

# A400 Elite

## BELT ALIGNMENT MONITOR









## INSTALLATION INSTRUCTIONS

# OPERATION MANUAL

Part No. A4004V4C / A4004V6C

[www.go4b.com/usa](http://www.go4b.com/usa)

 	 <b>WARNING</b>
	<p>Rotating parts can crush, cut and entangle.</p> <p>Do NOT operate with guard removed.</p> <p>Lockout power before removing guard or servicing.</p>

 <b>DANGER</b>	
	
<p>Exposed buckets and moving parts will cause severe injury or death.</p> <p>Lockout power before removing cover or inspection door.</p>	

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Dear 4B Customer:

Congratulations on your purchase. 4B appreciates your business and is pleased you have chosen our products to meet your needs.

Please read in its entirety and understand the literature accompanying the product before you place the product into service. Please read the safety precautions carefully before operating the product. With each product you purchase from 4B, there are some basic but important safety considerations you must follow to be sure your purchase is permitted to perform its design function and operate properly and safely, giving you many years of reliable service. Please read and understand the Customer Safety Responsibilities listed below. Failure to follow this safety directive and the Operation Manuals and other material furnished or referenced, may result in serious injury or death.

### ***SAFETY NOTICE TO OUR CUSTOMERS***

- A. In order to maximize efficiency and safety, selecting the right equipment for each operation is vital. The proper installation of the equipment, and regular maintenance and inspection is equally important in continuing the proper operation and safety of the product. The proper installation and maintenance of all our products is the responsibility of the user unless you have asked 4B to perform these tasks.
- B. All installation and wiring must be in accordance with Local and National Electrical Codes and other standards applicable to your industry. (Please see the article “Hazard Monitoring Equipment Selection, Installation and Maintenance” at [www.go4b.com](http://www.go4b.com).) The installation of the wiring should be undertaken by an experienced and qualified professional electrician. Failure to correctly wire any product and/or machinery can result in the product or machine failing to operate as intended, and can defeat its design function.
- C. Periodic inspection by a qualified person will help assure your 4B product is performing properly. 4B recommends a documented inspection at least annually and more frequently under high use conditions.
- D. Please see the last page of this manual for all warranty information regarding this product.

### ***CUSTOMER SAFETY RESPONSIBILITIES***

#### **1. READ ALL LITERATURE PROVIDED WITH YOUR PRODUCT**

Please read all user, instruction and safety manuals to ensure that you understand your product operation and are able to safely and effectively use this product.

#### **2. YOU BEST UNDERSTAND YOUR NEEDS**

Every customer and operation is unique, and only you best know the specific needs and capabilities of your operation. Please call the 24-hour hotline at 309-698-5611 for assistance with any questions about the performance of products purchased from 4B. 4B is happy to discuss product performance with you at any time.

### **3. SELECT A QUALIFIED AND COMPETENT INSTALLER**

Correct installation of the product is important for safety and performance. If you have not asked 4B to perform the installation of the unit on your behalf, it is critical for the safety of your operation and those who may perform work on your operation that you select a qualified and competent electrical installer to undertake the installation. The product must be installed properly to perform its designed functions. The installer should be qualified, trained, and competent to perform the installation in accordance with Local and National Electrical Codes, all relevant OSHA Regulations, as well as any of your own standards and preventive maintenance requirements, and other product installation information supplied with the product. You should be prepared to provide the installer with all necessary installation information to assist in the installation.

### **4. ESTABLISH AND FOLLOW A REGULAR MAINTENANCE AND INSPECTION SCHEDULE FOR YOUR 4B PRODUCTS**

You should develop a proper maintenance and inspection program to confirm that your system is in good working order at all times. You will be in the best position to determine the appropriate frequency for inspection. Many different factors known to the user will assist you in deciding the frequency of inspection. These factors may include but are not limited to weather conditions; construction work at the facility; hours of operation; animal or insect infestation; and the real-world experience of knowing how your employees perform their jobs. The personnel or person you select to install, operate, maintain, inspect or perform any work whatsoever, should be trained and qualified to perform these important functions. Complete and accurate records of the maintenance and inspection process should be created and retained by you at all times.

### **5. RETAIN AND REFER TO THE OPERATION MANUAL FOR 4B'S SUGGESTED MAINTENANCE AND INSPECTION RECOMMENDATIONS**

As all operations are different, please understand that your specific operation may require additional adjustments in the maintenance and inspection process essential to permit the monitoring device to perform its intended function. Retain the Operation Manual and other important maintenance and service documents provided by 4B and have them readily available for people servicing your 4B equipment. Should you have any questions, please call the free 24-hour hotline number (309-698-5611).

### **6. SERVICE REQUEST**

If you have questions or comments about the operation of your unit or require the unit to be serviced please contact the 4B location who supplied the product or send your request via fax (309-698-5615) or call us via our 24-hour hotline number in the USA (309-698-5611). Please have available product part numbers, serial numbers, and approximate date of installation. In order to assist you, after the product has been placed into service, complete the online product registration section which is accessed via our website [www.go4b.com/usa](http://www.go4b.com/usa).

# A400 ELITE OVERVIEW

The A400 ELITE belt misalignment monitor uses 4B WDA magnetic proximity sensors to monitor the alignment of the belt in bucket elevators. Each control unit incorporates two independent monitoring circuits for early detection of belt misalignment on one or two bucket elevators.

4B WDA sensors operate in pairs to detect the position of steel bolt heads or steel buckets as they pass through the sensor's adjustable magnetic field. Nuisance / false alarms are tuned out by setting a tolerance window on each sensor which allows for normal belt travel.

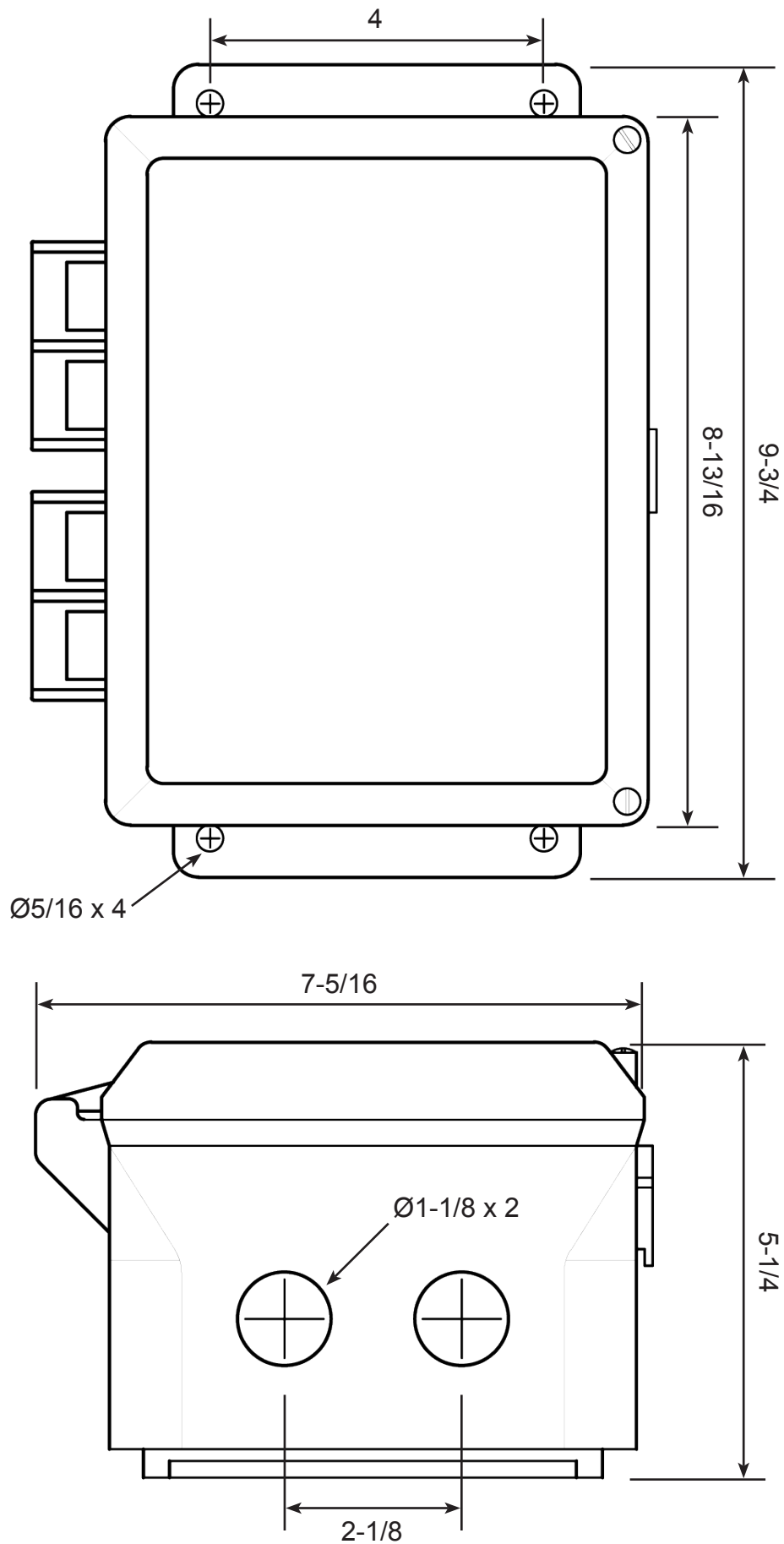
Status LEDs on the control unit indicate the alignment condition of the belts on the elevators, while internal relay contacts provide alarm and automatic shutdown of the elevator when hazardous misalignment conditions are detected.

