SMD Operations Procedures Manual

8.1.1.26 OPERATION OF WEDGE WRAPPER

Text Pages 1 through 7
Attachment(s) 1, 2, 3

Hand Processed Changes

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8.1.1.26 Operation of Wedge Wrapper

1.0 Purpose and Scope

1.1 This procedure provides instruction in the operation of the Wedge Wrapping Machine (Wrapper) located on the south wall of building 902.

1.2 The information is provided for any person who will operate the controls of the Wrapper.

2.0 Responsibilities

2.1 Authorized operators of the Wrapper will perform the tasks described here. A list of authorized operators is maintained by the Cognizant Technical Supervisor.

2.2 The operator shall complete the following documentation:

A. Traveler.

B. Wedge Wrapper Log Book. Entries shall include notes of any irregularities during start-up, operation and shut down of the Wedge Wrapper. Record insulation/film type used, wedge type and quantity wrapped. Log number settings on hand wheel counter (for gap setting), speed and torque (on power panel).

3.0 Prerequisites

3.1 Training

3.1.1 Operator shall be instructed by the Cognizant Technician Supervisor before operating the Wedge Wrapper.

3.1.2 Operator shall be trained as an "affected employee" as defined by SBMS Subject Area, "Lockout/Tagout (LOTO)".

3.2 Initial State of Wrapper

3.2.1 Control panel controls shall be set to their "initial" settings (see para. 5.4) before activating the control console.

3.3 Equipment

A. Safety glasses with side shields.

4.0 Precautions

4.1 All guards and shields shall be in place during operation.

4.2 Eye protection shall be worn by the operator and any person(s) observing wedge wrapping process.

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

4.4 A test of the interlocks shall have been performed within the last six months. A dated Interlock Test Form (Attachment 3) shall be posted near the Wrapper.

5.0 Procedure

5.1 Overview of Wedge Wrapper

The Wedge Wrapping Machine provides a means of wrapping insulation/film around specified copper wedges, and other magnet parts, so that they are electrically insulated.

In the wrapping process, insulation film is wrapped around the part as it is pulled through the wrapping head by feed rollers.

The degree of overlap of the insulation will vary with the requirements on the part being wrapped, as per the applicable drawing.

5.2 Operator Controls

5.2.1 Refer to Attachment 1: "Electrical Control Panel Diagram" and Attachment 2: "Wedge Wrapper Diagram". The function of the indicator lights and controls of the Wrapper are as follows (NOTE: capital letters indicate how the controls are labeled):

A. Amber indicator light: Illuminates when the SYSTEM ON push button is depressed and the Kick Switch Pad is depressed.

B. SYSTEM ON black push button and SYSTEM OFF red push button: Activates and de-activates power to the control console.

C. POWER ON red indicator light: Illuminates when the SYSTEM ON push button is depressed, indicating that system power is activated.

D. TORQUE and SPEED potentiometers: Gives linear control of the motor rotation speed and torque.

E. Kick Switch Pad: Depressed to turn motor on.

NOTE:

A hand-held push-button assembly and extender cable may be plugged into the Kick Switch Pad assembly box. The push button has the same function as the Kick Switch Pad.

F. Counter (hand wheel to right of machine): Controls rotational speed of the wrapping heads by a variable ratio belt system tied to the motor shaft.

5.3 Set up the Material to be Insulated

5.3.1 Refer to the applicable Magnet Assembly Procedure.

5.4 Initial Control Settings

CAUTION
Equipment Damage

Failure to set controls properly before activating system power could result in equipment or product damage

5.4.1 MOTOR SPEED potentiometer, MOTOR TORQUE potentiometer, and counter to suggested settings in the Wedge Wrapper Log Book:

Example:	Speed	30
	Torque	92
	Counter	99442

5.5 Mount Insulation Film Spools

> **CAUTION**
> **Equipment Damage**
>
> **Always install two spools of near equal weight so that the wrapping heads are balanced. Do not install one spool. Failure to do this could cause equipment damage.**

5.5.1 Open protective covers. Verify that the safety interlock has de-activated control power to the wrapping heads by observing that the red POWER ON light is extinguished.

