



Installation Manual

Trailer Edition

HK-430 and HK-430 HO
Diesel Heating Units

Revision 3

January 2015

TK-55186-2-IM

TRANE
TECHNOLOGIES

Installation Manual

Trailer Edition HK-430 and HK-430 HO Diesel Heating Units

TK 55186-2-IM (Rev. 3, 01/15)

Release History

Released	Rev. 0, 09/11
Rev. 1	(02/13) Page 21 - Changed art to show forged connecting links and forged locking hooks used for lifting the unit.
Rev. 2	(01/14) Pages 22-23: added separate Zero-Cube installation instructions, Pages 44 - 45: added Service Test Procedure for engine break-in.
Rev. 3	(01/15) Pages 38 and 40: Added important note about the fuel tank air vent.

Introduction

This installation manual was written to assist with the installation of the **Thermo King HK-430 and HK-430 HO** diesel heating units onto trailers or intermodal containers specifically designed and built for these applications.

Due to its complexity, you should not attempt this installation unless you:

- Are an experienced mechanic
- Can safely lift 34 kilos (75 lbs.)
- Are certified or trained in the repair and maintenance of diesel powered refrigeration systems
- Have a basic understanding of electricity and electrical wiring
- Have the necessary tools and equipment to complete the installation.

This manual is published for informational purposes only. Thermo King makes no representations warranties express or implied, with respect to the information recommendations and descriptions contained herein. Information provided should not be regarded as all-inclusive or covering all contingencies. If further information is required, Thermo King Corporation Service Department should be consulted.


Thermo King's warranty shall not apply to any equipment which has been "so installed, maintained, repaired or altered as, in the manufacturer's judgment, to affect its integrity."


Manufacturer shall have no liability to any person or entity for any personal injury, property damage or any other direct, indirect, special, or consequential damages whatsoever, arising out of the use of this manual or any information, recommendations or descriptions contained herein.


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Safety Precautions

The  symbol appears next to a point that is particularly important:


 **DANGER:** Addresses a circumstance that, if encountered, will lead to death or serious injury


 **WARNING:** Addresses a circumstance that, if encountered, might lead to death or serious injury.

 **CAUTION:** Addresses a circumstance that, if encountered, may cause damage to equipment or minor injury.

 **WARNING:** Keep your hands away from fans and belts when the unit is running. Set all electrical controls to the OFF position before servicing the unit.

 **WARNING:** Make sure all mounting bolts are tight and are of correct length for their particular application








 **WARNING:** Never drill holes in the unit unless absolutely necessary. Holes drilled into the unit may weaken structural components. Holes drilled into electrical wiring can cause fire or explosion.

 **WARNING:** When using ladders to install or service refrigeration systems, always observe the ladder manufacturer's safety labels and warnings. A work platform is the recommended method for installations.

 **CAUTION:** Exposed coil fins are very sharp and can cause painful lacerations. Wear leather work gloves to prevent injury.

Safety Precautions (continued)

Battery Installation and Cable Routing

-  **WARNING:** *Improperly installed battery could result in a fire or explosion! A Thermo King approved battery must be installed and properly secured to the battery tray.*
-  **WARNING:** *Improperly installed battery cables could result in fire or explosion! Battery cables must be installed, routed and secured properly to prevent them from rubbing, chaffing or making contact with hot, sharp or rotating components.*
-  **WARNING:** *Do not attach fuel lines or any additional wiring harnesses to the battery cables as this could cause an electrical fire!*
-  **CAUTION:** *Do not connect other manufacturer's equipment or accessories to the Thermo King unit. This could result in severe damage to equipment and void the warranty!*
-  **CAUTION:** *Set all unit electrical controls to the OFF position before connecting battery cables to the battery to prevent unit from starting unexpectedly and causing personal injury.*
-  **CAUTION:** *Always wear protective clothing, gloves and eye wear when handling and installing batteries. Battery acid can cause serious burns when exposed to eyes or skin. If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters your eye, immediately flood it with running cold water for at least twenty minutes and get medical attention immediately.*
-  **CAUTION:** *Always cover battery terminals to prevent them from making contact with metal components during battery installation. Battery terminals grounding against metal could cause the battery to explode.*

Required Tools

1. Safety Glasses
2. Drill
3. Drill Bits
4. Tape Measure
5. Mechanics Tools
6. Lifting Device
7. Two Forged Eyebolts (1/2-13 UNC)
8. Work Platform (Recommended)
9. Torque Wrench

NOTE: Equipment such as torque wrenches should be in good working condition and routinely calibrated to assure accurate readings.

Installation Components

HARDWARE KIT

Clamps
Bandwraps
Screw 1/4-20 SS
Nut 1/4-20 SS
Nut 1/2-13
Washer 1/2- SAE
Washer 1/4 SS
Washer 1.25 OD
Screw #10
Screw 1/4-20
Screw Torx T-25

FUEL LINE KIT

Hose 1/4 OD x 40 ft.
Hose 3/8 OD x 40 ft.
Eyelet fitting 1/4"
Eyelet Fitting 3/8"
Sleeve Fitting 1/4"
Sleeve Fitting 3/8"
Nut Fitting 1/4"
Nut Fitting 3/8"
Connector 1/4"
Connector Fuel Line
Hose 4.00 in. long


FUEL PUMP KIT

Fuel Pump
Hose Fitting 3/8"
Pump Bracket
Harness
Nameplate

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Trailer / Container Requirements

HK-430 and HK-430 HO


 **DANGER:** The front wall of the trailer or container must be structurally strong enough to support the weight of the HK 430 or HK-430 HO unit!


IMPORTANT: Thermo King HK-430 and HK-430 HO diesel heating units should only be installed onto trailers or containers specifically designed and built for these applications.

WEIGHTS*		
Thermo King HK unit with EON battery installed.	HK-430	HK-430 HO
	203 kg (448 lbs.)	221 kg (488 lbs.)

* Does not include weight of fuel, fuel tank and brackets.

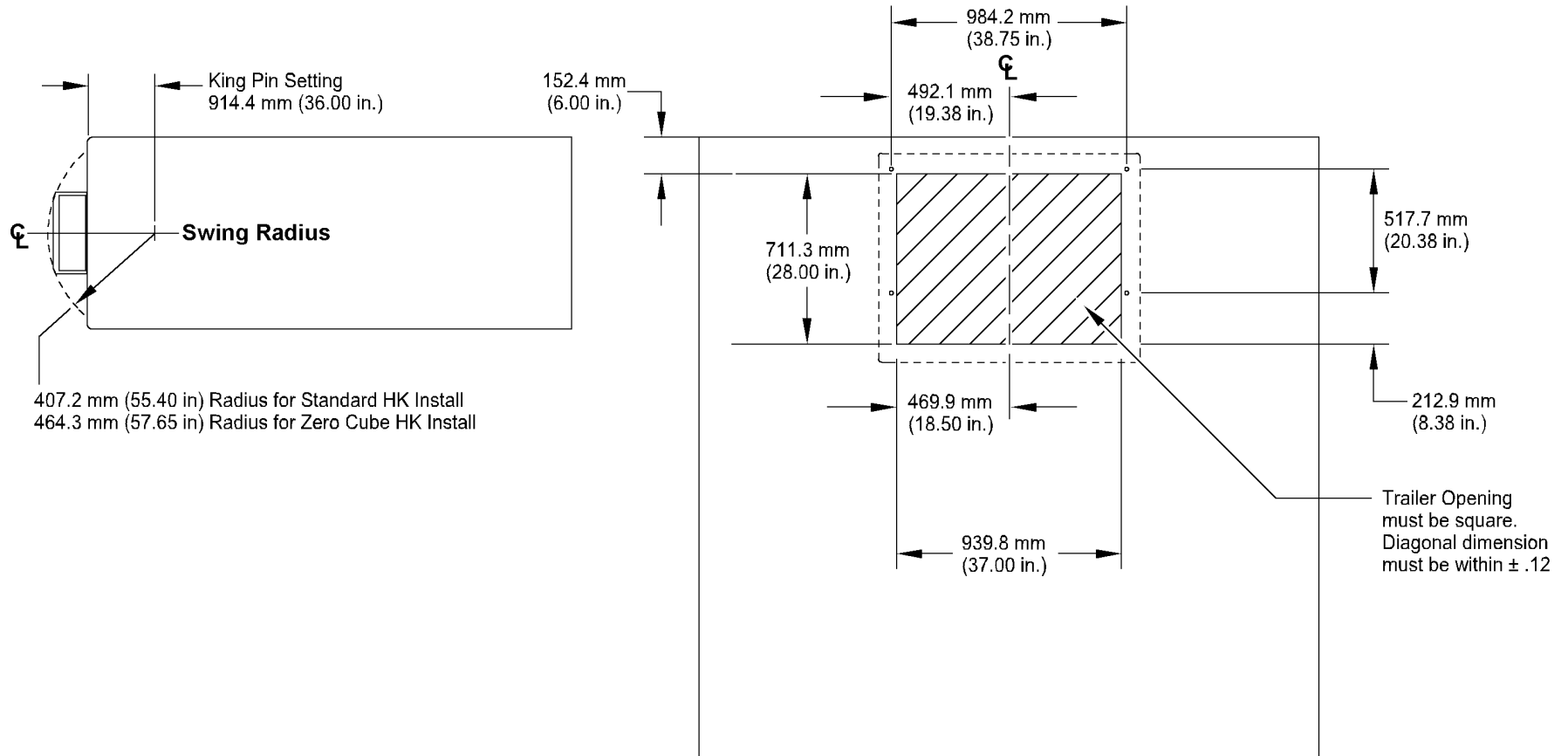
Front Wall Mounted Fuel Tank

 **DANGER:** The front wall of the trailer or container must be structurally strong enough to support the weight of the HK-430 or HK-430 HO unit and the 65 gallon fuel tank!

 **DANGER:** An improperly installed fuel tank could lead to serious injury or death! Consult your trailer or container manufacturer for specific details on proper fuel tank installation and recommendations.

IMPORTANT: Thermo King HK-430 and HK-430 HO diesel heating units should only be installed onto trailers or containers specifically designed and built for these applications.


Trailer / Container Requirements



AAA665

Mounting Bolt Specifications and Installation Requirements


Mounting Bolts Specifications

 **DANGER:** The use of mounting bolts other than those specified could result in severe damage to equipment, void the warranty or cause personal injury or death!

NOTE: Mounting hardware to be supplied by installer.

- Use Metric M12 x 1.75 pitch class 8.8 (1/2 in.-13 UNC - 2B Rolled thread grade 5), medium carbon steel bolts and locking nuts.
- All hardware must be zinc plated with dichromate finish.

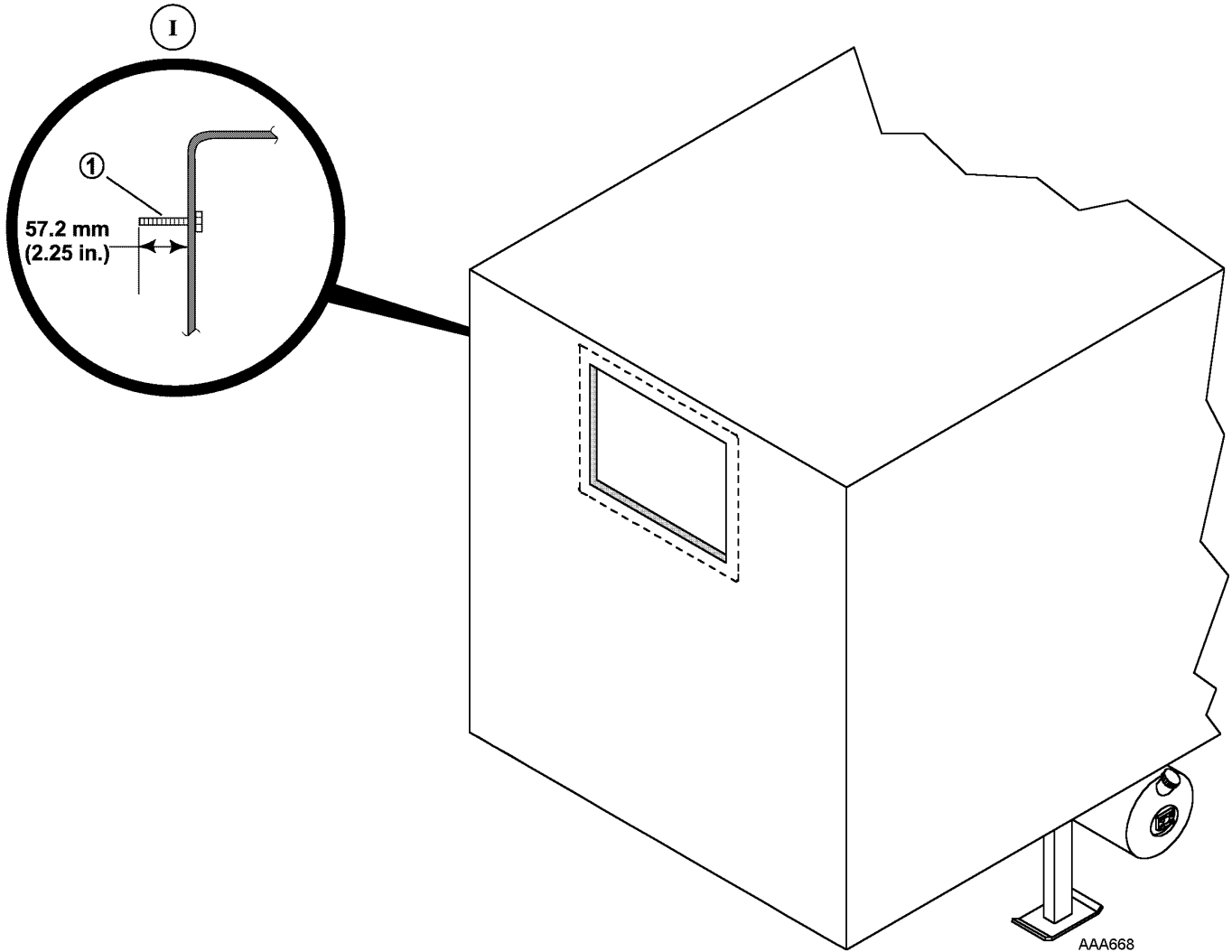
Mounting Bolt Installation Requirements

 **DANGER:** Four mounting bolts must be installed to properly secure the unit to the trailer front wall! Failure to do so could result in severe damage to equipment, void the warranty or cause personal injury or death!