## A400 ELITE SPECIFICATIONS

Input Supply Voltage	<ul style="list-style-type: none"> <li>• 100 to 240 VAC or 24 VDC (A4004V46C)</li> <li>• 24 VDC (A4004V4C)</li> </ul>
Alarm Relay Contacts	A - 1 Pole Normally Open - 8 A @ 250 VAC B - 1 Pole Normally Open - 8 A @ 250 VAC
Stop Relay Contacts	A - 1 Pole Normally Open - 8 A @ 250 VAC B - 1 Pole Normally Open - 8 A @ 250 VAC
Sensor Supply	24 VDC (Supplied by A400 Internal Power Supply)
Sensor Input Speed Range	20 to 4,000 PPM (Pulses Per Minute)
Terminals	Power: 2.5 mm <sup>2</sup> - 16 AWG Maximum Signals: 2.5 mm <sup>2</sup> - 16 AWG Maximum
Dimensions (H x W x D)	9-3/4 x 7-5/16 x 5-1/4 (inches) / 246 x 188 x 133 (mm)
Fixing Centres (H x W)	8-3/4 x 4 (inches) / 222 x 102 (mm)
Cable Entry	2 Holes 1-1/8 in. Diameter (28 mm) - 3/4 in. Conduit
Weight	3 lbs / 1.3 Kg
LED Status Indicators	Power - Green Sensor 1A - Green (Flashing - Target Detected) Sensor 2A - Green (Flashing - Target Detected) Misalignment A - Yellow (Alarm) Sensor 1B - Green (Flashing - Target Detected) Sensor 2B - Green (Flashing - Target Detected) Misalignment B - Yellow (Alarm) Alarm - Red Stop A - Red Stop B - Red
Push Buttons	Test
Approvals	<ul style="list-style-type: none"> <li>• CSA Class II Div. 2, Groups F &amp; G (A4004V46C)</li> <li>• CSA Class II Div. 1, Groups E, F &amp; G (A4004V4C - When Powered with a Class 2 Power Supply)</li> </ul>
Protection	<ul style="list-style-type: none"> <li>• A4004V46C - IP66 Ambient Temp. -4° F to 113° F (-20° C to 45° C)</li> <li>• A4004V4C - IP66 Ambient Temp. -4° F to 122° F (-20° C to 50° C)</li> </ul>

# A400 ELITE DIMENSIONS

ALL DIMENSIONS IN INCHES



# WDA SENSOR OVERVIEW

The 4B WDA sensor is designed to detect moving ferrous (magnetic) material passing within its sensing range. It will not detect non-ferrous material such as plastic, rubber, stainless steel or aluminium.

The WDA can detect ferrous steel elevator buckets from the side of the elevator leg, or through the elevator belt from the back of the leg. For plastic elevator buckets, the steel elevator bolts used to attach the buckets can be targeted by installing the WDA on the back of the leg. A flashing LED on the end of the sensor indicates a target has been detected. A potentiometer control screw, located below the LED, allows the target sensing range to be adjusted from 1 to 3 inches. For more detailed information, refer to the WDA sensor operation manual.

## WDA SENSOR SPECIFICATIONS

Voltage -	12 to 24 VDC $\pm$ 10%
Supply Current -	65 mA
LED Indicator -	Green (Flashing) - Target Detected Green (Off) - No Target Detected
Outputs (Max) -	1. 100 mA Sink 2. 50 mA Source
Detection Range -	Adjustable: 1 - 3 Inches (25 - 75 mm) for 1 Inch Diameter Ferrous Target
Detection Rate -	20 - 2,000 PPM (Pulses Per Minute)
Cable -	9 ft. Long - 6 Conductor
Conduit Entry -	1/2 Inch NPT
Temperature Rating -	-4° F to 122° F (-20° C to 50° C)
Protection -	IP66
Approvals -	CSA Class II Div. 1 Groups E, F, & G (USA and Canada) CE, ATEX & IECEx Versions Available (Europe)

- Specifications listed are for WDA3V34C, high temperature version also available (HTAS1V34)



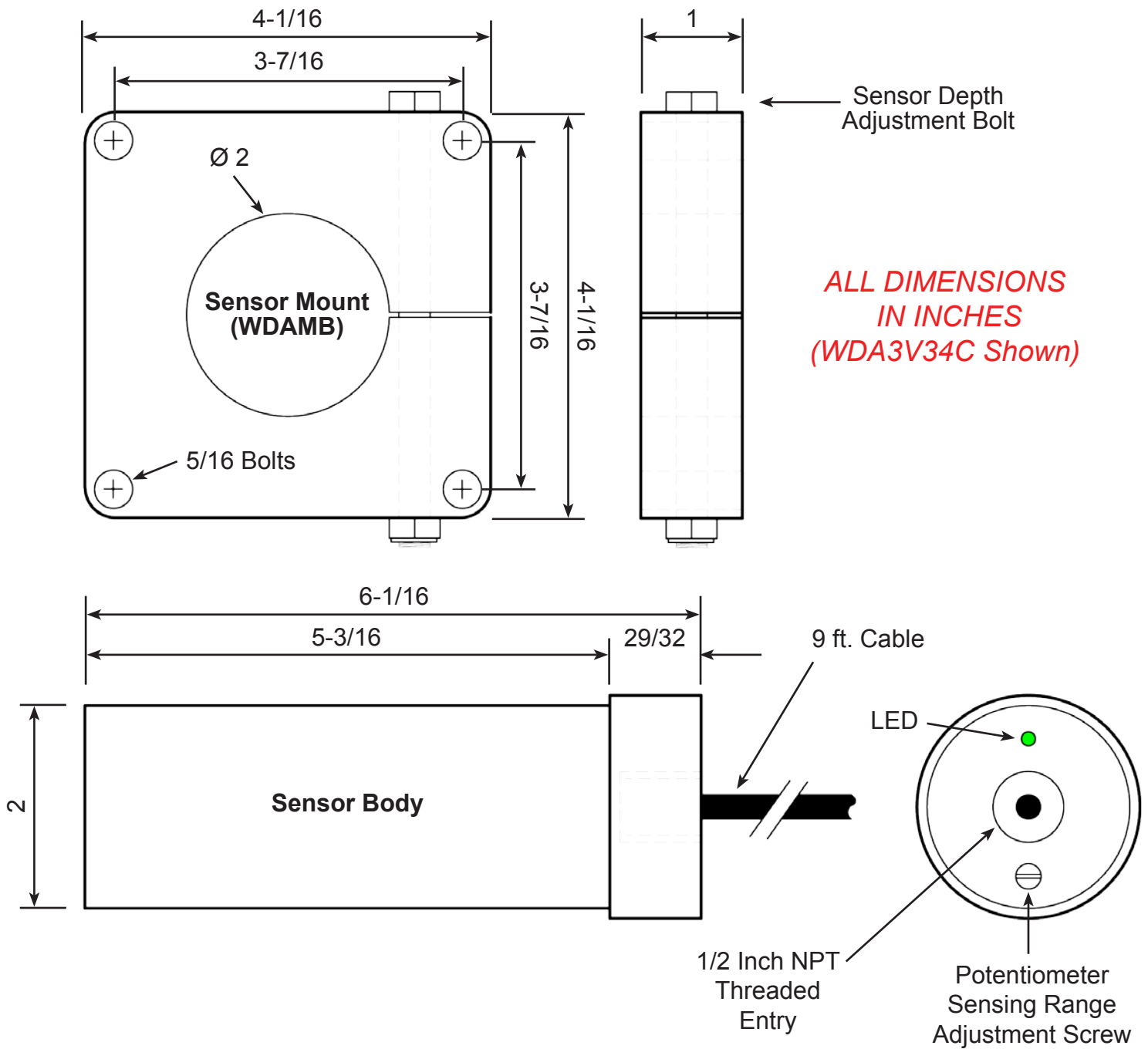
**WDA3V34C**



**HTAS1V34**



# WDA SENSOR DIMENSIONS



## NOTE

WDA sensors are designed to work in pairs with the A400. One pair mounted on the head of the elevator leg and another pair on the boot section.

# A400 ELITE OPERATION

## ADJUSTMENT OF ALIGNMENT SENSORS -

If the control unit is mounted in a hazardous area, switch the electrical supply OFF before opening the lid of the control unit to make the following adjustments. Close the lid before switching the electrical supply ON. Repeat this each time an adjustment is required inside the control unit.

Ensure that the Alignment Sensors have been correctly mounted as outlined within the *WDA SENSOR INSTALLATION* section. At this point it will be necessary to start the elevator. Until the A400 Elite is correctly set up and adjusted, the elevator may not run continuously depending on how the A400 has been wired to the motor starter.

With the elevator running and correctly aligned, adjust the WDA sensor target sensing range adjusters (VR1 - VR4) in the A400 control unit as follows: Turn the potentiometer for the relevant alignment sensor fully anti clockwise; at this position, the relevant sensor indicator LED on the lid of the control unit will probably not be flashing. Increase the potentiometer in a clockwise direction until the indicator LED flashes steadily then increase a little more for allowable misalignment. Repeat for all other sensors.

When all sensor adjustments are complete, test the complete assembly as follows. Mark the sensor depth, then with the elevator running correctly and aligned correctly, slacken the clamp screw on each alignment sensor. Slowly pull out the sensor until the LED on the sensor (and the LED on the control unit) no longer flashes steadily which should cause the system to alarm and/or shutdown. When the test has been successfully completed, clamp the sensor back in its original position. Repeat for all sensors.

## WARNING

If the system does not immediately shutdown as expected or alarm as required, then remove the machine from service until the problem has been diagnosed and corrected.

## ADJUSTMENT OF DELAY & TOLERANCE DIP SWITCHES -

Ensure that the electrical supply to the control unit is OFF. Open the lid of the control unit and locate the delay and tolerance DIP switches (figure 1) near the top left hand side of the control board.

