

Byk-Rak

2024

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1. Introduction

Welcome to the Byk-Rak system. The Byk-Rak system is designed to allow flexibility in loading and unloading bikes regardless of style or size. Transit authorities were consulted on the design of the Byk-Rak system for ease of use on buses. Using that information, we incorporated four main elements to ensure compatibility.

1. **Easy operation (for riders and maintenance employees)**
2. **Economical choice**
3. **Durable construction “commercial grade”**
4. **Can go through bus wash and has little maintenance**

2. Benefits of the Byk-Rak

The Byk-Rak system accepts all bicycles regardless of size or style, and can be operated by one person. Our efficient design coupled with the durable, commercial grade material makes it a cost effective choice that will last. Due to its quick use, the Byk-Rak system will not slow down bus schedules. It is designed to go through a bus wash, and requires very little maintenance.

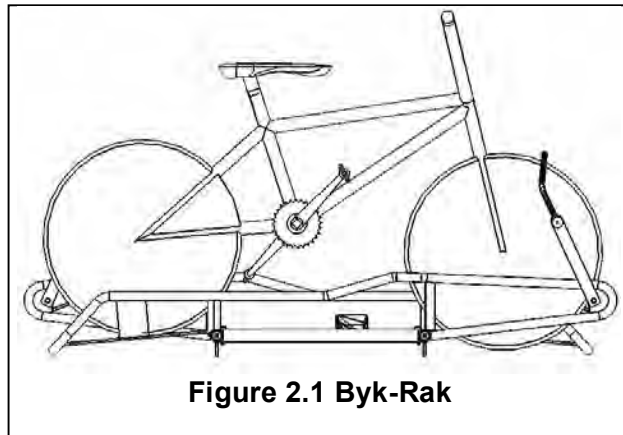


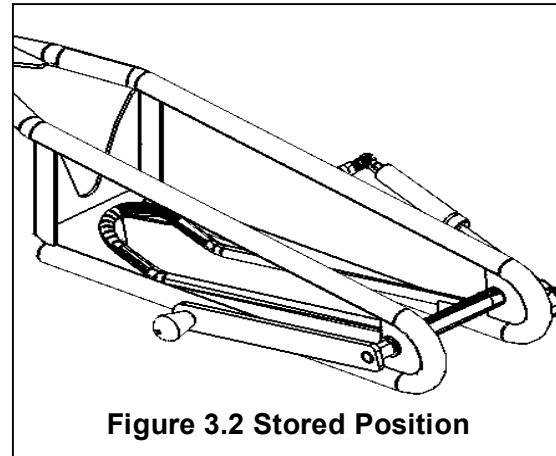
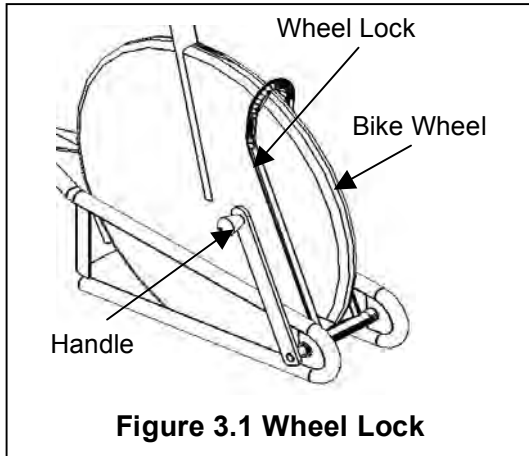
Figure 2.1 Byk-Rak

3. Key Features

Independent Loading/Unloading Although the Byk-Rak has space for two bicycles, it is designed so the inside bike can be loaded and unloaded without removing the outside bike. Simply swing down the Wheel Lock, located near the sidewalk, and guide the bike down onto the curb. In this way, the rider need not lean uncomfortably over the other bike or access the bike from street-side to unload it.

Safe use for bicycles The Byk-Rak system is designed to securely hold the bike by the wheels only, so there is no chance of scratched paint or other damage to the bicycle.

Convenient, secure Wheel Lock The Byk-Rak employs the use of a Wheel Lock that secures the bike *after* it is put in the Byk-Rak. The pedals do not have to be oriented to miss the frame. After the bike is put in, the rider conveniently swings the Wheel Lock around to the top of the front wheel. This action is assisted with a spring-loaded lever that creates a positive locking system. This same lever holds the Wheel Lock in a stored position while not in use.



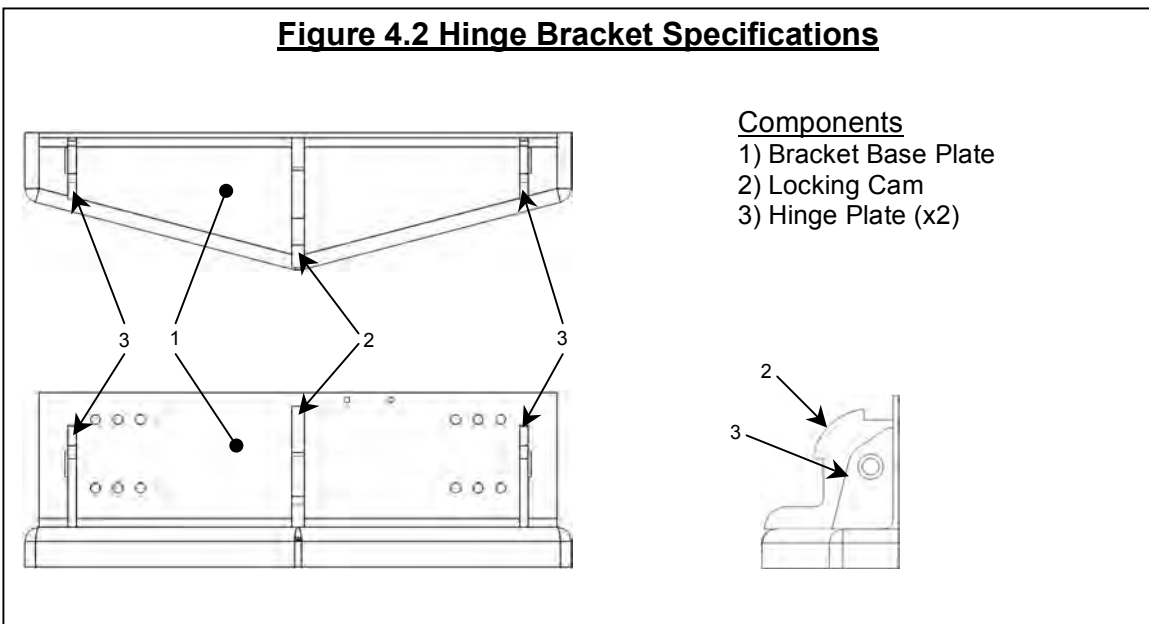
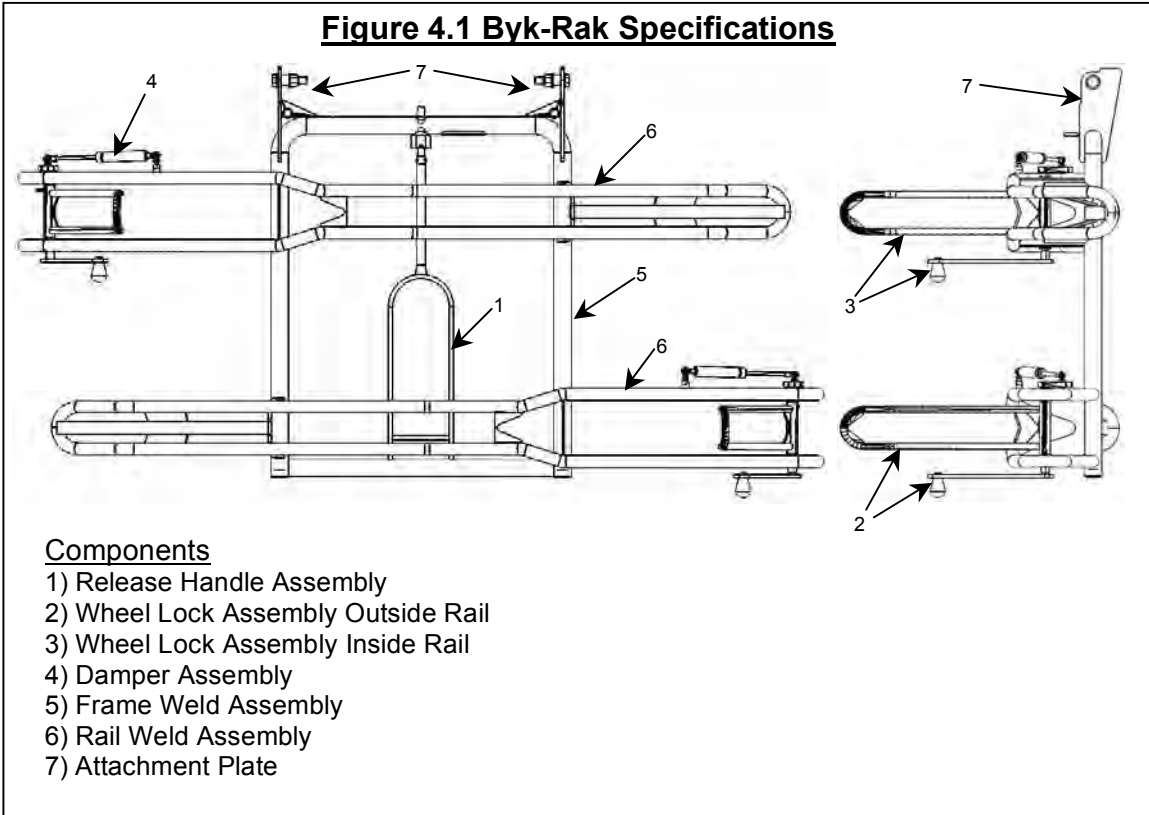
Load/unload speed In order to ensure fast operation, a series of tests were administered to determine the average loading and unloading speed. These tests were completed by people who had no experience with the Byk-Rak system, using a variety of bikes, and included stowing and lowering the Byk-Rak from its stored position. Amazingly, the average time of operation for either loading or unloading was 10 seconds or less!

Operation with one hand The Byk-Rak is designed with a well-located locking pin release handle to allow riders to raise or lower the Byk-Rak with one hand while they hold their bikes with the other.

No loose parts and simple construction The Byk-Rak has a simple construction with few parts, and no detachable parts such as pins, clips, or straps, that could be lost.

Bicycle Compatibility The Byk-Rak is designed specifically to fit any type of bike and, more importantly, fit all in the same way. No modifications or additions are needed to load any type of bike, whether it's a mountain bike, road bike, or child's bike.

4. Specifications



5. Technical Features Bike Rack

One (SOLO) Position Modular Bike Rack Assembly

<u>Byk-Rak Technical Features and Safety</u>	<u>Benefits and Advantages</u>
<ul style="list-style-type: none"> The Byk-Rak is 7 inches deep by 50 inches wide. 	<ul style="list-style-type: none"> The Byk-Rak is large enough to hold any adult-sized bikes (excluding tandem and recumbent) children's bikes—down to a size of 16" diameter wheels.
<ul style="list-style-type: none"> The Byk-Rak weighs less than 35 pounds. 	<ul style="list-style-type: none"> The Byk-Rak meets OSHA/NIOSH standards for lifting by a single individual.
<ul style="list-style-type: none"> All parts of the Byk-Rak are finished with powder coat paint. (Unless specified by customers request i.e. electro polish and/or bead blasted bike racks) 	<ul style="list-style-type: none"> Powder coat painting provides corrosion resistance and will not flake off. It can chip, but that chip will not increase in size. This method of painting is also more environmentally safe than traditional methods.
<ul style="list-style-type: none"> All moving parts on the Byk-Rak are made of stainless steel. (including the Byk-Rak itself) 	<ul style="list-style-type: none"> Stainless steel is corrosion resistant and will not chip like plated or coated steel.
<ul style="list-style-type: none"> The Byk-Rak is mounted to the front of the bus. 	<ul style="list-style-type: none"> Front-mounting the carrier increases driver visibility, safety, and security.
<ul style="list-style-type: none"> The Byk-Rak is always in the deployed position. 	<ul style="list-style-type: none"> Byk-Rak protrudes minimally for increased maneuverability.
<ul style="list-style-type: none"> The Byk-Rak has rounded outside corners, smooth welds, and few 'pinch' points. 	<ul style="list-style-type: none"> Having these safety features lessen the likeliness of injury to the operator.
<ul style="list-style-type: none"> Bikes can be loaded and unloaded from the 	<ul style="list-style-type: none"> Bikes are always loaded and unloaded from the sidewalk-side so the user is not exposed to traffic.
<ul style="list-style-type: none"> The main rail on the Byk-Rak are removable. 	<ul style="list-style-type: none"> Removable rail allow commonality between Byk-Rak products and modular replacement of damaged parts for ease of repair and a lower cost.
<ul style="list-style-type: none"> The Byk-Rak is constructed to support over 75 pounds static and up to 75 pounds of bicycle weight in the deployed position. 	<ul style="list-style-type: none"> This allows the carrier to easily hold heavy bikes and provides for misuse.
<ul style="list-style-type: none"> Bikes are secured by the front wheel lock, and supported on the back wheel. 	<ul style="list-style-type: none"> Loading/unloading times are under 10 seconds, so use of the Byk-Rak does not affect scheduling.
<ul style="list-style-type: none"> The Byk-Rak makes contact only with the tires of the bicycle. 	<ul style="list-style-type: none"> Bike frames or other parts will not be scratched or damaged.
<ul style="list-style-type: none"> The Byk-Rak accepts bicycles without any orientation of the pedals. 	<ul style="list-style-type: none"> This speeds up loading times because the user need not adjust the pedals to miss any part of the Byk-Rak.

<ul style="list-style-type: none"> • The Byk-Rak has no pins, clips, or straps. The Byk-Rak has minimal use of complex parts. 	<ul style="list-style-type: none"> • There are no small parts to break down or lose. This also contributes to fast loading time. A simple construction ensures high reliability and ease of use.
<ul style="list-style-type: none"> • The Bicycle Rack shall be clearly marked with easy to follow instructions for operation. 	<ul style="list-style-type: none"> • Educated the user as to the correct orientation of the bike when loading, ensuring the shortest loading and unloading time possible.
<ul style="list-style-type: none"> • The wheel lock folds away when stored 	<p>The wheel lock folds into the center of the Byk-Rak automatically so it will not damage the front of the bus.</p>
<ul style="list-style-type: none"> • The bumper mounting bracket is adjustable via multiple bolt-holes. 	<ul style="list-style-type: none"> • The Byk-Rak's height can be adjusted for different buses or routes. Rack can be moved up or down away from Headlights
<ul style="list-style-type: none"> • Bike Rack will have removable rail that can be replaced with a modular component. 	<ul style="list-style-type: none"> • With this design racks that have been damage to the rail component can be replaced without replacing the entire rack.
<ul style="list-style-type: none"> • Headlight Blockage and Turning Radius was main factors in development of our new design One Position Bike Rack. 	<ul style="list-style-type: none"> • With the small profile of the one position bike rack the drivers ability to turn and view what is in front of him have greatly been enhanced compared to 2 and 3 position bike racks

Technical Features and Specifications

2 Position Modular Bike Rack

<u>Byk-Rak Technical Features</u>	<u>Advantages</u>
<ul style="list-style-type: none"> The Byk-Rak is 30 inches deep by 55 inches wide. 	<ul style="list-style-type: none"> The Byk-Rak is large enough to hold adult-sized bikes (excluding tandem and recumbent) and designed to hold smaller bikes—down to a children’s size of 16” diameter wheels.
<ul style="list-style-type: none"> Lifting weight of the Byk-Rak is less than 30 pounds to stow. 	<ul style="list-style-type: none"> The Byk-Rak meets OSHA standards for lifting by a single individual, and anyone can raise or lower with one hand, ensuring convenient operation.
<ul style="list-style-type: none"> The Byk-Rak can be lowered or raised with one hand. 	<ul style="list-style-type: none"> This leaves the other hand free to stabilize the bike so the rider can operate the Byk-Rak independently.
<ul style="list-style-type: none"> All parts of the Byk-Rak are finished with powder coat paint. Stainless Steel Bike Racks are either bead blasted for a Non-Glare finish or Electro- Polished for a Chrome like finish. 	<ul style="list-style-type: none"> Powder coat painting provides corrosion resistance and will not flake off. It can chip, but that chip will not increase in size. This method of painting is also more environmentally safe than traditional methods. Very little Maintenance is needed on the Stainless Steel bike racks.
<ul style="list-style-type: none"> All moving parts on the Byk-Rak are made of stainless steel. 	<ul style="list-style-type: none"> Stainless steel is corrosion resistant and will not chip like plated or coated steel.
<ul style="list-style-type: none"> The Byk-Rak is mounted to the front of the bus. 	<ul style="list-style-type: none"> Front-mounting the carrier increases driver visibility, safety, and security.
<p>The Byk-Rak has two locking positions, stowed and deployed.</p>	<ul style="list-style-type: none"> In the stowed position the Byk-Rak protrudes minimally for increased maneuverability. Locking the carrier minimizes shaking.
<ul style="list-style-type: none"> The Byk-Rak has rounded outside corners, smooth welds, and few ‘pinch’ joints. 	<ul style="list-style-type: none"> These safety features lessen the likeliness of an operator being injured.
<ul style="list-style-type: none"> The Byk-Rak does not block wipers or access panels in the stowed position. 	<ul style="list-style-type: none"> The carrier mounts to right to the bumper and bikes are held far enough away to not interfere with wipers or access panels.
<ul style="list-style-type: none"> Bikes can be unloaded from the sidewalk-side or front of the Byk-Rak. 	<ul style="list-style-type: none"> Bikes never need to be unloaded from street-side so the user is not exposed to traffic.
<ul style="list-style-type: none"> Bikes can be independently loaded or unloaded. 	<ul style="list-style-type: none"> This allows either bike slot to be accessed at any time.

<u>Technical Features Con't</u>	<u>Advantages</u>
<ul style="list-style-type: none"> The Byk-Rak is constructed to support over 250 pounds in the central portion. It will support bicycles up to 75 lbs. per bike rail while the vehicle is moving. 	<ul style="list-style-type: none"> This allows the carrier to easily hold heavy bikes and provides for misuse, such as someone climbing on to it to reach a mirror or window.
<ul style="list-style-type: none"> Bikes wheels are secured by the front wheel lock and rail system. No contact is made to the frame of the bicycle. 	<ul style="list-style-type: none"> This means loading and unloading times are under 10 seconds so use of the Byk-Rak will not affect scheduling.
<ul style="list-style-type: none"> The Byk-Rak only makes contact with the tires of the bicycle. 	<ul style="list-style-type: none"> Bike frames or other parts will not be scratched or damaged.
<ul style="list-style-type: none"> The Byk-Rak accepts bicycles without any orientation of the pedals. 	<ul style="list-style-type: none"> This speeds up loading times because the user need not adjust the pedals to miss any part of the Byk-Rak.
<p>The Byk-Rak has no pins, clips, or straps or cords.</p>	<ul style="list-style-type: none"> There are no loose parts to break down or become lost. This also contributes to the fast loading time.
<ul style="list-style-type: none"> The Byk-Rak has been designed to have a simple design with few parts. 	<ul style="list-style-type: none"> A simple construction ensures ease of use and high reliability.
<ul style="list-style-type: none"> The wheel lock folds away when stowed automatically requiring no action from the bicycle rider for proper stowage. 	<ul style="list-style-type: none"> The wheel lock folds into the center of the Byk-Rak automatically so it will not damage the front of the bus.
<ul style="list-style-type: none"> The bumper mounting bracket is adjustable via multiple bolt-holes. 	<ul style="list-style-type: none"> The Byk-Rak's height can be adjusted for different buses or routes.
<ul style="list-style-type: none"> The Hinge Bracket is designed to attach to all mounting brackets similarly. 	<ul style="list-style-type: none"> The Byk-Rak can be installed on any bus through the use of different mounting brackets.
<ul style="list-style-type: none"> Bike Rack will have removable rails that can be replaced with a modular component. These rails are interchangeable for front or back 	<ul style="list-style-type: none"> With this design racks that have been damage to the rail component can be replaced without replacing the entire rack.

