

# **O**WNER'S MANUAL

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## ***A-Series***

***Manual Number 6908281***



**cascade<sup>®</sup>**  
**corporation**

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# INTRODUCTION

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## ABOUT ForkSetter™ SYSTEM

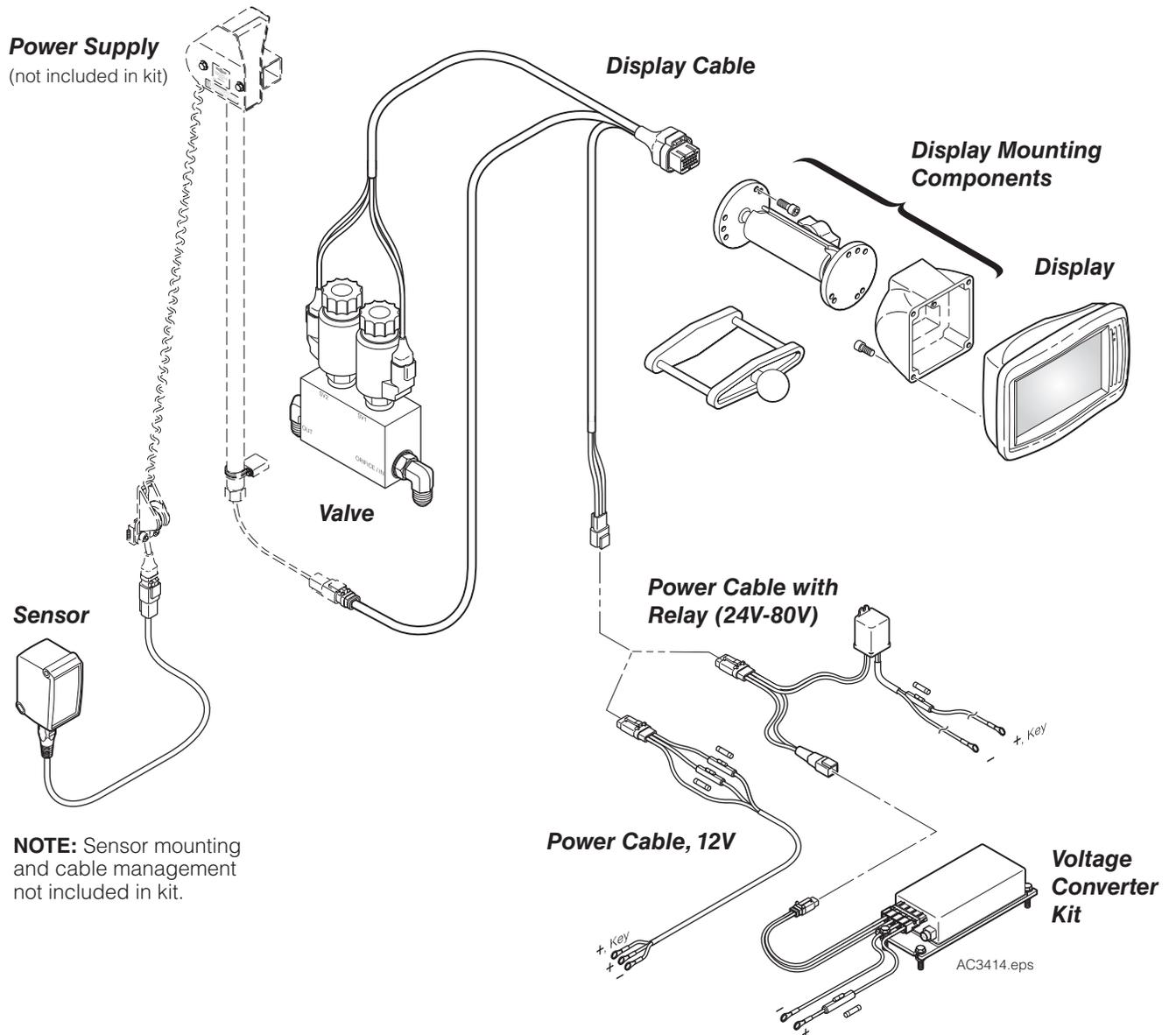
The ForkSetter™ product is intended to be an operator aid. It allows the operator to select the appropriate fork (or arm or pad) position for a the load (or pallet) from a list. Arrow indicators show the operator the direction to move the forks (or arms or pads). The forks (or arms or pads) automatically stop moving when the correct position is achieved. This function improves operator speed and efficiency while reducing product damage.

## BASIC FEATURES

- The system automatically stops forks (or arms or pads) at a defined position.
- The fork (or arm or pad) position is user defined and labeled. Each defined position is called a target.
- Adjustable target tolerance and deceleration zones.
- Sort the list of targets by frequency, minimum value, maximum value, or alphanumeric.
- When a target is not selected, the solenoid is not energized and the forks (or arms or pads) are free to move.
- Arrows show the direction to move forks (or arms or pads) to the target selected.
- Adjustable stop timer that releases for free movement after time out.
- Easy calibration and setup functions that are password protected.
- Multiple languages to choose.
- Optional add/delete target for driver.

# INTRODUCTION

## HARDWARE

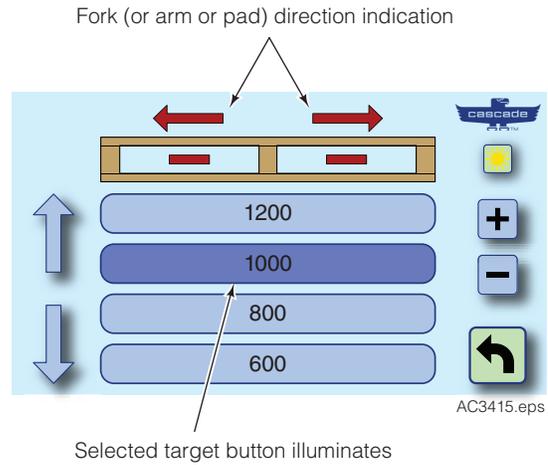


**NOTE:** Sensor mounting and cable management not included in kit.

## ForkSetter™ DISPLAY FEATURES

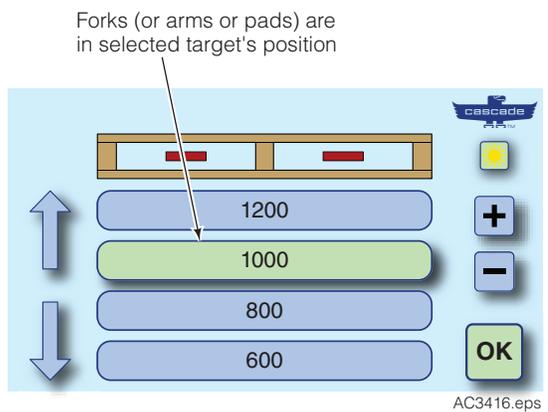
### When a target button is selected:

- The selected target button illuminates.
- The arrows indicate the direction that the forks (or arms or pads) must travel to reach the target position.



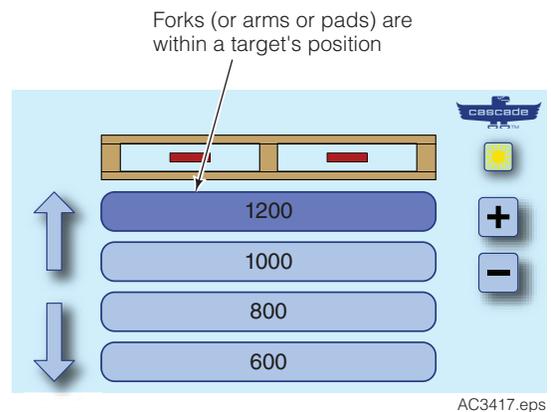
### When the forks (or arms or pads) are in target range:

- The selected target button turns green.
- The ForkSetter™ valve blocks flow for a predetermined amount of time, in seconds.
- After the timer runs out, the solenoid is no longer energized and forks (or arms or pads) are free to move.



### When a target button is NOT selected:

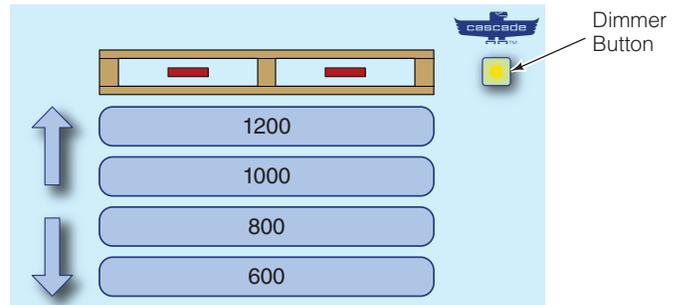
- During fork (or arm or pad) movement, a target button will illuminate when the forks (or arms or pads) are in the defined position.



# INTRODUCTION

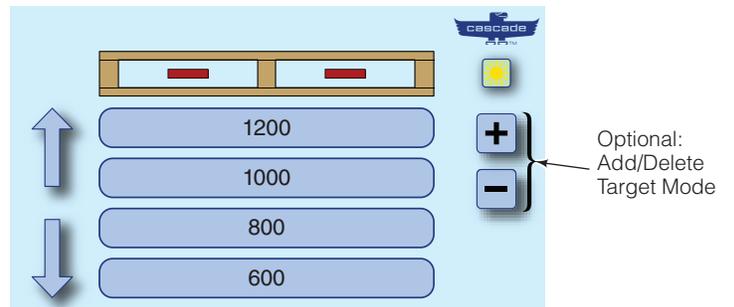
## ADDITIONAL USER DISPLAY FEATURES

- Dimmer button adjusts the display's brightness.



AC3418.eps

- Optional: Add/Delete target mode for driver.  
**NOTE:** Option can be hidden from or available to driver.



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# IMPORTANT INFORMATION

## WARNINGS



**WARNING:** The ForkSetter™ product is not a safety device. It is intended to allow the operator to select the appropriate forks (or arms or pads) position for the load/pallet about to be handled to avoid damage and improve efficiency. Misuse of any lift truck, lift truck accessories or equipment can result in severe personal injury or death.

**WARNING:** Any piece of equipment can present a hazard when used inappropriately or by an untrained operator (driver) or service technician. This equipment must be serviced by qualified, properly trained personnel only.

**WARNING:** Operators (Drivers) must read and understand the "Operation" section in this manual before being allowed to operate equipment with the ForkSetter™ product. If the operator (driver) does not understand any part of this manual, a supervisor should be asked to explain. If it is still not understood, the equipment should not be used. This equipment is intended for use by a trained and authorized operator only.

**WARNING:** Equipment can be HOT. Do not touch or service the valve body, hoses or fittings if the temperature is above 120° F (48° C).

**WARNING:** Residual risk exists to pedestrians and to bystanders in the work area. Do not operate this equipment near pedestrians and bystanders. Do not operate this equipment or attachment in any way not specifically described in the manual as the intended use and function. Operate only in a safe work area and in compliance with facility, local and national standards and rules.

**WARNING:** Daily Inspections are required by the operator before using Cascade Corporation equipment. Operate the equipment in a secure environment, through its full range of function before using in a work environment. Look for leaks, wear or damage. Leaking hydraulic oil can cause a slip hazard, a fire or burns. If a problem is found, take the equipment out of service immediately and report the problem to a supervisor or qualified mechanic for assessment before returning the equipment to work.

**WARNING:** Cascade Corporation does not evaluate the effects the accessories and attachments may have on a host system once installed. It is the industrial truck OEM or installer's responsibility to assess the effect of Cascade Corporation equipment on specifications, stability, performance, operation and safe use of OEM equipment after the installation of Cascade accessories and attachments.

**WARNING:** This kit contains a Class 1 laser. Do not look into the sensor's laser beam. Looking directly into the beam may result in eye injury. **EN/IEC 60825-1:2014** Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to laser notice No. 50, dated June 24, 2017.



## SPECIAL DEFINITIONS

The statements shown appear throughout this manual where special emphasis is required. Read all WARNINGS and CAUTIONS before proceeding with any work. Statements labeled IMPORTANT and NOTE are provided as additional information of special significance or to make the job easier.



**WARNING** – A statement preceded by WARNING is information that should be acted upon to prevent **bodily injury**. A WARNING is always inside a ruled box.

**CAUTION** – A statement preceded by CAUTION is information that should be acted upon to prevent machine damage.

**IMPORTANT** – A statement preceded by IMPORTANT is information that possesses special significance.

**NOTE** – A statement preceded by NOTE is information that is handy to know and may make the job easier.

# IMPORTANT INFORMATION

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## SPECIFICATIONS AND SYSTEM REQUIREMENTS

- The attachment and truck must be in good working condition, properly serviced and maintained.
- Hydraulic requirements:
  - **Maximum Recommended flow:** 10 GPM (38 L/min.)  
**NOTE:** High flow can cause back pressure affecting arm speed and increases heat in the system.
  - **Circuit:** Install ForkSetter™ valve in the CLOSE (or CLAMP) line, in series, between auxiliary valve and attachment.
  - **System Cleanliness Values (ISO 4406:1999):** 15/13/11
  - **Operating Temperature Range:** -22 to 230° F (-30 to 110° C)  
**CAUTION:** User supplied hoses must meet the appropriate industrial standards for safety and quality. See specifications such as the ISO 17165-2, SAE J1273 or EN982.
- Electrical requirements (for each truck/attachment combination):
  - A connection into the truck electrical system for power, is required.
  - **Voltage/Current:** The electrical circuit should be 12V, 4A minimum or be installed with a voltage converter with 12-14V output.
  - The system includes a constant power and a keyed power connection. The keyed power is required for best results and instant “On” features.
  - **Maximum Power:** 45W

## DECOMMISSIONING

When possible take advantage of the Cascade “buyback” policy to ensure maximum recycling and proper disposal to minimize environmental impact. Otherwise, dispose of non recyclable content in accordance with local laws. Note that the recycle content of this accessory is very high.

## SOUND AND VIBRATION

- Weighted emission sound pressure level (LpA) does not exceed 70 dB(A).
- Measured value of whole body vibration (m/s<sup>2</sup>) does not exceed 0,5 m/s<sup>2</sup>.
- Measured value of hand-arm vibration (m/s<sup>2</sup>) does not exceed 2,5 m/s<sup>2</sup>.

# INSTALLATION

## ABOUT INSTALLATION

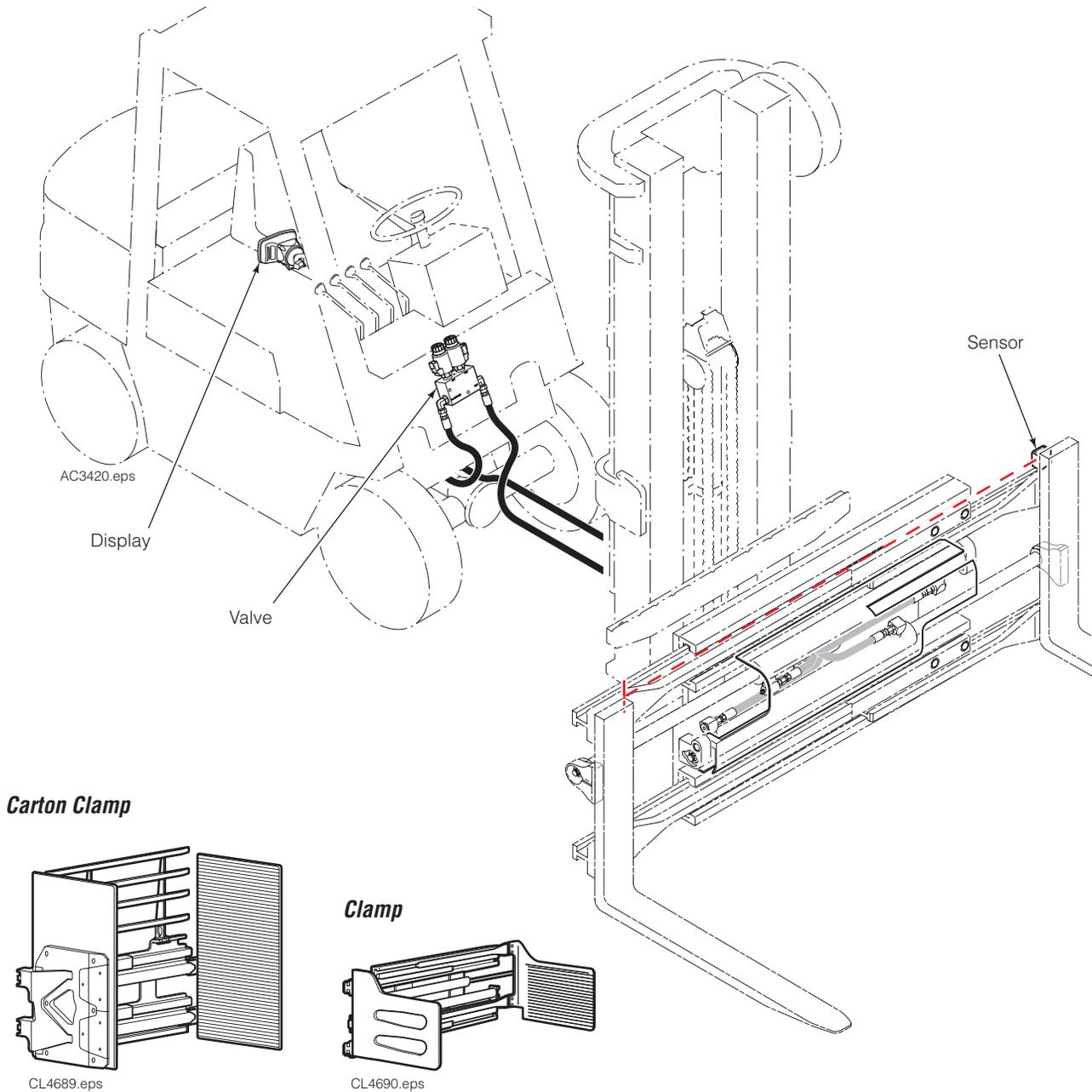
This section provides installation instructions for Cascade ForkSetter™ product kit. This kit contains a touch screen display, display mounting kit, valve, power wire harness, and laser sensor.

