

01 53 00 A5 ABS Pads. Before selecting correct ABS pad size please verify the soil capacity with Penetrometer.
Please download additional accessories that may be required for different soil and weather and seismic conditions.
14.24.00.A1 Hydraulic electronic stabilizing system
14.24.00 Hydraulic piers

① Site-Preparation
3/8" = 1'-0"

Angel Landings

www.angellandings.com

Tel# 917-653-0551

Site preparation for super structure install and complete built install

2000

2/5/2021

01 53 00 A5

ABS Pads (Footings).
& anchor accessories



MENU

Manufactured Home Setup Material Buyers' Guide

The following buyers' guide will help you in finding the best product for your needs.

QUICK MENU

+

Determining What Size ABS Pad Or Footing To Use

How To Find the Soil Density By Using A Penetrometer

When installing a manufactured home, it is important to determine the soil density using a soil test probe where the footings will be located under the home. This is done by using a soil penetrometer.



Pocket Penetrometer Part # SOILTEST

Once you have determined the pier load requirements by using the home manufacturer's setup manual or HUD code 3285, you can now choose the most cost effective footing or PAD to set the home.

There are many ABS Pads to choose from depending upon the soil and load requirements.

ABS Pads

**Square ABS Pads
Ideal For Steel Piers**



**Oval ABS Pads
Ideal For Concrete Block Piers**



**Multi-Pad Configurations
For Heavy Pier Loads**

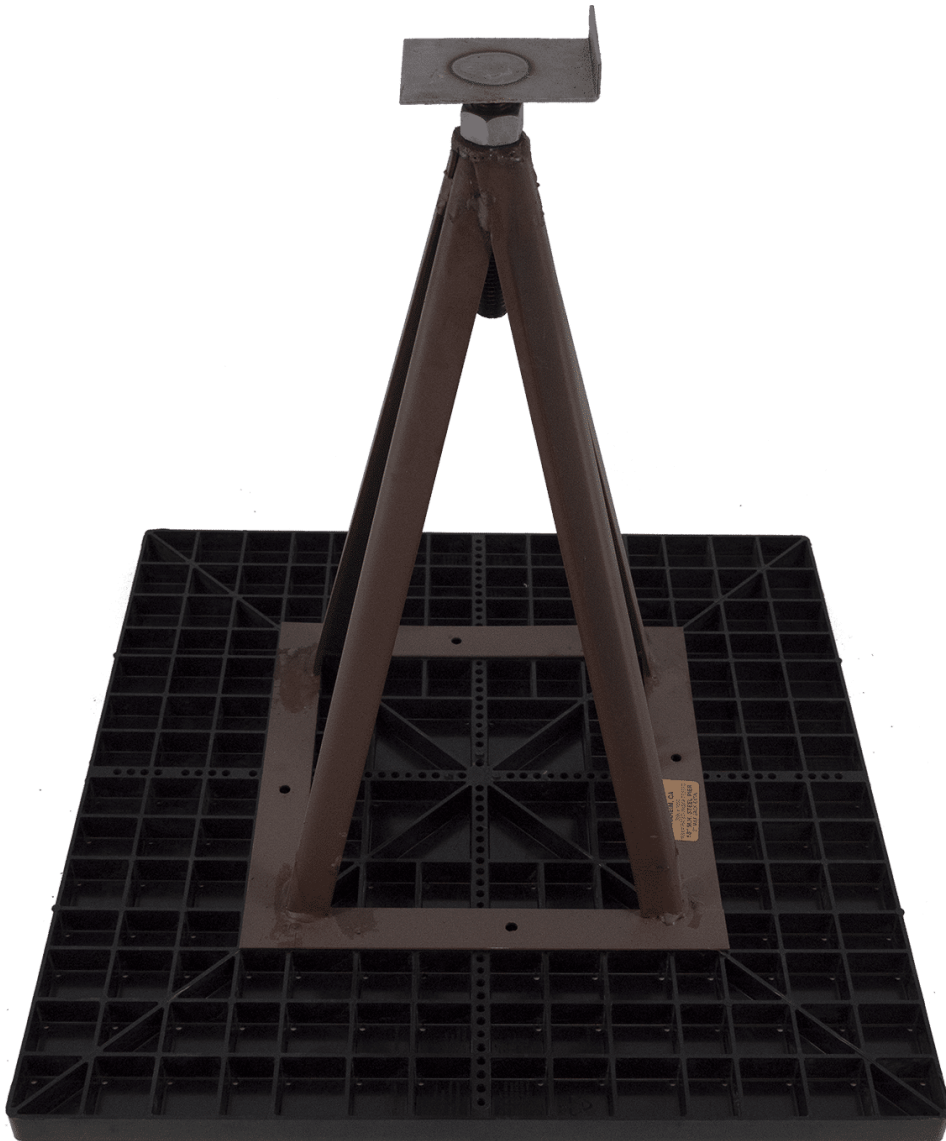


Once you have determined the proper size pad, you will need to build your piers utilizing either steel piers or concrete blocks. Steel piers are available in several heights and two head options. When using concrete block for piers, you will utilize cap boards and wedges to gain the proper support height.

Steel Piers & Heads

For Pier Loads Up To 6,000 LB

Shown With Standard Pier Head



**Standard Pier Head
Part # ST-HD**

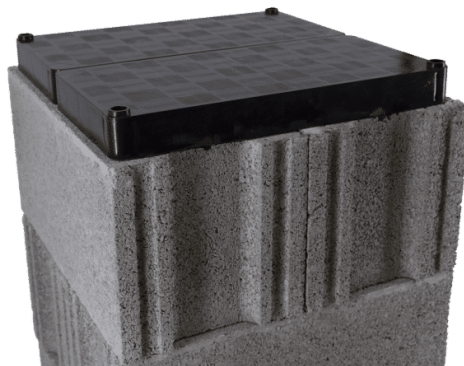


Locking Pier Head
Part # LK-HD



Cap Boards

ABS Cap Board



Treated Cap Board



Hardwood Cap Board

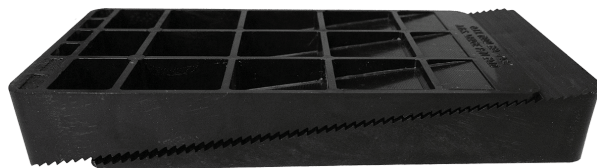


Single Stack Cap Board (All Materials)



Wedges

ABS Wedge



Treated Wedge



Hardwood Wedge



Leveling The Piers

Smart Leveler®

The Smart Leveler® digital water level is a highly precise level that works on an ancient Pascal principal of hydrodynamics that water always seeks its own level.

While the principal may be ancient, the technology behind the Smart Leveler is far from it! The level consists of a sensitive, digital pressure gauge connected with tubing to a sealed fluid-filled reservoir. The pressure differential between the digital display and reservoir is determined by the height differential and provides accurate, repeatable elevation measurements of + or – level to 1/10 inch.

