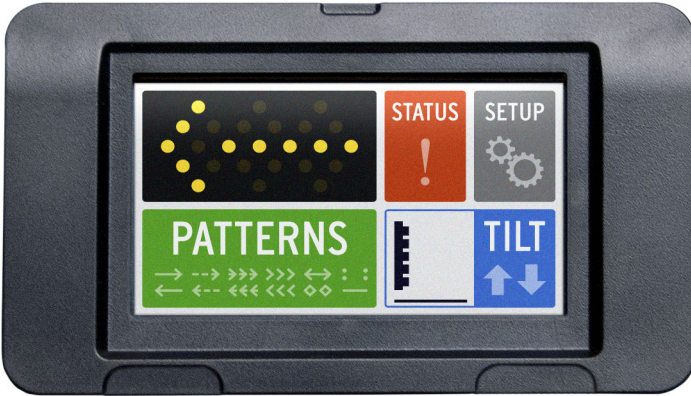


Touchscreen Controller for Wanco® Wireless Arrow Boards



User's Manual
February 2026

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1 Introduction

1.1 Read before using

For your safety and protection from injury, carefully read, understand, and observe all instructions in this manual. If you have questions regarding this product, please contact Wanco® service or sales (see Section 1.3, page 2).

Keep this manual with the wireless controller. Additional and replacement manuals are available from Wanco.

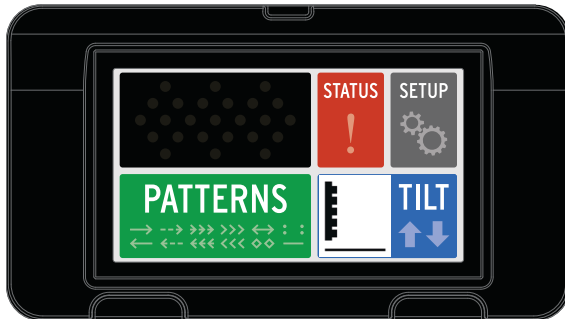
1.2 About this manual

This manual describes how to use the wireless touchscreen controller for Wanco® Wireless Arrow Boards (Figure 1-1).

This manual is organized in sections that match the controller screens and buttons, in the same order in which they appear on the screen.

This manual does not include any information about installing hardware. For hardware installation, wiring, and additional operating information, see the arrow board owner's manual.

Figure 1-1. Touchscreen controller



1.3 Where to obtain service

IMPORTANT!

Electronics are serviceable only by the factory.

Do not open the controller or the access panel on the back of the arrow board unless instructed to do so by an authorized Wanco service technician. Failure to comply may void the warranty.

Before calling for service, please have the controller serial number ready. The serial number can be found on the back of the controller.

Issues are sometimes due to the arrow board in addition to or instead of the controller. Therefore, it is useful to have the arrow board identification (ID) number ready. The ID number can be found on the bottom of the arrow board (see Figure 1-2).

Contact our service department using the following information:

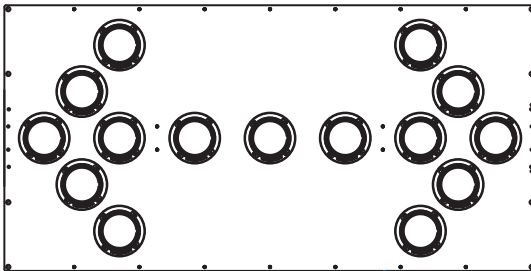
Wanco Inc.

5870 Tennyson Street
Arvada, Colorado 80003

303-427-5700
fax 303-427-5725

www.wanco.com
info@wanco.com

Figure 1-2. Identification number location




ID label on bottom of frame near power cable

2 Safety Information

2.1 Safety statements in this manual

This manual contains the following types of callouts, which must be followed to reduce the possibility of personal injury, damage to the equipment, or improper service. Each alert has a specific meaning, as described below:

 The safety alert symbol alerts you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER

Indicates an imminently hazardous situation which, if not avoided, **WILL** result in death or serious injury.

WARNING

Indicates an imminently hazardous situation which, if not avoided, **COULD** result in death or serious injury.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

CAUTION

Used without the safety alert symbol, indicates a potentially hazardous situation which, if not avoided, could result in property damage.

IMPORTANT!

Indicates information that is of particular importance when transporting, operating, or servicing the equipment.

2.2

General safety



⚠ WARNING

Improper use of equipment could cause serious injury or death.

Prior to using this product, carefully read, understand, and observe all instructions in this manual.



⚠ WARNING

Improper display could cause a traffic accident resulting in severe injury or death.

Visually inspect arrow board to ensure correct pattern is displayed.

CAUTION

Improper use can cause damage to the touchscreen, possibly resulting in a failure to operate.

To prevent damage when using the touchscreen controller:

- Ensure hands are clean, or wear clean finger cots or gloves.
- Hold the controller outside the touchscreen display.
- Do not handle the controller by its cable.
- Do not press any heavy, hard, or sharp object to the screen.
- Do not apply excessive strain to the controller or its cable.
- Do not drop the controller.

2.3

Service safety

IMPORTANT!

Electronics are serviceable only by the factory.

Do not open the controller or the access panel on the back of the arrow board unless instructed to do so by an authorized Wanco service technician. Failure to comply may void the warranty.

For assistance, see Section 1.3, "Where to obtain service," page 2.

2.4

FCC statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

3 Before you begin

3.1 Installation

The controller is located inside the vehicle cab. Instructions for installing the controller are included in the arrow board owner's manual.

3.2 Pairing

The wireless arrow board controller is a smart controller that “knows” the arrow board it is paired with, and shows you only the functions available for that board.

Before the controller will work with a wireless arrow board, the controller and arrow board must be “paired.” If they are not paired, the controller will not be able to wirelessly control the arrow board.

When a wireless arrow board is shipped with a controller from the factory, the controller and arrow board are paired and ready to use.

If the controller and arrow board are not paired, you must first pair them. Pairing instructions are provided in Step 4, page 11.

IMPORTANT!

If the arrow board has a wired controller, it can also pair and interact with a wireless controller. Commands from the wired controller will override commands from the wireless controller.

3.3 Touchscreen behavior

3.3.1 Power on/off

The button on the bottom of the controller is an on/off button. To turn the controller on or off, press and hold the bottom button for three seconds.

The controller also has a sleep mode, in which the controller is on and ready to be used, but its touchscreen display is blank. To put the wireless controller into sleep mode, press and release (do not hold) the on/off button. To exit sleep mode, touch the touchscreen or press and release the on/off button.

If touching the screen does not activate it, then the controller is off. To turn it on, press and hold the bottom button for three seconds.

3.3.2 Buttons

3.3.2.1 All buttons

Except on the Main screen, all touchscreen “buttons” behave as follows:



Touch a button and it turns black, to indicate that you are selecting it.



After you lift your finger, the button image is yellow, to indicate it is the currently chosen option.



Nothing happens when you touch a light gray button. A light gray button is inactive and unavailable.



Touch the **MAIN** button to return to the Main screen.



Touch the **BACK** button to go back to the previous screen.

3.3.2.2

Inactive buttons

A button can be inactive for several reasons:

- The controller is not paired with an arrow board. Pairing instructions are provided in Step 4, page 11.
- The feature is not available with the current system configuration. For example, the **TILT** button on the main screen is inactive when the configured tilt-frame is **NONE**.
- The feature has been disabled. For example, an arrow-pattern button may be inactive because the system has been configured to prevent the pattern from appearing on the arrow board.
- A system error has occurred. To check for alarm messages, see Section 5.2.2, page 21.

