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VACUUM TECHNOLOGIES, INC.

Dekker Controller Manual Rev: Feb 18 2016

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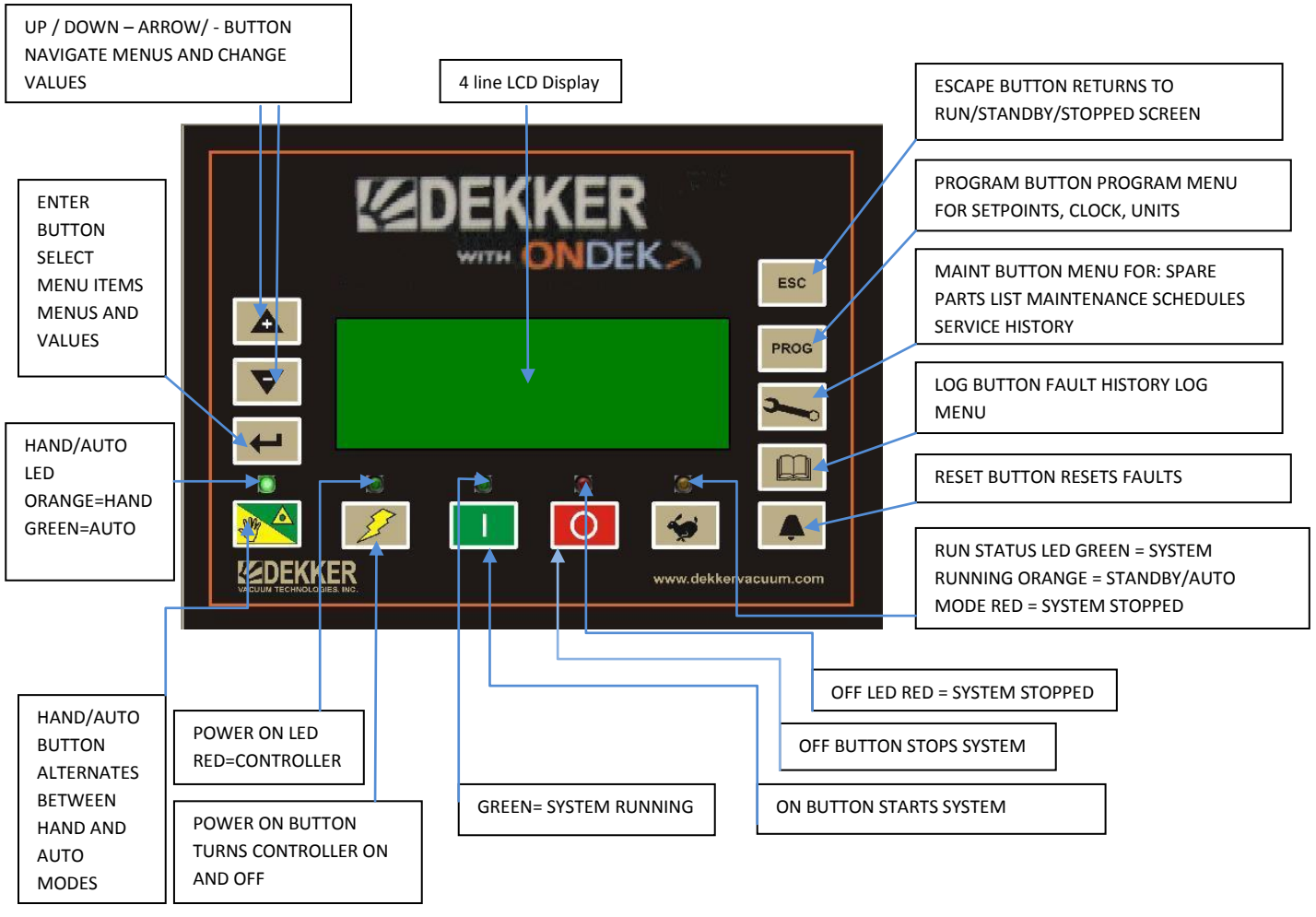
DEKKER CONTROLLER OVERVIEW

