SMD Operations Procedures Manual

8.1.1.45 OPERATION OF THE CABLE SPOOLER

Text Pages 1 through 9
Attachment(s) 1-6

Hand Processed Changes

HPC No.	Date	Page No.	Initials

Revision No. 02

Approved: Signature on File 1/8/19
SMD Division Head Date

Preparer(s): H. Hocker

1 Purpose and scope

1.1 To provide instruction in the operation of the Cable Spooler located in building 902.

2 Responsibilities

2.1 The authorized operator shall test the Emergency Stop systems every six months.

2.2 The operator shall read and complete the following documentation:

2.2.1 Maintenance log. Entries shall include.

- Each repair and maintenance procedure.
- Parts and material used.

3 Prerequisites

3.1 Training

3.1.1 Operators shall be instructed by the Technician supervisor before using this procedure.

3.2 Equipment

3.2.1 Safety glasses with side shields, or goggles. Safety Shoes.

4 Precautions

4.1 Verify that all guards and shields are in place.

4.2 Wear eye protection.

4.3 Do not wear loose clothing or hanging jewelry. Keep long hair tied up.

4.4 Install barriers (i.e.: Caution Tape) around perimeter of cable spool arrangement during operations.

5 Procedure

5.1 Overview of Cable Spooler

- The spooler provides a means of transferring cable / ribbon between spools /reels under specified tension. The cable passes through an inspection area. The inspection area may consist of visual inspection aids [mirrors, distance wheels, video equipment, or defect (lump) detection].

5.2 Operator Controls

5.2.1 Control Panel

- *AC Power Indicator Light – Illuminates when the service disconnect switch (labeled "Cable Spooler" is in the "ON" Position*
- *START Black Push Button – Activates power to the servo amplifiers and tension clutch controller.*
- *E-STOP Red mushroom-head pushbutton: Causes all machine motion to stop and cable tension to release by deactivating all motors & clutches.*
- *Phase Indicator Lights (A-B-C)*
- *Circuit Breaker*
- *Spooler Motor FWD (payout) – spool shaft turns CW*
- *Spooler Motor REV (take-up) – Spool shaft turns CCW*
- *Stop - Does not function*
- *RH (Speed) - fixed motor speed high set @ 60 cycles (HZ)*
- *RM (Speed) - fixed motor speed medium set @ 30 cycles (HZ)*
- *RL (Speed) - fixed motor speed low set @ 10 cycles (HZ)*
- *Jog motor – fixed motor speed set @ 5 cycles (HZ)*
- *Output Stop - switch to "ON" to engage magnetic brake. Brake is enabled when either motor spindle switches are "ON".*
- *Reset - used to reset activated protective circuit.*
- *Motor Speed - turn knob to adjust spooler motor speed.*
- *Run Light - indicates spooler motor running.*
- *Up to Freq - indicates motor speed > 0.00 cycles (HZ).*
- *Overload Alarm - indicates power is > 24 VDC.*
- *Power Failure - indicates power is < 6 cycles (HZ).*
- *Frequency Detection - indicates motor speed > 6 cycles (HZ).*

5.2.2 Tension Controller

- *Power ON/ OFF - switches 120 VAC power to controller.*
- *Tension ON/ OFF - switches power to tension control function.*
- *Mode - Switch "AUTO"-closed loop using tension force sensor to maintain tension setting. Switch "MANUAL" - open loop. Tension force sensor not used. Tension varies during spooling.*
- *Tension (Automatic) - turn knob to set tension at calibrated set points on meter. Applied tension remains constant during spooling – requires tension sensor.*
- *Tension (Manual) - turn knob to set tension at calibrated set points on meter. Applied tension varies during spooling – meter does not function without tension sensor.*

