Operation - D-750

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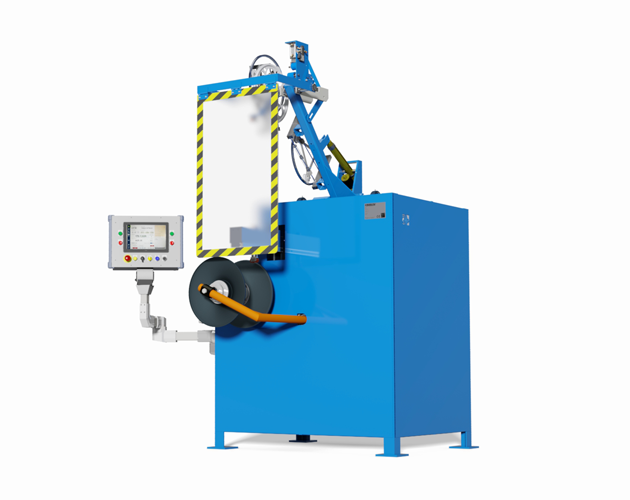
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# Overview



The D-750 is a single-spindle coiling machine designed for rewind-line REELEX® packaging.

This machine is equipped with a collapsible mandrel and automatic endform removal system which allows easy coil removal. The D-750 also features an integrated buffer system mounted on the frame. This advanced buffer system is used to precisely control line tension. Running at 750 RPM, the D-750 is designed to be operated by a single operator performing coil removal and packaging functions.

Generation 2 (G2) and Generation 3 (G3) machines feature integrated touch-screen controls with troubleshooting, help, recipe and product setup software included.

## 

## 

## Specifications

| **Capability** | |
| --- | --- |
| **Maximum Spindle RPM** | 750 |
| **Number of Spindles** | 1 |
| **Online Capable** | No |
| **Coils per Hour (Offline)** | 30 - 40 (based on 1,000ft/305m coil length) |
| **Operators Required** | 1 |
| **Automatic Endform Removal** | Yes |
| **Automatic Tube Insertion and Boxing** | No |
| **Spooling Capability** | Optional (DHS-750 Spooler) |
| **Integral Payoff** | No, Motorized Payoff Required (See Payoff Requirements) |

| **Features and Requirements** | |
| --- | --- |
| **Controller** | ["G2" Industrial PC-based control system](http://www.reelex.com/machines/G2_Control_System.html) with integrated sliding control panel and LCD screen inside control cabinet featuring two speed control modes, real-time displays including program for troubleshooting and testing of all electronic and mechanical functions. Fully customizable touchscreen HMI operator interface with on-screen help, product recipe storage and retrieval, REELEX packaging calculator, maintenance functions, machine setup, multilingual options and more. |
| **Motors** | One 5 HP (3.75 KW) DC, 1,750 RPM spindle motor and one 2 HP (1.5 KW) DC, 1,750 RPM traverse motor |
| **Buffer System** | High-performance buffer with 15" sheaves suitable for products such as Category 6, 6A and Fiber Optics |
| **Counter** | Footage counter mounted at output of dancer |
| **Anti Reverse** | Automatic Anti Reverse AAR-1 mounted at input of buffer |
| **Length, Width, Height** | 68” (173cm), 90” (229cm), 111” (282cm) |
| **Air-Supply Requirement** | 70 psi (5 bar) minimum air supply required. |
| **Power Supply Requirement** | 230 v (+/- 10%), 3 phase, 40 amps, 50/60 Hz. Transformer is available upon request. |

### Payoff Requirements

#### Can I use a non-REELEX payoff with my REELEX machine?

Yes, however you will likely be unable to achieve maximum performance from your REELEX machine. If you plan to use a non-REELEX payoff with REELEX coiling machines, the payoff must:

* Have a four-quadrant regenerative DC drive.
* Accept inputs from a 1K to 5K Ohm potentiometer signal from the [UDA](http://www.reelex.com/machines/Dancers.html).
* Be designed for rapid acceleration and deceleration from stop to full speed approximately 30 times per hour.
* Have adequate power to accelerate a full supply reel from stop to full speed in approximately 10 seconds.