Dekker's Controller is standard on the Vmax models. The Dekker Controller provides for system control as well as monitoring of system status. Service functions include display of spare parts list, maintenance schedules, and service history, along with logging of fault conditions.
The Dekker Controller includes a 4-line large-font liquid crystal display, a durable Lexan membrane keypad, and multiple status LEDs. Communication between controllers is via RS-485 for multi-machine systems. An Ethernet port provides for remote monitoring and control via TCP/IP protocols and can be enhanced with the use of Dekker's OnDek Software (optional and purchased separately). Input and output (I/O) includes 9 digital (24VDC) inputs and 7 dry relay contact outputs. Analog I/O includes 2 RTD (Resistance Temperature Detectors) inputs, four 0-10VDC/4-20mA inputs, one 0-10VDC output, and one 4-20mA output. Power input to the controller is 24VDC.

DEKKER CONTROLLER KEYPAD

The Dekker Controller text display, buttons, and LEDs are described below. Refer to the diagram below that shows this information.



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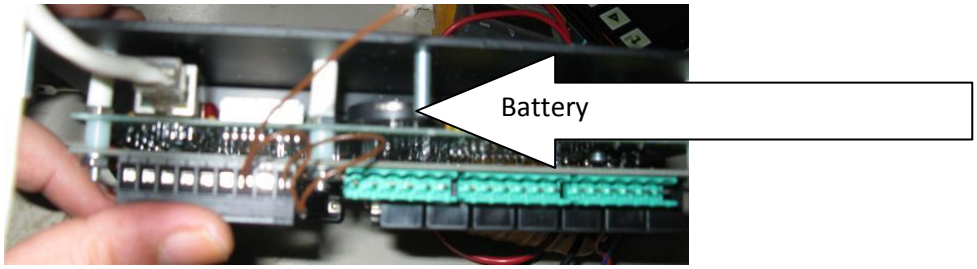
The OnDek Dekker Controller

Battery

The Dekker Controller is shipped from supplier with a battery protector placed between the battery clip and the surface of the battery, it may be a rubber sleeve around the clip or a small plastic insulator between the clip and battery. This must be removed before applying power to the controller. If not removed the controller will not retain Date, Time and other values that are written to the controller for setup. The controller cannot be flashed with new firmware until this is removed. To remove use a pair of needle nose pliers and pull from clip.



