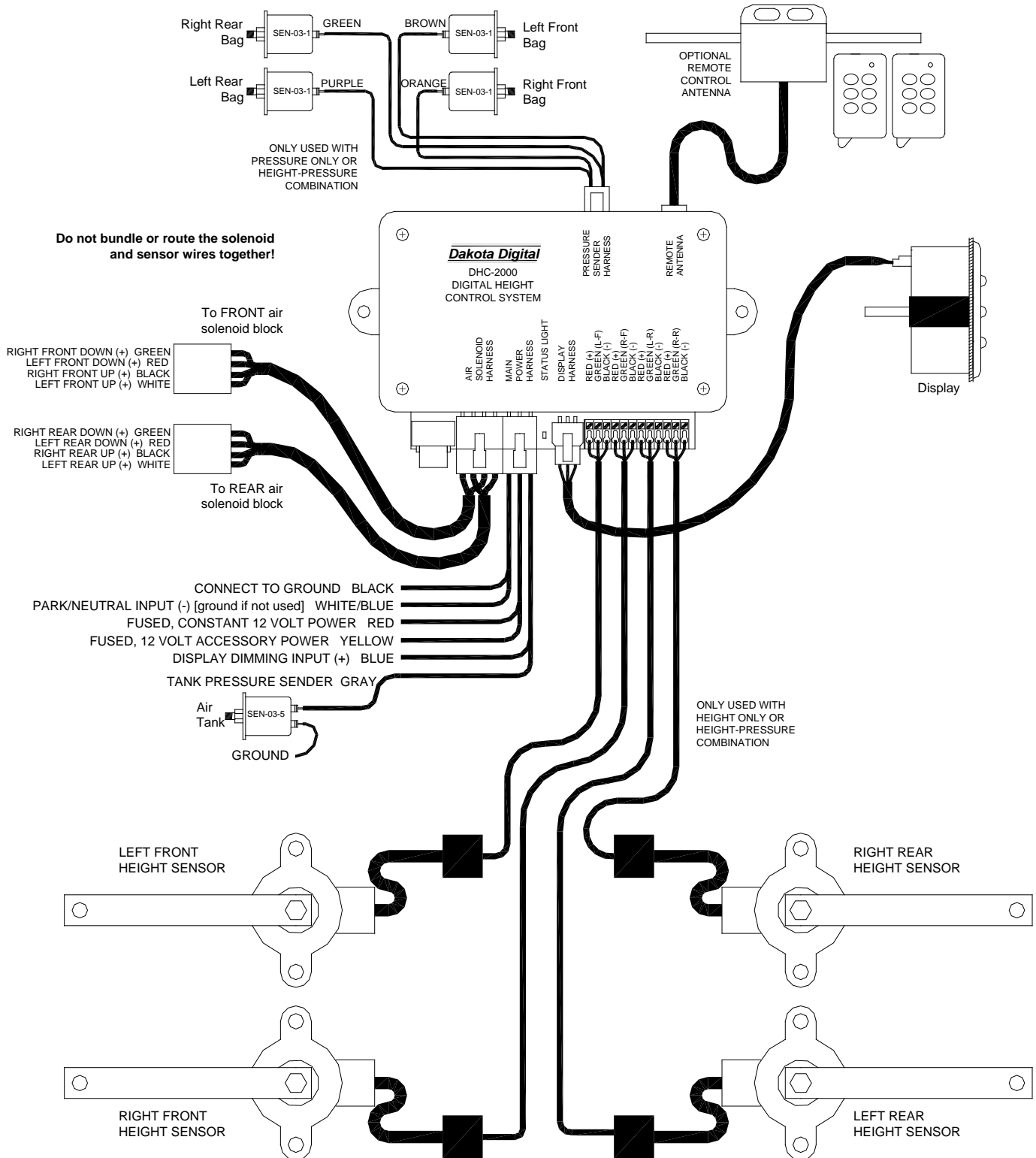


# Dakota Digital

## DHC-2000/DHC-2100 rev. C Digital Height Control System



### Wiring Overview

**IMPORTANT:** Make sure to always disconnect the negative cable from the battery if you are going to be working on or under the vehicle. Failure to do so can result in serious injury if the system is accidentally activated.