3 Position Wide Modular Bike Rack Assembly

<u>Byk-Rak Technical Features and Safety</u>	<u>Benefits and Advantages</u>
<ul style="list-style-type: none"> The Byk-Rak is 29.5 inches deep by 82 inches wide. 	<ul style="list-style-type: none"> The Byk-Rak is large enough to hold any adult-sized bikes (excluding tandem and recumbent) children's bikes—down to a size of 16" diameter wheels.
<ul style="list-style-type: none"> The Byk-Rak weighs less than 51 pounds. 	<ul style="list-style-type: none"> The Byk-Rak meets OSHA/NIOSH standards for lifting by a single individual, and anyone can raise or lower with one hand, ensuring convenient operation.
<ul style="list-style-type: none"> The Byk-Rak can be lowered or raised with one hand. A spring assisted pivot bracket is recommended to reduce lifting weight. 	<ul style="list-style-type: none"> This leaves the other hand free to stabilize the bike so the rider can operate the Byk-Rak with ease.
<ul style="list-style-type: none"> All parts of the Byk-Rak are finished with powder coat paint. (Unless specified by customers request i.e. electro polish and/or bead blasted bike racks) 	<ul style="list-style-type: none"> Powder coat painting provides corrosion resistance and will not flake off. It can chip, but that chip will not increase in size. This method of painting is also more environmentally safe than traditional methods.
<ul style="list-style-type: none"> All moving parts on the Byk-Rak are made of stainless steel. (including the Byk-Rak itself) No surface lubrication is needed. 	<ul style="list-style-type: none"> Stainless steel is corrosion resistant and will not chip like plated or coated steel. A Non-Glare Stainless Steel Finish is available.
<ul style="list-style-type: none"> The Byk-Rak is mounted to the front of the bus. 	<ul style="list-style-type: none"> Front-mounting the carrier increases driver visibility, safety, and security.
<ul style="list-style-type: none"> The Byk-Rak has two locking positions, stowed and deployed. 	<ul style="list-style-type: none"> In the stowed position the Byk-Rak protrudes minimally for increased maneuverability. Locking the carrier minimizes shaking.
<ul style="list-style-type: none"> The Byk-Rak has rounded outside corners, smooth welds, and few 'pinch' points. 	<ul style="list-style-type: none"> Having these safety features lessen the likeliness of injury to the operator.
<ul style="list-style-type: none"> The Byk-Rak does not block wipers or access panels in the stowed position. 	<ul style="list-style-type: none"> The carrier mounts right to the bumper, and bikes are held far enough away to not interfere with wipers or access panels.
<ul style="list-style-type: none"> Bikes can be loaded and unloaded from the sidewalk-side or front of the Byk-Rak. 	<ul style="list-style-type: none"> Bikes are always loaded and unloaded from the sidewalk-side so the user is not exposed to traffic.
<ul style="list-style-type: none"> Bikes can be independently loaded or unloaded. 	<ul style="list-style-type: none"> This allows either bike slot to be accessed at any time.
<ul style="list-style-type: none"> The main rails on the Byk-Rak are removable. 	<ul style="list-style-type: none"> Removable rails allow commonality between Byk-Rak products and modular replacement of damaged parts for ease of repair and a lower cost.
<ul style="list-style-type: none"> The Byk-Rak is constructed to support over 250 pounds static in the deployed position. 75 pounds per bike rail. 	<ul style="list-style-type: none"> This allows the carrier to easily hold heavy bikes and provides for misuse.

<ul style="list-style-type: none"> • Bikes are secured by the front wheel lock, and supported on the back wheel. 	<ul style="list-style-type: none"> • Loading/unloading times are under 10 seconds, so use of the Byk-Rak does not affect scheduling.
<ul style="list-style-type: none"> • The Byk-Rak makes contact only with the tires of the bicycle. 	<ul style="list-style-type: none"> • Bike frames or other parts will not be scratched or damaged.
<ul style="list-style-type: none"> • The Byk-Rak accepts bicycles without any orientation of the pedals. 	<ul style="list-style-type: none"> • This speeds up loading times because the user need not adjust the pedals to miss any part of the Byk-Rak.
<ul style="list-style-type: none"> • The Byk-Rak has no pins, clips, or straps. The Byk-Rak has minimal use of complex parts. 	<ul style="list-style-type: none"> • There are no small parts to break down or lose. This also contributes to fast loading time. A simple construction ensures high reliability and ease of use.
<ul style="list-style-type: none"> • The Bicycle Rack shall be clearly marked with easy to follow instructions for operation. 	<ul style="list-style-type: none"> • Educated the user as to the correct orientation of the bike when loading, ensuring the shortest loading and unloading time possible.
<ul style="list-style-type: none"> • The wheel lock folds away when stored 	<p>The wheel lock folds into the center of the Byk-Rak automatically so it will not damage the front of the bus.</p>
<ul style="list-style-type: none"> • The bumper mounting bracket is adjustable via multiple bolt-holes. 	<ul style="list-style-type: none"> • The Byk-Rak's height can be adjusted for different buses or routes.
<ul style="list-style-type: none"> • The Hinge Bracket is designed to attach to all mounting brackets similarly. 	<ul style="list-style-type: none"> • The Byk-Rak can easily be installed on any bus through the use of different mounting brackets.
<ul style="list-style-type: none"> • Bike Rack will have removable rails that can be replaced with a modular component. These rails are interchangeable. 	<ul style="list-style-type: none"> • With this design racks that have been damage to the rail component can be replaced without replacing the entire rack.
<ul style="list-style-type: none"> • Headlight Blockage and Turning Radius was main factors in development of our new design 3 Position Bike Rack. 	<ul style="list-style-type: none"> • Testing has determined with 3 bikes loaded there is no blockage increase from the 2 Position bike rack loaded with bikes. Through Engineered off-set design and precise angles these goals were accomplished.



Byk-Rak General Tips to care for your Bike Racks

Tips

- Do not cut, weld, or grind mild steel near stainless steel as the mild steel particulates can adhere to the stainless-steel surface, and can rust, staining it.
- Do not use cleaning products that contain chlorides (such as muriatic acid) near stainless steel.
- Do not use abrasive elements. A fine Scotch-Brite pad is most aggressive pad we can recommend.
- Do not use steel wool or steel brushes on stainless steel, as the mild steel bristles will deposit free iron on the surface of the stainless steel, and this will eventually turn to red surface rust.
- Do not allow concrete detergents to contact stainless steel. If this is unavoidable, either wrap/tarp or immediately rinse the stainless steel and surrounding area with water.
- Avoid using aggressive abrasives on our glass bead-blasted finish – you can permanently change the cosmetic look, and there is no effective field repair.

Light Clean up

- Use soap or a mild detergent and warm water, followed by a clean water rinse.
- A final wipe down with a dry cloth ensures that you won't see water spots if your rinse has been less than perfect.
- If stubborn stains (red rust, brown/black oxides) scuffs or other discoloration persist, follow the deep cleaning process detailed below.

Deep Clean up

- Occasionally a deep cleaning may be required with a citric acid cleaner, such as CitriSurf 77 Plus, followed by a abundant clean water rinse and wipe dry. Leaving the citric acid solution on the surface can cause discoloration if you don't rinse it well.
- For stubborn surface discoloration, use of a Scotch-Brite pad (such as 3M) with the citric acid cleaner may be necessary.
- Naval Jelly (available at most hardware stores) is also good for removing surface rust and discoloration.

Quick Release Byk-Rak

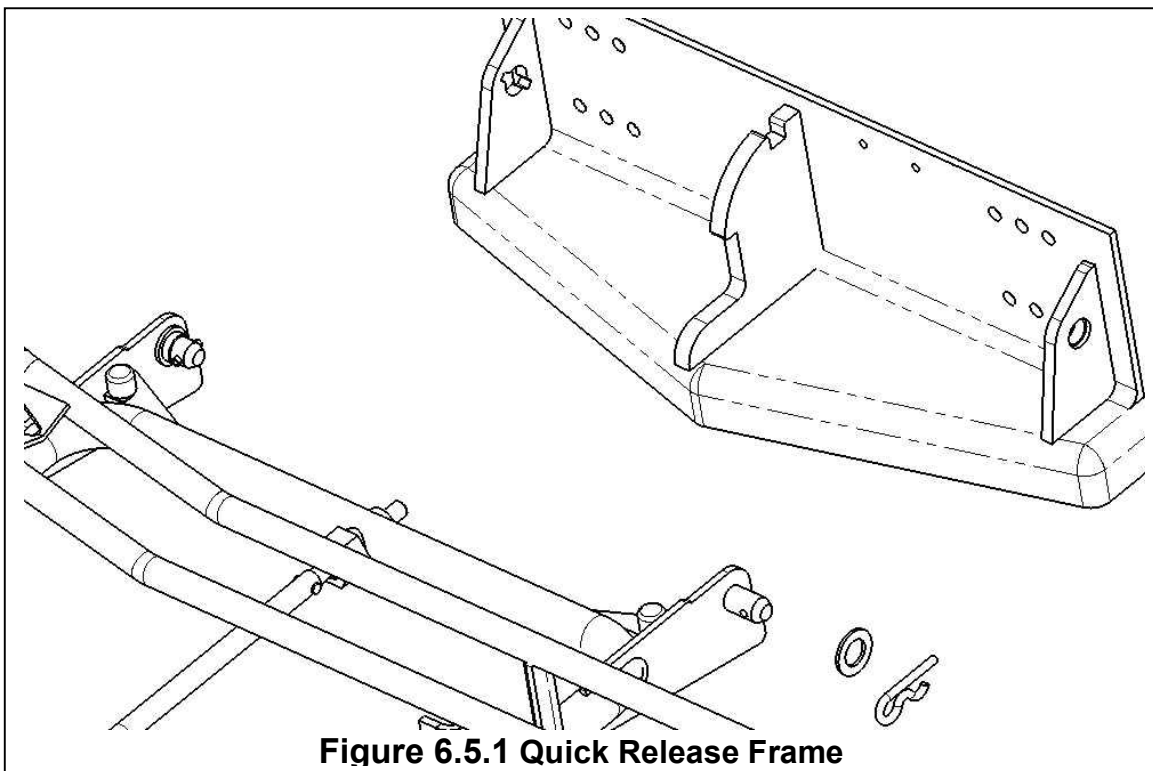
The Quick Release Byk-Rak is a special model that was designed to quickly and easily disassemble without sacrificing reliability. This model is useful for environments in which the Byk-Rak may be removed frequently or shared between buses. The Quick Release Byk-Rak is made up of three assembly features that may be used in concert, or separately as the situation demands. No tools are necessary to remove the quick release Byk-Rak.

Quick Release Rails

Each of the two rails may be removed for cleaning or maintenance. To install the rails onto the main frame, insert the two fixed pegs into the holes on one side of the frame and bolt down the other side. To remove the rail(s) simply remove the bolt and lift the rail off the frame.

Quick Release Frame

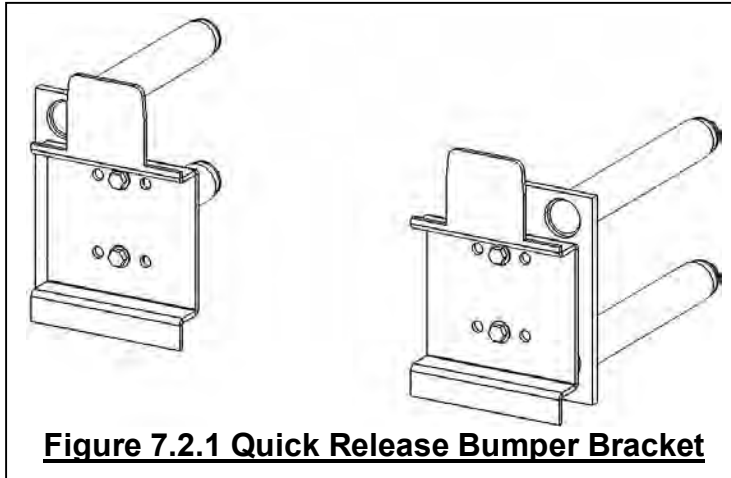
The Quick Release Frame uses a fixed pin and a removable cotter pin instead of bolts to attach the frame to the hinge plate. See Figure 6.5.1 below.



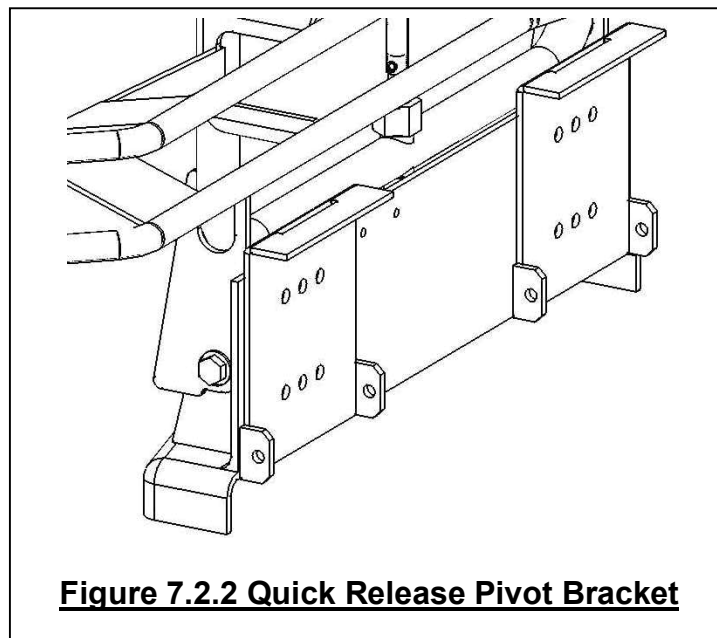
To install, rotate the Byk-Rak frame to a 45° angle and slide in the left side pin. Next, slide the right side pin in, put the washer on, and insert the cotter pin. To remove the Byk-Rak frame, reverse the process described above. The Byk-Rak may now be used to transport bicycles.

Quick Release S/S Bracket Kit

This assembly was designed to allow an operator to quickly disconnect the hinge bracket from the bumper bracket. This is convenient if a Byk-Rak may be removed often or switched between different buses. The Quick Release Bracket is installed between the bumper bracket and the hinge bracket and is made up of two parts: one plate that is bolted to the bumper bracket and another that is bolted to the hinge bracket. No tools are necessary for operation.



To install the Quick Release Bracket see the section on installing the bumper bracket specific to your bus or bumper type. The bracket is bolted to the bumper bracket in the same way as the hinge bracket usually would. Notice in Figure 7.2.1 that there are three sets of holes for horizontal adjustment of the Byk-Rak. The other half of the Quick Release Bracket bolts to the hinge bracket in the same way. See Figure 7.2.2 below.



Installation- General Information

Proper installation of the Byk-Rak is the most important factor in the safety and effectiveness of its use. Four main elements of the Byk-Rak's installation must be considered when setting up the carrier.

1. **Approach Angle**
2. **Footprint**
3. **Loading Height**
4. **Protrusion**

Please read carefully before installing the Byk-Rak.

1. **Approach Angle-** The approach angle is the angle formed by the ground and a line from the front tire to the first obstruction ahead of it. This angle determines the steepness of incline that the bus can drive. The installer should be aware that mounting the Byk-Rak too low can decrease the approach angle of the bus.
2. **Footprint-** The footprint refers to the profile of the stowed Byk-Rak against the front of the bus. The carrier should be mounted so as to avoid blocking headlights and/or turn signals.
3. **Loading Height-** This height corresponds to the vertical distance that a bicycle must be lifted into the Byk-Rak. Mounting the carrier too high can make it difficult for users to load the bike.
4. **Protrusion-** Protrusion is the distance from the front bumper to the furthest edge of the Byk-Rak in the deployed position. This measurement is important because:
 - Bike rack protrusion is limited by many state Departments of Transportation (e.g. California's limit is 36 inches).
 - Approach angle and turning radius are more affected as protrusion increases.
 - Protrusion determines the distance between the stowed Byk-Rak and the front of the bus; the carrier should not interfere with windshield wipers or the driver's line-of-sight.

Bracket Mounting

The Byk-Rak system is made up of two parts: the Byk-Rak and the bracket that fastens the carrier to the bus bumper. Proper installation of both is required to ensure the safe and effective operation of the Byk-Rak.

The bracket usually connects to the bumper but may also attach to the front of the bus itself depending on the bus/bumper type. The installer must be sure to follow the directions for the correct bus type. After determining the correct bumper bracket the installer should inspect the front of the bus for these conditions.

1. Is the bumper mounted correctly?
2. Is the bumper and bus frame in good repair? Make sure nothing is damaged, like a bent bumper from a collision.
3. Is there any other object installed on the bus that could compromise the installation or operation of the Byk-Rak?
4. Some installations require the installer to remove the bumper. It is then the installer's responsibility to determine whether the bumper-to-bus bolts should be reused.

If the answer to any of these questions is '**NO**', the bus must be repaired prior to installing the Byk-Rak mounting bracket. Mounting the Byk-Rak without making these repairs or modifying the Byk-Rak to fit on a damaged bus is **unsafe**, and voids all Byk-Rak warranties.

Help Universal 96" and 102" Bumper Installation

The Byk-Rak system mounts to both the 96" wide and 102" wide Help Universal bumpers by the same method. The Help Universal bumper is identified by an array of exposed bolts on the top and bottom of the bumper. The Byk-Rak C-Bracket attaches to four of these bolts.

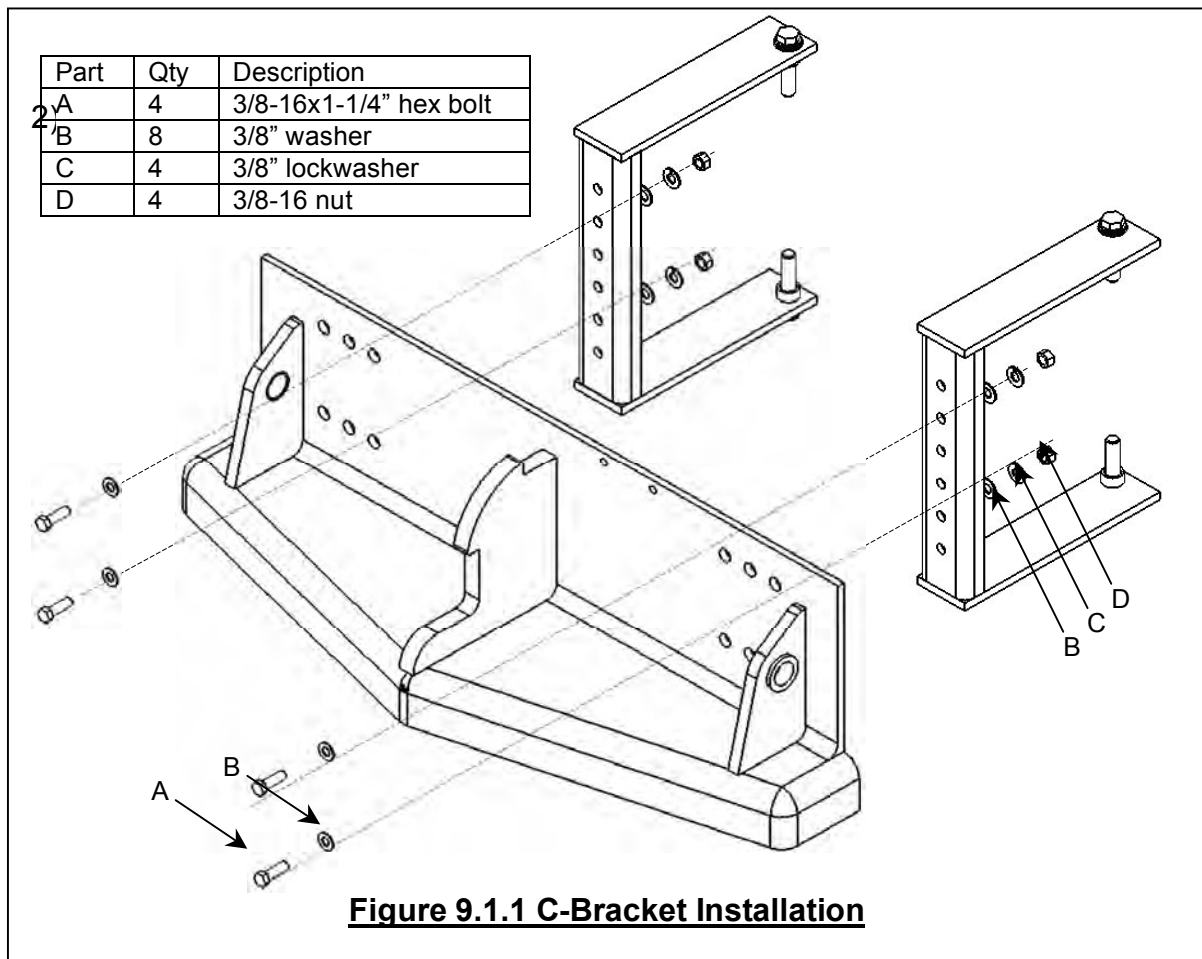
Generally, no modification is needed to install the C-Bracket. **However, make sure to check that there is enough space between the bumper and the bus body to fit the C-Bracket.**

If there is not enough space to install the C-Bracket, you have two options:

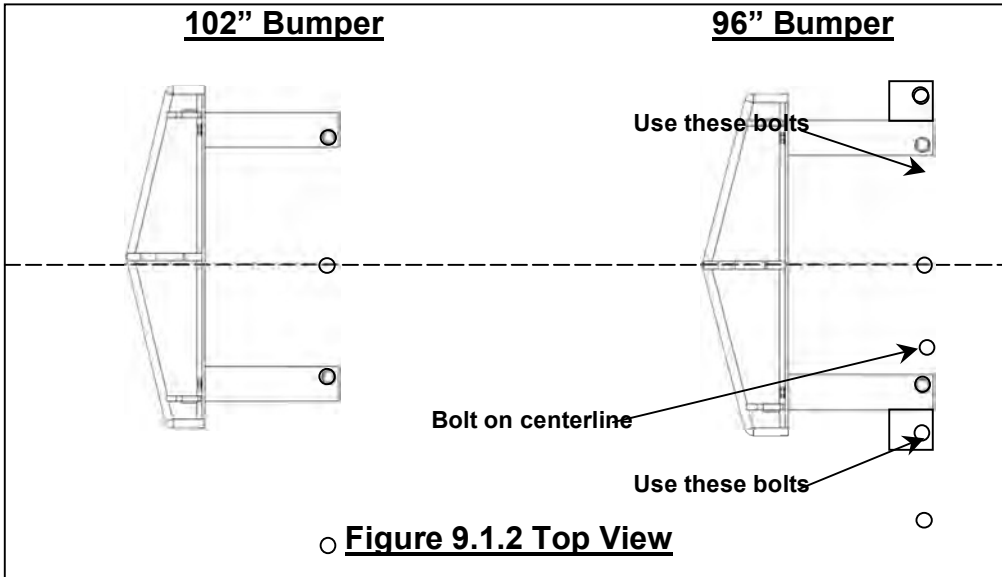
- a) modify the front body of the bus to make space for the C-Bracket or
- b) re-mount the bumper low enough that the C-Bracket will fit

Follow these directions to install either a 96" or 102" C-Bracket. The installation varies slightly between the two widths; the 96" C-Bracket has welded 'ear' tabs on the outside of the mounting arms while the 102" C-Bracket does not.