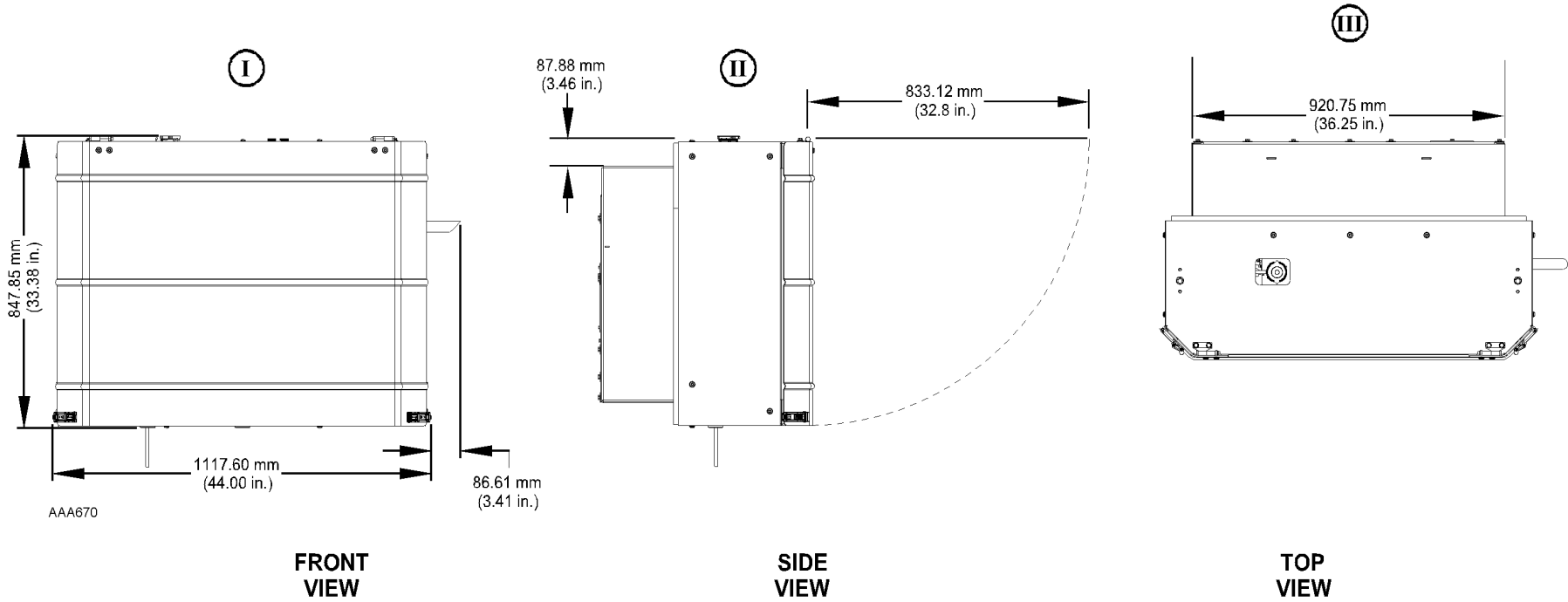
NOTE: The location of the unit mounting bolts in the trailer front wall is critical to proper unit installation.

- A gasket sealing surface of 76.2 mm (3.00 in.) wide all around the trailer wall opening must be free from rivets or bolt heads and flat within 6.5 mm (.25 in.)
- All mounting bolts must be square with the front wall and securely fastened to the trailer wall in such a manner to allow the mounting nuts be torqued to 82 N•m (60 ft. lbs.) from outside the trailer.
- Mounting bolts are to extend 57.2 mm (2.25 in.) beyond the front wall (**Detail I**).
- Surface of all mounting bolts are to be flat within 2.5 mm (0.10 in.).

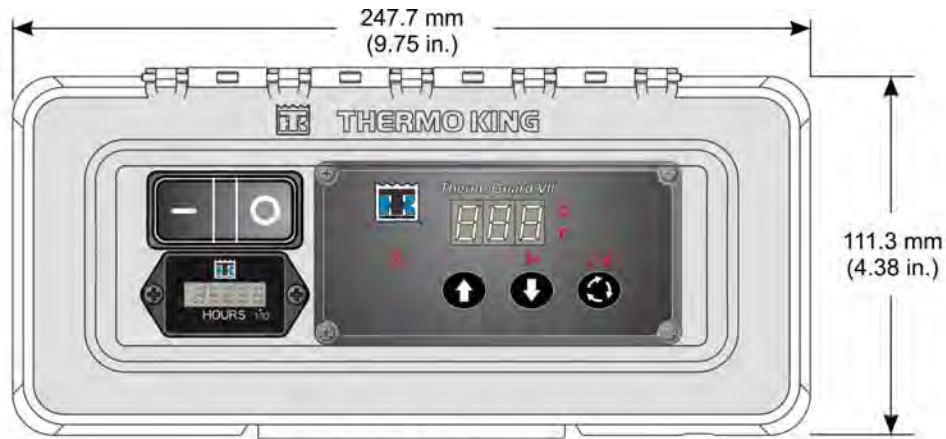
Mounting Bolt Specifications and Installation Requirements



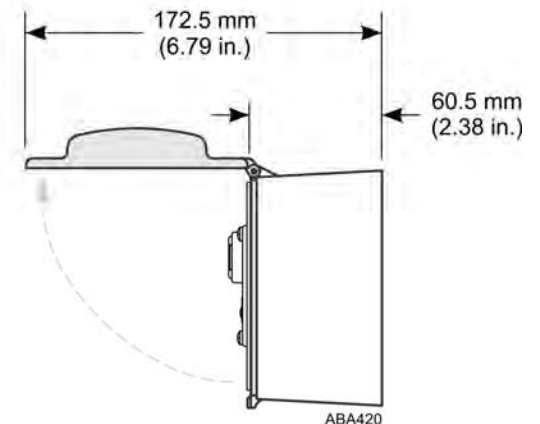
Unit Dimensions



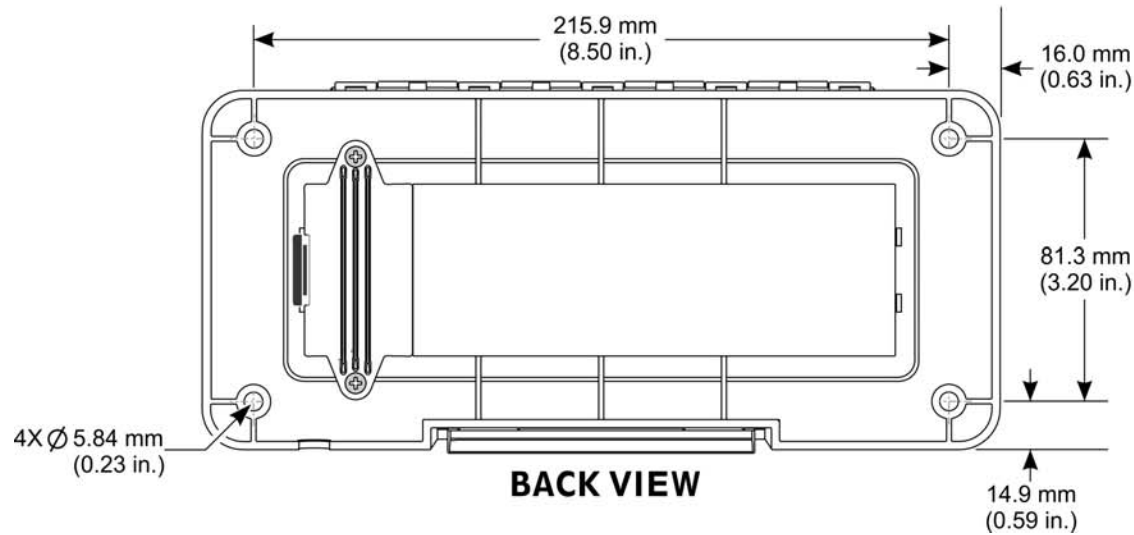
HMI Remote Mount Dimensions



FRONT VIEW



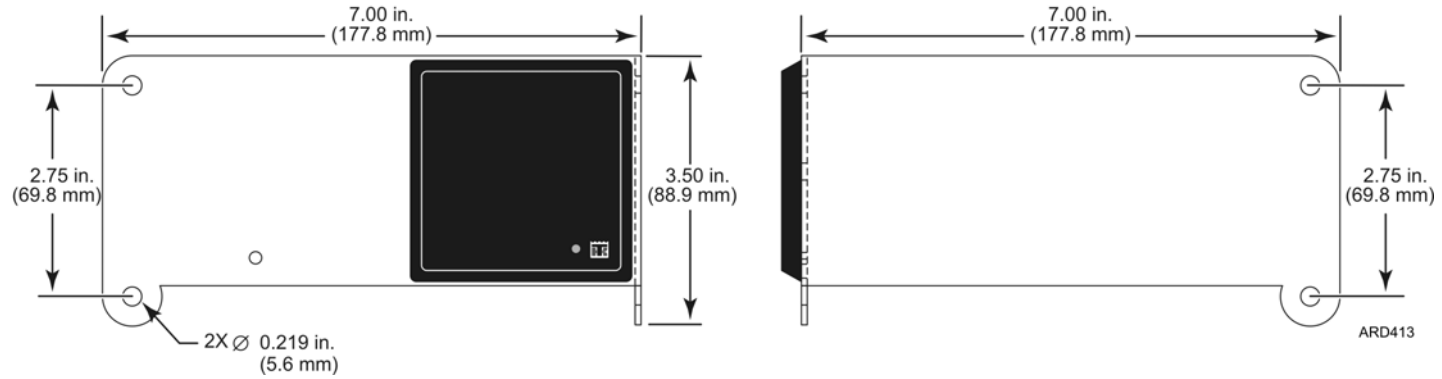
END VIEW



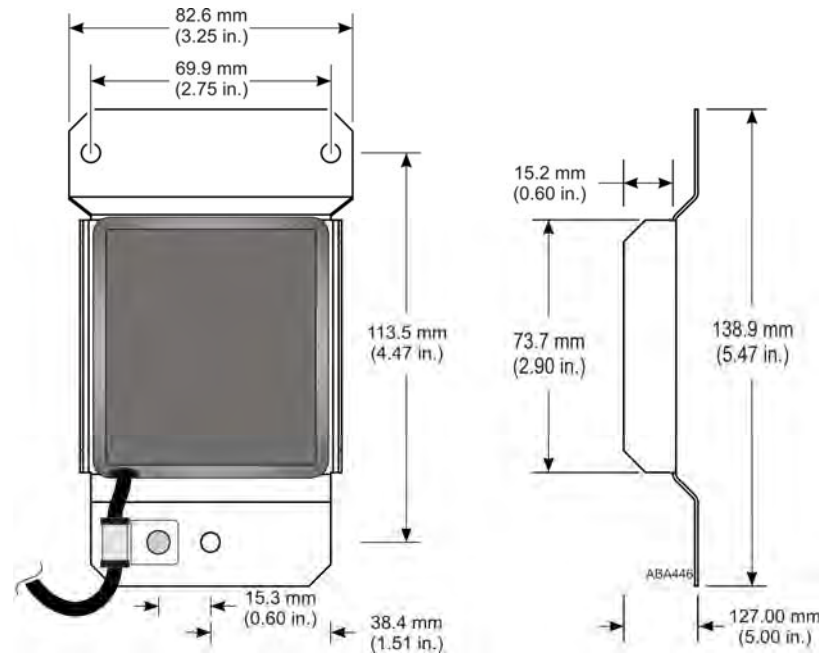
BACK VIEW

Status Light Dimensions (Option)

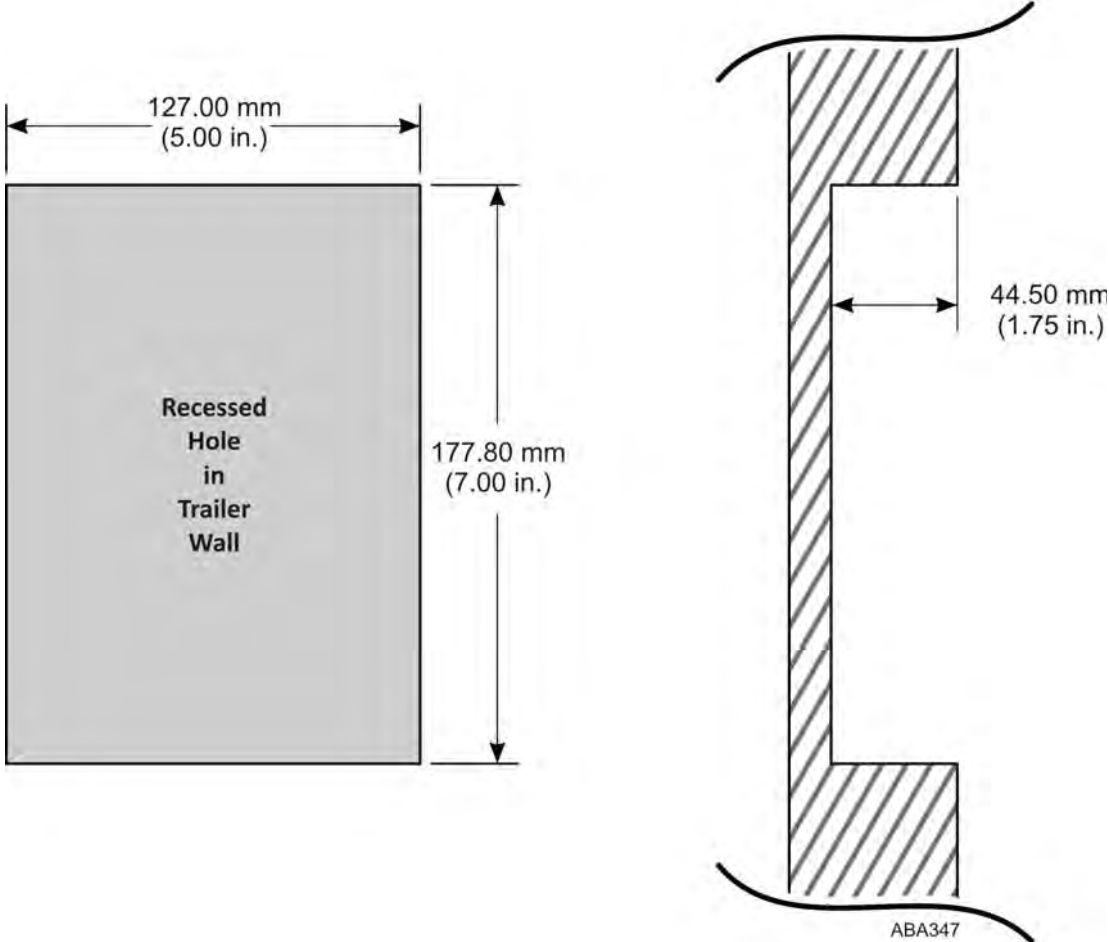
Corner Mount Version



Surface Mount Version



Flush Mount Status Light Opening Dimensions (Option)



NOTE: Dimensions shown will accommodate the Surface Mount Standard Display version only.