**NOW AVAILABLE WITH APP FOR
IPHONES, IPADS AND ANDROID
DEVICES**

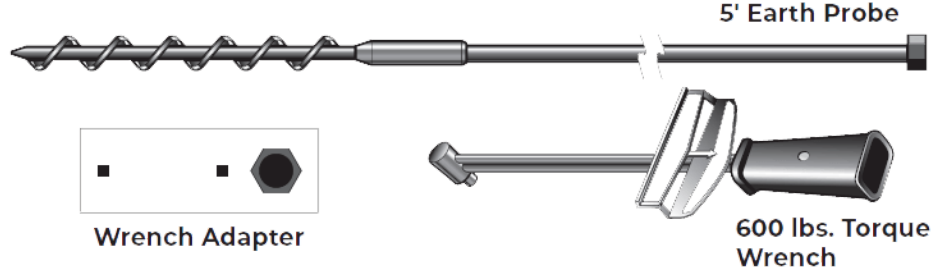




Smart Leveler Part # OTSL1
Smart Leveler w/ Apps Part # OTSL2

Determining The Proper Anchors To Use

There are a couple of types and several size anchors used when securing down a manufactured home or other building. For dirt installation, you will need to use a torque probe to determine the proper size earth auger anchor needed.



Torque Probe

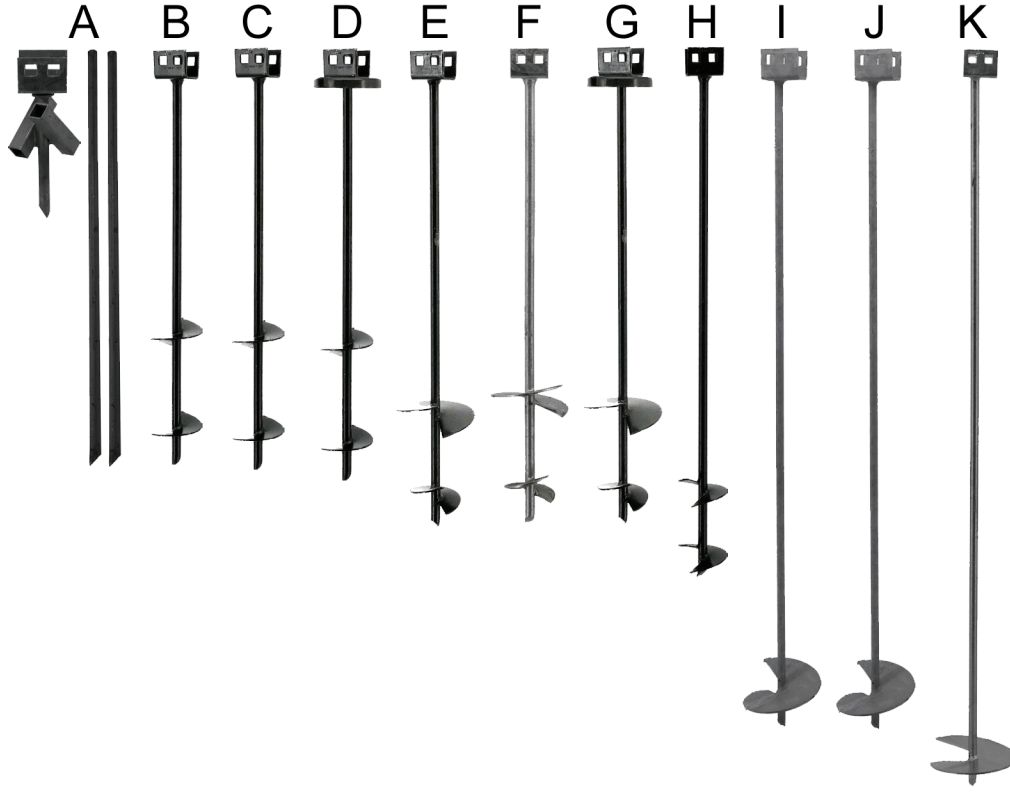
The Torque Probe is needed to determine the soil classification where the anchor's helix will be located in the ground. Use the Soil Classification Chart on the next page to see recommended anchors for each soil condition. Once you have determined the proper size anchor from your Torque Probe results, refer to the home manufacturer's setup manual or HUD code 3285 to choose the proper anchor spacing needed.

Torque Probe Instructions

1. Place the tip of the earth probe in the ground, closest to where you intend to install the anchor. Rotate the probe clockwise using a 15/16" hex socket or electric drive machine.
2. Rotate the probe into the soil until you have reached the depth equal to the length of the anchor you intend to install.
3. Place the wrench adapter on the torque wrench and insert the hex portion of the wrench adapter onto the earth probe.
4. Steadily rotate the torque wrench on the probe while supporting the probe with the opposite hand. (Do not exceed 600 inch lbs.)
5. While rotating clockwise, view the torque wrench test value.
6. Use the Soil Classification Chart on the next page to determine the proper anchor needed for the soil conditions.
7. If test results do not match the anchor for that depth, rotate the probe to the next anchor depth and check reading. Repeat until probe reading matches anchor length for depth of reading.

Soil Classification Chart

Use the chart below to choose the proper earth auger anchor for each soil classification.



** Contact us about additional sizes that may be available*

Anchor Stabilization Devices

Stabilizing devices are used when the anchor is connected to the main chassis beam and is pulled at a 45 degree angle or cross strapping.

Stabilizers

Anchor Stabilization Cap
Part # OT CAP1



Stablizer Plate 11" Painted
Part # OT MSP2 P



Stablizer Plate ABS
Part # 1055-19



Stablizer Plate 17\" Galv.
Part # OT MSP1



Concrete Anchors

When installing anchors in wet or dry concrete, choose from these available options.

Wet Set L Shape Fixed or Swivel Head
Part # OT CAWP
Part # OT CAWP-S



Dry Set Patio Concrete Head And Bolt
Fixed Head
Part # OT CAD



Concrete Re-Bar 6" J Shape Swivel
Only
Part # OT CAW-S



Concrete Re-Bar 10" J Shape Swivel
Only
Part # OT CAW10-S

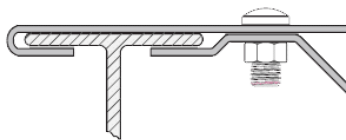


Determining The Proper Tie Down Connectors & Straps

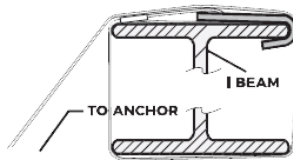
When securing a home, there are several areas that need to be tied down to make the home safe. Now that you have chosen the proper anchors and stabilizing devices, you will need to determine the attachment connectors on the frame or side wall, as well as longitudinal protection and the proper strap lengths. We have several options for you to choose from.