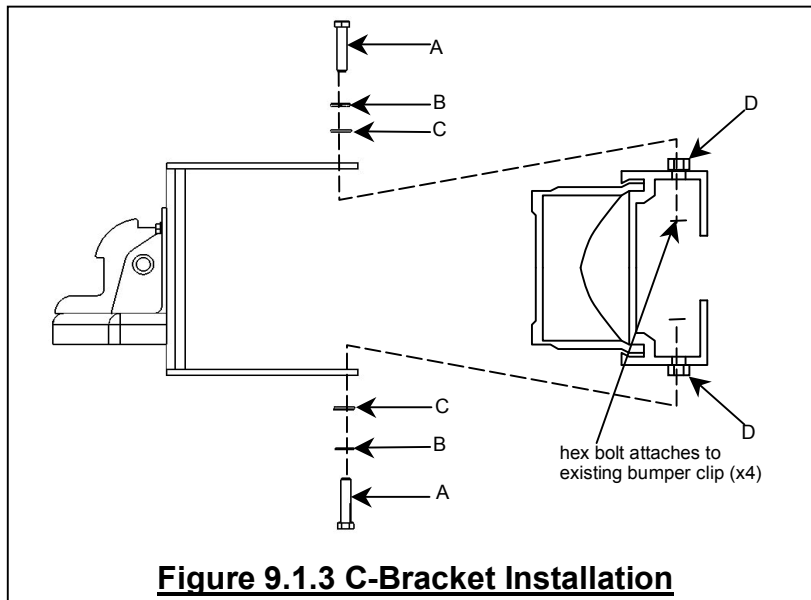
- 1) Set up the C-Brackets and Hinge Bracket in the orientation shown below and fasten the bolts loosely.



2) The next step is to find the four bolts, two on the top and two on the bottom of the bumper, that the C-Bracket will attach too. The difference between the 96" and 102" Help Universal bumpers is that the 96" bumper has a bolt on the centerline. See Figure 9.1.2 below.



3) Attach the C-Bracket to the Help Universal Bumper in 4 places using 1/2-13x3" hex bolts, lockwashers, and spacers. See Figure 9.1.3 below.



Part	Qty	Description
A	4	1/2-13x3" hex bolt
B	4	1/2" lockwasher
C	4	1/2" washer
D	4	spacer

- 4) Next, tighten all of the fasteners and bolts, including those connecting the Hinge Bracket to the C-Brackets. Congratulations! You have successfully installed the mounting bracket and Hinge Bracket.
- 5) Proceed to **Section 10: Mounting the Byk-Rak.**

Help Slide-In Bumper Installation

The Help Slide-In bumper is identified by its hollow aluminum bumper structure and its 2 black urethane pieces that “slide-in” to the back structure and meet at the bumper centerline.

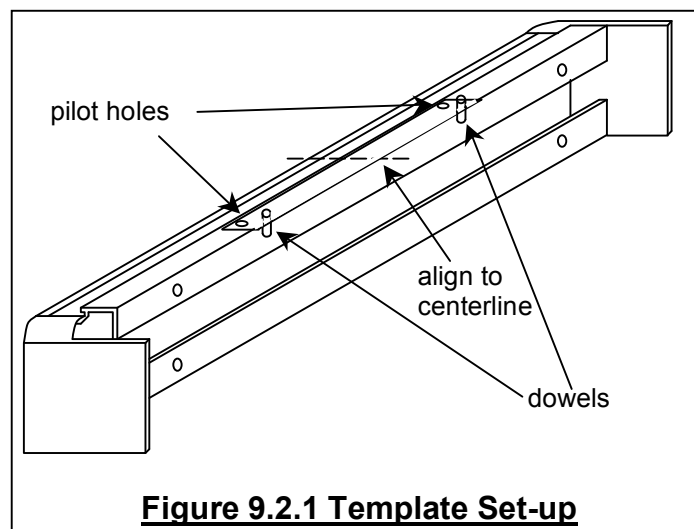
One of two methods may be used to mount the Byk-Rak on the Help Slide-In bumper: the Stand-off bracket or the C-Bracket. The Stand-off mounting bracket may be used if there is not enough space between the bumper and bus body for the C-Bracket.

Slide-In Bumper C-Bracket Installation

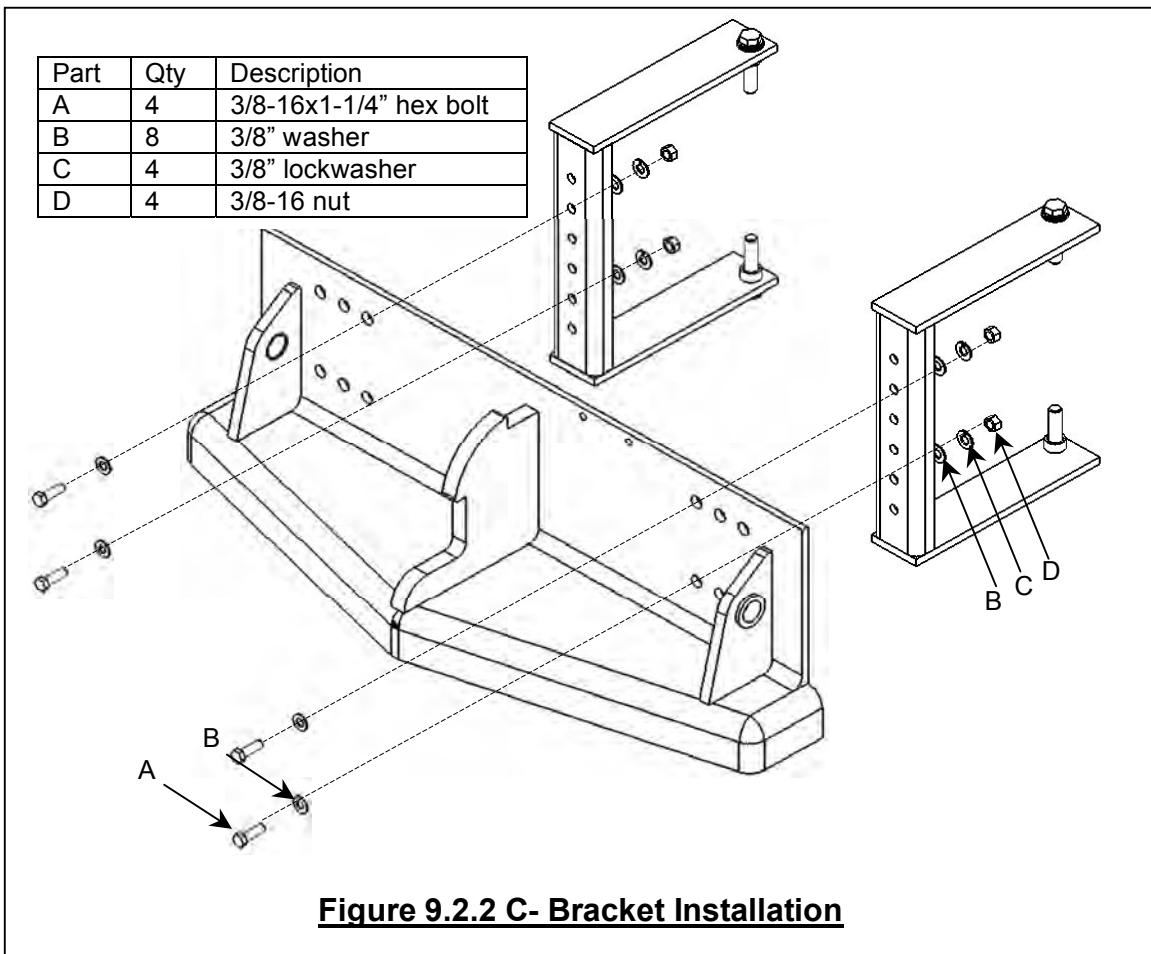
The C-Bracket for Byk-Rak mounts to the Slide-In bumper at four spots, two on top of the bumper and two on bottom of the bumper. Usually the C-Bracket can be installed without changes to the existing bumper set-up. However, sometimes there is not enough space between the bumper and bus body for the C-Bracket arm to fit. **It is important that you check the clearance between the bumper and bus body before attempting to install the C-Bracket.**

If there is not enough room for the C-Bracket, you have three options:

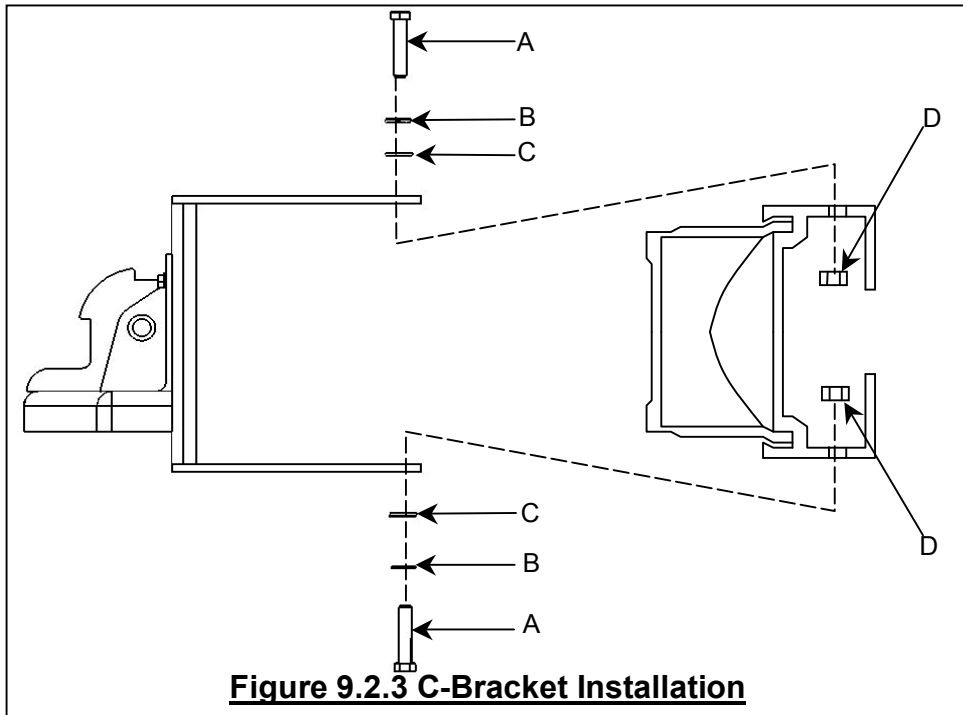
- a) modify the front body of the bus to make space for the C-Bracket,
 - b) re-mount the bumper low enough that the C-Bracket will fit, or
 - c) use the Stand-off bracket method (see end of Section 9.2)
- 1) First, you must mark out the centerline of the front of the bus and the bumper. These lines will be used later to reattach the bumper. To make these lines, use the centerline of the aluminum back structure as a reference.
 - 2) Next, detach the Help Slide-In bumper from the bus frame by removing the bumper-to-frame bolts.
 - 3) Place and tightly hold the provided drill template on the top of the bumper, making sure to align the center lines. Make sure the top edge is flush with the edge of the aluminum back structure. Now drill two 1/4” pilot holes, on the right and left of the centerline. See Figure 9.2.1 below.



- 4) Repeat step 3, now on the bottom of the bumper.
- 5) Enlarge each of the 4 holes made in steps 3 and 4 with a 17/32" drill bit.
- 6) Set up the C-Brackets and Hinge Bracket in the orientation shown below and fasten the bolts loosely.



- 7) Attach the C-Bracket to the Help Slide-In Bumper in 4 places using 1/2-13x1-1/2" bolts, lockwashers, and spacers. See Figure 9.2.3 below. Tighten all fasteners and bolts.



Part	Qty	Description
A	4	1/2-13x1-1/2" hex bolt
B	4	1/2" lockwasher
C	4	1/2" washer
D	4	1/2-13 locknut

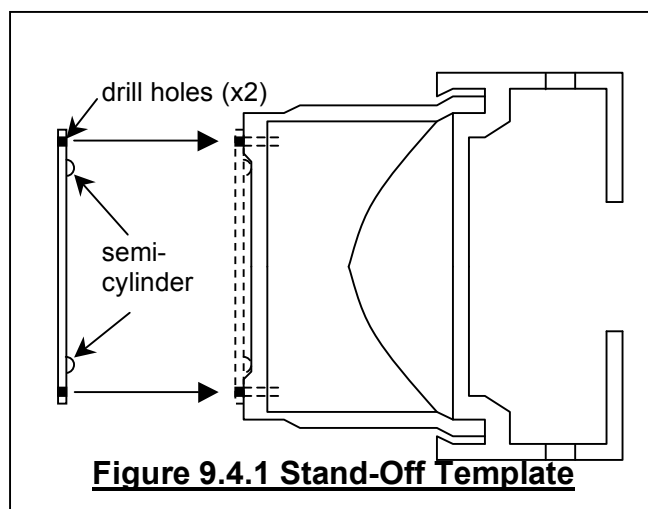
- 8) Lastly, remount the bumper to the bus frame with the bumper-to-frame bolts, making sure to align the centerlines. Tighten all of the fasteners and bolts, including those connecting the Hinge Bracket to the C-Brackets.
- 9) Congratulations! You have successfully installed the mounting bracket and Hinge Bracket. Proceed to **Section 10: Mounting the Byk-Rak**.

Slide-In Bumper Stand-Off Installation

Using the Stand-Off installation method, four holes are drilled through the polyurethane structure and aluminum back structure. The Stand-Off bracket is then attached to the aluminum back structure via four bolts. This method is well suited for buses with insufficient space between the bumper and bus body to mount C-Brackets.

Note before installation: If the bus has a wheelchair lift you may have to lower the lift and remove the lift pan to gain access to the bumper. Also, you may have to remove the bumper to gain access to some bolts.

- 1) First, find the provided drill jig template and fit it to the front of the bumper. The semi-cylindrical pieces should help index the template. Make sure the center of the template is aligned with the center of the bus.



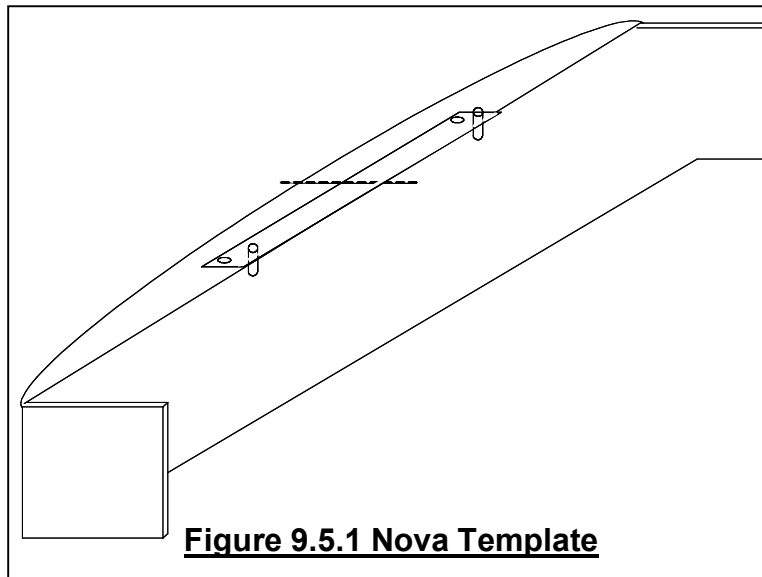
- 2) Drill **one** 1/4" pilot hole through one of the top template drill holes. Insert a 1/4" dowel into the template and urethane to index the template. Now, drill the other top hole and put another 1/4" dowel into it. Lastly, drill the two bottom holes, making sure that the template **does not move**.
- 3) With all the pilot holes drilled, remove the template. Cut four holes using a 1-1/2" hole saw with a 1/4" pilot drill. Make sure that each hole is drilled perpendicular to the bumper face and drill through any structural ribs that may be encountered.
- 4) Now, insert the two Stand-Off brackets into the holes. The brackets should be pushed in until the tube contacts the aluminum back structure.

Nova C-Bracket Installation

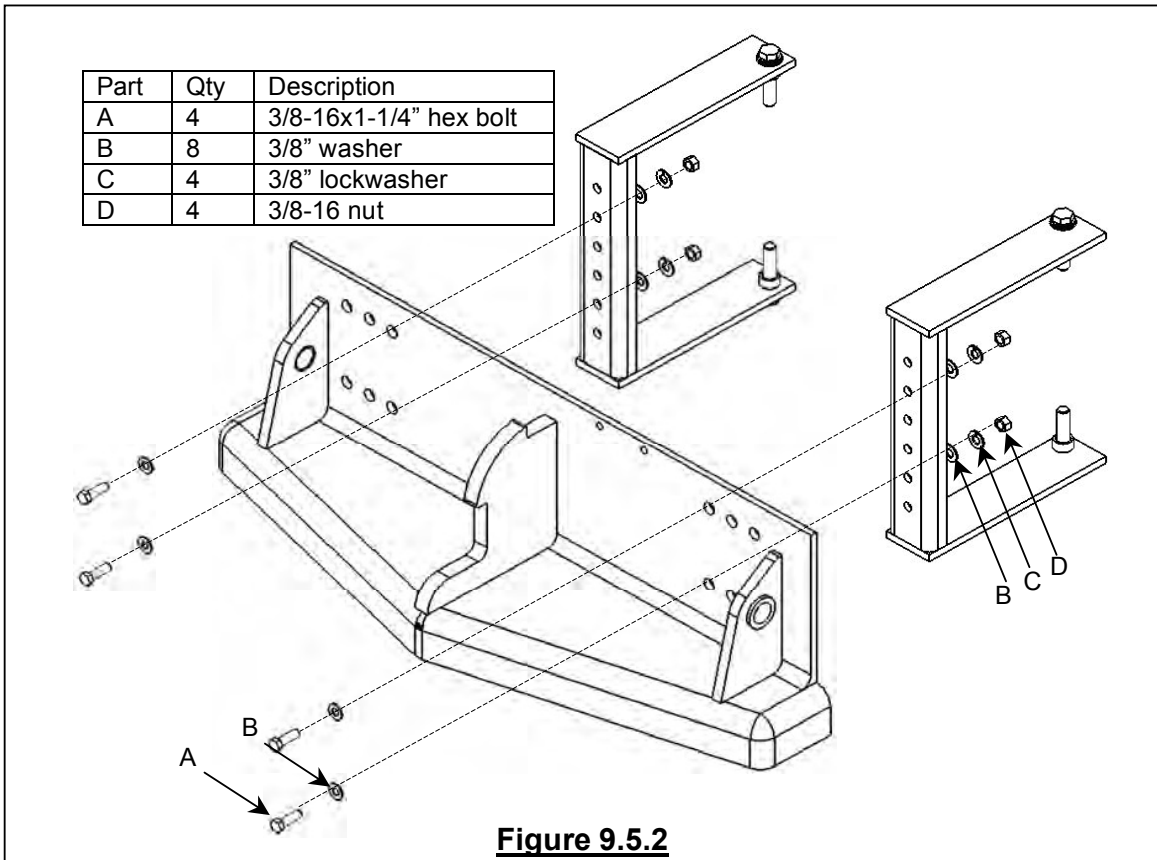
The C-Bracket for Byk-Rak mounts to the Nova bumper at four spots, two on top of the bumper and two on bottom of the bumper. Usually the C-Bracket can be installed with no changes to the existing bumper set-up. Sometimes, however, there is not enough space between the bumper and bus body for the C-Bracket arm to fit. **It is important that you check the clearance between the bumper and bus body before attempting to install the C-Bracket.**

If there is not enough room for the C-Bracket, you have three options:

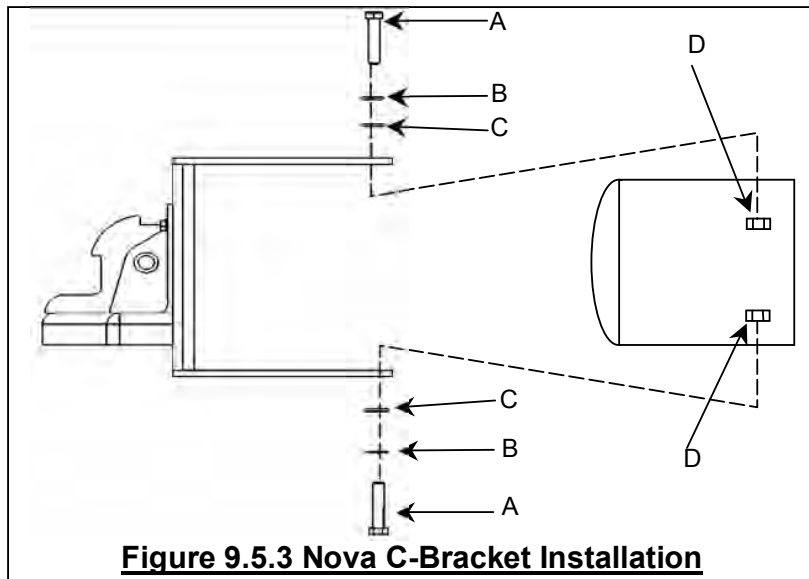
- a) modify the front body of the bus to make space for the C-Bracket,
 - b) re-mount the bumper low enough that the C-Bracket will fit, or
 - c) use the Threaded Insert bracket method (see Section 9.4)
- 1) First, you must mark out the centerline of the front of the bus and the bumper. These lines will be used later to reattach the bumper. To make these lines, use the centerline of the aluminum back structure as a reference.
 - 2) Now, detach the Nova bumper from the bus frame by removing the bumper-to-frame bolts.
 - 3) Place and tightly hold the provided drill template on the top of the bumper, making sure to align the center lines. Also, make sure the top edge is flush with the edge of the aluminum back structure. Now drill two 1/4" pilot holes, on the right and left of the centerline. See Figure 9.5.1 below.