Battery Selection Guide

Refer to Service Bulletin T&T 446 for more information regarding Battery Selection and Maintenance.



CAUTION: Do not connect other manufacturer's equipment or accessories to the Thermo King unit! This could result in severe damage to equipment and void the warranty!

IMPORTANT: The specified battery, electrical wiring and electronic controls were designed to operate and maintain only the Thermo King refrigeration system and factory authorized Thermo King options.

Trailer units are designed for one 12 volt, Group 31 battery supplied by the installer.

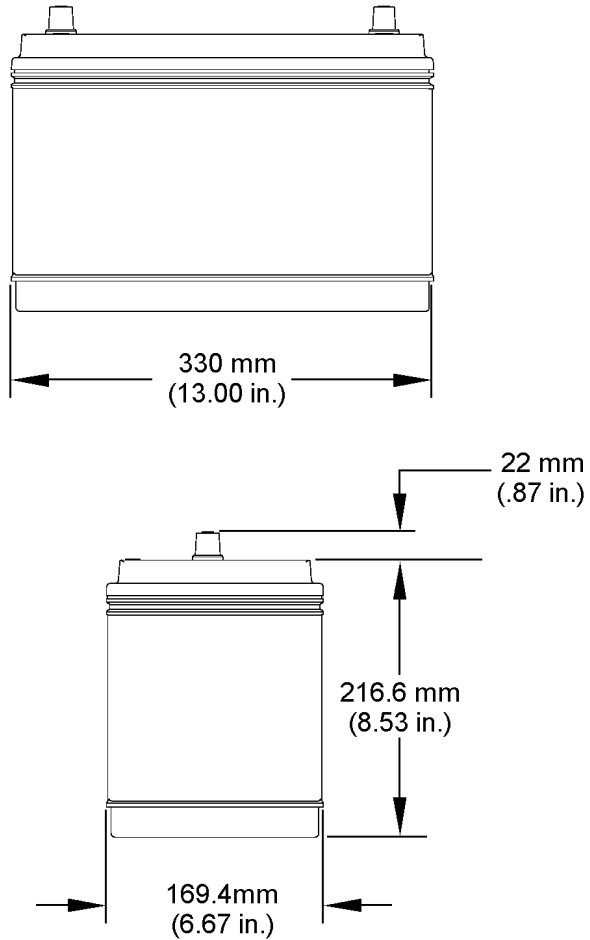
The battery must be suitable for deep cycling, heavy duty and rated with a minimum of 95 amp/hr.

NOTE: See following table for Thermo King approved batteries. Refer to Service Bulletin T&T 446 for more information regarding Battery Selection and Maintenance.

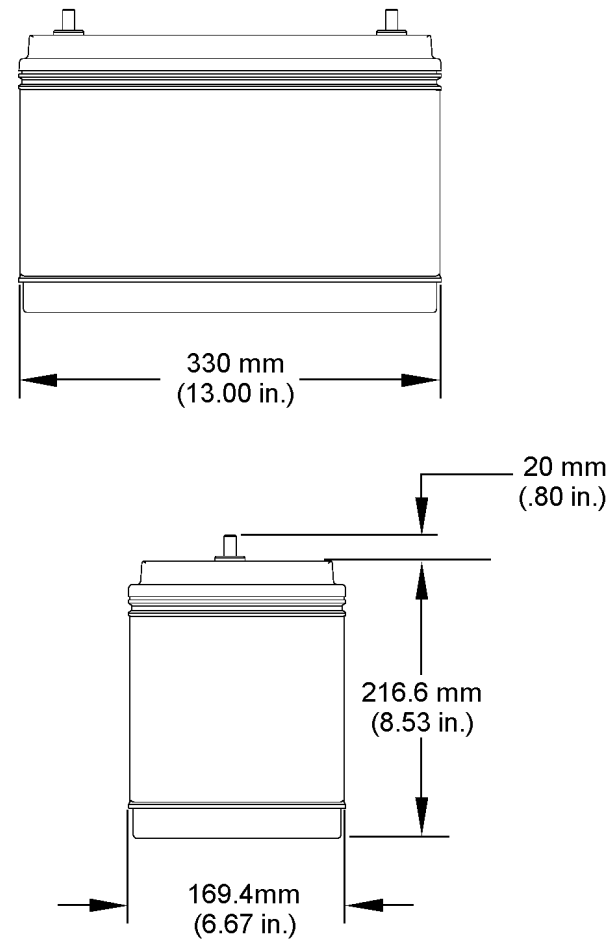
BATTERY APPLICATION TABLE		
750 CCA Wet Cell Thermo King ReliaMax 750S P/N 203-731 Threaded Stud P/N 203-730 SAE Post	925 CCA Wet Cell Thermo King ReliaMax 925N P/N 203-733 Threaded Stud P/N 203-732 SAE Post	1150 CCA Dry Cell (AGM) Thermo King EON P/N 203-550 Threaded Stud P/N 203-551 SAE Post
<ul style="list-style-type: none"> • Wet Cell Technology • Better suited for warmer climates • Less cranking power at low ambient temperatures • 18-24 month expected life *see note below • Choose for southern climates 	<ul style="list-style-type: none"> • Wet Cell Technology • Better suited for colder climates • High cranking power at low ambient temperatures • 18-24 month expected life *see note below • Choose for northern climates 	<ul style="list-style-type: none"> • Dry Cell (AGM) Technology • Better suited for all applications • High cranking power at lower ambient temperatures • Suited for extreme temperatures • Best for high cycling applications (Cycle-Sentry use) • 5-7 year expected life
<p>* NOTE: Wet cell battery life and maintenance requirements are determined by the operating environment and the charge/discharge rate (cycles) while the battery is in service. Higher ambient temperatures and frequent discharges will shorten a wet cell battery's overall life expectancy and increase maintenance requirements.</p>		

Group 31 Battery Dimensions

Lug Connections



Threaded Stud Connections



AAA403

Installing the Unit - Standard Installation

Uncratering the Unit



DANGER: Do not use a forklift to install the unit! This could result in severe damage to the equipment, void the warranty or cause personal injury or death!



WARNING: Use only locking hooks to safely lift the unit! Failure to use locking hooks could result in severe damage to the equipment, void the warranty or cause personal injury or death! (Detail I).

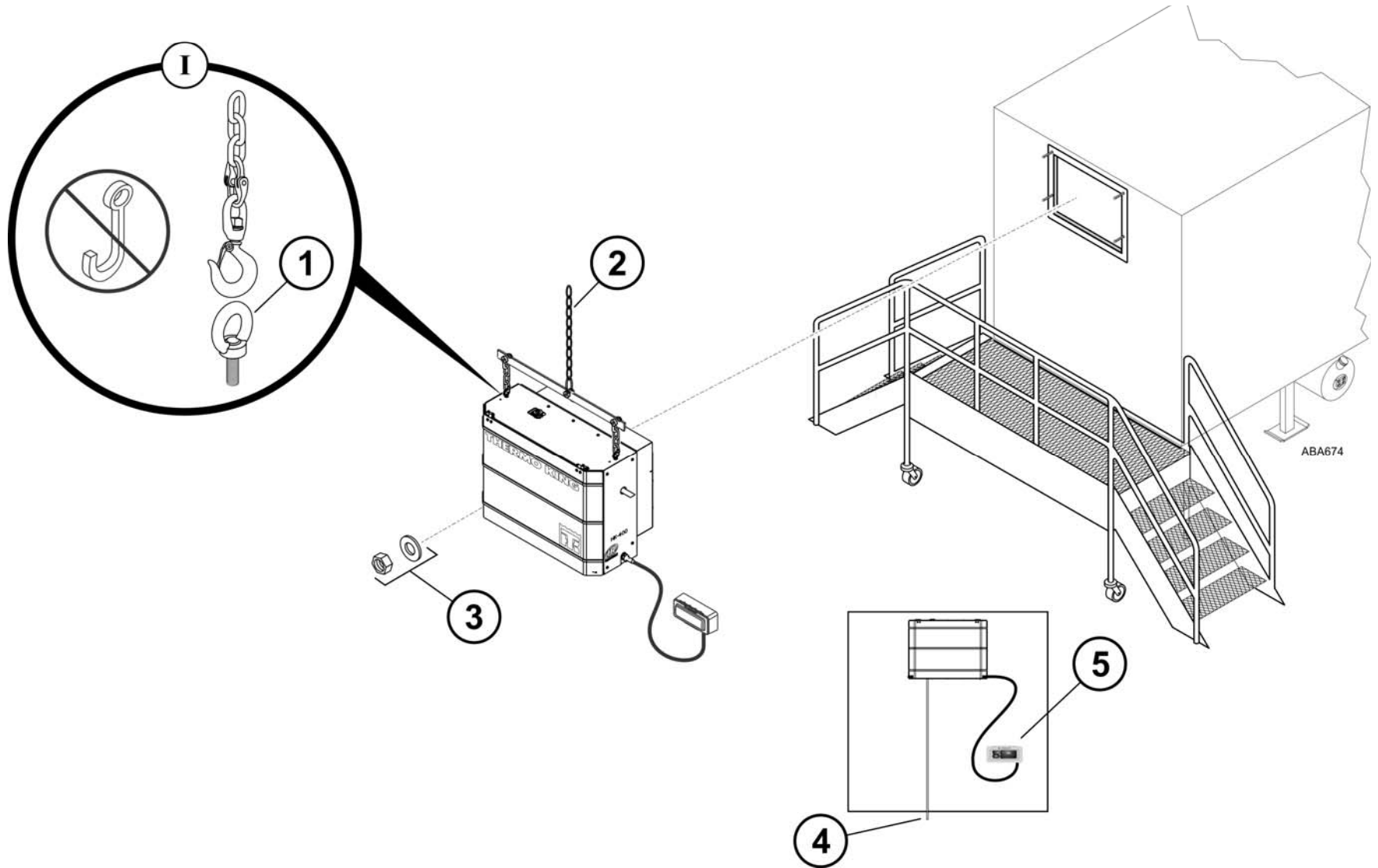
To avoid unnecessary damage to your unit, place the crated unit near the trailer prior to its removal. Carefully remove top boards of the crate, the installation kit boxes, and any other loose components from rear of unit.

1. Attach two forged lifting eyebolts (1/2-13 UNC) into the thread holes located on top of unit (**Detail I**).
 - Attach lifting device to eyebolts and slightly raise unit and remove hardware holding unit to crate.

Standard Installation


2. Lift the unit and position it in the trailer opening. With the unit access door open, align the four unit mounting holes with the trailer mounting bolts.
3. Attach washer and locking nuts. Torque to 82 N•m (60 ft. lbs.).
4. Route the drain hose straight down and past the bottom of the trailer and secure with supplied clamps and screws. Be sure not to pinch the drain hose closed when routing and installing clamps.
5. See “Installing the Remote HMI” on page 24.


Installing the Unit - Standard Installation



Installing the Unit - Zero-Cube Installation (Option)

Uncrating the Unit

 **DANGER: Do not use a forklift to install the unit! This could result in severe damage to the equipment, void the warranty or cause personal injury or death!**

 **WARNING: Use only locking hooks to safely lift the unit! Failure to use locking hooks could result in severe damage to the equipment, void the warranty or cause personal injury or death! (Detail I).**

To avoid unnecessary damage to your unit, place the crated unit near the trailer prior to its removal. Carefully remove top boards of the crate, the installation kit boxes, and any other loose components from rear of unit.

1. Attach two forged lifting eyebolts (1/2-13 UNC) into the thread holes located on top of unit (**Detail I**).
 - Attach lifting device to eyebolts and slightly raise unit and remove hardware holding unit to crate.