### Overview: Installation Steps

- 1 Install hydraulic components, "Valve and Hose Installation", Page 8.
- 2 Install electronic components, "Electronic Component Installation", Page 9.  
**NOTE:** This installation section includes installing mast power supply, not included in kit.
- 3 Setup the display for use, "Initial Set Up" in Display Section, Page 13.

### Owner/User Steps

- 1 Add target positions to the display's target list, "Adding Targets" in Operation Section, Page 26.



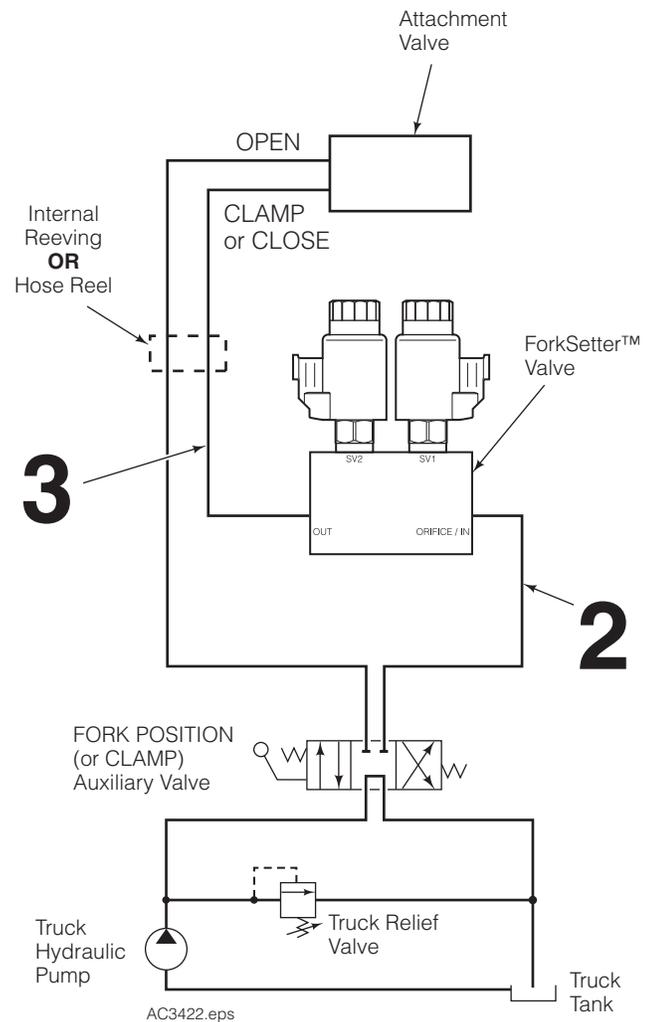
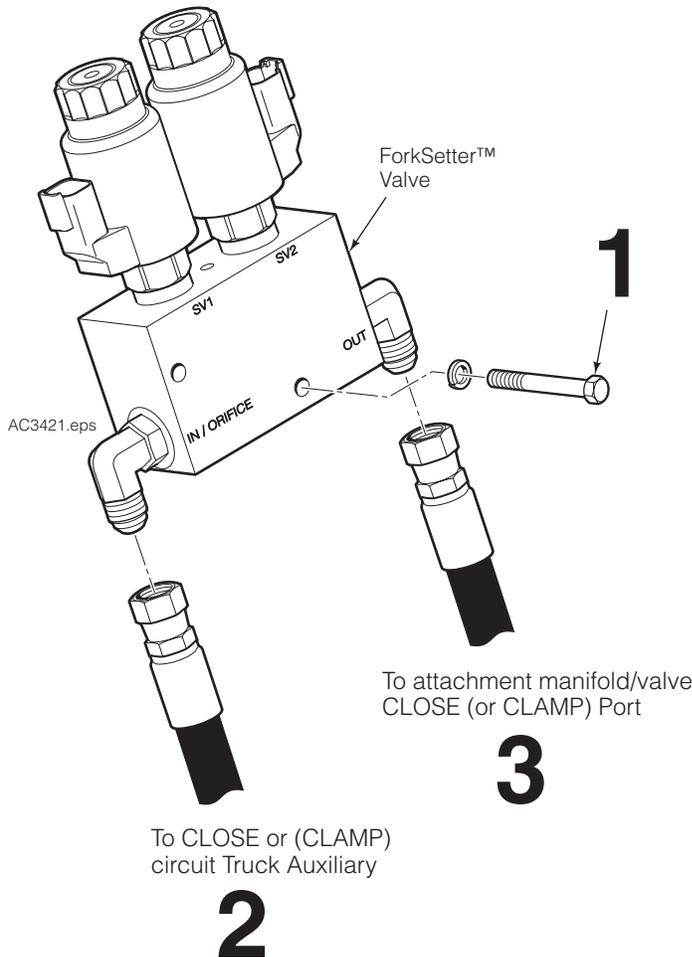
# INSTALLATION

## VALVE AND HOSE INSTALLATION

**CAUTION:** User supplied hoses must meet the appropriate industrial standards for safety and quality. See specifications such as the ISO 17165-2, SAE J1273 or EN982.

 **WARNING:** Before removing any hoses, relieve pressure in the hydraulic system. With the truck off, open the truck auxiliary control valve (or valves) several times in both directions.

- 1** Position valve on the truck cowl. Mark the mounting holes. Mount the valve using two 1/4 in. (6 mm) capscrews (user supplied).
- IMPORTANT:** Watch for clearance with the valve when fully tilting back the mast.
- 2** Connect a high pressure, OEM approved hose (user supplied) from the ForkSetter™ valve "ORIFICE / IN" port to the truck auxiliary CLAMP port.
- 3** Connect a high pressure, OEM approved hose (user supplied) from the ForkSetter™ valve "OUT" port to the attachment CLAMP supply line (internal reeving or hose reel).



# INSTALLATION

## ELECTRONIC COMPONENT INSTALLATION

**NOTE:** Due to host truck and attachment geometry being varied, wire cable track, guards and mounting are not included in the kit and are user supplied. Consult Cascade Corporation for support.

Pre-designed attachments suitable for the ForkSetter™ system are recommended. Consult Cascade Corporation.

A four conductor cable (AWG 26 minimum) for over the mast is required and not included with the kit. Consult Cascade Corporation for Power Supply (shown in table) or Cable Reel options.

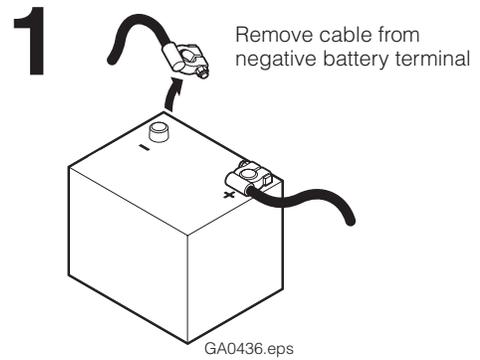
### Compatible Power Supply Groups ①

Maximum Mast ② Fork Height, in. (cm)	Power Supply Group
166 (422)	6844334
189 (480)	6844339
218 (554)	6844344
240 (610)	6844349
320 (813)	6844354

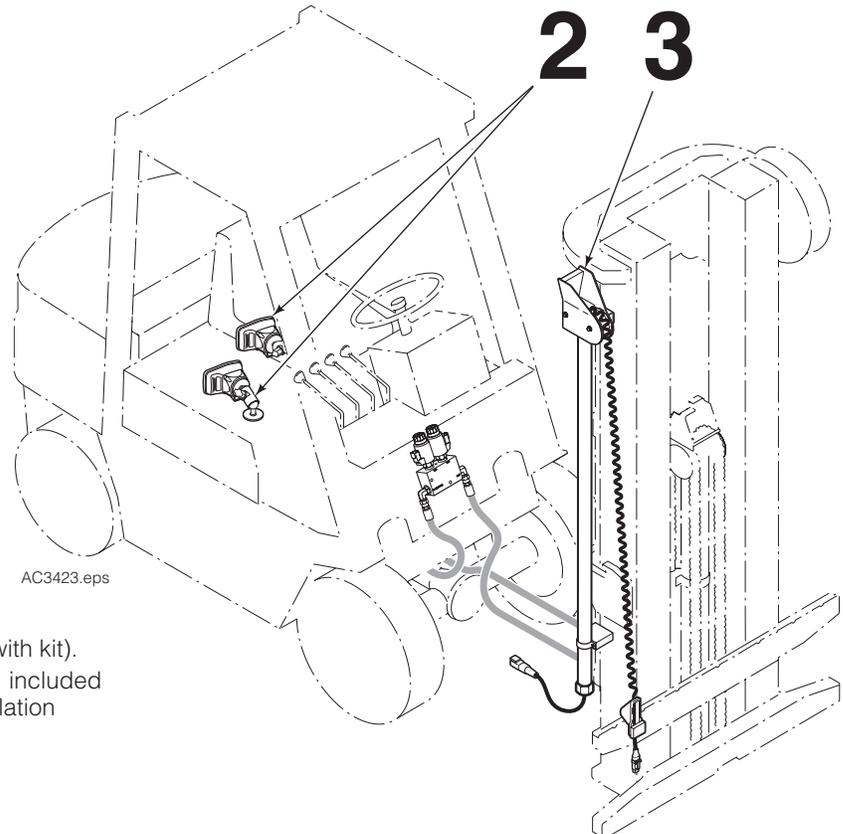
① Conductors 4 @ 26 AWG

② Simplex, dual or triple masts only

- 1 Disconnect the truck power cable from the negative battery terminal or as directed by OEM truck manual.



- 2 Mount the display for easy access on the truck overhead guard or dash using the mounting kit and hardware provided.



- 3 Install mast power supply (not supplied with kit). Refer to installation instructions 6844330, included with power supply kit, for complete installation procedure.

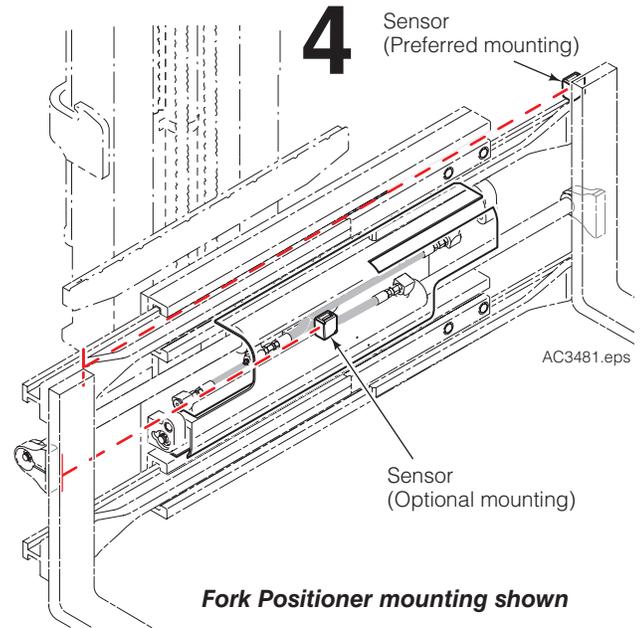
*Procedure continued on next page*

# INSTALLATION

## ELECTRONIC COMPONENT INSTALLATION (CONTINUED)

- 4 Install the sensor on the attachment. Position sensor to measure the distance between the forks (or arms or pads) with a minimum distance of 2 in. (50 mm).
 

**CAUTION:** Verify that sensor wiring is clear from binding or damage during full range of motion.
- 5 If necessary, install reflective tape to improve sensor performance in sever applications, such as, bright light, dirty and non-reflective surfaces.
- 6 Route and connect the sensor cable to the mast power supply. Secure wiring.
- 7 Verify the cable harness is connected to the touch screen display.
- 8 Route and connect solenoid cables to the valve assembly. Secure wiring.
  - Connector labeled DECEL to SV1
  - Connector labeled STOP to SV2
- 9 Route and connect the 4 socket connector to the mast power supply. Secure wiring.
- 10 Connect the cables as follows:



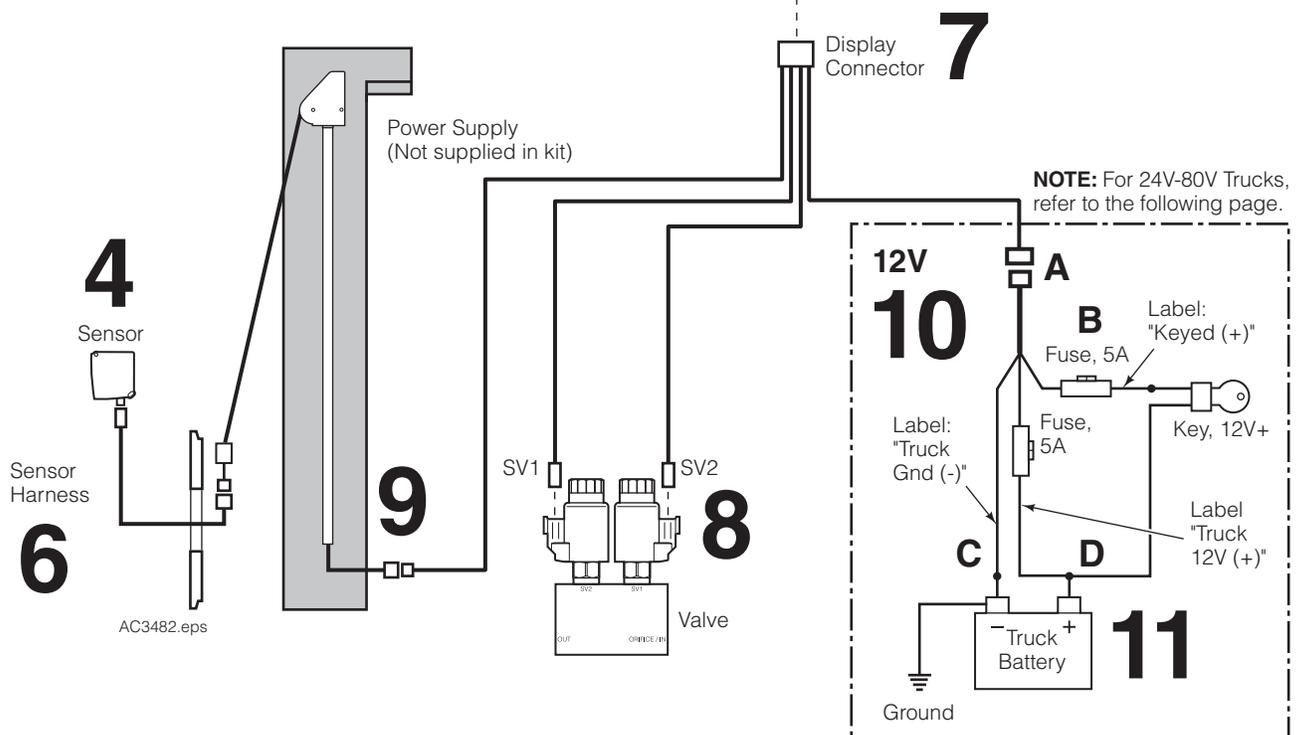
### 12V Trucks

- A Connect the power cable's 3-socket connector to the display cable's 3-pin connector.
- B Connect the power cable terminal, labeled "Keyed (+)", to a 12V switched power source.
- C Connect the power cable terminal, labeled "Truck Gnd (-)", to ground.
- D Connect the power cable terminal, labeled "Truck 12V (+)", to a 12V source.



**WARNING:** To reduce risk of fire, replace only with the same type and ratings to fuse. The fused power cable is polarity sensitive. The positive wire must be connected to a positive power source.

Procedure continued on next page



## ELECTRONIC COMPONENT INSTALLATION (CONTINUED)

10 Connect the cables as follows (continued)

### 24V-80V Trucks

- A** Mount the converter kit and relay to the truck. Connect the relay's 2-pin connector, labeled "Converter", to the converter kit's cable 2-socket connector.
- B** Connect the relay cable's 3-socket connector to the display cable's 3-pin connector.
- C** Connect the converter kit's fused positive terminal, "Source (+)", to a 24V-80V power source.
- D** Connect the relay terminal, labeled "Truck Gnd", and convertor terminal, labeled "Source(-)", to ground.
- E** Connect the relay terminal, labeled "Key (+)" wire to a 24V-80V key switched power source.