- 4) Repeat step 3, now on the bottom of the bumper.
- 5) Enlarge each of the 4 holes made in steps 3 and 4 with a 17/32" drill bit.
- 6) Set up the C-Brackets and Hinge Bracket in the orientation shown below and fasten the bolts loosely.



- 7) Attach the C-Bracket to the Nova Bumper in 4 places using 1/2-13x1-1/2" bolts, lockwashers, and spacers. See Figure 9.5.3 below. Tighten all fasteners and bolts.



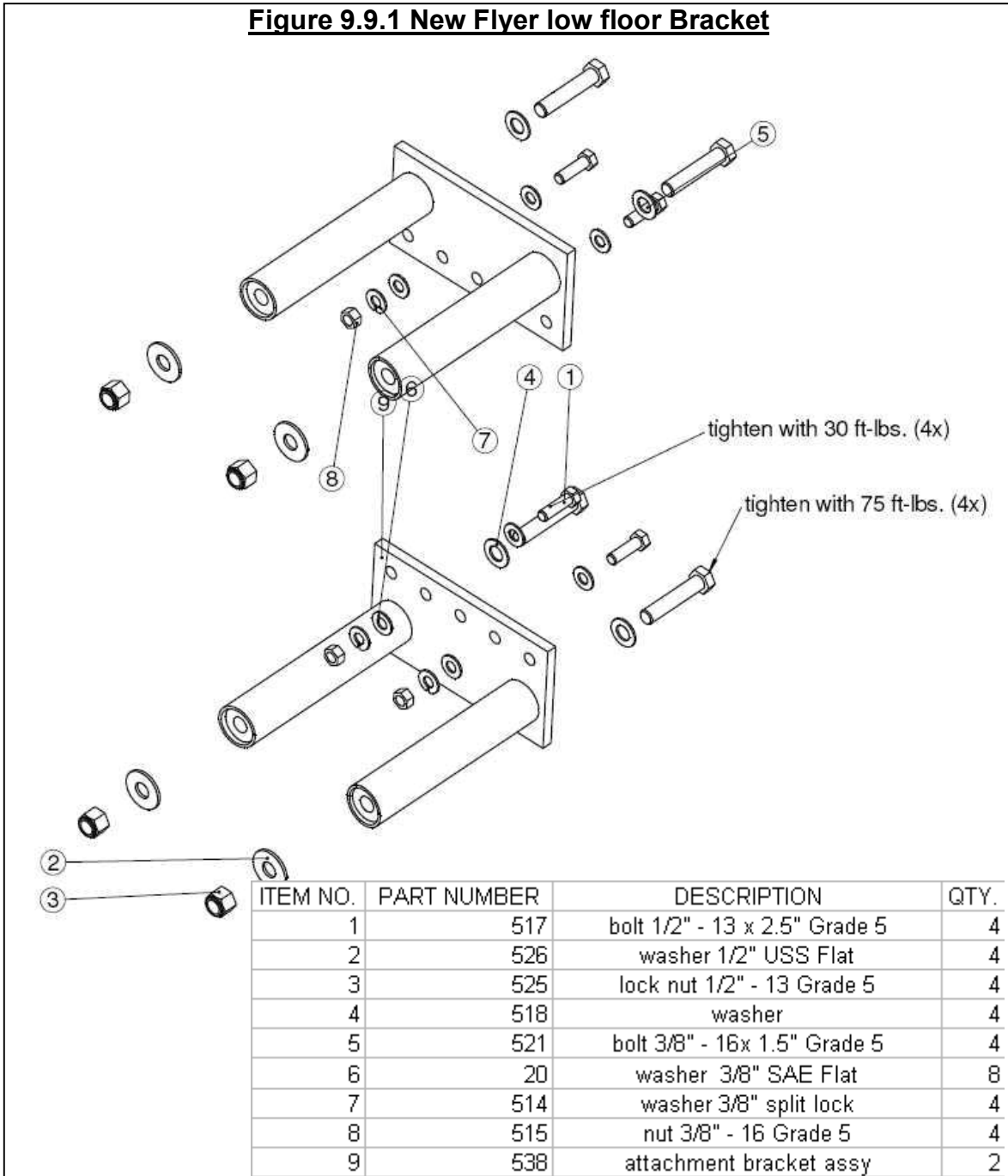
Part	Qty	Description
A	4	1/2-13x1-1/2" hex bolt
B	4	1/2" lockwasher
C	4	1/2" washer
D	4	1/2-13 locknut

- 8) Lastly, remount the bumper to the bus frame with the bumper-to-frame bolts, making sure to align the centerlines. Tighten all of the fasteners and bolts, including those connecting the Hinge Bracket to the C-Brackets.
- 9) Congratulations! You have successfully installed the mounting bracket and Hinge Bracket. Proceed to **Section 10: Mounting the Byk-Rak**.

New Flyer low floor Bracket Installation

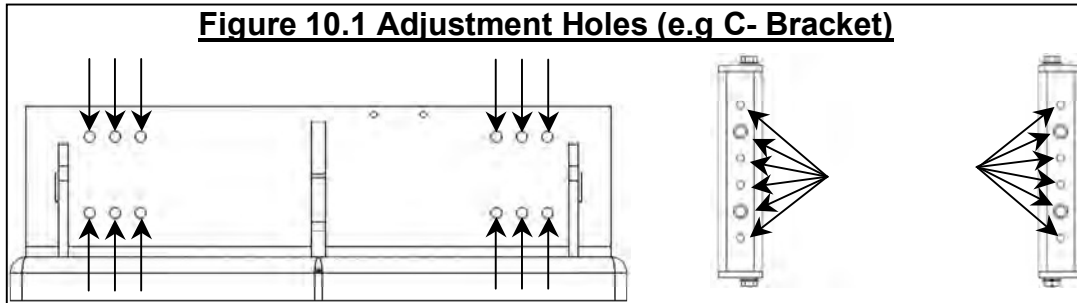
The New Flyer low floor bracket is a tube-style stand-off bracket that is very similar to the Help Slide-In and RTS stand-off brackets (Sections 8.2, 8.6). The only difference is this bracket has inline tubes instead of offset. For step-by-step installation instructions, refer to Sections 9.2 or 9.6.

Figure 9.9.1 New Flyer low floor Bracket



Height/Position Adjustment

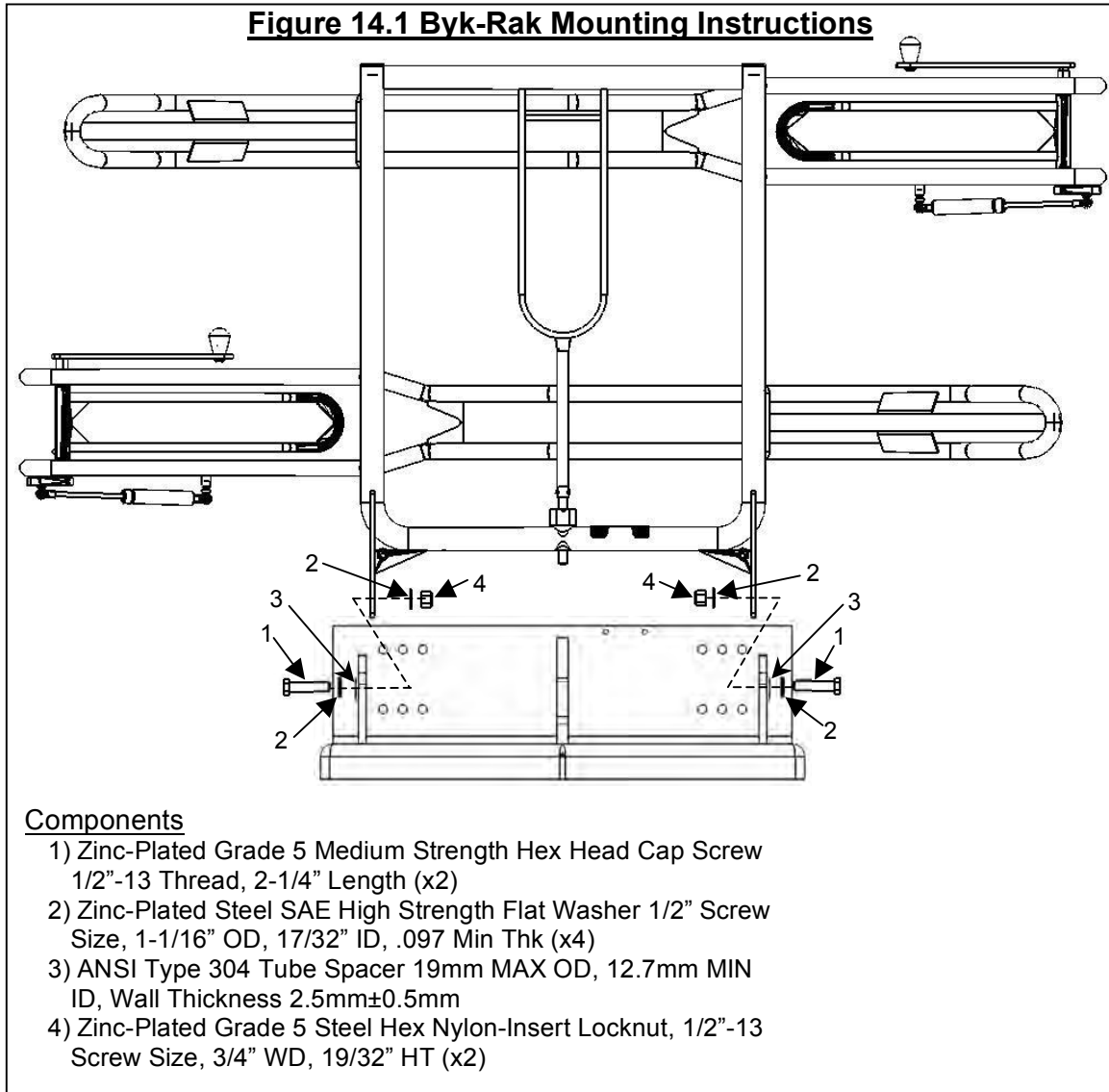
To change the height or left/right positioning of the Byk-Rak, first detach the carrier from the hinge bracket, if installed already. Next, uninstall the hinge bracket and position it up, down, left, or right as desired and reinstall the fasteners/bolts in another set of adjustment holes.



Depending on the bus type, some brackets do not have multiple height adjustment holes. If so, the hinge bracket will be positioned optimally and no adjustment is required.

Mounting the Byk-Rak

Now that the bracket has been mounted to the bus per the instructions, the Byk-Rak can be installed to the hinge bracket. This installation is extremely quick and simple, because only two bolts must be fastened. See Figure 14.1 below.



Once the Byk-Rak has been secured by the two machine screws, make sure the carrier can swing freely and lock into the stowed and deployed positions.

Byk-Rak Operation

The Byk-Rak is very fast and easy to use, eliminating any deviation from typical bus schedules. The Byk-Rak can be quickly loaded or unloaded by an individual rider, although young children **should be assisted by an adult**.

When loading or unloading a bicycle, follow these steps:

CAUTION: Loading or unloading your bike from street side may cause death or serious injury.

Loading a Bicycle

- 1) Make ready your bike for loading by removing any loose items that may fall off, such as water bottles or tire pumps.
- 2) Make sure that the bus driver is aware that you are loading your bike. Load from the curb or in front of the bus; never step into oncoming traffic to load your bike.
- 3) To lower the Byk-Rak from the stowed position, pull the handle with one hand and lower the carrier until you feel it lock. Use your other hand to steady your bicycle.
- 4) Next, lift your bike and set it into Byk-Rak. Tire slot is clearly labeled FRONT WHEEL. The bike can be loaded and secured backwards, but the label is attached to make it easier to unload the inside bike.
- 5) Swing the wheel lock around (from under the Byk-Rak) and on top of the front wheel.
- 6) You may now board the bus.

Unloading a Bicycle

- 1) As the bus approaches your stop, notify the bus driver that you will be unloading your bike. Unload from the curb or in front of the bus; **never step into oncoming traffic to unload your bike**.
- 2) Swing the wheel lock around to under the front tire.
- 3) You may now lift your bike out of the Byk-Rak.
- 4) If the Byk-Rak is empty and no one is waiting to load their bike, lift the Byk-Rak up until it locks into the stowed position.

CAUTION: Loading or unloading your bike from street side may cause death or serious injury.

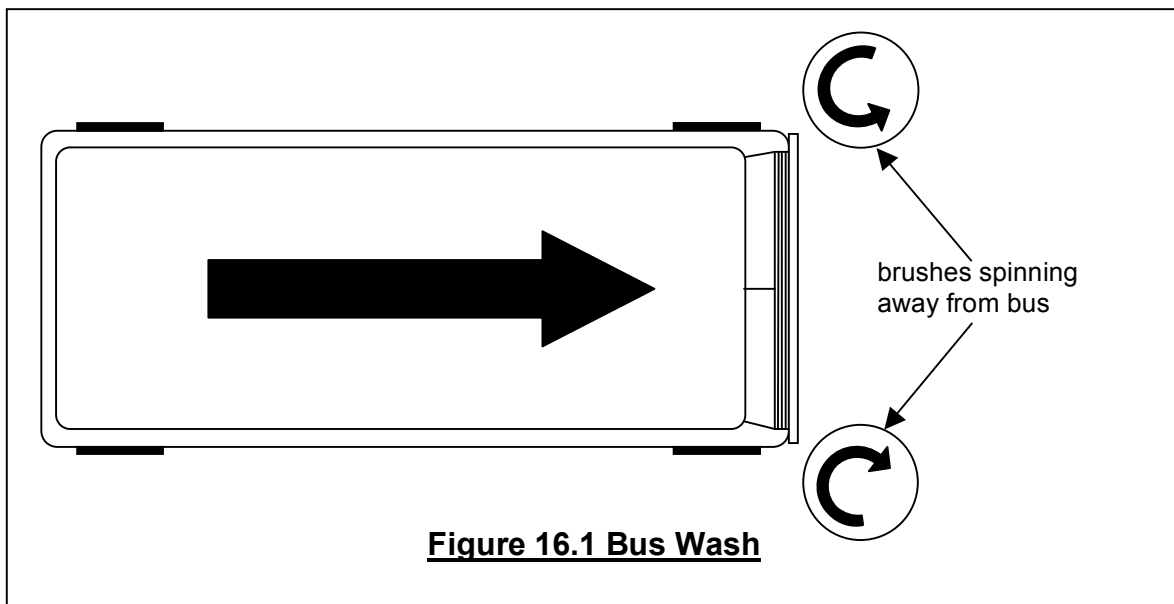
Byk-Rak does not condone use of motorized vehicles on their Bike Racks. Use of Motorized vehicles will void the warranty of the Byk-Rak equipment.

Bus Washing

One of the major features of the Byk-Rak is its compatibility with bus washes. As long as the Byk-Rak is empty and in the stowed position, it can be safely taken through a bus wash facility. The Byk-Rak system was designed with round tubing and edges so the wash brushes will not become entangled or stuck in the carrier.

Although the Byk-Rak is fully compatible with bus wash facilities, the following conditions can damage the carrier and should be avoided.

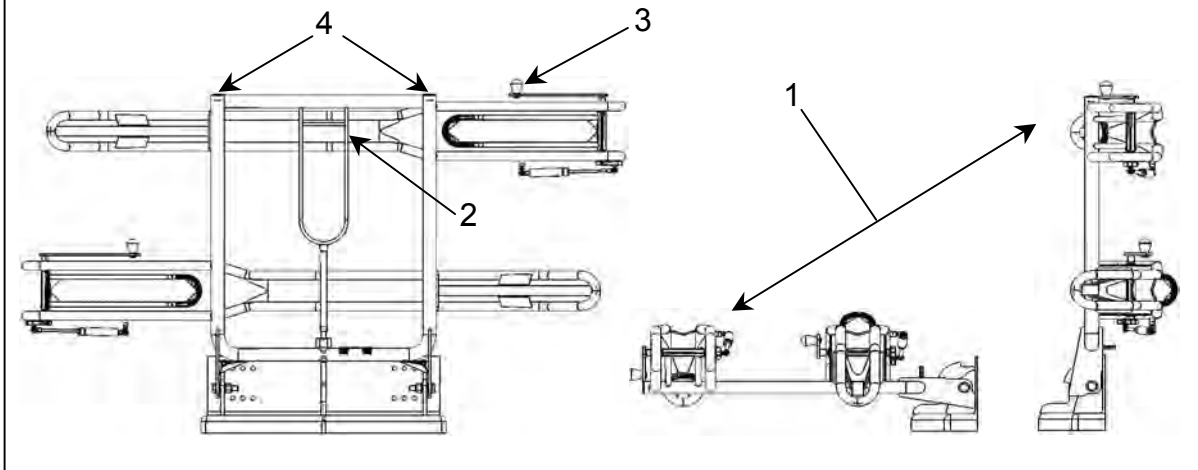
- 1) **Slow brush rotation-** If the wash brushes are spinning too slowly they may catch onto any protruding object such as a mirror. Also, if the axle pushes too deeply onto the Byk-Rak it may get caught on any vertical ridges.
- 2) **High bus speed-** If the bus is moving too quickly through the bus wash system, the same problems explained above may occur.
- 3) **Low brush density-** If there are too few brushes on the brush arm, the axle may be pushed too deeply onto the Byk-Rak and may catch on any vertical ridges.
- 4) **Brushes blocking bus path-** The brushes should spin away from the front of the bus in order to climb across any protrusions. If the brush is on the driver's side, it should spin counter-clockwise when viewed from above. Any brush on the opposite side should spin clockwise. See Figure 16.1 for a visual representation.



As long as these conditions are not present and the Byk-Rak is in the stowed position, there should be no damage above regular wear and tear. If excess damage is observed, examine the Byk-Rak setup and the bus wash facility. If any further problems are encountered, please contact Byk-Rak at 1(800) 627-6627.

Parts and Service

Figure 17.1 Visual Inspection



Byk-Rak Visual Inspection Checklist

Byk-Rak recommends a quick visual inspection before utilizing the carrier. Use this as a checklist and inspection sheet for bus drivers. If any of the following statements are false, repair the Byk-Rak before putting into service.

- 1) ___ Byk-Rak swings from stowed to deployed position freely and locks in each position automatically.
- 2) ___ Release handle easily unlocks Byk-Rak to change positions without sticking.
- 3) ___ Wheel lock swings all the way around and spring keeps tension.
- 4) ___ End caps are present and not damaged.

30 Day Inspection

Check every 30 days to ensure that:

- 1) The Byk-Rak swings easily between the stowed and deployed positions.
- 2) The release handle unlocks the Byk-Rak and does not stick.
- 3) The locking pin automatically locks in the deployed and stowed positions.
- 4) All bolts/fasteners are present and tight.
- 5) The two end caps on the front of the Byk-Rak are present and not damaged.
- 6) All instruction labels are present and intact (not shredded, marred, or scratched off). When replacing, first clean the surface with isopropyl alcohol.
- 7) The main frame and bike rails are unbent and structurally sound.