5.3 Operation of the Cable Spooler

5.3.1 Verify tensioner has been calibrated.

5.3.2 Load spool onto spooler payout station, payout over top of reel.

5.3.3 Mount empty reel on take-up station

5.3.4 Connect 208 VAC plug from the spooler control cabinet to wall receptacle.

5.3.5 Switch "ON" service disconnect located on side.

5.3.6 Switch 3-phase breaker to "ON". Ensure that all 3 phase indicators are illuminated.

5.3.7 Set motor speed control knob to "ZERO"

5.3.8 Align the two spools with inspection table using the hand-held traverse drive motor controller.

5.3.9 Switch "ON" motor spindle forward (FWD) switch.

5.3.10 Zero cable footage counter.

5.3.11 Slowly increase motor speed knob.

5.3.12 Payout cable to take up reel.

5.3.13 Stop spooler motor

5.3.14 Lock cable end into take-up reel hub.

5.3.15 Switch “ON” power strip

5.3.16 Turn “MAGPOWER TRAC-2” power switch to “ON”

5.3.17 Select TENSION mode.

5.3.18 Set tension adjustment knob to zero (fully CCW).

5.3.19 Set tension switch to “ON”

5.3.20 Adjust tension.

5.3.21 Switch motor spindle FWD to “ON”

5.3.22 Begin inspecting /transferring cable.

5.3.23 Adjust motor speed to suit.

5.3.24 Be sure cable is properly passing through inspection area and onto take-up reel.

5.4 Calibration of TRAC-2 Tension Controller

NOTE 1

This procedure should be performed by an Authorized Operator at the start of every production run and every six months thereafter during production.

NOTE 2

Adjustment of the TRAC-2 requires an Energized Work Permit and is NOT included as part of this procedure.

NOTE 3

Use cable when performing calibrations.

5.4.1 Attach force gauge in inspection area.

5.4.2 Mount spool of cable to payout spooler shaft.

5.4.3 Clamp cable end in force gauge.

5.4.4 Zero the force gauge.

5.4.5 Turn on the tension controller as per section 5.2.2.

5.4.6 Adjust the potentiometer until the force gauge reads 5 lbs.

5.4.7 Record the "actual" tension (force gauge reading) and the tension shown on the TRAC-2 display.

5.4.8 Increase the tension in 5 lb. increments as read on the force gauge, recording the actual tension and the TRAC-2 displayed tension at each point.

5.4.9 Repeat step 5.4.8 until a tension of 20 lbs., as read on the force gauge, is reached.

5.4.10 IF all of the readings are within the Specified Tolerance of ±2.5 lbs.,

THEN perform the following steps:

5.4.10.1 Dismantle the set-up.

5.4.10.2 Check off, date, and initial the "TRAC-2 Calibration" form posted on the Payout Spooler.

5.4.10.3 Note in the Log Book that no adjustment to the system was required.

5.4.11 IF one or more readings are outside the Specified Tolerance of ±2.5 lbs.,

THEN perform the following steps:

5.4.11.1 Immediately inform the Cognizant Engineer.

5.4.11.2 Do not dismantle the set-up before consulting with your supervisor. Others may want the opportunity to verify your findings.

5.4.11.3 Note in the Log Book that the system is not within spec.

5.4.11.4 Check off, date, and initial the "TRAC-2 Calibration" form.

5.5 Interlock Test Procedure

NOTE 1

Interlocks shall be tested on a six-month interval during production, or after major maintenance or repair, or after a software revision. If a device fails, stop work, and immediately notify the Technical Supervisor, the Cognizant Engineer, and the ES&H Coordinator.

NOTE 2

Refer to the Interlock Test Form as an aid to locate and test each device. As each device is tested, check off the appropriate box. All interlocks are functional when the Spooler is operated in AUTO or MANUAL modes:

5.5.1 Visually inspect the switches for damage.

- Limit switch E-1 shuts power to the tension controller and the spooler.
- Limit switch E-2 shuts power to the tension controller and the spooler

5.5.2 Begin operating the spooler and tensioner as noted in section 5.3.

5.5.3 Depress "E-STOP" push button. Verify all movement to the spooler and tensioner ceases.

5.5.4 Repeat for all E-Stop Buttons.

5.5.5 When all devices have been successfully tested, date and initial the completed "Interlock Test" form. Post a copy near the Winder.