Tie Down Connectors

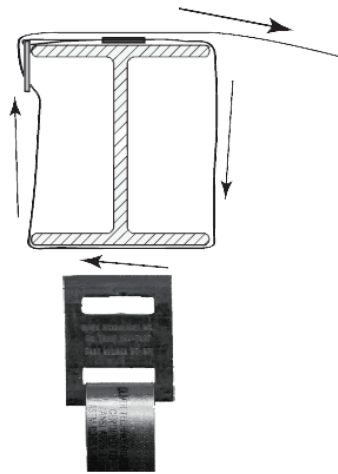
Swivel Frame Tie
Part # OTSFT N/B



J Hook Frame Tie Part # OTFT1-6



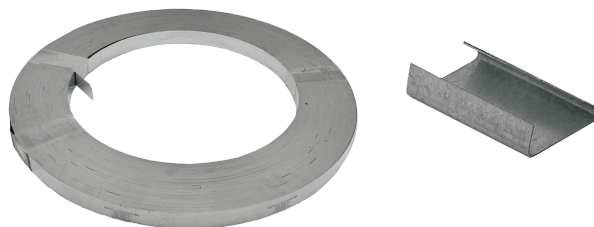
Buckle Frame Tie Part # OTST1-6



Longitudinal Connectors

When homes are equipped with pre-installed sidewall and/or longitudinal brackets, you have a couple of choices.

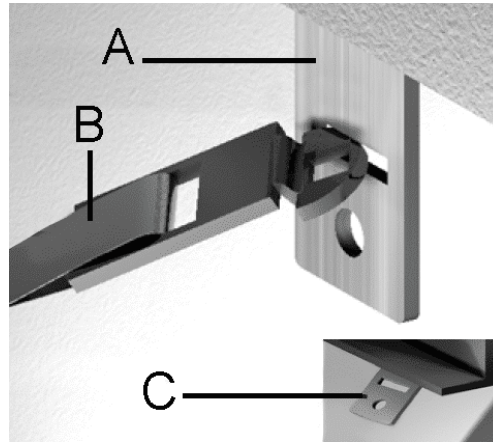
Galvanized Strapping & Crimp Seals



Typical Sidewall Connector Installed By Home Manufacturer (A)

Quick Connector Strap (B)

Typical Longitudinal Connector Installed By Home Manufacturer (C)

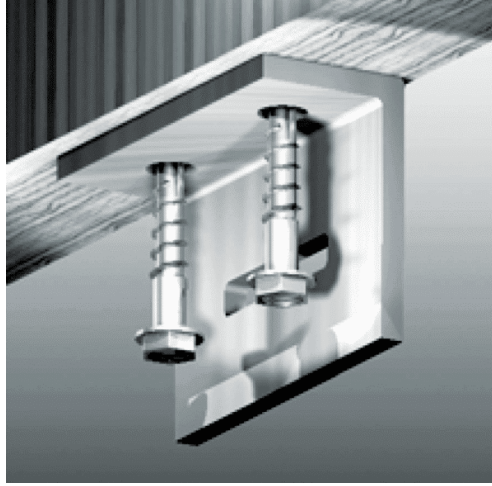


Longitudinal I-Beam Connectors Part # OTLTK



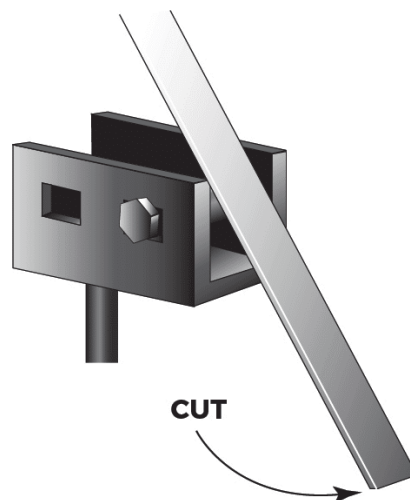
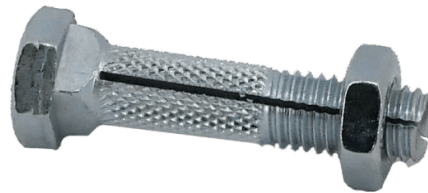
** Quick Connector Sold Separately*

Sidewall Bracket Part # OTSWB



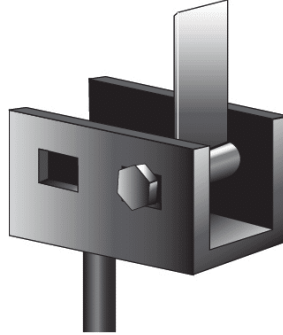
Galvanized Split Bolt

**5/8" x 3" x 5/8" Square Shoulder with
Hexagon Head
Part # OT S/B**



Step 1

Insert split bolt into anchor head, attach loosely. Pull strap past bolt and cut strap leaving approximately 12" of strap to wrap onto bolt.



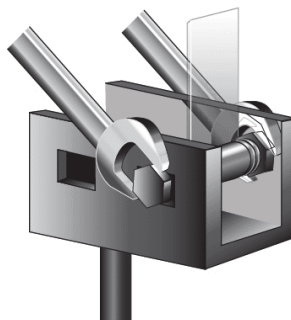
Step 2

Insert the strap end into the slot in bolt until flush with opposite side of bolt.



Step 3

Using 15/16" wrench or socket; turn the bolt, winding the strap so that a minimum of four to five complete turns are made and the strap is adequately tensioned so that the anchor is firmly against the stabilizing device in direction of pull.
All slack must be removed.



Step 4

Hold the bolt under tension while tightening the nut, drawing the head of the bolt into the recess, continue to tighten the nut until securely fastened.

Foundation Stabilization Systems

An innovative alternative to conventional anchors is our All Steel Foundation Systems (ASFS). These systems eliminate the need for most anchors in Wind Zone 1. In Wind Zones 2 & 3, ASFS eliminates the need for diagonal frame ties, stabilizer plates and anchors required for longitudinal protection. ASFS can be used in all soil classes up to 4B. All Steel Foundation Systems are available with or without a pier support.

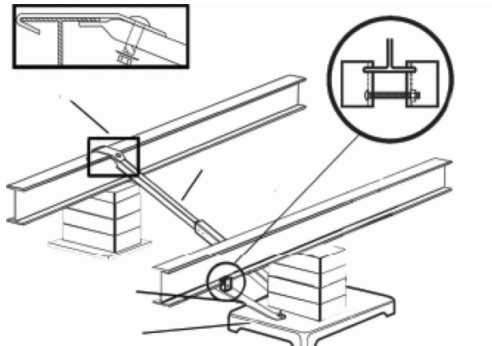
All Steel Foundation Systems With Pier Support



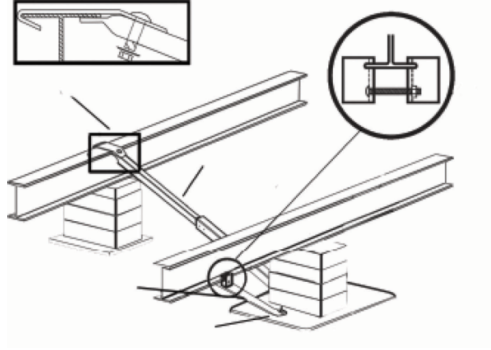
Model #1100 IV (Dirt)



MODEL #1100 ICV (Concrete)



Model #1102 Solo (Dirt)