## 

# Push-Button Description

**E. STOP**: The **E.STOP** button will disengage the power from the D-750 motors, including all equipment in the line. To restart the line, follow the instructions in the initial line start up. The footage length in the readout will reset to 0.

**STOP (D-750):** Stops the D-750 machine under a controlled deceleration. It typically takes ten seconds to stop from full speed. The D-750 may be restarted if all **STOP** circuits are closed.

**START (D-750):**  If the payoff is on, and the buffer is up, press the **START** button to begin winding on the D-750.

**ON/OFF**: Lowers or raises the endform onto the mandrel. (A foot pedal can be positioned near the worktable for convenience).

**L. RESET :**  Resets the footage counter regardless of the **FEET/METER** switch position.

**RAISE/LOWER:**  The lever will raise or lower the buffer/dancer for string up. If lowered while running, the D-750 machine will stop under normal deceleration. The arm should be in its uppermost position to restart the machine.

**OPEN/CLOSE DOOR:** Press to open and close guarding door (if equipped).

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# Initial Line Startup Procedure

1. Turn on main power.
2. Press the RESET button on the D-750 controller.
3. String up all accumulators and bring product to the D-750.
4. Lower Buffer Dancer to string up. Raise when finished.
5. Press the ON/OFF button to remove endform. If machine is equipped with guarding, press the OPEN/CLOSE DOOR button.
6. Insert the end of the product into the hole on mandrel segment.
7. Press the ON/OFF button to raise endform
8. If machine is equipped with guarding, press START on the D-750. The endform will raise and the machine will start.
9. Press the START button on the payoff.
10. Press the START button on the D-750 machine to start the winding process. (The D-750 will accelerate slowly.) Acceleration and deceleration is based on the payoff and the largest supply reel.
11. At PRESET1 the D-750 machine will decelerate slowly. The last two meters (six feet) of cable should be wound slowly.
12. At PRESET2 the D-750 machine will stop. Press the ON/OFF button. If machine is equipped with guarding, arm will come off and guard will open.
13. Cut the cable and remove the coil.
14. Repeat steps six through nine as each coil is finished.

### Set air regulators as follows:

| **Equipment** | **Air Pressure** |
| --- | --- |
| D-750 Air Input | 80 psi (5.5 bar) |
| Accumulator / Buffer Dancer | 20 psi (1.4 bar) |
| Buffer-Dancer-AARI | 20 psi (1.4 bar) |

| **NOTE:** Many issues relating to poor quality coils are caused by improper air pressure and tension control. For more information, please see [Best Practices - LAN Cable](https://drive.google.com/open?id=1Ltck3ZqDDxQfL3ruGMMbz6ZYJjT2H6yiTN5-pq1TDrY). |
| --- |

| **NOTE:** It takes approximately 30 to 45 seconds to remove a coil and to restart the D-750, and 45 seconds to wind a 305-meter / 1,000 foot coil. |
| --- |

# Packaging Procedure

1. After the coil is finished winding, press the ON/OFF button. The endform will come off the end of the mandrel, allowing the coil to be removed. If machine is equipped with guarding, skip this step. If equipped with Stretch Wrap Module, see “Stretch Wrap Module Operation”.
2. Cut the cable. At this point the anti reverse (AAR1) should hold the cable.
3. Wrap any loose cable around the outside of the coil (do not thread the outside “tail” back into the coil) and hold on to the outside end with thumb. Make sure not to lose track of the payout hole.
4. Reach around to the back of the coil and grab the inside of the coil from the back and pull the coil from the machine.
5. Set the coil down onto the cradle/table for boxing/packaging.
6. To begin a new coil, insert the end of the cable into the hole on the mandrel segment.
7. Press the ON/OFF button. The endform will raise and secure to the mandrel. If machine is equipped with guarding, skip this step.
8. Press the START button to begin winding.
9. Go back to the finished coil. Insert a payout tube into the payout hole, being careful to ensure each wrap is on the correct side of the tube.
10. Lift the coil with tube into the box.
11. If using EZ-Tubes or EcoCore tubes, lock the guide tube into the box, feed wire through tube, and fold up the box.
12. If using REELEX II tubes, fold box, insert tube, and secure tabs.
13. Stack box upright on pallet once complete.
14. Fold a new box and label it for the next coil.