6 Documentation

6.1 Maintenance Log
6.2 Calibration Report

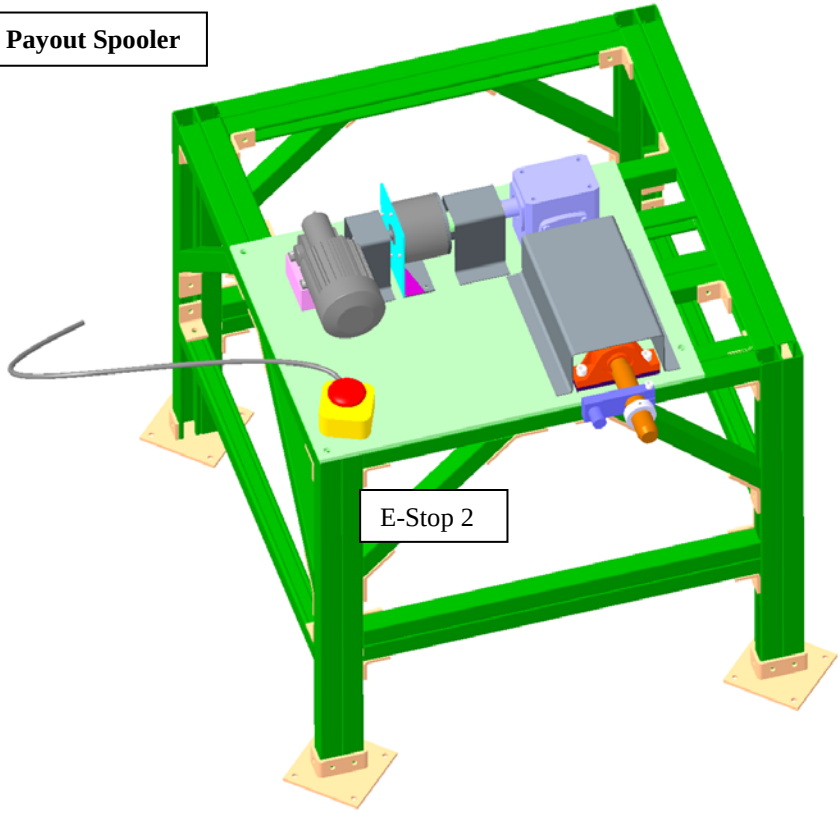
7 References

7.1 None

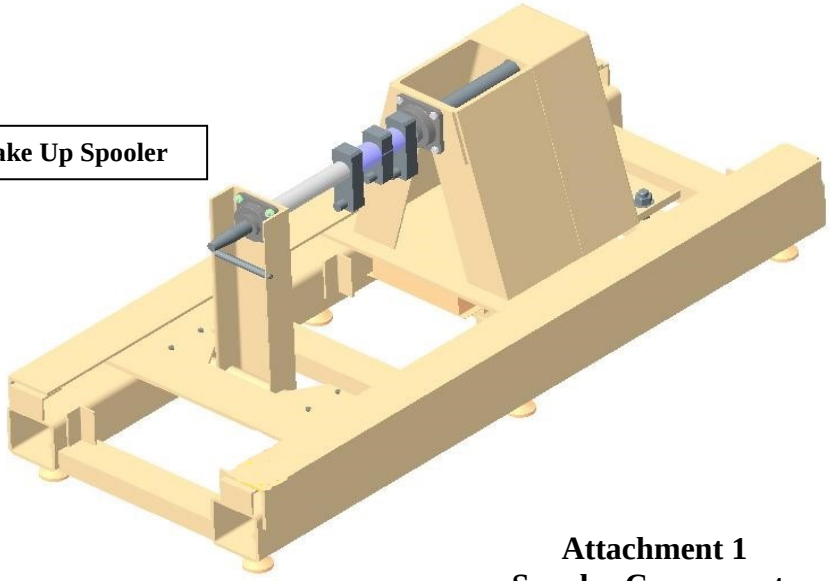
8 Index of Attachments

1. Spooler Components
2. Spooler Control Panel
3. Spooler Control Panel Detail
4. Tension Controller
5. Calibration Form
6. Interlock Test Form