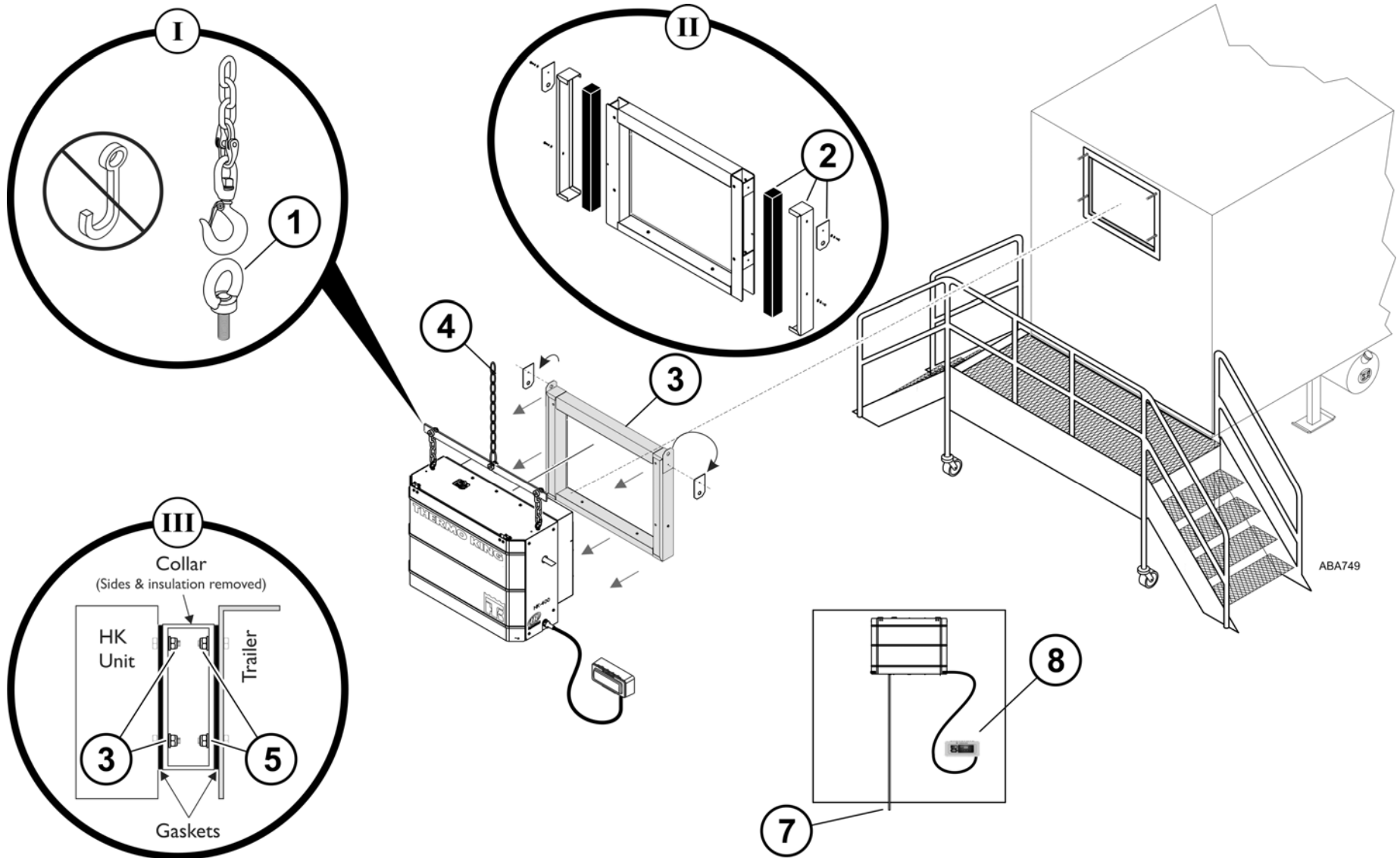
Zero-Cube Installation

2. Remove the lifting plates, side panels and the insulation pieces from the collar (**Detail II**). Discard only the lifting plates.
3. Position collar onto the rear of the HK unit with the gasket facing out.
 - Secure the collar to the unit with (installer supplied) mounting bolts, washers and locking nuts (**Detail III**).

NOTE: Use Metric M12 x 1.75 pitch class 8.8 (1/2 in.-13 UNC - 2B Rolled thread grade 5), medium carbon steel bolts, flat washers and locking nuts. All hardware must be zinc plated with dichromate finish. Torque to 82 N•m (60 ft. lbs.).

4. Lift the unit and position it in the trailer opening. With the unit access door open, align the collar mounting holes with the trailer mounting bolts.
5. Attach washer and locking nuts. Torque to 82 N•m (60 ft. lbs.). (**Detail III**).
6. Reinstall the insulation and side panels back onto collar. Tighten hardware securely.
7. Route the drain hose straight down and past the bottom of the trailer and secure with supplied clamps and screws. Be sure not to pinch the drain hose closed when routing and installing clamps.
8. See “Installing the Remote HMI” on page 24.

Installing the Unit - Zero-Cube Installation (Option)



Installing the Remote HMI

NOTE: *The installation views shown are for reference only. The actual locations chosen for installing the remote HMI may vary per your specific application and should not interfere with the operation of the trailer or container.*

Surface Mount Installation

1. Position the HMI onto the surface of the front wall while providing a drip loop as shown.
2. Open the front cover to access the four mounting holes.
 - Secure to the trailer wall with the supplied T-25 Torx head self tapping screws.

IMPORTANT: *Do not overtighten the screws or the plastic enclosure will be damaged.*

3. Secure the harness to the trailer wall with the supplied clamps and self tapping screws.

Flush Mount Installation

NOTE: *Installer to provide a recessed pocket in the trailer wall to accommodate the remote HMI. This recessed pocket must be deep enough to help protect the HMI from damage and allow for water drainage. See “HMI Remote Mount Dimensions” on page 15.*

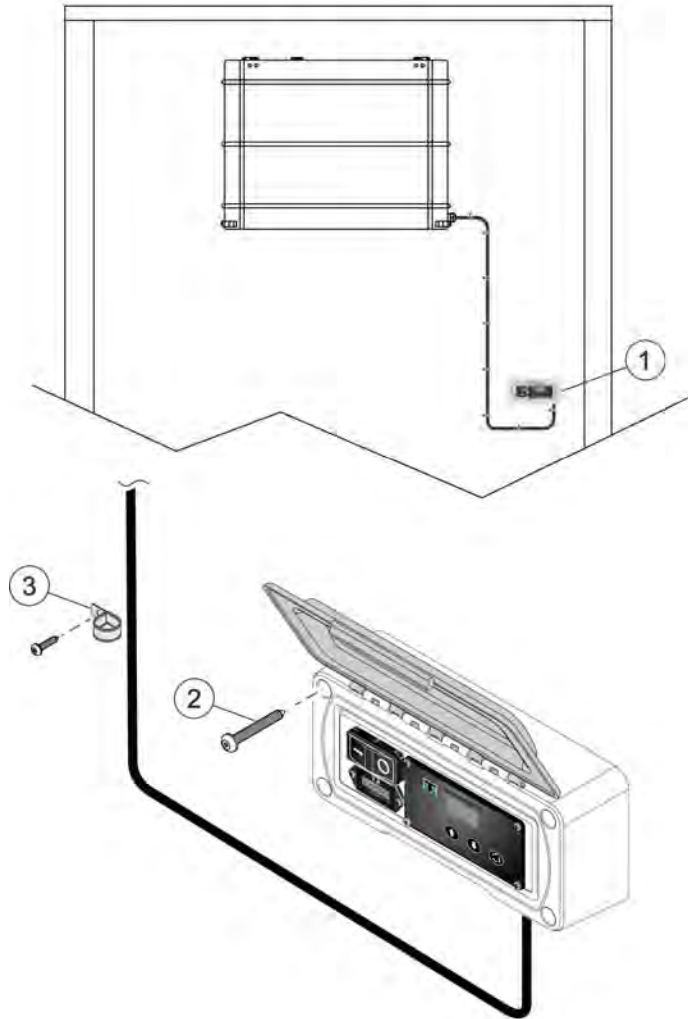
1. Position the HMI into the recessed pocket while providing a drip loop as shown.
2. Open the front cover to access the four mounting holes.
 - Secure to the recessed pocket with the supplied T-25 Torx head self tapping screws.

IMPORTANT: *Do not overtighten the screws or the plastic enclosure will be damaged.*

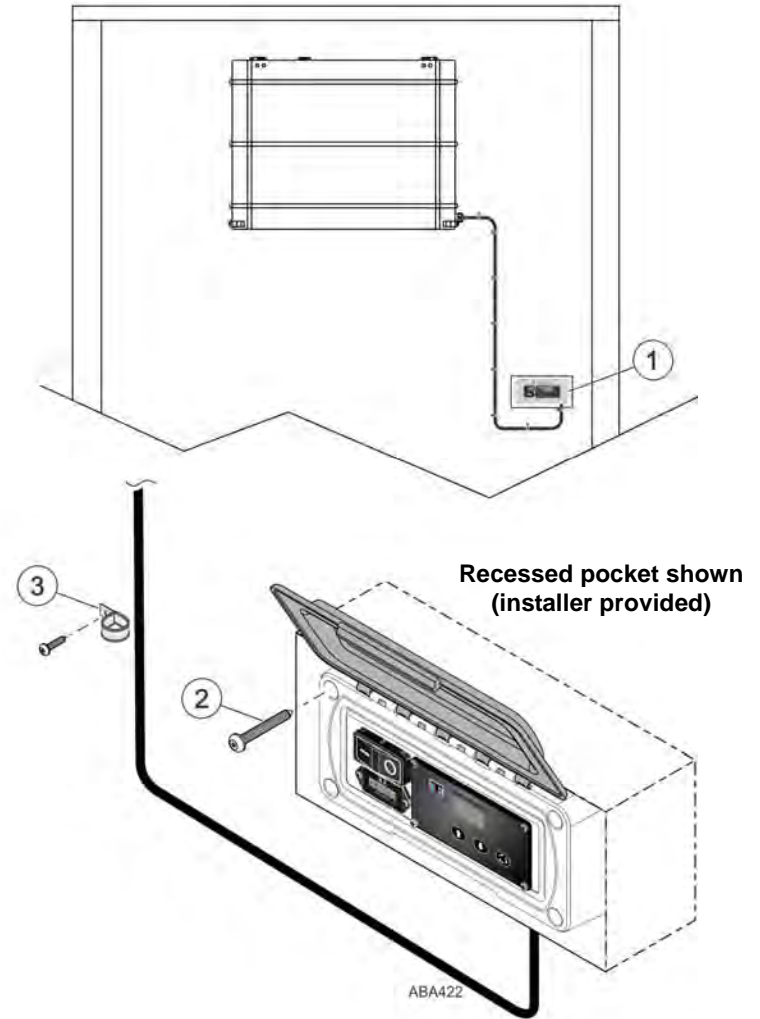
3. Secure the harness to the trailer wall with the supplied clamps and self tapping screws.

Installing the Remote HMI

Surface Mount Installation





Flush Mount Installation



Installing the Fuel Tank - Aluminum, 22" dia. 30 & 50 Gallon - (Option)

Installed onto Trailers with Standard Cross Member Spacing

 **DANGER:** An improperly installed fuel tank could lead to serious injury or death! Consult your trailer manufacturer for specific details on proper fuel tank installation and recommendations.

 **CAUTION:** The trailers crossmembers must be strong enough to safely support the combined weight of the mounting hardware, fuel tank and fuel.

Fuel Tank Capacity	Combined Total Weight
30 Gallon Diesel	142 KG (313 lbs.)
50 Gallon Diesel	214 KG (471 lbs.)

Open Style Tank Mounting Bracket - New fuel tank mounting kits were released November 1, 2008. Factory Kit 701635 and Aftermarket Kit 90-398 contain a new open style fuel tank mounting bracket. This new mounting bracket can be used to install either a 30 or 50 gallon, 22" diameter fuel tanks onto a typical trailer with standard crossmember spacing of 6", 8", 10" or 12".

- Trailers with non-standard crossmember spacing of 9", 15" and 16" will require the additional components found in Kit 701658 (90-399) to complete the installation.
- These new kits **can not** be used to install a 75, 90, 110 or 120 gallon, 22" diameter fuel tanks. Those tanks require Kit 710278 (90-121).
- DO NOT** substitute any components from Kits 701635 (90-398) and 701658 (90-399) with any previously supplied fuel tank mounting kits as they are not interchangeable.
- Kits 701635 (90-398) and 701658 (90-399) are specifically designed to install a 30 or 50 gallon fuel tank in a hanging position under a trailer attached to the floor crossmembers. **Substitutions are not acceptable!**

A. Fuel Tank Position

- Thermo King recommends the fuel tank be mounted 203.2 mm (8.00 in.) under the trailer as shown. Otherwise, the OEM or installer is responsible to ensure the fuel tank position meets or exceeds DOT or Federal Highway regulations, when applicable.

B. Tank Strap Position

- 30 Gallon Tanks - Fuel tank straps must be positioned 381 mm (15.00 in.) apart as shown.
- 50 Gallon Tanks - Fuel tank straps must be positioned 673 mm (25.50 in.) apart as shown.

C. Rubber Strips and Pads

- Rubber strips must be properly installed on both the mounting bands and the rubber pads must be installed onto the underside of the hanger assemblies to prevent metal to aluminum contact.

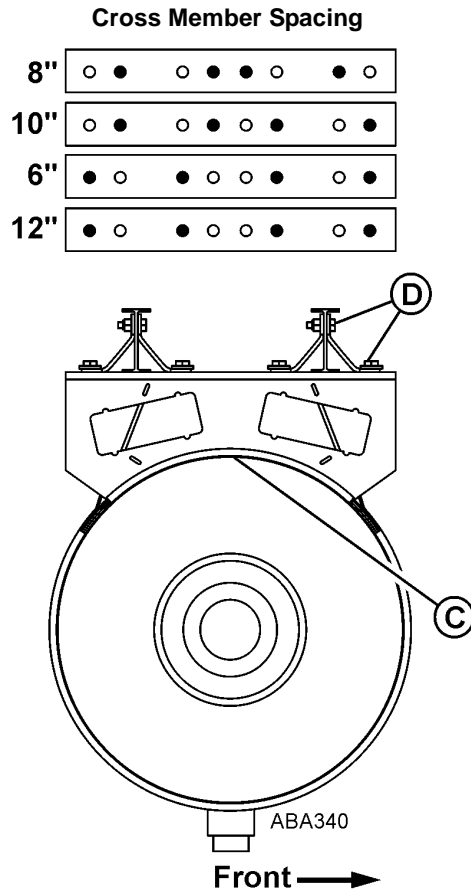
D. Mounting Hardware

- Grade 5 mounting hardware is supplied. **Substitutions are not acceptable!**
- All mounting hardware must be properly installed and torqued to the specifications listed.