30 Day Service

If 30 day inspection shows damage, follow this service list:

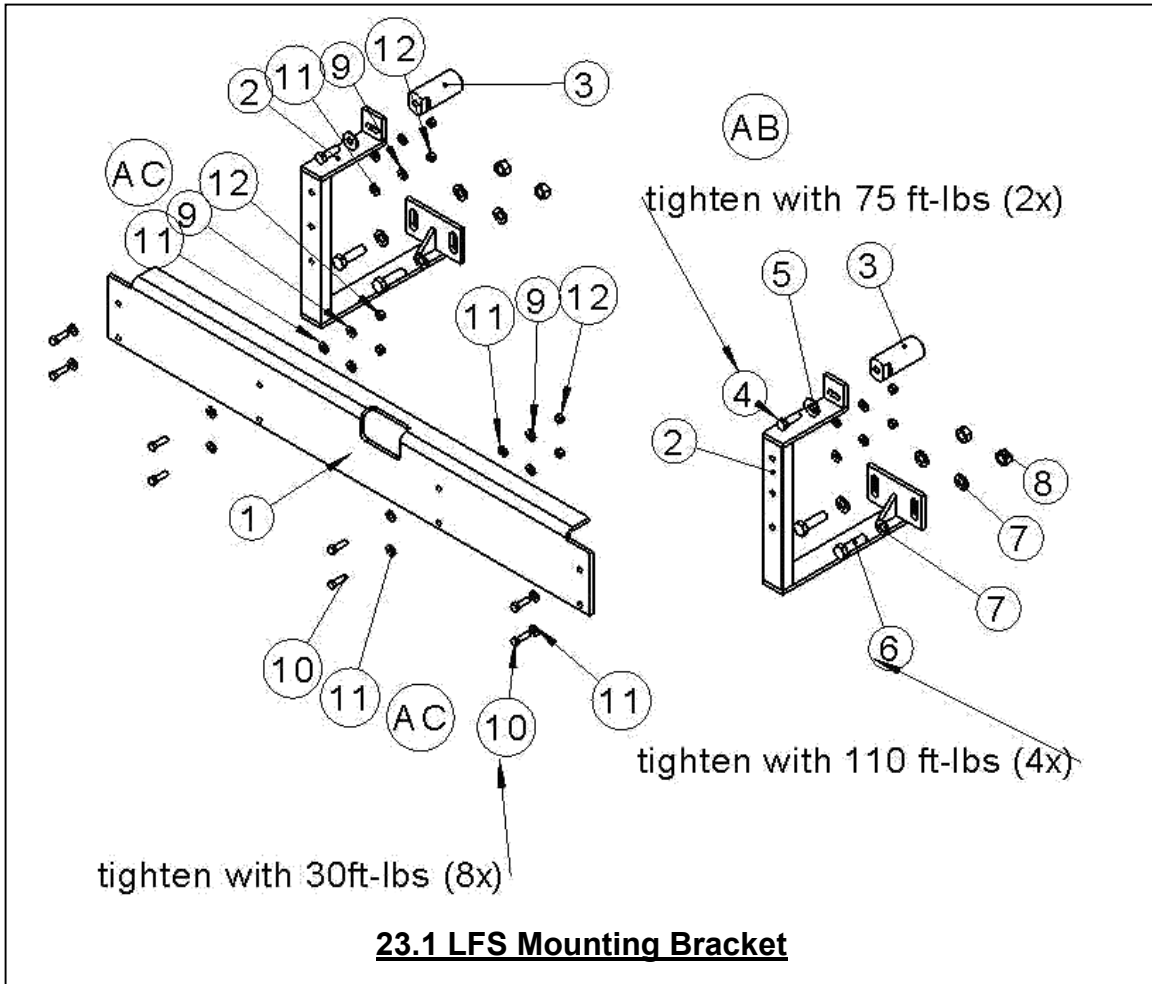
- 1) If the Byk-Rak does not swing easily, check the hinge plate assembly, attachment plate, and hinge bolts for incorrect installation or damage. If they are damaged, replace immediately. If the hinge or attachment plates are bent, remove and straighten or replace.
- 2) Make sure the main frame and bike rails are undamaged and unbent. If they are damaged, replace immediately.

Quality Inspection Process Plan

This section contains details of the Quality Process Plan followed to ensure the bike racks are delivered with zero defects to the customer. The table below shows the process steps followed for each bike rack delivery.

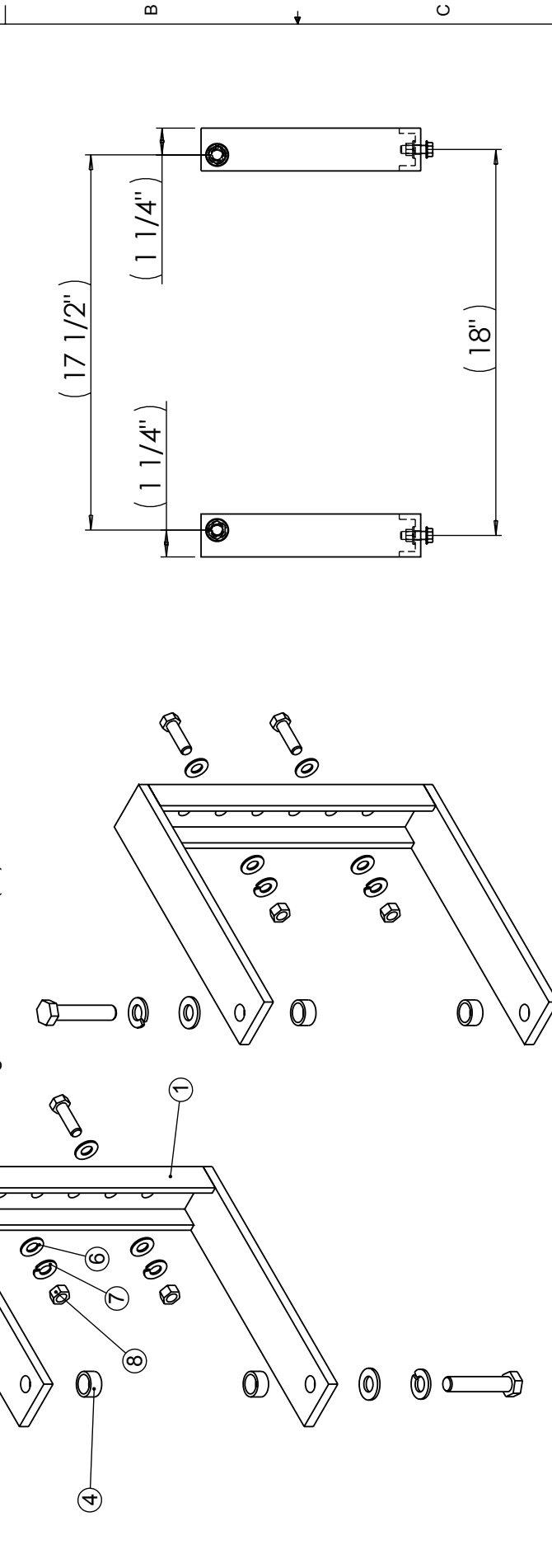
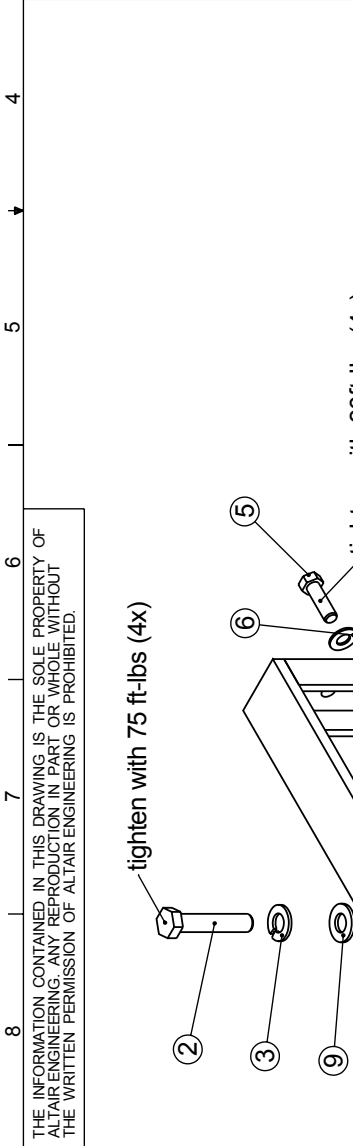
Process Control Plan												
<input type="checkbox"/> Prototype <input type="checkbox"/> Pre Launch <input checked="" type="checkbox"/> Production	Control Plan Number: Accessory Part for Transit Buses		Key Contact/ Phone: 989-723-5241		Date (Orig.): 11-Jun-08		Approved 11-Jun-08					
Part Number: B003-HDBE / 277667 Latest Change Level: Rev. 1			Core Team: GL, GM, KG Approval Date: 11-Jun-08			Customer Engineering Approval/Date: N/A Customer Quality Approval/Date: N/A						
Part Name: Bike Rack/ Pivot Bracket Assembly Inspection Team: Midwest Bus			Other Approval Date (if req.): N/A Supervisor: Greg Limbaugh			Approved By: Bob Reichert						
Part/ Process Number	Process Name/ Operation Description	Machine, Device, Jig, Tools, for Mfg.	Characteristics			Methods						
			Number	Product	Process	Special Characteristic Class	Product/ Process Spec. Tolerance	Evaluation/ Measurement Technique	Size	Frequency	Control Method	Reaction Plan
10	Check all hardware is secure	Roll Pins, Bolt & Nuts	10-1				Zero Defects	Visual, Wrench	100%	Each Part	Per QC Process	Tighten loose parts
20	Check Red Stoppers on Rack	Check both nuts are tight	20-1				Zero Defects	Visual, Wrench	100%	Each Part	Per QC Process	Modify Stopper to Spec
30	Operate Release Handle	Ensure that the release handle freely engages and disengages the pin	30-1				Zero Defects	Mechanical	100%	Each Part	Per Drawing	Disassemble Pin assembly and replace Bac Parts
40	Check all labels that they are correct	Check position and straightness	40-1				Zero Defects	Visual	100%	Each Part	Per QC Process	Change out Labels
50	Inspect Powder Coated Parts	No Chips, Scratches, or missing paint	50-1		Touch up Paint		Zero Defects	Visual	100%	Each Part	Per QC Process	Touched up parts must blend in with powder coating
60	Package Rack into box	Cover Rack with plastic bag and support material	60-1				N/A	Labor	100%	Each Part	Per QC Process	2 person job to ensure quality

Nova LFS Mounting Bracket



Label #	Part Number	Description	Qty.
N/A	640	Kit - LFS Mounting Bracket	1
1	650	attachment plate	1
2	655	bracket assembly	2
3	669	insert 1 3/4"	2
4	670	bolt 1/2" – 13 x 1.5" Grade 5	2
5	526	washer 1/2" USS Flat	2
6	671	bolt M16 x 55, DIN 933, fully threaded	4
7	672	washer M16 DIN 125	8
8	673	lock nut M16x2 DIN 934	4
9	514	washer 3/8" split lock 18-8	8
10	521	bolt 3/8" – 16 x 1.5" Grade 5	8
11	520	washer 3/8" SAE Flat	16
12	515	nut 3/8" – 16 Grade 5	8

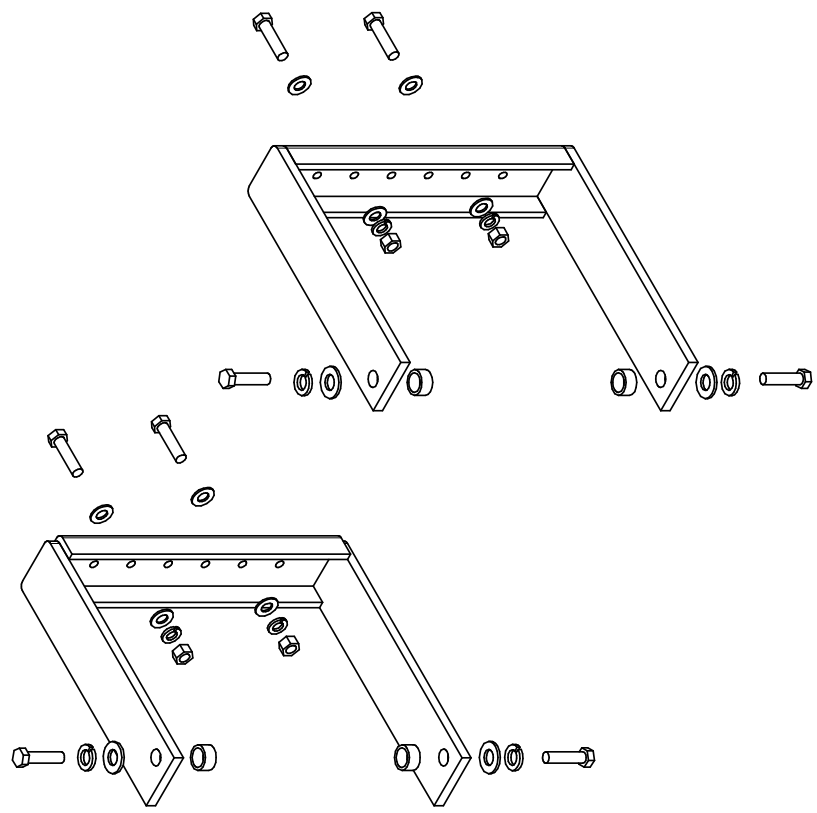
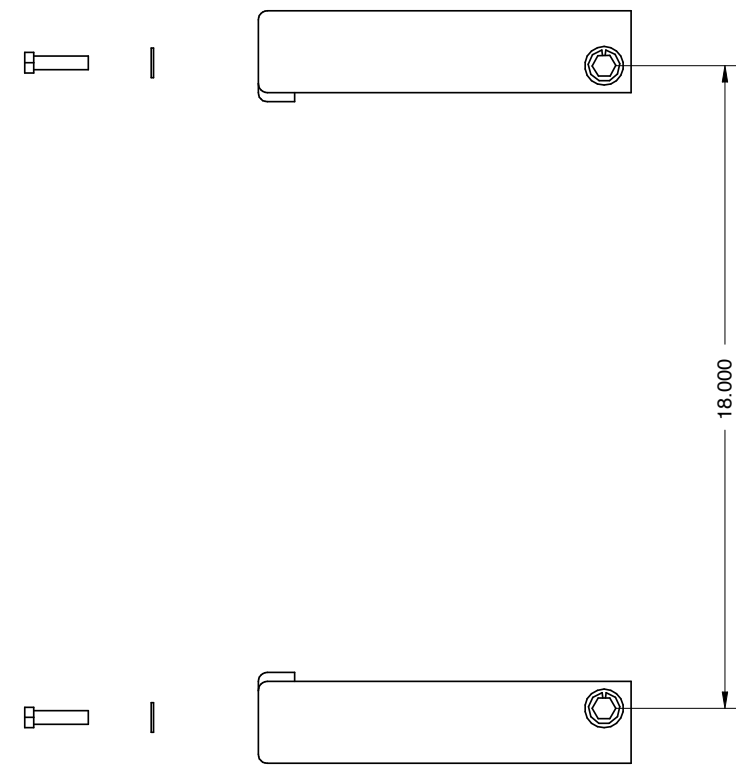
ITEM NO.	PART NUMBER	Revision	DESCRIPTION	QTY.
1	INV-067-513	AA-003	Flexible bracket assy	2
2	INV-067-517	AA-004	bolt 1/2" - 13 x 2.5" Grade 5	4
3	INV-067-516	AA-003	washer 1/2" Split lock 18-8	4
4	INV-067-519	AA-003	spacer 7/16"	4
5	INV-067-521	AA-004	bolt 3/8" - 16 x 1.5" Grade 5	4
6	INV-067-520	AA-004	washer 3/8" SAE Flat	8
7	INV-067-514	AA-004	washer 3/8" split lock 18-8	4
8	INV-067-515	AA-004	nut 3/8" - 16 grade 5	4
9	INV067-B030-AC	AA-003	washer	4



Confidential
patent pending

Dimensions are in inch unless otherwise specified	CAD Generated Drawing, Do Not Manually Update	Notes for Flexible
Tolerances:	Do Not Scale Drawing	Description brckt ass'y FLXIBLE
Material:	Status:	Name brckt ass'y FLXIBLE
Treatment:	Project: Attachment Bracket Systems	Size A
	Standard:	Rev. Seq. AA-003
		Dwg. No. 503
		Scale 1:5
		CAD File INV-067-503
		Printed: Tuesday, October 25, 2005
 Altair Engineering <i>The Shortest Distance Between Concept and Reality</i>		Sheet 1 of 1

REVISIONS			
ZONE	REV	DATE	APPROVED
	AA	11/13/08	
DESCRIPTION			



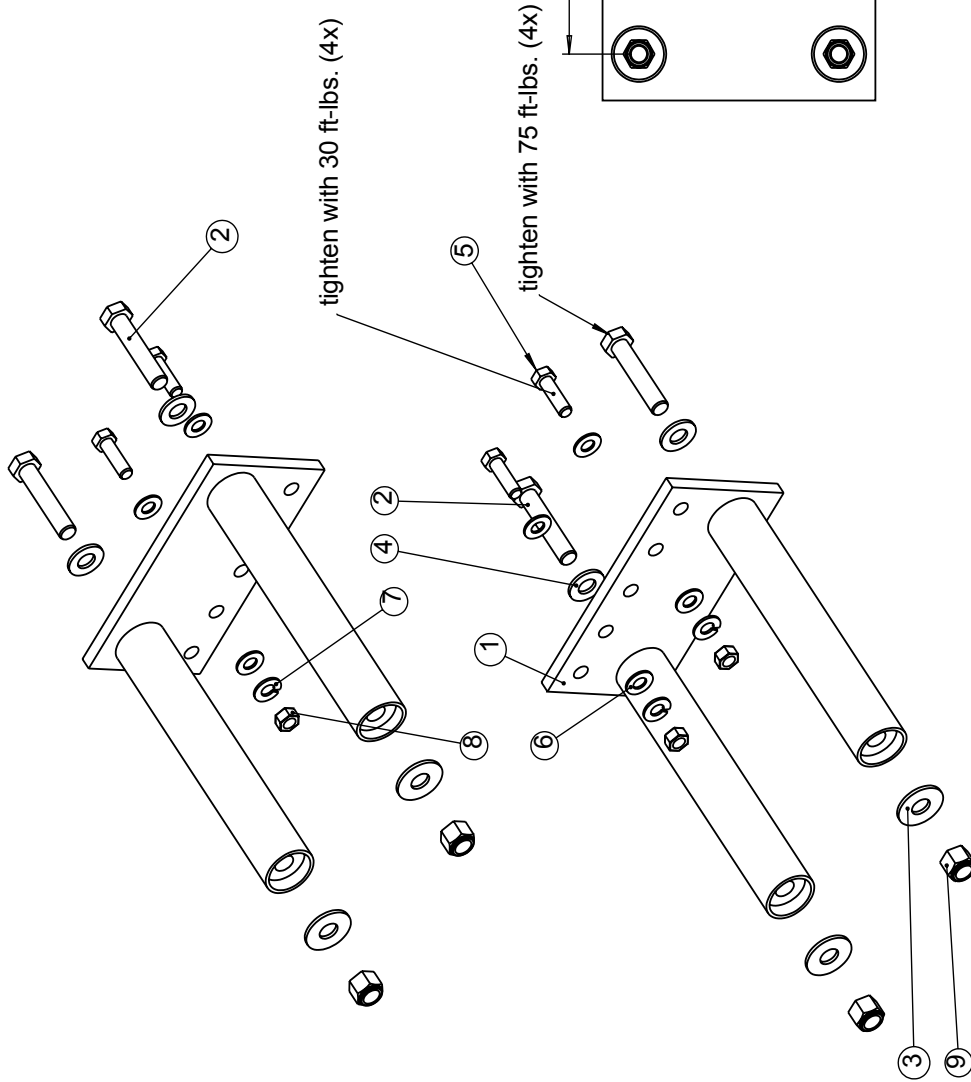
Tolerances
Project
Material
Treatment




Name	DWG NO.	DATE	Drawn By
DART Bracket Assm.	513D	11/13/08	JW
SIZE	Scale	Status	
A			

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 ALTAIR ENGINEERING. ANY REPRODUCTION IN PART OR WHOLE WITHOUT
 THE WRITTEN PERMISSION OF ALTAIR ENGINEERING IS PROHIBITED.

