

# Programmable Respoolers

## Showmark Precision Optical Fiber and Fine Wire Respoolers



### Precision and Flexibility for all your spooling needs

Showmark offers several styles of machines for respooling or coiling optical fiber and other fine wires and filaments. The DigiSpooler and ErgoSpooler series handle specialized applications, including bi-directional winding, and double as high-speed general purpose rewinders. They feature servo based programmable control systems with touchscreen interfaces allowing them to be custom configured for just about any winding application where precision and accuracy is required.

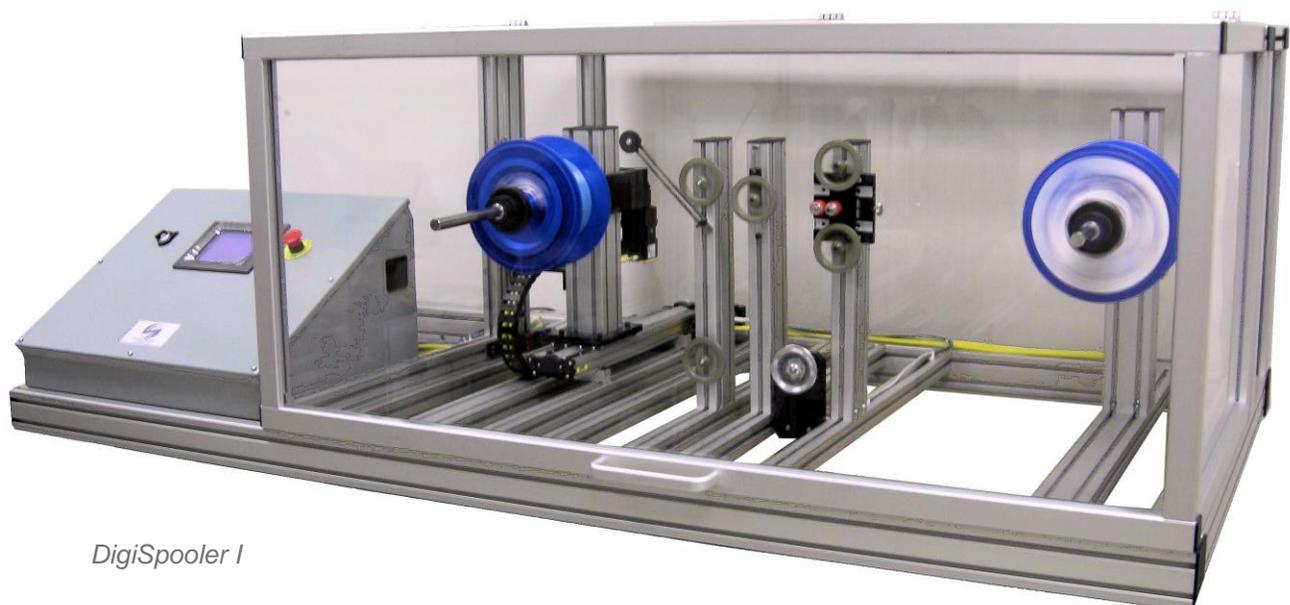
### Precise Solutions

All our programmable respoolers employ a moving take-up design. This assures that the filament travels in a straight path onto the take-up spool. The result is less twisting of the material, more control over the winding process, and neater rows and layers onto the spool. It also produces less stress and side loading when winding delicate materials. The traversing system has standard positional repeatability of  $\pm 3$  microns. The payoff spool can also traverse assuring a straight path of travel from start to finish. The machines take up less floor space if a moving payoff is employed.

Each system is provided with brushless servo motors on the take-up and traverse axes. All starts and stops are smooth and precise with  $\pm 0.06\%$  typical length tracking accuracy. Depending on the configuration, up to two more servos may be used if active closed-loop tension control and a moving payoff are selected. Other tension control methods with a range of tension levels are available.

### DigiSpooler I

The DigiSpooler I is available in a benchtop or floor standing format. The 6-inch color touchscreen interface provides intuitive adjustments for its 2-4 axis brushless servo motor control system. All winding parameters for several hundred spool and fiber combinations can be stored in its onboard Windows-CE computer. Tension is set electronically on servo motor based active tension versions, or by adjusting a dial on electronic brake-based systems. No tools are required for most operations. Choose the traverse size, tensioning system, shaft size, and other options – including CE-Mark - that are right for your needs.



*DigiSpooler I*

## DigiSpooler II

The DigiSpooler II provides the same functionality as the DigiSpooler I, but its 17-inch color touchscreen with a full PC on board makes it ideal for custom applications requiring a more user specific operator interface, integration with other software and networking.

### DigiSpooler II for use with Optical Fiber

The system includes:

- Servo motor based 10-100gram closed-loop tension control
- Dual 200mm stroke traversing units
- Full bi-directional winding
- Fiber Clamps
- 70mm diameter guide wheels
- Locking & Leveling Casters

The Payoff and Take-up spools on the machine are carried by precision traversing units that move to maintain a straight path of travel at all times from start to finish. The machine is completely reversible. Either side can act as the payoff or take-up axis. The winding can be paused in either direction and reversed and restarted without loss of position, wire placement, or length tracking.