- *ALARM RELAY A* - When sensors 1A and 2A detect a misalignment condition, either a 5 or 30 second delay can be set before energizing ALARM RELAY A. Setting DIP switch 1 to the left (off) = 5 seconds, right (on) = 30 second delay.
- *ALARM RELAY B* - When sensors 1B and 2B detect a misalignment condition, either a 5 or 30 second delay can be set before energizing ALARM RELAY B. Setting DIP switch 2 to the left (off) = 5 seconds, right (on) = 30 second delay.
- *STOP RELAY A* - Once ALARM RELAY A has been energized, a 20 or 60 second delay can be set before de-energising STOP RELAY A. Setting DIP switch 3 to the left (off) = 20 seconds, right (on) = 60 seconds.
- *STOP RELAY B* - Once ALARM RELAY B has been energized, a 20 or 60 second delay can be set before de-energising STOP RELAY B. Setting DIP switch 4 to the left (off) = 20 seconds, right (on) = 60 seconds.
- *MISS TOL A* - Sets an allowable misalignment tolerance for sensors 1A and 2A. Set DIP switch 5 to the right (on) only if alarms are being generated due to a sensitivity issue occurring between sensors 1A and 2A. Do *NOT* change DIP switch position due to a true belt misalignment condition.
- *MISS TOL B* - Sets an allowable misalignment tolerance for sensors 1B and 2B. Set DIP switch 6 to the right (on) only if alarms are being generated due to a sensitivity issue occurring between sensors 1B and 2B. Do *NOT* change DIP switch position due to a true belt misalignment condition.
- DIP switches 7 & 8 are not used.

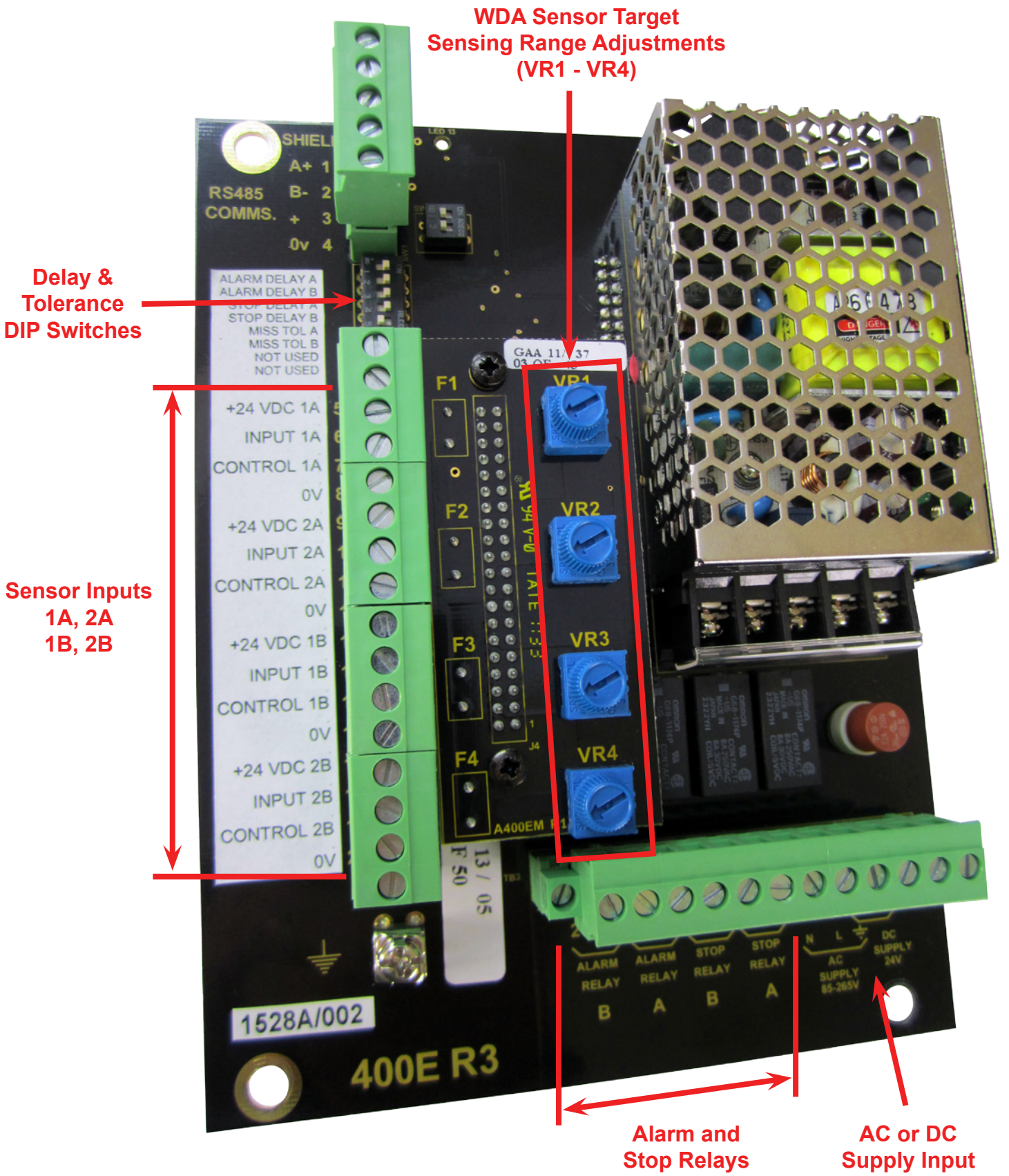


Figure 1 -  
A400 Wiring Connections & Switches

## TEST BUTTON FUNCTIONALITY -

### Normal Test -

The A400 ELITE is equipped with a self test function, initiated by the test button on the lid of the control unit. When the button is pressed the ALARM LED flashes and then the following automatic test is initiated as the button is released:

1. All LEDs illuminate – the ALARM LED continues to flash
2. After 5 seconds all LEDs return to their normal conditions

This test can be performed when the elevator is running or stopped and tests the correct function of the microprocessor and of all LEDs.

### Extended Test -

If the Normal Test is initiated and if the test button is pressed again, while the ALARM LED is flashing, the extended test operates as follows:

1. All LEDs illuminate - the ALARM LED continues to flash
2. Press the test button again
3. The ALARM and STOP A LEDs flash for a further 5 seconds (8 seconds total time)
4. The ALARM RELAY and STOP RELAYS are inverted and the ALARM, STOP A and STOP B LEDs flash
5. After 3 seconds all LEDs and relays return to their normal conditions

If this test is performed when the elevator is not running, the alarm will sound but the STOP RELAYS will have no effect on the elevator. If this test is performed when the elevator is running, the alarm will sound and the STOP RELAYS will stop the elevator! This test should be performed on a regular basis to check the safety of the installation.

The test button has been designed to ignore the first 0.5 seconds of touch; this is to reduce the possibility of accidental activation.

## **WARNING**

If the system does not immediately shutdown as expected or alarm as required, then remove the machine from service until the problem has been diagnosed and corrected.

## STARTING AND ACCELERATING -

The A400 ELITE automatically detects that the elevator is running by testing the signals from the Alignment Sensors. If two pulses are received from either of the 'A' sensors within the allowed start up time (preset to approximately 10 seconds), the elevator is considered to be running and the STOP 'A' relay will energise to maintain the motor starter circuit. Similarly the 'B' sensors will energise the STOP 'B' relay.

## NORMAL RUNNING -

As long as the relevant sensors both receive the correct number of pulses, the elevator is considered to be running normally and the relevant STOP relay will remain energized and the STOP indicator LEDs will remain off.

## NORMAL STOPPING -

When the elevator is stopped by means of the motor starter, when the pulses cease from both sensors, and after a further 10 seconds the relevant STOP relay will de-energise, ready for the next starting operation. If the elevator is re-started within this 10 second delay, as the STOP relay is still energized, starting is still enabled.

### **MISALIGNMENT ALARM -**

If the ratio of the pulses from a pair of alignment sensors falls to a value which is less than that set by SWITCH 5 or SWITCH 6 as appropriate, the elevator is in misalignment and the MISALIGNMENT A or MISALIGNMENT B LED will be energized. If the LED remains energized for a time which is longer than that set on SWITCH 1 or 2, the ALARM RELAY 'A' or 'B' will energise. If the misalignment condition subsequently corrects itself, the MISALIGNMENT 'A' or 'B' LED and ALARM RELAY 'A' or 'B' will de-energise.

### **MISALIGNMENT STOP (SHUTDOWN) -**

If the alarm relay remains energized for a time which is longer than that set on SWITCH 3 or 4, the relevant STOP RELAY will de-energise and the relevant STOP LED will energise. When the elevator has stopped and the pulses have ceased on the sensors, the relevant STOP LED and MISALIGNMENT LED will flash to indicate the reason for the stop condition.

### **RESTARTING -**

If the elevator has stopped because of a misalignment, the LEDs described above will remain flashing indefinitely. When the elevator is re-started, and if normal starting conditions are met, the flashing LEDs will be cancelled.

### **TWO ELEVATOR LEGS (ONE SET OF SENSORS PER LEG) -**

If the A and B sensors are fitted to two separate elevators, then all of the A400 Elite operations described in this section apply separately to each elevator and separate ALARM and STOP relays can be used.

### **ONE ELEVATOR LEG (HEAD AND BOOT SENSORS) -**

If the A and B sensors are mounted on the same elevator, (for example A at the head and B at the boot) the control unit will differentiate between misalignment faults at the two sensor locations. Normally, the two STOP relays would be connected so that both can stop the elevator and either alarm relay will operate the alarm indicator.

## **WARNING**

- Rotating machinery can cause serious injury or death
- Always lockout and tagout the machine prior to installation

## **WARNING**

The Control Unit is susceptible to static voltage, static handling precautions should be taken. Connection of a clean ground to terminal 31 is essential for optimum performance.

Since the enclosure is a static hazard, it should only be cleaned with a damp cloth.