## **Introduction**

Congratulations, you have purchased one of the finest AIR-Ride Height Control Systems available. This system can:

- use height sensors, pressure senders, or both height and pressure senders to monitor and control of all four corners of the vehicle with the option of monitoring the tank pressure.
- have three different height presets for automatic up/down control, manual up/down control, and to completely empty the air bags.
- be connected to an ARR-2000 remote transmitter system to allow remote control of the air bag system when the key is off.

## **Sensor Types**

Here are the possible setup configurations for height, pressure, or both height and pressure based systems:

- **Height based only:**  
4 height sensors used and one tank pressure sender.
- **Height based with pressure monitoring:**  
4 height sensors used, 4 bag sensors used, and optionally one tank pressure sender.
- **Pressure based only, 4 bag:**  
4 pressure sensors used and optionally one tank pressure sender.
- **Pressure based only, 3 bag (2 front and 1 rear):**  
3 pressure sensors used and optionally one tank pressure sender.  
The right rear sensor input and relay outputs should not be used.
- **Pressure based only, 2 bag (1 front and 1 rear):**  
2 pressure sensors used and optionally one tank pressure sender.  
The right front and right rear sensor input and relay outputs should not be used.
- **Pressure based only, 2 bag (1 left and 1 right):**  
2 pressure sensors used and optionally one tank pressure sender.  
The left rear and right rear sensor input relay outputs should not be used.

**Note:** The bag pressure senders are 150 psi units and the tank sender is a 400 psi unit.

## **Sensor Installation**

### **Pressure based (or both pressure/height)**

The bag pressure senders need to be mounted in their desired location T'd into appropriate airline or valve; make sure to thread them into a 1/8" NPT grounded fitting otherwise you will need to attach a ground wire to the body of the sender. It is VERY IMPORTANT that the pressure senders ground through the threads or there will be unstable readings, thread sealant should NOT be used unless there is an extra ground wire run to the body of the sender

### **Height based (or both pressure/height):**

Please refer to the manual accompanying the height based sensor.

Once the height sensors are mounted, the cables will need to be routed up to the controller and attached to the labeled terminals. To insert the wires into the terminals, strip about ¼" of insulation from the end of the wire, push the button down on the top of the terminal, insert the wire, and release the button. Pull on the wire gently to make sure it is seated tightly.

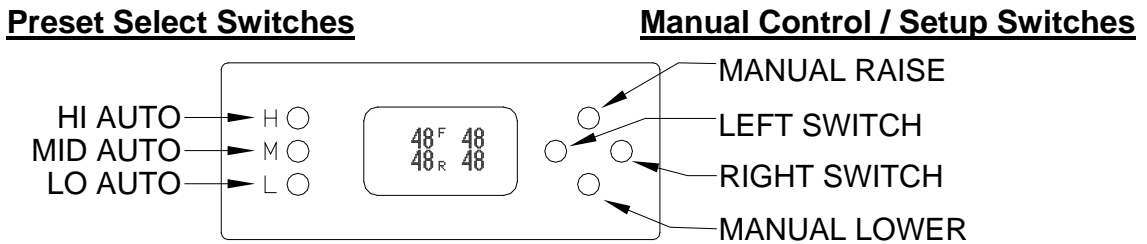
After the wires are attached, the next step is to program the sensor travel into the controller (Page 4). Once that is done, the system is ready to operate.

The controller will automatically determine which mode to operate with depending on which sensors are connected to it. The display will show "EE" for a sensor that is disconnected and "- -" for a sensor that is shorted to ground.

## OPERATION / PROGRAMMING

The auto height control system is active when both the large red power wire and the yellow accessory power wire are on. When the accessory power is off the display and height control will shut down to prevent draining the battery.

The display unit has a 2 line, full character display with three switches on the left side and four switches on the right side. The left side switches select the presets. The right side switches allow manual control, change the display, and are used for setup.