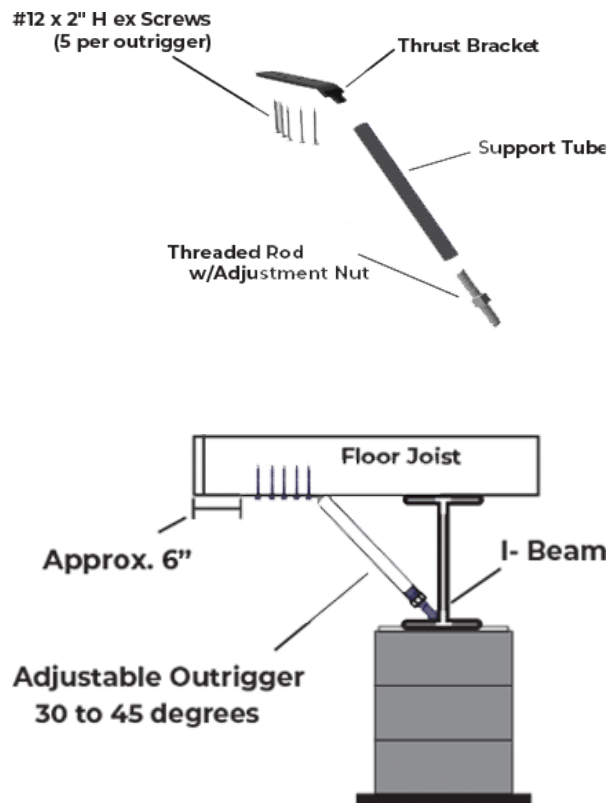
Model #1102 Solo (Concrete)

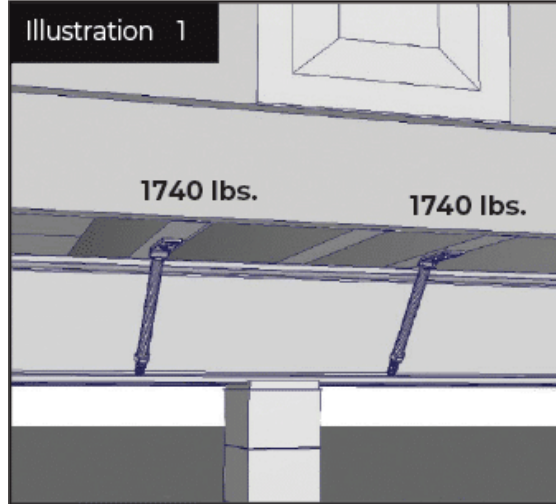
Supporting The Perimeter Of The Home Or Building

There are several door/window and perimeter pier support options. Typically perimeter supports utilize footing that are installed at or below frost depth. Oliver Technologies offers a few alternative perimeter support options that are not affected by frost heave, making your perimeter support installations fast and easy.

Adjustable Outriggers

The Adjustable Outrigger has been designed to replace perimeter piers with a maximum working load of 1740 lbs. Refer to the installation manual or home manufacturer for roof loads, pier loads and location of perimeter piers.





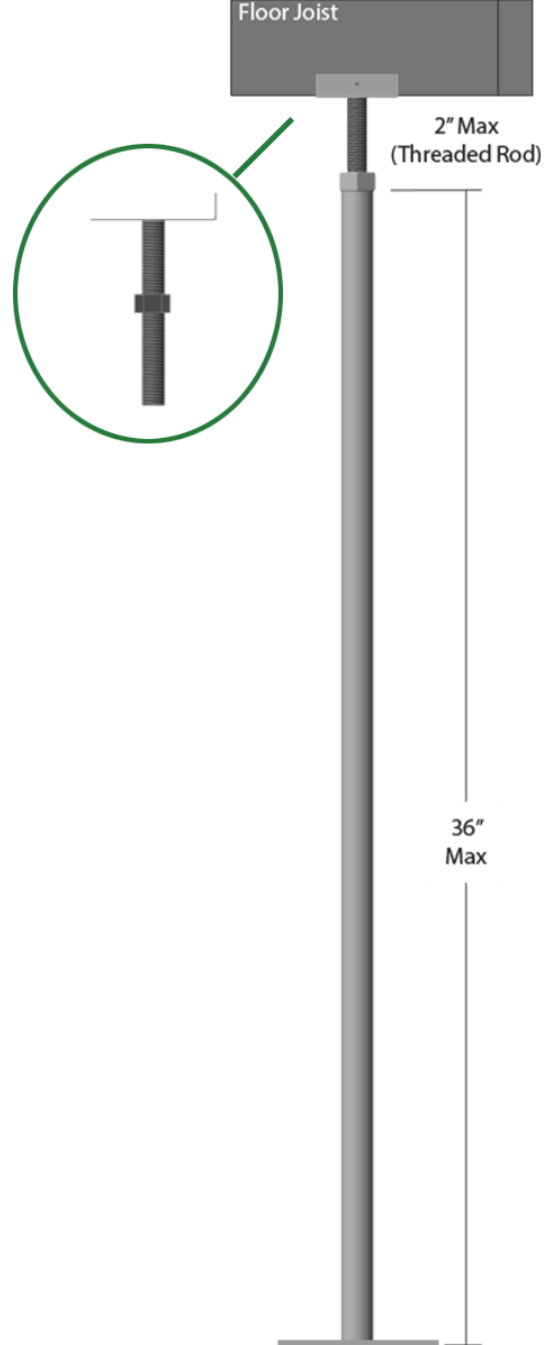
EZ Piers

The EZ Pier is another replacement for the conventional perimeter support. It can be used for pier heights up to 39" and features a 2" adjustment. The pipe can be cut-to-fit for shorter heights. It has a maximum working load of 4,000 lbs.

EZ Pier Head
Part # ST-HD



EZ Pier
Part # OTPP36

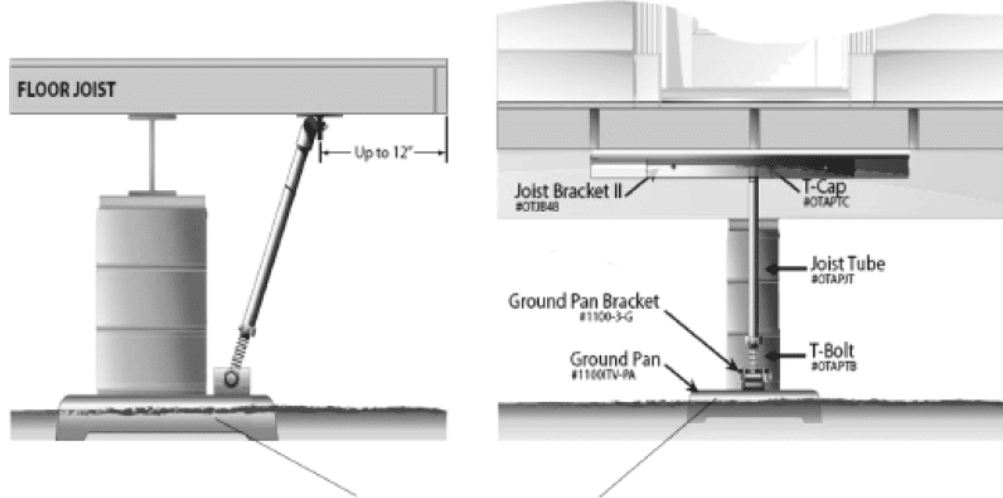


Sideline Support

Part # OTIS3

This perimeter pier option is used for difficult soils with a maximum pier load of 4,800 lbs. and can be used with perimeter pier heights up to 60". It can also take the place of two perimeter piers for openings up to 48".