## **INSTALLATION**

The control unit box should be installed in a suitable control or starter switch room and mounted at an eye level position so that the warning lights and LED screen can be readily seen. The box should have sufficient space to open the lid for wiring and adjustment

### **ENCLOSURE INSTALLATION -**

1. You must use the correct cable, glands and sealing arrangement and in accordance with all installation codes.
2. Where other certified components are used as part of the assembly or installation procedure, the user must take in to account any limitations which might be listed on the relevant certificates.
3. The box is supplied with 2 x 1-1/8 inch (28.5 mm) pre drilled holes in the bottom face. All unused entry apertures must be sealed using component certified stopping plugs. The end user must install component or apparatus certified stopping plugs and cable glands/conduit in strict accordance with the manufacturer's instructions. In order to connect conduit to the control unit enclosure, use a CSA and/or UL certified Class II conduit hub (for example, a Myers™ hub) with a suitable bonding (grounding) connection that is rated for the installation environment.
4. The enclosure must not be modified in any way, as this will invalidate the certification.
5. All wiring must be carried out in accordance with relevant codes of practice and / or instructions.
6. The voltage and current and maximum power dissipation shown on the box label must not be exceeded.
7. The wiring installation must extend to within 1 mm of the metal face of the terminal.
8. All leads must be insulated for the appropriate voltage.
9. Not more than 1 single or multiple strand cable is to be connected to any terminal unless multiple conductors have previously been joined in a suitable manner (e.g. boot lace ferrule) such that they present a single connection point to the terminal.
10. A flat-head or straight screwdriver of the correct size should always be used when tightening terminals.

### **WDA SENSOR INSTALLATION -**

Sensors are placed in pairs at the head and boot on the up side of the elevator leg (figure 8). Refer to the *WDA SENSOR PLACEMENT DRAWINGS* section regarding proper sensor positioning for your application. Sensor installation will vary depending on the type of elevator bucket (metal or plastic).

For more detailed information, refer to the WDA sensor operation and installation manual.

# ELECTRICAL CONNECTION

All wiring must be in accordance with local and national electrical codes and should be undertaken by an experienced and qualified electrician.

Always use dust/liquid tight flexible metal conduit with approved fittings to protect the sensor cables. Use rigid metal conduit to protect the cables from the sensors to the control unit. Conduit systems can channel water due to ingress and condensation directly to sensors and sensor connections which over time will adversely affect the performance of the system. As such, the installation of low point conduit drains is recommended for all sensors.

All electrical connections are made via 3 sets of terminals provided as shown in Figure 2.

## FUSE RATINGS -

In order to maintain the product certification, A400 fuses MUST be replaced with equivalent fuses at the same rating. Failure to do so will invalidate the certification and any warranties which may exist.

Model A4004V4C -

- F1 to F5 200 mA maximum.
- F1 to F4 (under circuit board) are used to limit the current available to each of the 4 sensors.
- F5 is used to limit the current available to the internal electronics and terminals 3 and 4.
- F6 is not used.

Model A4004V46C -

- F1 to F4 2 amp maximum, located under the circuit board and used to limit the current available to each of the 4 sensors.
- F5 200 mA, it is used to limit the current available to the internal electronics and terminals 3 and 4.
- F6 2 amp maximum, it is used to protect the AC power supply and should have a 2 amp rating.

## NOTE

Recommended cable type is Belden 5508FE with 10 conductors each 22 AWG, shielded. Overall outer diameter is 0.23 inches. Belden 5508FE wire colors are used in all of the sensor wiring diagrams in section 9.

# ⚠ WARNING

The unit should ONLY be powered with either a main supply (A4004V46C model) OR a 24 VDC (A4004V4C and VA400V46C models) NOT BOTH (see A400 specifications).

## FIELD WIRING CONNECTION DETAILS

- Terminal 5 - 24 VDC Power to Sensor 1A (Fuse F1)
- Terminal 6 - Input Signal for Sensor 1A
- Terminal 7 - 0 to 12 VDC Control Signal for Sensor 1A (When Required)
- Terminal 8 - 0 VDC for Sensor 1A
- Terminal 9 - 24 VDC Power to Sensor 2A (Fuse F2)
- Terminal 10 - Input Signal for Sensor 2A
- Terminal 11 - 0 to 12 VDC Control Signal for Sensor 2A (When Required)
- Terminal 12 - 0 VDC for Sensor 2A
- Terminal 13 - 24 VDC Power to Sensor 1B (Fuse F3)
- Terminal 14 - Input Signal for Sensor 1B
- Terminal 15 - 0 to 12 VDC Control Signal for Sensor 1B (When Required)
- Terminal 16 - 0 VDC for Sensor 1B
- Terminal 17 - 24 VDC Power to Sensor 2B (Fuse F4)
- Terminal 18 - Input Signal for Sensor 2B
- Terminal 19 - 0 to 12 VDC Control Signal for Sensor 2B (When Required)
- Terminal 20 - 0 VDC for Sensor 2B

Ground Connection

Sensor Fuses F1 - F4  
(Located Under Board)

Fuse F5  
Power Supply

Fuse  
F6

## POWER & RELAY CONNECTION DETAILS

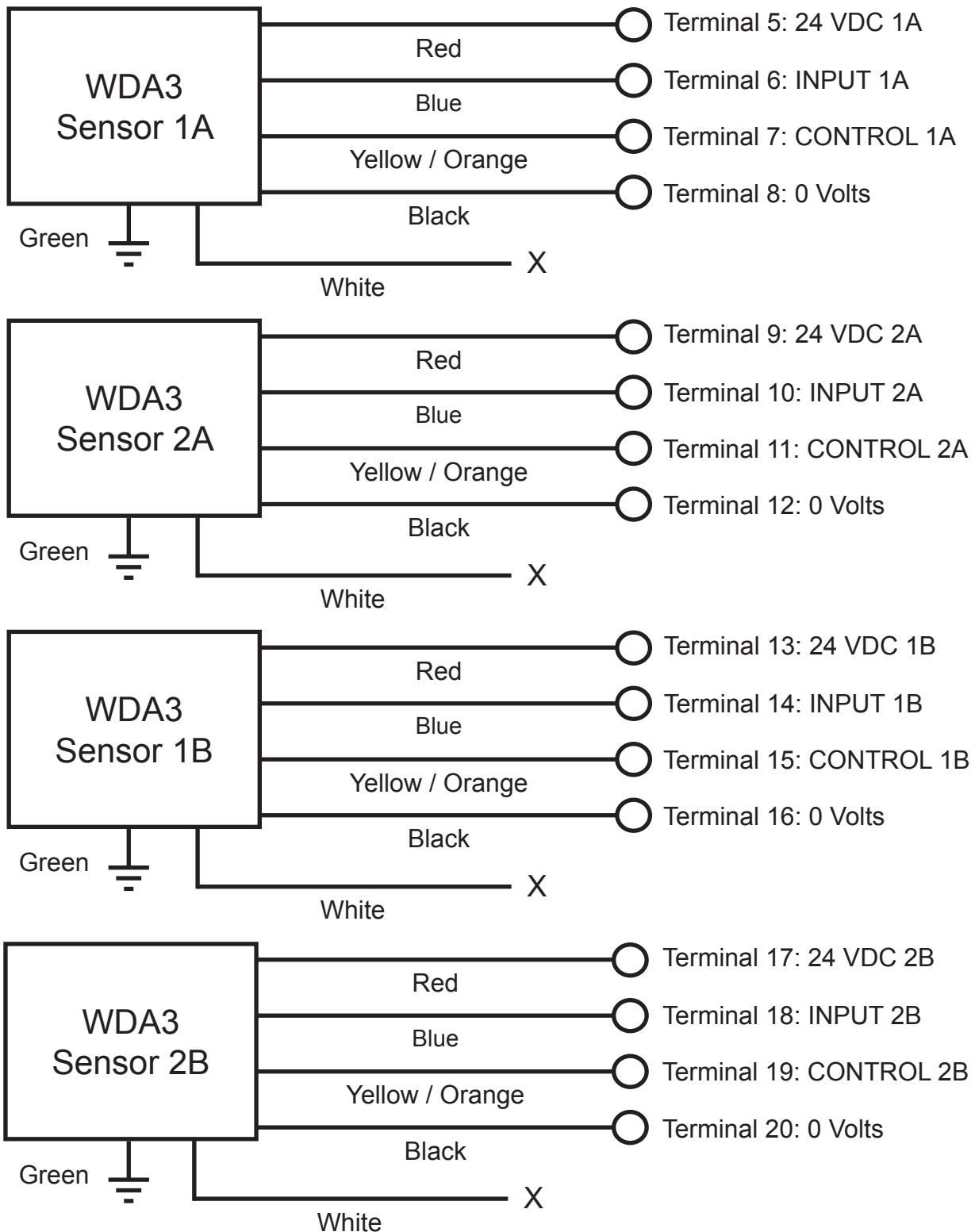
- Terminal 21 - Alarm B Relay Common
- Terminal 22 - Alarm B Relay Normally Open
- Terminal 23 - Alarm A Relay Common
- Terminal 24 - Alarm A Relay Normally Open
- Terminal 25 - Stop B Relay Common
- Terminal 26 - Stop B Relay Normally Closed (Under Normal Running Conditions)
- Terminal 27 - Stop A Relay Common
- Terminal 28 - Stop A Relay Normally Closed (Under Normal Running Conditions)
- Terminal 29 - Neutral Connection
- Terminal 30 - VAC Connection
- Terminal 31 - Ground or 0 Volt Connection
- Terminal 32 - 24 VDC Connection

**Figure 2 -  
A400 Wiring Connections**



# ELECTRICAL DIAGRAMS

## WDA SENSOR WIRING DIAGRAMS FOR THE A400 CONTROL UNIT -



X - The white wire is not used, and must be made safe by insulating it. The green wire is connected to the case of the sensor and must be connected to ground.