### **Changing the display:**

Pressing the left and right manual control switches at the same time will toggle the display between the height values, the tank pressure, and the corner pressures.

### **Manual control:**

When manual control is active, the set of 4 manual control switches will be lit brightly. The function of these switches are as follows:

- Pressing the left or right switch will change which readings on the display that are highlighted (all four, front two, rear two, or individual)
- Pressing the top switch will raise the corners that are highlighted
- Pressing the bottom switch will lower the corners that are highlighted

The Park/Neutral input (white/blue wire) is used to disable manual down when the vehicle is in gear. This should be connected to a vehicle wire that is grounded when the vehicle is in park or neutral (or to a Dakota Digital GSS-2000 output) where required by law. To disable this feature connect the white/blue wire directly to ground.

If the down switch is pressed and the white/blue wire is not grounded the display will show "LOCK".

### **Auto control:**

The three switches on the left select the three preset heights: High, Medium, and Low. When one of the auto presets are active, that switch will be lit brightly. To select one of the presets, press the corresponding button. To change any of the 3 presets:

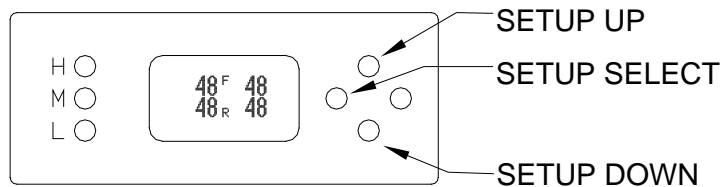
- Manually adjust the height and then press and hold the button for that preset (H, M, or L) for about 4 seconds. The display will display "SET" and store the new setting.

You can also do a bag dump by pressing the H and L switches at the same time for about 4 seconds. This will do a controlled dump to about 3-5% height.

### **Tank Warning:**

The tank pressure has a user adjustable low warning point. If the tank pressure drops below the warning point the display will automatically switch to displaying the tank pressure and the number will flash.

## Manual Control / Setup Switches



### Setup Menus:

To enter the setup mode, press and hold the *Setup Select Switch* while turning the key on. Use the top and bottom *Setup Switches* to scroll up and down through the menus. Use the *Setup Select* switch to select a menu item.

The menus are:

- DONE - exit the setup routine
- REM - Remote system setup (operation mode and transmitter programming)
- SENSR - Sensor programming (adjusting for mechanical arm travel)
- SPEED - Solenoid control speed (to slow down fast air systems)
- WARN - Tank warning point setup
- KEYON - Select operation mode when key is turned on.
- ADVNC - Advanced control setup options.

### Programming sensor travel:

1. Begin with the key off and then hold the left *Setup Select Switch* in while turning the key on. The display will show ("CODE" "AC44B", aluminum control case)( "CODE" "AC48", plastic control case).
2. Release the switch. The display will show "SETUP" "DONE".
3. Press the up or down *Setup Switch* until "SENSR" is displayed.
4. Press and release the left *Setup Select Switch* switch. The display will toggle between "DUMP" "ALL" and "DONE" "PRS M".
5. Use the down *Setup Switch* to dump the air from all of the bags and then press the M switch (medium switch on left side of display)
6. The display will now toggle between showing a number for each of the four corners, "RAISE" "ALL", and "DONE" "PRS M". Use the up *Setup Switch* to raise all bags to their full height. The numbers will begin increasing until they reach 100 and then it will stay at 100. If any bag does not get to 100 then that sensor may need adjustment to increase the arm travel.
7. Press the left *Setup Select Switch* to control front only, the right *Setup Select Switch* to control rear only, or both left and right *Setup Select Switches* together to control all 4 corners.
8. When all four corners are fully raised, press the M switch (medium switch on left side of display)
9. The display will show "SETUP" "DONE". Press the *Setup Select Switch* or turn the key off to exit.

### Changing the key on mode:

When the key is turned on, the system can be set up to go to back to the last mode it was in before the key was turned off, it can always start up in the "M" (medium) auto mode, it can always do an auto raise to the "M" setting and then turn the auto mode off, or it can always start with the auto mode off.