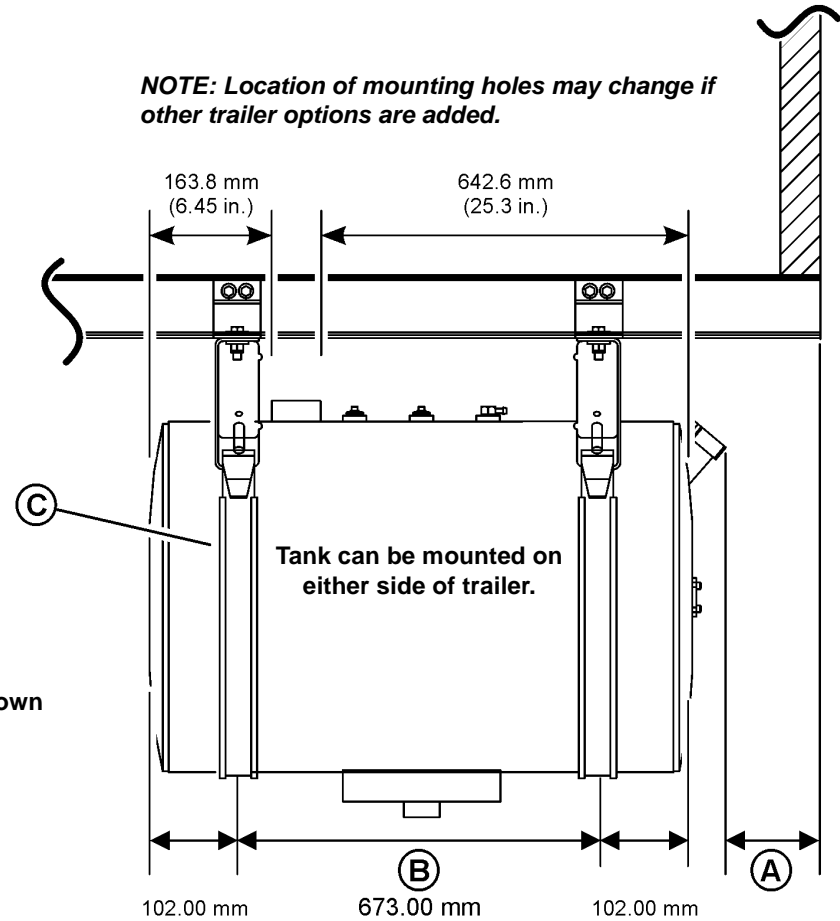
Hardware Size	Torque Specifications
3/8-16 Grade 5	42 N•m (31 ft-lb)
1/2 -13 Grade 5	81 to 88 N•m (60-65 ft-lb)
1/2" T-bolts	48 N•m (35 ft-lb.)

Installing the Fuel Tank - Aluminum, 22" dia. 30 & 50 Gallon - (Option)

Standard crossmember spacing shown. For other crossmember spacing, refer to TK-54238-2-IM.
 Non-standard crossmember spacing of 9", 15" and 16" also requires Kit 701658 (90-399)



50 Gallon Fuel Tank Shown



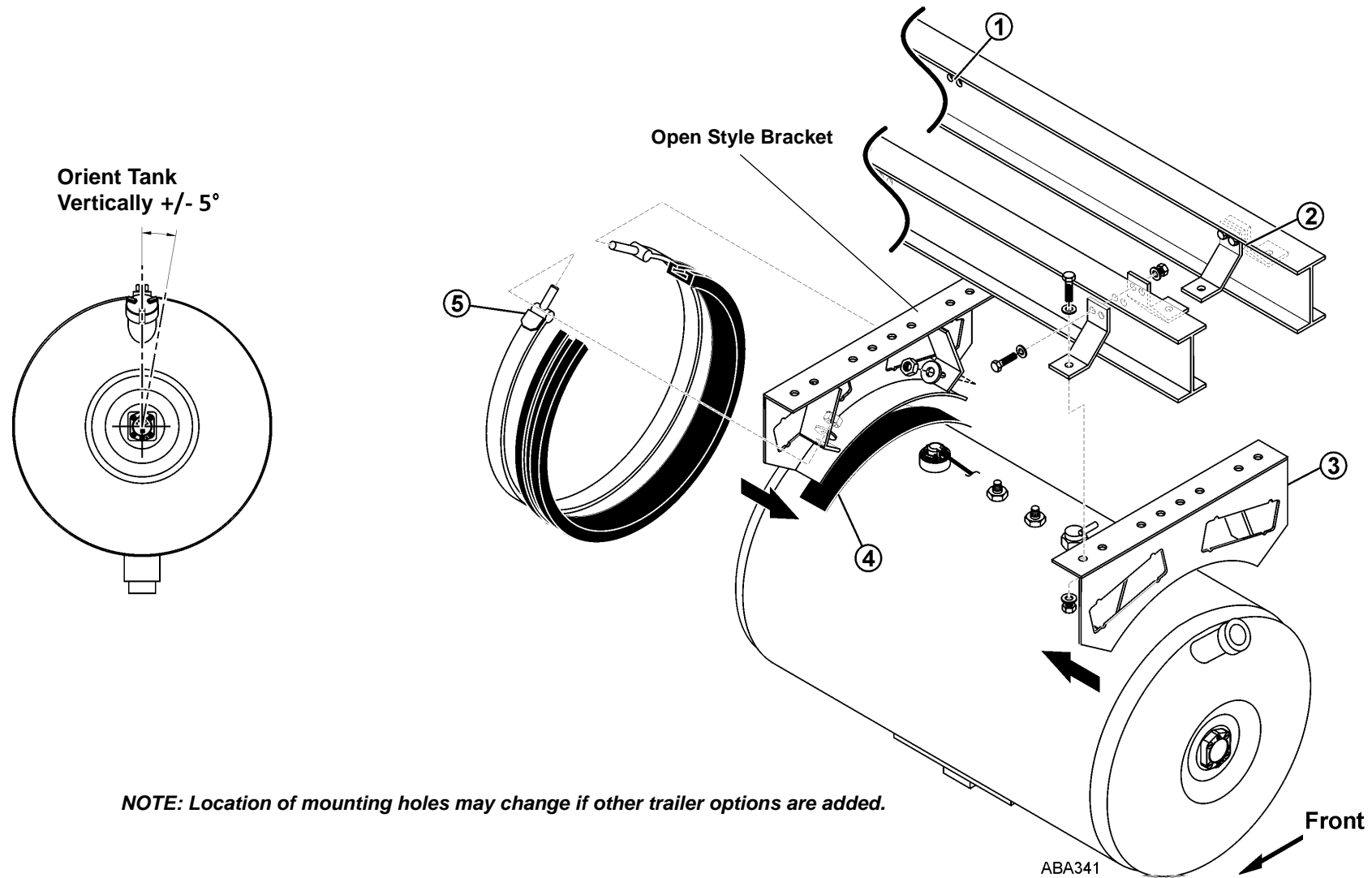
Installing the Fuel Tank - Aluminum, 22" dia. 30 & 50 Gallon - (Option)

Fuel Tank Installation

NOTE: Location of mounting holes may change if other trailer options are added.

1. Locate the existing sets of 10.3 mm (.406" dia.) pre-punched holes in the crossmembers. *See note above.*
2. Align the two holes of each hanger bracket with the holes in the crossmember and secure with two, 3/8-16 screws, washers and locking nuts. Torque the hardware to 42 N•m (31 ft-lb).
3. Install each hanger assembly (facing each other as shown) onto the hanger brackets with 1/2-13 screws, washers and locking nuts. Torque the hardware to 81 to 88 N•m (60-65 ft-lb).
4. Clean the underside of each hanger assembly and install the self-adhesive rubber pads.
5. Loosely install the tank straps t-bolts onto the hanger assemblies with 1/2" washers and locking nuts. Verify the rubber strips are properly installed on the mounting bands.
6. Install the fuel tank into the straps with the tank positioned vertically within plus or minus 5 degrees and tighten the tank straps to 48 N•m (35 ft-lb).

Installing the Fuel Tank - Aluminum, 22" dia. 30 & 50 Gallon - (Option)



NOTE: Location of mounting holes may change if other trailer options are added.

Installing the Fuel Tank - Aluminum, L-Shaped, 65 Gallon - (Option)

Important Fuel Tank Installation Information

NOTE: *These instructions are written exclusively for, and are limited to, the installation of the aluminum L-Shaped 65 gallon fuel tank, positioned directly under a Thermo King HK heating unit, and mounted onto the front wall of a trailer or intermodal container designed specifically for this application. All other installations are the responsibilities of the installer.*



DANGER: *An improperly installed fuel tank could lead to serious injury or death! The mounting hardware to secure the fuel tank and mounting brackets onto the front wall of the trailer or intermodal container is to be supplied by the installer and must be 1/2-13 UNC (rolled thread), Medium Carbon Steel (Grade 5 or better) with Zinc Plate and Dichromate finish. Additionally, the front wall of the trailer or intermodal container must be structurally strong enough to safely support the combined total weight of the HK heating unit, the fuel tank and mounting brackets and 65 gallons of diesel fuel (see chart below). Consult your trailer or intermodal container manufacturer for details regarding your specific installation.*

APPROXIMATE WEIGHTS		
Thermo King HK unit with EON battery installed.	HK-430 203 kg (448 lbs.)	HK-430 HO 221 kg (488 lbs.)
L-shaped fuel tank, mounting brackets and hardware.	53.5 kg (118 lbs.)	53.5 kg (118 lbs.)
65 gallons of diesel fuel.	236 kg (520 lbs.)	236 kg (520 lbs.)
COMBINED TOTAL WEIGHT	447 kg (986 lbs.)	511 kg (1126 lbs.)

A. FUEL TANK POSITION

- Thermo King recommends the fuel tank be centered directly under the HK heating unit.

B. TANK STRAP POSITION

- Fuel tank mounting brackets and support straps must be positioned 1225 mm (48.25 in.) apart to properly support the weight of the tank and fuel.
- The tank straps must fit into the strap guides located on the top of the fuel tank.

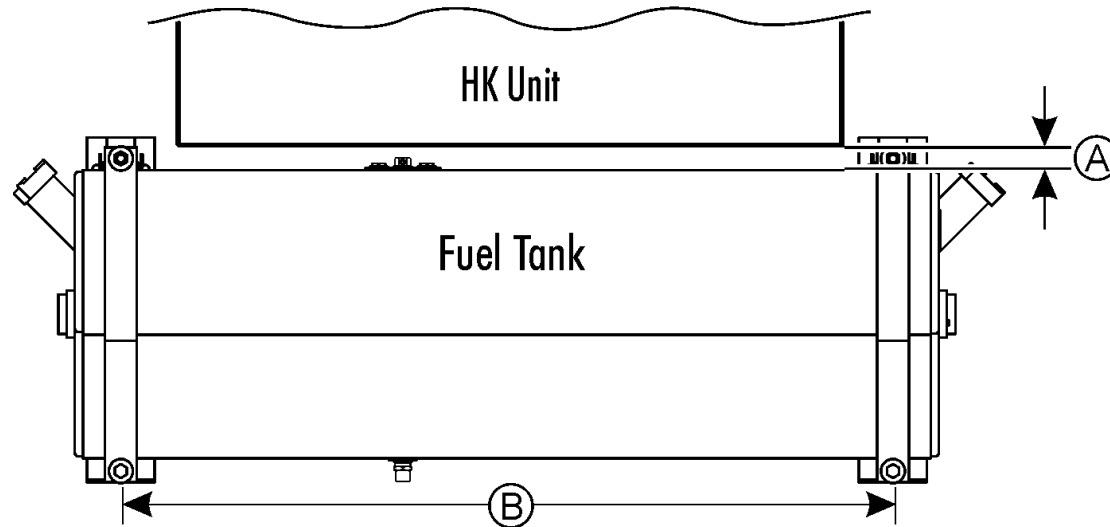
C. RUBBER STRIPS AND PADS

- Rubber strips must be properly installed on the mounting brackets, and mounting bands to prevent metal to aluminum contact.

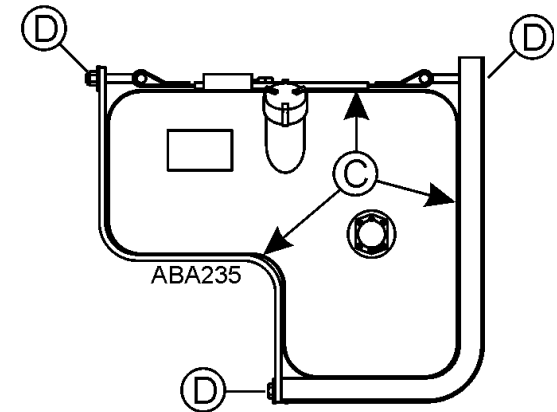
D. MOUNTING HARDWARE

- Grade 5 mounting hardware is supplied to secure the tank to the mounting brackets.
- Mounting hardware to secure the complete fuel tank and mounting bracket assembly onto the trailer or container is to be supplied by the installer and must be 1/2-13 UNC (rolled thread), Medium Carbon Steel (Grade 5 or better) with Zinc Plate and Dichromate finish.
- All mounting hardware must be properly installed and torqued to the specifications listed.

Installing the Fuel Tank - Aluminum, L-Shaped, 65 Gallon - (Option)



Front View



Side View

Installing the Fuel Tank - Aluminum, L-Shaped, 65 Gallon - (Option)