- **2" of adjustment, cut to fit**
- **Eliminates one base pad/footing**



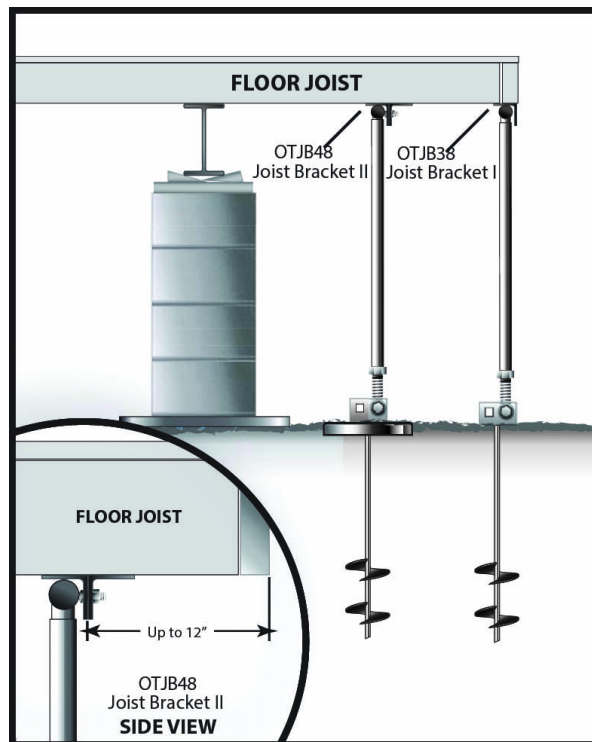
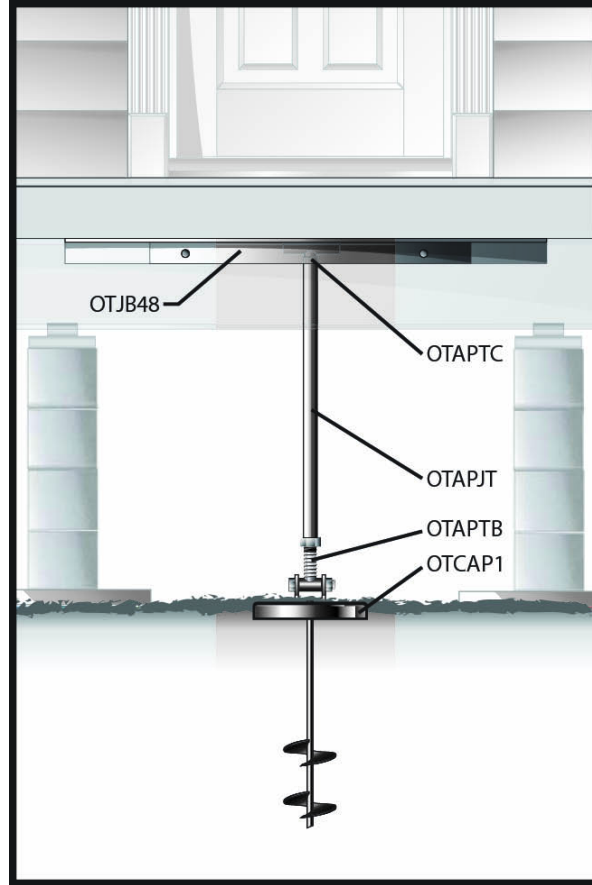
Anchor Piers

Part# OTAP12K

Our patented Anchor Pier has several advantages. It allows you to use the anchor in freezing climates as a perimeter pier as long as the helix is installed below the frost line.

- Replaces up to 3,200 lbs without cap or up to 4,800 lbs with a cap
- Used in place of perimeter strapping (wind zone II & III)
- Also used in conjunction with concrete slab foundation
- For perimeter pier heights up to 60" with 2" of adjustment, cut to fit





Choosing The Right Steps

Fixed Wood / Metal Steps

Our Wood/Metal Steps feature painted black metal frames and treated treads. They are available in several heights, platform depths and your choice of Standard or IRC compliant steel handrails.

**Standard Hand Rails
(Single side shown)**



**IRC Compliant Hand Rails
(Single side & back shown)**



Get All Decked Out

ProLine Decks: Available in 4-Module, 6-Module, 9-Module Deck Kits

Our patent pending modular design allows you to quickly build a deck in hours versus days. Simply find the slope, order the deck kit and put it together in no time flat.

**9-Modular Deck Kit
(Shown with optional second steps)**



**6-Modular Deck Kit
(Shown with optional second steps)**



4-Modular Deck Kit



Other Products You Need To Complete The Job

Hydraulic Jacks

12T or 20T

Part # HJNORCO 12 OR 12 L

HJNORCO 20 OR 20 L



Jack Plate
Part # JACKPLATE



Press Down Plate for ASFS
Part # JPI-BEAM



Galvanized Flashing
Part # GV10-S



Part # (Click To See Table)



Lag Bolts & Washer
Part # (Click To See Table)



Duct Tape
Part # DUCT TAPE



Rolled Foam
Part # ROLL FOAM 5.5



Multi-Purpose Anchors

If you need anchors for swing sets, trampolines, trees, carports and more, choose from the anchors below.

