INSTALLATION INSTRUCTIONS

SmartValve
Setup Tool

H00700PK

SmartValve™ | Electronic Height Control
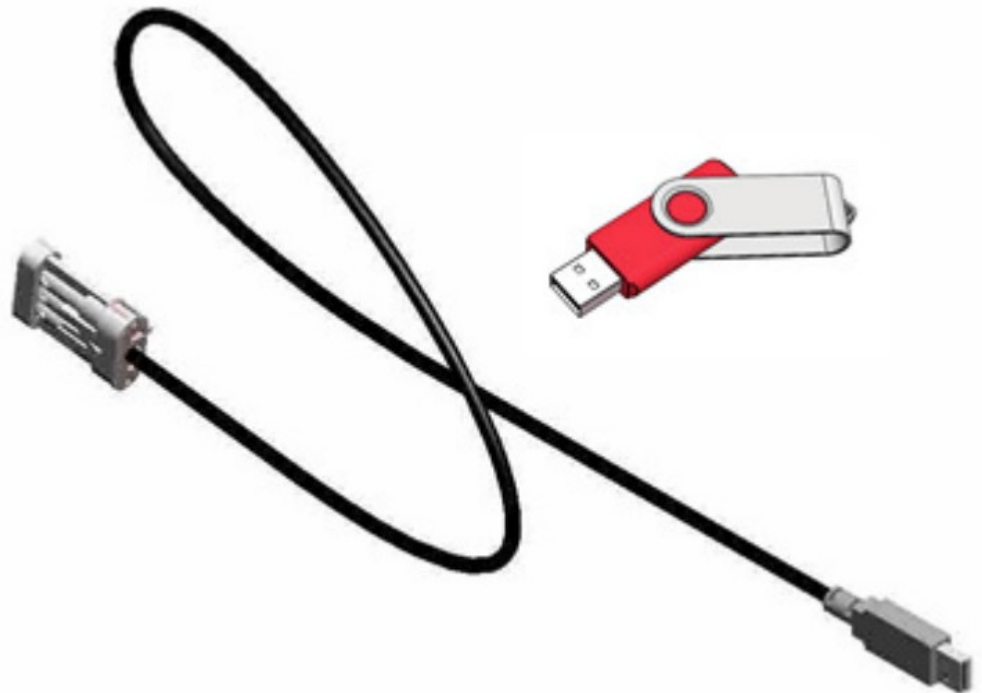
Link®

Step by step installation videos of SmartValve at www.youtube.com.

Search "Installing Link SmartValve".

IMPORTANT: IT IS IMPORTANT THAT THE ENTIRE IN-STALLATION INSTRUCTIONS BE READ THOROUGHLY BEFORE PROCEEDING WITH THE INSTALLATION.

1. INTRODUCTION

Thank you for choosing a Link SmartValve. We want to help you get the best results from this height control system and to operate it safely. This instruction contains information to assist in the installation of the SmartValve. This instruction is intended solely for use with this product.

All information in this instruction is based on the latest information available at the time of printing. Link Manufacturing reserves the right to change its products or manuals at any time without notice.

Damaged components should be returned to Link with a pre-arranged Returned Materials Authorization (RMA) number through the Customer Service Department. The damaged component may then be replaced if in compliance with warranty conditions.

2. SAFETY SYMBOLS, TORQUE SYMBOL, and NOTES

⚠ DANGER	**DANGER indicates a hazardous situation which if not avoided, will result in death or serious injury.**
⚠ WARNING	**WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.**
⚠ CAUTION	**CAUTION indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.**
NOTICE	*NOTICE* **indicates a potentially hazardous situation which, if not avoided, may result in property damage.**
🔧 TORQUE	*TORQUE* **indicates named fasteners are to be tightened to a specified torque value.**
NOTE:	**A Note provides information or suggestions that help you correctly perform a task.**

3. SAFE WORKING PRACTICES

⚠ CAUTION

When handling parts, wear appropriate gloves, eye-glasses, ear protection, and other safety equipment.