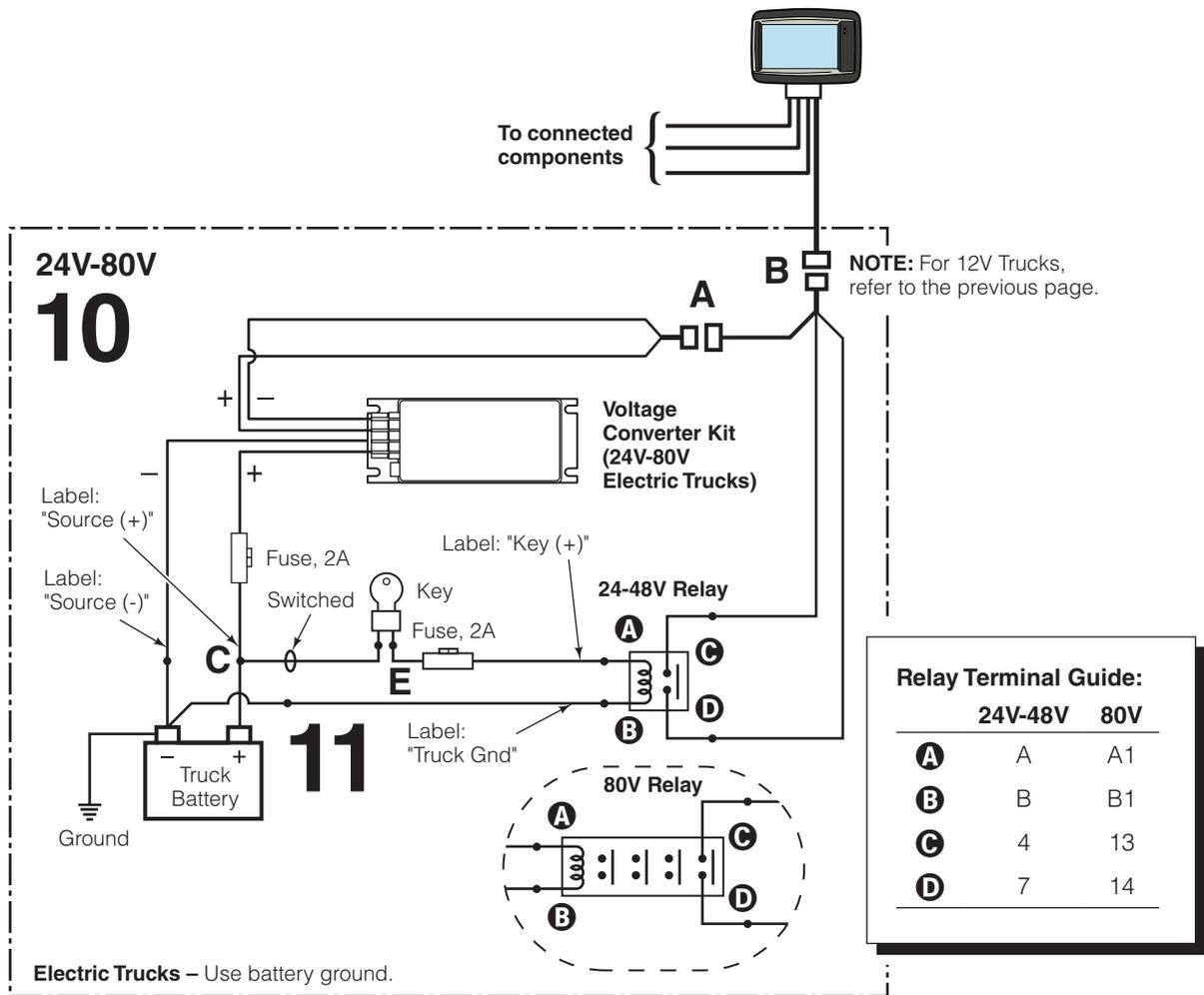
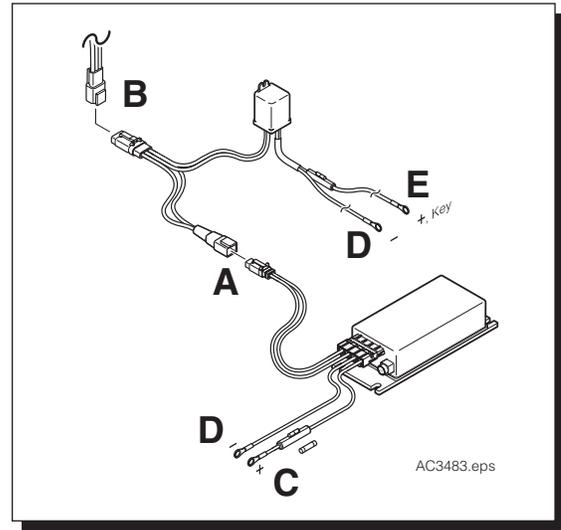
**NOTE:** Connecting the "Key" wire to a keyed power source allows the display to turn on without reboot. Check cable routing for pinch points and clearance. Use wire ties as needed.

11 Connect battery cable(s) to their proper terminal(s).

*Procedure continued on next page*



**WARNING:** To reduce risk of fire, replace only with the same type and ratings to fuse. The fused power cable is polarity sensitive. The positive wire must be connected to a positive power source.



## ELECTRONIC COMPONENT INSTALLATION (CONTINUED)

**12** The sensor is configured at the factory. If necessary, perform "Sensor Setup" instructions, found in the Appendix A.

**13** Perform "Initial Setup" found in "Display" section.

**14** Test the system prior to use as outlined, below.

### TEST PRIOR TO USE

**CAUTION:** After completing installation or returning to service, always test the equipment through several cycles.

Test in a safe environment, away from pedestrians or bystanders.

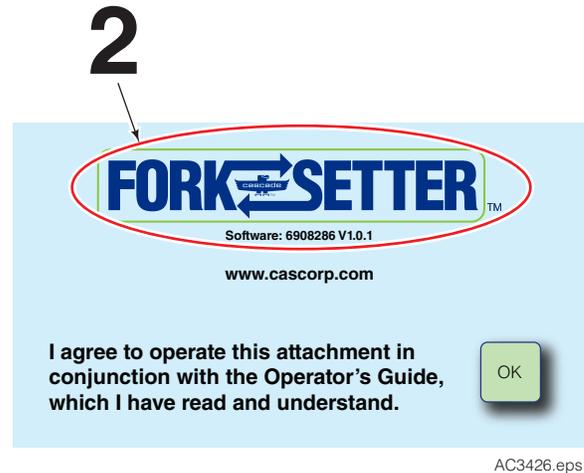
### HOW TO DISABLE

Disconnect power.

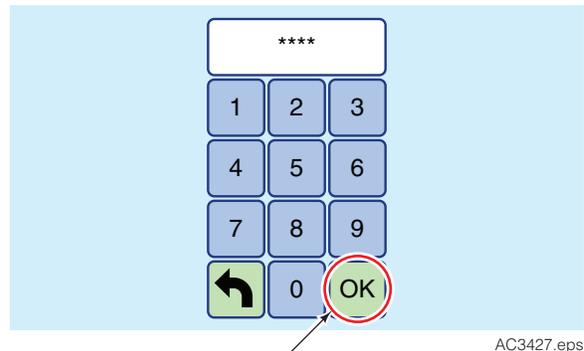
## INITIAL SETUP

**IMPORTANT:** Perform the following prior to putting the system into service.

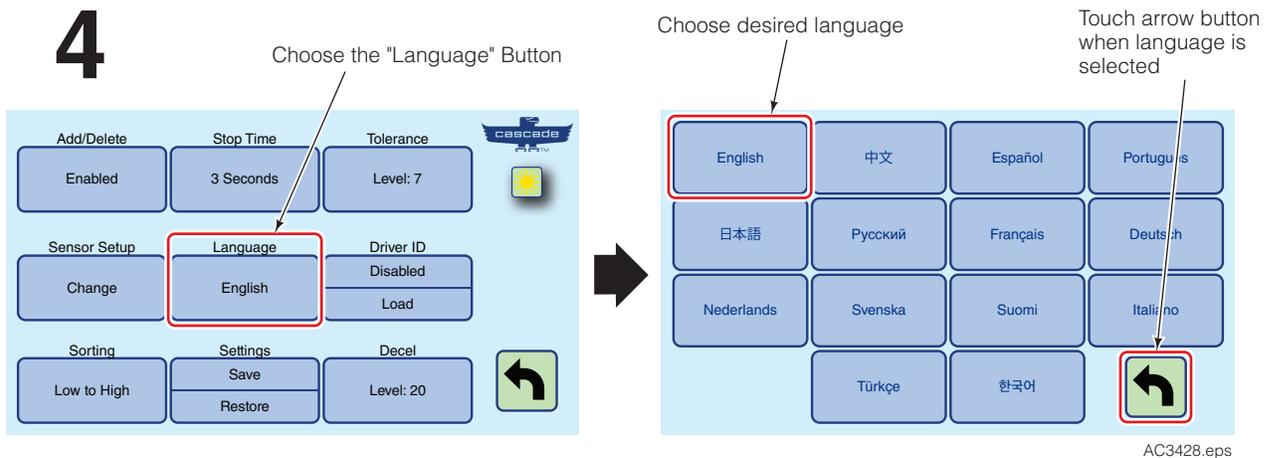
- 1 Power the unit and let it boot to the *Acknowledgement screen*.
- 2 Touch the ForkSetter™ Logo.



- 3 A dialog box will show. Enter the password, "1234", and touch the "OK" button.



- 4 If required, locate "Language" and touch the button. Choose the preferred language. Then, choose the arrow button to return the *Settings screen*.



Procedure continued on next page

## INITIAL SETUP (CONTINUED)

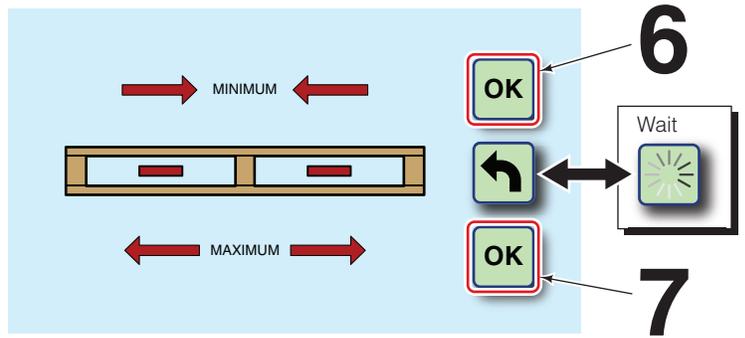
**5** Locate "Sensor Setup" and touch the "Change" button. This will set the minimum and maximum range for the sensor.

**5**

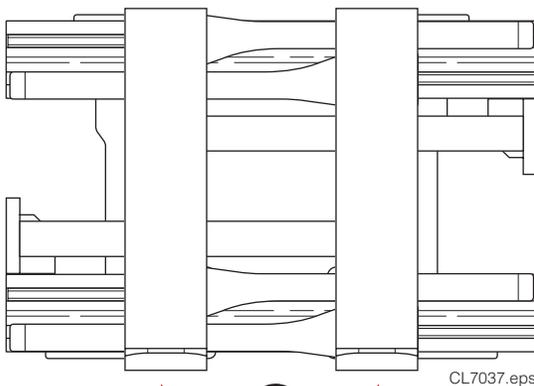


**6** Position the forks (or arms or pads) as close as possible. Press the upper "OK" button. The Return button will change to a spinning icon. When the Return button reappears, continue to Step 7.

**7** Position the forks (or arms or pads) as far apart as possible. Press the lower "OK" button. The Return button will change to a spinning icon. When the Return button reappears, choose the Return button to return the *Settings* screen.



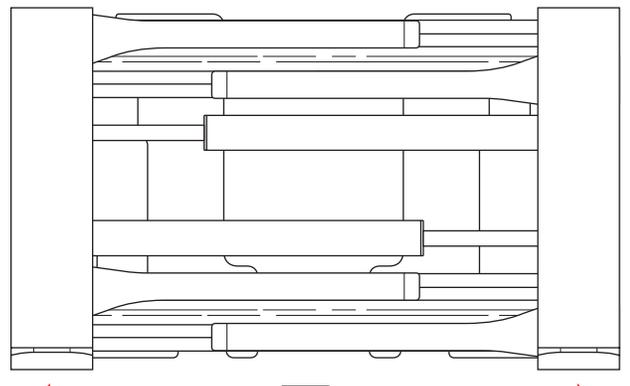
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**6**

Position the forks (or arms or pads) as close as possible.



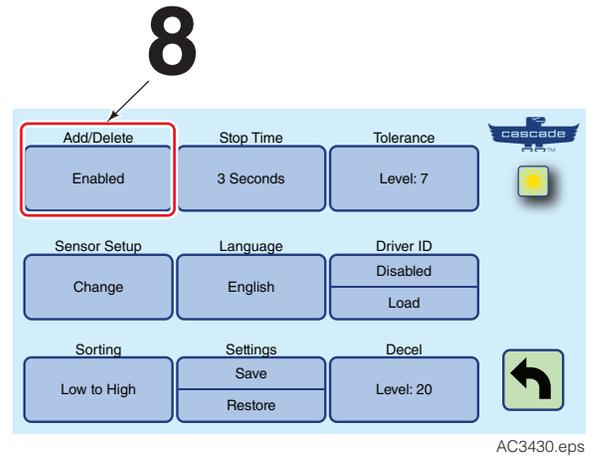
CL7038.eps

**7**

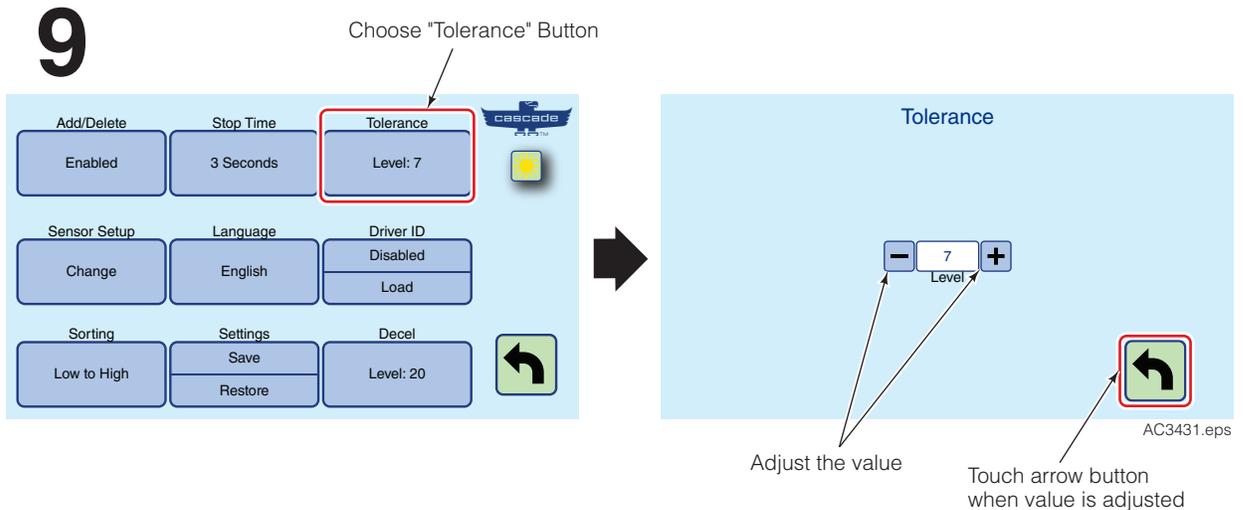
Position the forks (or arms or pads) as far apart as possible.

## INITIAL SETUP (CONTINUED)

- 8 Locate "Add/Delete" and verify that "Enabled" appears in the box (button).