ITEM NO.	PART NUMBER	Revision	DESCRIPTION	QTY.
1	INV-067-538	AA-011	attachment bracket assy	2
2	INV-067-517	AA-004	bolt 1/2" - 13 x 2.5" Grade 5	4
3	INV-067-526	AA-005	washer 1/2" USS Flat	4
4	INV067-B030-AC	AA-006	SAE 1/2" flat washer	4
5	INV-067-521	AA-005	bolt 3/8" - 16 x 1.5" Grade 5	4
6	INV-067-520	AA-005	washer 3/8" SAE Flat	8
7	INV-067-514	AA-005	washer 3/8" split lock 18-8	4
8	INV-067-515	AA-006	nut 3/8" - 16 grade 5	4
9	INV067-B031-AC	AA-007	lock nut 1/2" - 13 grade 5	4



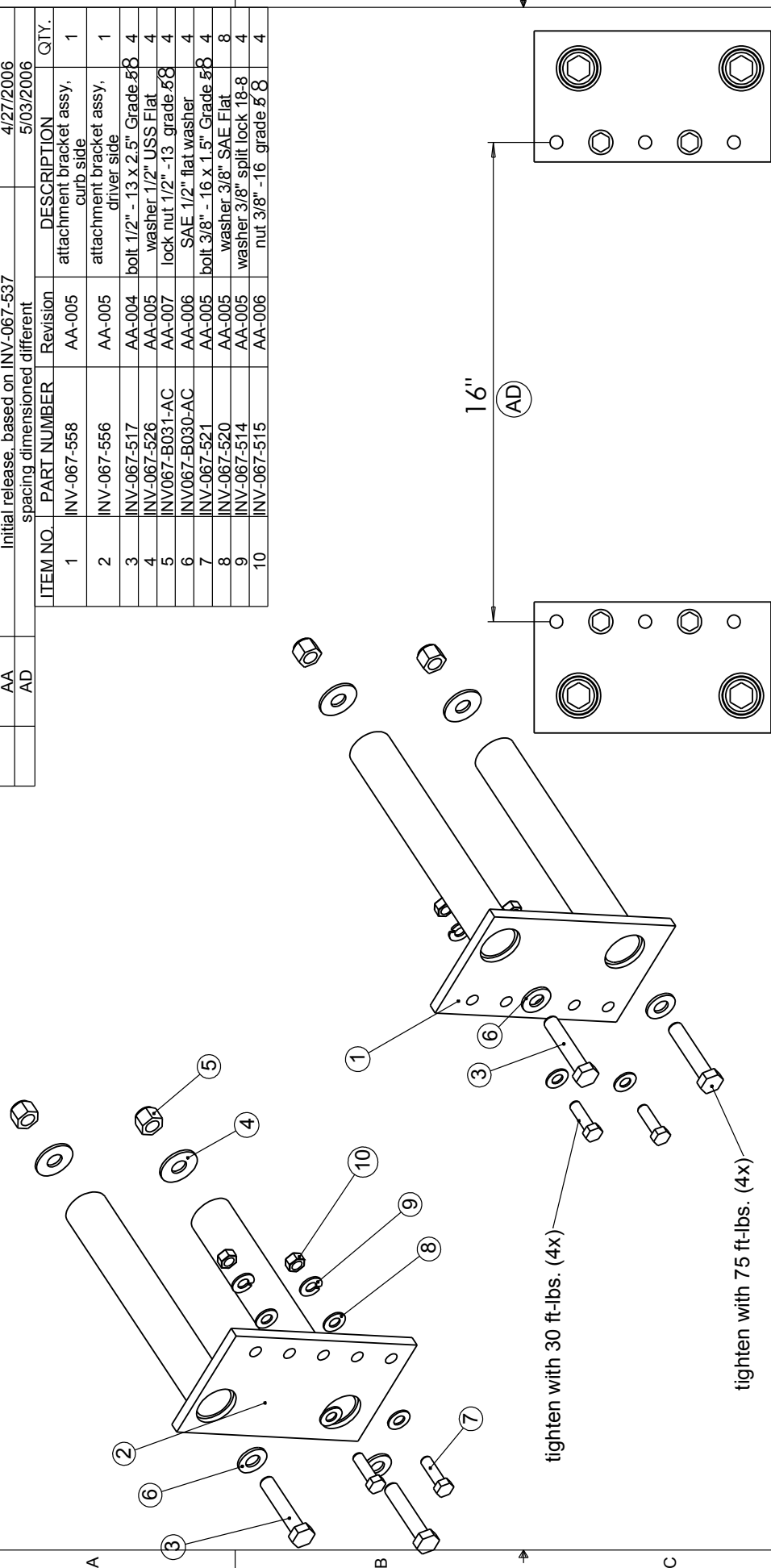
Confidential
 patents pending

Dimensions are in inch unless otherwise specified	CAD Generated Drawing, Do Not Manually Update	Notes for New Flyer low floor
	Do Not Scale Drawing	Description bracket ass'y for New Flyer
Tolerances:	Status:	Name bracket ass'y
Material:	Project: Attachment Bracket Systems	Size A
Treatment:	Standard:	Scale 1:10
		Rev. Seq. AA-018
		Sheet 1 of 1
Printed: Thursday, May 31, 2007		

ZONE	REV.	DESCRIPTION	DATE
	AA	Initial release, based on INV-067-537	4/27/2006
	AD	spacing dimensioned different	5/03/2006

ITEM NO.	PART NUMBER	Revision	DESCRIPTION	QTY.
1	INV-067-558	AA-005	attachment bracket assy, curb side	1
2	INV-067-556	AA-005	attachment bracket assy, driver side	1
3	INV-067-517	AA-004	bolt 1/2" - 13 x 2.5" Grade 5B	4
4	INV-067-526	AA-005	washer 1/2" USS Flat	4
5	INV067-B031-AC	AA-007	lock nut 1/2" - 13 grade 5B	4
6	INV067-B030-AC	AA-006	SAE 1/2" flat washer	4
7	INV-067-521	AA-005	bolt 3/8" - 16 x 1.5" Grade 5B	4
8	INV-067-520	AA-005	washer 3/8" SAE Flat	8
9	INV-067-514	AA-005	washer 3/8" split lock 18-8	4
10	INV-067-515	AA-006	nut 3/8" - 16 grade 5B	4

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tighten with 30 ft-lbs. (4x)

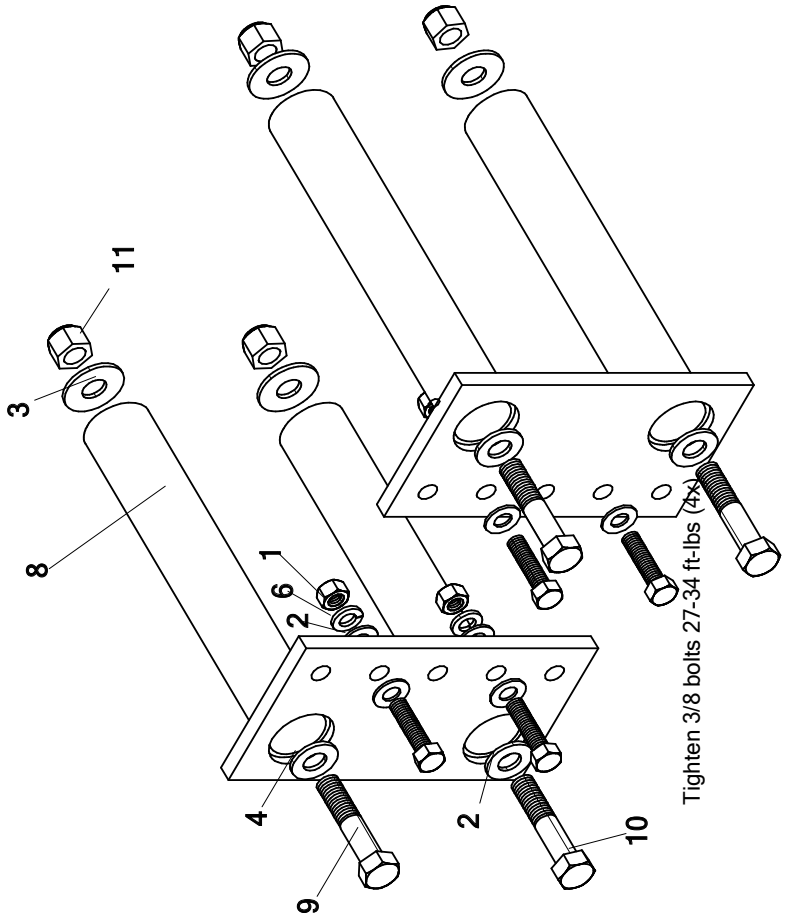
tighten with 75 ft-lbs. (4x)

Confidential
patents pending

Dimensions are in inch unless otherwise specified	CAD Generated Drawing, Do Not Manually Update	Notes for New Flyer, low floor
Tolerances:	Do Not Scale Drawing	Description bracket assy for New Flyer
Material:	Status:	Name bracket ass'y
Treatment:	Project: Attachment Bracket Systems	Size A
	Standard:	Scale 1:10
		CAD File INV-067-557
		Rev. Seq. AD-003
		Sheet 1 of 1
		Printed: Thursday, May 31, 2007




REVISIONS		DATE	APPROVED
ZONE	DESCRIPTION	9/26/2011	KDP
REV A	Initial Release		



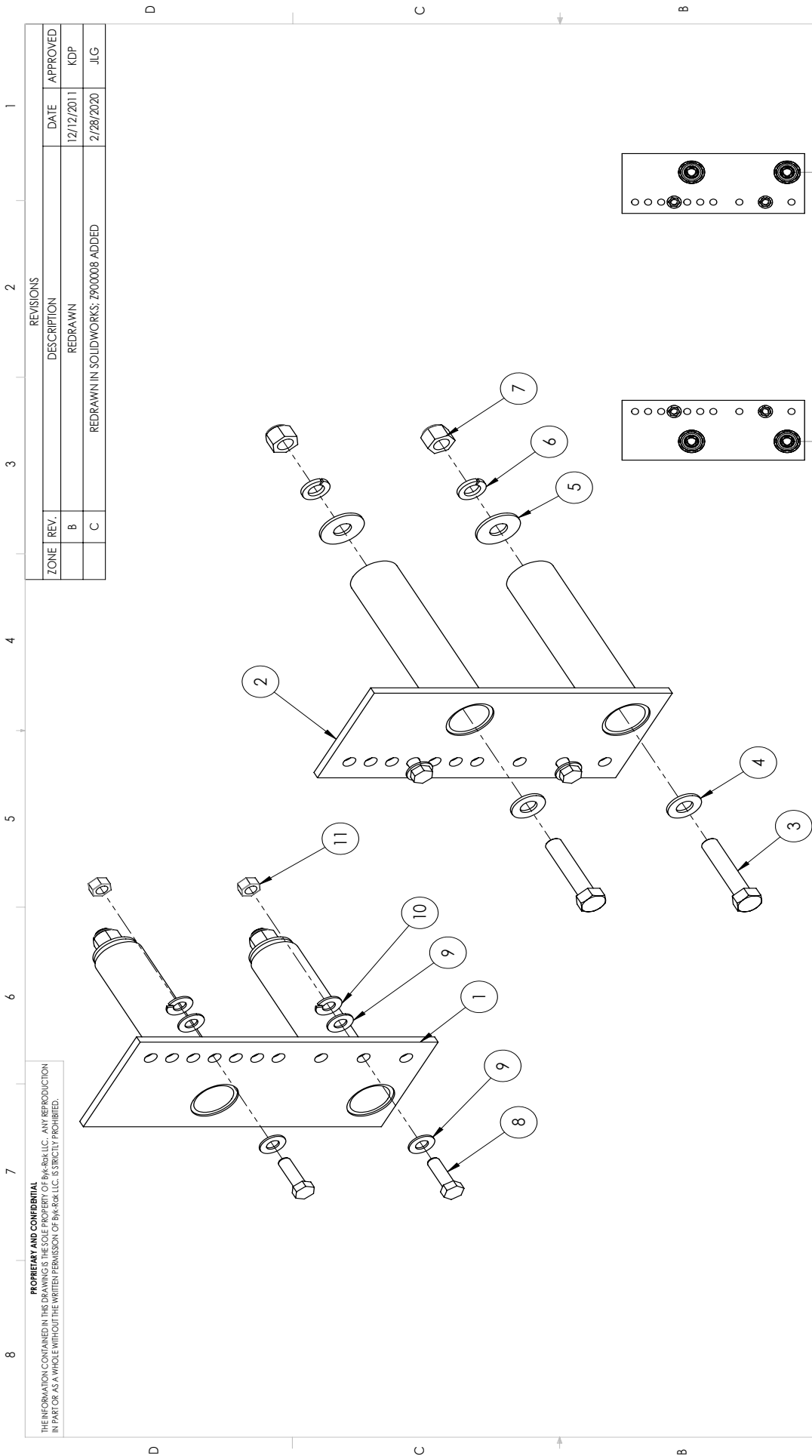
Item #	Qty	Part Number	Part Name
1	0	Z900010	Hex nut 3/8"-16 grade 5
2	0	Z900012	Washer 3/8" SAE flat
3	4	B030-AC	SAE 1/2" flat
4	4	Z900007	Washer 1/2" USS flat
6	0	Z900011	Washer 3/8" Lock
8	2	B809	Brkt Attachment Asy
9	4	Z900005	Bolt .5 -13 x 2.5
10	0	Z900009	Bolt 3/8"-16x1.5" Grade 5
11	4	B031-AC	Lock Nut 1/2"-13 grade 5

Tighten 3/8 bolts 27-34 ft-lbs (4x)

Tighten 1/2" bolts 72-78 ft-lbs (4)



Bracket Assy. Kit		DWG NO.	811
SIZE	Scale	Sheet	DATE
A			9/26/11
			Drawn By
			KDP



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	790	BRKT, 6.75" STREET SIDE	1
2	789	BRKT, 6.75" CURB SIDE	1
3	Z900005	BOLT, 1/2"-13 X 2-1/2"	4
4	B030AC	WASHER-FLAT SAE 1/2" ID, 1-1/16" OD	4
5	Z900007	WASHER 1/2" USS FLAT	4
6	Z900008	1/2" LOCK WASHER	4
7	B031AC	NUT-LOCK, NYLON 1/2"-13 GR 8	4
8	Z900009	BOLT 3/8" - 16 x 1.5" GRADE 5	4
9	Z900012	WASHER 3/8" SAE FLAT	8
10	Z900011	WASHER 3/8" SPLIT LOCK 18-8	4
11	Z900010	NUT, 3/8"-16 GRADE 5	4

Byk-Rak™

TITLE: KIT, BRT MTG 6.75"

NAME	DATE
KDP	12/12/2011

UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 TOLERANCES:
 FRACTIONAL: 1/16
 ANGULAR: MACH: 1° BEND: ± 2°
 ONE PLACE DECIMAL: ± .06
 TWO PLACE DECIMAL: ± .03
 THREE PLACE DECIMAL: ± .01

DRAWN: []
 CHECKED: []
 ENG. APPR.: []
 MFG. APPR.: []
 Q.A.: []
 COMMENTS: []

MATERIAL: See Part BOM
 FINISH: SEE PRT BOM
 DO NOT SCALE DRAWING

SIZE DWG. NO. **B** 794 REV **C**
 SCALE: 1:3 WEIGHT: 10.08 SHEET 1 OF 1

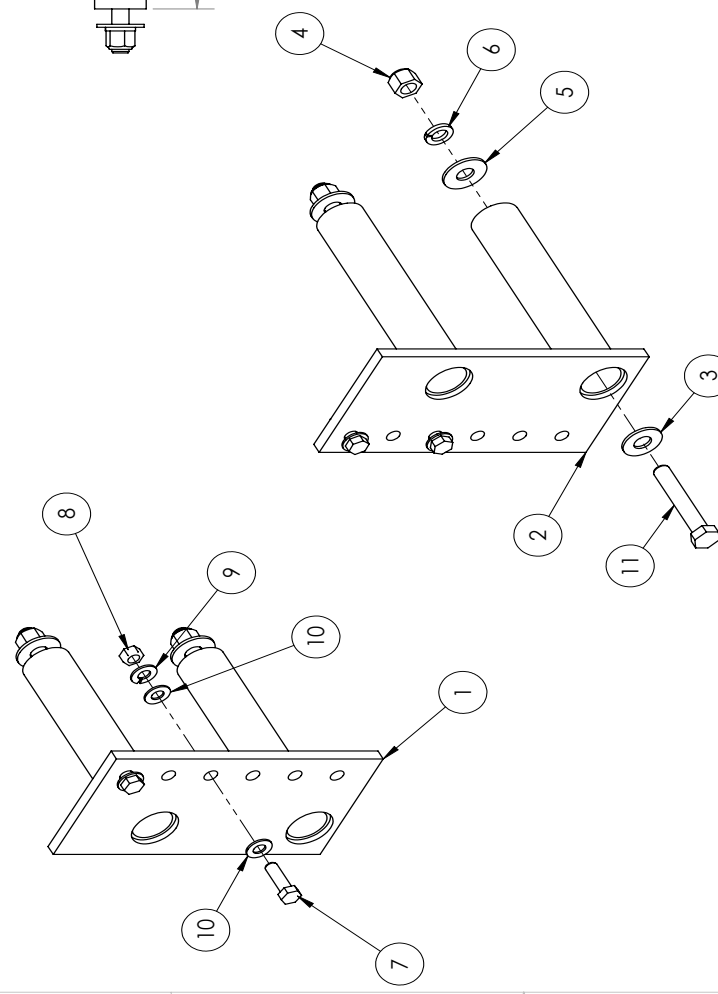
PROPRIETARY AND CONFIDENTIAL
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 IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF BYK-RAK LLC IS STRICTLY PROHIBITED.

8 7 6 5 4 3 2 1

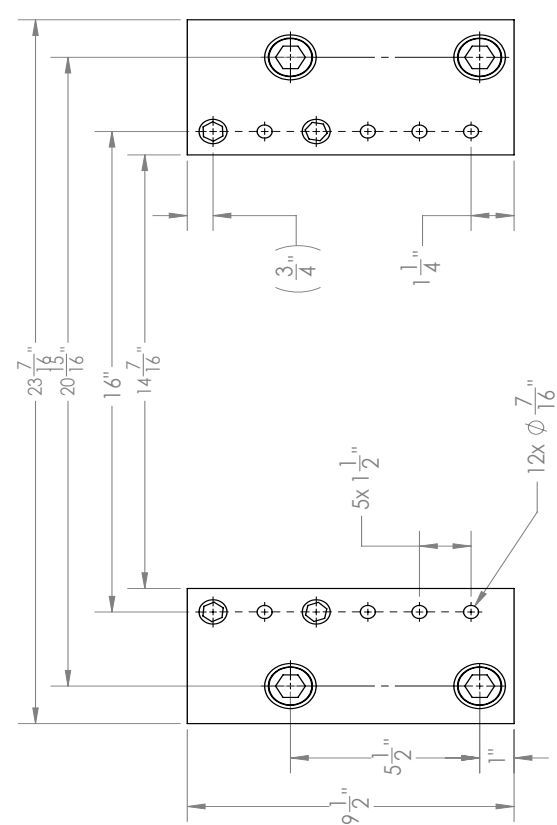
PROPRIETARY AND CONFIDENTIAL
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 IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF BYK-RAK LLC, IS STRICTLY PROHIBITED.

