

# VE Wrapper Screens and Recipe Setup



Blockwise Engineering LLC  
www.blockwise.com

Blockwise's electrically actuated full-recipe controlled balloon wrapping machine, the **model VE wrapping machine**, includes a touchscreen Human-Machine Interface (HMI) that is used to program and operate the machine. This document briefly describes how the touchscreen is used to program, calibrate and operate the machine.

**RUN SCREEN** – This is the main screen for recipe progress. It displays balloon pressure, station temperatures, pleating and compression dwell times, and force readings for both stations, along with recipe name and number. A message box across the top informs and instructs the user about progress and next steps. A countdown timer is also provided.

This screenshot shows recipe number 1, which is labelled as VE 22. The setpoint for balloon pressure is 15 psi, the setpoints for pleating and compression station temperature are both 60°C, and the dwell times for pleating and compression are 20 and 30 s, respectively. Vacuum will begin 10 seconds after the start of pleating. This screen also shows the current diameter and force readings for both pleating and compression stations.

**MODIFY RECIPE SCREEN** – Displays and allows changes to the currently-selected recipe. The operator can enter the pleat station open diameter, compression station closing force/diameter, compression station rapid diameter (at start of compression stage), pleating and compression station temperatures, and actuation speeds as well.



**ADVANCED RECIPE SCREEN** – Further control of recipe ingredients, such as pleat station stop type, pinch detection toggle, vacuum toggle, compression force/diameter limits, along with linking of recipe to pleat station. Leak detection is available as an option.

The screenshot shows the 'ADVANCED RECIPE SCREEN' with the following settings:

- PLEAT:** CLOSED STOP (FULLY CLOSE selected), PINCH DETECTION (OFF selected), FORCE THRESHOLD (40.0 lbf).
- LINK RECIPE TO PLEAT STATION:** LINK (yellow button), UNLINK (yellow button).
- ENABLE VACUUM:** ON (selected), OFF (radio button).
- COMPRESSION:** Motor SN: 309160108, COMP MAX FORCE (100.0 lbf), COMP MIN DIA (0.25 mm), VERIFICATION (ON selected), MIN DIA (0.50 mm), MAX DIA (1.50 mm).

Buttons at the bottom include SAVE (yellow), CLOSE, LEAK DETECTION, and a partially visible button.

**SETUP SCREEN** – Machine-wide settings are displayed and changed here. This screen also handles Pressure Calibration and the Error Log.

**Recipe Trigger:** The instant at which the balloon inflates as part of a recipe

**Not At Temp:** Allows recipes to execute when stations are more than 5°C outside setpoint

**Buzzer:** Audible beep to prompt each stage of a full recipe cycle

**Security:** Password protection for Operator lockout of machine settings

**Cycle Count:** Full recipe cycles since last reset

**Units:** Switch between metric and imperial units of measure

**Errors/Clear Logs:** Shows registered errors, allows them to be cleared

**Calibration:** Calibrate machine for station diameter, actuation force, and balloon pressure

The screenshot shows the 'SETUP SCREEN' with the following settings:

- UNITS:** DIAMETER (mm), PRESS (psi), FORCE (lbf), TEMP (C).
- BUZZER:** ENABLED (selected), DISABLED (radio button).
- NOT AT TEMP:** ENABLE OPERATION (selected), DISABLE OPERATION (radio button).
- CALIBRATION:** (yellow button).
- RECIPE TRIGGER:** START BUTTON (selected), SIMPLUER SWITCH (radio button).
- AUTOMATICALLY CONNECT/DISCONNECT SIMPLUER AT START/END OF RECIPE:** ENABLED (radio button), DISABLED (selected).
- SECURITY:** 240 VAC, HMI V1.4, MCU v1.3, USER ACCESS: UNRESTRICTED, CHANGE PASS (yellow button).
- ERRORS:** (grey button).
- CYCLE COUNT:** (grey button).
- RUN RECIPE:** (grey button).
- MANUAL MODE:** (yellow button).

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**CALIBRATION SCREEN** – Use this screen to calibrate and check machine for station diameters, station actuation forces, and inflated balloon pressure. Can also set “safe” gains/constants, and view gains/constants.

The CALIBRATION screen is divided into two main sections: PLEAT and COMPRESSION. Each section contains buttons for DIAMETER, FORCE, and CHECK FORCE. The PLEAT section also includes a BALLOON PRESSURE button. The COMPRESSION section includes buttons for SET SAFE CAL VALUES, VIEW CAL VALUES, and RESET NOMINAL HEATER CURRENT. A SETUP button is located at the bottom left.

**MANUAL MODE SCREEN** – Allows all machine functions to be commanded manually (instead of executing a recipe sequence), with the exception of dwell times.

The MANUAL MODE screen displays manual setpoints for PLEATING and COMPRESSION. Each section includes fields for DIAMETER, FORCE, SPEED, and TEMP, with a GO button. A SETUP button is at the bottom left. At the bottom right, there are controls for BALL PRESS (30.0), PRESS (0.0 psi), VENT, and VAC.

In this screen the operator can enter all setpoints for pleating and compression (diameter, force, actuation speed, temperature), as well as balloon pressure and vacuum.