Payout Spooler



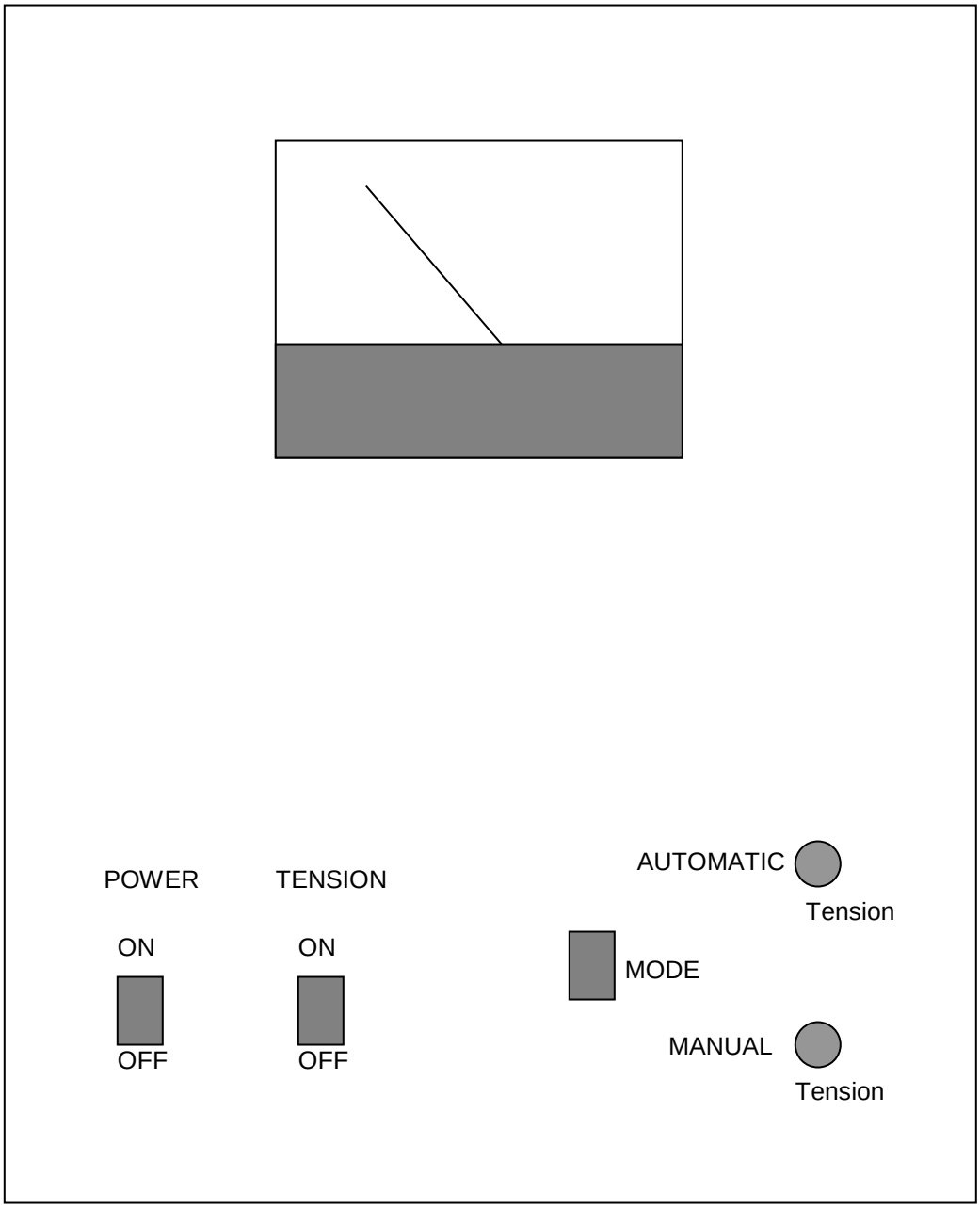
Take Up Spooler



Attachment 1
Spooler Components

Attachment 2
Spooler Control Panel

Attachment 3
Spooler Control Panel Detail



Attachment 4
Tension Controller

Attachment 5

TRAC-2 Tension Controller Calibration Form

Notes:

1. Calibration Procedure: SMD-OPM 8.1.1.45 Section 5.4
2. Specified Tolerance: ±2.5 lbs.

Performed by: _____

Date: _____

Force Gauge SMD ID#: _____

TEST DATA

Setpoint (lbf)	Force Gauge (lbf)	TRAC-2 Display	Failed (*)
5			
10			
15			
20			

Attachment 6

Interlock Test Form

Procedure SMD-OPM 8.1.1.45 Section 5.5

Designation	✓	✓	✓	✓	✓	✓	✓
E-Stop 1 (Panel)							
E-Stop 2 (Payout Spooler)							
Date →							
Initials→							