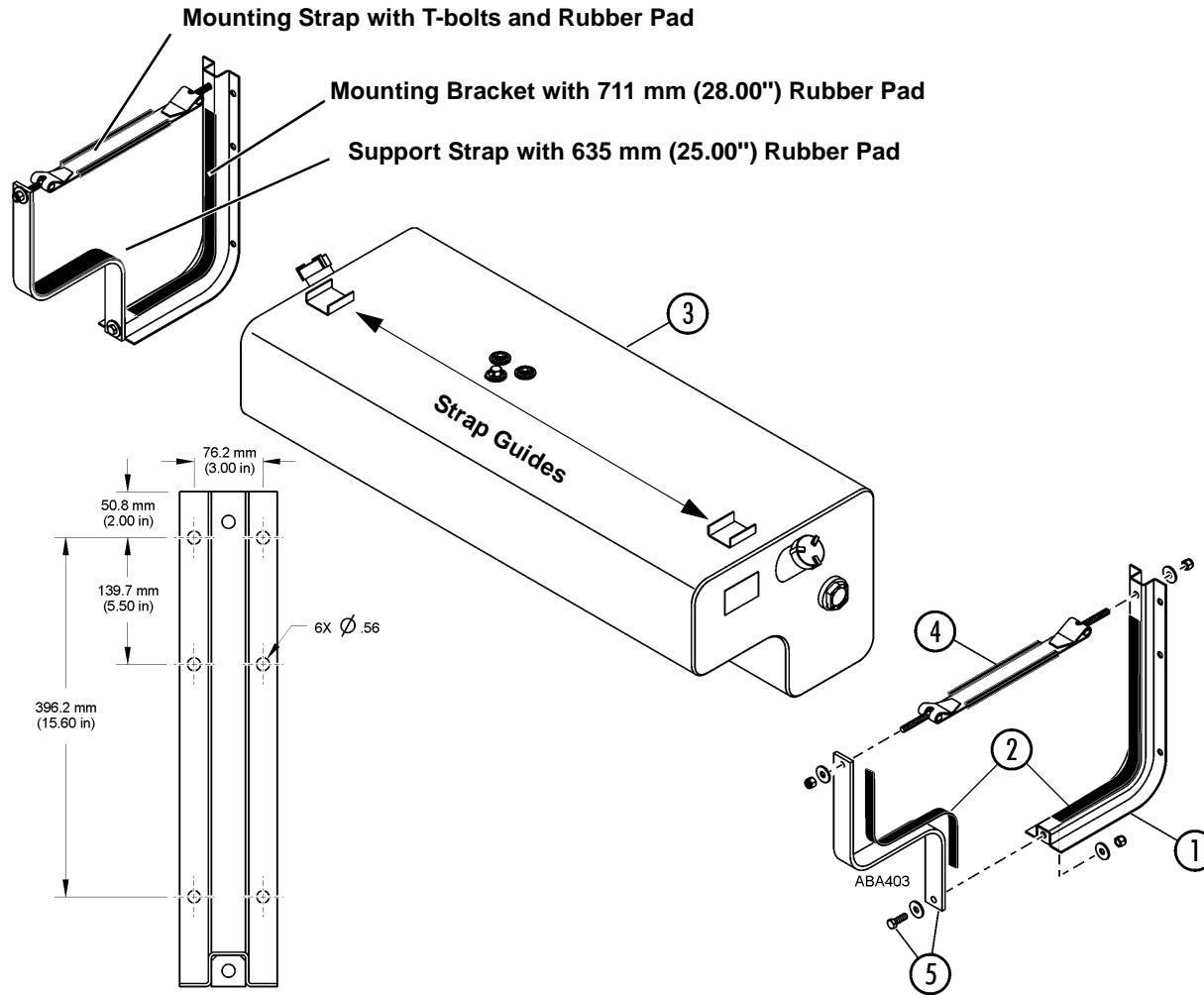
Fuel Tank Installation

1. Install the tank mounting brackets with six, (installer supplied) 1/2-13 screws, washers and locking nuts onto the front wall. Torque the hardware to 81 to 88 N•m (60-65 ft-lb.).
2. Clean the inside surfaces of the mounting brackets and support straps. Install the 711 mm (28.00") long rubber strips onto the mounting brackets and the 635 mm (25.00") long rubber strips onto the support straps.
3. Install and center the tank onto the mounting brackets.
4. Install the mounting straps with T-bolts onto the upper holes of the mounting bracket with the supplied 1/2" washers and locking nuts. Verify the rubber strips are properly installed on the mounting straps and straps are aligned with the strap guides on the top of the tank. Leave the nuts finger-tight on the threads.
5. Install the support straps to the lower mounting holes of each mounting bracket with the supplied 1/2-13 x 1.50" long bolts, flat washers and locking nuts. Leave the nuts finger-tight on the threads.
6. Tighten the lower nuts first to 44.5 N•m (33 ft-lb.) or until 2 full threads are exposed through the locking material of the nut, then tighten the upper nuts to 44.5 N•m (33 ft-lb.).

NOTE: At least two full threads must be exposed after 44.5 N•m (33 ft-lb.) is applied. If not, tighten the nuts until two full threads project through the locking material of the nuts.

IMPORTANT: Do not over tighten the mounting hardware or damage to the tank will result.

Installing the Fuel Tank - Aluminum, L-Shaped, 65 Gallon - (Option)



Installing the Fuel Tank - Steel, Rectangle, 65 Gallon - (Option)

Important Fuel Tank Installation Information

NOTE: *These instructions are written exclusively for, and are limited to, the installation of the 65 gallon steel fuel tank, positioned directly under a Thermo King HK heating unit, and mounted onto the front wall of a trailer or intermodal container designed specifically for this application. All other installations are the responsibilities of the installer.*



DANGER: *An improperly installed fuel tank could lead to serious injury or death! The mounting hardware to secure the fuel tank and mounting brackets onto the front wall of the trailer or intermodal container is to be supplied by the installer and must be 1/2-13 UNC (rolled thread), Medium Carbon Steel (Grade 5 or better) with Zinc Plate and Dichromate finish. Additionally, the front wall of the trailer or intermodal container must be structurally strong enough to safely support the combined total weight of the HK heating unit, the fuel tank and mounting brackets and 65 gallons of diesel fuel (see chart below). Consult your trailer or intermodal container manufacturer for details regarding your specific installation.*

APPROXIMATE WEIGHTS		
Thermo King HK unit with EON battery installed.	HK-430 (203 kg) 448 lbs.	HK-430 HO 221 kg (488 lbs).
Rectangle steel fuel tank, mounting brackets and hardware.	89.4 kg (197 lbs.)	89.4 kg (197 lbs.)
65 gallons of diesel fuel.	236 kg (520 lbs.)	236 kg (520 lbs.)
COMBINED TOTAL WEIGHT	528 kg (1165 lbs.)	547 kg (1205 lbs.)

A. FUEL TANK POSITION

- Thermo King recommends the fuel tank be centered directly under the HK heating unit.

B. TANK STRAP POSITION

- L-brackets and support straps must be positioned 1225 mm (48.25 in.) apart to properly support the weight of the tank and fuel.

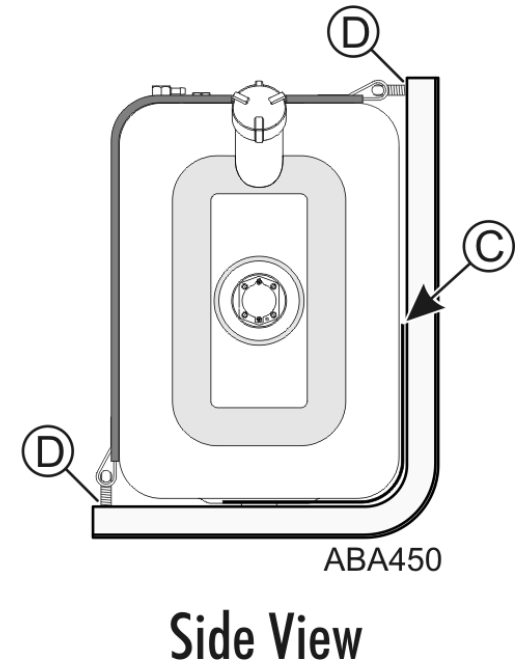
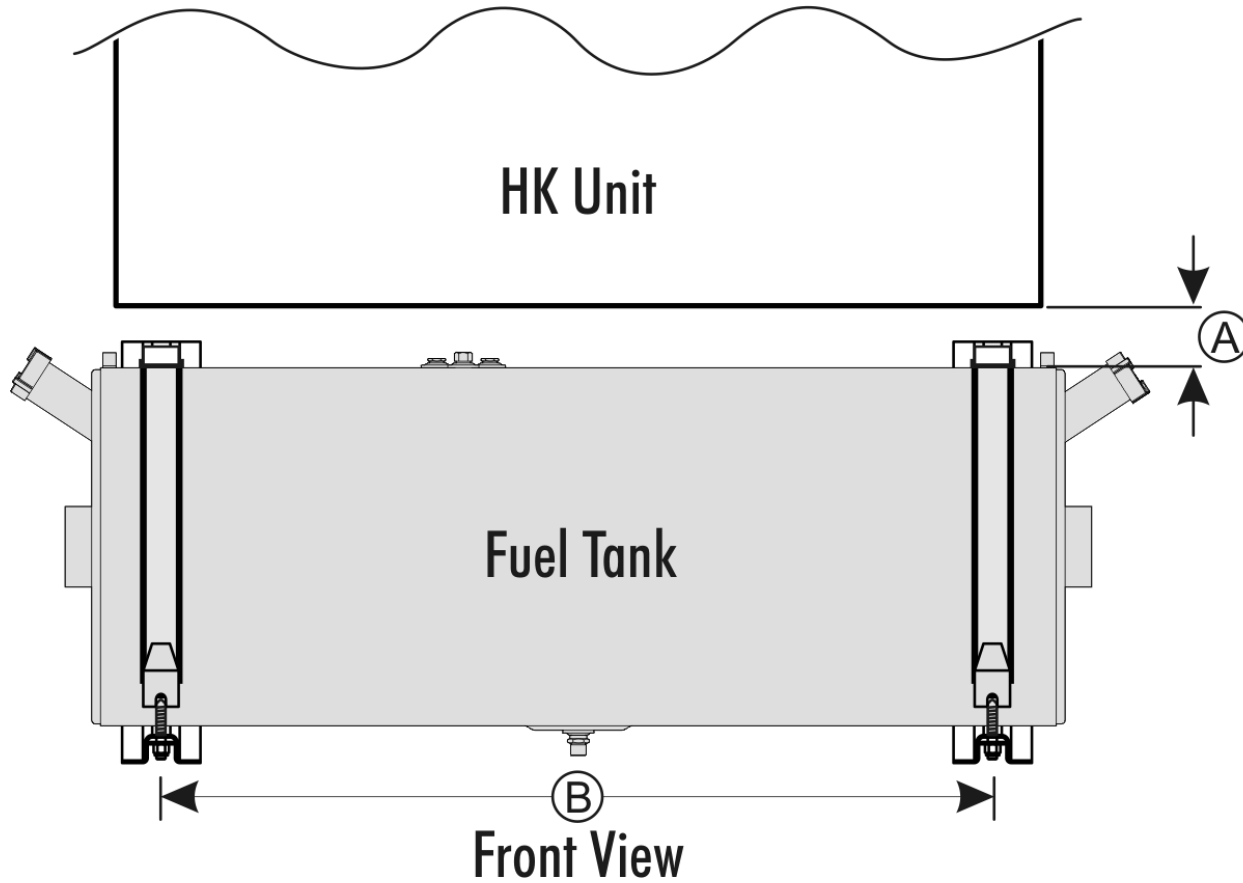
C. RUBBER PADS AND STRIPS

- Rubber pads and strips must be properly installed on the L-brackets and support straps to prevent metal to metal contact.

D. MOUNTING HARDWARE

- Grade 5 mounting hardware is supplied to secure the tank to the L- brackets.
- Mounting hardware to secure the complete fuel tank and mounting t assembly onto the trailer or container is to be supplied by the installer and must be 1/2-13 UNC (rolled thread), Medium Carbon Steel (Grade 5 or better) with Zinc Plate and Dichromate finish.
- All mounting hardware must be properly installed and torqued to the specifications listed.

Installing the Fuel Tank - Steel, Rectangle, 65 Gallon - (Option)



Installing the Fuel Tank - Steel, Rectangle, 65 Gallon - (Option)

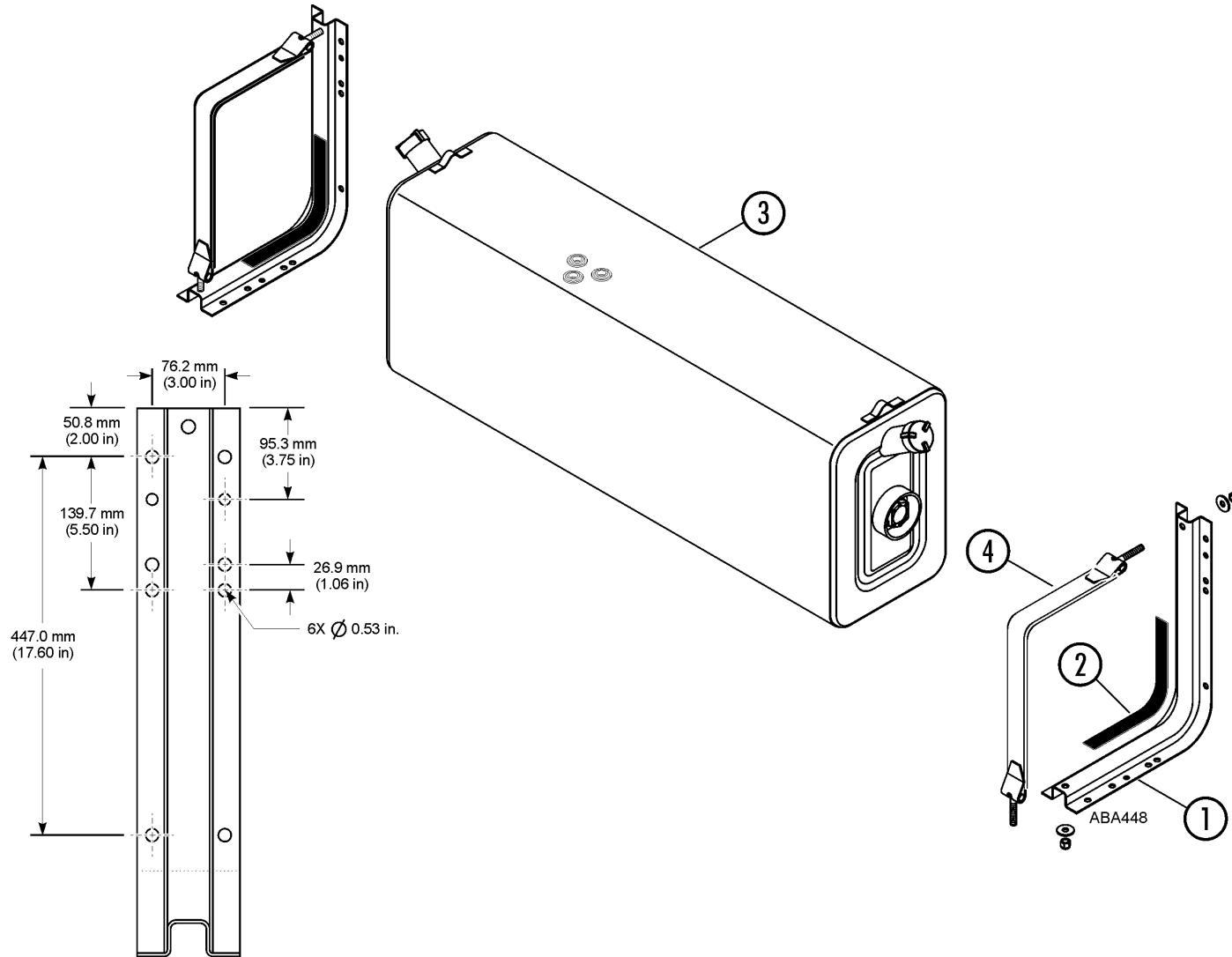
Fuel Tank Installation

1. Install the L-brackets with six, (installer supplied) 1/2-13 screws, washers and locking nuts onto the front wall of the container or trailer. Torque the hardware to 81 to 88 N•m (60-65 ft-lb.).
2. Clean the inside surfaces of the L-brackets and install the 710 mm (27.95 in.) self-adhesive rubber pads. Slide the 813 mm (32.00 in.) rubber strips onto the support straps.
3. Position and center the tank onto the L-brackets.
4. Install the T-bolts on the support straps into the upper and lower holes of the L-brackets with the supplied 1/2" washers and locking nuts. Verify the rubber pads and strips are properly positioned on the L-brackets and straps to prevent any metal to metal contact before hand tightening the mounting hardware. Leave the nuts finger-tight on the threads.
5. Tighten the lower nuts first to 44.5 N•m (33 ft-lb.) or until 2 full threads are exposed through the locking material of the nut, then tighten the upper nuts to 44.5 N•m (33 ft-lb.).