4. EQUIPMENT REQUIRED

1. Portable computer with USB port running Windows XP operating system or later.
2. Link SmartValve software pre-installed on the computer (included with H00700PK kit)
3. The H18289 USB programming cable (included with the H00700PK kit)
4. Measuring tool to verify vehicle ride height

5. CONNECTING AND STARTING PROGRAM

5.1
Position the portable computer on the same side of the vehicle as the SmartValve. Attach the USB programming cable connector to an empty USB port on the computer.
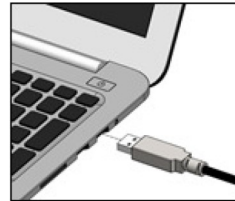

Figure 1.
Cable Connection

5.2
Locate the three pin connector on the Hadley harness near to the SmartValve.
NOTE: remove the environmental cap before proceeding

Figure 2.
Locate 3 Pin connector

5.3 Plug the other end of the USB programming cable to the three pin connector;
NOTE: The environmental connector must be replaced when finished with the USB cable.

Figure 3.
Turn on power

5.4
Turn on the vehicle power: The vehicle's main battery switch and the ignition switch should be turned to the "on" position. When the ignition is turned "on", the SmartValve LED indicator should show green for about 3 seconds and then go out.

5.5

The tractor must be parked on a smooth level surface to properly adjust the suspension heights.

NOTICE

The vehicle must provide > 90 PSI air pressure during the adjustment process. Start the engine if necessary, to maintain the minimum air pressure.

Figure 4.
Link SmartValve
desktop icon

5.6

Turn the portable computer "on", locate the Link SmartValve icon on the screen desktop start the application or find the Link program folder and select the "SmartValve Setup Tool" to begin the application. The SmartValve Setup Tool program is accessible in the Start menu on Windows 7 or the Apps page on Window 8.
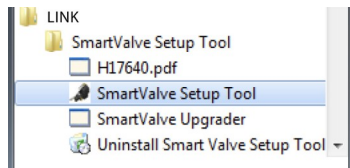
Figure 5.
SmartValve Setup
Tool folder location

5.7

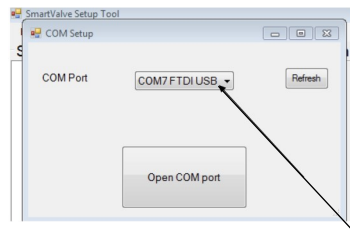The COM Setup window should appear on the screen:

Figure 6.
COM Setup Window

5.8

The Com Port window should show "COMxx FTDI USB"(xx is the port number); if necessary, select the refresh button or down arrow symbol to locate the FTDI USB cable, then select the "Open Com port" button.
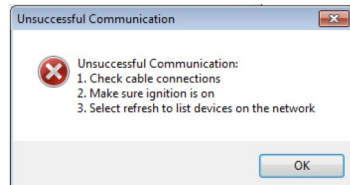
Figure 7.

5.9

If the "FTDI USB" port does not appear as a selection, or the "Open COM port" button does not respond, check the cable connections and ignition switch. If necessary, restart the computer and restart the application.

5.10

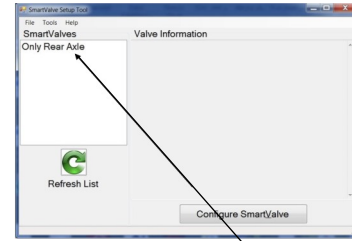The "SmartValve Setup Tool" window should appear on the screen as shown in figure 8.

Figure 8.

5.11

Select the SmartValve listed in the white box (press the refresh list if necessary) and then press "Enter" or "Configure SmartValve"
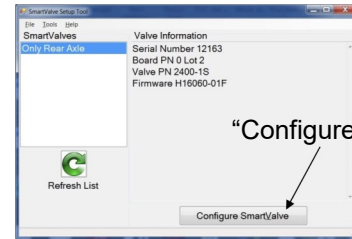
Figure 9.