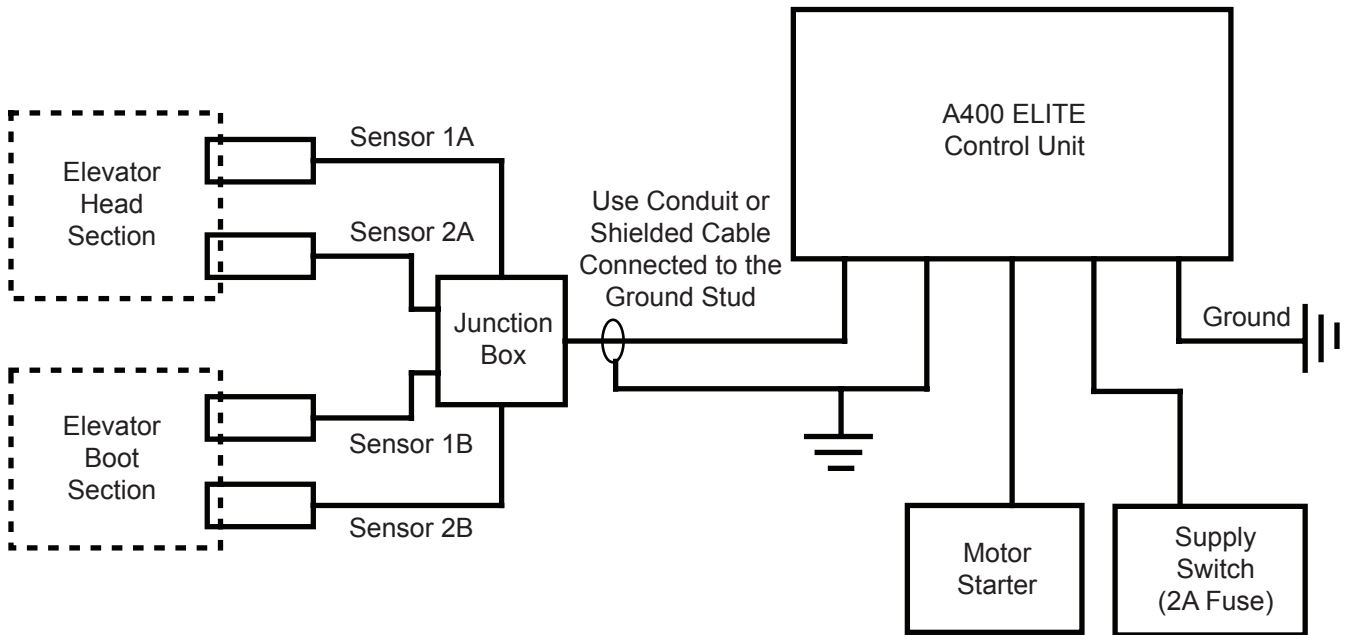
**Figure 3 -  
WDA Sensor Wiring Diagram**

### NOTE

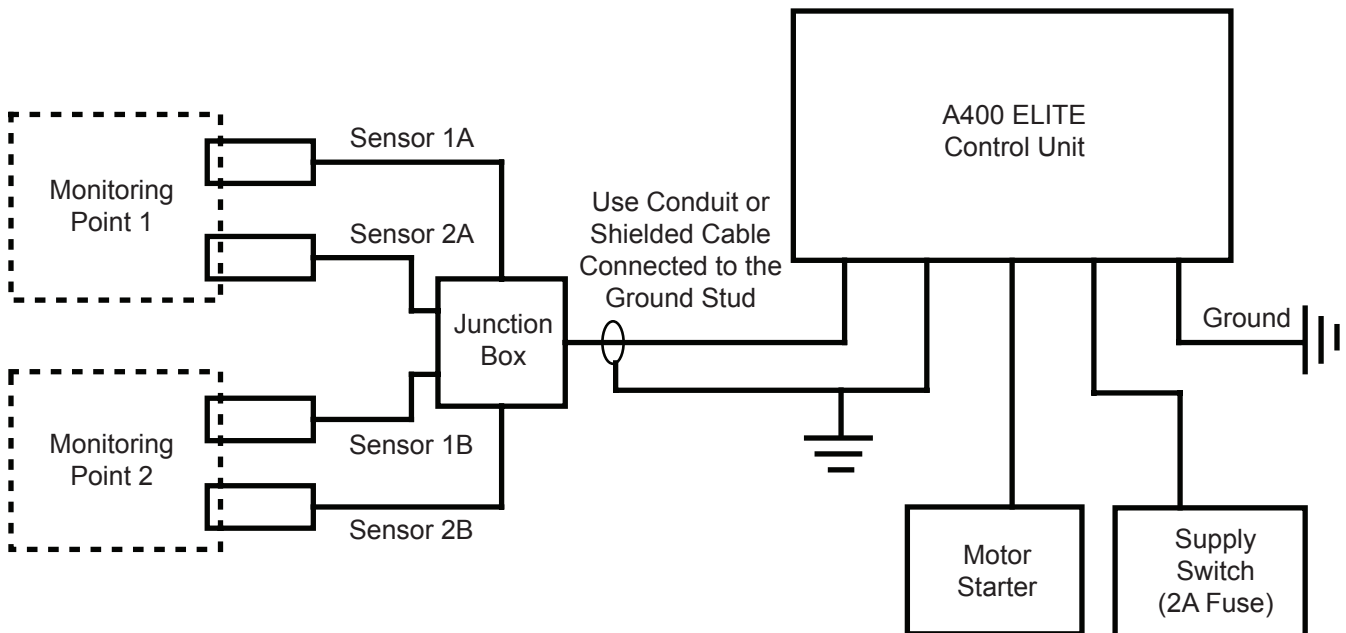
If using high temperature WDA sensors (HTAS1V34), follow the wiring diagram included in the manual for that model.

## A400 ELITE SYSTEM DIAGRAMS -

For all belt misalignment monitoring, 4B recommends that the elevator leg be monitored at both the head and boot sections (Figure 4). For those cases where monitoring is already occurring, but at only one of these two sections, the A400 can be installed to monitor the secondary point (Figure 5).