3.3.2.3

Gloves

The touchscreen is pressure-sensitive and will work with some gloves, but not all.

3.3.3

Touchscreen calibration

If you press a button and nothing happens, or a different button is selected, you might need to calibrate the touchscreen. For calibration instructions, see Section 5.4.1.3, page 29.

4 Quick Setup

Step 1 Install arrow board

If not already installed, install the Wanco Wireless Arrow Board according to the instructions provided in the arrow board owner's manual.

Step 2 Install controller

If not already installed, install the controller inside truck cab, including mounting bracket and connecting to the vehicle's power. Follow the installation instructions in the arrow board owner's manual.

Step 3 Apply power

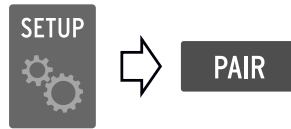
Ensure power is on for both the arrow board and the controller, then press and hold the on/off button for three seconds to turn on the controller.

Step 4 Pair arrow board and controller

When shipped from the factory, the wireless controller and arrow board are paired. Skip this step unless pairing is required.

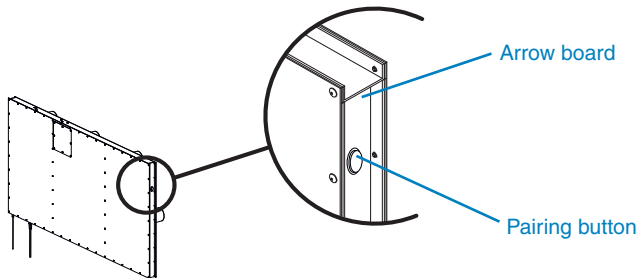
Follow these steps to pair the wireless controller and arrow board:

- a. On the touchscreen, press the **SETUP** button to view the **PAIR** button.



- b. Press and hold the **PAIR** button until it starts blinking. It will remain in this state for up to 10 minutes. Locate the pairing button on the side of the arrow board (see Figure 4-1).

Figure 4-1. Arrow board pairing button



- c. Press and hold the arrow board pairing button for five seconds until all of the lights on the arrow board start flashing.
- d. When pairing is successful, the **PAIR** button changes to **PAIRED**.
- e. Press the **BACK** button to return to the Setup screen, or the **MAIN** button to return to the Main screen.
- f. If pairing is unsuccessful, try again or contact the Wanco service department, (see Section 1.3, page 2).

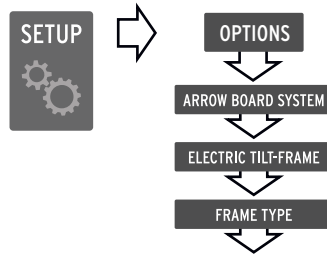
PAIRED

If you wish to pair the wireless controller to an older arrow board, contact the Wanco service department (see Section 1.3, page 2).

Step 5

Configure power-tilt frame

Use the touchscreen to verify the controller detects the correct power-tilt-frame type. Press:



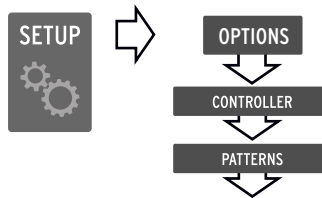
- **90° TILT FRAME** is highlighted if the arrow board has a factory-installed 90° tilt frame.
- **180° TILT FRAME** is highlighted if the arrow board has a factory-installed 180° tilt frame.
- **NONE** is highlighted if you have a third-party, manual-tilt, or fixed frame.

For more information on frame types, see Section 5.4.2.1, page 31.

Step 6

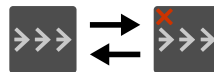
Disable display patterns (optional)

Disable one or more display patterns, if desired. Press:



Then press the buttons for the patterns you want to disable.

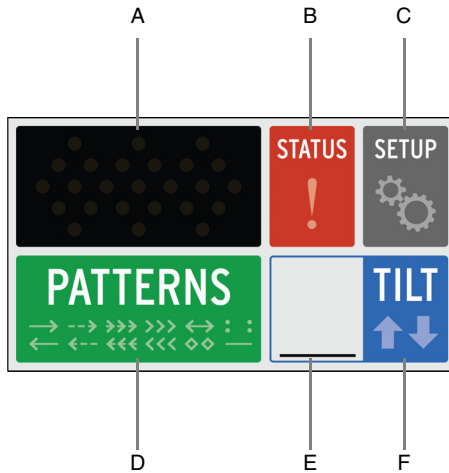
When a pattern button is disabled, it has a red "X" in the upper-left corner. To re-enable it, press it again.



5 Using the Touchscreen

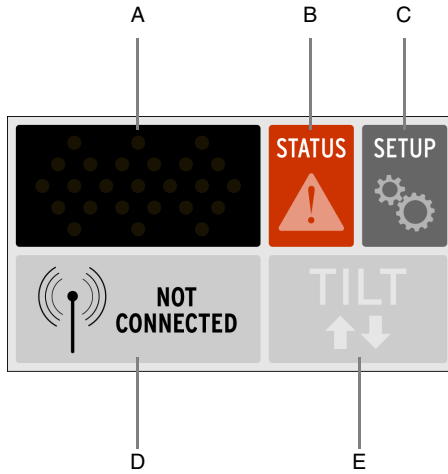
5.1 Main screen

Figure 5-1. Main screen, paired



A – Pattern display (see Section 5.1.1, page 18)	Shows the pattern on the arrow board. If no pattern is shown, then the arrow board is “blanked.”
B – STATUS button and indicator (see Section 5.1.2, page 18)	View system status. If any alarms are active, alert symbol flashes on and off.
C – SETUP button (see Section 5.1.3, page 19)	Pair the controller and arrow board. Individually configure settings for the controller and arrow board. Also used for maintenance and diagnostics.
D – PATTERNS selector button (see Section 5.1.4, page 19)	Select a pattern for the arrow board to show.
E – Tilt-frame symbol (see Section 5.1.5, page 19)	If the power-tilt-frame position is known, the symbol indicates whether the arrow board is up or down. If the position is not known, only the horizontal bar is shown.
F – TILT button (see Section 5.1.5, page 19)	Control power-tilt operation.

Figure 5-2. Main screen, not paired



A – Pattern display
(see Section 5.1.1, page 18)

The pattern display is blank until the controller is paired with an arrow board.

B – **STATUS** button and alert symbol
(see Section 5.1.2, page 18)

View system information and active alarms. Alert symbol flashes on and off if one or more alarms are active.

C – **SETUP** button
(see Section 5.1.3, page 19)

Configure settings for the controller.

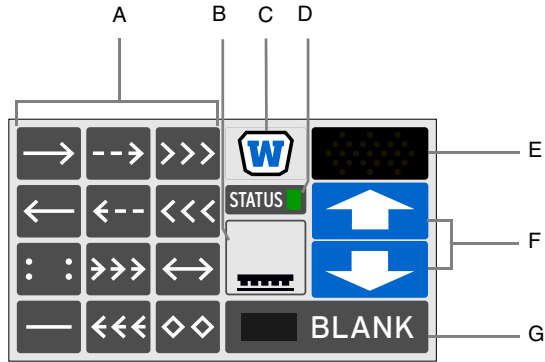
D – “Not Connected” message
(see Section 6.2.1, page 38)

The controller has either lost its pairing to the arrow board, or has not been paired. Full message reads, “Not connected. Check arrow board power”.

E – **TILT** button
(see Section 5.1.5, page 19)

Inactive, cannot be selected.