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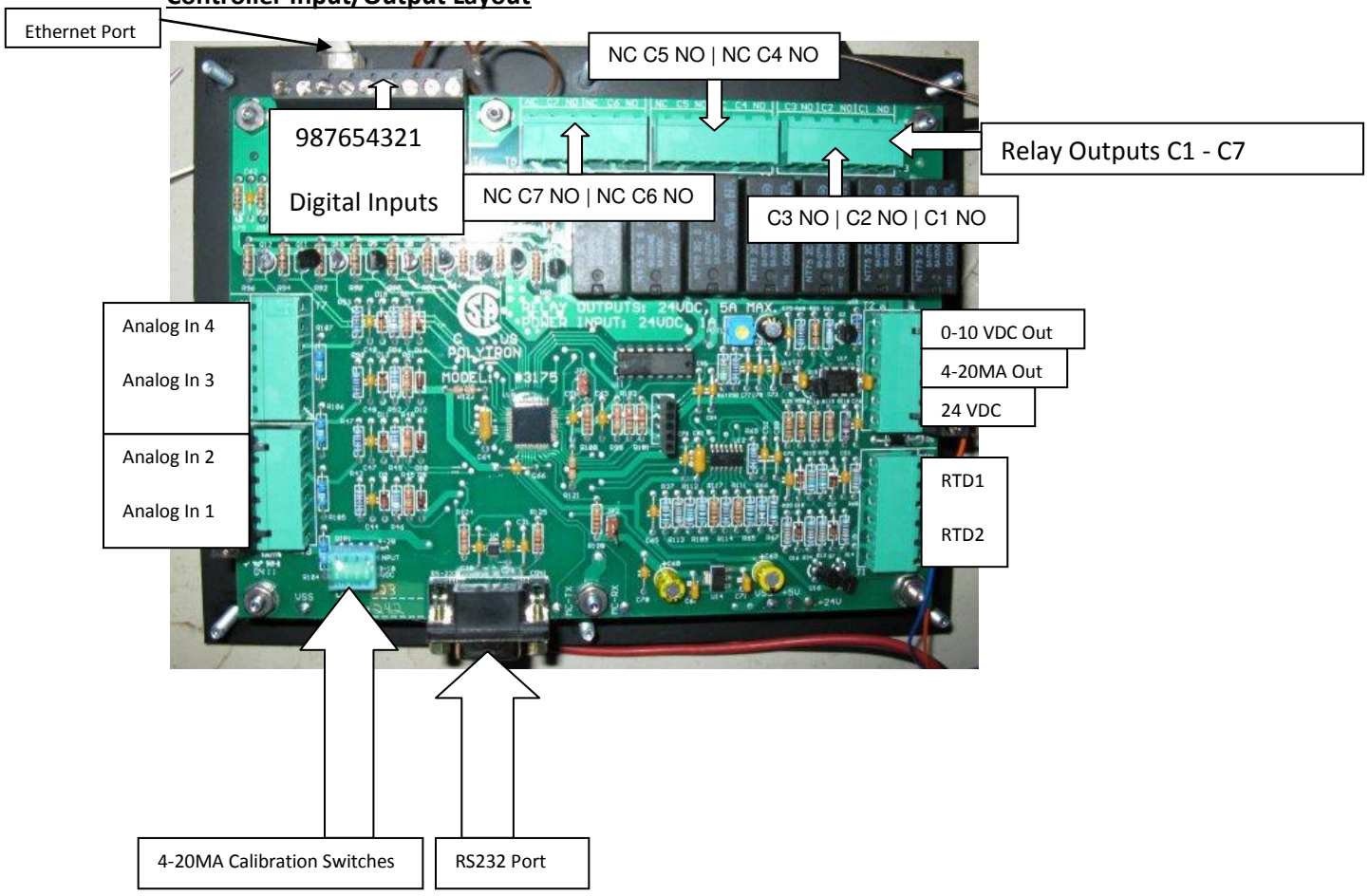
Controller Input/Output Layout



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Current Input/Output Assignments

Digital Inputs

1. E-Stop
2. Overloads
3. Aux Contact Vac Pump
4. Low Fluid Level
5. High Fluid Level
6. Remote Start
7. Remote Stop
8. Circ Pump Overload
9. External Warning

(Note: External warning is used to give a warning on the screen from an external device.)
(Analog input 4 is a 0-15 psia transducer used in conjunction with Analog input 1 transducer to measure the difference in vacuum across the inlet filter)

Analog Inputs

1. Vacuum
2. Backpressure
3. Circ Pump Pressure
4. Diff Pressure

RTD Inputs

RTD1 – Aux Temp
RTD2 – Discharge Temp

Relay Outputs

- C1/NO = Vac Pump Motor Starter
- C2/NO = Local Lag Light
- C3/NO = Horn Output
- C4/NO = Remote Lag Light
- C5/NO = AllFault Out
- C6/N0 = Scavender Valve Out
- C7/NO = Cooling Fan

All inputs and outputs are 24VDC

Analog inputs are 0-10 Vdc by default, but configurable for 4-20ma

C5 Allfault output is used to for a remote indicator for any shutdown fault.

C6/NO Scavenger only10 Minute Run times were changed to a minium of 30 Minutes and adjustable to 90 Minutes in firmware version 1.12d all prior versions were 0 - 10 applies to firmware versions prior to v 1.12d

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Entering Password

Press and hold ESC button until Password 0 appears at bottom of screen.

Press MAINT button twice which enters the password 33

Then press ENTER

You now have access to change Controller settings.

