Medical Coil Winders

Supporting Medical Device Manufacturing Around the World
RothGreaves has been leading the Medical Coil Winder industry for over 25 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 it’s 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.
4000 Series Manual Winder

The 4000 Series Manual Winder is our most popular winder. This winder has a chuck-to-chuck distance of 96 inches and the adjustable tailstock is movable to within 15 inches of the headstock for work with shorter mandrels. The features of this workhorse machine make it a reliable and steady performer for producing a wide variety of coils for a wide range of uses. The robust 4000 Series machine continues to be an economical addition to virtually any production line.
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.

The angle control compensator is designed to fit directly onto the Quick change tooling base.
4500 Series Mini-Winders

While the 4500 Mini-Winder is compact, it includes all of the features and functions you’ll need to produce a wide variety of coil profiles in a wide range of filament sizes. The Mini is an excellent machine for shorter coil needs, while conserving valuable floor space.
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 its 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.

All of our models are capable of making multi-pitch coils with round or flat wire as shown above. 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 Bunk Bed Winders

This is the space saving, cost saving, clean room safe, machine you’ve been looking for! The 4800 Bunk Bed winder is a one operator machine with two stacked precision winders, each with its own independent controls, all in one.
4800 Bunk Bed Coil Winder

This space saving double-decker model is quickly becoming one of our most popular machines. Our customers love the easy access to both upper and lower stations allowing a single operator to efficiently run two separate programs on two independent machines at the same time.

You'll easily produce different coils with different profiles, in different quantities, using different wires, simultaneously all on one machine. Both the top and bottom levels run on EasyWind™ software and each level has it's own interface to avoid potential confusion of sharing a single monitor. The same reliable CNC controls we use on our single-station machines operate each level with separate computers and hardware for each. This allows for independent operation of each station.

All the features available on the single station machines can be installed on the 4800 Series winder. As with any of our machines, safety light curtains are available to protect the operator during operation.

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.

Mandrel dampers are available to calm down oscillating mandrels during the winding process. We have a number of different styles to help make your process more productive.
Have you ever wanted a coil winder you could program and walk away from while it continues to run large production quantities with minimal human interaction? RothGreaves Automatic Coil Winders run unattended hour after hour producing high quality coils in large quantities for catheters, guidewires and other devices.

5500 Series Automatic Winders

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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.

This winder features a fully equipped winding machine that creates the coil and when paired with an automatic cut-to-length station, can deliver coils ready for the next operation already cut to length. The cut-to-length station receives the new coil from the winder, cuts it to length, and delivers it into the collection tray, all without the help of an operator.

Like all of our machines, the Automatic is operated by a true CNC control system running our EasyWind™ software that includes multi-pitch, multi-segment, multi-speed coil profiling—the best on the market today.

This is an ideal solution for coils with wire diameters 0.005" or greater. Smaller, more delicate coils may not be suitable for automatic operation and generally require hand transport.

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.
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.
6000 SideWinder Hybrid

The SideWinder Hybrid machine is able to transfer a coil in two ways; *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.

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 as an available option) to precisely set the pitch and lock the coil onto the mandrel.

The SideWinder Hybrid runs on our proprietary EasyWind™ software.

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The direct transfer process uses a pre-coil to set final diameter more accurately and control coil pitch.

The helical transfer method screws the coil directly onto the mandrel as it is being made.

To get accurate pitch and coil seating, the Pitch Setting Guide is used after a helical transfer.
7000 Series Arbor Puller Winder

A specialized version of the Automatic machine, this winder will automatically withdraw the mandrel from the formed coil and transfer the coil for the next operation. This process is useful for sticky wire or coated wire as the mandrel is “unscrewed” from the coil as it is being withdrawn.
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.

This process works especially well with coated wire which may not deliver well through an automatic spindle. This machine eliminates the coil being pushed or pulled through a spindle during production.

Coiling starts automatically.

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

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.

Using the attached monitor, build the re-spool recipe and press start for reliable and fast re-spooling.

*Rspecifications available upon request.*
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", ¼" (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", ¼" (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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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", ¼" (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", ¼" (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
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" ¼" (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", ¼" (available in options)
- **Safety features:** Light curtain with surround or door with surround (available in options)
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 that 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

**Force feedback**
- 0-500 grams Force feedback mandrel tension
- 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
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)

**ACTUATOR - TAG RAIL**
- Tag rail - for large capacity payout rack (>10lbs)

**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
RothGreaves is a full-service, multi-discipline, engineering firm providing products and technical expertise to medical device manufacturers, pharmaceutical producers, and high-technology firms. We're dedicated to producing the industry’s finest precision coil winders, the most reliable PTFE release finishes, and first-class custom applications.

And we're dedicated to YOU, our valued customers around the World.

To find out more about our products and services, and how we might be of service to you, please visit our website at www.rothgreaves.com or call us at 1-952-404-2604. We'd love to hear from you!