Figure 5-3. Main screen, single-screen layout



A – Pattern selection buttons (see Section 5.5, page 34)	Select a pattern for the arrow board to show.
B – Tilt-frame symbol (see Section 5.6, page 35)	If the power-tilt-frame position is known, the symbol indicates whether the arrow board is up or down. If the position is not known, only the horizontal bar is shown.
C – SETUP button (see Section 5.1.3, page 19)	Pair the controller and arrow board. Individually configure settings for the controller and arrow board. Also used for maintenance and diagnostics.
D – STATUS button and indicator (see Section 5.1.2, page 18)	View system status. If alarms are active, indicator is yellow (for medium-level alarms) or red (for critical alarms).
E – Pattern display (see Section 5.1.1, page 18)	Shows the selected pattern. If no pattern is shown, then the arrow board is “blanked.”
F – TILT UP/DOWN buttons (see Section 5.6, page 35)	Control power-tilt operation. <ul style="list-style-type: none"> ■ For auto-stop, tap an arrow button to raise and lower the arrow board. ■ For manual stop, press and hold an arrow button to raise or lower the tilt-frame. When you stop pressing the button, the tilt-frame stops moving.
G – BLANK button	Blank the arrow board display so that all its lights are off and it does not show any pattern.

Note: This alternate interface is an option intended for locales that mandate pattern selection and tilt-frame control be available continuously on the Main screen. Wanco recommends using the standard interface unless the alternate interface is required. All status and setup functions are the same regardless of which interface you use. To choose the single-screen interface, see Section 5.4.1, page 27.

5.1.1 Pattern display

The pattern display shows the selected pattern while the controller and arrow board are paired. If the arrow board was blanked, the pattern display is blank.

The flashing of the pattern display mimics the flashing of the arrow board. However, if the arrow board experiences a failure (e.g., if a light is broken), the pattern display on the controller will not reflect the failure. You should always visually inspect the arrow board after selecting a pattern.

If the controller does not have a connection to the arrow board, the pattern display is inactive. (To troubleshoot connection problems, see Section 6.2.1, page 38.)

- To select a pattern, see Section 5.1.4.
- To select a pattern using the single-screen interface (page 17), press a pattern button on the Main screen. For more information about patterns, see Section 5.5, page 34.
- For examples of all available patterns, see Appendix B, page 49.

5.1.2 Status

Press the **STATUS** button to view the controller Status screen (see Section 5.2, page 20).

The **STATUS** button has two states:



The default state indicates there are no alarms or errors.



If the system detects a problem, the alert symbol flashes on and off.

The **STATUS** button on the single-screen interface (page 17) has a colored indicator that represents system status: green for good, yellow for a medium-level alarm, and red for a critical alarm.

Press the **STATUS** button to view alarms. To learn about alarms, see Section 5.2.2, page 21.

5.1.3

Setup

Press the **SETUP** button to pair the controller and arrow board, configure various settings for the controller and arrow board, and perform maintenance or troubleshooting procedures (see Section 5.3, page 24).

5.1.4

Pattern selection

Press the **PATTERNS** button to select a display pattern for the arrow board (see Section 5.5, page 34).

If an error message appears in place of the **PATTERNS** button, see Section 5.2.2, "Alarms," page 21.

5.1.5

Power-tilt

If the arrow board is equipped with a power-tilt frame and the controller is properly configured, you can raise and lower the arrow board using the Tilt screen on the controller. Press the **TILT** button to view the Tilt screen (see Section 5.6, page 35). The tilt button has five states:



The controller is configured for a power-tilt frame, but does not know the frame position.



The controller is configured for a power-tilt frame, and knows the frame is all the way down.



The controller is configured for a factory 90-degree or 180-degree power-tilt frame, and knows the frame is all the way up.

The tilt screen is not able to determine which way a 180-degree board is facing when the frame is up.

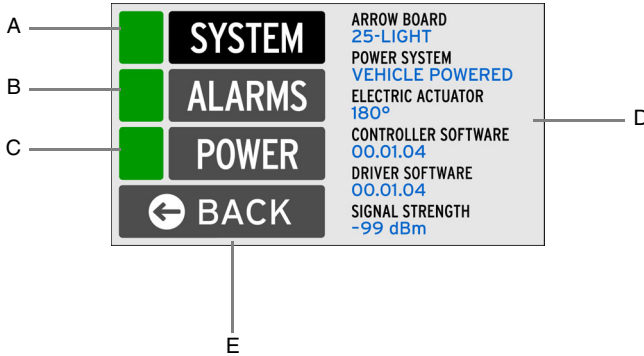


The controller is not configured for a power-tilt frame (the frame selection is NONE), or the controller is not paired with an arrow board.

- The arrow board should be down (horizontal) when it is not being used.
- To configure the tilt-frame type, see Section 5.4.2.1, page 31.

5.2 Status screen

Figure 5-4. Status screen



A – SYSTEM button and indicator (see Section 5.2.1, page 21)	View system information. If system indicator is green, the system is functioning properly. If system indicator is red, the controller is not paired with an arrow board.
B – ALARMS button and indicator (see Section 5.2.2, page 21)	View alarm messages. If alarm indicator is green, there are no active alarms. If yellow, at least one medium-level alarm is active. If red, at least one critical alarm is active.
C – POWER button and indicator (see Section 5.2.3, page 22)	View voltage and current level. If voltage indicator is green, voltage level is good. If yellow, voltage level is low. If red, voltage level is critical.
D – System information	When you arrive at the Status screen, the system information appears by default. See Section 5.2.1. <ul style="list-style-type: none"> ■ When you press the ALARMS button, this information is replaced by a list of alarms (see Section 5.2.2). ■ When you press the POWER button, this information is replaced by a voltage-level indicator (see Section 5.2.3, page 22). ■ When you press the SYSTEM button, this information is replaced by the list of system information (see Section 5.2.1).
E – BACK button	Go back to the previous screen (in this case, the Main screen—see Section 5.1, page 15).

5.2.1

System

Press the **SYSTEM** button to view the following information:

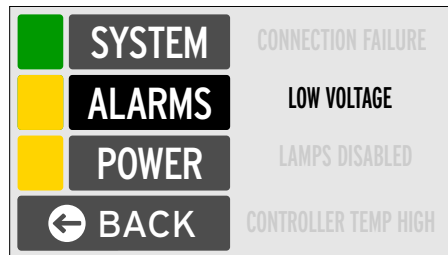
ARROW BOARD	The number of lights on the paired arrow board: 15 or 25
POWER SYSTEM	The arrow board power source: vehicle electrical system or battery with solar charging
ELECTRIC ACTUATOR	The type of power-tilt frame installed on the paired arrow board: 90° , 180° , or NONE
CONTROLLER SOFTWARE	The version of software on the controller, (a service technician may ask for this)
DRIVER SOFTWARE	The version of software on the paired arrow board, (a service technician may ask for this)
SIGNAL STRENGTH	Wireless signal strength between the arrow board and controller, measured in decibel-milliwatts (dBm): The closer the reading is to 0 dBm, the stronger the signal strength. Any signal below -110 dBm is considered poor.

5.2.2

Alarms

Press the **ALARMS** button to view a list of all alarms. Active alarms are shown in black, inactive alarms in light gray (see Figure 5-5, page 21).

Figure 5-5. Alarm screen showing low voltage



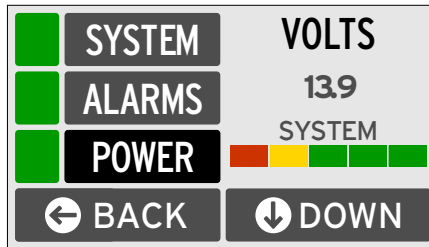
There are two levels of alarms: critical (red) and medium-level (yellow).