REV.	DESCRIPTION	DATE	APPROVED
A	RELEASE FOR MANUFACTURE	2017-04-22	JAMEY KOHORST
B	WAS A SIZE UPDATED ASSEMBLY TO CURRENT BOM: Z900007 & Z900008 ADDED	3/20/2020	JLG

D C B A



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	598	BRKT ASY-CURB SIDE ATT	1
2	599	BRKT ASY-DRIVERS SIDE	1
3	B030-AC	SAE 1/2" FLAT WASHER	4
4	B031-AC	NUT-LOCK, NYLON 1/2"-13 GR 8 YZ	4
5	Z900007	WASHER 1/2" USS FLAT YZ	4
6	Z900008	1/2" LOCK WASHER	4
7	Z900009	BOLT 3/8" - 16 x 1.5" GRADE 5	4
8	Z900010	NUT, 3/8"-16 GRADE 5	4
9	Z900011	WASHER 3/8" SPLIT LOCK 18-8	4
10	Z900012	WASHER 3/8" SAE FLAT	8
11	Z900015	bolt 1/2" - 13 x 3" Grade 5	4



Byk-Rak™

TITLE:
BRACKET ASSEMBLY 7.75" L

NAME	DATE
JJK	2017-4-22

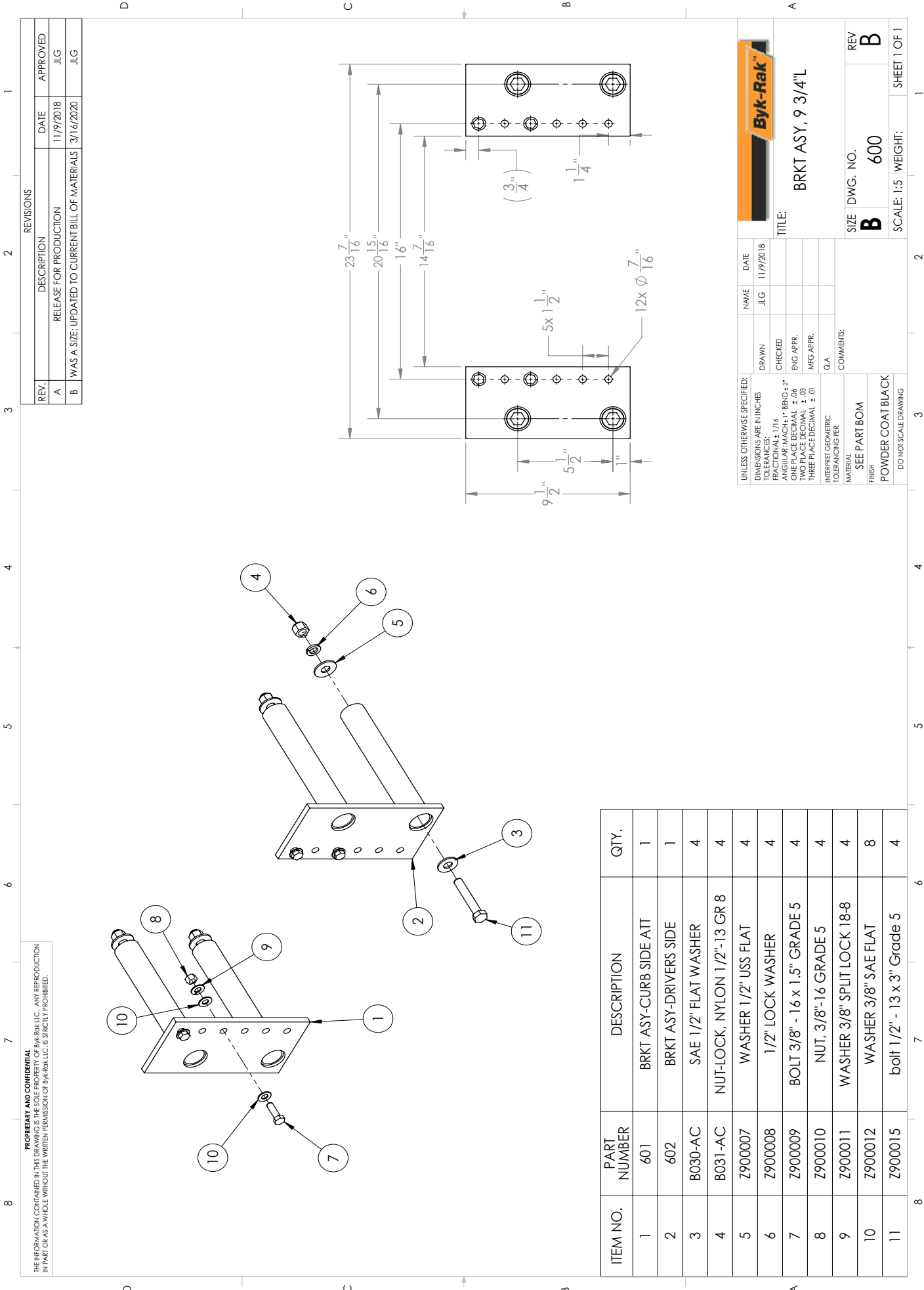
UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 TOLERANCES: FRACTIONS: 1/16
 DECIMALS: 0.005
 ANGULAR: 1/4 CHG * BRND, ± 1°
 ONE PLACE DECIMAL: ± 0.04
 TWO PLACE DECIMAL: ± 0.03
 THREE PLACE DECIMAL: ± 0.01

INTERPRET GEOMETRIC TOLERANCING PER:
 MATERIAL: MILD STEEL
 FINISH: POWDER COAT BLACK
 DO NOT SCALE DRAWING

COMMENTS:

SIZE DWG. NO. **B 597** REV **B**

SCALE: 1:4 WEIGHT: SHEET 1 OF 1



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REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	RELEASE FOR PRODUCTION	11/9/2018	JLG
B	WAS A SIZE, UPDATED TO CURRENT BILL OF MATERIALS	3/16/2020	JLG

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	601	BRKT ASY-CURB SIDE ATT	1
2	602	BRKT ASY-DRIVERS SIDE	1
3	B030-AC	SAE 1/2" FLAT WASHER	4
4	B031-AC	NUT-LOCK, NYLON 1/2"-13 GR 8	4
5	Z900007	WASHER 1/2" USS FLAT	4
6	Z900008	1/2" LOCK WASHER	4
7	Z900009	BOLT 3/8" - 16 x 1.5" GRADE 5	4
8	Z900010	NUT, 3/8"-16 GRADE 5	4
9	Z900011	WASHER 3/8" SPLIT LOCK 18-8	4
10	Z900012	WASHER 3/8" SAE FLAT	8
11	Z900015	bolt 1/2" - 13 x 3" Grade 5	4

Byk-Rak

NAME: JLG DATE: 11/9/2018

DRAWN: CHECKED: BNG APFR. MFG APFR. Q.A. COMMENTS:

TITLE: BRKT ASY, 9 3/4" L

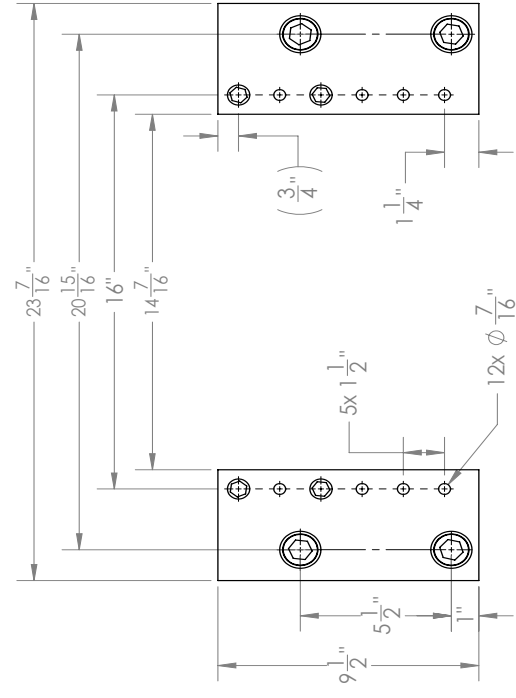
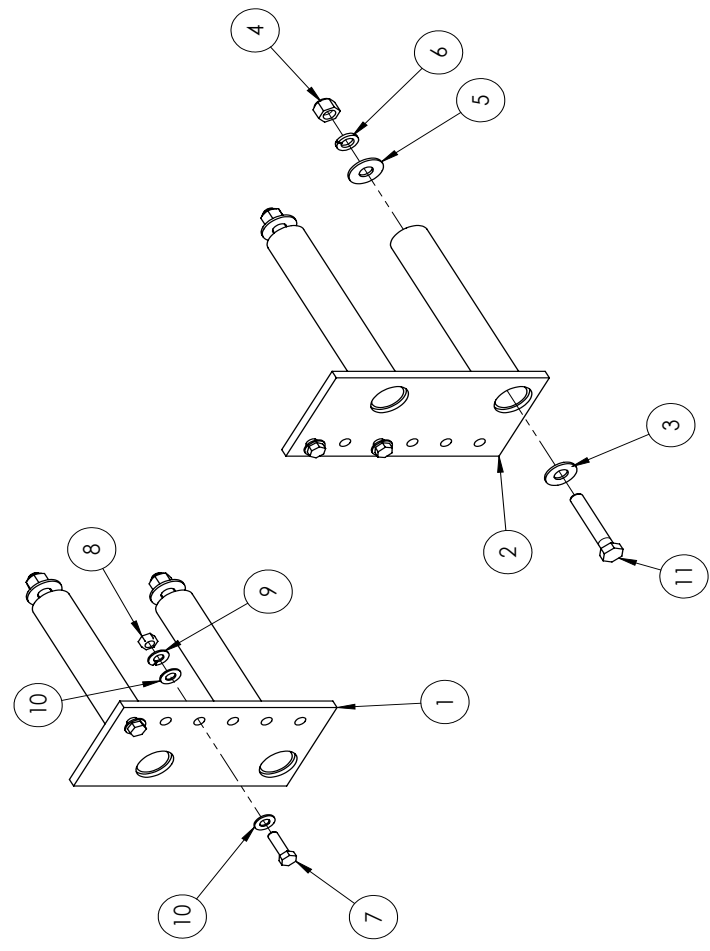
SIZE: DWG. NO. **B** 600 REV **B**

SCALE: 1:5 WEIGHT: SHEET 1 OF 1

UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 TOLERANCES:
 FRACTIONAL: 1/16
 ANGULAR: MACH: 1° BEND: ± 2°
 ONE PLACE DECIMAL: ± .06
 TWO PLACE DECIMAL: ± .03
 THREE PLACE DECIMAL: ± .01
 INTERPRET GEOMETRIC TOLERANCING PER:
 MATERIAL:
 SEE PART BOM
 FINISH:
 POWDER COAT BLACK
 DO NOT SCALE DRAWING

PROPRIETARY AND CONFIDENTIAL
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REVISIONS		DATE	APPROVED
REV.	DESCRIPTION		
A	RELEASE FOR PRODUCTION	3/13/2020	JIG



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	621	BRKT ASY-CURB SIDE ATT	1
2	622	BRKT ASY-DRIVERS SIDE	1
3	B030-AC	SAE 1/2" FLAT WASHER	4
4	B031-AC	NUT-LOCK, NYLON 1/2"-13 GR 8	4
5	Z900007	WASHER 1/2" USS FLAT	4
6	Z900008	1/2" LOCK WASHER	4
7	Z900009	BOLT 3/8" - 16 x 1.5" GRADE 5	4
8	Z900010	NUT, 3/8"-16 GRADE 5	4
9	Z900011	WASHER 3/8" SPLIT LOCK 18-8	4
10	Z900012	WASHER 3/8" SAE FLAT	8
11	Z900015	bolt 1/2" - 13 x 3" Grade 5	4

Byk-Rak™

TITLE: BRKT ASSY, 9 1/4" L

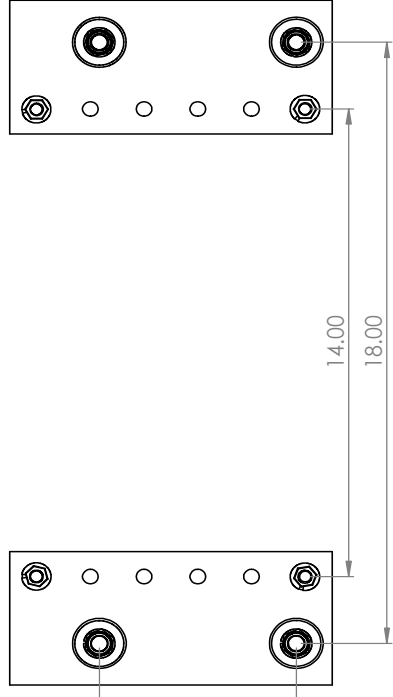
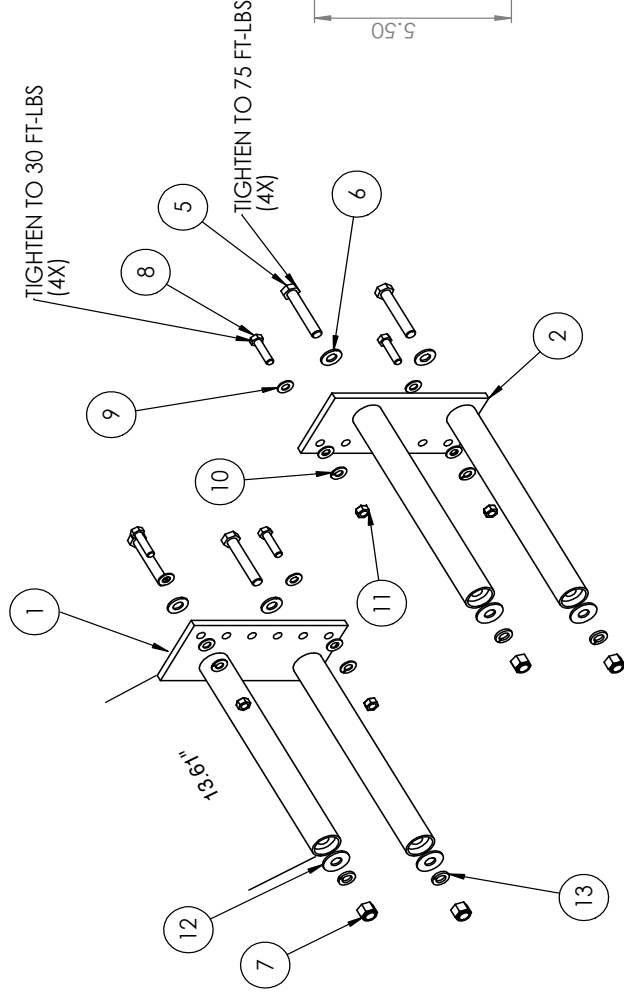
UNLESS OTHERWISE SPECIFIED:	NAME	DATE
DIMENSIONS ARE IN INCHES	JIG	3/13/2020
TOLERANCES:	DRAWN	CHECKED
FRACTIONS: 1/16		
ANGULAR: MACH ± BEND ± 2°		
ONE PLACE DECIMAL ± .06	ENG APPR.	
TWO PLACE DECIMAL ± .03	MFG APPR.	
THREE PLACE DECIMAL ± .01	Q.A.	
INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:	
MATERIAL:	SEE PART BOM	
FINISH:	POWDER COAT BLACK	
DO NOT SCALE DRAWING		

SIZE DWG. NO. **B** 620 REV **A**

SCALE: 1:5 WEIGHT: SHEET 1 OF 1

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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	626	CURB SIDE ASSEMBLY	1
2	627	STREET SIDE ASSEMBLY	1
5	Z900015	bolt 1/2" - 13 x 3" Grade 5	4
6	B030AC	SAE 1/2" flat washer	4
7	B031-AC	Nut - Lock	4
8	Z900009	bolt 3/8" - 16 x 1.5" Grade 8	4
9	Z900012	washer 3/8" SAE Flat	8
10	Z900011	washer 3/8" split lock 18-8	4
11	Z900010	nut 3/8" - 16 grade 5	4
12	Z900007	washer 1/2" USS Flat	4
13	Z900008	1/2" LOCK WASHER	4



UNLESS OTHERWISE SPECIFIED:	DRAWN	CHECKED	NAME	DATE
DIMENSIONS ARE IN INCHES	RLC	RLC	RLC	10-4-21
FRACTIONAL ± 1/16				
ANGULAR: MACH ± .1° BEND ± .2°				
ONE PLACE DECIMAL ± .04				
TWO PLACE DECIMAL ± .03				
THREE PLACE DECIMAL ± .01				
INTERPRET GEOMETRIC TOLERANCING PER:				
MATERIAL:				
FINISH:				
DO NOT SCALE DRAWING				

Byk-Rak™

TITLE:

SIZE DWG. NO. REV
B 625 B

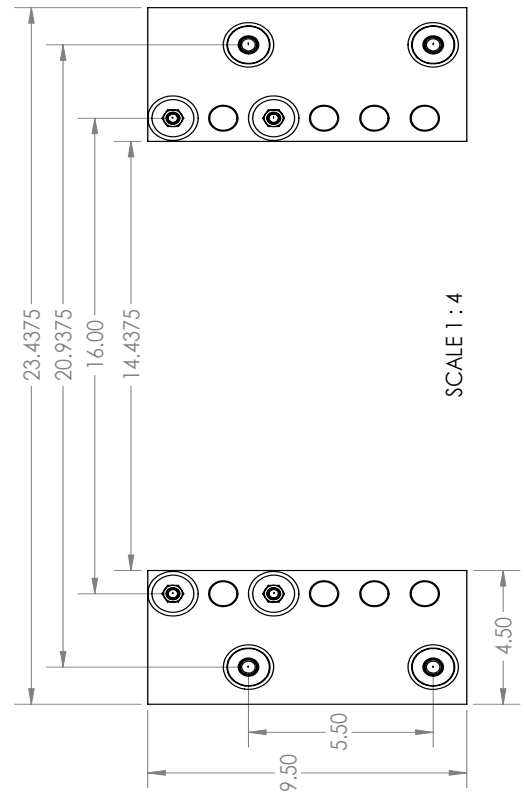
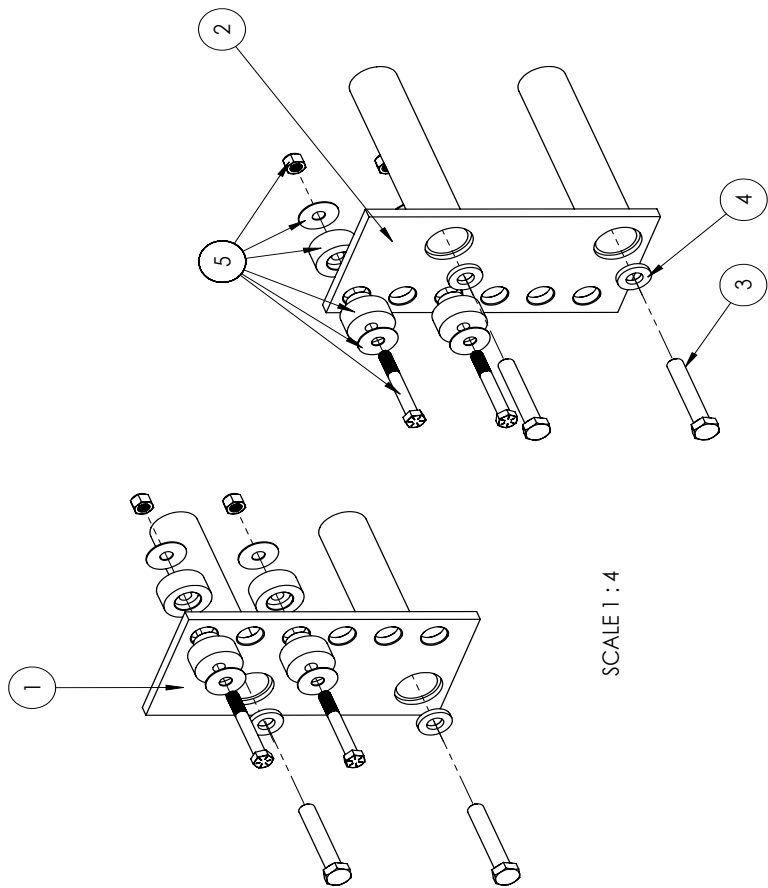
SCALE: 1:10 WEIGHT: SHEET 1 OF 1

8 7 6 5 4 3 2 1

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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	RE-RELEASE UNDER NEW NUMBER	4/18/2018	JLG
	B	Z900015 WAS Z900046	8/6/2018	JLG

Item #	Part #	Description	Qty.
1	B701	BRKT ASY-CURB SIDE ATT W/ ISOLATOR	1
2	B702	BRKT ASY-DRIVERS SIDE W/ ISOLATOR	1
3	Z900015	BOLT 1/2"-13 X 3" GRADE 5	4
4	B030-AC	WASHER, FLAT SAE 1/2" ID, 1-1/16" OD	4
5	Z900180	ISOLATOR KIT	1



UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES		AD	3/24/18
TOLERANCES:		DRAWN	CHECKED
FRACTIONAL: 1/16		ENG APPR.	MFG APPR.
ANGULAR: MACH: 1° BEND: 2°		G.A.	
HOLE POSITION: ± .01		COMMENTS:	
TWO PLACE DECIMAL: ± .02		MATERIAL:	
THREE PLACE DECIMAL: ± .01		FINISH:	
INTERPRET GEOMETRIC TOLERANCING PER:		SEE PART BOM	
SCALE: 1:1		WEIGHT:	

Byk-Rak

TITLE:
 BRKT ASY-NEW FLYER, W ISOLATOR

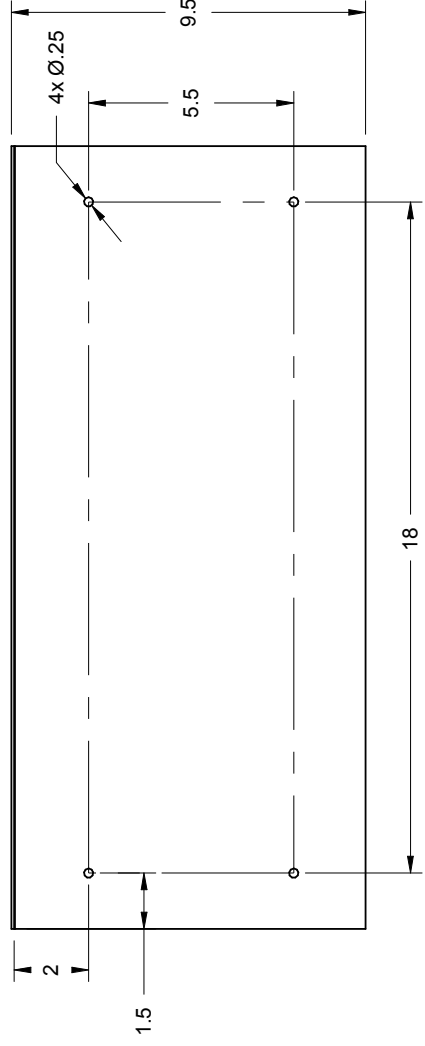
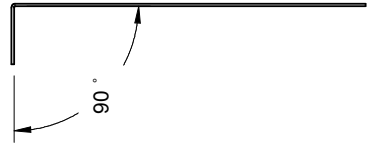
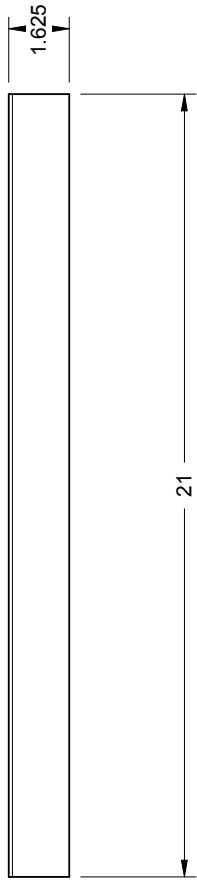
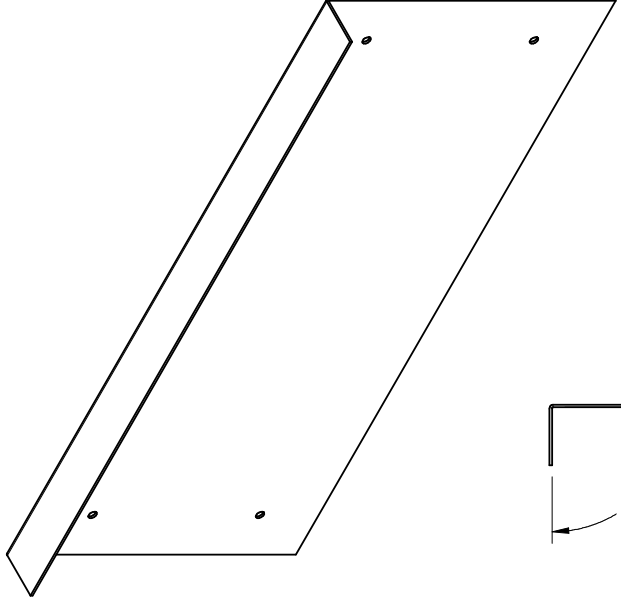
SIZE DWG. NO. REV
B B700 **B**