1. Begin with the key off and then hold the left *Setup Select Switch* in while turning the key on. The display will show ("CODE" "AC44B", aluminum control case)( "CODE" "AC48", plastic control case).
2. Release the switch. The display will show "SETUP" "DONE".
3. Press the up or down *Setup Switches* until "KEYON" is displayed.
4. Press and release the switch. The display will show "KEYON" and the current setting ("LAST", "M", "M OFF", or "OFF").
5. Press the up or down *Setup Switches* to change the setting. When the desired setting is shown, press and release the left *Setup Select Switch*.
6. The display will show "SETUP" "DONE". Press the left switch or turn the key off to exit.

## Changing the output speed:

The output speed can be used to slow down systems with large air lines or high pressure tanks so that the system will operate more reliably and stop at the desired height with minimal overshoot.

1. Begin with the key off and then hold the left *Setup Select Switch* in while turning the key on. The display will show ("CODE" "AC44B", aluminum control case) ("CODE" "AC48", plastic control case).
2. Release the switch. The display will show "SETUP" "DONE".
3. Press the up or down *Setup Switch* until "SPEED" is displayed.
4. Press and release the left *Setup Select Switch*. The display will show "FRONT" "SPEED" and the current speed setting.
5. Use the up or down *Setup Switch* to change the speed number from 1 to 15 with 15 being the slowest. When the desired value is shown press and release the left *Setup Select Switch*.
6. The display will now show "REAR" "SPEED" along the current setting for the rear bags.
7. Use the up or down *Setup Switch* to change the value and press and release the left *Setup Select Switch* when done.
8. The display will show "SETUP" "DONE". Press the left *Setup Select Switch* or turn the key off to exit.

## Changing the tank warning point:

The tank warning point can be adjusted from 0 to 248 psi. When the tank pressure drops below this point the tank reading will flash and the display will automatically switch to the tank pressure display. If the tank pressure sender is disconnected this is disabled.

1. Begin with the key off and then hold the left *Setup Select Switch* in while turning the key on. The display will show ("CODE" "AC44B", aluminum control case) ("CODE" "AC48", plastic control case).
2. Release the switch. The display will show "SETUP" "DONE".
3. Press the up or down *Setup Switch* until "WARN" is displayed.
4. Press and release the switch. The display will show "TANK" "WARN" and the current set point.
5. Press the up or down *Setup Switch* to change the value. When the desired value is shown, press and release the left *Setup Select Switch*.
6. The display will show "SETUP" "DONE". Press the left *Setup Select Switch* or turn the key off to exit.

## The advanced control options:

No changes will normally be made to these settings. There are four options under the advanced menu, "ADV TIME", "ADV" "ERR", "ADV F PSI", and "ADV R PSI". The time setting is the minimum time the controller must see a corner out of adjustment before it will try to make a correction. This time delay avoids nuisance corrections during acceleration, deceleration, and cornering. The error setting is the minimum error that a corner must have before it is seen as too low or too high. The F PSI and R PSI menus set limits when both pressure and height sensors are used together. They adjust how far the pressures are allowed to differ from side to side when trying to make corrections for height. Rigid frame vehicles may need to reduce the R PSI setting to keep the rear bags balanced on uneven ground.

## The remote setup options:

The remote system setup requires the ARR-2000 remote system. This system plugs into a connector on the back side of the controller. The remote system is only operational when the key is turned off. The remote system has two modes of operation, one for individual corner control and another that controls the front bags together and the rear bags together (more information on remote system in the ARR-2000 manual).

The REM selection has another set of menus underneath it. They are:

- MODE - select remote operation mode.
- PRGM - program the key-chain transmitters into the system.
- TEST - test the operation of the key-chain transmitters.

Troubleshooting guide.