CONTROLLER TEMP HIGH (CRITICAL)	The temperature (inside the controller) is higher than the maximum rated operating temperature for the system. Contact the factory for assistance (see Section 1.3, page 2).
CONNECTION FAILURE (CRITICAL)	The controller has lost its pairing with the arrow board. For troubleshooting, see Section 6.2.1, page 38.
LOW-VOLTAGE (MEDIUM OR CRITICAL)	Power to the arrow board has dropped below optimal. A critical alarm appears when the power reaches 11.5 volts and the system shuts down. For troubleshooting, see Section 6.2.2, page 39.
LAMPS DISABLED (MEDIUM)	One or more arrow board lamps are not lighting. For troubleshooting, see Section 6.2.3, page 39, or the arrow board manual.

5.2.3 Power

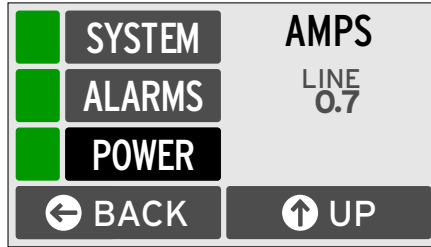
Press the **POWER** button to view the input voltage (see Figure 5-6).

Figure 5-6. Power screen showing voltage

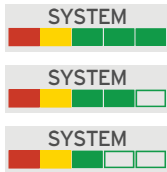


Line voltage is the input voltage from the primary power system, and line current is the input current in amps (see Figure 5-7).

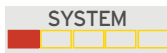
Figure 5-7. Power screen showing amps



- Press the **DOWN** button to view the line current. The bar graph disappears.
- Press the **UP** button to view line voltage and the bar graph.



Green: Voltage level is good.



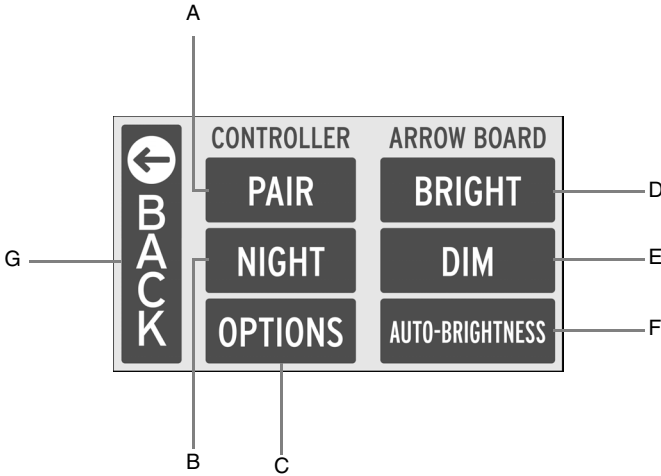
Yellow: Voltage level is low and may require attention.



Red: Voltage level is critical. Immediate charging required. See Section 6.2.2, page 39.

5.3 Setup screen

Figure 5-8. Setup screen



A – PAIR button (see Section 5.3.1, page 25)	Pair the controller and arrow board (see Step 4, page 11).
B – NIGHT button (see Section 5.3.2, page 25)	Switch to night mode, in which the touchscreen display is dimmed. Changes to DAY button after being pressed.
C – OPTIONS button (see Section 5.4, page 26)	Configure settings for the controller and arrow board. Also used for maintenance and diagnostics.
D – BRIGHT button (see Section 5.3.4, page 26)	Manually set the brightness of the arrow board to brightest level.
E – DIM button (see Section 5.3.4, page 26)	Manually set the brightness of the arrow board to dimmest level.
F – AUTO-BRIGHTNESS button (see Section 5.3.4, page 26)	For some models, automatically adjusts brightness of the arrow board based on ambient light.
G – BACK button	Go back to the previous screen (in this case, the Main screen—see Section 5.1, page 15).

5.3.1

Pair

If the controller and arrow board are not “paired”, you must pair them. Press the **PAIR** button and follow on-screen instructions (see Step 4, page 11).

- When shipped from the factory, the controller and wireless arrow board are paired and ready for installation. There is no need to pair them again unless the controller is later paired with a different arrow board.
- You may pair the controller with any Wanco Wireless Arrow Board, but only with one arrow board at a time.

IMPORTANT!

If the arrow board is already connected to a wired controller, it can also pair and interact with a wireless controller. Commands from the wired controller will override commands from the wireless controller.

5.3.2

Night mode

Press the **NIGHT** button to dim the touchscreen display.

When in night mode, the night button changes to a **DAY** button. Press the **DAY** button to revert the display to full brightness (day mode).



5.3.3

Options

Press the **OPTIONS** button for additional setup options, and for maintenance and diagnostics. For details, see Section 5.4, page 26.

5.3.4

Arrow board brightness

This setting includes three options to control arrow board brightness:

BRIGHT

BRIGHT sets the arrow board to brightest illumination for daytime use.

DIM

DIM sets the arrow board to dimmest illumination for nighttime use or when daylight glare is low.

AUTO-BRIGHTNESS

AUTO-BRIGHTNESS uses the arrow board's photocell. It automatically adjusts display brightness in response to ambient light level: dim at night and bright during the day.

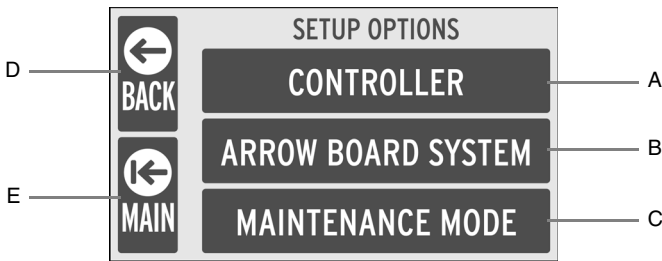
If the arrow board does not have a photocell, this button behaves the same as the **DIM** button.

For the photocell location, see Figure 6-2, page 43.

5.4

Setup Options screen

Figure 5-9. Setup Options screen



A – **CONTROLLER** button
(see Section 5.4.1, page 27)

Configure settings for the controller, including disabling display patterns, choosing the touchscreen interface style, and calibrating / resetting the controller.

B – **ARROW BOARD SYSTEM** button
(see Section 5.4.2, page 30)

Configure system settings, including setting the tilt-frame type, choosing tilt-frame motion behavior, calibrating the compass, and rebooting the arrow board electronics.

C – **MAINTENANCE MODE** button
(see Section 5.4.3, page 33)

Switch lights on and off for arrow board maintenance and diagnostics.

D – **BACK** button

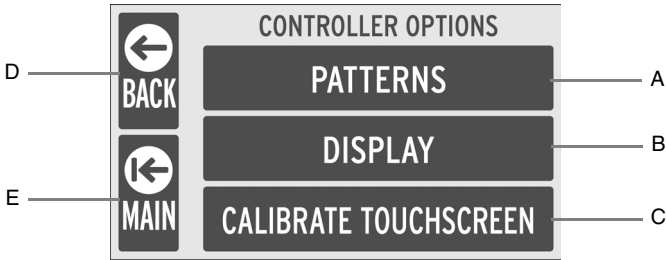
Go back to the previous screen (in this case, the Setup screen—see Section 5.3, page 24).

E – **MAIN** button

Return to the Main screen.