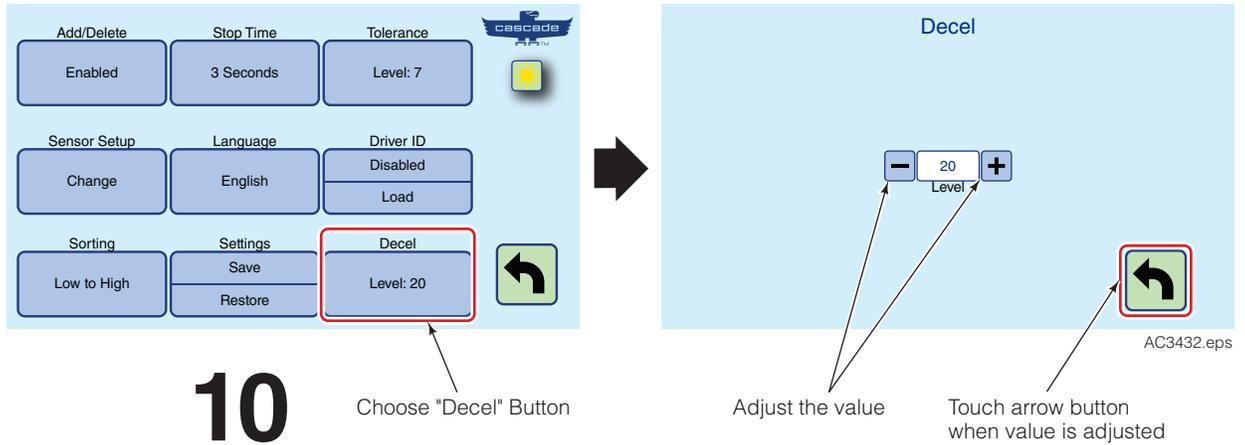
- 9 Locate "Tolerance" and verify the level value. The value in the box (button) represents the size of the stop zone. Touch the box (button) and use the "+" and "-" buttons to change the desired value. Cascade recommends starting with "8" (default value). Choose the Return button to return the *Settings* screen.



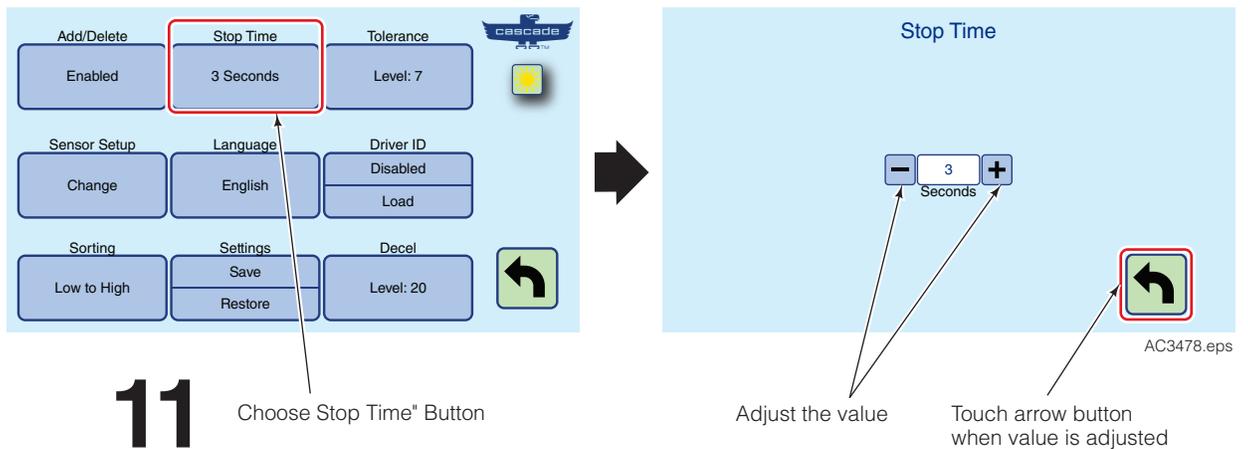
## INITIAL SETUP (CONTINUED)

- 10** Locate "Decel" and verify the decel value. The value displayed in the box (button) represents the size of the decelerate zone. Touch the box (button) and use the "+" and "-" buttons to change the value. Cascade recommends starting with twice the "Tolerance" level value. Start between 12 and 18 (default value is 16). Choose the Return button to return the *Settings screen*.

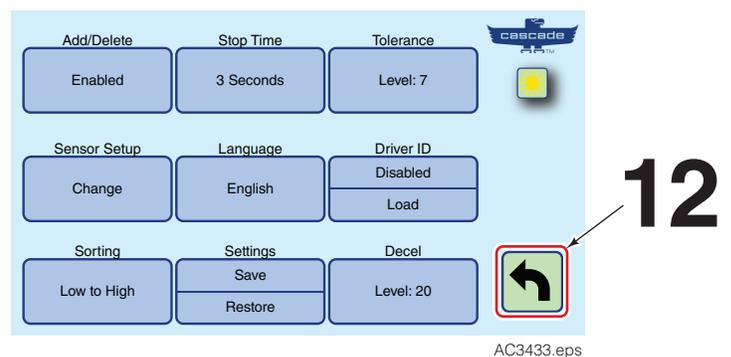
**IMPORTANT:** Refer to Troubleshooting for further Decel value adjustments.



- 11** Locate "Stop Time" and verify the time is set to 2 seconds (default). If required, touch the button to change the value. Use the "+" and "-" buttons to the desired value. Choose the Return button to return the *Settings screen*.



- 12** Choose the Return button to return the *Acknowledgement screen*.



## DISPLAY SETTINGS

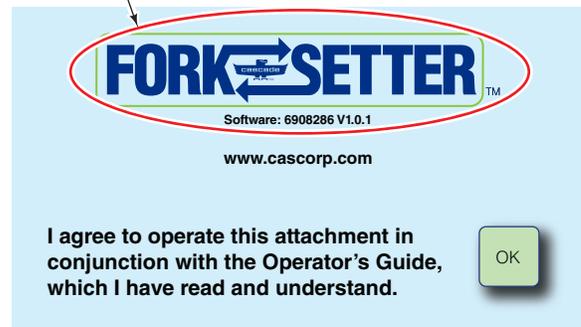
This section describes the settings found in the *Settings screen*.

**NOTE:** Many of the settings shown are used in performing the display's initial setup. Refer to "Initial Setup".

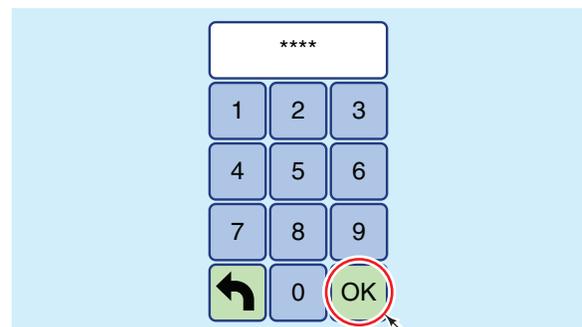
### Access Settings Screen

- 1 From the *Acknowledgement screen*, touch the ForkSetter™ Logo.

1



- 2 A dialog box will show. Enter the password, "1234", and touch the "OK" button. The Settings screen will show.



2

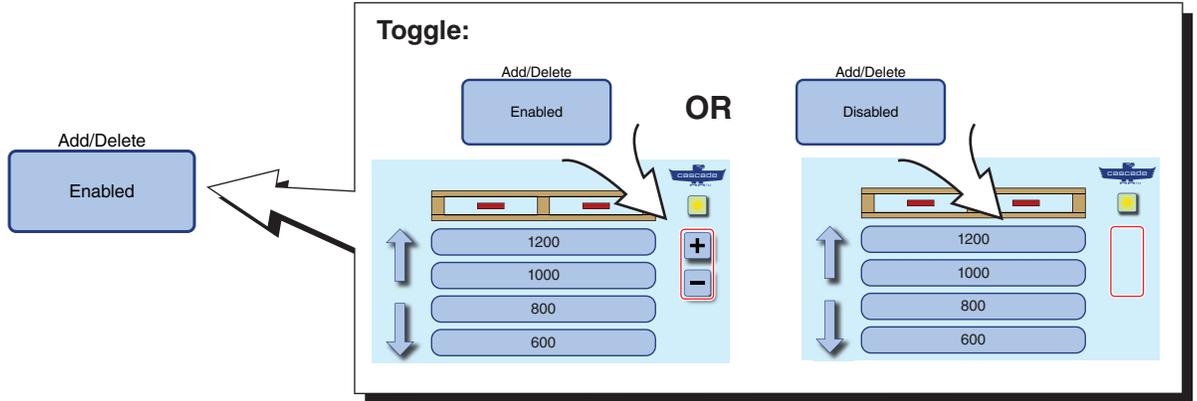


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## DISPLAY SETTINGS (CONTINUED)

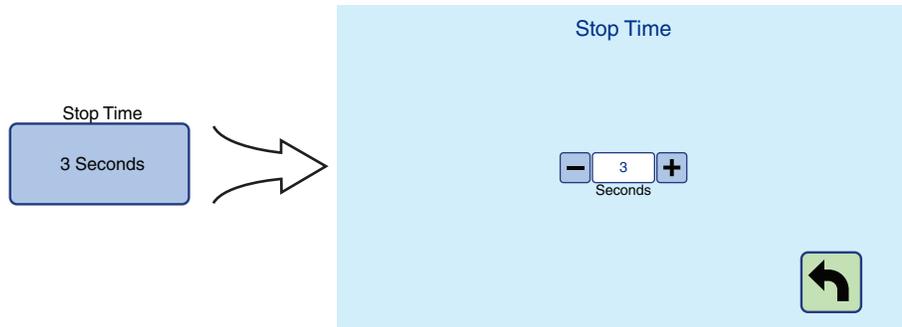
### Settings Screen

- **Add/Delete Button** – Allows the user to add and/or remove selectable target buttons, on the *Target Selection* screen.



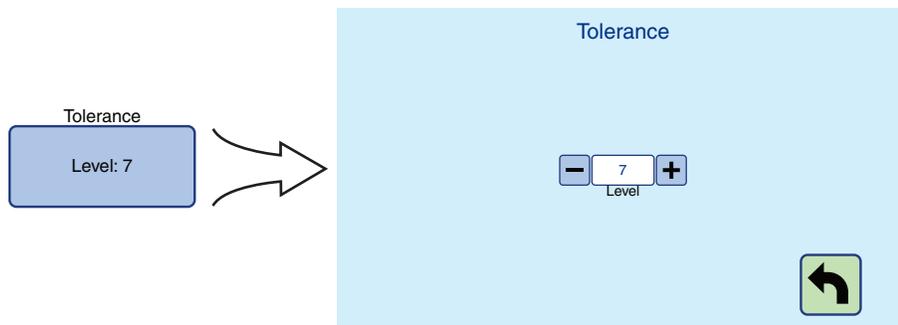
AC3434.eps

- **Stop Time Button** – When the forks (or arms or pads) enter the stop zone, the valve will shut off flow for the time shown.



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- **Tolerance Button** – The size of the stop zone. Refer to "Initial Setup", Step 9.

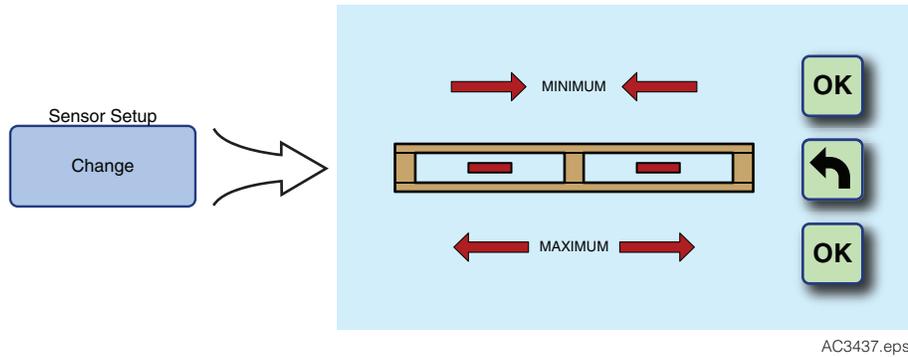


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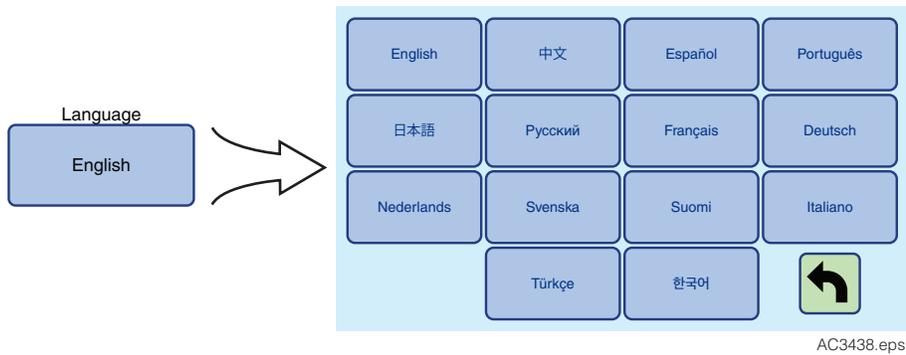
## DISPLAY SETTINGS (CONTINUED)

### Settings Screen (Continued)

- **Sensor Setup Button** – Sets the range of the forks (or arms). Refer to "Initial Setup", Step 6 and 7.



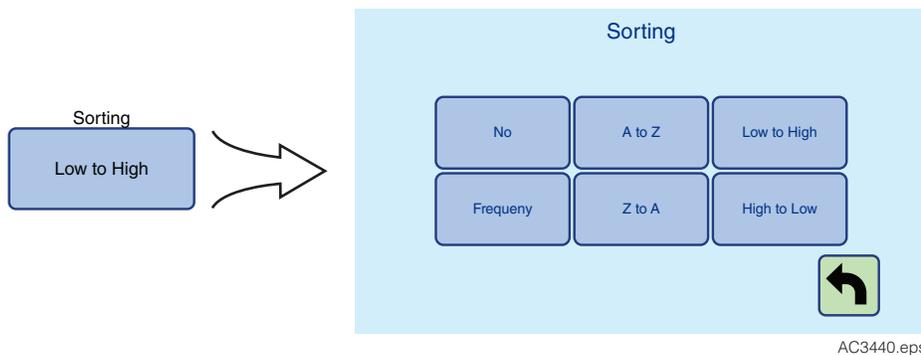
- **Language Button** – Select a language for the display to show.



- **Driver ID Button** – This button and button options are not active. Consult Cascade Corporation. Refer to back cover.



- **Sorting Button** – Choose the order to display the list of targets.



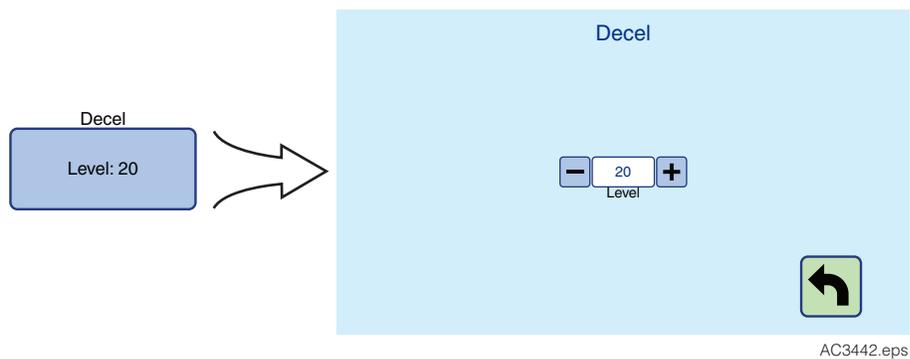
## DISPLAY SETUP (CONTINUED)

### Settings Screen (Continued)

- **Settings Button** – This button and button options are not active. Consult Cascade Corporation. Refer to back cover.



- **Decel Button** – The size of the deceleration zone. Refer to "Initial Setup", Step 10.



## ABOUT OPERATION

This section provides operating instructions for Cascade ForkSetter™ system used with Cascade attachments. The system requires additional instructions as outlined below. Refer to the attachment's Operator Guide for safety rules and standard operation procedures.

The following warnings and information is to be read and understood by each operator prior to use.



**WARNING:** The ForkSetter™ product is not a safety device. It is intended to allow the operator to select the appropriate forks (or arms or pads) position for the load/pallet about to be handled to avoid damage and improve efficiency. Misuse of any lift truck, lift truck accessories or equipment can result in severe personal injury or death.

**WARNING:** Operators (Drivers) must read and understand the "Operation" section in this manual before being allowed to operate equipment with the ForkSetter™ product. If the operator (driver) does not understand any part of this manual, a supervisor should be asked to explain. If it is still not understood, the equipment should not be used. This equipment is intended for use by a trained and authorized operator only.

**WARNING:** Residual risk exists to pedestrians and to bystanders in the work area. Do not operate this equipment near pedestrians and bystanders. Do not operate this equipment or attachment in any way not specifically described in the manual as the intended use and function. Operate only in a safe work area and in compliance with facility, local and national standards and rules.

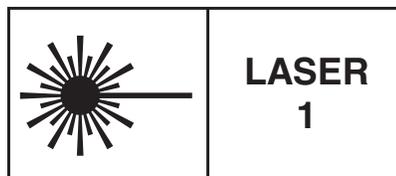
**WARNING:** Equipment can be HOT. Do not touch or service the valve body, hoses or fittings if the temperature is above 120° F (48° C).

**CAUTION:** Do not use tools or hard objects to touch the screen to avoid damage and scratching.

**WARNING:** Daily Inspections are required by the operator before using Cascade Corp. equipment. Operate the equipment in a secure environment, through its full range of function before using in a work environment. Look for leaks, wear or damage. Leaking hydraulic oil can cause a slip hazard, a fire or burns. If a problem is found, take the equipment out of service immediately and report the problem to a supervisor or qualified mechanic for assessment before returning the equipment to work

**WARNING:** Cascade Corp. does not evaluate the effects the accessories and attachments may have on a host system once installed. It is the industrial truck OEM or installer's responsibility to assess the effect of Cascade Corp. equipment on specifications, stability, performance, operation and safe use of OEM equipment after the installation of Cascade accessories and attachments.