"Configure SmartValve Button"

The "Configure SmartValve" window will appear on your desktop.

5.12

NOTICE **NOTE:** The vehicle should be set to the normal ride height position (dump switch in normal position). The SmartValve dash LED should not be flashing red or green.

6. SETTING THE LEVER ROTATION

6.1

Viewing the SmartValve from the lever side, determine the direction that the lever rotates as the vehicle chassis is raising.
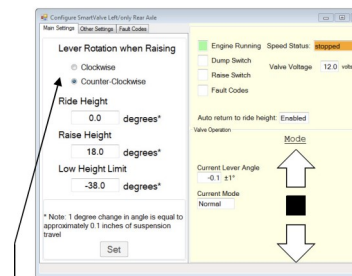
Figure 10.

6.2

If the lever rotates "Clockwise" as the chassis rises, then select the "Clockwise" button.

6.3

If the lever rotates "Counter-Clockwise" as the chassis rises, then select the "Counter-Clockwise" button. Press the "Set" button to store the valve rotation information.

6.4

NOTES on the Set button operation:
- The Set button becomes disabled (grayed out) when there are no changes to be made to the valve
- When the save is successful, "Update completed" appears in green in the lower left corner of the window (otherwise an error box appears warning that the transfer couldn't be completed).
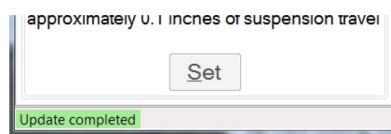

Figure 10.

7. SETTING RIDE HEIGHT

7.1

NOTE: The ride height of the vehicle must be set to the vehicle manufacturer's recommended settings before continuing to the other adjustments. The ride height setting and measuring location are available from the dealer.

NOTE: The ride height adjustment range is -10 degrees to +10 degrees. If the SmartValve requires more than a 5 degree change in ride height during this process, the SmartValve should be rotated on the mount bracket to more accurately center the valve.
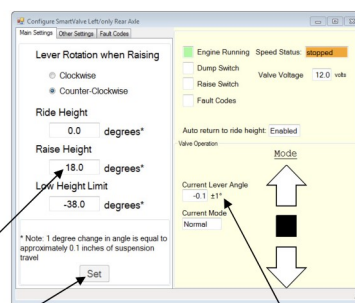

Figure 11.

"Enter Ride Height Angle Here"

"Set Button"

"Current Lever Angle"

7.2

Setting the standard ride height

To increase the ride height: enter a larger angle value into the ride height box. A 1 degree angle generally changes the frame height between 0.1 and 0.2 inches.
To decrease the ride height: enter a smaller angle value (for example: -1.5) into the ride height box. A 1 degree angle generally changes the frame height between 0.1 and 0.2 inches.

Press the "Set" button to store the new ride height value.

This value may be adjusted as necessary until the manufacturer's ride height setting is achieved.

7.3

NOTE: If the tractor frame lowers when a larger or positive angle is entered, or the tractor frame rises when a smaller or negative angle is entered, the lever rotation might be reversed. Verify that the lever rotation setting is correct. Refer to the section "Setting the Lever Rotation of the SmartValve" above.

7.4

When the ride height adjustment has been completed, re-measure to verify the ride height setting. When the desired ride height is set, proceed to the "Raise Height" adjustment.

8. SETTING RAISED RIDE HEIGHT

Figure 12.

"Raise Height" Adjustment

"Set" Button

"Current Lever Angle"

8.1

NOTE: The CAN bus wires must be properly connected to use the "Raise Height" feature.
Press the "Raise" button (located in the cab) for about 1 second. The green LED should begin to blink.

8.2

NOTE: If the "Raise" button is pressed again, the suspension will return to standard ride height.