5.4.1 Controller Options screen

Figure 5-10. Controller Options screen



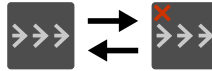
A – PATTERNS button (see Section 5.4.1.1, page 28)	Enable and disable display-pattern selection buttons. For use when specific patterns are not allowed, or to simplify pattern selection for arrow board users.
B – DISPLAY button (see Section 5.4.1.2, page 28)	Switch between the standard interface and an alternate, single-screen version.
C – CALIBRATE TOUCHSCREEN button (see Section 5.4.1.3, page 29)	Manually calibrate the touchscreen interface.
D – BACK button	Go back to the previous screen (in this case, the Setup Options screen — see Section 5.4, page 26).
E – MAIN button	Return to the Main screen.

5.4.1.1

Patterns

Press any enabled pattern button to disable it, preventing its selection on the Pattern Selection screen (see Section 5.1.4, page 19).

When a pattern button is disabled, it has a red "X" in the upper-left corner. To re-enable it, press it again.



5.4.1.2

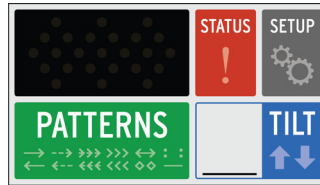
Display

Press a button to choose the interface style:

- Press



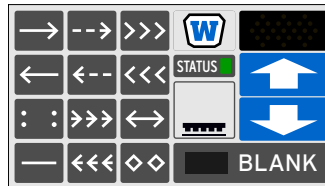
for the standard interface



- Press



for the single-screen interface



The standard Main screen provides a large display pattern preview, status and tilt-position indicators, and easy access to all the other screens.

The single-screen interface provides the convenience of pattern selection and tilt-frame control all on one screen. Status and Setup screens are available, accessed by pressing their icons.

For more information about the single-screen interface, see Figure 5-3, page 17.

5.4.1.3

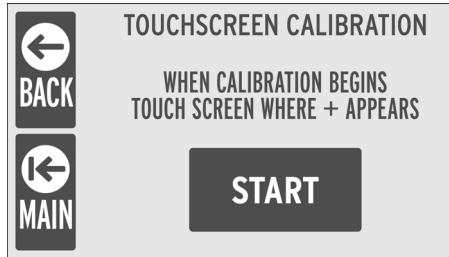
Calibrate touchscreen

If the touchscreen is out of calibration, it may misinterpret where you press when you try to activate a button. If this happens, it is necessary to perform a touchscreen calibration.

Follow these steps to calibrate the screen:

1. Press the **CALIBRATE TOUCHSCREEN** button to open the Touchscreen Calibration screen (Figure 5-11).

Figure 5-11. Touchscreen Calibration screen



2. To start the calibration process, press the **START** button.
3. A series of targets will appear on the screen, one at a time, until the calibration sequence is complete. Use a blunt object, such as a stylus or the back of a ballpoint pen, to gently press the screen where each target appears.

CAUTION

Improper use can damage the touchscreen.

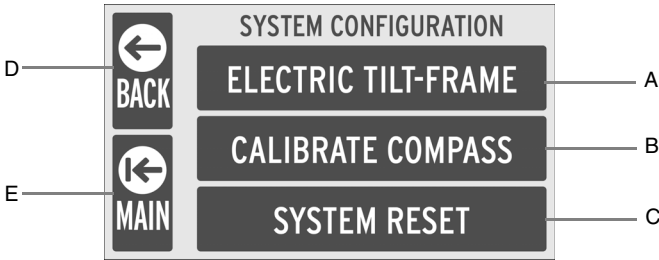
To prevent damage when calibrating the touchscreen:

- Do not press a pen point, pencil, or any marking implement to the screen.
- Do not press any heavy, hard or sharp object to the screen.

After calibration, the controller returns to the Touchscreen Calibration screen. Press the **BACK** button to go back to the Main screen.

5.4.2 System Configuration screen

Figure 5-12. System Configuration screen



A – ELECTRIC TILT-FRAME button (see Section 5.4.2.1)	Configure settings that will allow the controller to raise and lower an arrow board with an electrically operated tilt-frame.
B – CALIBRATE COMPASS button (see Section 5.4.2.2, page 32)	Manually calibrate the arrow board compass.
C – SYSTEM RESET button (see Section 5.4.2.3, page 32)	Trigger a system reset, which initializes the arrow board electronics. Sometimes used by Wanco service technicians during diagnostics or troubleshooting.
D – BACK button	Go back to the previous screen (in this case, the Setup Options screen— see Section 5.4, page 26).
E – MAIN button	Return to the Main screen.

5.4.2.1

Electric tilt-frame settings

FRAME TYPE

Press the **FRAME TYPE** button to configure the controller for the correct arrow board mounting frame. See "Tilt-frame type" below.

TILT MOTION

Configure the behavior of the controller's tilt buttons. See "Tilt-frame motion" below.

Tilt-frame type

90° TILT FRAME

The **90° TILT FRAME** button is highlighted if the arrow board has a factory-installed 90° tilt frame.

180° TILT FRAME

The **180° TILT FRAME** button is highlighted if the arrow board has a factory-installed 180° tilt frame.

NONE

The **NONE** button is highlighted if the arrow board does not have a factory-installed, electrically-controlled tilt frame.

Tilt-frame motion

If the Tilt-frame Type is set to 90° or 180° tilt frame, the controller tilt buttons can be configured to behave in one of two ways:

AUTO
STOP

Press the **AUTO STOP** button to configure the tilt buttons for the auto-stop mode.

In the auto-stop mode, the tilt frame will begin to move when you press and release the tilt button, and will continue to move until the tilt-frame reaches the limit of its range of motion.

MANUAL
STOP

Press the **MANUAL STOP** button to configure the tilt buttons for the manual-stop mode.

In manual-stop mode, the tilt-frame will only move while you are pressing the tilt button. When you take your finger off the touchscreen, the tilt-frame stops moving.

If the Tilt-frame type is set to None, auto stop is not available.

5.4.2.2

Calibrate compass

Wanco Wireless Arrow Boards include a built-in electronic compass. They use the arrow board's compass bearing—north, south, east, west, and points between—to communicate the direction the arrow board is facing. This enables receiving devices, such as a phone or car, to accurately represent the arrow board location and orientation for mapping, navigation, and vehicle alert systems.

For more about connected arrow boards, see the arrow board owner's manual.

For calibration instructions, see Section 6.5, page 44.

5.4.2.3

System reset

During diagnostics or troubleshooting, a Wanco service technician may direct you to initialize the arrow board electronics by pressing the **SYSTEM RESET** button. Under normal conditions, this button is not used during operation.

After pressing the **SYSTEM RESET** button, the controller shows a confirmation screen that allows you to proceed or cancel. Follow the instructions on the screen:



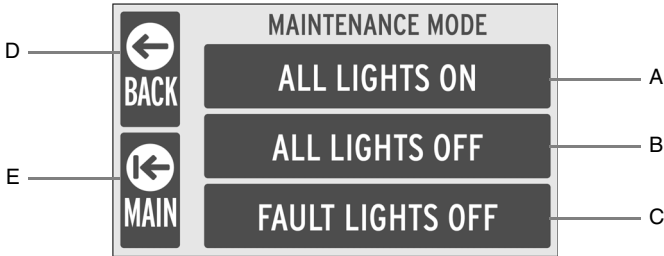
5.4.3

Maintenance Mode screen

The maintenance mode is used for troubleshooting wiring circuits for the arrow board lights, and can also be used to turn off all lighting circuits when replacing a light on the arrow board (see Figure 5-13).

Other than keeping the touchscreen clean, the controller has no maintenance requirements. Arrow board maintenance requirements are described in the arrow board owner's manual.