5.5.2 Mount spools onto spindle heads. Tighten the control knob on the spool mount to hold the spool in place. This control knob creates tension on the tape spool during wrapping.

NOTE ***Tension will need to be adjusted accordingly as insulation is off-spooled onto magnet part.***

5.6 Set Audio Alarm

The audio alarm box, located to the right of the control panel, emits a loud tone when the wrapped material reaches the end of the support track. Use of this alarm is optional.

5.6.1 Ensure the alarm box is plugged into a 110V power outlet. Set the ON/OFF toggle switch to the ON position. Observe that the green POWER ON light illuminates.

5.6.2 When the alarm is tripped, depress the RESET push button to reset the alarm.

5.7 Operate the Wrapper

5.7.1 Close and secure all covers.

5.7.2 Verify that controls are set to their initial settings (5.4).

5.7.3 Ensure controller is plugged into a 110V power outlet. Depress SYSTEM ON black push button. Red POWER ON indicator light should illuminate.

5.7.4 Depress the Kick Switch Pad. Heads will rotate.

5.7.5 Adjust rotational speed of the wrapping heads in two ways:

5.7.5.1 Vary the motor speed by adjusting the SPEED or TORQUE control potentiometer, or;

CAUTION

Change ratio only while machine is running. Failure to do so will result in equipment damage.

5.7.5.2 Change the ratio of the variable belt system with the hand wheel counter.

5.8 To Shut Down the Wrapper

5.8.1 Release Kick Switch Pad.

5.8.2 Depress SYSTEM OFF red push button.

5.9 Test of Safety Interlocks

The Wrapper has three interlocks. Two interlocks are micro-switches on the hinged covers of the wrapping heads. One interlock is a micro-switch in the feed track, which will turn off the machine when the feed track is empty.

The test procedure can be performed with or without spools installed on the wrapping heads.

5.9.1 Place a sample part on the feed track to close the feed track interlock.

5.9.2 Close and secure the hinged covers of the wrapping heads.

5.9.3 Verify that the controls are set to their "initial" settings (5.4)

5.9.4 Depress the black SYSTEM ON push button and observe that the red indicator light turns on.

5.9.5 Depress the Kick Switch Pad. Wrapping heads should rotate and amber indicator light will illuminate.

5.9.6 Pull the sample part out of the feed track interlock. Verify that machine motion stops and the amber indicator light extinguishes.

5.9.7 Check off the appropriate box on the Wedge Wrapper Interlock Test Form (Attachment 3).

5.9.8 Re-install the sample part to close the on the feed track interlock.

5.9.9 Depress the Kick Switch Pad. Wrapping heads should rotate and amber indicator light will illuminate.

5.9.10 Pull down the front cover. Verify that machine motion stops and the red POWER ON and amber indicator lights extinguish.

5.9.11 Check off the appropriate box on the Wedge Wrapper Interlock Test form (Attachment 3).

5.9.12 Close front cover.

5.9.13 Depress SYSTEM ON black push button.

5.9.14 Depress the Kick Switch Pad. Wrapping heads should rotate and amber indicator light will illuminate.

5.9.15 Open the top cover. Verify that machine motion stops and the red POWER ON and amber indicator lights extinguish.

5.9.16 Check off the appropriate box on the Wedge Wrapper Interlock Test form (Attachment 3).

5.9.17 Close top cover.

5.9.18 Date and initial the form.

5.9.19 If a failure occurs at any step of the procedure, stop work, write "fail" on the form, and immediately notify the cognizant engineer and the ES&H Coordinator.