Multi-Purpose Barbed Drive Anchors

A



B



C



D



E

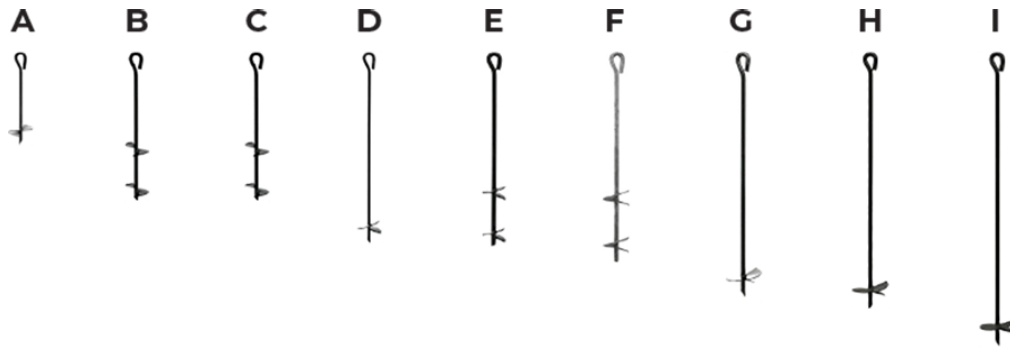


F



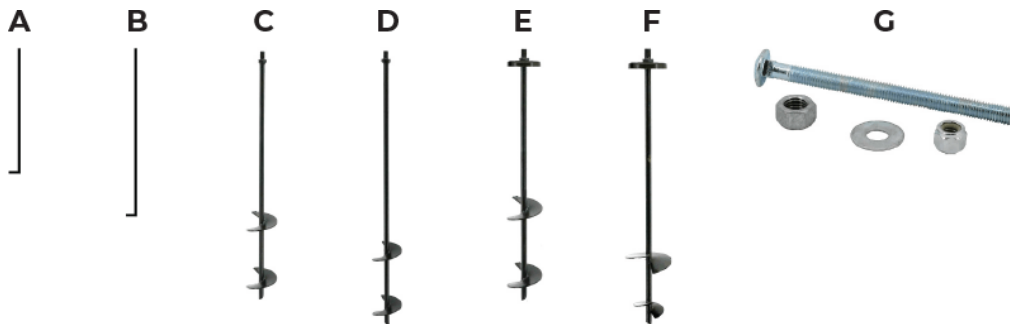
** Contact us about additional sizes that may be available*

Multi-Purpose Eye Auger Anchors



** Contact us about additional sizes that may be available*

Shed & Other Building Anchors



** Contact us about additional sizes that may be available*

CONTACT US

Need help finding the right product please call us at 1-800-284-7437.

CONTACT US



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Hohenwald, TN 38462
Toll Free Phone: 1-800-284-7437
Texas Local Phone: 1-817-502-9809
Mon - Fri 8:00AM - 5:00PM CST

[Foundation Stabilizing Systems](#)

[Pier Pads, Cap Boards & Wedges](#)

[Anchors and Components](#)

[Perimeter Pier Options](#)

[Decks & Steps](#)

[Tools & Other Products](#)

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[USA Wind Zone Map](#)

[Careers](#)

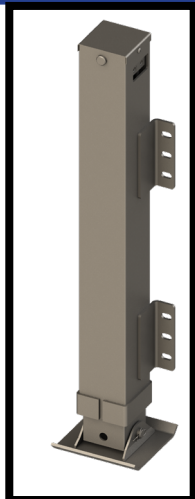
14.24.00.A1 Hydraulic leveling system



PATRIOT JACK SYSTEM™ LEVELING ASSEMBLY

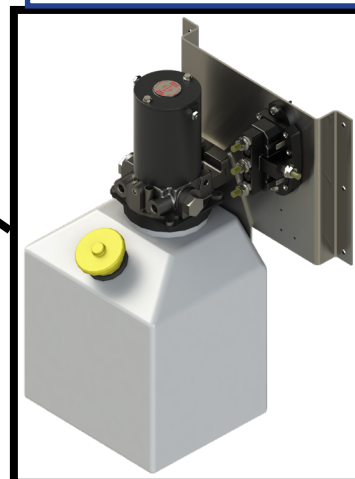
LEVELING AND STABILIZATION

14K Landing Gear



Front

Power Unit Assembly



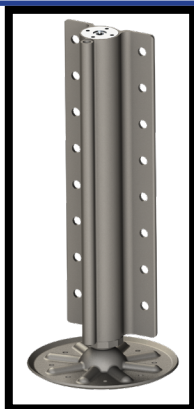
Pendant Switch



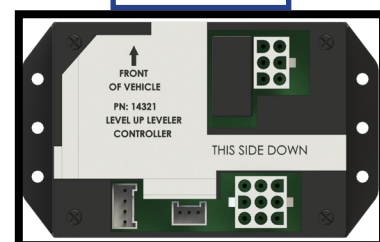
LCD Control Touchpad



8K Leveling Jacks



Controller



Rear

14.24.00 Hydraulic piers



**PATRIOT JACK
SYSTEMS™ LEVELING
OEM INSTALLATION
MANUAL**

**L I P P E R T
C O M P O N E N T S®**

Component Description

1. Jacks
 - A. 8K capacity aluminum leveling jacks, 14K capacity landing gear
 - B. Standard 9-inch diameter (63.5 square inch) footpads on a ball swivel for maximum surface contact on all surfaces
2. Motor/Pump Assembly
 - A. 12V DC motor
 - B. Hydraulic fluid reservoir, 1.75 gallon capacity
 - C. Solenoid
3. Control valve manifold
4. System Controls
 - A. Touchpad can be operated in manual mode or fully automatic mode
 - B. Pendant switch to independently operate landing gear
 - C. Sensors to detect when trailer is level
5. Fittings and Hoses
 - A. Fittings - High pressure O-Ring Face or JIC - Size 4
 - B. Hose - 1/4" I.D., 3000 psi - W.P. Rated

Safety

Please read and study the operating manual before operating the leveling system. Adhere to all safety labels.

The use of the Lippert Components, Inc. Patriot Jack Systems Leveling to support the trailer for any reason other than which it is intended is prohibited by the Lippert Limited Warranty. The system is designed as a leveling system only and should not be used for any reason to provide service under the trailer, e.g. changing tires or servicing the leveling system.

Lippert Components, Inc. recommends that a trained professional be employed to change the tires on the trailer. Any attempts to change tires or perform other service while the trailer is supported by the leveling system could result in damage to the trailer and/or cause serious injury or death.

WARNING

The "WARNING" symbol above is a sign that a procedure has a safety risk involved and may cause death or serious personal injury if not performed safely and within the parameters set forth in this manual.

WARNING

Failure to follow instructions provided in this manual may result in death, serious personal injury and/or severe product and property damage, including voiding of the component warranty.

WARNING

**Trailer MUST be supported per manufacturer's recommendations before working underneath.
Failure to do so may result in death or serious personal injury.**

CAUTION

Always wear eye protection when performing service, maintenance or installation procedures. Other safety equipment to consider would be hearing protection, gloves and possibly a full face shield, depending on the nature of the task.

CAUTION

Moving parts can pinch, crush or cut. Keep clear and use caution.