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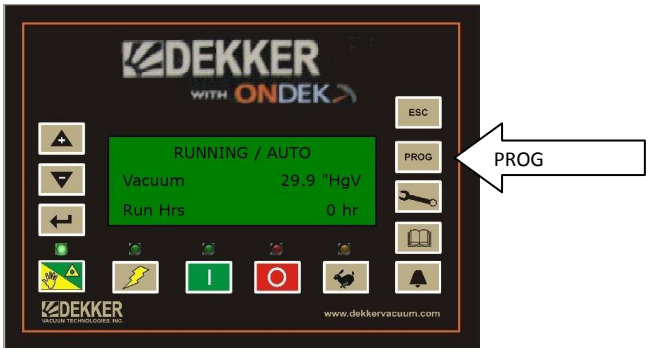
Changing Vacuum Units

Enter Password

If current screen is STOPPED or RUNNING press PROG once to view Setpoints screen. If HgV is already set for vacuum units you will see Vac CutIn and Vac CutOut in HgV units.



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To change to another Unit use DOWN arrow to scroll to Vacuum Unit Then press ENTER.

Once you press ENTER use UP arrow to change unit, you will have a choice of TORR, HgV or Millibars.

Once selection is made you must press ENTER again to save.

Changing Vac CutIn and CutOut

Enter Password

If current screen is STOPPED or RUNNING Press PROG once to view Setpoints screen.

Press UP or DOWN button if necessary to select Vac CutIn then press ENTER

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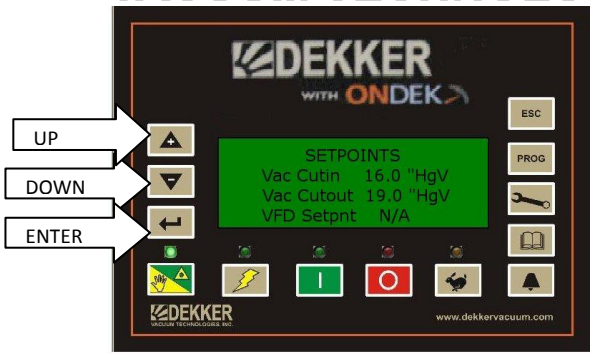

Once ENTER is pressed use UP or DOWN arrows to change value then press ENTER to save. Using UP/DOWN arrows repeat for Vac CutOut and save again by pressing ENTER

NOTE: When set up for multimachine, controller must be in STOPPED mode when changing Setpoints.

Multimachine Setup

Multimachine allows two or more Controllers to communicate and rotate Lead and Lag pumps based on hours Run. When rotation occurs the pump with the least hours will rotate to Lead if the hours are imbalanced. This keeps from putting all the run hours on one pump. To set up for multimachine CAT5 Ethernet cables are run from the RS485 jack mounted inside the panel. The cable is plugged into the jack in the first panel, then routed to the second panel and plugged in. Each panel has two jacks so that you can run cables to each machine if more than two. Cables must be run before setting the Controller up for multimachine. Once cables are run go to first Controller and Enter Password.

Now press PROG button twice to view System Options Screen
Press DOWN arrow until Multimachine is selected.
Press ENTER.
Even though multimachine may already be set for 1 use UP button to move to 2 then back to 1

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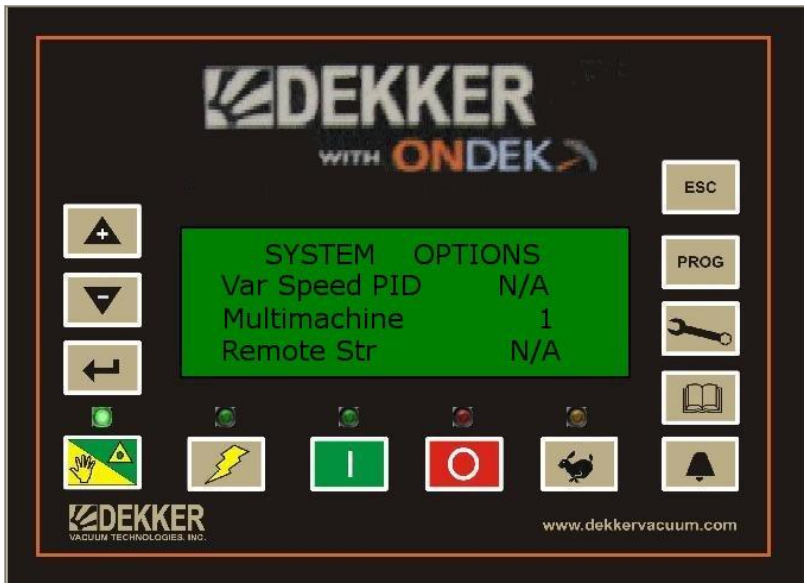
And press ENTER. Controller will reboot.



