

PRECISE AND EFFICIENT VENTOBACCO CURING CONTROL

- For the best possible dry leaf texture and characteristics
- Secures the maximum possible dry leaf weight during curing
- Considerably decreases fuel, electrical consumption and curing duration

The design of the **CURING CONTROL VK981®** has been based on long experience in curing tobacco in different areas, with various climatic, soil and growing conditions. It is as simple to use as possible, giving the user almost unlimited capabilities to cure the tobacco easily and efficiently.

VK981® is a curing control based on microcontroller's latest technology, equipped with all necessary safety devices and software to ensure its safe operation under difficult conditions.

All data stored in its memory is safely guarded for many years.

VK981® controls:

The Dry Bulb Temperature

The Relative Humidity (RH) or Wet Bulb Temperature

The Temperature Advance Rate (and subsequent humidity decrease)

The ΔT (Temperature Difference) of the air between the lower and upper tobacco tiers in the barn

A sophisticated control with selected data from thousands of good cures is continuously refining operator's orders, according to the rate of change of the several curing parameters, to secure the optimum curing performance.

VK981® is designed to precisely control the burner's operation and fresh air (intake) damper's operation in either of these operating modes:

- **MANUALLY:** The user sets the desired temperature and humidity limits.
- **SEMI-AUTOMATICALLY BY CURING PHASES:** The user selects only the desired CURING PHASE and the control advances the phase.
- **AUTOMATICALLY:** The control advances the whole curing automatically.

It is well known to experienced barn operators that different kinds of tobacco (under ripe, overripe, under fertilized, tobacco lacking microelements, grown under unfavorable climatic conditions, cool weather, drought, etc.) may need quite different curing techniques to produce acceptable leaf quality. And many times it is hard to predict how such tobacco leaves will react as curing advances.

VK981® is what we call a "*Smart control*". By checking continuously the rate of the curing parameter changes as curing process advances in the barn, it can understand what kind of tobacco is loaded in the barn and how this tobacco reacts in curing, and uses its memory stored data to refine the curing schedule to secure the most efficient and successful cure.

VK981® not only insures the barn's operator that his crop will be cured in the best possible way with the lowest possible energy consumption, but also gives him a better life standard by taking out of him all the guesswork and letting him enjoy quiet nights.

VK981® Curing Control is the most advanced *Fully Programmable Curing Control* in the market. It is based on microcontroller's latest technology, equipped with all necessary safety devices and software to ensure its safe operation under difficult conditions.

VK981® can be installed on any barn or retrofit heat exchanger.

VK981® is built in a plastic casing, installed in a metal panel box and can be mounted on the front or top of barn's electrical panel or directly on a barn's furnace room wall where it is protected from rain, water drops from condensation, and vibrations.

Control's front consists of:

a. **Five displays** that indicate the following temperatures:

- **Dry Bulb** Temperature
- **Wet Bulb** Temperature
- **RH%** (Relative Humidity)
- **TA** (Temperature Advance) – Rate of Dry Bulb temperature increase
- **ΔT** (Delta T) – Temperature difference between lower and upper tobacco tiers (between incoming and outgoing air from tobacco mass in the barn).

Note: When using a “Dry” RH sensor, the control converts the RH reading to Wet Bulb temperature. The operator then sets his curing parameters with WB settings, just as he always has.

b. **One Selector** (0-9)

To select the desired curing phase or operating mode (by pressing lower (-) or upper (+) button):

- No. 0 for MANUAL OPERATION
- No. 1 for COLORING
- No. 2 for WILTING
- No. 3 for LEAF DRYING
- No. 4 for STEM DRYING
- No. 5 for CONDITIONING
- No. 6 for AUTOMATIC OPERATION

c. **Eight LED lamps.** Only the selected phase's (operating modes) lamp lights.

d. **A group of three (3) buttons** to select, check and change settings on the displays.

e. **One “START CURING” button.** When a new curing cycle starts, this button must be pressed and held for 10 seconds.

f. **One green LED lamp** for the servo controlled fresh air damper. When the wet bulb thermostat gives the order to the servomotor to open, the lamp lights. When there is no order coming, the lamp blinks. When the order is to close the damper, the lamp is off.

g. **One red LED lamp for the burner.** When the dry bulb thermostat gives the order to the burner to fire, the lamp lights.

How the VK981® operates

To start each cure, press **“START CURING”** and hold for 10 seconds until **READY** appears on the display.

- To MANUALLY operate the control, you select No.0 on the selector. The MAN light is on. All displays show the actual temperatures in the barn. You can see and set the temperatures (DB, WB, temperature increase and ΔT) by pressing the “SETTINGS” button. When you press the “SETTINGS” button, all displays show the setting points. Each time you press “SETTINGS” again, one display at a time flashes. Now you can change the settings of the display. First DB, then WB, temperature increase and last ΔT.

By activating + or – buttons, setting values go up or down. After 15 seconds, the display(s) stop flashing and return to indication mode (thermometers).

You can cure with Temperature Increase Control and ΔT control together to perfectly control the rate of temperature increase, or with one or none of them. In case you want to bypass one control, you set - - on the display of the control you do not want to use (pressing "SETTINGS" and -).

- To operate in SEMI-AUTOMATIC BY CURING PHASE mode, you select on the SELECTOR the desired CURING PHASE (No. 1 for COLORING, 2 for WILTING, 3 for LEAF DRYING, 4 for STEM DRYING and 5 for CONDITIONING).

Now the light of the selected phase is on.

Each time you press "SETTINGS" one display at a time flashes (DB, WB, Temperature Increase and then Duration in hours). The DB and WB limits, the rate of Temperature increase, the ΔT setting and duration for each phase are stored in the control memory. The DB and WB temperature settings will automatically advance to the programmed limits and will remain there waiting for the operator to change the **CURING PHASE** when he feels like doing so.

If the operator wants to slightly change the programmed DB and WB upper limits of each phase as well as the programmed Temperature Increase and ΔT settings, he can do so by selecting the desired **CURING PHASE** number on the selector and then press "SETTINGS" button and change the limits with + or – buttons as described above.

In this way the experienced operator can easily adapt the control operation to his own technique, making his own program for each curing phase.

- To operate **AUTOMATICALLY**, you select No. 6 (AUTO) on the selector. AUTO light is on.

The curing process will automatically advance, starting from the ambient DB temperature in the barn changing automatically the curing phases following exactly the curing program. The rate of Temperature Increase, ΔT , DB and WB temperature limits where the operator wishes to stop, as well as the duration of each stop, can be programmed by the operator (if he wishes so) with the use of "SETTINGS" and with + and – buttons. The controls detailed operation mode is described in the VENTOBACCO VK981® OPERATOR'S MANUAL.

More details on the VK981® Curing Control

- By pressing **SELECT** and **START** buttons together, the operator can see where the floating DB is set automatically by the control at that precise moment. If he wants to increase or decrease the "floating" temperature, he can do so by pressing + or – while he keeps pressed **SELECT** and **START** buttons.
- Sensors are factory calibrated. Calibration can be checked or changed (if a sensor is changed) from the controls menu.

Ventobacco Temperature Sensors

Specially built accurate thermistors are in PVC case with PVC flexible (standard) 25 foot long cable. Sensor cables can be extended up to 50 feet.