Resources Required

- Electric or cordless drill or screw gun
- Appropriate sockets
- Appropriate drive bits
- Torque wrench
- Open end wrenches
- Phillips head screwdriver
- Hand saw or reciprocating saw
- #12 x 1" hex head self-tapping screws
- #8 x 1" fasteners (appropriate for the structure)
- Tape measure

Preparation

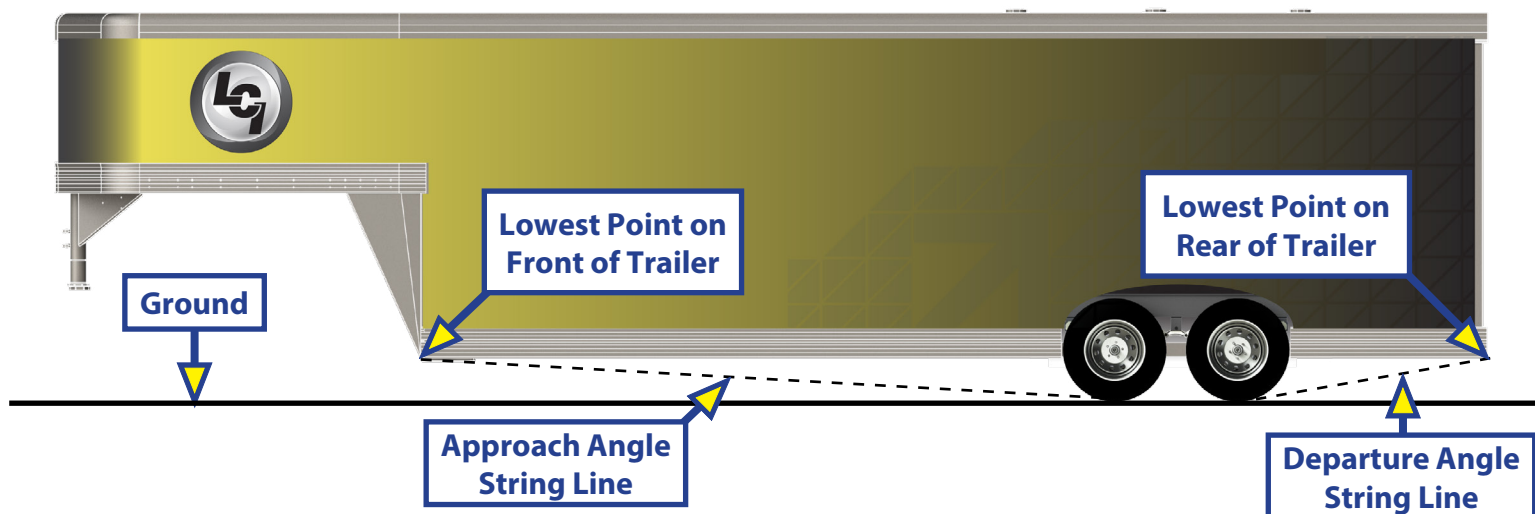
Determine how and where the leveling jack brackets will be welded to the frame of the trailer.

NOTE: The rear jacks should be mounted approximately 12-18" behind the rear tires on a tandem axle trailer, or as close to the rear tire as allowed on a tri-axle trailer, and within the plane of the departure angle (Fig. 1). Leveling jacks shall be aligned with each other.

NOTE: When installing the system, the mid-jacks should be mounted approximately one foot in front of the front tires. Mid-jacks can be offset up to 24" to clear obstructions, e.g. entry steps.

6. Determine the location for the hydraulic power unit and valve manifolds.

Fig. 1



Installation

Rear Jacks, Mid-Jacks

1. When fully retracted, the rear jacks MUST be mounted to achieve a minimum ground clearance equal to the departure angle (Fig. 1) or no less than 8" to the ground to enable maximum level correction. Any additional ground clearance added to the jack location will decrease the amount of level correction available to the system.
2. Using $\frac{1}{2}$ " - 20 bolts and nuts (Grade 5 minimum), bolt the leveling jacks (Fig. 2) to the mounting brackets (Fig. 3) to achieve proper ground clearance. Upper and lowermost bolts are vertically spaced a minimum two-hole patterns (4.5") (Fig. 4) and tightened to 52-64 ft-lbs. A minimum spacing of three-hole patterns (6.75") is recommended where possible.

NOTE: When installing the system, the rear jacks must be mounted within the departure angle, should be aligned with each other from side-to-side and mounted 12"-18" behind the rear tires on a tandem axle trailer or, on a tri-axle trailer, as close to the rear tire as allowed. The mid-jacks should be mounted approximately one foot in front of the front tires. The mid-jacks can be offset from each other side-to-side by up to 24" to fit the jacks around steps or other obstructions. The universal mounting brackets are designed to fit a 12" I-beam with no modifications. However, the frame on the trailer may not be 12" or there may be obstructions where the jacks are to be mounted. If that is the case, measure for the modifications needed on the jack brackets.

Fig. 2

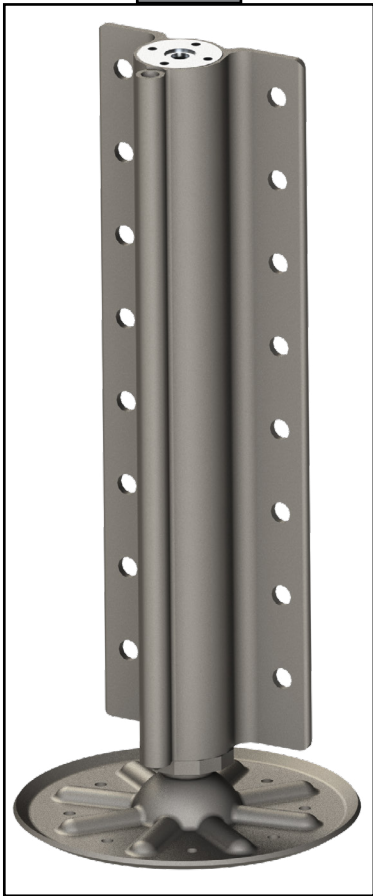


Fig. 3

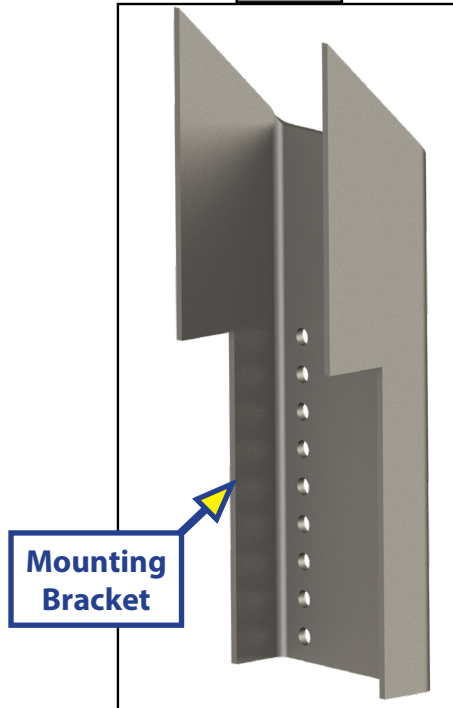
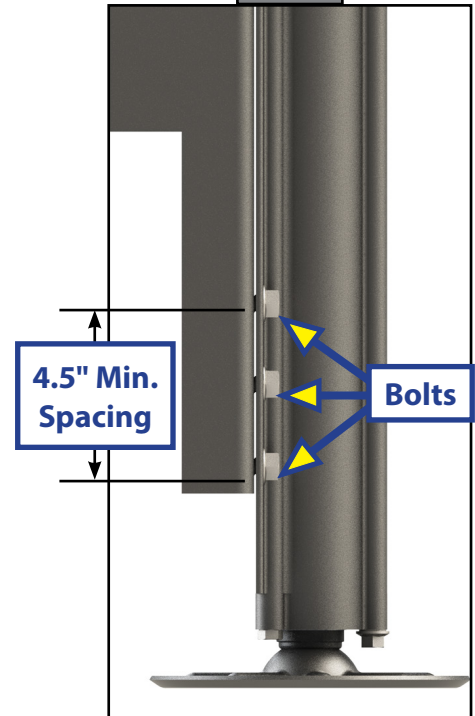
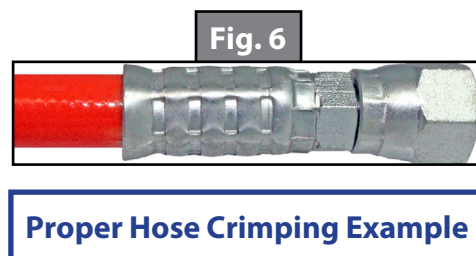
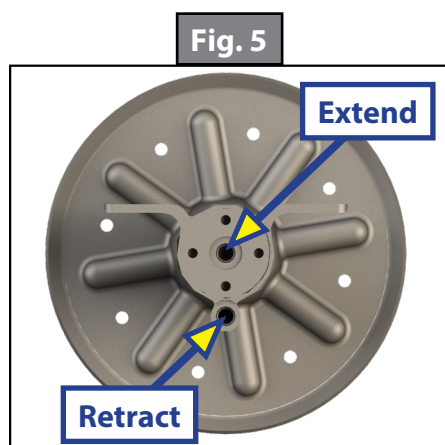