Go to second Controller Enter Password and follow same steps above only change multimachine to 2 and press ENTER.

If there are three controllers on the third set multimachine for 3. Do this for all Controllers each with a different multimachine number starting with the first they should be, 1,2,3,4 etc.. When Controllers power back up on each Controller it should show Units Found which will be the number of Units found on the RS485 Bus. This should match the number of Controllers, if a Duplex 2, if a Triplex 3 etc..

Temperature Warnings And Faults

Temperature warnings and faults are factory set, It is not recommended to change these settings without consulting with a Dekker Service Tech.

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Setting Date And Time

Enter Password

Press PROG once to view Setpoints screen.

Using Down Arrow scroll to Date and Press ENTER key.

Use Up / Down arrows to change Date, press ENTER again to save.

Use Up / Down key to select Time.

Press Enter

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Use UP / DOWN key to change

Press ENTER to save.

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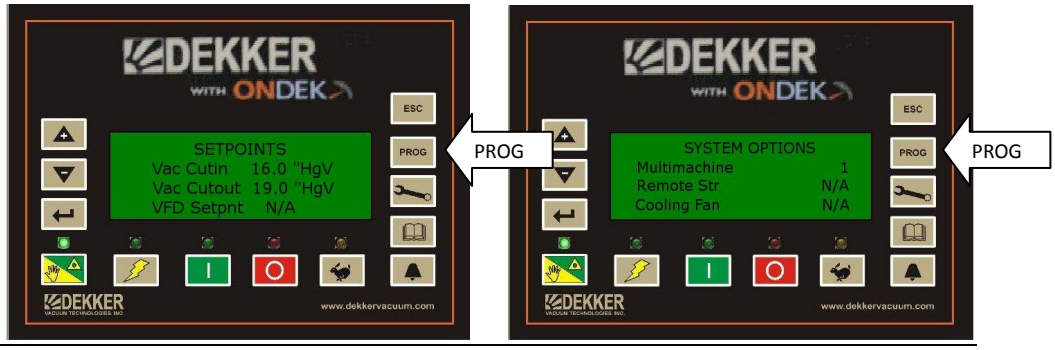
Entering Keycodes

Keycodes are used to enable available options. Keycodes are 7 digits. All keycodes are entered with 2 leading 0s.

Enter Password

From STOPPED or RUNNING screen press PROG button once to get to SETPOINTSs Screen

Press PROG button once more to get to SYSTEM OPTIONS Screen



Press DOWN key to find option needed

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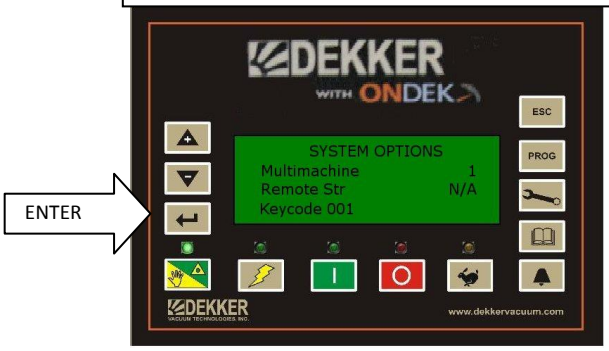
Once selected press ENTER. Keycode will appear with one 0

