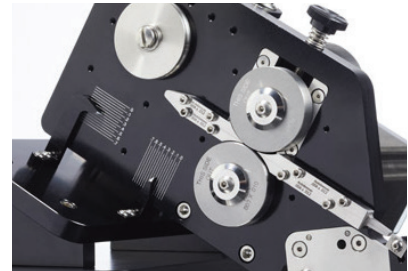
Method 2: the **helical transfer** process forms the coil and at the same time screws the coil onto the mandrel. After the coil is on the mandrel it can then be placed in the pitch setting guide (sold separately) to precisely set the pitch and lock the coil onto the mandrel.



The Sidewinder Head precisely sets the pitch and locks the coil directly onto the mandrel.



The Sidewinder Head's Micrometer Adjustment feature provides, precision adjustment and minute fine tuning of the coil pitch.



Different wire guides and rollers are manufactured to match the specific size and profile of the wire being coiled.



When using the **helical transfer** process, the Pitch Setting Guide is used after a helical transfer to set an accurate pitch and coil seating.

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7000 Series



7000 Series Arbor Puller Winder

This machine's cascading production process drops the coil and cuts it to length before depositing the finished coil into a collection tray. This machine eliminates the coil being pushed or pulled through a spindle during production, and works especially well with coated wire which might not deliver well through an automatic spindle.

This model is only available at RothGreaves.

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7000 Series

7000 Arbor Puller Winder

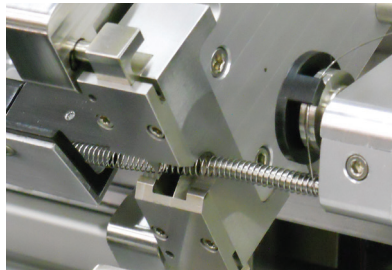
The 7000 Arbor Puller machine's cascading production process is completed in four steps:

- 1) a coil is precisely wound onto the mandrel
- 2) the winder automatically withdraws the mandrel from the coil
- 3) the new coil is dropped into a cut-to-length station
- 4) the finished coil is delivered into a collection tray

RothGreaves has developed our proprietary EasyWind software; this custom software was created for multi-pitch, multi-segment, multi-speed coil profiling. This is the most advanced software on the market today. EasyWind advanced features have recipe development and full security level control. All of our machines are operated by a CNC servo controller for extreme accuracy and reliability.



Coiling starts automatically.



Coils are cut to length at the end of the coiling process.



Most of our parts are machined in-house here at RothGreaves, ensuring shorter lead times and part availability.

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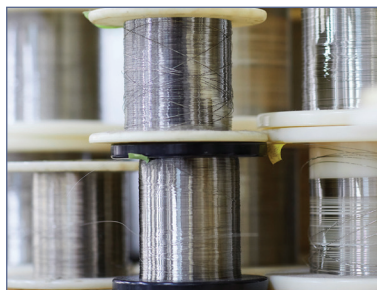
Re-Winder

Re-Spooler

Finally, a quick and practical solution for transferring bulk wire from large, heavy spools to smaller, more manageable work spools without tying up your busy coil winder. It's so smart and simple you'll wonder how you've gotten by without it.



The operator simply loads the bulk spool onto the upper spindle and feeds the wire through the tensioning wheels down to the work spool on the lower spindle.



The Re-Spooler makes it easy to maintain an inventory of right-sized spools ready for use on your winders.



**Specifications available upon request.*

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Specs by Series

4000 Series

- **CE CERTIFIED**
- **Dimensions:** 129" L x 29" W x 38" H
- **Chuck-to-chuck length:** 96"
- **Power requirements:** 208-240 VAC, Single Phase, 50/60 Hz, 10 Amp
- **Pneumatic requirements:** 80 psi @ 3.0 cfm (5.0 if hot air torch option is installed)
- **Servo motors/Drive amplifiers:** Spindles (2) – 400 watt, Carriage (1) – 750 watt
- **Winding speed max:** 6000 rpm
- **Controller type:** CNC multi-axis servo controller
- **Operating System:** Microsoft Windows 10
- **Operating Software:** EasyWind™
- **Interface:** 17" touch screen monitor and track ball keyboard
- **Manual jog controller:** Pendant with joy stick operation all axis
- **Wire tensioning:** Electronic (available in options)
- **Arbor tensioning:** Pneumatic or actuator control (available in options)
- **Chuck sizes:** 1/16" 1/8", 1/4" (available in options)
- **Collet sizes:** 0.036" diameter to 0.500" diameter (available in options)
- **Safety features:** Light curtain with surround or door with surround (available in options)
- Multi-filar options are available for this model