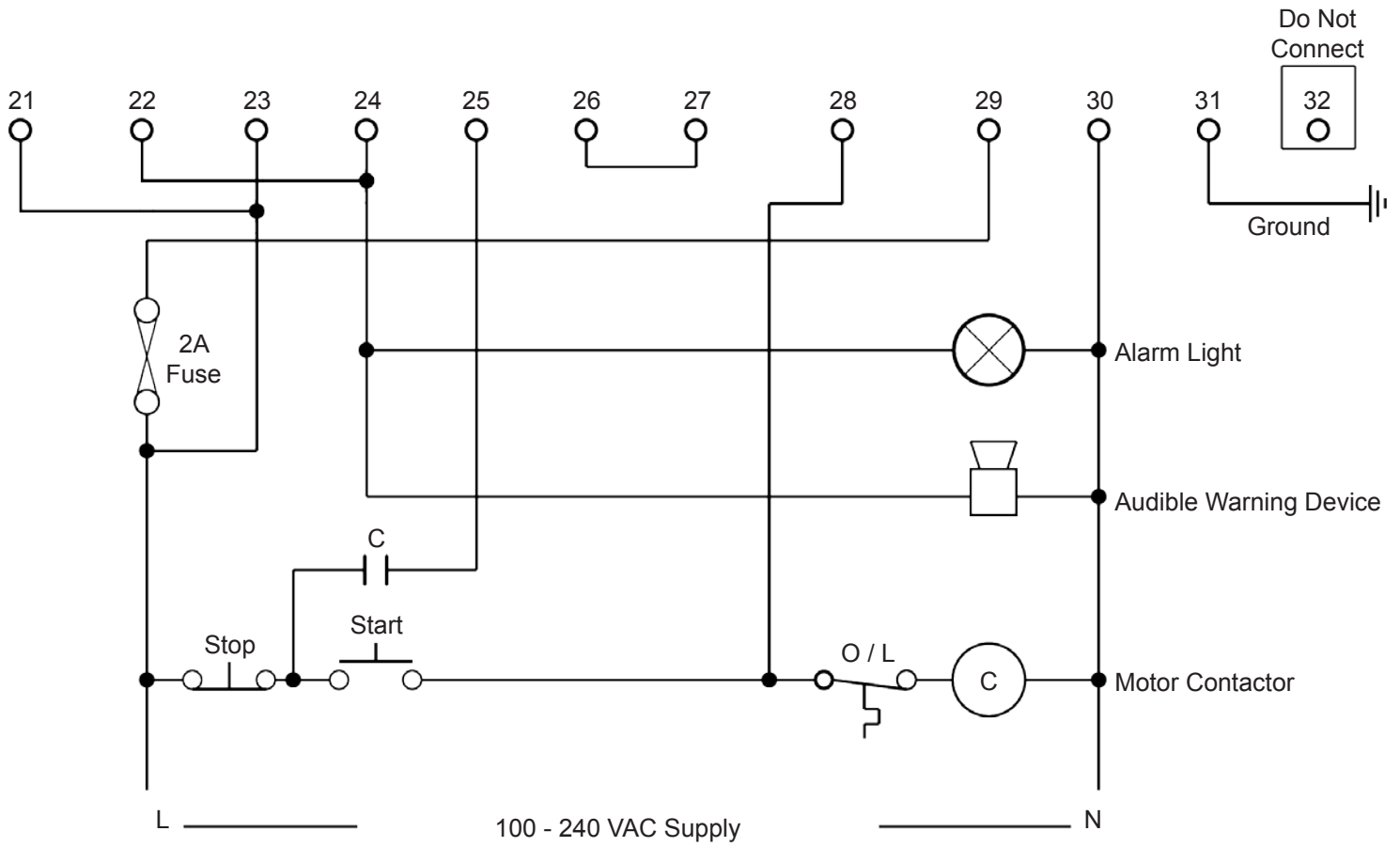


**Figure 4 -  
Standard A400 Diagram**

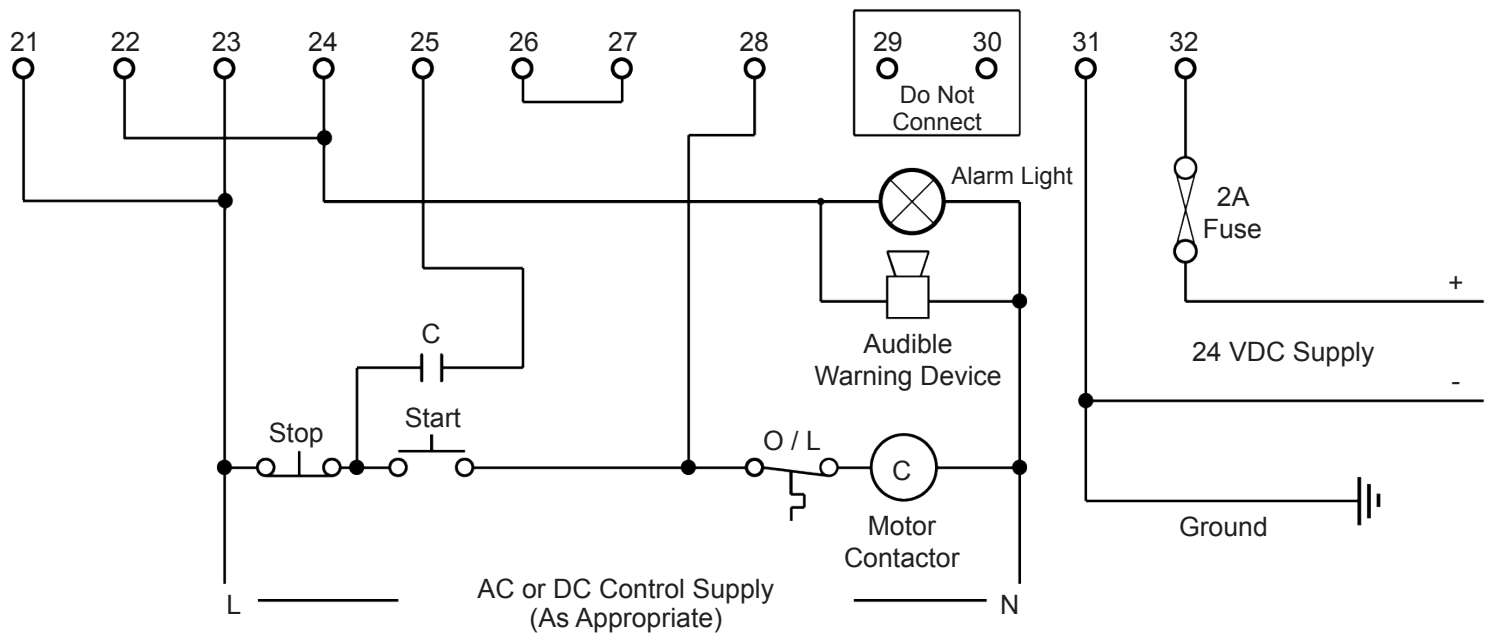


**Figure 5 -  
Optional A400 Diagram**

# AC AND DC SUPPLY DIAGRAMS -



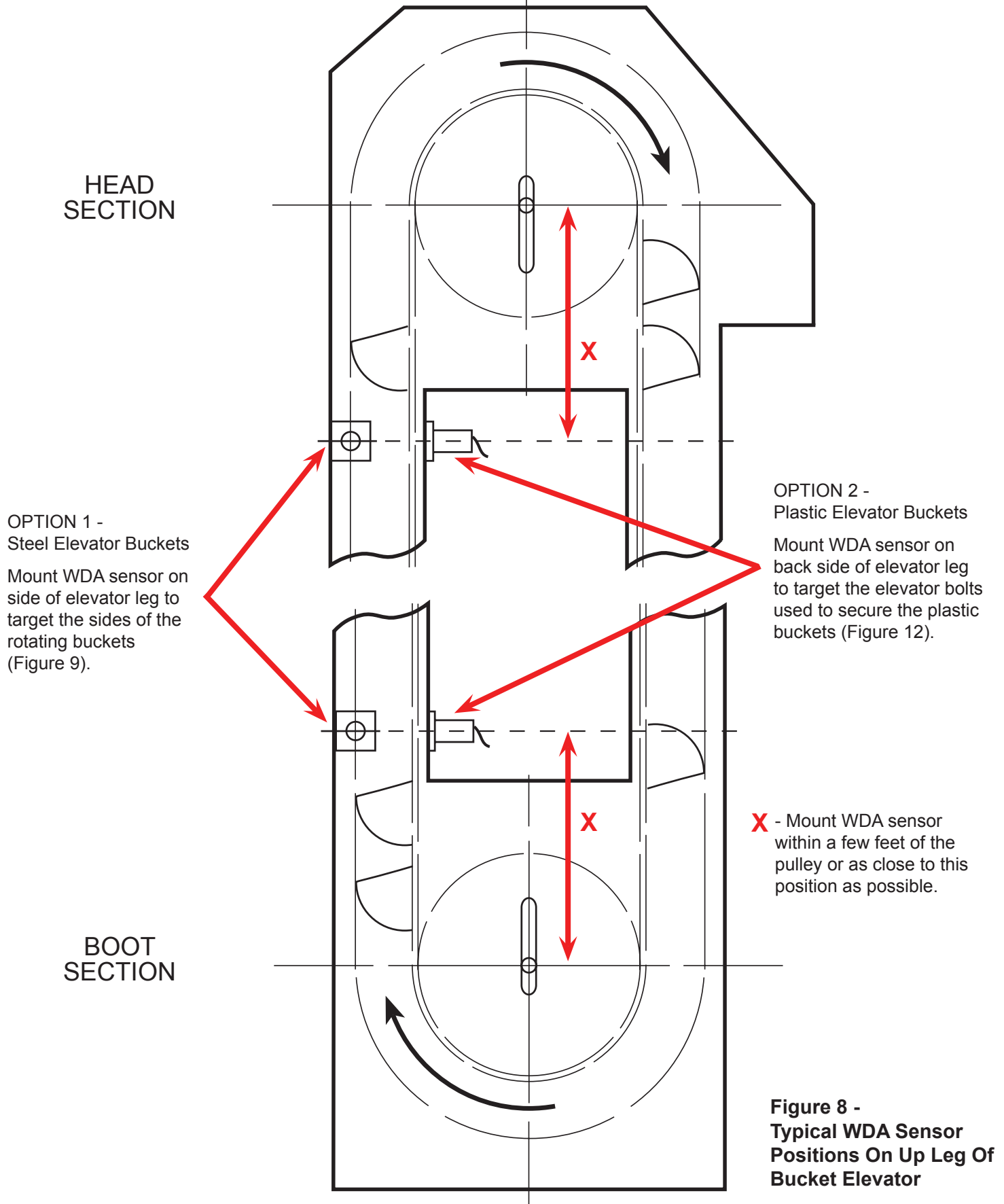
**Figure 6 -  
AC Supply Diagram**



**Figure 7 -  
DC Supply Diagram**

# WDA SENSOR PLACEMENT DIAGRAMS

## WDA SENSOR MOUNTING PLACEMENT OVERVIEW -



### NOTE

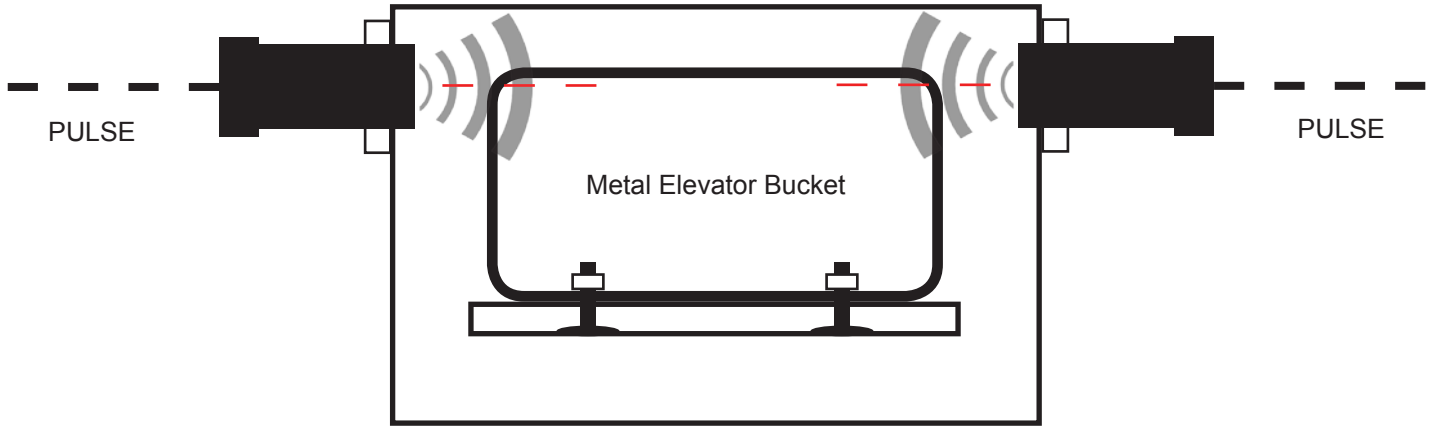
WDA sensors are designed to work in pairs with the A400. One pair mounted on the head of the elevator leg and another pair on the boot section.

# NOTE

If using stainless steel elevator buckets and bolts (non-ferrous), use PTFE coated steel fender washers (ferrous) between the belt and bucket. Mount WDA sensor on the back side of the leg to target the ferrous bolts / washers (See Figure 12 - Plastic Bucket Installation).