Once selected press ENTER. Keycode will appear with two 0s

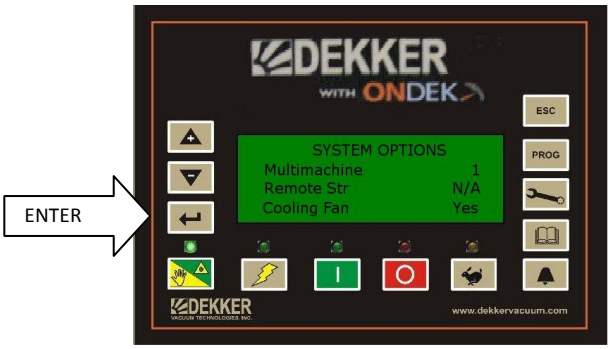
Press ENTER again then use UP/DOWN keys to enter third digit of keycode



Press ENTER again then use UP/DOWN keys to enter fourth digit of keycode

Press ENTER after each entry and continue until all digits of keycode are entered

Then press ENTER one last time. The N/A will change to Yes enabling the option chosen.



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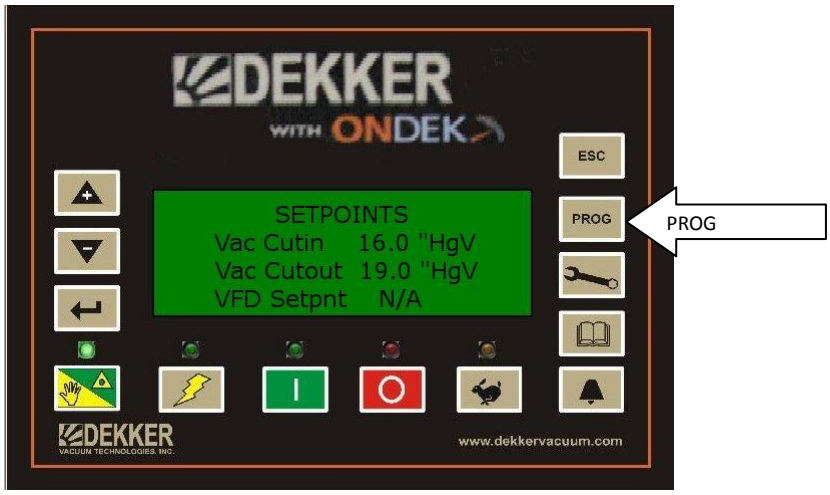
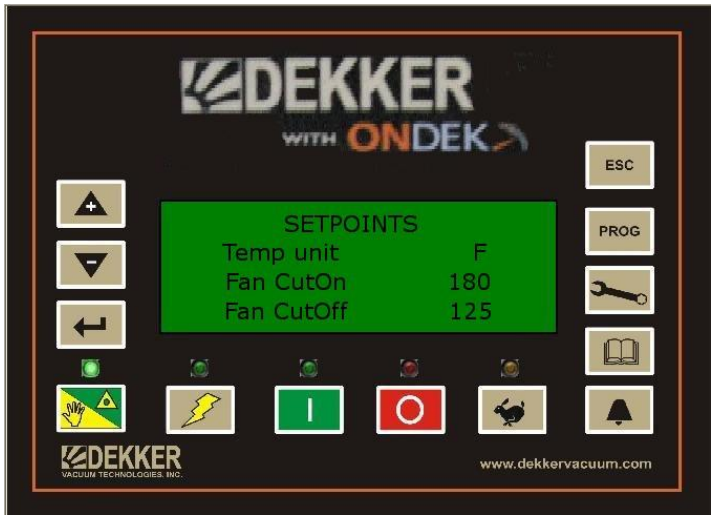
Cooling Fan

The Dekker Controller is equipped with a temperature control to operate a cooling fan when applicable. This feature requires a cooling fan keycode to be entered (see entering keycodes above). Once the cooling fan keycode is entered press the PROG button until you see the SETPOINT screen.