NOTE: The largest angle or maximum fifth wheel height that can be achieved is limited by the shock absorber travel.

8.3

When the "Current Lever Angle" (right lower box) stops increasing, this is the largest angle that is possible on this vehicle. The raise height entry is typically reduced from 2 to 4 degrees below this value. For example, if the "Current Lever Angle" stops increasing at 19 degrees, enter 15 to 17 degrees in the "Raise Height" box.
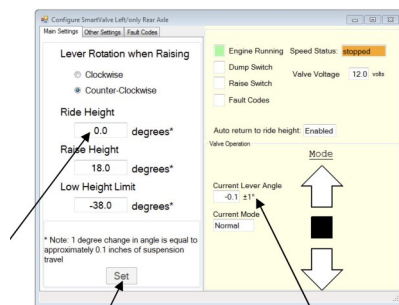
8.4

To set the raised height, enter a positive angle value (generally between 12 to 30 degrees). A 1 degree angle typically changes the frame height between 0.1 and 0.2 inches.

Press the "Set" button to store this value into the SmartValve.

8.5

When the raise height setting has been set, re-check to verify that all tires are in contact with the ground and the shocks are not fully extended. The shocks should have a minimum of ½" of travel remaining. If necessary, repeat the adjustment.

8.6

When the proper "Raise Height" setting is set, proceed to the "Low Height Limit" adjustment.

9. SETTING THE LOW HEIGHT LIMIT

Figure 13.

"Enter low height limit here"

"Current Lever Angle"

9.1

Switch the suspension "dump switch" (located in the cab) to the "dump" or "exhaust" position. The green LED should begin to blink and the suspension will begin to lower.

9.2

When the suspension is fully lowered, read the "Current Lever Angle" in the lower right-hand box. Enter this value into the "Low Height Limit" box. For example, if the "Current Lever Angle" is -22 degrees, then enter -22 into the "Low Height Limit" box. The lowered height limit is always negative.

Press the "Set" button to store this value into the SmartValve.

10. VERIFY AND ADJUST SETTINGS

10.1

Verify the raised, lowered and ride height settings and re-adjust if necessary.

11. OTHER SETTINGS

11.1

Click on the "Other Settings" tab to choose options other than the basic heights. Currently, the only setting is the "Enable auto return to ride height" feature.

12. ENABLE AUTO RETURN TO RIDE HEIGHT

12.1

Click the check box to enable this feature. The corresponding check box in the right half of the window will change to match this setting if the valve accepts this.
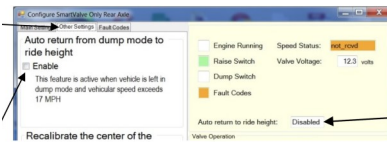
"Other Settings" Tab

Figure 14.

Status shown here

"Click to enable/disable"

This option will only be settable if the valve firmware has this feature. For standard retrofit valves this is H16060-01 Revision E or later. If the valve does not have this feature, the check box and text will be greyed out.

As described in the valve installation manual, enabling this option will return to normal height if moving while dumped. It also will prevent dumping unless moving below 10 MPH or stopped.

12.2

Recalibrate the Center of the Lever Angle (This Feature is Rarely Used. Only Use As Directed by a Link Service Technician)
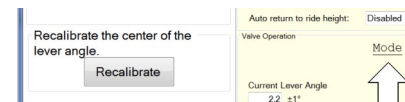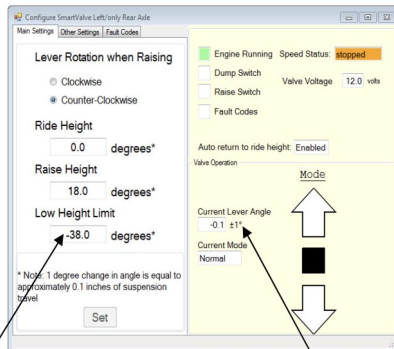
Figure 15

13. STATUS AND DIAGNOSTIC INFORMATION

13.1

The boxes on the upper right corner of the configure screen, indicate the status of the SmartValve inputs to help verify proper wiring and signals. The "Engine Running" and "Speed Status" indicators indicate if the CAN bus information is received by the SmartValve:

The Engine Running light box should be green if the engine is running based on the CAN bus RPM signal. The Speed Status box will indicate "stopped" if the Speed signal is present. If it shows "not_rcvd", no vehicle speed is present on the CAN bus and a different bus should be connected.