**IMPORTANT:** *Make sure to always disconnect the negative cable from the battery if you are going to be working on or under the vehicle. Failure to do so can result in serious injury if the system is accidentally activated.*

Problem	Possible cause	Solution
Gauge will not light up (red light is off)	RED wire does not have power.	Connect to a location that has power.
	BLACK wire is not getting a good ground.	Connect ground to a different location.
Gauge will not light up (red light is flashing slowly)	YELLOW wire does not have power.	Connect to a location that has power with the key on.
	The key is not on.	The ignition key must be turned on.
Gauge will not light up (red light is flashing rapidly)	Display harness is unplugged.	Seat connectors in tightly at both ends.
Gauge will not light up (red light is on steady)	Gauge is damaged.	Return gauge for repair. (see instructions)
Gauge lights up, but displays "EE".	The harness to the display is damaged.	Inspect harness, contact factory for additional checks or instructions.
	Sender is not connected to gauge.	Connect wires from gauge to sender terminals.
	Wire between controller and sender is broken.	Test and replace wire.
	Sender is not grounding properly.	PSI senders ground through it's mounting threads. Make sure the threads are clean. <b>Do Not Use Tape or Sealant on Sender Threads.</b>
	Controller is damaged.	Return gauge for repair. (contact factory)
	Sender is damaged.	Return for replacement. (see instructions)
Gauge lights up, but displays "--".	Sender wire is shorted to ground.	Check wire for damaged insulation, replace if necessary.
	Sender is damaged.	Return sender for repair. (contact factory)
Gauge lights up, but does not read correctly.	Loose connection on power wire.	Reconnect wire going to PWR terminal.
	Poor sender ground.	Make sure sender case is getting a solid ground.
	Poor ground connection.	Move ground to different location
	Incorrect sender type.	Make sure sender has been replaced with the correct type.
Display will not dim.	Blue wire is not connected correctly.	Check wiring connections.
	Gauge is damaged.	Return gauge for repair. (contact factory)
Display remains dim at all times.	Blue wire is getting power all of the time.	Connect blue wire to a location that only has power when the headlights are on.
	Battery is very low.	Recharge or replace vehicle battery.
	Gauge is damaged.	Return gauge for repair. (contact factory)
Switches will not operate any of the solenoids.	10A fuse is blown.	Replace fuse.
Compressor will not shut off.	Tank reading incorrect (much higher than actual)	Check that 400PSI sensor (has 2 terminals) used on tank.
	Compressor wired incorrectly	Please consult service manual for the compressor to verify wiring.

## **SERVICE AND REPAIR**

DAKOTA DIGITAL offers complete service and repair of its product line. In addition, technical consultation is available to help you work through any questions or problems you may be having installing one of our products. Please read through the Troubleshooting Guide. There, you will find the solution to most problems. **Should you ever need to send the unit back for repairs, please call our technical support line, (605) 332-6513, to request a Return Merchandise Authorization number.** Package the product in a good quality box along with plenty of packing material. Ship the product by UPS or insured Parcel Post. Be sure to include the RMA number on the package, and include a complete description of the problem with RMA number, your full name and address (street address preferred), and a telephone number where you can be reached during the day. Any returns for warranty work must include a copy of the dated sales receipt from your place of purchase. Send no money. We will bill you after repair.

## **Dakota Digital 24 Month Warranty**

DAKOTA DIGITAL warrants to the ORIGINAL PURCHASER of this product that should it, under normal use and condition, be proven defective in material or workmanship within 24 MONTHS FROM THE DATE OF PURCHASE, such defect(s) will be repaired or replaced at Dakota Digital's option.

This warranty does not cover nor extend to damage to the vehicle's systems, and does not cover removal or reinstallation of the product. This Warranty does not apply to any product or part thereof which in the opinion of the Company has been damaged through alteration, improper installation, mishandling, misuse, neglect, or accident.

This Warranty is in lieu of all other expressed warranties or liabilities. Any implied warranties, including any implied warranty of merchantability, shall be limited to the duration of this written warranty. Any action for breach of any warranty hereunder, including any implied warranty of merchantability, must be brought within a period of 24 months from date of original purchase. No person or representative is authorized to assume, for Dakota Digital, any liability other than expressed herein in connection with the sale of this product.

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