6.0 Documentation

6.1 Traveler

6.2 Wedge Wrapping Log Book

6.3 Wedge Wrapper Interlock Test Form

7.0 References

7.1 Magnet Assembly Procedure for wedges being wrapped.

7.2 Applicable BNL drawings.

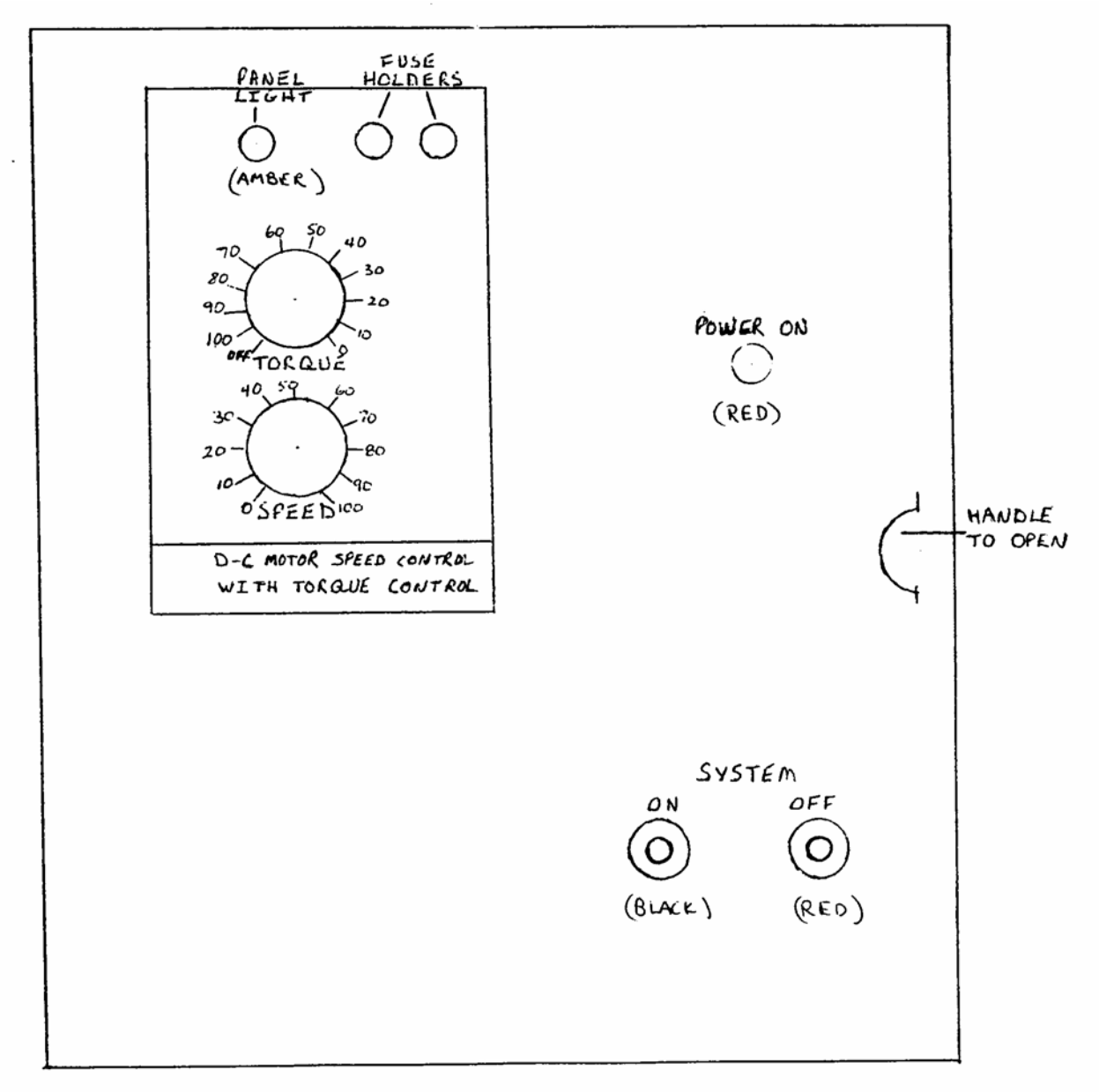
7.3 SBMS Subject Area: "Lockout/Tagout (LOTO)".