NOTE: At least two full threads must be exposed after 44.5 N•m (33 ft-lb.) is applied. If not, tighten the nuts until two full threads project through the locking material of the nuts.

IMPORTANT: Do not over tighten the mounting hardware or damage to the tank will result.


Installing the Fuel Tank - Steel, Rectangle, 65 Gallon - (Option)




Installing the Fuel Pump and Fuel Lines

FOR UNDER CHASSIS FUEL TANKS

Installation Recommendations

 **DANGER: Leaking fuel lines could cause a fire resulting in death or serious injury! All fuel line fittings must be tight and leak free!**

 **DANGER: Do not route fuel lines with battery cables or electrical wires, as this could cause a fire!**

- All fuel lines should be routed in a protective housing with no kinks and sharp bends.
- Rubber grommets must be used when routing fuel lines through holes in metal.
- Secure all fuel lines with provided clamps.
- Remove plastic cap from the fuel vent and point the outlet towards the rear of the trailer.

IMPORTANT: *The factory installed fuel tank air vent must be in place and functional for the Thermo King unit's fuel system to operate correctly and for the fuel tank to remain in compliance with Federal Motor Carrier Safety Administration specifications (title 49, paragraph 393.67). A plugged or restricted fuel tank air vent can result in premature damage to the fuel pump and could also cause severe damage to the fuel tank. NEVER remove or install any other component in place of the fuel tank air vent.*

Installing the Fuel Pump and Fuel Lines

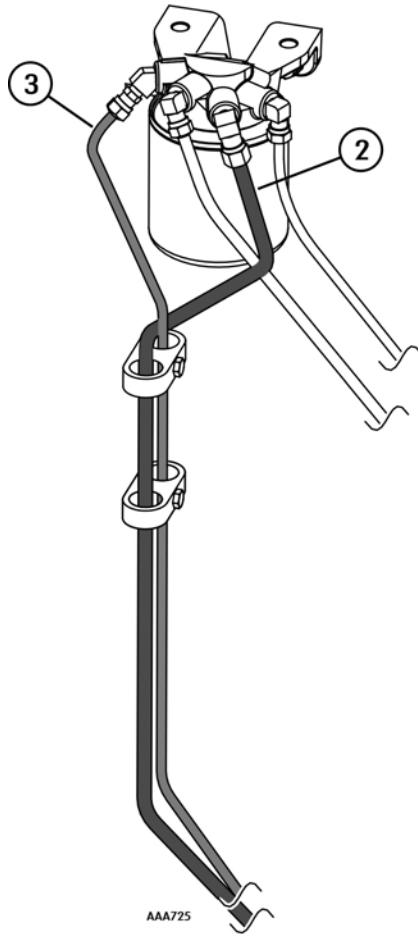
1. Install the fuel pump and bracket as low as possible to provide rapid pump priming.
2. Route the **fuel supply** line from the fuel filter located inside the unit, down to the fuel pump and then to the fuel pickup tube on the fuel tank. Install fuel line connectors (provided in installation kit), cut end of fuel line at a 45 degree angle and insert into fuel pickup tube until it is 38.1 mm (1.50 in.) from the bottom of the tank and tighten securely.
3. Route the **fuel return** line from the fuel filter located inside the unit down to the fuel tank return fitting. Attach fuel line connectors and tighten securely.
4. Route the electrical harness from the unit to the fuel pump and attach to the fuel pump connector. ***The connector must be installed out of road spray area.***

NOTE: *Add sufficient amount of fuel (1/4 tank) to allow the unit to run for 8 to 12 hours during engine break-in and pre-delivery procedures.*

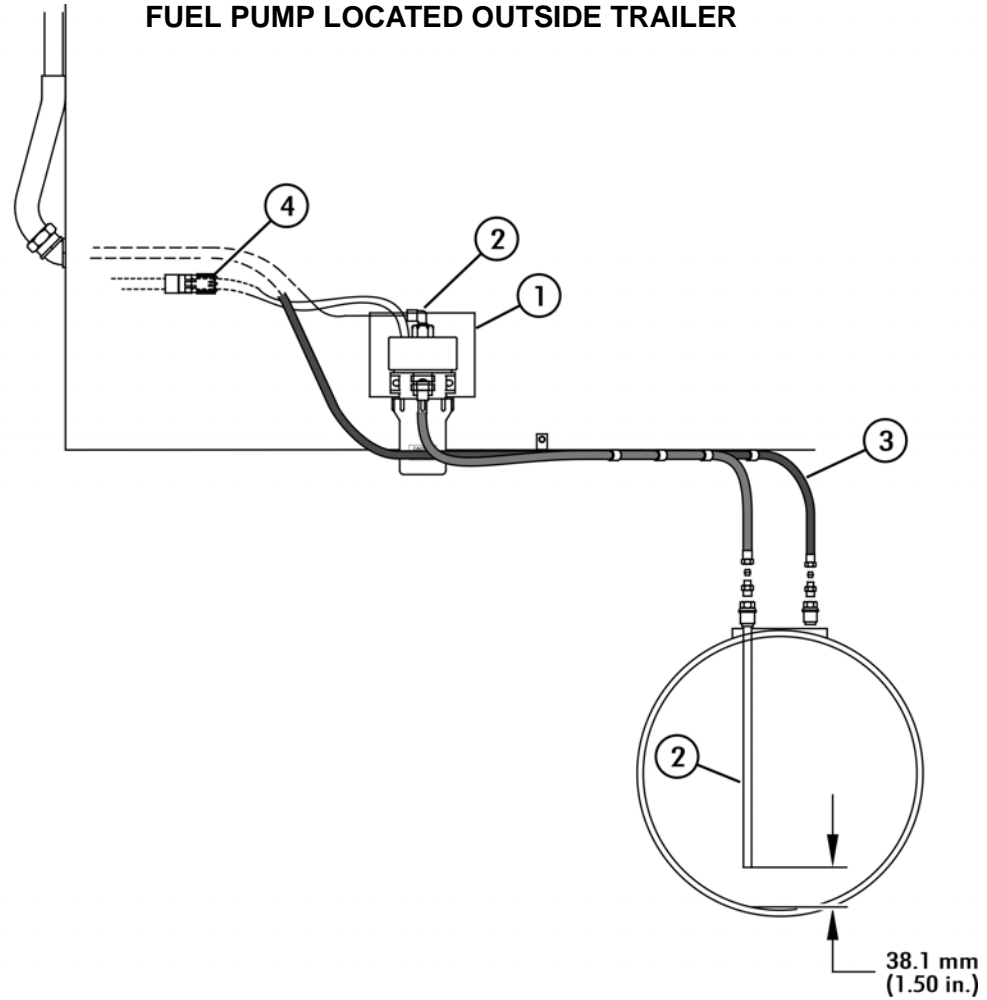
Installing the Fuel Pump and Fuel Lines

FOR UNDER CHASSIS FUEL TANKS

FUEL FILTER LOCATED INSIDE UNIT



FUEL PUMP LOCATED OUTSIDE TRAILER



Installing the Fuel Pump and Fuel Lines

FOR NOSE MOUNTED L-SHAPED and RECTANGLE SHAPED 65 GALLON FUEL TANKS

Fuel Pump Installation



DANGER: Leaking fuel lines could cause a fire resulting in death or serious injury! All fuel line fittings must be tight and leak free!



DANGER: Do not route fuel lines with battery cables or electrical wires, as this could cause a fire!

1. Install the fuel pump and bracket inside the unit next to the battery box with 1/4-20 screws, flat washers and locking nuts. Tighten hardware securely.
2. Route and attach the fuel pump harness to the fuel pump.

Fuel Line Installation

3. Remove the protective plugs from each of the fuel fittings and install the fuel line supply and return line fittings securely.
4. **FUEL SUPPLY** - Route fuel lines from:
 - Supply fitting on the fuel filter to the top outlet fitting of the fuel pump.
 - Side inlet fitting on the fuel pump to the fuel tank fitting.
 - Tighten all fuel line fittings securely.
5. **FUEL RETURN** - Route fuel line from:
 - Return line fitting from the fuel filter to the fuel tank fitting.
 - Tighten all fuel line fittings securely.
6. Secure all fuel lines adequately with cable ties or clamps.
7. Remove the plastic cap from the fuel vent and point it towards the rear of the unit.
8. Remove the plastic cap from the fuel vent and point the outlet towards the rear of the truck.

IMPORTANT: The factory installed fuel tank air vent must be in place and functional for the Thermo King unit's fuel system to operate correctly and for the fuel tank to remain in compliance with Federal Motor Carrier Safety Administration specifications (title 49, paragraph 393.67). A plugged or restricted fuel tank air vent can result in premature damage to the fuel pump and could also cause severe damage to the fuel tank. NEVER remove or install any other component in place of the fuel tank air vent.

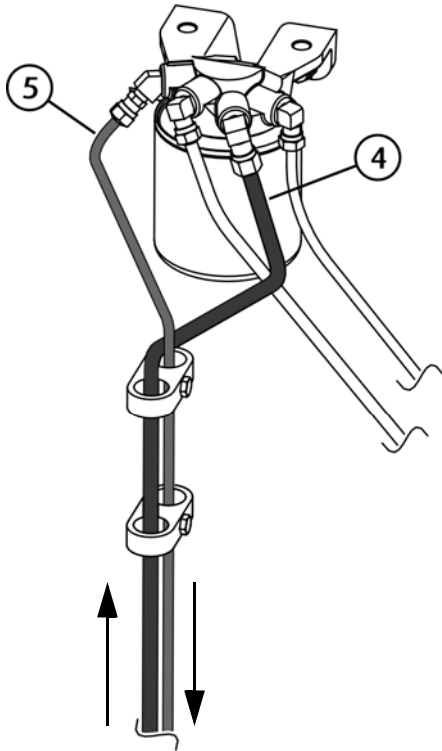
NOTE: Add sufficient amount of fuel (1/4 tank) to allow the unit to operate.

9. Operate the unit and check all fuel line fittings for leaks.

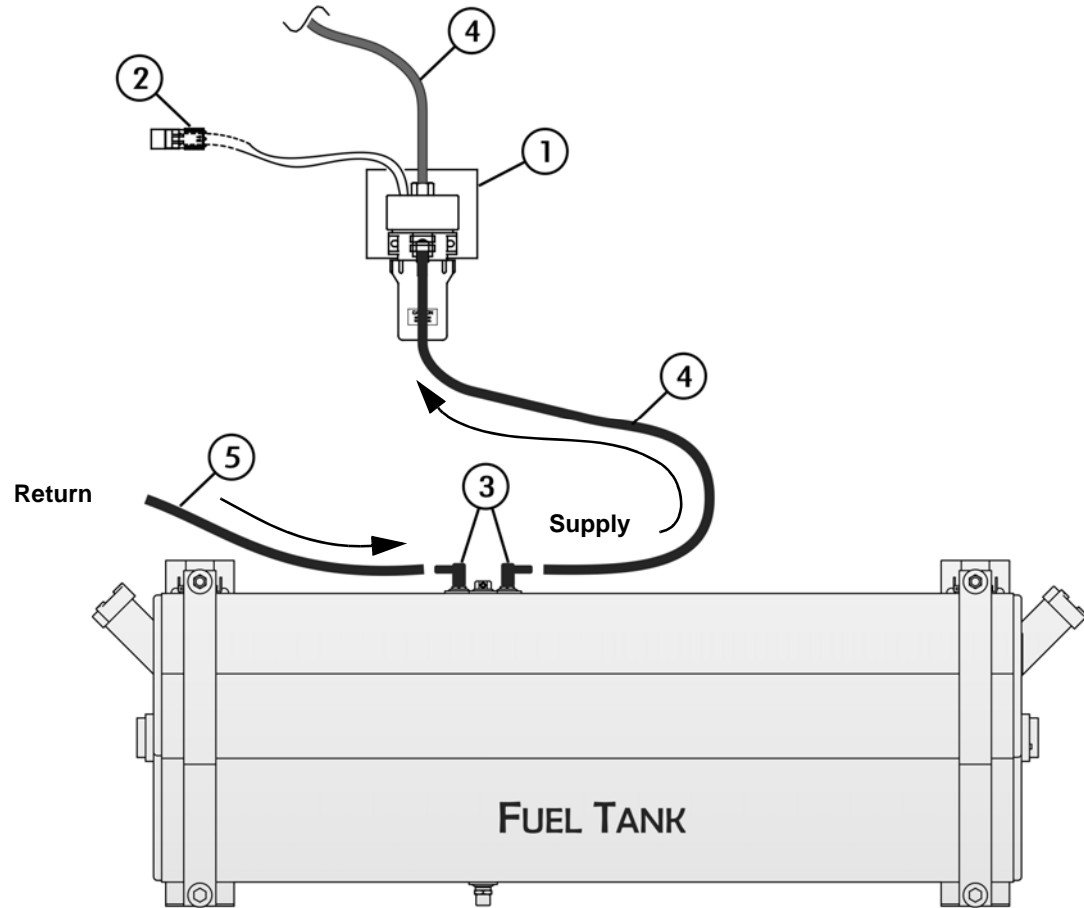
Installing the Fuel Pump and Fuel Lines

FOR NOSE MOUNTED L-SHAPED and RECTANGLE SHAPED 65 GALLON FUEL TANKS

FUEL FILTER LOCATED INSIDE UNIT



FUEL PUMP LOCATED INSIDE HK UNIT



Installing the Remote Status Light - (Option)