**WARNING:** This kit contains a Class 1 laser. Do not look into the sensor's laser beam. Looking directly into the beam may result in eye injury. **EN/IEC 60825-1:2014** Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to laser notice No. 50, dated June 24, 2017.



## REQUIRED DAILY INSPECTION

Operator, each day and prior to use:

- Visually inspect the valve body, hoses and fittings for leaks, damage or wear.
- Report any observations such as low pressure, leaks, damage or wear to your supervisor.

# OPERATION

## DISPLAY BUTTONS

Scroll Up



Add - Add new target



Dimmer - Adjust the display's brightness



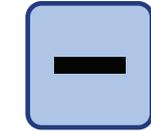
Return - Deselect a target



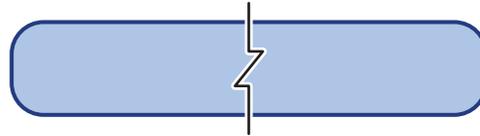
OK - Accept selection



Scroll Down



Delete- Remove target



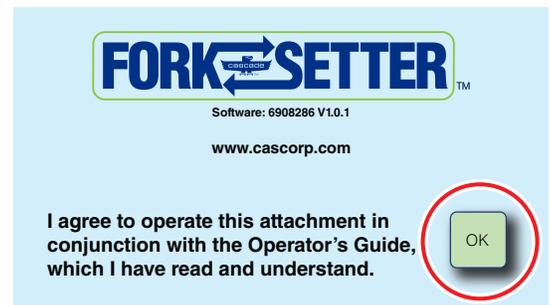
AC3443.eps

Target - A preset fork (or arm or pad) width

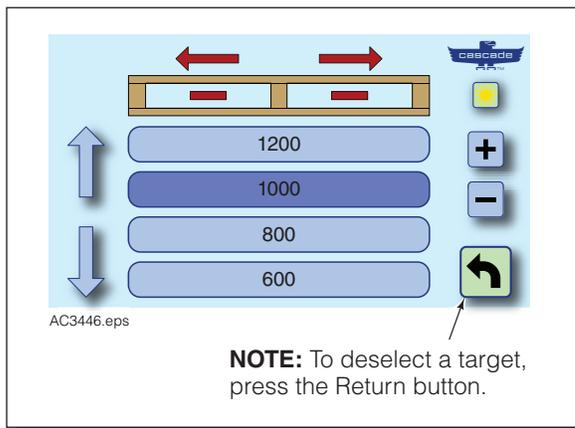
**NOTE:** Scroll buttons show when five or more targets are listed.

## BASIC OPERATION WITH AN ATTACHMENT

- 1 Read the Acknowledgment statement and press the "OK" button to continue.
- 2 Approach the load and position the truck and attachment as described in the attachment's operator guide or user manual.
- 3 At the *Target Selection screen*, choose a target point from the list.

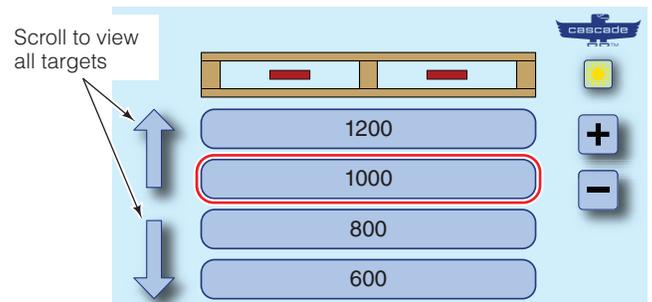


AC3444.eps



AC3446.eps

**NOTE:** To deselect a target, press the Return button.



AC3449.eps

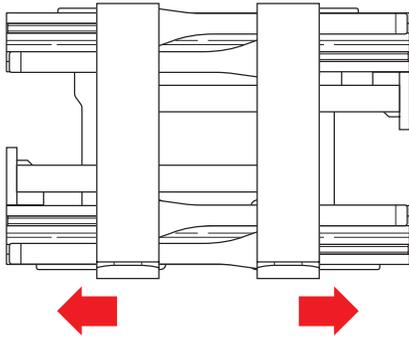
*Procedure continued on next page*

# OPERATION

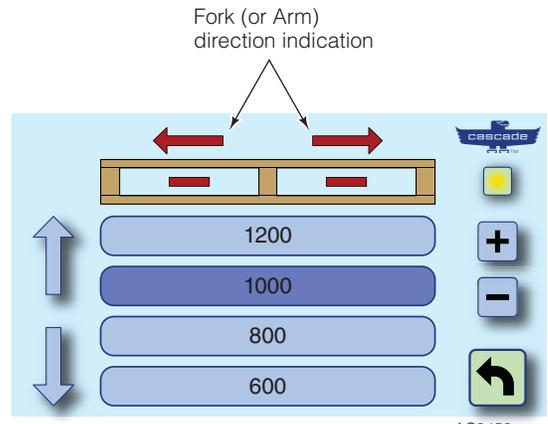
## BASIC OPERATION WITH AN ATTACHMENT (CONTINUED)

- 4 The arrows above the pallet indicate the direction the forks (or arms or pads) must travel.

Use the truck auxiliary control lever to move forks (or arms or pads) in the direction of the arrows shown on the display.



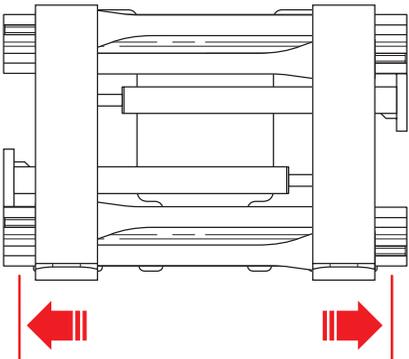
CL7042.eps



AC3450.eps

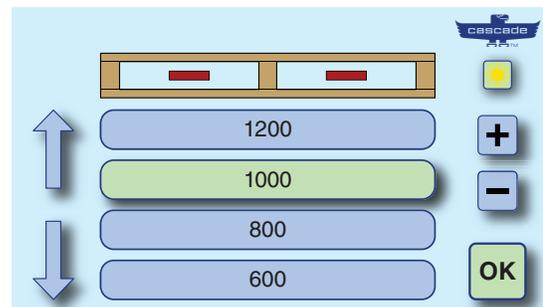
- 5 When the forks (or arms or pads) are within target range, the selection turns green and the valve blocks the flow for a set amount of time (Stop Time).

The forks (or arms or pads) are now positioned.



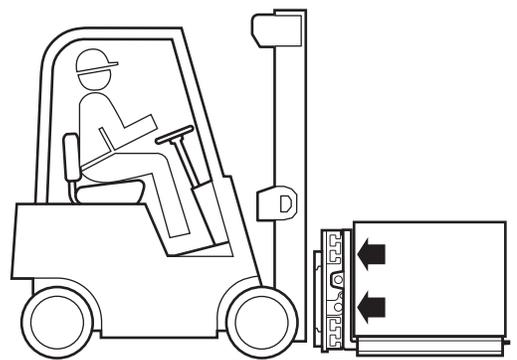
CL7043.eps

**NOTE:** For best accuracy, hold the auxiliary lever "on" until the forks (or arms or pads) stop. Release the auxiliary lever.



AC3447.eps

- 6 Transport the load as described in the attachment's operator guide.



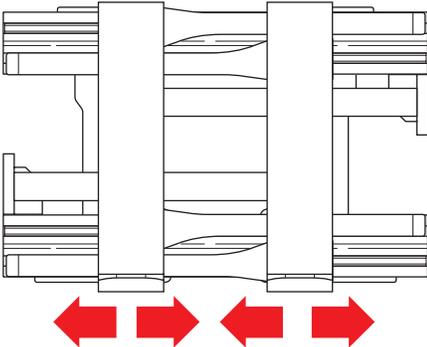
CL7044.eps

Procedure continued on next page

# OPERATION

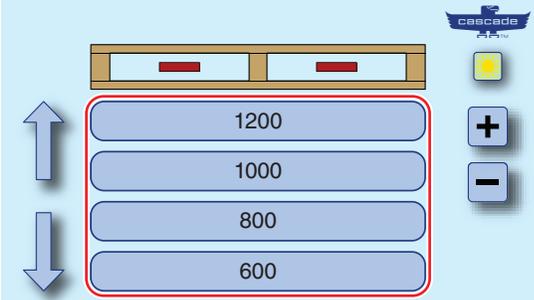
## BASIC OPERATION WITH AN ATTACHMENT (CONTINUED)

7 After Stop Time runs out, the valve opens and the forks (or arms) are free to move.



CL7045.eps

8 Choose a new target selection.

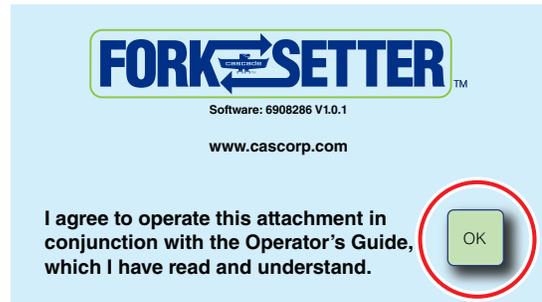


AC3448.eps

# OPERATION

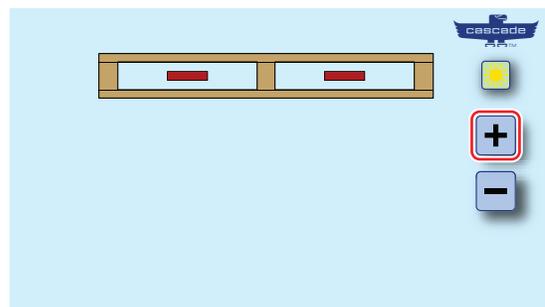
## ADDING TARGETS

- 1 Read the Acknowledgment statement and press the "OK" button to continue.



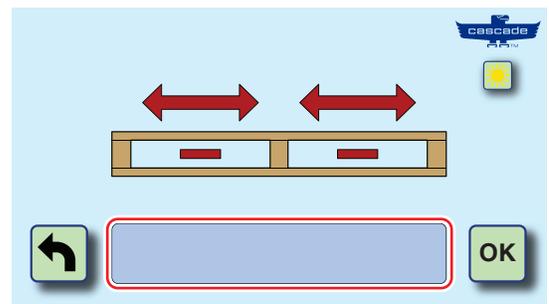
AC3444.eps

- 2 In the *Target Selection* screen, choose the "+" button.



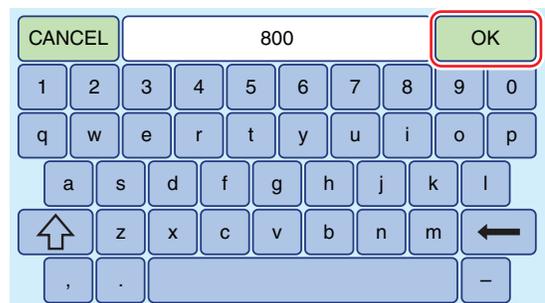
AC3451.eps

- 3 Press the Description field.



AC3452.eps

- 4 Use the screen's keyboard to enter the target button's description. Press the "OK" button.



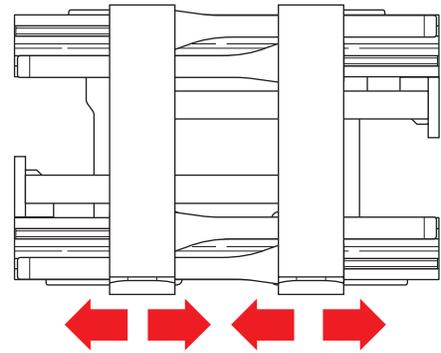
AC3453.eps

*Procedure continued on next page*

# OPERATION

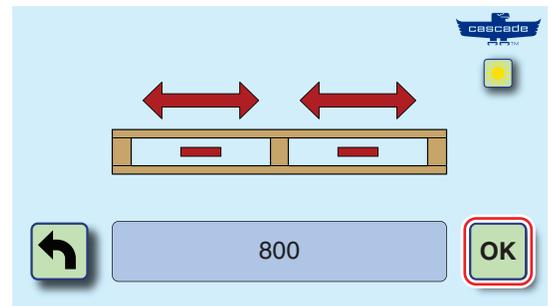
## ADDING TARGETS (CONTINUED)

5 Position the forks(or arms or pads) to new target width.



CL7045.eps

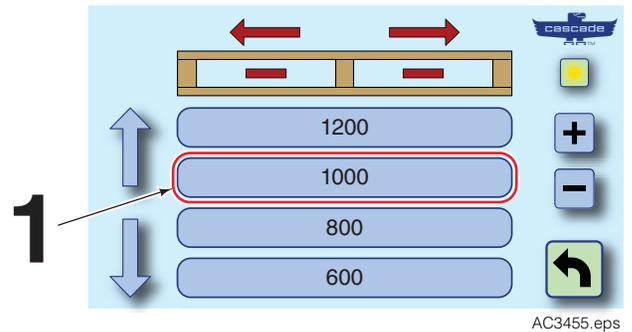
6 Press the "OK" button to set the position.



AC3454.eps

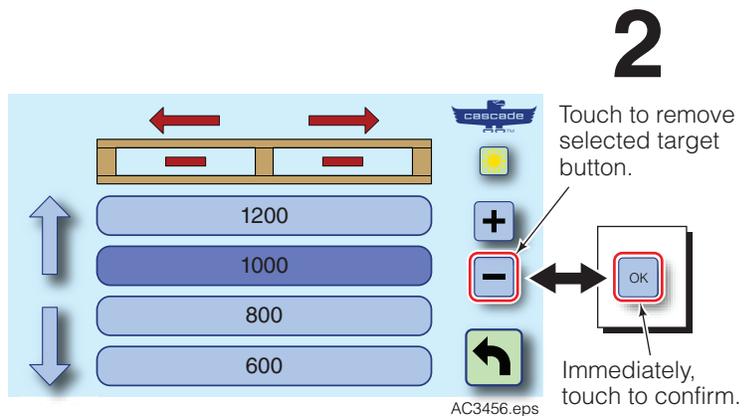
## REMOVE TARGETS

1 Press a target button.



AC3455.eps

2 Press the "-" button to remove the selected target and then "OK" button to confirm. The button will return "-" button and the target button will be removed.