13.2

Whenever the raise switch is pressed, the "Raise Switch" indicator box should turn green. Since the raise button is momentary, this indicator will only show green while the button is pressed.

13.3

The "Dump Switch" indicator will show green whenever the switch is in the dump or exhaust position. Since this is derived from the dump line pressure, make sure adequate air pressure is present. Note: The dump switch overrides the raised mode.

13.4

If there is an active fault indication, the "Fault Codes" box is orange. Click on the "Fault Codes" tab in the upper left corner to see the active faults. Clicking on one these codes highlights it and displays a description of the fault. The blink code explanations in the SmartValve manual can also be helpful.
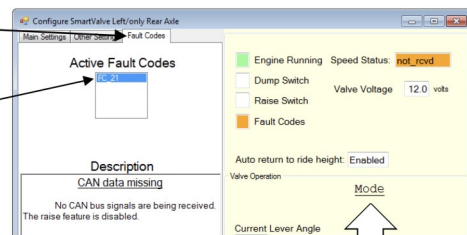
"Fault Codes" tab

Select Fault Code

Figure 16.

13.5

The voltage displayed represents the voltage at the valve. This voltage will normally be as much as 2 volts lower than the vehicle battery voltage. Voltage readings below 9 volts while the battery voltage is above 13 volts may indicate a problem with the ground or other wiring.

The "Auto return to ride height" status is also shown in this area.

The "Mode" arrows in the lower right hand area of the box indicate the frame direction of travel. If the vehicle is at selected height, the square box between the arrows will be filled.

The "Current Mode" box indicates if the desired height is Lowered, Normal, or High.

14. Pre-Existing SmartVavle Firmware

Table 1

Firmware	Application	SV PART #'S
H16060-01E	Retrofit SmartValve, 6x4 Driveline, Factory Installed Dump Function. Single Momentary Push Button Raise Control	H02410RE thru RE
H16060-08D	Retrofit SmartValve, 6x4 Driveline, 2 Momentary Push Buttons to Control Raise and Lower Function	H02410RF thru RK
H16060-16D	Retrofit SmartValve, 6x2 Driveline	H02410RN thru RR
H16060-19A	OEM Installed SmartValve, Freightliner	H02410LG1
H16056A	OEM Installed SmartValve, Peterbilt	H02410RT

15. Upgrading the SmartValve Firmware

15.1

If it becomes necessary to upgrade the firmware in the SmartValve, this version of the SmartValve Setup Tool can be used to upload the new firmware.

16. Instructions for Upgrading the Firmware

16.1

NOTE: The SmartValve should be listed in the main "SmartValve Setup Tool" window to load the new firmware. If it is not, please skip ahead to the next section "Alternative Instructions for Upgrading the SmartValve Firmware".

16.2

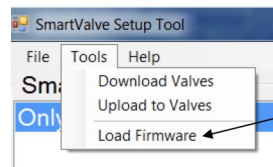Navigate to the "SmartValve Setup Tool" window and select "Load Firmware" in the "Tools" menu.

Figure 17.