Figure 5-13. Maintenance Mode screen

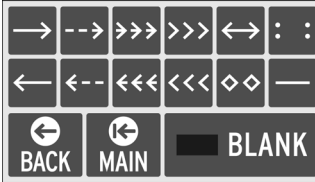


A – ALL LIGHTS ON button	Turn on all the circuits for the arrow board lights, and consequently turn on all the lights. Used for determining whether lights are functioning properly.
B – ALL LIGHTS OFF button	Turn off all the circuits for the arrow board lights. Used when performing maintenance on these circuits and when changing lights.
C – FAULT LIGHTS OFF button	Turn off only the lighting circuits that the system has identified as potentially faulty. All other lighting circuits are on. Used for determining which circuits may be faulty.
D – BACK button	Go back to the previous screen (in this case, the Setup Options screen—see Section 5.4, page 26).
E – MAIN button	Return to the Main screen.

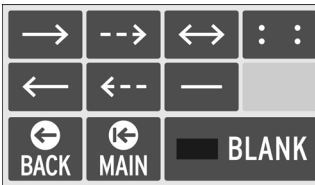
5.5

Pattern Selection screen

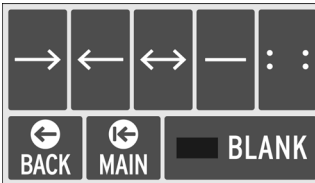
The Pattern Selection screen allows you to choose a display pattern for the arrow board. The controller “knows” the arrow board it is paired with, and only provides you with buttons for the patterns the arrow board is capable of showing:



For 25-light arrow boards, all of which can show any of 12 flashing and sequential patterns



For 15-light arrow boards that can show any of 7 flashing and sequential patterns



For 15, 14, or 13-light arrow boards that can show any of 5 flashing patterns

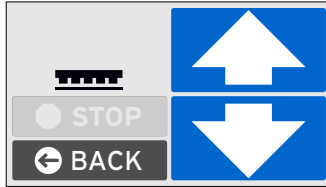
- If a pattern button is light gray, it is disabled and cannot be selected. To enable and disable patterns, see Section 5.4.1, page 27.
- To blank the arrow board (i.e., turn off all lights and show no pattern), press the **BLANK** button.
- For examples of all available patterns, see Appendix B, page 49.

5.6

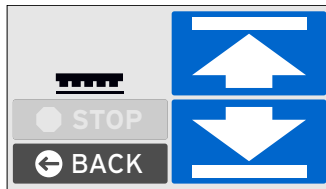
Tilt screen

If the arrow board is equipped with a power-tilt frame and the controller is properly configured, you can raise and lower the arrow board using the Tilt screen on the controller.

To access the Tilt screen, press the **TILT** button on the Main screen.

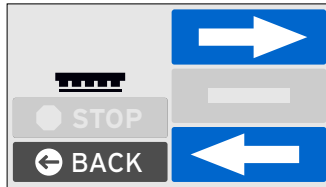


The Tilt screen for 90-degree tilt-frames provides arrow buttons for moving the arrow board up and down.

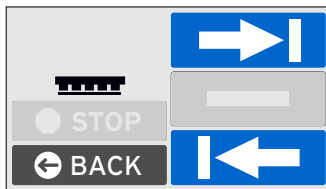


If auto-stop is enabled, the Tilt screen for 90-degree tilt-frames looks like this.

These arrow buttons also appear on the Single screen display (see Figure 5-3, page 17).



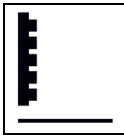
The Tilt screen for 180-degree tilt-frames provides arrow buttons for moving the arrow board so that it will face front or back, and a neutral-position button that causes the arrow board to face downward.



If auto-stop is enabled, the Tilt screen for 180-degree tilt-frames looks like this.

The Tilt screen indicates the arrow board position if it is known:

- 90-degree tilt frames:



Up

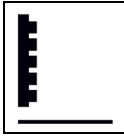


Down



Unknown

- 180-degree tilt frame:



Up*



Down



Unknown

**Because each arrow board installation is different, it is not possible for the controller to know whether an arrow board on a 180-degree tilt-frame is facing front or back. The position icons indicate that the tilt frame is up and has reached the end of its range of motion; they do not indicate which direction the arrow board is facing.*

To operate the tilt frame, press a blue button on the Tilt screen. The button behavior depends on the tilt-motion mode: auto-stop or manual-stop (see Section 5.4.2.1, page 31).

When the tilt-frame has reached the end of its range of motion, the actuator makes a clicking or ratcheting sound for a few seconds. This sound is normal and is not an indication of damage to the actuator.

If the arrow board has a 180-degree power-tilt frame:

- The arrow buttons allow you to operate the tilt frame continuously, so that the arrow board can face front, toward oncoming traffic, or back, toward the front of the vehicle.
- In auto-stop mode, the blue bar or neutral-position button causes the arrow board to face downward. The arrow board should face down when it is not being used.

6 Troubleshooting

6.1 System messages

The first indication of trouble is usually a system status message that appears in place of the **PATTERN** button on the Main screen. These messages do not appear when the display uses the single-screen layout (see Section 5.4.1.2, page 28).

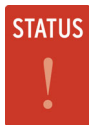
Table 6-1 provides a list of system messages.

Table 6-1. System messages

Button color	Message	System status
Green	None	No messages. See Section 6.2 if STATUS button is flashing
Gray	CONNECTING	Controller is attempting to connect to arrow board
	CHECK AB POWER	Arrow board power may be off or disconnected
	NOT CONNECTED	Controller and arrow board are not paired (see Section 5.3.1, page 25)
Red	LOW VOLTAGE	Arrow board voltage is too low
	LAMPS DISABLED	Possible arrow board light or wiring issue (see Section 6.2.3, page 39)

6.2 Alarms

In many cases, a problem with a component of the arrow board system will be indicated by a flashing **STATUS** button on the Main screen. The **STATUS** button has two states:



The default state indicates there are no alarms or errors.



If the system detects a problem, the alert symbol flashes on and off.

If the Main screen is in single screen layout, the **STATUS** button will display a yellow or red square, depending on the severity of the alert. The square is green if there are no active alerts.

To view alarms, press the **STATUS** button, then the **ALARMS** button. Active alarms are shown in black, inactive alarms in light gray.

- For a list of alarms, see Table 6-2.
- To contact the factory for assistance, see Section 1.3, page 2.

Table 6-2. Alarms

Alarm	Details
CONNECTION FAILURE	see Section 6.2.1
LOW-VOLTAGE	see Section 6.2.2
LAMPS DISABLED	see Section 6.2.3
CONTROLLER TEMP HIGH	see Section 6.2.4, page 40

6.2.1 Connection failure

If the controller indicates it has no connection, the cause may be due to power failure, wiring, or radio transmitter failure.

- For power and wiring problems:
 - Check voltage levels (see Section 6.2.2).
 - Check for blown fuses and wiring damage.
 - Check for reversed power wiring connections. Ensure power connections are proper and secure.
 - When power is restored, the arrow board restarts and shows the last pattern it displayed.
 - After restoring power, use the controller to check for alarms. If it shows the same alarm, contact the factory for assistance.
- If the problem is not due to a power failure or obvious wiring issues, contact the factory for assistance.

6.2.2

Low-voltage

When power to the arrow board drops below the minimum voltage required for operation, the system alerts the operator with an alarm and a "Low Voltage" message that replaces the **PATTERN** button on the Main screen.

To avoid an automatic low-voltage shutdown, ensure the system provides sufficient power for continuous operation.

When power to the arrow board drops below 11.5 volts, the arrow board automatically shuts down to prevent damage to its electronics. The controller continues to operate until its power drops below 5 volts.

When sufficient power is restored, the arrow board restarts and shows the last pattern displayed.