4500 Series

- **CE CERTIFIED**
- **Dimensions:** 65" L x 29" W x 38" H
- **Chuck-to-chuck length:** 36"
- **Power requirements:** 208-240 VAC, Single Phase, 50/60 Hz, 10 Amp
- **Pneumatic requirements:** 80 psi @ 3.0 cfm (5.0 if hot air torch option is installed)
- **Servo motors/Drive amplifiers:** Spindles (2) – 400 watt, Carriage (1) – 750 watt
- **Winding speed max:** 6000 rpm
- **Controller type:** CNC multi-axis servo controller
- **Operating System:** Microsoft Windows 10
- **Manual jog controller:** Pendant with joy stick operation all axis
- **Operating Software:** EasyWind™
- **Interface:** 17" touch screen monitor and track ball keyboard
- **Wire tensioning:** Electronic (available in options)
- **Arbor tensioning:** Pneumatic or actuator control (available in options)
- **Chuck sizes:** 1/16", 1/8" 1/4" (available in options)
- **Collet sizes:** 0.036" diameter to 0.500" diameter (available in options)
- **Safety features:** Light curtain with surround or door with surround (available in options)
- Multi-filar options are available for this model

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Specifications

Specs by Series (continued)

4800 Series

- **CE CERTIFIED**
- **Dimensions:** Overall 136" L x 24" W x 68" H,
Upper deck 51" from floor
Lower deck 33" from floor
- **Chuck-to-chuck length:** 96"
- **Power requirements:** 208-240 VAC, Single Phase,
50/60 Hz, 10 Amp
- **Pneumatic requirements:** 80 psi @ 3.0 cfm
(5.0 if hot air torch option is installed)
- **Servo motors/Drive amplifiers:** Spindles (x2) –
400 watt, Carriage (x1) – 750 watt
- **Winding speed max:** 6000 rpm
- **Controller type:** CNC multi-axis servo controller
- **Operating System:** Microsoft Windows 10
- **Operating Software:** EasyWind™
- **Manual jog controller:** Pendant with joy stick
operation all axis
- **Interface:** 17" touch screen monitor and track ball
keyboard
- **Wire tensioning:** Electronic (available in options)
- **Arbor tensioning:** Pneumatic or actuator control
(available in options)
- **Chuck sizes:** 1/16", 1/8", 1/4" (available in options)
- **Collet sizes:** 0.036" diameter to 0.500" diameter
(available in options)
- **Safety features:** Light curtain with surround or
door with surround (available in options)

5500 Series

- **CE CERTIFIED**
- **Dimensions:** 135" L x 35" W x 38" H
- **Chuck-to-chuck length:** 96"
- **Power requirements:** 208-240 VAC, Single Phase,
50/60 Hz, 10 Amp
- **Pneumatic requirements:** 80 psi @ 3.0 cfm
(5.0 if hot air torch option is installed)
- **Servo motors/Drive amplifiers:** Spindles (2) – 400
watt, Carriage (1) – 750 watt
- **Winding speed max:** 6000 rpm
- **Controller type:** CNC multi-axis servo controller
- **Operating System:** Microsoft Windows 10
- **Manual jog controller:** Pendant with joy stick
operation all axis
- **Operating Software:** EasyWind™
- **Interface:** 17" touch screen monitor and track ball
keyboard
- **Wire tensioning:** Electronic (available in options)
- **Arbor tensioning:** Pneumatic or actuator control
(available in options)
- **Tailstock Chuck sizes:** 1/16", 1/8", 1/4" (option)
- **Headstock Collet sizes:** 0.010" to 0.180" (option)
- **Collet sizes:** 0.036" diameter to 0.500" diameter
(available in options)
- **Safety features:** Light curtain with surround or
door with surround (available in options)
- Multi-filar options are available for this model

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Specifications

Specs by Series (continued)