| **NOTE:** For detailed package assembly instructions, please see the [REELEX Packaging Guide](https://drive.google.com/open?id=1VV8tOD4LENB-6S5xPpJownPIgWBzYYX1pn4VXuiEx4I) |
| --- |

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## Coil Settings and Adjustments

### Line Tension:

Line tension is adjusted by air regulator on dancer and measured in Pounds Per Square Inch (PSI). Tension should be always as low as possible without causing a detrimental effect on coil rigidity or slack in the line. High line tension can cause the payout hole to close up while winding, cause damage to the cable or cause slipping layers, while too low tension can cause the coil to fall apart.

| **IMPORTANT**: Recommended line tension for UTP cables is **no more than 12 psi, and typically as low as 5-10 psi.** |
| --- |

### Gains (Upper/Lower Ratios): Gains-Explained.png

The gain (ratio) adjustments control the distances between wraps in a layer. Generally, the lower the gain, the less negative space in the coil and therefore the coil will be denser and result in a smaller diameter. However, if the gain goes too low the coil will start to increase in diameter, as layers have no where to go but build atop one another.

In addition to fine-tuning the diameter of the coil, the gains also adjust tension placed on the product within the coil. Higher gains will help ease the tension within the coil if the product being wound is sensitive to pressures or deformation.

In the packaging charts or packaging program, the chart will indicate the minimum diameter size at the minimum gain setting and the maximum gain gives the maximum diameter size.

| **NOTE:** Calculate gain settings at: <http://www.reelex.com/Support/calculator.html> |
| --- |

**EXAMPLE:** Given a product with OD of 0.242 inches (6.14 mm)

If the chart or program gives Minimum Gain of 36 and Maximum Gain of 48, select a gain somewhere between those two numbers (closer to 36 will give a smaller diameter coil, whereas an average gain closer to 48 will create a larger coil).

A good setting for this product is 38. Thus, make Upper Gain (Ratio) = 40, and Lower Gain (Ratio) = 36. When averaged, these two numbers produce an Average Gain of 38.

40 + 36, divided by 2 equals = 38

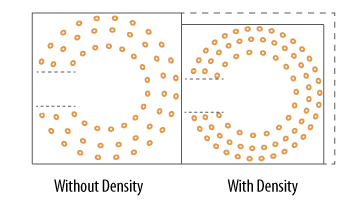
Upper and Lower Gain should not be the same. Typically, it is best they are different by 3 or 4 digits.

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### Density:

The “variable density” setting increases the number of crossovers (places where the wire crosses over itself) as the coil builds. This increases the density of the wind resulting in smaller, denser REELEX coils and potentially reducing package sizes by up to 15%.

| **NOTE:** The Density Program is included on most modern REELEX machines. An upgrade is available on many REELEX machines manufactured prior to 2001. |
| --- |



The Density Program also staggers the location of the crossovers so they occur at irregular intervals.

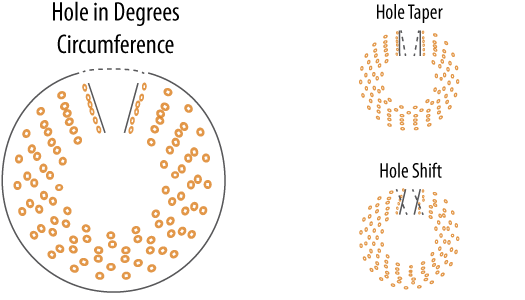
In addition to allowing for increased coil density, the shifting of the crossovers have a significantly positive effect on the electrical performance of data cables such as Category 5e, Category 6 and more. This means products that previously performed marginally in electrical testing can now be packaged in REELEX with little or no degradation in performance.

### 

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### Hole Settings:

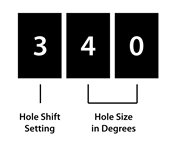
#### Hole Size:

The hole size setting on all REELEX machines can be adjusted in degrees. The larger the setting, the larger the payout hole, however the coil size will also increase. Any settings larger than 120 may produce a coil that may collapse or cause the product to slip. The hole size should be chosen so that the machine or operator does not have a problem inserting the tube.