After restoring power, use the controller to check for alarms. If it shows the same alarm, contact the factory for assistance.

6.2.3

Lamps disabled

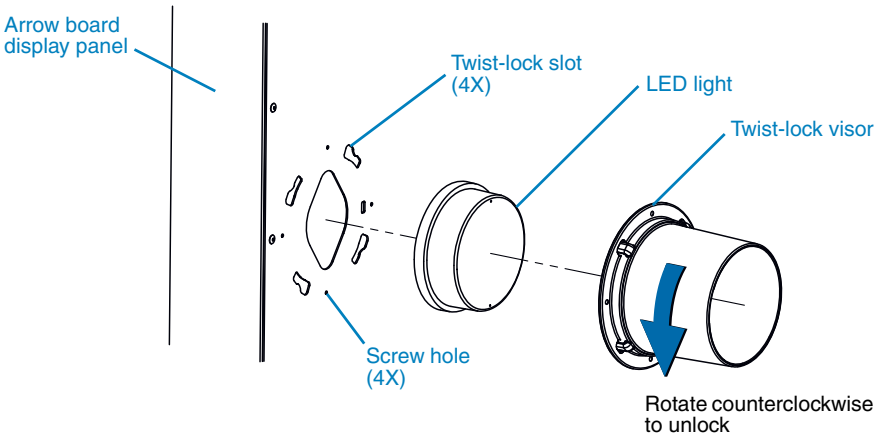
If the controller shows the "Lamps Disabled" error, at least one arrow board display light or wiring circuit is not working properly. The system includes a maintenance mode for troubleshooting a display error.

For troubleshooting, follow these steps:

1. On the controller, press **SETUP > OPTIONS > MAINTENANCE MODE**.
2. Press the **ALL LIGHTS ON** button to switch all light circuits on, then look at the arrow board:
 - If any lights are off, go to Step 3.
 - If all lights are on, use the controller and press the **FAULT LIGHTS OFF** button, then look at the arrow board. If any lights are off, the arrow board may have faulty wiring or a loose connection. Contact the factory for assistance.
3. Replace the lights:
 - a. Make note of which lights are off, so you will know which ones to replace.
 - b. On the controller, press the **ALL LIGHTS OFF** button.
 - c. Locate an affected light on the arrow board and remove any screws holding the visor to the board, if present. See Figure 6-1, page 40.
 - d. Rotate the visor counterclockwise and pull it away from the arrow board to remove it. The light will be loose when the visor is removed. Hold the light in place and use care not to let it fall.

- e. Gently pull the light away from the display panel and disconnect its wiring, then reverse the procedure to install the new light and its visor.
 - f. Repeat these steps for each light you want to replace.
4. On the controller, press the **ALL LIGHTS ON** button, then look at the arrow board. If the same lights are off, the arrow board may have a faulty display-light circuit. Contact the factory for assistance.
 5. On the controller, go to the Main screen, then:
 - If the alert symbol on the **STATUS** button is flashing, press **STATUS > ALARMS**. If the same alarm is indicated, contact the factory for assistance.
 - If the alert symbol is not flashing, then the problem is solved.

Figure 6-1. Twist-lock visor detail



6.2.4 Controller temp high

The control-system temperature (inside the arrow board display panel) is higher than the maximum rated operating temperature for the system.

Move the controller away from any heat sources and allow it to cool. After it cools down, deploy it again. If it fails to function or the controller shows the same alarm, contact the factory for assistance.

6.3 Controller

6.3.1 Controller is off

6.3.1.1 Sleep mode

The controller has an on/off switch and a sleep mode. When the controller is off, it looks like it is asleep, and vice versa.

If the controller appears to be off, touch the touchscreen with your finger. If the controller is in sleep mode, the screen will instantly light up. If the controller is off, it will not light up.

6.3.1.2 Power on/off

To turn the controller on when it is off, press and hold the on/off button on the bottom of the controller for three seconds. If the touchscreen does not light up immediately, then there is a problem with either the controller or its power supply.

For troubleshooting, follow these steps:

1. If the power supply is off, turn it on and then press and hold the controller on/off button for three seconds. If the touchscreen does not light up immediately, then proceed to Step 2.
2. With the power supply turned on:
 - a. If the controller has the standard power cable (which plugs into the vehicle's power outlet/cigar lighter), check the fuse that is inside the plug at the power end of the cable. Replace the fuse if necessary. If the fuse is good, the controller or its power cable may have failed. Contact the factory for assistance.
 - b. If the controller is hard-wired to power, check the power connection for loose or reversed wiring. If the wiring has an inline fuse, check the fuse and replace it if necessary. If the wiring and connections are proper and secure, the controller may have failed. Contact the factory for assistance (see Section 1.3, page 2).

6.3.2 Pairing problems

If the controller is not paired with the arrow board, see "Pair arrow board and controller" on page 11.

If repeated attempts to pair the controller with the arrow board are unsuccessful, contact Wanco customer service (see Section 1.3, page 2).

6.3.3 Touchscreen problems

6.3.3.1 Wrong button selected

If you move your finger before lifting it off the touchscreen, you can unintentionally activate a different button than the one you wanted. Use care to ensure you activate the desired button.

- On all screens except the Main screen, when you touch a button, it turns black to indicate that you are selecting it.
- If the button you want is not black when you are touching it, move your finger until the desired button is black.

If the touchscreen is out of calibration, it may misinterpret where you press when you try to select a button. In this case, it is necessary to perform a touchscreen calibration. For calibration instructions, see Section 5.4.1.3, page 29.

6.3.3.2 Inactive buttons

A button can be inactive for several reasons:

- The controller is too far away from the arrow board. Move the controller closer and try again.
- The controller is not paired with an arrow board. Pairing instructions are provided in Section 4, page 11.
- The feature is not available with the current configuration, or the feature has been disabled. For setup instructions, see Section 5.3, page 24.
- An error has occurred. On the Main screen, press the **STATUS** button to check system status, and then see Section 5.2, page 20.

For more information on button behavior, see Section 3.3.2, page 8.

6.4 Arrow board

6.4.1 Wiring

If you suspect a problem with the arrow board is due to a wiring issue, check the controller to see whether there are any active alarms. Often an alarm helps troubleshoot the problem. If there are no active alarms, check the Troubleshooting section of the arrow board owner's manual, or contact the factory for assistance (see Section 1.3, page 2).

6.4.2 Tilt-frame

If the arrow board has a tilt-frame with electrically operated actuators and an actuator malfunctions, a power reset often solves the problem. Power the arrow board system off, then power it on and try operating the actuator again. If it still does not function properly, contact the factory for assistance (see Section 1.3, page 2).

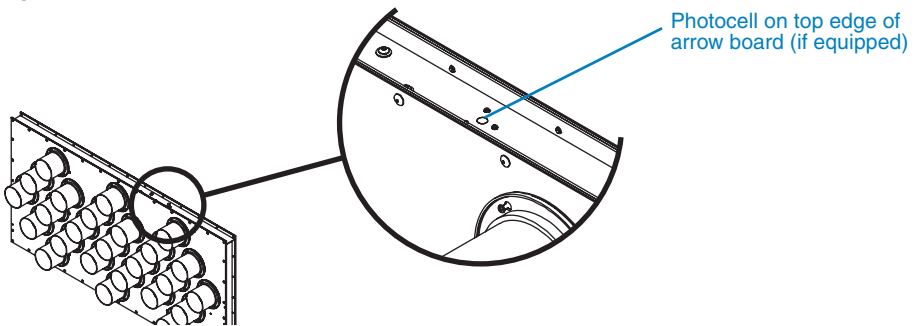
To move the arrow board from the deployed (vertical) to the horizontal (stored) position when the actuator does not function, remove the bolt that holds the actuator to the arrow board, then manually tilt the arrow board down. Use care not to damage the actuator, the bolt, and the arrow board.