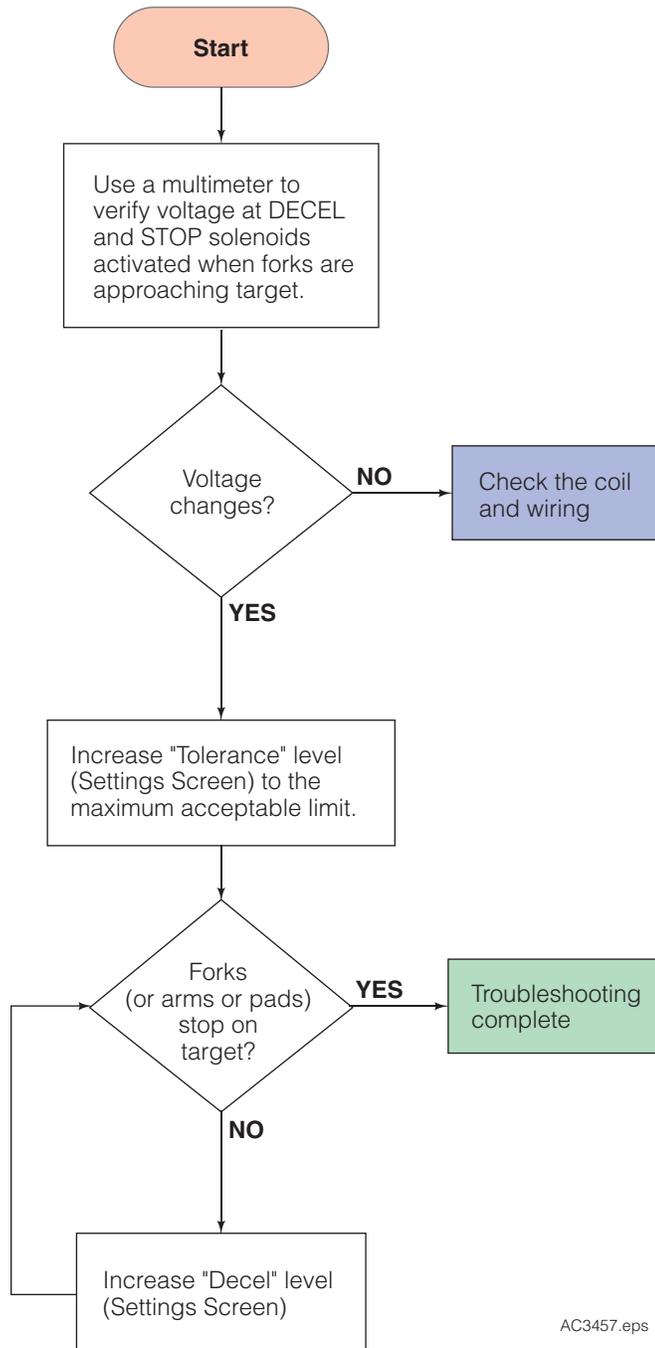


AC3456.eps

# TROUBLESHOOTING

## TARGET TROUBLESHOOTING

**Problem: The forks (or arms or pads) do not stop and go past the target.**

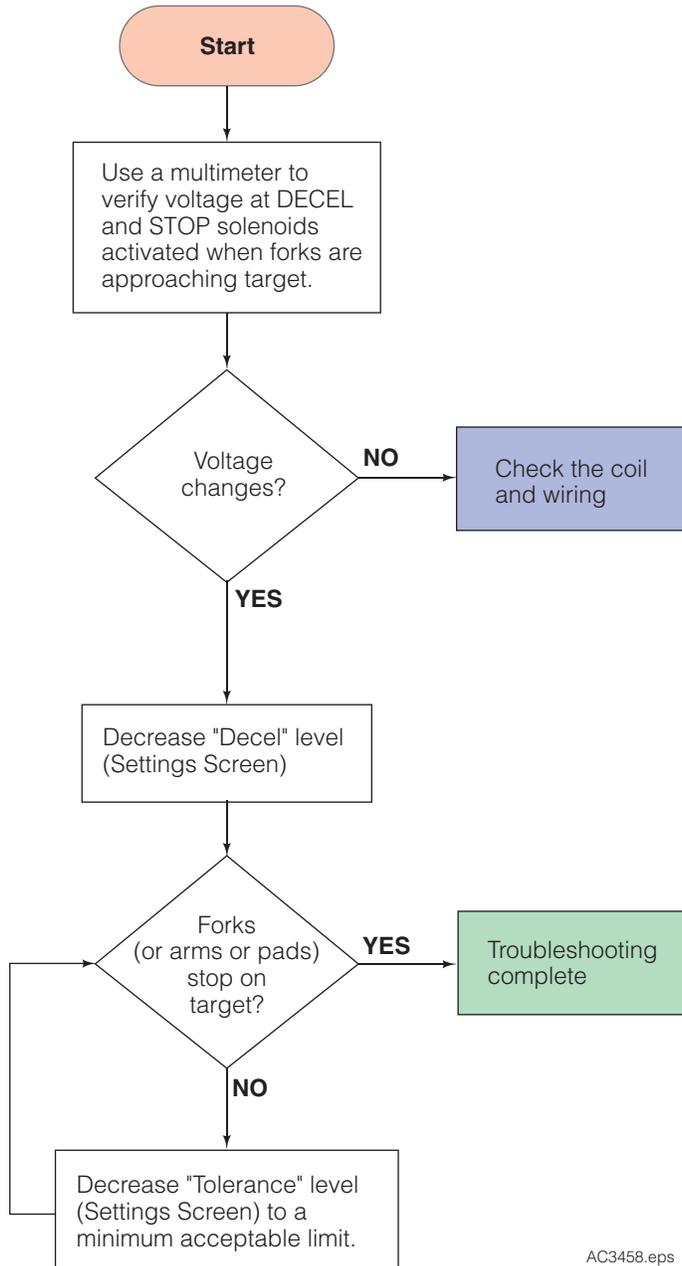


AC3457.eps

# TROUBLESHOOTING

## TARGET TROUBLESHOOTING (CONTINUED)

**Problem: The forks (or arms or pads) stop or slow before reaching the target.**



AC3458.eps

## ABOUT SERVICE

This section describes servicing the valve and provides hydraulic and electrical schematics of the system.

**NOTE:** To service the sensor, refer to the Appendix A.

**NOTE:** Wear appropriate protective gear, goggles and gloves. Clean up and dispose of split hydraulic oil and grease appropriately.

## HOW TO DISABLE

Disconnect power.

## DECOMMISSIONING

When possible take advantage of the Cascade “buyback” policy to ensure maximum recycling and proper disposal to minimize environmental impact. Otherwise, dispose of non recyclable content in accordance with local laws. Note that the recycle content of this accessory is very high.

## VALVE REMOVAL AND INSTALLATION

- 1 Disconnect the hoses from the valve. Plug the ends and tag for reassembly.
- 2 Disconnect the solenoid connectors from the solenoid coil.
- 3 Remove the valve mounting capscrews. For reassembly, tighten capscrew to 15 ft.-lbs. (20 Nm).
- 4 For reassembly, reverse the above procedures with the following exceptions:
  - Service the valve as described in "Valve Service".



**WARNING:** Before removing any hoses, relieve pressure in the hydraulic system. With the truck off, open the truck auxiliary control valve (or valves) several times in both directions.

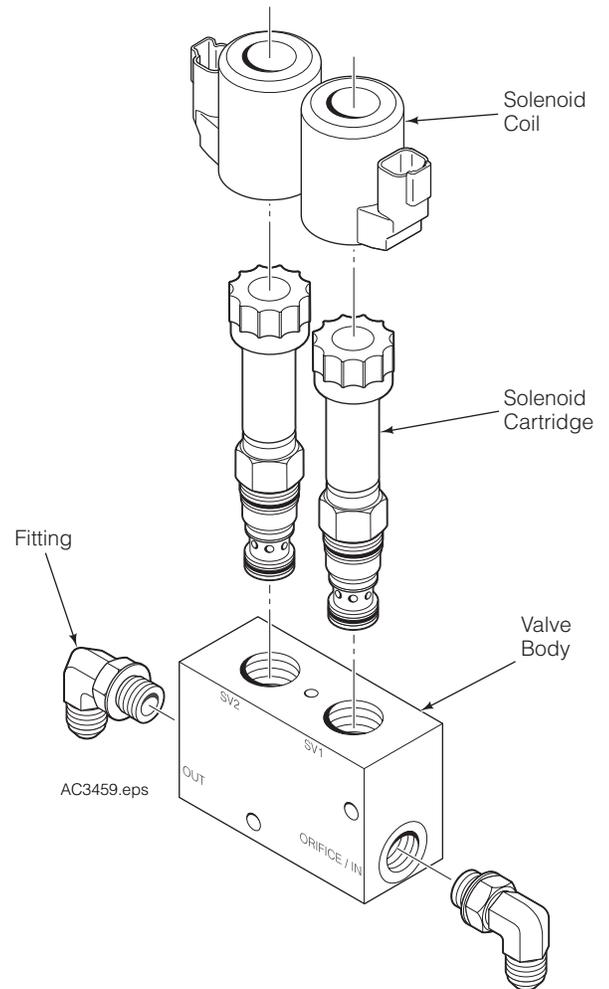
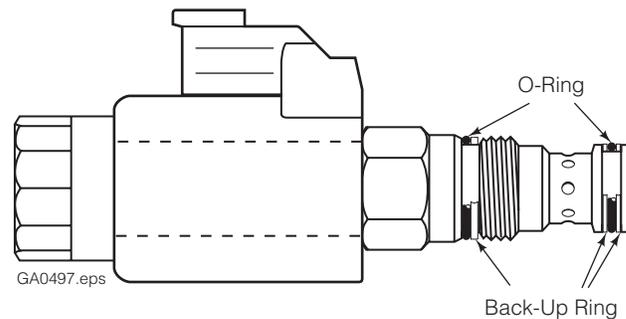


**WARNING:** Equipment can be HOT. Do not touch or service the valve body, hoses or fittings if the temperature is above 120° F (48° C).

## VALVE SERVICE

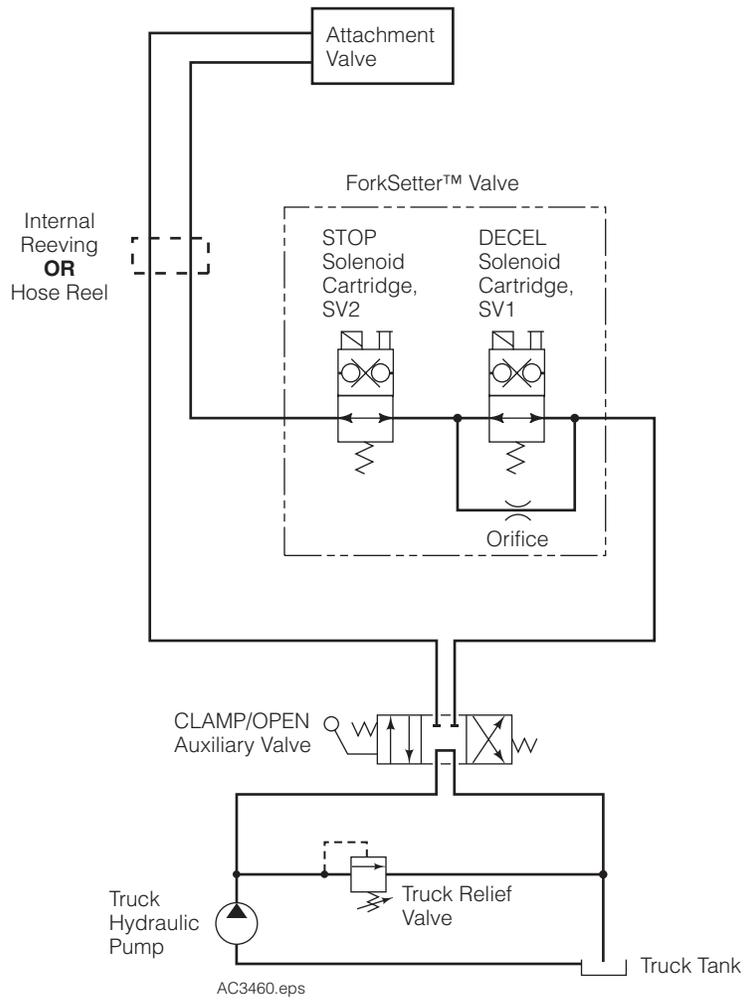
- 1 Remove the valve from the truck as described above.
- 2 Remove the solenoid coil, cartridges, fittings and plugs from the valve.
- 3 Remove the O-rings and back-up rings from the cartridges.
- 4 Clean all parts with clean solvent.
- 5 For reassembly, reverse the above procedures with the following exceptions:
  - Replace O-rings and back-up rings as shown.
  - Lubricate cartridges, fittings and plugs with O-ring lube or petroleum jelly prior to installation.

### SOLENOID COIL AND CARTRIDGE

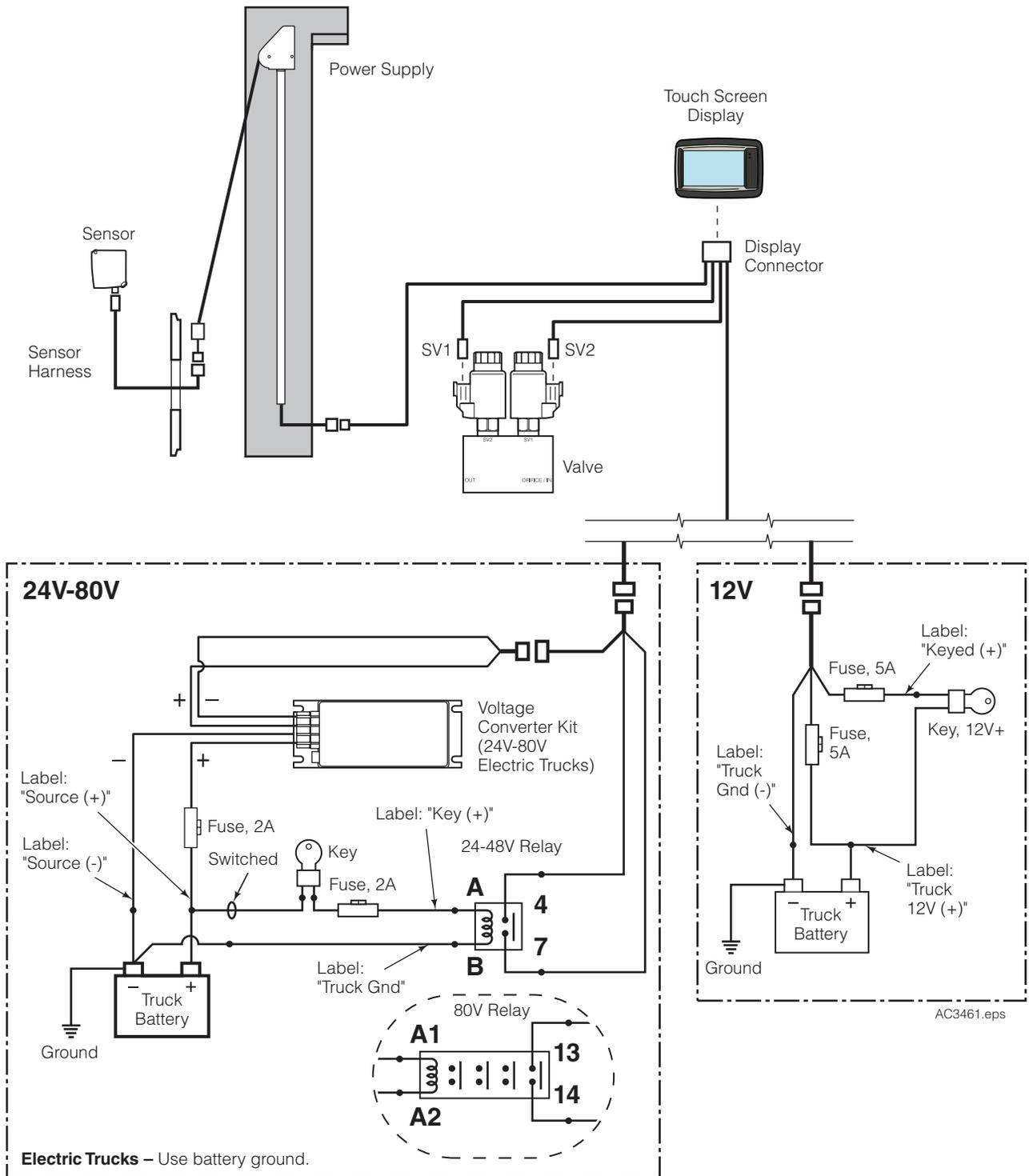


**WARNING:** After completing any service procedure, always test the attachment through several cycles. First test empty to bleed any air trapped in the system to the truck tank. Then test with a load to make sure that the attachment operates correctly before returning to service. Stay clear of the load while testing. Do not raise the load more 4 in. (10 cm) off the floor while testing.