8.0 Attachments

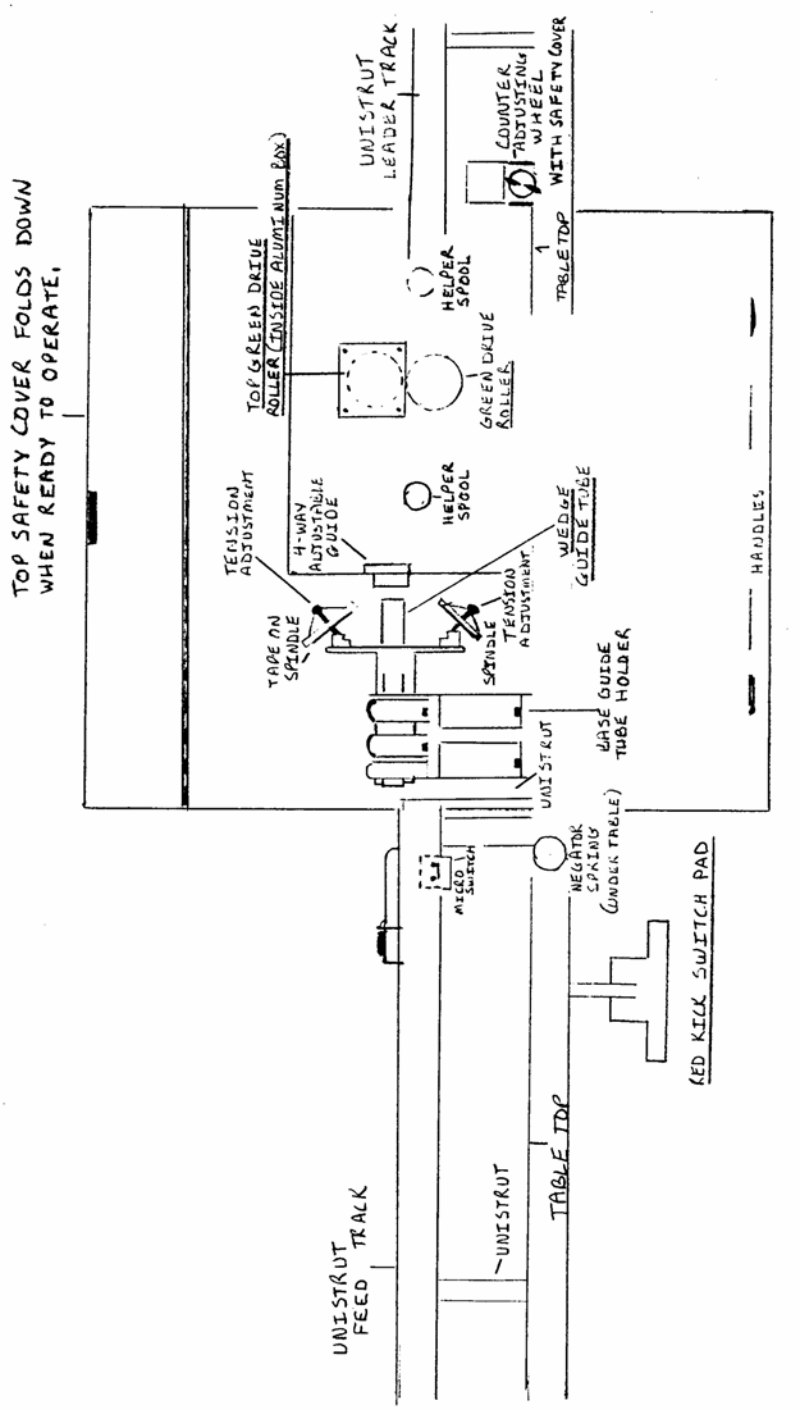
1. Electrical Control Panel Diagram
2. Wedge Wrapper Diagram
3. Wedge Wrapper Interlock Test Form

Attachment 1

Electrical Control Panel Diagram



Attachment 2 -Wedge Wrapper Diagram



Attachment 3

Wedge Wrapper Interlock Test Form

Instructions:

1. Refer to SMD-OPM 8.1.1.26, "Operation of Wedge Wrapper", paragraph 5.9 for the proper test procedure.

2. Post this form near the Wedge Wrapper.

3. Do not operate the Wrapper if the test has not been performed within the past six months.

4. The interlocks to be tested are as follows:

   Interlock #1: Located on the feed track.
   Interlock #2: Located on the top hinged cover of the wrapping heads.
   Interlock #3: Located on the front hinged cover of the wrapping heads.

5. Check box, initial, and date. Notify CE and ES&H Co-ordinator if a failure occurs.

#1									
#2									
#3									
INIT.									
DATE									