### DigiSpooler II for use with Soft Solder

The system includes:

- Closed-loop electronic brake provides 1.5oz – 3.9lb of tension control
- Dual 200mm stroke traversing units
- 6in diameter aluminum guide wheels

The system has a simplified wire path to minimize bending of the solder as it winds. The take-up spool is carried by a precision traversing unit that moves to maintain a straight path of travel onto the take-up spool. The payoff is also carried by a traverse that maintains the payoff point in the center of the machine. The winding can be paused and restarted without loss of position, wire placement, or length tracking.

## ErgoSpooler

The ErgoSpooler is a precision winding machine for applications where interaction or monitoring by an operator is required. It is ergonomically designed with the take-up spool and operator interface within easy reach of the user. The moving take-up and payoff design produce neat and even layers of material onto a spool or mandrel. It includes a 15-inch color touchscreen interface, recipe manager, custom report generator, and an optional high magnification color camera system. The convenient foot pedal frees up both of the operator's hands for applying adhesives, inspecting the spool, or other special requirements.

The ErgoSpooler can be configured for almost any precision winding application. It can be equipped with various sized shafts for holding standard style spools and mandrels; or it can be fitted with chucks or a sliding tailstock to add flexibility for unique winding requirements. It is also possible to integrate laser micrometers, cameras, marking systems, or other devices into the machine for special needs. The standard interface provides excellent functionality, but it can also be customized for specific requirements. The Recipe Manager and Report Generator can also be modified for your exact needs.

## System Configuration

Choose from the many standard options to configure the right respooler for your needs. Chances are we already offer what you need. If not, we are able to make modifications for unique applications. Following are some of our most popular options. Please call the factory if you need something special.



**Take-up Travel** – All systems include a servo motor driven actuator on the take-up side. Its function is to traverse back and forth according to the pitch (fiber spacing) and spool width settings input into the touchscreen interface. The length of travel of the actuator should at least be equal to the widest spool that will be wound. Standard traverse lengths are available from 50 – 350mm. The standard actuator has bidirectional repeatability of  $\pm 3\mu\text{m}$ . A  $\pm 1.3\mu\text{m}$  system is also available.

**Payoff Travel** – For many applications, the payoff spool does not need to move. The spooler can be configured without an actuator on the payoff side. In some cases, it is desirable to always keep the payoff point of the filament from the supply spool aligned with the guide wheels on the machine. This provides the least amount of stress and side loading on the material. It can also result in better winds because less twist is induced in the wire. An actuator that is similar to the one used on the take-up side can be incorporated on the payoff side. This adds an additional servo motor to the machine. Standard lengths are available from 50 – 350mm.

**Tension Control** – Showmark respoolers are offered with two types of closed-loop tension control. Standard Closed-Loop uses a smooth turning electronic brake coupled to the payoff shaft. The brake is controlled based on feedback from a sensor that monitors the diameter change of the payoff spool. Active Closed-Loop systems use a servo motor on the payoff shaft in conjunction with a tension transducer that measures the actual tension in the filament. Standard tension control can range in increments from 10-1000g. We also offer Proof Testers with up to 5Kg of tension control.



**Any Spool** – Spoolers can be configured to fit many spool sizes. 10, 15, 20, and 30mm diameter shaft sizes are available for the payoff and take-up. The Universal Spool Mounting System shown at right is provided with each shaft. It allows spools with a range of bore sizes to be mounted. No tools are needed. In addition, a shaftless chuck system is available for holding any shaft from 0-10mm in diameter.

Standard spool flange diameters up to 500mm can be accommodated. Custom shafts can be provided to meet special needs.

## Add the Special Features You Need

Options are available for tailoring Showmark's winders to your exact needs.

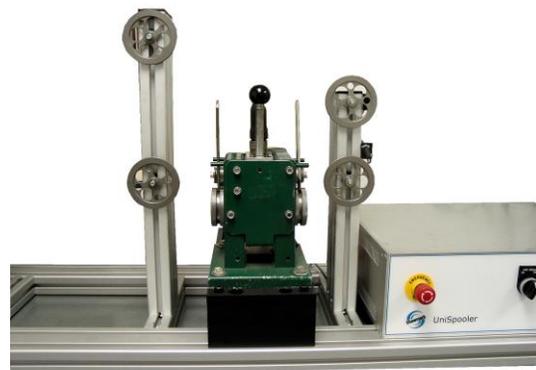


**Wire Clamps** – A pair of manually operated clamps are positioned in the path of the wire. While spooling, the clamps do not interfere with the motion of the wire. They can be lowered before a cut is made and provide a repeatable cutting location. They also allow the operator to maintain control of both ends of the wire so that the coil can be processed and the new end quickly secured to the take-up for the next spool or coil to be made.

**Safety Enclosure (CE Mark Preparation)** – The DigiSpooler I & II can be equipped to meet CE Mark standards for shipment to countries in the European Union. A safety enclosure with a sturdy aluminum frame and clear Lexan panels is added to the machine. The enclosure is hinged and includes gas struts for lifting assistance and holding it in the

up position. An electronic safety interlock switch is coupled to the enclosure. The machine will not operate with the enclosure in the open position. Additional electronics are added to meet CE safety, electrical noise, and electrical immunity requirements.

**Incorporate a process or sensor** – All machines can be configured to accommodate a customer specific process or inspection system in the wire path. This is done by adding a "Workstretch" into the machine. The Workstretch can be any length. The fiber travels in a straight and level path through the Workstretch. Showmark can often mount and integrate your process with the motion controller of the DigiSpooler.



*A wire defect detector integrated into the Workstretch*

A sampling of spools and coils wound on Showmark programmable spooling machines