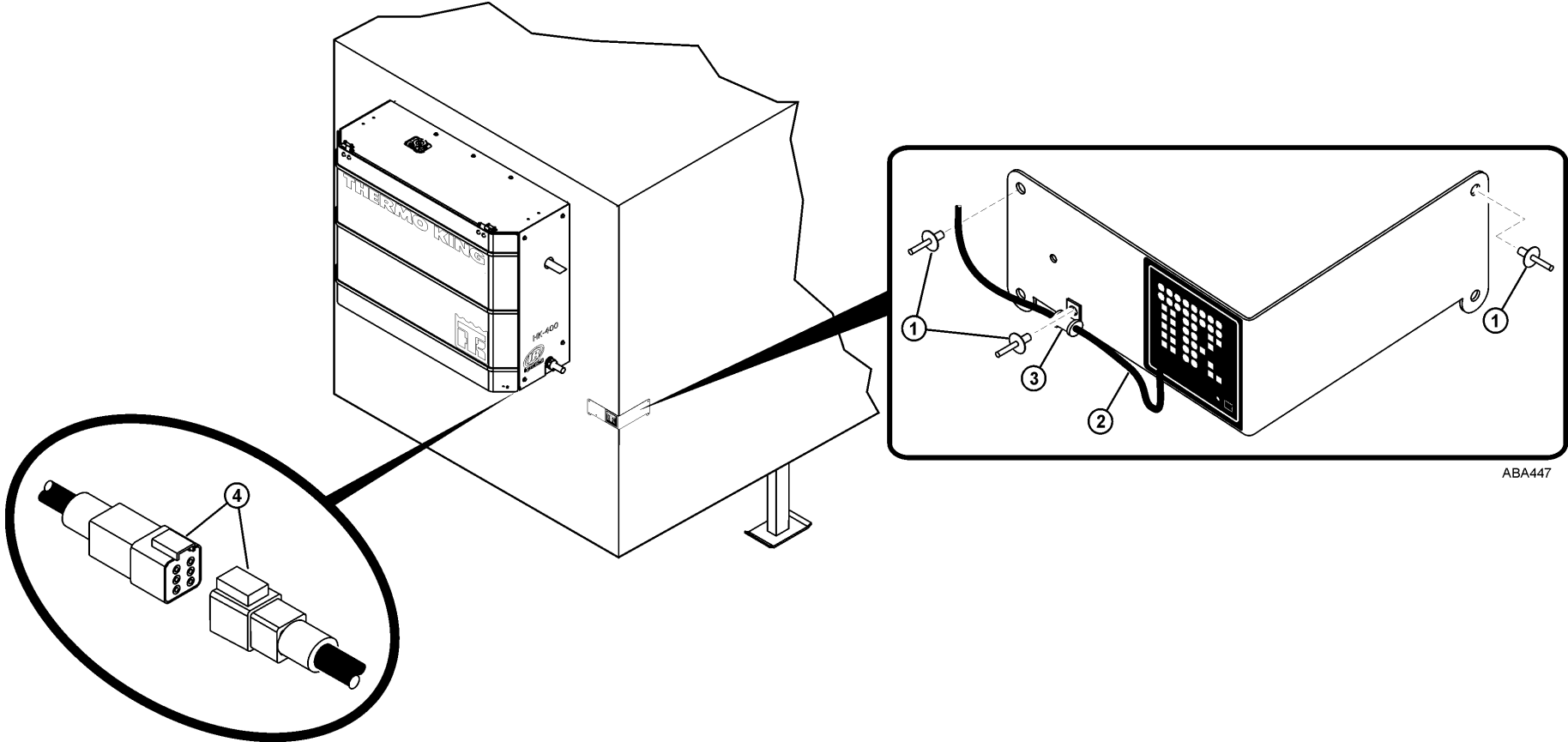
Installation

NOTE: Corner mounted light shown. Flush mounted light installs into recessed opening (See “Flush Mount Status Light Opening Dimensions (Option)” on page 17.

1. Mount the Status Light in a location that is visible in the tractor mirror to the driver.
 - Mark and drill the four mounting holes using a 3/16" drill.
 - Mount the status light in position with the supplied rivets.
2. Route harness as shown allowing a “drip-loop” to prevent water from migrating into the Status Light.
3. Secure harness to the bracket and trailer using the supplied clamps and rivets.
4. Connecting the Status Light harness to the matching connector located inside the unit attached to the roadside engine mount.

IMPORTANT: DO NOT secure excess harness to battery cables or electrical harnesses.


Installing the Remote Status Light - (Option)



ABA447

Installing the Battery

Installing the Battery

 **CAUTION: Set all electrical controls to the OFF position before connecting the battery to prevent the unit from starting!**

 **CAUTION: Always wear protective clothing, gloves and eye wear when handling and installing batteries!**

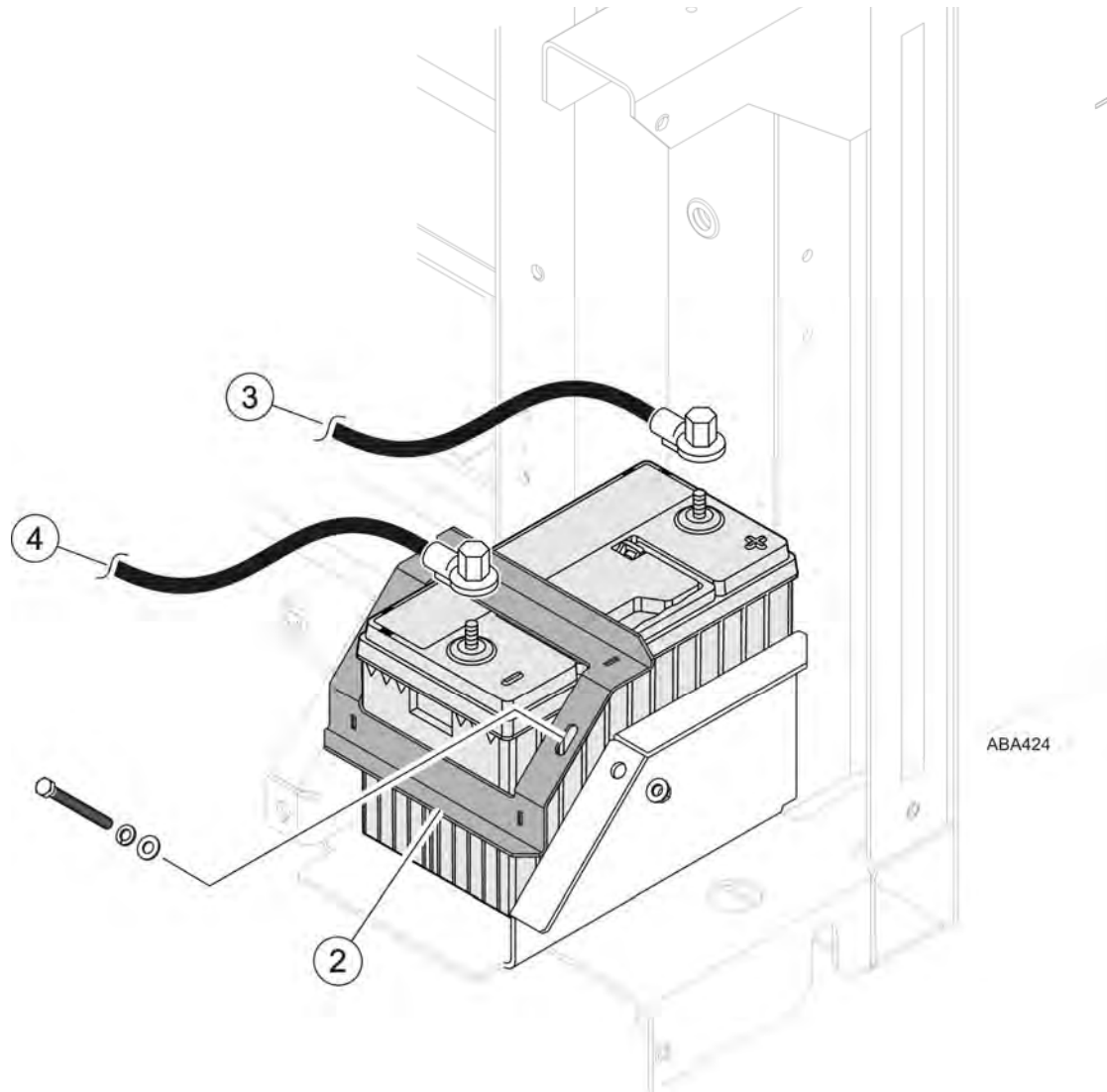
 **CAUTION: Cover battery terminals to prevent accidental shorting during battery installation!**

 **CAUTION: Do not route battery cables together with fuel lines as this could cause a fire!**

 **CAUTION: All battery connections must be clean and tightly secured.**

1. Open unit door to access battery tray.
2. Install battery into tray and secure with hold down bracket, bolts, lock washers and flat washers.
 - Hand tighten both bolts and then torque to 6.8 N•m (60 in-lb). **DO NOT over tighten hardware as this may crack or distort the battery!**
3. Install **positive** + battery cable on the positive battery post **first** to minimize accidental electrical shorting.
4. Install **negative** - battery cable on negative battery post **second** to minimize accidental electrical shorting.
5. Close and secure unit door.

Installing the Battery



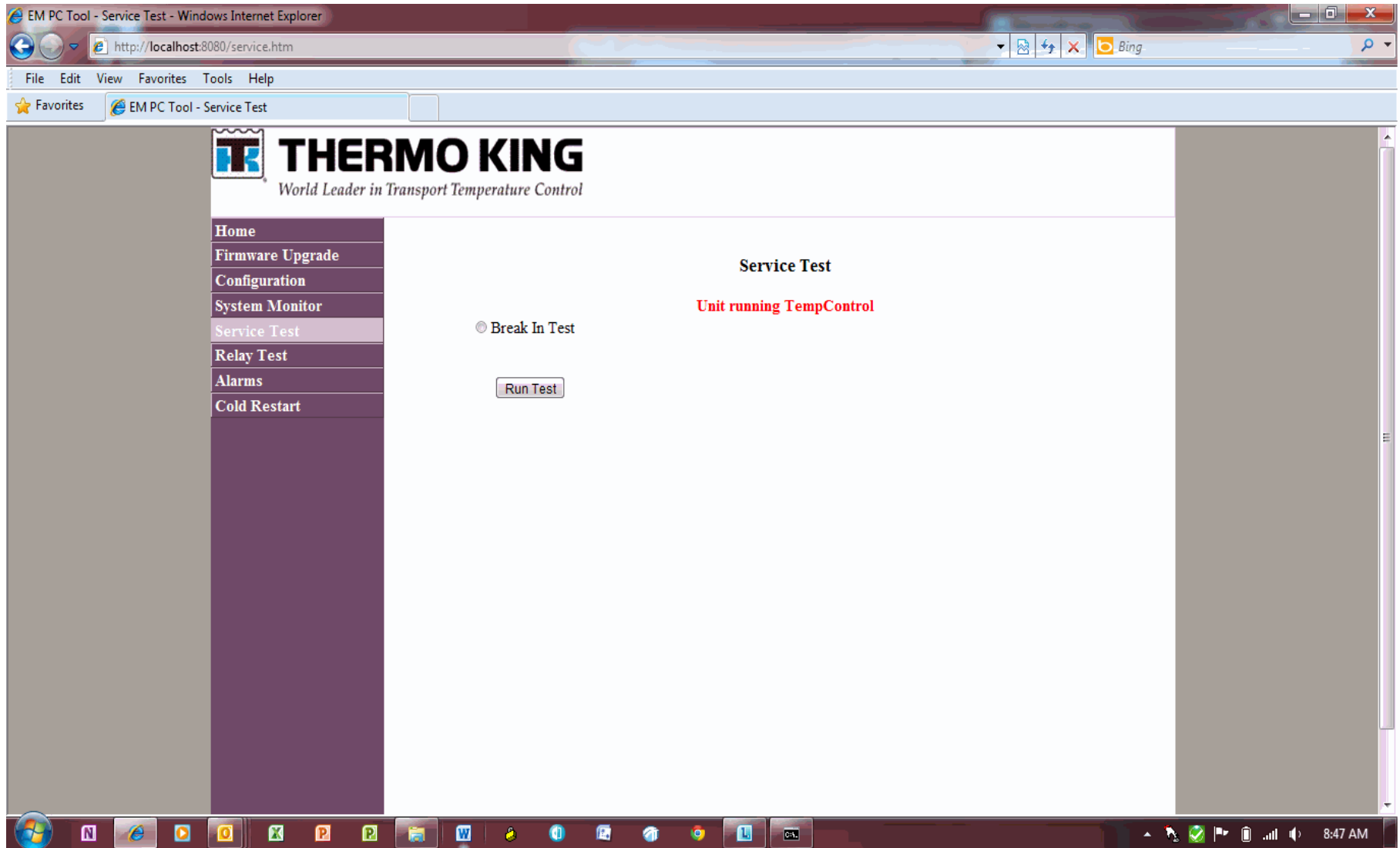
Service Test Procedure

Engine Break-in Test

The following procedure is used to run the unit for 10 hours to break-in the diesel engine.

1. Ensure software revision is **EB04** or higher.
2. Open PC Monitor - In the menu on the left is a page called “Service Test” - this page is new, the only test is the break-in Test.
3. Select - Service Test page.
4. Select - Break-in Test by clicking in the dot in front of it.
5. Select - Run Test by clicking in the radio button.
 - A countdown timer for the 10 hour break-in test will appear and start counting down.
 - The PC may be disconnected and the test will continue until the timer runs out.
 - When the test is completed (timer goes to 0) the unit will go back into temp control mode.
 - The test can be stopped prematurely using PC Monitor. The test can be restarted with PC Monitor, and will run for the remaining amount of time.
 - The test can also be stopped by turning the unit off. Turning the unit off will not affect the hours counter. The counter will stop and restart when the operator goes back in to engine break-in test mode.
 - The software only allows the test to be run once. The test cannot be run with a replacement engine.

Service Test Procedure



SYSTEM CHECK LIST

- All unit mounting hardware torqued to specifications.
- No air gaps between unit and trailer wall.
- Drain hose properly routed and secured.
- Fuel tank properly installed.
- Fuel lines properly routed and fuel fittings tightened securely.
- Bulkhead properly designed and installed.
- Battery secured correctly and all connections clean and tight.
- Remote HMI mounted securely.
- Run Pre-Trip Inspection (refer to Operator's Manual).
- Run unit under load for eight hours to properly break-in engine.
- Release to customer.

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