Use DOWN arrow to scroll to Fan CutOn and Fan CutOff. These are the setpoints to turn the fan on and off. They can be changed by entering password, scroll back to the settings. Press ENTER then use UP / DOWN arrows to change values. You must press ENTER again to save. Normally Open Output C7 is used for this purpose.



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Rotation

When set up for multimachine the system will rotate pumps every 24 hours if needed. For rotation to occur, the Lead pump must have the most run hours. When this condition is met and the time for rotation occurs, the Lag pump will become the lead pump. If this condition is not met rotation will not occur. If a triplex or higher system rotation for each pump will occur in order based on run hours of each pump.

Manual Rotation

The pumps can be rotated manually, but the same condition above applies, the Lead must have the most hours.

To rotate pumps manually, On the Lead pump, press and hold RESET button until you see the text “Manual Transfer” appear on the screen, then release the button. Wait a few seconds and you will see the upper text “LD” move to the opposite controller, the text “LG1” will move to where the “LD” was previously.

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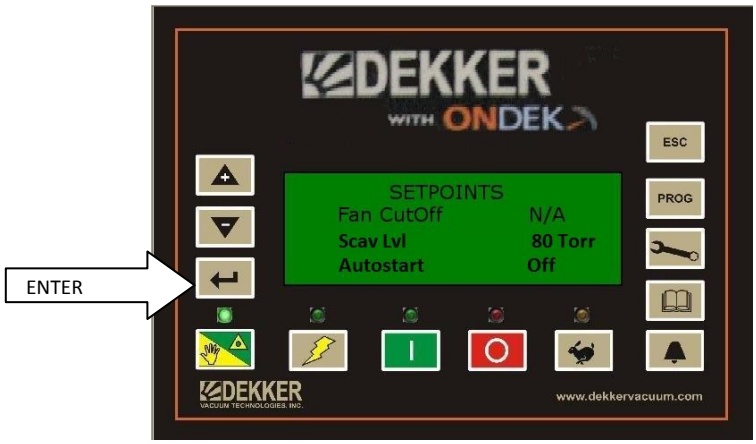
Scavenger Output

Output 6 on the controller is used for a bleed valve. This output cycles on for 30 Secs and off for 9 minutes based on vacuum level. The vacuum level for cycling to occur is adjustable via the Setpoint menu on the Dekker Controller.

- Enter password
- Press PROG until Setpoints screen is shown.
- Using DOWN arrow scrool to Scav Lvl
- Press ENTER
- Use UP/DOWN arrows to change value
- Press ENTER to save.



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Faults and Fault Log

If a fault occurs the fault will be displayed on the screen and recorded in the fault log. Faults include Overload, Temperature and in some versions of firmware Back Pressure. The Temperature and Back Pressure faults are adjustable from the setpoint screen, but it is not recommended to change these without consulting with a Dekker Technician. Changing these values could result in pump damage. Below is what is shown on the screen when a temperature fault occurs. The Run Status light will also turn red and flash so you can see a fault has occurred from a distance. Faults are cleared using the Reset button, but will not clear until the condition that caused the fault is cleared.

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When the fault occurs it is recorded in the fault log. The fault log will record up to 10 faults. When this ir reached the most recent fault is recorded at the top of the list and fault at the bottom of the list is removed. To view the fault log press the Log button.

Each fault can be selected to view what values such as Vacuum, Back Pressure etc… were at the time of the fault and up to 10 minutes prior to the fault.

To view this detail use UP or DOWN key to select the fault.

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Then press ENTER. The first screen shows what was occurring at the time of the fault, use DOWN arrow to view more information. Press ENTER again to view what was occurring 1 minute prior to fault. Press again for 2 minutes prior. You can continue pressing ENTER to view up to 10 minutes prior to fault.

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Autostart

The Dekker controller is equipped with Autostart. This feature allows automatic restart of system when power returns from a power loss. To enable this feature press PROG button to show SETPOINTS screen. Use DOWN arrow to select Autostart. Press ENTER. Use UP arrow to change to On. Press ENTER to save. If system is multimachine this must be set on all controllers.