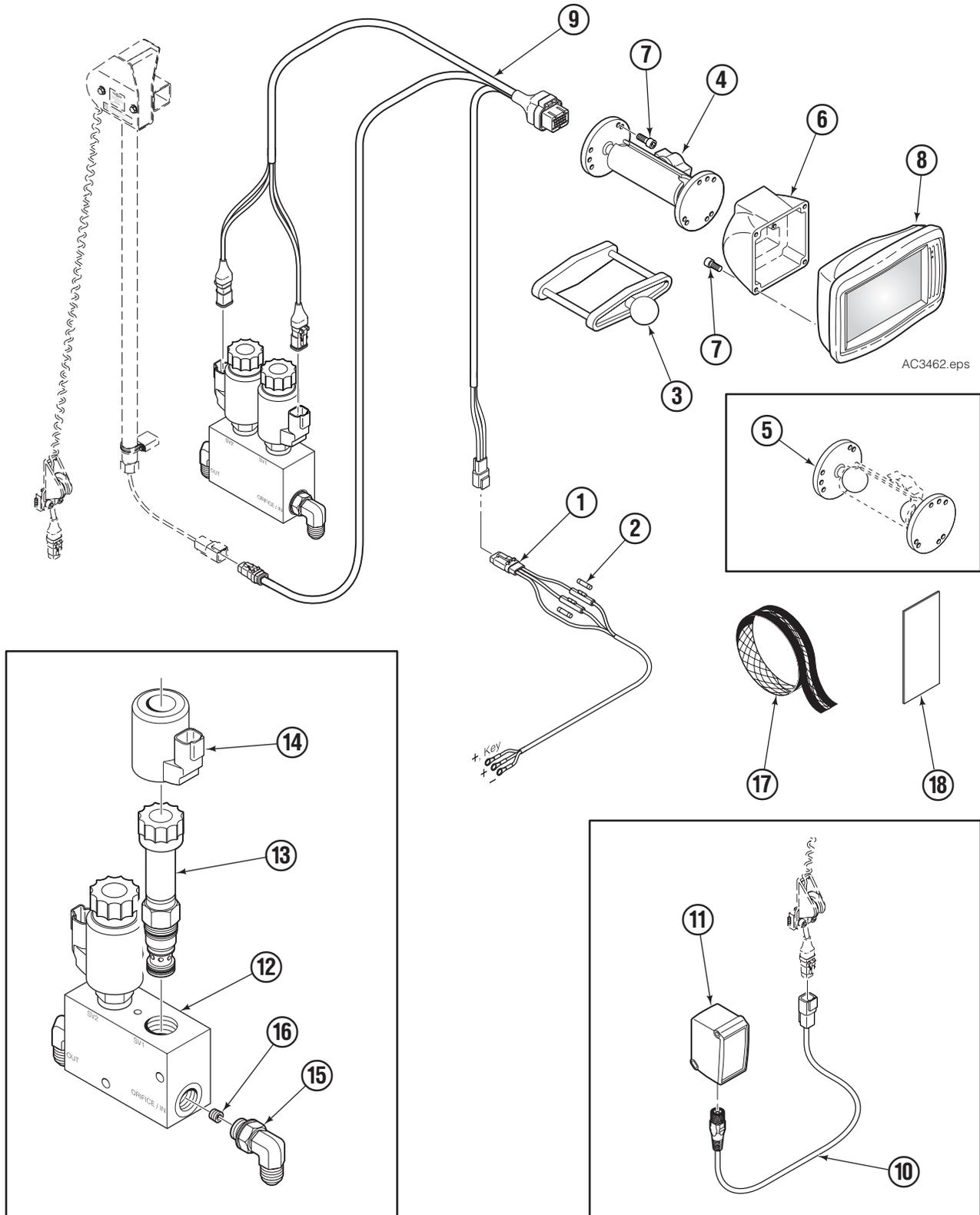
## HYDRAULIC SCHEMATIC



## ELECTRICAL SCHEMATIC



**ForkSetter™ Parts  
12V Trucks**



AC3462.eps

## ForkSetter™ Parts 12V Trucks

REF	QTY	PART NO.	DESCRIPTION
		12A-APS-X-0001	Fork Setter Kit
	1	6849297	Mounting Kit ◆
	1	6915812	Valve Group ■
1	1	6854511	Power Cable, 12V ●
2	1	6806708	Fuse, 5A
3	1	6850578	Mounting Bracket
4	1	6849486	Display Mounting Clamp ▲
5	2	6849481	Ball Mount ▲
6	1	6849706	Adapter ▲
7	3	6405497	Capscrew, M5 x 12 ▲
8	1	6908284	Display
9	1	6904668	Display Cable Harness
10	1	6908030	Sensor Cable Harness
11	1	6927298	Sensor, Configured
12	1	6916033	Valve Body
13	2	6002188	Directional Control Cartridge
14	2	6809857	Coil
15	2	601676	Fitting, 6
16	1	6911661	Orifice, .02 in. dia.
17	1	6927402	Reflective Tape
18	1	6029665	Velcro

◆ Includes Items 3-7.

■ Includes Items 12-16.

● Includes Item 2.

▲ Display Mounting Part Number 6841756 includes items 4-7.



## ForkSetter™ Parts 24V-48V Trucks

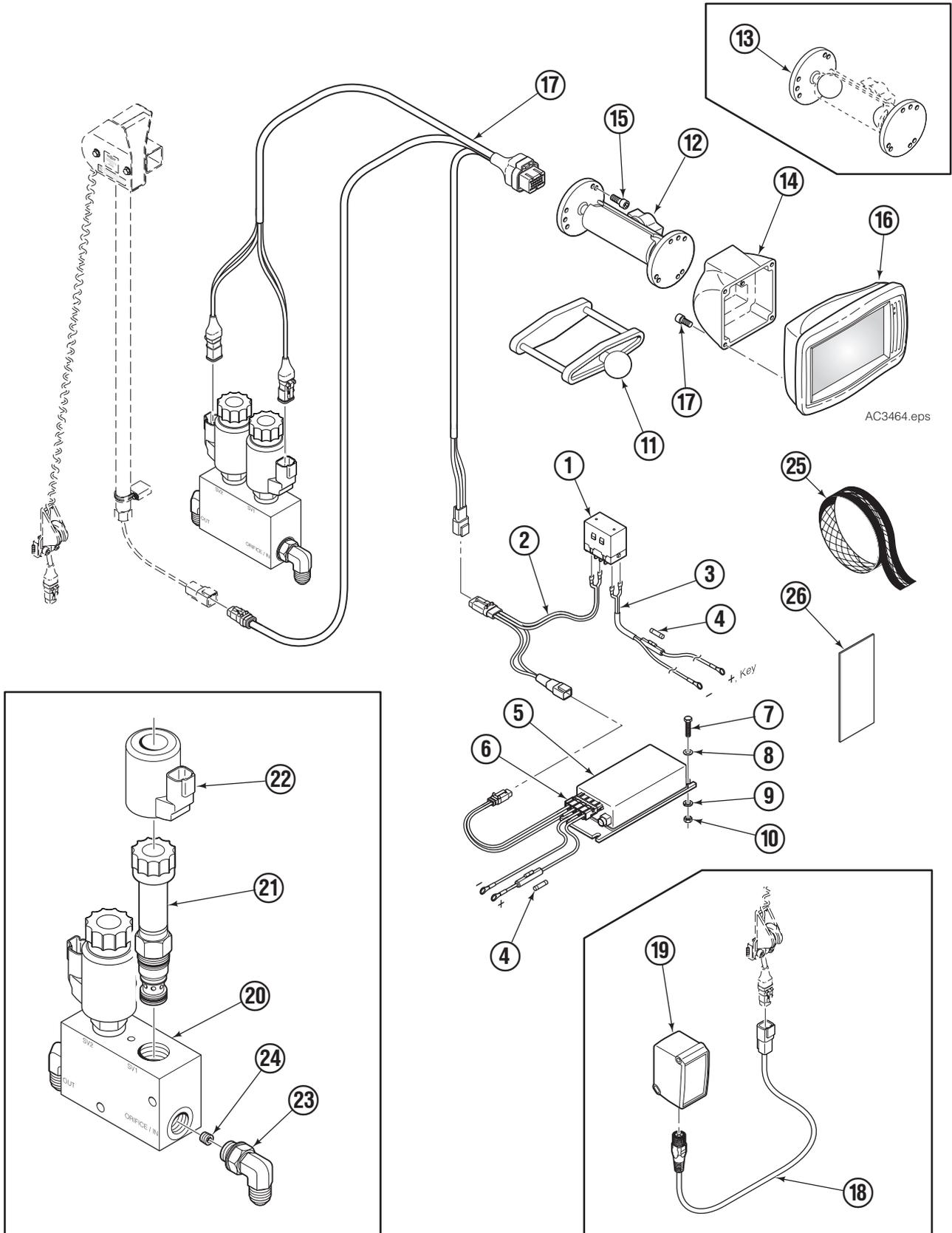
REF	QTY	PART NO.	PART NO.	PART NO.	DESCRIPTION
		24A-APS-X-0001	36A-APS-X-0001	48A-APS-X-0001	Fork Setter Kit
	1	6855855	6851614	6855856	Relay Kit ◆
1	1	6855748	6852671	6855749	Relay

### Common Parts

REF	QTY	PART NO.	DESCRIPTION
	1	6882798	Converter Kit ■
	1	6849297	Mounting Kit ●
	1	6915812	Valve Group ▲
2	1	6854600	Relay Cable Harness
3	1	6855815	Power Cable Harness □
4	2	6806701	Fuse, 2A
5	2	6405497	Capscrew, M5 x 12
6	2	685901	Washer
7	1	6884670	DC/DC Converter
8	1	6884689	Converter Cable Harness
9	4	762900	Capscrew,
10	4	202346	Washer
11	4	206323	Lockwasher
12	4	765718	Nut, M6
13	1	6850578	Mounting Bracket
14	1	6849486	Display Mounting Clamp ○
15	2	6849481	Ball Mount ○
16	1	6849706	Adapter ○
17	3	6405497	Capscrew, M5 x 12 ○
18	1	6908284	Display
19	1	6904668	Display Cable Harness
20	1	6908030	Sensor Cable Harness
21	1	6927298	Sensor, Configured
22	1	6916033	Valve Body
23	2	6002188	Directional Control Cartridge
24	2	6809857	Coil
25	2	601676	Fitting, 6
26	1	6911661	Orifice, .02 in. dia.
27	1	6927402	Reflective Tape
28	1	6029665	Velcro

- ◆ Includes Items 1-6.
- Includes Items 7-12.
- Includes Items 13-17.
- ▲ Includes Items 22-26.
- Includes Item 4.
- Display Mounting Part Number 6841756 includes items 14-17.

**ForkSetter™ Parts  
80V Trucks**



## ForkSetter™ Parts 80V Trucks

REF	QTY	PART NO.	DESCRIPTION
		80A-APS-X-0001	Fork Setter Kit
	1	6908461	Relay Kit ◆
	1	6882798	Converter Kit ■
	1	6849297	Mounting Kit ●
	1	6915812	Valve Group ▲
1	1	6908462	Relay
2	1	6854600	Relay Cable Harness
3	1	6855815	Power Cable Harness □
4	2	6806701	Fuse, 2A
5	1	6884670	DC/DC Converter
6	1	6884689	Converter Cable Harness
7	4	762900	Capscrew,
8	4	202346	Washer
9	4	206323	Lockwasher
10	4	765718	Nut, M6
11	1	6850578	Mounting Bracket
12	1	6849486	Display Mounting Clamp ○
13	2	6849481	Ball Mount ○
14	1	6849706	Adapter ○
15	3	6405497	Capscrew, M5 x 12 ○
16	1	6908284	Display
17	1	6904668	Display Cable Harness
18	1	6908030	Sensor Cable Harness
19	1	6927298	Sensor, Configured
20	1	6916033	Valve Body
21	2	6002188	Directional Control Cartridge
22	2	6809857	Coil
23	2	601676	Fitting, 6
24	1	6911661	Orifice, .02 in. dia.
25	1	6927402	Reflective Tape
26	1	6029665	Velcro

- ◆ Includes Items 1-6.
- Includes Items 7-12.
- Includes Items 13-17.
- ▲ Includes Items 22-26.
- Includes Item 4.
- Display Mounting Part Number 6841756 includes items 14-17.

## SENSOR

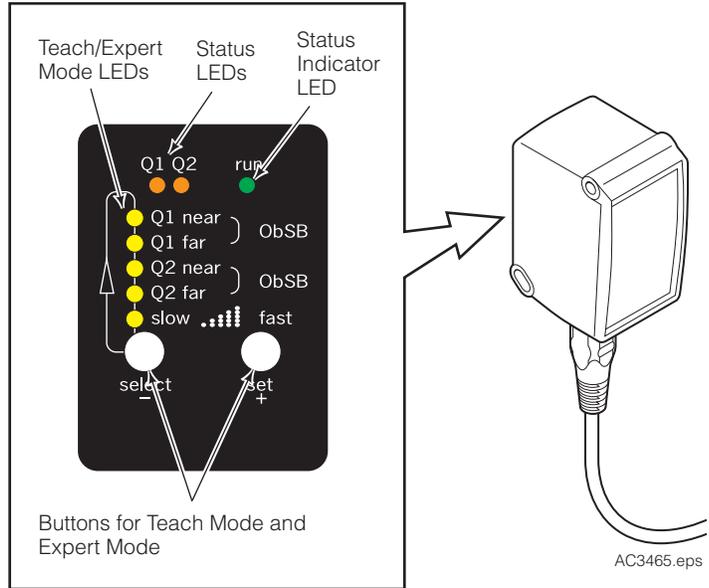
### Introduction

Each ForkSetter™ system comes with one sensor, part no. 6927298. The sensor is configured at the factory. The following information is for reference and in the event that the sensor requires reconfiguration.

**WARNING:** This kit contains a Class 1 laser. Do not look into the sensor's laser beam. Looking directly into the beam may result in eye injury.  
**EN/IEC 60825-1:2014** Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to laser notice No. 50, dated June 24, 2017.

**LASER**

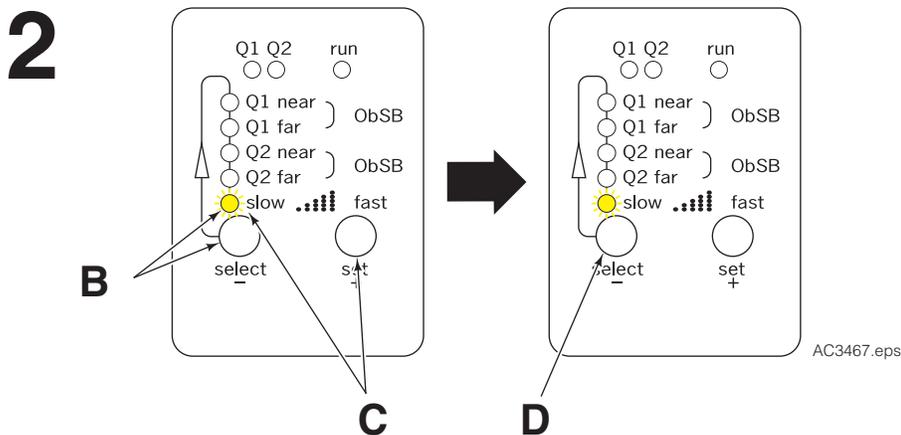
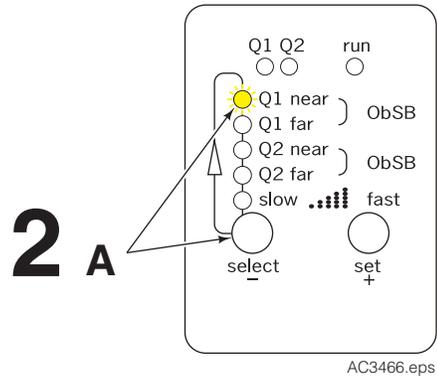
**1**



### Sensor Setup

In the event that the sensor is replaced, service or performance verified, refer to the following instructions:

- 1 Power the truck on.
- 2 Configure the sensor speed:
  - A Press and hold the "Select" button for at least 5 seconds. The "Q1 near" LED lights up. The sensor is in "Teach Mode".
  - B Press "Select" button repeatedly until "slow ... fast" LED flashes.
  - C Press "Set" button repeatedly until the "slow ... fast" LED flashes cyclically 5 times. This indicated the speed is set to super-fast.
  - D Press and hold the "Select" button for five seconds OR wait 5 minutes without pressing any buttons. Continue to Step 3.



## SENSOR (CONTINUED)

### Sensor Setup (Continued)

3 Configure expert settings:

**A** Press and hold "Select" and "Set" buttons simultaneously for longer than 10 seconds, until "Q1 near" LED lights up and "slow ... fast" LED flashes.

**NOTE:** If the "slow ... fast" LED is not flashing, the two buttons were not pressed simultaneously.

**B** Press the "Set" button until "slow ... fast" LED flashes 1 time.

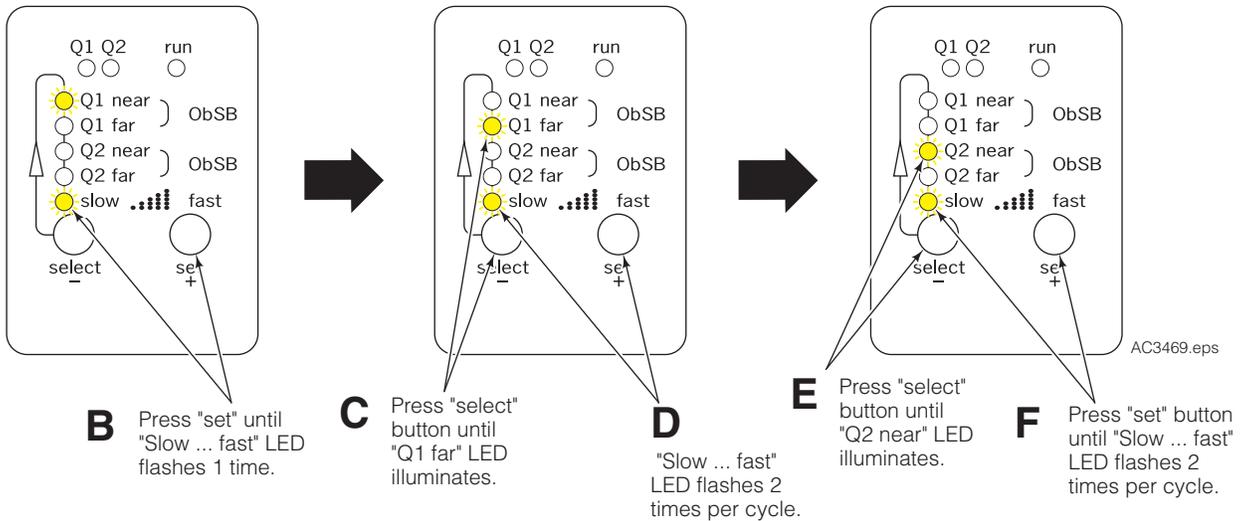
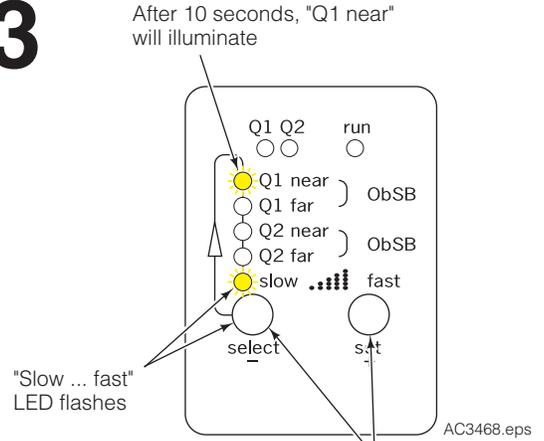
**C** Press the "Select" button until "Q1 far" LED illuminates.