On newer machines featuring REELEX II default software, the hole size setting is already offset by 50, so that the hole size in degrees is equal to the setting plus 50. Thus, to create a coil with an actual hole size of 110 degrees, the hole size setting would be 60, because 50+60 = 110. **Range: 0° to 120°**

#### Hole Shift:

The hole shift setting is the hundred digit of the Hole Size setting and adjusts the slant of the hole. To determine the proper hole shift setting, use the following formulas. **Range:** 0 to 9



**EXAMPLE:** Cable has an OD of 0.242 inches (6.14 mm)

English: 20 x 0.242 = 4.84 round up to **5**

Metric: 0.8 x 6.14 = 4.91 round up to **5**

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#### Hole Taper:

Adjusts the shape of the hole to adjust for product slippage and to shape the payout hole to easily accept the payout tube. Has the added benefit of smoothing coil shape to reduce ridges. **Range:** 0.00-5.00

# 

# G2 and G3 (Touchscreen) Operation

| **See:** [**G2 and G3 - Controls and HMI Operation**](https://drive.google.com/open?id=1PIwUHcuAptKVZ4uQs7xcXthXYZMLCTKciEyh_BgZaSY), or use the on-screen help function. |
| --- |

# G1 Software Operation

| Reference Video:  * View the video here: [Reading Coil Settings on G1 REELEX Machines](https://youtu.be/xPv1lQccy44) |
| --- |

Single-spindle machines that have the density software installed operate much differently than machines without the software.

**LED Numeric Display** The number displayed in the length display now shows the value of the current function number selected. If viewing or changing functions while winding, although the display does not show it, the length counter is still counting.

**Length Reset Button** Should be relabeled **LENGTH RESET / ENTER.** The Length Reset button has 2 uses. When the function number is “00” the coil length is displayed. In function 00, the l. Reset / enter button resets the length counter. With any other function number the l. reset / enter button functions as a data entry button.

**Data Input** On older equipment, this was formerly *Hole Size*. For most function numbers this thumbwheel is used to select the value to be entered into the function. See “Exceptions” below.

**Function Number** On older equipment, this was formerly *Upper Ratio*. This thumbwheel now selects a function. The value of the function number is displayed when this thumb wheel is set to one of the function numbers in the chart.

**“Lower Ratio”** Not used.

**PRESET 1 and PRESET 2**  Settings will remain the same except when entering certain variables (see “exceptions” below). After altering the variables that use these presets to change values, they must be entered back to their original settings.

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### Exceptions

For certain functions, because of the number of digits required, PRESET 1 and PRESET 2 are used as the DATA INPUT:

* PRESET 3 (FUNCTION NUMBER 12) is used to enter a stop length in case the sequential print reset mark is not seen. This is only used when you are in sequential mode. Use PRESET 2 as the DATA INPUT number
* For the footage scalar (FUNCTION NUMBER 13) PRESET 1 is used to enter a whole number and PRESET 2 is used for the decimal portion of the scalar.
* For the meters scalar (FUNCTION NUMBER 14) PRESET 2 is used as the decimal portion of the scalar. No whole numbers are needed so PRESET 1 is not used.
* To start the stretch wrap process (if equipped) (FUNCTION NUMBER 38) PRESET 2 is used

## Function Descriptions

### Primary Functions

| **Function Number** | **Function** | **Operation** |
| --- | --- | --- |
| FUNCTION 0 | LENGTH DISPLAY | Press L. RESET/ENTER to Reset length |
| FUNCTION 1 | UPPER RATIO | Press L. RESET/ENTER to enter Data Input |
| FUNCTION 2 | LOWER RATIO | Press L. RESET/ENTER to enter Data Input |
| FUNCTION 3 | DENSITY FACTOR | Press L. RESET/ENTER to enter Data Input |
| FUNCTION 4 | HOLE SIZE | Press L. RESET/ENTER to enter Data Input |
| FUNCTION 5 | HOLE SHIFT | Press L. RESET/ENTER to enter Data Input |
| FUNCTION 6 | HOLE TAPER | Press L. RESET/ENTER to enter Data Input |