6.4.3 Brightness

If the arrow board appears dim and it should be brighter:

- For an arrow board equipped with a photocell (see Figure 6-2), clean the photocell cover using a soft, damp cloth.
- For an arrow board that does not have a photocell, press the **SETUP** button on the controller Main screen, and then change the brightness setting to **BRIGHT** (see Section 5.3, page 24).

Figure 6-2. Photocell location



6.5 Compass calibration

6.5.1 Determining whether calibration is required

The compass is calibrated at the factory and does not normally require field calibration, but the compass can come out of calibration, in which case field calibration is necessary.

You can verify whether the compass is properly calibrated:

- First, view the arrow board in person and determine which direction it is facing. Then check the compass bearing virtually by viewing the arrow board location either on a compatible connected system or in Wanco Fleet Manager. (Wanco Fleet Manager is an optional service that may not be included with your arrow board.)
- If the connected system or Fleet Manager indicates the arrow board is facing a different direction than it is actually facing, then the compass requires calibration.

IMPORTANT!

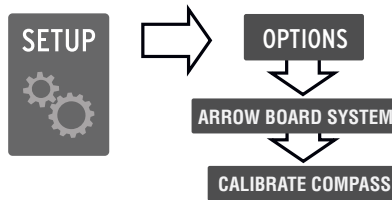
You should calibrate the compass if it is out of calibration.

6.5.2

Calibration procedure

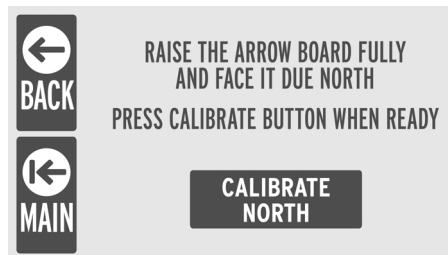
Follow these steps to calibrate the compass using a wireless controller:

1. Follow the safety requirements in Section 2, page 3.
2. The arrow board must be oriented correctly before starting the calibration process:
 - Ensure the arrow board display panel is fully deployed and upright (vertical), with the power cables coming out the bottom.
 - If the arrow board is installed on a 180-degree power-tilt frame, such that it can tilt to face either forward or rearward, set the arrow board in its default position, with the power cables closer to the bottom of the arrow board than the top.
3. Position the vehicle so the arrow board display panel faces due north (zero degrees). For accuracy, use an analog or digital compass, or a smartphone app.
4. On the controller, press the following buttons to access the Calibrate Compass screen:



5. When the Compass Calibration screen appears (Figure 6-3), press the **CALIBRATE NORTH** button.

Figure 6-3. Compass calibration screen, “Face north”



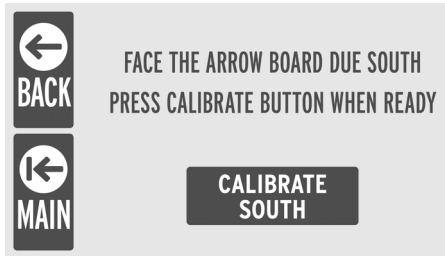
6. Both the button and the arrow board blink as the compass is calibrated for north.

- When the message on the screen changes (Figure 6-4), position the vehicle so the arrow board display panel faces due south (180 degrees).

IMPORTANT!

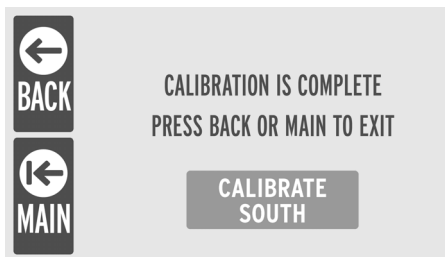
If the arrow board is on a 180-degree tilt frame, do not change its position by activating the frame. Instead, you must reposition the vehicle.

Figure 6-4. Compass calibration screen, "Face south"



- Press the **CALIBRATE SOUTH** button.
- Both the button and the arrow board blink as the compass is calibrated for south.
- When the calibration process ends, the "Calibration is Complete" message is shown (Figure 6-5). Press the **BACK** button to return to the System Configuration screen or the **MAIN** button to return to the Main screen.

Figure 6-5. Compass calibration screen, "Complete"



A Menus

Main

— **Display patterns** (see Section 5.5, page 34)

- (12 patterns + blank)
 - Right arrow
 - Left arrow
 - Right stem arrow
 - Left stem arrow
 - Right walking arrow
 - Left walking arrow
 - Right chevron arrow
 - Left chevron arrow
 - Double arrow
 - Alternating diamonds
 - Four corner
 - Bar
 - Blank
- (7 patterns + blank)
 - Right arrow
 - Left arrow
 - Right stem arrow
 - Left stem arrow
 - Double arrow
 - Bar
 - Four corner
 - Blank
- (5 patterns + blank)
 - Right arrow
 - Left arrow
 - Double arrow
 - Bar
 - Four corner
 - Blank

— **Status** (see Section 5.2, page 20)

- System info
- Alarms
- Power

— **Setup**—*see next page*

— **Tilt** (see Section 5.6, page 35)

- (90° tilt-frame)
 - Up
 - Down
 - Stop
- (180° tilt-frame)
 - Left
 - Neutral
 - Right
 - Stop

Main (from previous page)

└─ **Setup** (see Section 5.3, page 24)

- └─ (Controller)
- └─ Pair
- └─ Night/Day
- └─ Options
 - └─ Controller
 - └─ Patterns (disable/enable)
 - └─ Display
 - └─ Standard
 - └─ Single screen
 - └─ Calibrate touchscreen
 - └─ Arrow board system
 - └─ Electric tilt-frame
 - └─ Frame type
 - └─ 90° tilt-frame
 - └─ 180° tilt-frame
 - └─ None
 - └─ Tilt motion
 - └─ Auto stop
 - └─ Manual stop
 - └─ Calibrate compass
 - └─ System reset
 - └─ Confirm/cancel
 - └─ Maintenance mode
 - └─ All lights on
 - └─ All lights off
 - └─ Fault lights off
- └─ (Arrow board)
- └─ Bright
- └─ Dim
- └─ Auto-brightness

B Display Patterns

This section shows the different arrow patterns available on the wireless controller, depending on the number of lights:

- 25-light flashing & sequential arrow boards can show all patterns in Table B-1 and Table B-2.
- 15-light flashing & sequential arrow boards can show all patterns in Table B-1, and the stem arrow patterns in Table B-2.
- 13-, 14-, and 15-light flashing arrow boards can show the patterns in Table B-1.

Table B-1. Flashing patterns



















































Description Pattern button	Arrow board display	
	1st pulse	2nd pulse
Flashing arrow, right 		
Flashing arrow, left 		
Flashing double arrow 		
Flashing four-corner warning 		
Flashing caution-bar warning 		

Table B-2. Sequential patterns

Description Pattern button	Arrow board display			
	1st pulse	2nd pulse	3rd pulse	4th pulse
Sequential stem arrow, right 				
Sequential stem arrow, left 				
Sequential walking arrow, right* 				
Sequential walking arrow, left* 				
Sequential chevron arrows, right* 				
Sequential chevron arrows, left* 				
Alternating flashing diamonds* 				

**25-light arrow boards only*



WANCO INC.

5870 Tennyson Street
Arvada, Colorado 80003
800-972-0755
303-427-5700
303-427-5725 fax

 www.wanco.com