6000 Series

- **CE CERTIFIED**
- **Dimensions:** 129" L x 29" W x 38" H
- **Chuck-to-chuck length:** 96"
- **Power requirements:** 208-240 VAC, Single Phase, 50/60 Hz, 10 Amp
- **Pneumatic requirements:** 80 psi @ 3.0 cfm (5.0 if hot air torch option is installed)
- **Servo motors/Drive amplifiers:** Spindles (2) – 400 watt, Carriage (1) – 750 watt
- **Winding speed max:** 6000 rpm
- **Controller type:** CNC multi-axis servo controller
- **Operating System:** Microsoft Windows 10
- **Manual jog controller:** Pendant with joy stick operation all axis
- **Operating Software:** EasyWind™
- **Interface:** 17" touch screen monitor and track ball keyboard
- **Wire tensioning:** Electronic (available in options)
- **Arbor tensioning:** Pneumatic or actuator control (available in options)
- **Tailstock Chuck sizes:** 1/16", 1/8" 1/4" (available in options)
- **Headstock Collet sizes:** 0.010" to 0.180" (available in options)
- **Safety features:** Light curtain with surround or door with surround (available in options)
- Multi-filar options are available for this model

7000 Series

- **Dimensions:** 210" L x 38" W x 38" H
- **Power requirements:** 208-240 VAC, Single Phase, 50/60 Hz, 10 Amp
- **Pneumatic requirements:** 80 psi @ 3.0 cfm (5.0 if hot air torch option is installed)
- **Servo motors/Drive amplifiers:** Spindles (2) – 400 watt, Carriage (1) – 750 watt
- **Winding speed max:** 6000 rpm
- **Controller type:** CNC multi-axis servo controller
- **Operating System:** Microsoft Windows 10
- **Manual jog controller:** Pendant with joy stick operation for carriage and spindles
- **Operating Software:** EasyWind™
- **Interface:** 17" touch screen monitor and track ball keyboard
- **Wire tensioning:** Electronic (available in options)
- **Arbor tensioning:** Pneumatic (available in options)
- **Chuck sizes:** 1/8", 1/4" (available in options)
- **Safety features:** Light curtain with surround or door with surround (available in options)

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Available Options

FILAMENT TENSION:

Servo Motor w/ Load Cell Feedback

- 10-100 gram: 11 watt servo motor with load cell (<0.002" Diam Wire)
- 20-200 gram: 30 watt servo motor with load cell (<0.004" Diam Wire)
- 50-500 gram: 50 watt servo motor with load cell (<0.006" Diam Wire)
- 100-1000 gram: 100 watt servo motor with load cell (<0.008" Diam Wire)

Servo Motor for Torque Operation

- 11 watt servo (for wire less than 0.002" diameter wire)
- 30 watt servo (for wire less than 0.004" diameter wire)
- 50 watt servo (for wire less than 0.006" diameter wire)
- 100 watt servo (for wire less than 0.008" diameter wire)

Hysteresis Break for Torque Operation

- 0-3 oz-in static tension (<0.002" Diameter wire)
- 0-11 oz-in static tension (<0.004" Diameter wire)
- 0-35 oz-in static tension (<0.010" Diameter wire)
- 0-85 oz-in static tension (<0.014" Diameter wire)
- 0-140 oz-in static tension (<0.020" Diameter wire)

Active Payout with pneumatic tension

- Dancer arm controlled servo motor - adjustable in grams
- Dancer arm controlled servo motor - adjustable in PSI

MANDREL TENSION:

Pneumatic

- 0-20 lbs pneumatic mandrel tension
- 0-60 lbs pneumatic mandrel tension

Pneumatic with force feedback

- 0-10 lbs pneumatic/force feedback mandrel tension
- 0-20 lbs pneumatic/force feedback mandrel tension

Force feedback

- 0-2000 grams Force feedback mandrel tension
- 0-20 lbs Force feedback mandrel tension
- 0-50 lbs Force feedback mandrel tension

TOOLING BASE AND ACCESSORIES

- Standard tooling base
- Two pin guide
- Angle control compensator
- Coil transfer tool
- Ribbon wire payout tooling with mounting

MULTI-FILAR MOUNTING PLATE w/ GUIDE RIM & ROLLERS

- Two wire plate
- Three wire plate
- Four wire plate
- Six wire plate
- More than six wires - requires special pricing

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Options

Available Options (continued)

CHUCKS & COLLETS

- 1/8" Albrecht chucks
- 1/4" Albrecht chucks
- 3/8" Albrecht chucks
- 3/8" Automatic chuck - headstock only
- Collet holder for 0.0312" Diam to 0.250" Diam
(does not include collets)
- Collet holder for 0.047" Diam to 0.500" Diam
(does not include collets)
- Collets (specify size of mandrel)

CONTROLS ENCLOSURE

- Drop down electrical panels
- NEMA electrical cabinet

SAFETY FEATURES

- No safety enclosure
- Safety Enclosure - three sides and top
- Safety Enclosure - three sides and top with Light
Curtain
- Safety Enclosure - three sides and top with doors