### Secondary Functions

| **Function Number** | **Function** | **Operation** |
| --- | --- | --- |
| FUNCTION 7 | SPINDLE ENCODER | Read only |
| FUNCTION 8 | TRAVERSE ENCODER | Read only |
| FUNCTION 9 | PAYOFF TIMEOUT | L. RESET/ENTER to enter Data (in minutes) |
| FUNCTION 10 | SEQ OFFSET | Press L. RESET/ENTER to enter Data Input |
| FUNCTION 11 | PRESET4 | Accelerate from jog at Preset 4 |
| FUNCTION 12 | PRESET3 | Used to stop machine if Seq. mark not seen |
| FUNCTION 13 | FOOTAGE SCALAR | Use PRESET 1 & 2 thumbwheels as Data input |
| FUNCTION 14 | METER SCALAR | Use PRESET 2 thumbwheels as Data input |
| FUNCTION 15 | SPINDLE RPM | Read only |
| FUNCTION 16 | TRAVERSE RPM | Read only |
| FUNCTION 17 | OILER TIME | L. RESET/ENTER to enter Data (hours) |
| FUNCTION 18 | IPORT1 | Read only |
| FUNCTION 19 | IPORT2 | Read only |
| FUNCTION 20 | IPORT3 | Read only |
| FUNCTION 21 | UPPER RATIO TW | Read only, TW = thumbwheel |
| FUNCTION 22 | LOWER RATIO TW | Read only, TW = thumbwheel |
| FUNCTION 23 | PRESET1 TW | Read only, TW = thumbwheel |
| FUNCTION 24 | PRESET2 TW | Read only, TW = thumbwheel |
| FUNCTION 25 | HOLESIZE TW | Read only, TW = thumbwheel |
| FUNCTION 27 | DIP SWITCH W90A | Read only |
| FUNCTION 34 | NEW UPPER RATIO | Read only |
| FUNCTION 35 | NEW LOWER RATIO | Read only |

### 

### Stretch Wrapper Function

| **IMPORTANT**: If no stretch wrapper is equipped, certain values must be entered.   * **Function 36: 000** * **Function 37: 000** * **Function 38: 9999** * **Function 39: 000** * **Function 41: 999** |
| --- |

| FUNCTION 36 | WRAP\_DA\_BLOWER | Press L. RESET/ENTER to enter Data Input |
| --- | --- | --- |
| FUNCTION 37 | WRAP\_DA\_TENSION | Press L. RESET/ENTER to enter Data Input |
| FUNCTION 38 | START\_WRAP | Use Preset 2 Thumbwheels as Data Input |
| FUNCTION 39 | # OF SPINDLE REVS/ | Press L. RESET/ENTER to enter Data Input |
| FUNCTION 41 | START\_WRAP\_SEQ | Press L. RESET/ENTER to enter Data Input |

## Adjusting Length Counter (G1 Machines)

The length counter can be adjusted from .873 to 1.127 feet in steps of .001 or .266 to .343 meters in steps of .0003. Accuracies of 0.01% can be achieved. The option of counting up and down helps the performance.

### Adjustment Procedure

1. Push all eight switches to the off position on the W90A board near I/C 28.
2. Place the [FEET/METER] switch in its proper position.
3. Dial 9999 into PRESET 2.
4. Wind or run through a cable of known length. Ensure that the pickup wheel stops after the length is run through.
5. If N is greater than 1.000 then turn switch eight ON and K = N-1

* Switch 8 ON = 1 + Amount = Scalar
* Switch 8 OFF = 1 – Amount = Scalar

1. If N is less than 1.000 then K = 1-N
2. Turn on the proper switches so the sum of each mount is equal to K:

| **SWITCH NUMBER** | **AMOUNT** |
| --- | --- |
| 1 | .001 |
| 2 | .002 |
| 3 | .004 |
| 4 | .008 |
| 5 | .016 |
| 6 | .032 |
| 7 | .064 |

**Example A:**  A known 1000 foot cable was run through the counter. 1039 was in the readout.

N is less than 1.000

So, round off to get .038

So, .032 + .004 + .002 = .038

Turn on switches 2, 3 & 6.

**Example B:**  A cable of unknown length was run through the counter. 500 Meters was the measurement. It was later measured to be exactly 525 meters.

Turn on switch number eight.

(1.05-1=.05)

.32+.016+.002=.05 - Turn switches (8), 6, 5 & 2 on

So .032 + .016 + .002 = .05

Turn on switches 2, 5 & 6