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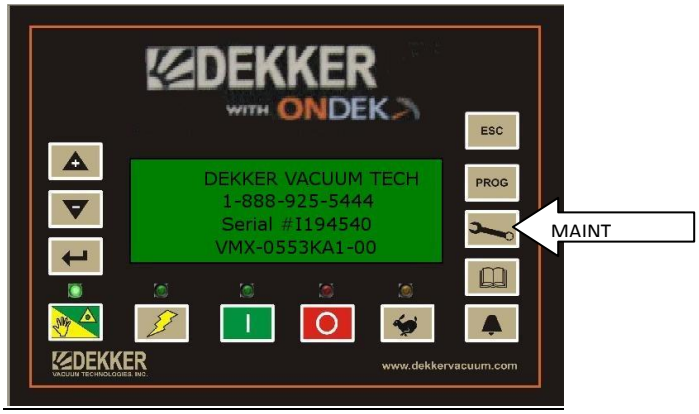
Maintenance Schedules

Pressing the **MAINT** button **once** will display the screen below:

This screen shows the support phone number for Dekker Vacuum along with the Serial number and model number of the system.



Pressing the **MAINT** button **twice** will display the spare parts list for the system. This list can be used for ordering parts if needed. Part numbers will appear in place of the Xs. These numbers are entered at the factory. Use Down arrow to navigate through the list.

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Pressing MAINT a third time will show the maintenance schedule intro screen. This screen also displays the current Run Hours.

Press MAINT a fourth time to view the maintenance schedule. This list provides a recommended maintenance schedule along with intervals. The time in hours until the maintenance is due counts down and can be seen on the Dekker Controller LCD in this area. Proper maintenance is necessary to provide proper performance and can prolong the life of your system. The UP and DOWN ARROW buttons can be used to navigate through the list. Proper response and service of service due message is highly recommended.

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Press MAINT the fifth time to view the Service History. Service history is recorded with date and time of service each time the recommended service is completed and the maintenance schedule is reset.

Pressing MAIN again will return you to the Dekker support screen. Pressing ESC at anytime will return to the main screen.

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Resetting Maintenance Schedule Hours

Enter Password

When maintenance is due you will see a warning on the screen letting you know that maintenance is due on the system. To remove this warning you must reset the maintenance interval. Press the MAINT button until you see the maintenance interval screen. The 0 shows the period has expired and generates the warning on the screen. You must reset the HRS To Srv to 500 or the schedule selected. Use DOWN key to select HRS TO SRV and press ENTER. Use UP key to reset to the correct interval (500 in this case). Press ENTER again to save, this last press of ENTER also records the date and time this service was completed in the Service History log.. Pressing ESC will take you back to the main screen and the warning will be gone. Note: warnings and faults only show in run mode.

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DP Inlet

DPInlet is a differential pressure across the inlet filter to monitor the filter. When the differential reaches the preset point a warning will show on the screen, once the filter is cleaned and the differential is reduced the warning will go away. A keycode (See Entering Keycodes) is required to enable this feature also an extra transducer is required.

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Remote Start Stop

To enable remote Start/Stop first the inputs must be wired. A NO momentary button is wired from the +24VDC on one side and to Digital input 6 on the other side. A NC momentary button is wired to +24VDC on one side and to Digital input 7 on the other. Both buttons must be momentary. Then to enable Remote Start/Stop you must enter the keycode. (See Entering keycodes)

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Network Options

Press PROG

Continue to press PROG until Network screen appears. This screen allows for changing Static IP address, Subnet mask and Gateway for network use. You can also turn DHCP on if a DHCP server is available to assign the controller an IP address. This screen should only be changed by qualified personnel.

Keycode List

Option Description	Keycode Number
Hi Level Switch	001159823
Low Level Switch	001146833
Temperature Switch	001117934
Vacuum Switch	001134668
Auxiliary RTD Temperature	001182214
Differential Pressure Inlet Filter	001114236
Back Pressure Transduce	001196511
Multimachine	001127744
Remote Start/Stop	001169856
Cooling Fan	001149877

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