Fig. 4



3. Identify hydraulic power unit mounting location.
4. Install hydraulic fittings onto leveling jacks. See Fig. 5 for details of fitting placement.
5. Measure and make the hydraulic hoses — orange for extend, black for retract (Fig. 6).
 - A. Measure the distance between the rear leveling jack to the mid-jack.
 - I. Add three feet to this measurement to make sure that there will be enough hose material to run between jacks and prevent kinking.
 - II. This is the measurement for the extend and retract hoses between the mid- and rear jacks.
 - NOTE:** For example, if the measurement is nine feet, two 12-foot orange hoses and two 12-foot black hoses would be made.
 - B. Measure the distance between the mid-jacks to the hydraulic power unit on each side of the trailer.
 - I. Add three feet to these measurements to make sure that there will be enough hose material to run between jacks and prevent kinking.
 - II. These will be the lengths of the extend and retract hoses between the mid-jacks and the hydraulic power unit.
- NOTE:** All hoses must be run on top of the foil insulation inside the underbelly and over the top of any frame crossmembers.
6. Secure all hoses to the proper fittings on each jack. See Hydraulic Hoses section and the Plumbing Diagram for color-coded illustrations of the hose installation.



Front Landing Gear

NOTE: There must be a minimum of 10" of clearance from the bottom of the footpads to the ground.

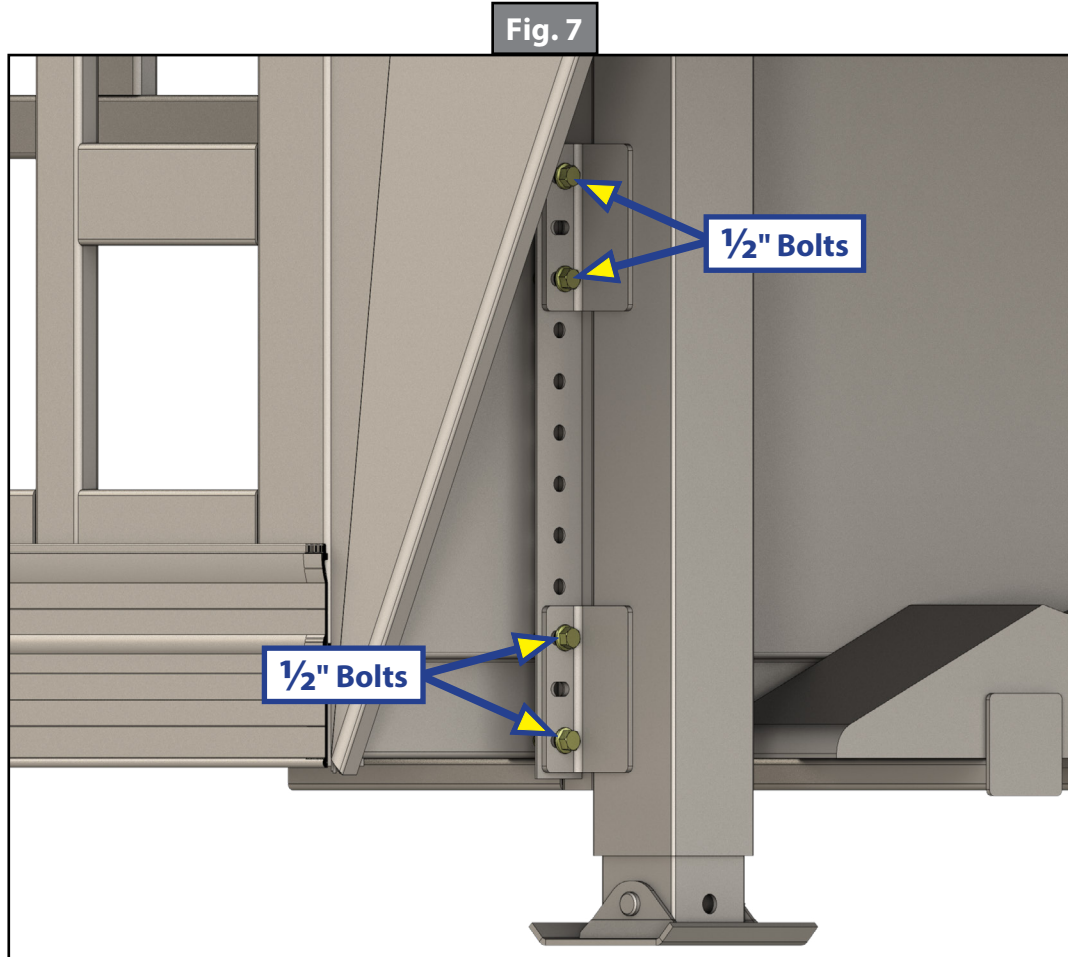
1. Using $\frac{1}{2}$ " - 20 bolts and nuts, attach jacks to mounting brackets on the trailer (Fig. 7).

NOTE: LCI recommends a minimum of eight bolts to secure each jack. Four bolts must be used to attach the top brackets, including two on each side of the jack, and a minimum of four bolts are to be used to attach the bottom brackets, including two on each side of the jack. Bolts should be no less than Grade 5 per SAE J429.

2. Torque the bolts to 52-64 ft-lbs if using Grade 5 bolts or 80-90 ft-lbs if using Grade 8 bolts.

NOTE: Make sure to not cross-thread the bolts and nuts.

3. Install the JIC hydraulic fittings on the landing gear. See Hydraulic Hoses section for orientation.



Hydraulic Power Unit

1. Using six self-tapping screws, mount the hydraulic power unit to the wall of the front compartment in a previously-determined position.
2. Install hose fittings onto the power unit. See Fig. 9.