"Load Firmware" Location

16.3

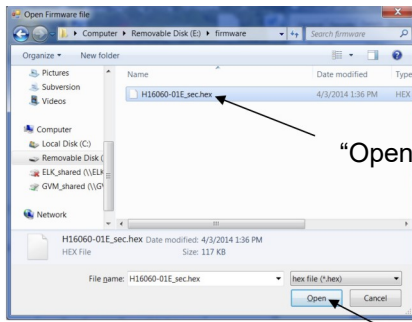In the "Open Firmware file" dialog box find and select the firmware hex file. Then click the "Open" button.

Figure 18.

"Open Firmware File"

"Open" button

16.4

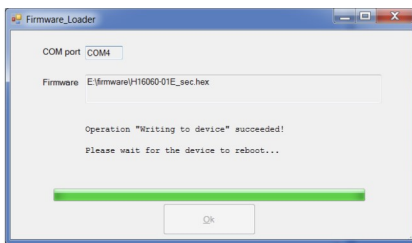Wait for the "Firmware Loader" progress window to close:

Figure 19.

16.5

If the "Firmware Loader" progress window does not close and displays the message "Operation 'Writing to device' failed", then press "Ok" and follow the instructions in the next section "Alternative Instructions for Upgrading the SmartValve Firmware".
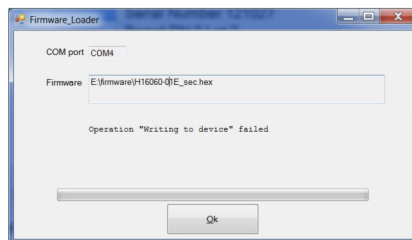

Figure 20.

17. Instructions for Upgrading the Firmware

17.1

NOTE: If the SmartValve is not listed on the main "SmartValve Setup Tool" window, use the following instructions:
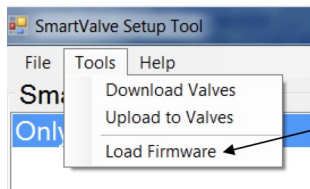

Figure 21.

"Load Firmware" Location

1. Turn off Ignition inside the Truck cab.
2. Navigate to the "SmartValve Setup Tool" window and select "Load Firmware" in the "Tools" menu.

3. A dialog box may appear that displays the message "No devices detected on network, try to load anyway?" Click the "Yes" button.

4. In the "Open Firmware file" dialog box find and select the firmware hex file. Then click the

Figure 21.

"Yes" Button

"Open" button.

5. Turn on the ignition inside the Truck cab. Perform this step within 3-5 seconds of finishing the last step.
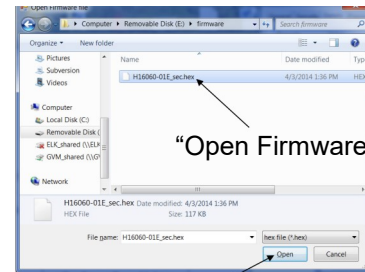

Figure 22.

"Open Firmware File"

"Open" Button
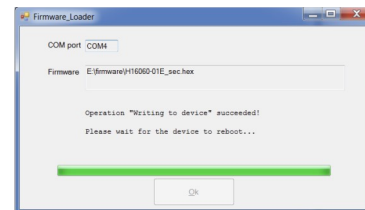
6. Wait for the progress window to close:

Figure 23.

18. Closing the Program

18.1

Close the configure window by selecting the "X" in the upper right edge of the window.
Close the program by selecting the "X" in the upper right edge of the SmartValve Setup Tool window.

18.2

Press the "yes" button to exit the program.
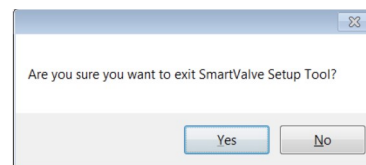Remember to replace the environmental cap on the Link harness when done.

Figure 24.

18. Revision Table

REV.	ECR	DESCRIPTION	ENG	REV BY	DATE
A	7672	PRELIMINARY ONLY	KW	TVG	06/24/2019
B	ECO-10186	REFORMAT TO LINK STANDARD	DEW	DEW	12/03/2021