ARBOR DAMPERS

- Standard arbor damper (for manual machines)
- Roller head arbor damper (for manual machines)
- Break away arbor damper (for manual and automatic
machines)
- Tray mount damper (36" section for automatic
machines)

MISCELLANEOUS OPTIONS

- Hot air torch
- Camera
- Bar code reader
- In-line wire annealing

-SIDEWINDER OPTIONS

- Direct Transfer Tooling - per wire size
- Helical Transfer Tooling - per wire size
- Pitch Setting Module
- Pitch setting Dies - per wire size

FRAME MODIFICATIONS

- Custom frame sizes - requires special pricing

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Service & Support

We know it's important to keep your winders up and running smoothly and it costs money if even one of your machines isn't operating properly. That's why we've offered the industry's best customer service now for 30 years.

- We can connect to your winder virtually, to help run the diagnostic tests needed to identify and correct the issue in the quickest way possible.
- Our video training series can help you diagnose many issues yourself, getting you back to work before you know it.
- And if necessary, we'll happily travel to you to make repairs, and install or ship parts as needed.



RothGreaves technicians will travel to your location to repair a machine.



We maintain a large inventory of parts to ensure availability on short notice.

Call us today at **1-952-404-2604** or email us at **request@rothgreaves.com** if you need service or support.

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Training

Training & Instruction

We have a variety of ways to provide you with training:

- We're able to connect to your winder by way of an internet connection and teach you exactly what you're interested in, from specific machine features and functions, to start-to-finish operation of any of our winder models
- Our **Coil Winding Video** teaches the basics of operating your new coil winder at your own pace, on your own schedule
- We're happy to come to you and train your whole crew or you can send your personnel to our facility, where we'll train them on your machine before it ships, and they'll learn all the techniques and tips to set up and operate to run perfect coils everytime.



RothGreaves offers complete training on how to run any of the coil winders we sell.



We maintain a large inventory of parts to ensure availability on short notice.

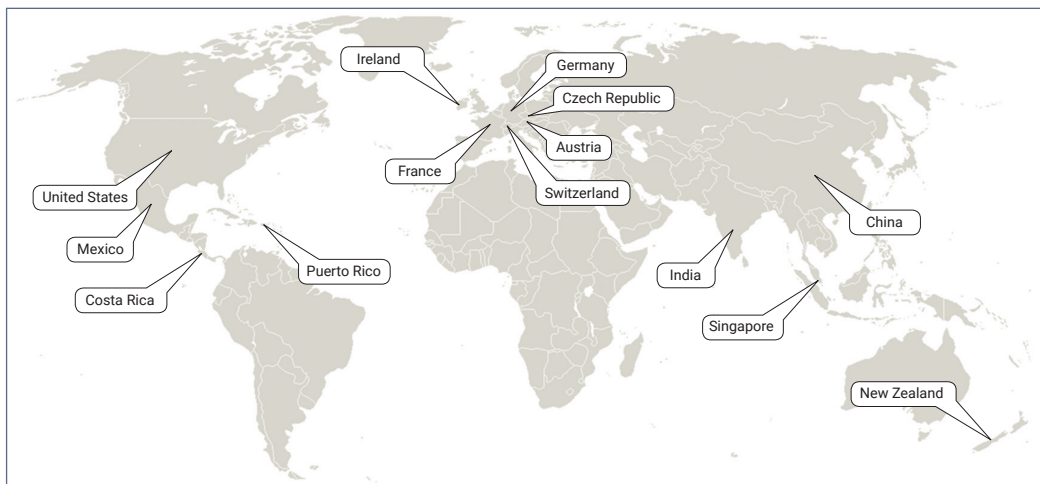
Contact us at **1-952-404-2604** or email us at **request@rothgreaves.com** to schedule your training sessions or to request more information about our **Coil Winding Video**.

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About Us



RothGreaves & Associates is a full-service, multi-discipline, advanced engineering firm located in Long Lake, Minnesota, USA.

We provide technical expertise to medical device manufacturers, pharmaceutical producers, and high-technology firms. We're focused on designing and building the world's best coil winders, the most durable and reliable PTFE release finishes, and superior equipment for custom applications.

For 30 years, RothGreaves & Associates has built and installed equipment for our customers around the world, including Ireland, France, Germany, Austria, Switzerland, Mexico, Costa Rica, Puerto Rico, New Zealand, China, Singapore, India, the Czech Republic, and of course, the United States.

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