## METAL ELEVATOR BUCKET SIDE MOUNTING DIAGRAMS -

### NORMAL RUNNING



### BELT MISALIGNMENT

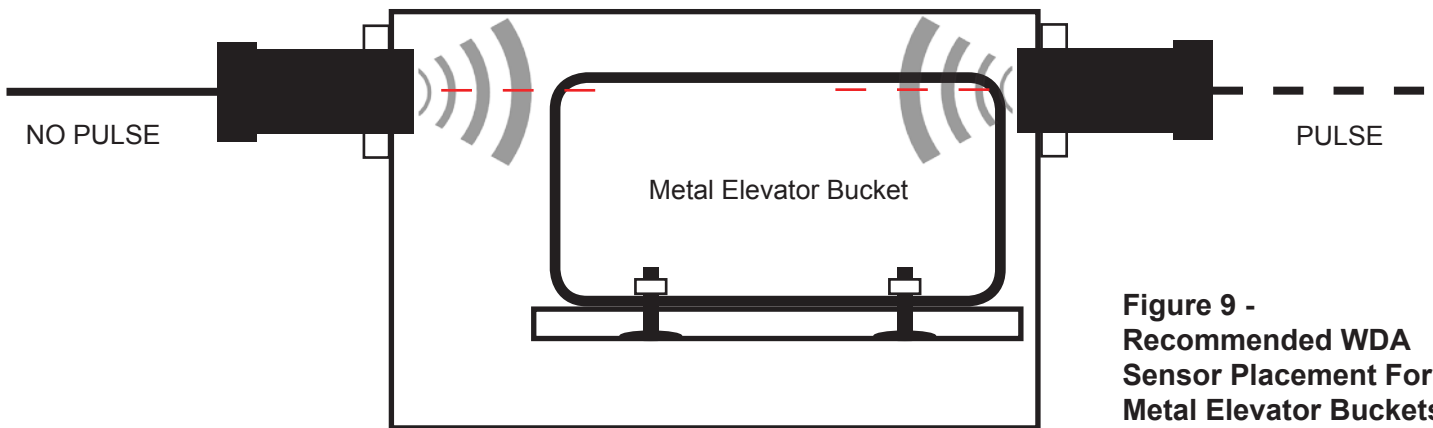


Figure 9 - Recommended WDA Sensor Placement For Metal Elevator Buckets

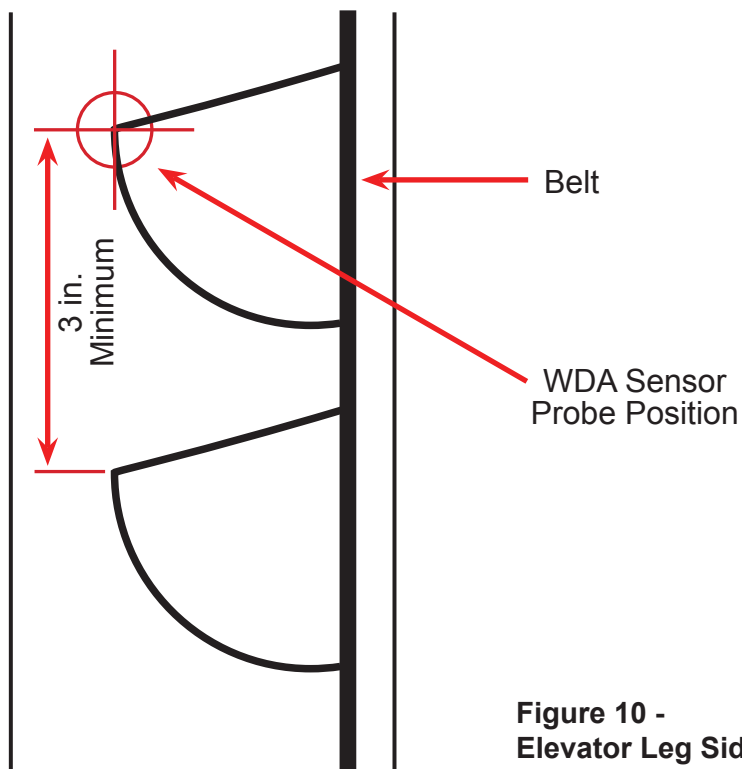
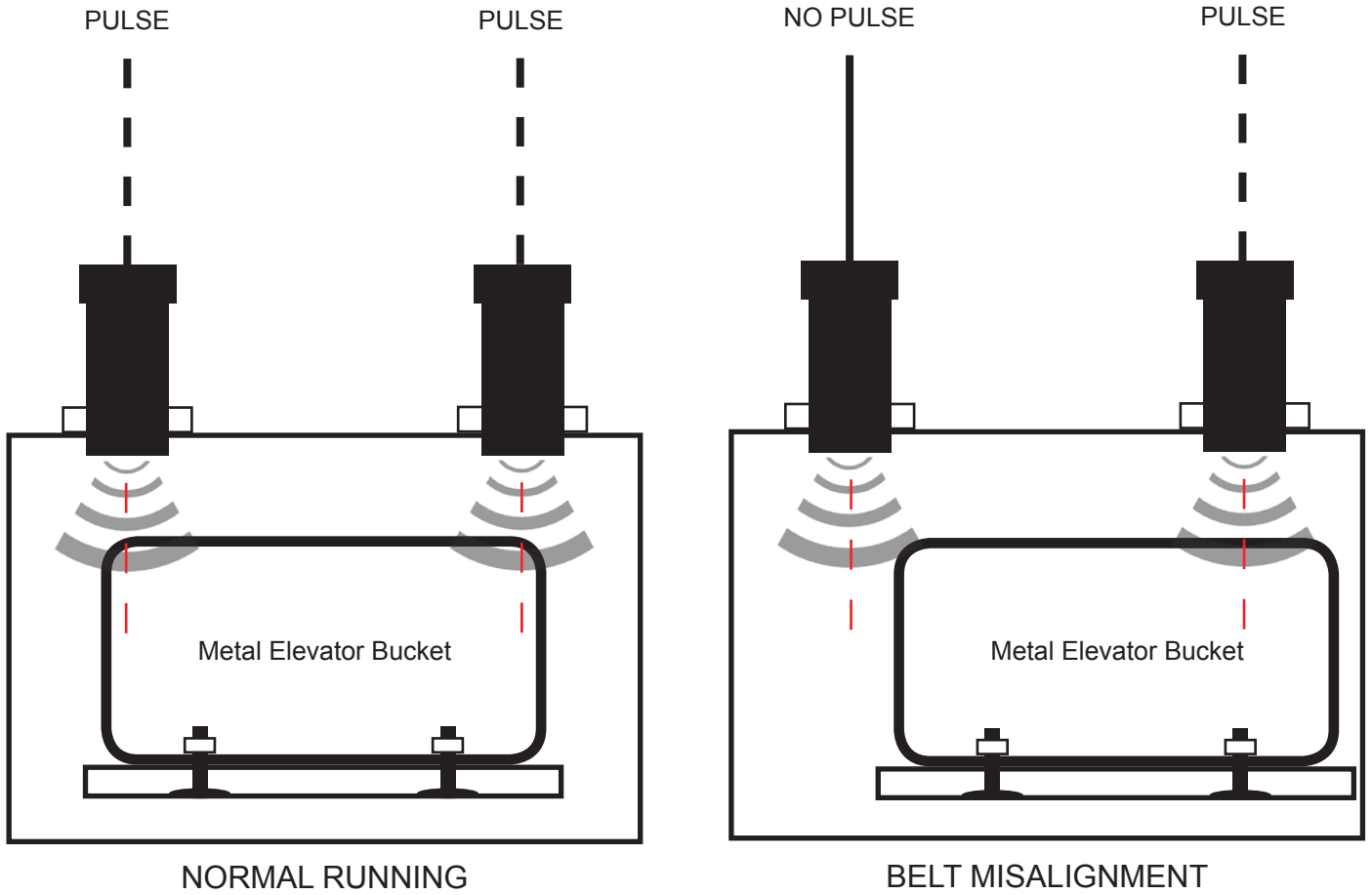


Figure 10 - Elevator Leg Side View

## METAL ELEVATOR BUCKET OPTIONAL FRONT MOUNTING DIAGRAMS -



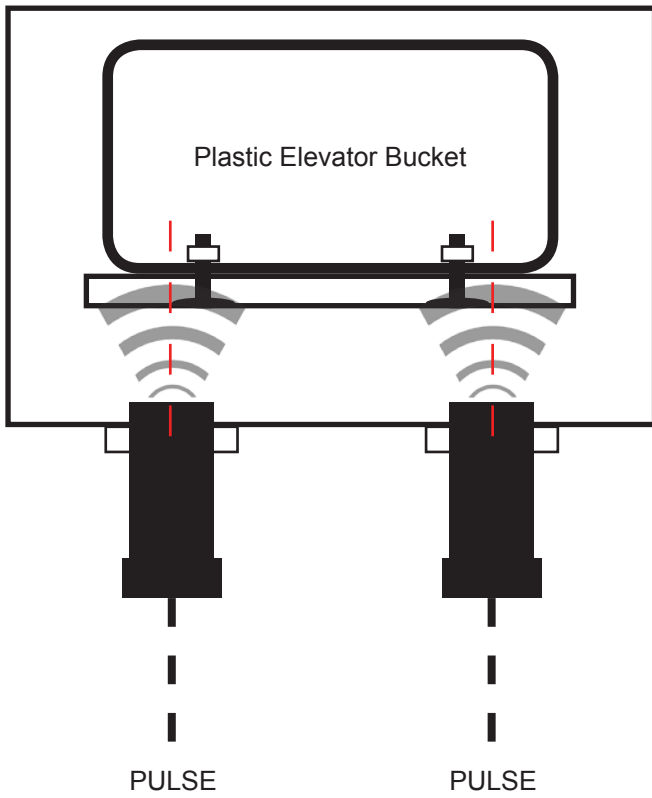
**Figure 11 -  
Optional Front Mounting Of WDA  
Sensor For Metal Elevator Buckets**

### NOTE

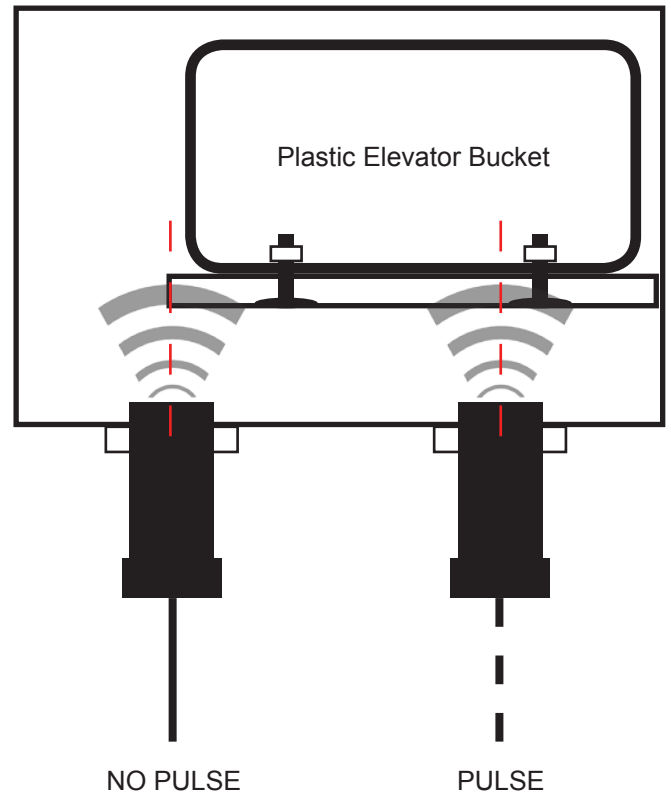
WDA sensors can be installed on the front of the elevator leg if side mounting is not possible. 4B recommends that all sensors be placed either on the side or on the front, but not in combinations (front and side for example).