**D** Press the "Set" button until "slow ... fast" LED flashes 2 times.

**E** Press the "Select" button until "Q2 near" LED illuminates.

**F** Press the "Set" button until "slow ... fast" LED flashes 2 times.

# 3



4 To exit expert settings and return to teach mode, press and hold "Select" and "Set" buttons simultaneously for more than 10 seconds.

## DECLARATION OF CONFORMITY



- (BG) EO декларация за съответствие за машини (Директива 2006/42/ЕЕС, приложение II, под А)
- (CS) ES PROHLÁŠENÍ O SHODĚ PRO STROJNÍ (Směrnice 2006/42/ЕЕС, příloha II, sub A)
- (DA) OVERENSSTEMMELSESERKLÆRING (Maskindirektivet, 2006/42/EØF, Bilag II, afsnit A)
- (ET) EÜ VASTAVUSDEKLARATSIOON MASINA (direktiiv 2006/42/ЕЕС, II lisa alam A)
- (FI) EY-VAATIMUSTENMUKAISUUSVAKUUTUS KONEESTA (Direktiivi 2006/42/ETY, liitteen II, malli A)
- (FR) DECLARATION CE DE CONFORMITE POUR LES MACHINES (Directive 2006/42/CEE, Annex II, Chapitre A)
- (EL) ΔΗΛΩΣΗ ΣΥΜΜΟΡΦΩΣΗΣ ΕΚ ΓΙΑ ΤΙΣ ΜΗΧΑΝΕΣ (Οδηγία 2006/42/ЕЕС, παράρτημα II, υπό Α)
- (EN) EC DECLARATION OF CONFORMITY FOR MACHINERY (Directive 2006/42/ЕЕС, Annex II, sub A)
- (GA) CE DEARBHÚ COMHRÉIREACHTA DO INNEALRA (Treoir 2006/42/ЕЕС, Iarscríbhinn II, fo A)
- (IS) ESB SAMRÆYING VÉLAHLUTA (Tilskipun 2006/42/CE, Viðauki II, lið. A)
- (IT) DICHIARAZIONE CE DI CONFORMITA' PER MACCHINE (Direttiva 2006/42/CE, Allegato II, part A)
- (LV) EK atbilstības deklarācija MAŠĪNU (Direktīva 2006/42/ЕЕС, Pielikums II, A)
- (LT) EB ATITIKTIES DEKLARACIJA technikai (Direktiva 2006/42/ЕЕС, II priedo sub A)
- (NN) EC SAMSVARERKLÆ OM MASKINER (Direktiv 2006/42/ЕЕС, Vedlegg II, del A)
- (MT) DIKJARAZZJONI TAL-KONFORMITÀ GĦALL-MAKKINARJU (Direttiva 2006/42/ЕЕС, I-Anness II, sub A)
- (NL) EC VERKLARING VAN OVEREENSTEMMING VOOR MACHINES (Richtlijn 2006/42/ЕЕС, Bijlage II, order A)
- (PL) UE DEKLARACJA ZGODNOŚCI DLA MASZYN (Dyrektywa 2006/42/ЕЕС, Załącznik II, rozdział A)
- (PT) DECLARAÇÃO CE DE CONFORMIDADE PARA AS MÁQUINAS (Directiva 2006/42/CEE, Anexo II, Capítulo A)
- (RO) DECLARAȚIA DE CONFORMITATE CE PENTRU UTILAJE (Directiva 2006/42/ЕЕС, anexa II, sub A)
- (SK) ES VYHLÁSENIE O ZHODE STROJOVÝCH (Smernica 2006/42/ЕЕС, príloha II, sub A)
- (SL) ES IZJAVA O SKLADNOSTI ZA STROJE (Direktiva 2006/42/ЕЕС, Priloga II, sub A)
- (ES) DECLARACIÓN "CE" DE CONFORMIDAD SOBRE MÁQUINAS (Según la directiva 2006/42/CEE, anex II, sub A)
- (SV) EG-FÖRSÄKRAN OM ÖVERENSSTÄMMELSE FÖR MASKINELL UTRUSTNING (Direktiv, 2006/42/ЕЕС, Annex II, A)
- (DE) EG-KONFORMITÄTSERKLÄRUNG FÜR MASCHINEN (EG-Richtlinie 2006/42/ЕЕС, Anhang II, sub A)
- (TR) MAKİNA İÇİN UYGUNLUK BELGESİ (Direktifi 2006/42/ЕЕС, Ek II, A alt)
- (HU) EK MEGFELELŐSÉGI NYILATKOZAT A GÉP Irányelv (2006/42/ЕЕС, II sub A)

- (BG) Производител / (CS) výrobce / (DA) producent / (ET) tootja / (FI) valmistaja / (FR) fabricant / (EL) κατασκευαστής /
- (EN) manufacturer / (GA) monaróir / (IS) Framleiðandi / (IT) fabbricante / (LV) ražotājs / (LT) gamintojas / (NN) Produsent /
- (MT) manifattur / (NL) fabrikant / (PL) producent / (PT) fabricante / (RO) producător / (SK) výrobca / (SL) proizvajalec /
- (ES) fabricante / (SV) tillverkare / (DE) Hersteller / (TR) üretici / (HU) gyártó

### Cascade Corporation USA

- (BG) адрес / (CS) adresa / (DA) adresse / (ET) aadress / (FI) osoite / (FR) adresse / (EL) διεύθυνση / (EN) address / (GA) seoladh /
- (IS) Heimilisfang / (IT) Indirizzo / (LV) adrese / (LT) adresas / (NN) adresse / (MT) indirizz / (NL) adres / (PL) adres / (PT) endereço /
- (RO) adresă / (SK) Sídlo / (SL) Naslov / (ES) dirección / (SV) address / (DE) Adresse / (TR) adres / (HU) cím

**2201 NE 201st Ave.  
Fairview, Oregon 97024-9718  
United States of America**

**Declaration Number:**

**CTF2019-A-003**

- (BG) Декларира, че / (CS) prohlašuje, že / (DA) erklærer, at / (ET) deklareerib, et / (FI) toteaa, että / (FR) déclare que / (EL) δηλώνει ότι
- (EN) declares that / (GA) go ndearbhaíonn an / (IS) lýsir því yfir að / (IT) dichiara che / (LV) deklarē, ka / (LT) pareiškia, kad /
- (NN) erklærer at / (MT) tid dikjara li / (NL) verklaart dat / (PL) deklaruje, że / (PT) declara que / (RO) declară că / (SK) prehlasuje, že /
- (SL) izjavlja, da / (ES) Declara que / (SV) förklarar att / (DE) erklährt, dass / (TR) olduğunu beyan / (HU) kijelenti, hogy

**Part Number:**

**zZA-APS-X-zzzzz (z = A-Z, 0-9)**

**Description:**

**Fork Positioning Aid**

**Person authorised to compile the technical file:**

**Cascade Italia Srl**

- (BG) е в съответствие с разпоредбите на машината директива (Директива 2006/42/ЕЕС), както е изменена, и с националното законодателство за прилагане;
- (CS) je v souladu s ustanoveními Machine (směrnice 2006/42/ЕЕС) ve znění pozdějších předpisů, a s vnitrostátní prováděcí předpisy;
- (DA) er i overensstemmelse med Maskindirektivets bestemmelser (Direktiv 2006/42/EØF) med ændring, og med national lovgivning, der omsætter dette direktiv;
- (ET) on kooskõlas sätetega Machine (direktiiv 2006/42/ЕЕС) muudetud ning siseriiklike rakendusaktide;
- (FI) täyttää konedirektiivin (direktiivi 2006/42/ETY) ja siihen liittyvien muutosten sekä ne voimaansaattavien kansallisten säädösten määräykset;
- (FR) est conforme aux dispositions de la Directive "Machines" (Directive 2006/42/CEE) modifiée, et aux législations nationales la transposant;
- (EL) είναι σύμφωνη με τις διατάξεις της οδηγίας Machine (Οδηγία 2006/42/ЕЕС), όπως τροποποιήθηκε, και με την εθνική νομοθεσία εφαρμογής
- (EN) is in conformity with the provisions of the Machine Directive (Directive 2006/42/ЕЕС) as amended, and with national implementing legislation;
- (GA) tá sé i gcomhréir le forálacha na Treorach Meaisín (Treoir 2006/42/ЕЕС) mar a leasaíodh, agus leis an reachtaíocht cur chun feidhme náisiúnta;

## DECLARATION OF CONFORMITY (CONTINUED)

- <sup>(IS)</sup> er i samræmi við ákvæði Vélahlutatlískipunarinnar (Tilskipun 2006/42/EEC) með viðbótum, og við samsvarandi landslög;
- <sup>(IT)</sup> è conforme alle condizioni della Direttiva macchine (Direttiva 2006/42/CE), come modificata e alla legislazione nazionale che la trasponde;
- <sup>(LV)</sup> atbilst šīs iekārtas (Direktīva 2006/42/EEC) noteikumiem ar grozījumiem, un ar valsts īstenošanas noteikumiem;
- <sup>(LI)</sup> laikantis mašinių direktyvos (Direktiva 2006/42/EEC) nuostatas su pakeitimais ir su nacionaliniuose įgyvendinimo teisės aktuose;
- <sup>(NN)</sup> er i samsvar med bestemmelsene i Forkrift om Maskiner som implementerer om tilnææav medlemsstatenes lovgivning om maskiner (2006/42/EEC);
- <sup>(MT)</sup> huwa konformi mad-dispożizzjonijiet tad-Direttiva Magni (Direttiva 2006/42/EEC) kif emendata, u mal-leġiżlazzjoni implimentattiva nazzjonali;
- <sup>(NL)</sup> voldoet aan de bepalingen van de Machineryrichtlijn (Richtlijn 2006/42/EEG, zoals laatstelijk gewijzigd), en de nationale wetgeving ter uitvoering van deze richtlijn;
- <sup>(PL)</sup> jest zgodny z wymaganiami Dyrektywy dla Maszyn (Dyrektywa 2006/42/EEC), uaktualnionej, oraz państwowymi przepisami uzupełniającymi;
- <sup>(ES)</sup> corresponde a las exigencias básicas de la directiva de la CE sobre máquinas (directiva "CE" 2006/42/CEE), incluidas las modificaciones de la misma y la correspondiente transposición a la ley nacional;
- <sup>(RO)</sup> este în conformitate cu dispozițiile Directivei mașinii (Directiva 2006/42/EEC), astfel cum a fost modificată, precum și cu legislația națională de punere în aplicare;
- <sup>(SK)</sup> je v súlade s ustanoveniami Machine (smernica 2006/42/EEC) v znení neskorších predpisov, a s vnútroštátne vykonávané predpisy;
- <sup>(SL)</sup> je v skladu z določbami stroj (Direktiva 2006/42/EEC), kakor je bila spremenjena, in z nacionalno izvedbeno zakonodajo;
- <sup>(PT)</sup> está conforme com as disposições da Directiva "Máquinas" (Directiva 2006/42/CEE), e respectivas alterações, e com a legislação nacional que a transpõe;
- <sup>(SV)</sup> är tillverkad i överensstämmelse med Maskindirektivet (Direktiv 2006/42/EEC) inklusive tillägg, och med motsvarande nationella lagstiftning;
- <sup>(DE)</sup> konform ist mit den einschlägigen Bestimmungen der EG-Maschinenrichtlinie (EG-Richtlinie 2006/42/EWG), inklusive deren Änderungen, sowie mit dem entsprechenden Rechtsreferenz zur Umsetzung der Richtlinie in nationales Recht;
- <sup>(TR)</sup> olarak değiştirilmiş ve ulusal uygulamaya mevzuatı ile Makine Direktifi (2006/42/EEC) hükümlerine uygun oldu ğunu;
- <sup>(HU)</sup> megfelel rendelkezéseinek Machine irányelv (2006/42/EEC) módosított, valamint a nemzeti végrehajtási jogszabályok;

- <sup>(BG)</sup> Той също така посочва, че / <sup>(CS)</sup> Dále uvádí, že / <sup>(DA)</sup> Det fastslås også, at / <sup>(ET)</sup> Samuti sätestatakse, et / <sup>(FI)</sup> Siinä todetaan myös, että / <sup>(FR)</sup> Il précise également que
- <sup>(EL)</sup> Αναφέρει, επίσης, ότι / <sup>(EN)</sup> It also declares that / <sup>(GA)</sup> Deir sé freisin go / <sup>(IS)</sup> Þar segir einnig að / <sup>(IT)</sup> E inoltre dichiara che / <sup>(LV)</sup> Tajā arī teikts, ka
- <sup>(LT)</sup> Jame taip pat teigiama, kad / <sup>(NN)</sup> Den sier også at / <sup>(MT)</sup> Hija tgħid ukoll li / <sup>(NL)</sup> Het bepaalt ook dat / <sup>(PL)</sup> Stwierdza również, że / <sup>(PT)</sup> Ele também afirma que
- <sup>(RO)</sup> Se precizează de asemenea că / <sup>(SK)</sup> Dálej uvádza, že / <sup>(SL)</sup> Navaja tudi, da / <sup>(ES)</sup> También se establece que / <sup>(SV)</sup> Det anges också att / <sup>(DE)</sup> Weiter heißt es, dass
- <sup>(TR)</sup> Ayrıca bildiren / <sup>(HU)</sup> Azt is kimondja, hogy

- <sup>(BG)</sup> са приложени следните(части/клаузи от)хармонизираните стандарти
- <sup>(CS)</sup> následující(části/doložkami)harmonizované normy byly použity
- <sup>(DA)</sup> følgende(dele/klausuler)harmoniserede standarder er blevet anvendt

- <sup>(ET)</sup> järgmised(osad/klauseleid)ühtlustatud standardid on rakendatud
- <sup>(FI)</sup> seuraavat(niiden osia/kohtia)yhdenmukaistettuja standardeja on sovellettu
- <sup>(FR)</sup> les suivants(parties/clauses des)normes harmonisées suivantes ont été appliquées
- <sup>(EL)</sup> οι ακόλουθε(μέρη/ρήτρες του)εναρμονισμένα πρότυπα που εφαρμόζονται
- <sup>(EN)</sup> the following(parts/clauses of)harmonized standards have been applied
- <sup>(GA)</sup> seo a leanas(páirteanna/cláisail de)caighdeáin chomhchuíbhithe a cuireadh i bhfeidhm
- <sup>(IS)</sup> eftirfarandi (hlutar/greinanna í)samhæfðir staðlar hafa verið beitt
- <sup>(IT)</sup> le seguenti (parti/clausole di)norme armonizzate sono state applicate
- <sup>(LV)</sup> šādi (daļas/punktos)saskaņotie standarti ir piemēroti
- <sup>(LT)</sup> taip (dalys/išlygas)dariniai standartai buvo taikomi

- <sup>(NN)</sup> følgende(deler/paragrafer i)harmoniserede standarder er blitt anvendt
- <sup>(MT)</sup> li ġejjin(partijiet/klawżoli ta 'l)-istandards armonizzati ġew applikati
- <sup>(NL)</sup> de volgende(onderdelen/bepalingen van)geharmoniseerde normen zijn toegepast
- <sup>(PL)</sup> następujące(klauzule/części)normy zharmonizowane zostały zastosowane
- <sup>(PT)</sup> os seguintes(partes/cláusulas de)normas harmonizadas foram aplicadas
- <sup>(RO)</sup> următoarele(părți/clauze ale)standarde armonizate au fost aplicate
- <sup>(SK)</sup> nasledujúce(části/doložkami)harmonizované normy boli použité
- <sup>(SL)</sup> naslednji(deli/klavzule)Usklajeni standardi so bili uporabljeni
- <sup>(ES)</sup> las siguientes(partes/cláusulas de)normas armonizadas se han aplicado
- <sup>(SV)</sup> följande(delar/klausuler i)harmoniserade standarder har tillämpats
- <sup>(DE)</sup> die folgenden(Teile/Klauseln)harmonisierte Normen wurden angewendet
- <sup>(TR)</sup> Aşağıdaki(bölümleri/maddeleri)uyumlaştırılmış standartlar uygulanmıştır
- <sup>(HU)</sup> az alábbi(részek/záradékok)harmonizált szabványokat alkalmaztak

### Standards Applied

EN ISO 12100:2010 - Safety of machinery. General principles for design. Risk assessment and risk reduction

ISO 4413:2010, Hydraulic fluid power — General rules and safety requirements for systems and their components.

EMC Directive 2014/30/EU  
EN 12895:2015 Industrial Truck EMC



Roncari Davide  
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8/6/2019

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