**PLASTIC ELEVATOR BUCKET MOUNTING DIAGRAMS -**

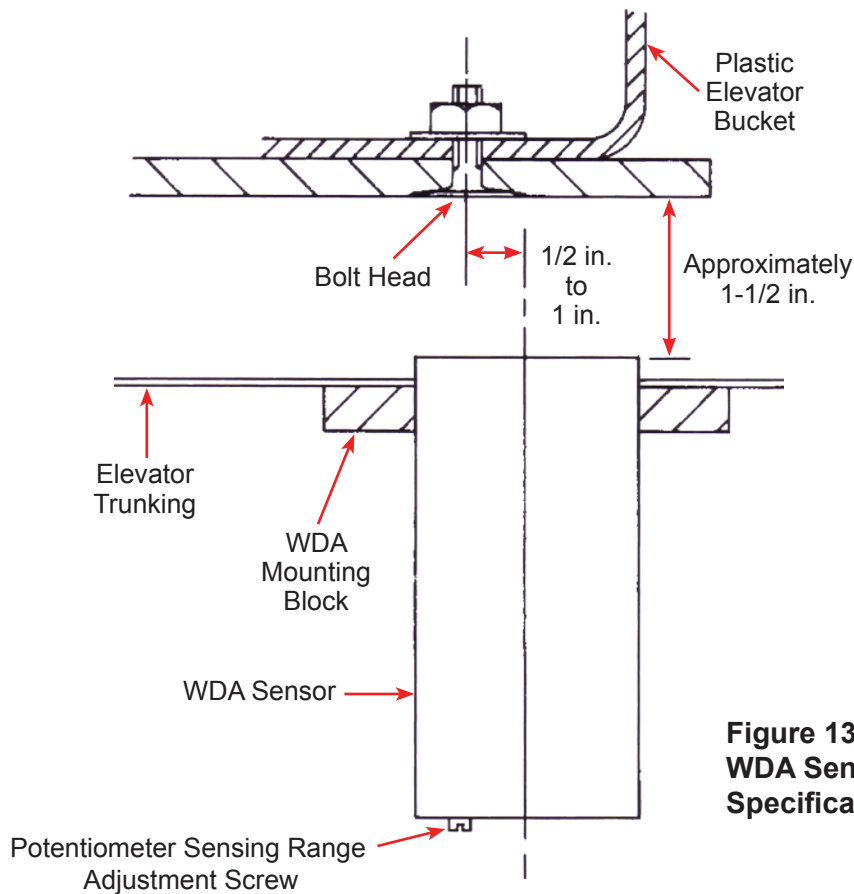
**NORMAL RUNNING**



**BELT MISALIGNMENT**



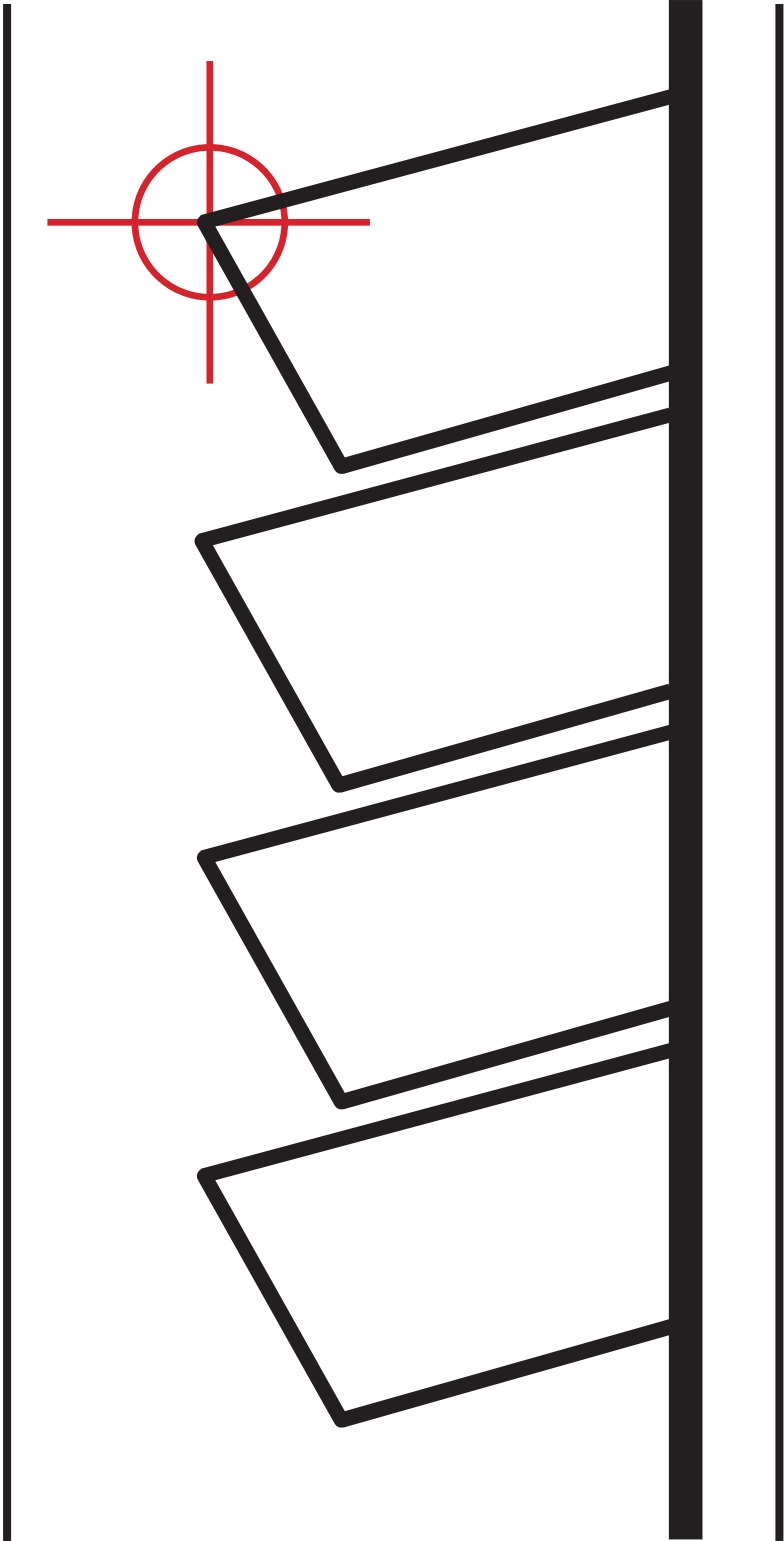
**Figure 12 -  
WDA Sensor Placement For Plastic Elevator  
Buckets (Detecting Bolts) On Up Side Of Leg**



**Figure 13 -  
WDA Sensor Installation  
Specifications For Plastic Buckets**

**METAL ELEVATOR BUCKETS WITH CLOSE VERTICAL CENTERS -**

Figure 14 illustrates the optimal WDA sensor placement for elevator buckets with close vertical spacing. This placement allows for the maximum differential between the buckets. GB Spidex™ and Starco™ low profile are two examples of these bucket types. For additional information, contact 4B.



**Figure 14 -  
WDA Sensor Placement For Metal  
Buckets With Close Vertical Centers**



# TROUBLESHOOTING GUIDE

FAULT	CAUSE	REMEDY
LED on alignment sensor does not flash	<ol style="list-style-type: none"> <li>1. Belt misaligning</li> <li>2. Sensor too far away from target</li> <li>3. Sensor adjustment incorrect</li> <li>4. Faulty wire connection</li> </ol>	<ol style="list-style-type: none"> <li>1. Correct belt tracking</li> <li>2. Move sensor closer to target</li> <li>3. Turn sensitivity control clockwise</li> <li>4. Check wiring</li> </ol>
LED on alignment sensor flashes excessively	<ol style="list-style-type: none"> <li>1. Sensor too close to target</li> <li>2. Sensor adjustment incorrect</li> <li>3. Interference in wiring</li> </ol>	<ol style="list-style-type: none"> <li>1. Move sensor away from target</li> <li>2. Turn sensitivity control counter clockwise</li> <li>3. Use shielded cable and rigid conduit</li> </ol>
Sensor LED on control unit does not flash	<ol style="list-style-type: none"> <li>1. Belt misaligning</li> <li>2. Elevator is not running</li> <li>3. Wiring fault</li> <li>4. Sensor connected to wrong terminals</li> <li>5. Sensor not operating</li> </ol>	<ol style="list-style-type: none"> <li>1. Correct belt tracking</li> <li>2. Normal when not running</li> <li>3. Check wiring</li> <li>4. Check connection</li> <li>5. Possible faulty sensor, contact 4B</li> </ol>
Wrong sensor LED on control unit flashes	Sensor connected to wrong input	See wiring diagram (figure 4)
Alarm LED on	Belt misaligned	Check belt / tracking
Stop LED on	<ol style="list-style-type: none"> <li>1. Stop condition occurred</li> <li>2. Belt misaligned</li> </ol>	<ol style="list-style-type: none"> <li>1. Check motor started</li> <li>2. Check belt</li> </ol>
Elevator leg fails to start	Wiring fault	Check wiring
Elevator leg starts, but fails to keep running	<ol style="list-style-type: none"> <li>1. Belt slipping / misaligning</li> <li>2. Start signal too short</li> </ol>	<ol style="list-style-type: none"> <li>1. Check belt tension / tracking</li> <li>2. Wait for minimum of two pulses before releasing start button</li> </ol>



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