SHEET 1 OF 1

8 7 6 5 4 3 2 1



REVISIONS			
ZONE	REV	DATE	APPROVED
	AA	08/12/09	



Tolerances
 .031" unless otherwise noted
 and +/- 2 Deg. on angles

Material
 18 gauge 3003 Aluminum

Treatment/Finish
 Stock

Note: Break all edges and corners .005 min



Name	DWG NO.	Drawn By
538 Bracket Template	Z900073	JW
SIZE	DATE	
A	08/12/09	
Scale	Sheet	Status

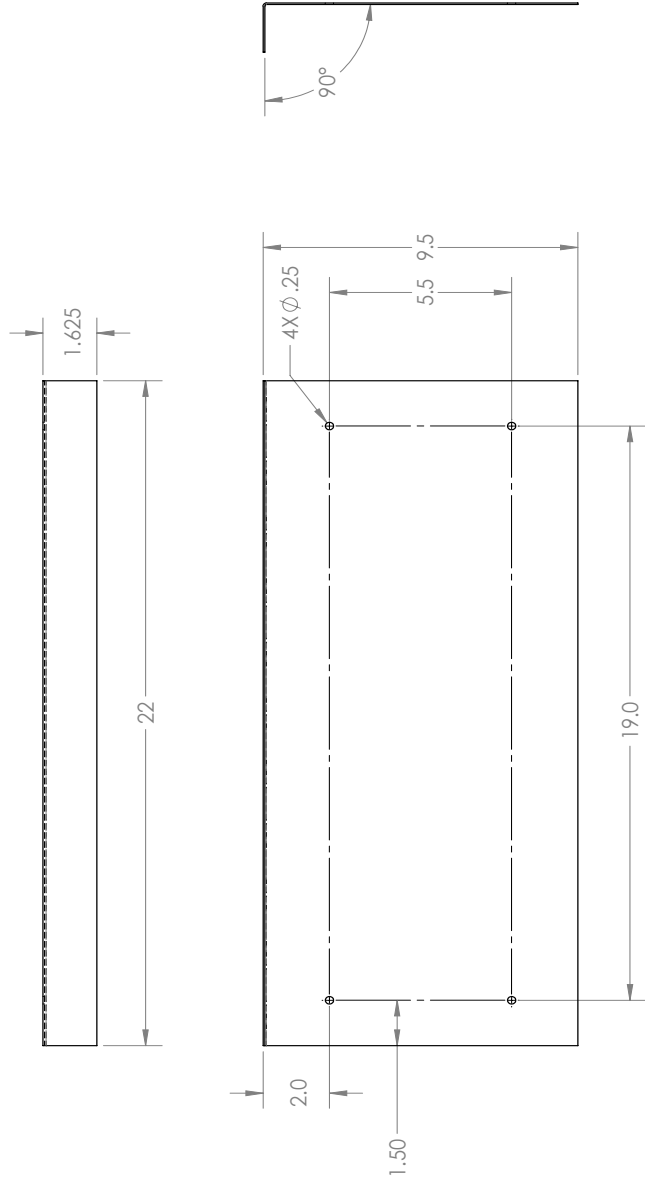


8 7 6 5 4 3 2 1

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ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		INITIAL RELEASE	10/29/19	JLG

D C B A



UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	JLG	10/29/2019
DECIMALS	CHECKED		
FRACTIONAL	ENG APPR.		
ANGULAR	MFG APPR.		
ONE PLACE DECIMAL	Q.A.		
TWO PLACE DECIMAL	COMMENTS:		
THREE PLACE DECIMAL	MATERIAL		
	FINISH		
	DO NOT SCALE DRAWING		

Byk-Rak™

TITLE:
597 BRACKET TEMPLATE

SIZE DWG. NO. REV
B Z900235 A

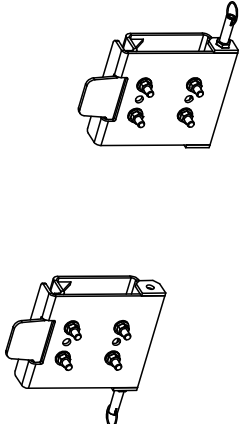
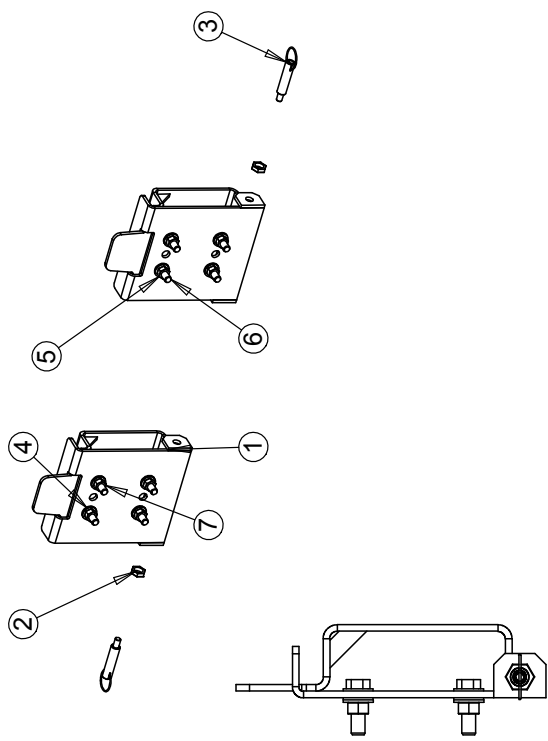
SCALE: 1:4 WEIGHT: 198.90 SHEET 1 OF 2

8 7 6 5 4 3 2 1

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ZONE	REV.	DESCRIPTION	DATE
AA	AA	initial release	7/20/2006
AB	AB	Brackets Updated & Added Mtg Fasteners	04/22/08
C	C	3/8" bolt 1.25" wqs 1.5". Hardware part numbers changed	5-3-12

ITEM NO.	PART NUMBER	Revision	DESCRIPTION	QTY.
1	INV-067-561	AB-003	quick release mechanism	2
2	INV-067-567	AA-002	jam nut 1/2" - 13 grade 5 zinc plate	2
3	INV-067-566	AA-005	Pin - Quick Release	2
4	Z900012	A	washer 3/8" SAE Flat	16
5	Z900011	A	washer 3/8" split lock 18-8	8
6	Z900088	A	bolt 3/8" - 16 x 1.25" Grade 8	8
7	Z900010	A	nut 3/8" - 16 grade 8	8



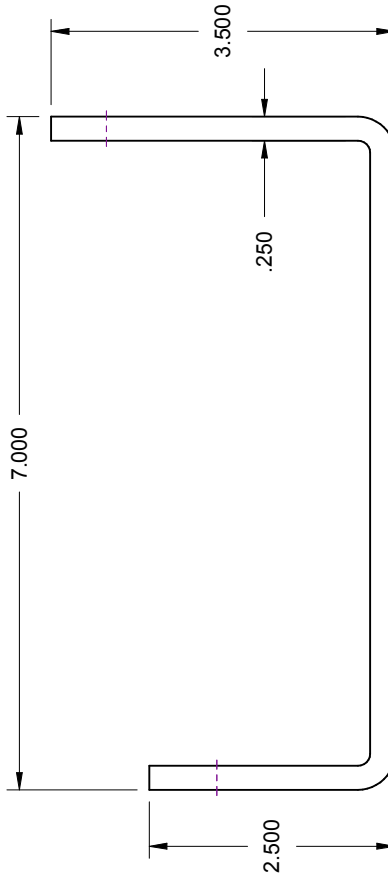
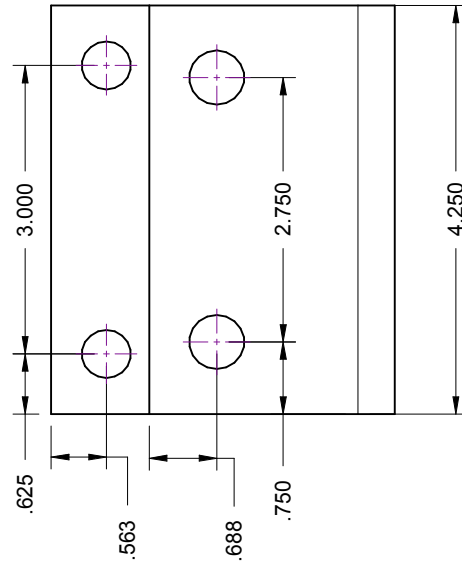
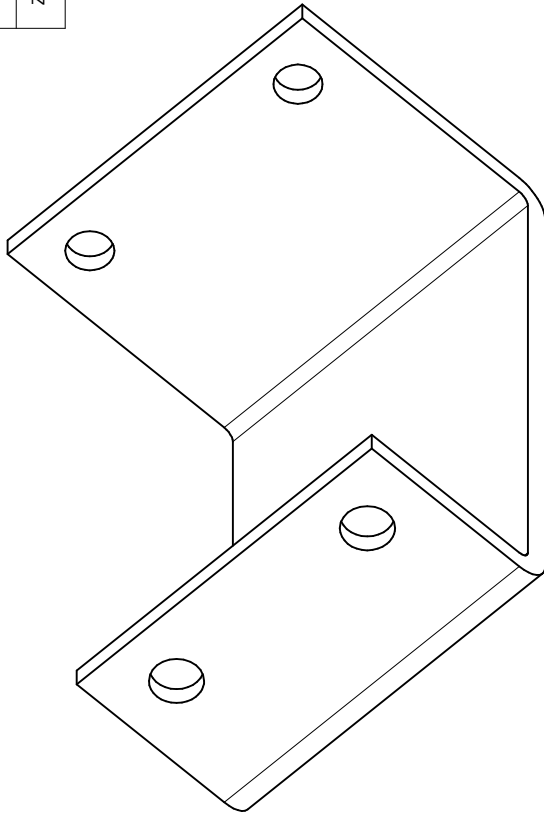
Dimensions are in inches unless otherwise specified	CAD Generated Drawing, Do Not Manually Update	Notes
Tolerances:	Do Not Scale Drawing	Description quick release complete
Material:	Status:	Name Quick release
Treatment:	Project: Attachment Bracket Systems	Size A
	Msgs: \$PRP-12.2	Dwg. No. INV-067-560
		Scale 1:5
		Printed: Thursday, May 03, 2012
		Part Seq. C
		Dwg. Seq. C
		Sheet 1 of 1

Confidential
patents pending





REVISIONS			
ZONE	REV	DESCRIPTION	DATE
	AA		11/4/09
			APPROVED

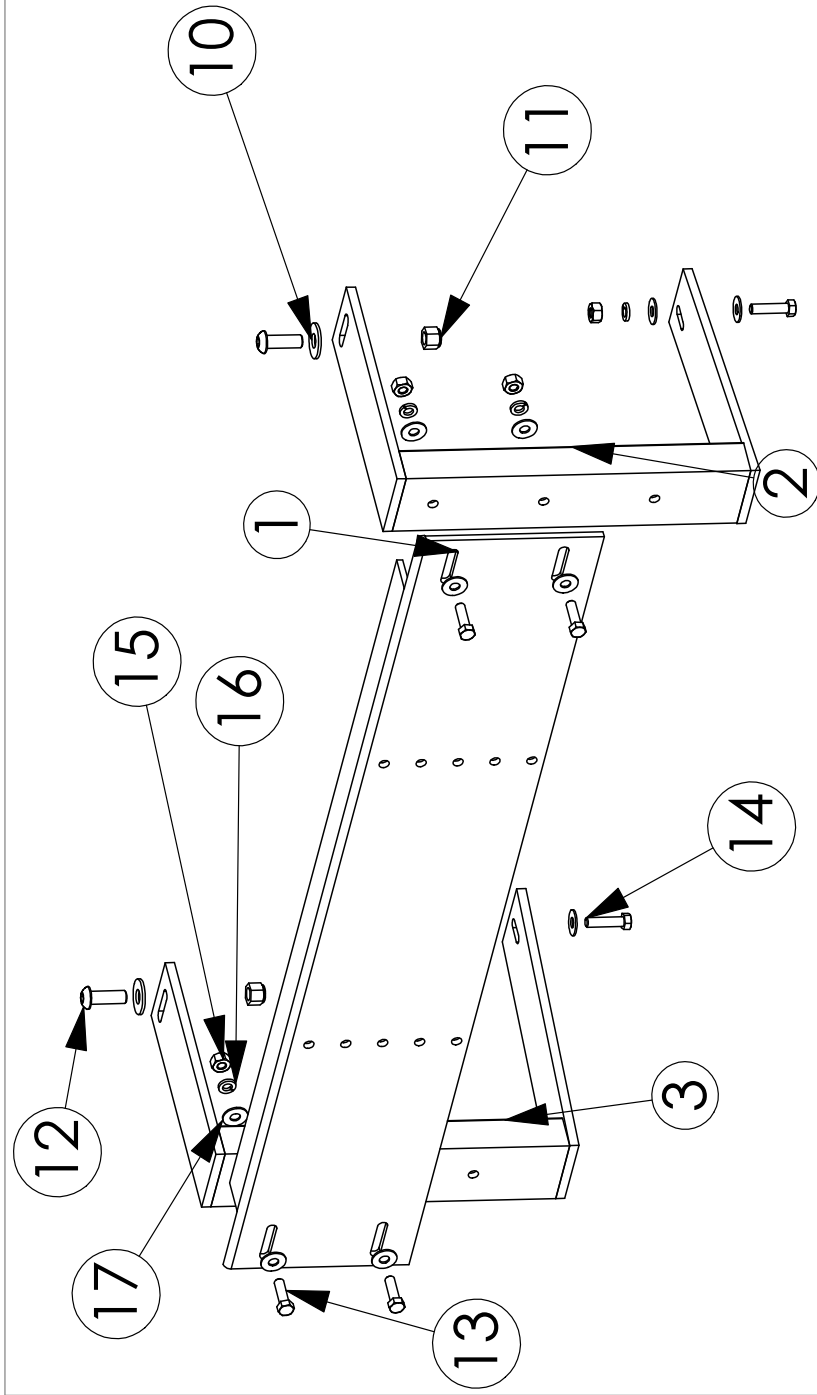


Tolerances	+/- .0313" +/- 2 deg.
Project	
Material	Mild Steel
Treatment	Pwdr Ct Blk



Name	726 Bracket	DWG NO.	726
Scale	1:2	Status	
Sheet		DATE	11/4/09
Drawn By	JW		





ITEM #	PART #	DESCRIPTION	QTY.
1	761	Brkt Center	1
2	762	Brkt Mounting Rt	1
3	763	Brkt Mounting Lt	1
10	Z900007	Washer- 1/2" USS Flat	2
11	B031-AC	Nut - Lock	2
12	Z900091	SBHCSCREW 0.5-13x1.5-HX-N SS	2
13	Z900038	HBolt .375-16x1.25	4
14	Z900009	HBOLT 0.3750-16x1.5x1.5-N	2
15	Z900010	HHNUT 0.3750-16-D-N	6
16	Z900011	Heavy LW 0.375	6
17	Z900012	Regular FW 0.375	12

Byk-Rak™

EXPLODED ASM KIT FREIGHTLINER M2

SIZE: **A** DWG. NO.: **760** REV.: **A**
 SCALE: 1:20 WEIGHT:

NAME	DATE
KDP	12-28-11
DRAWN	
CHECKED	
ENG APPR.	
MFG APPR.	
G.A.	
COMMENTS:	

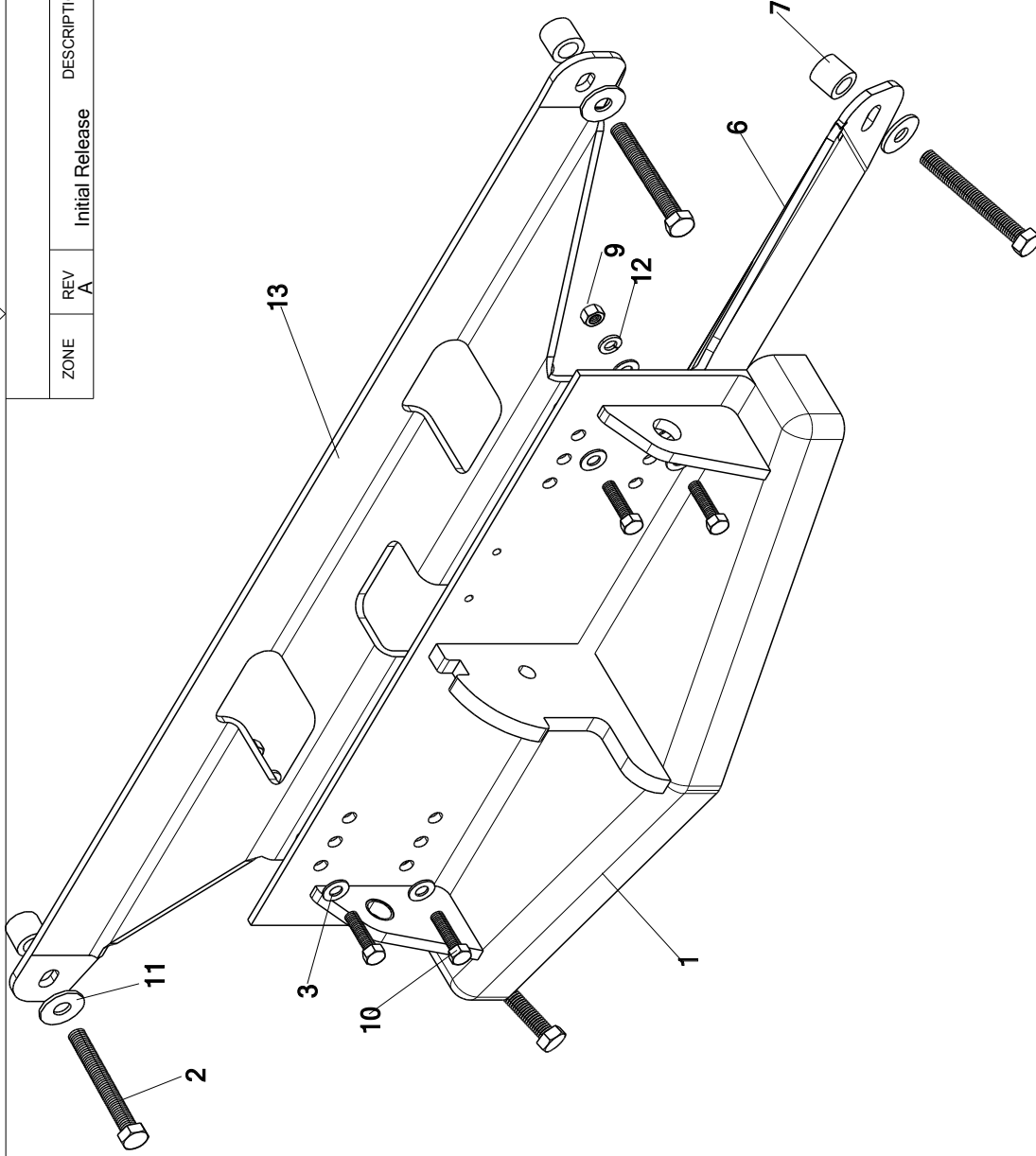
DIMENSIONS ARE IN INCHES	
TOLERANCES:	
FRACTIONAL: ±	
ANGULAR: MACH ± BEND ±	
TWO PLACE DECIMAL ±	
THREE PLACE DECIMAL ±	
MATERIAL:	--
FINISH:	--
DO NOT SCALE DRAWING	

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APPLICATION	USED ON
NEXT ASSY	

REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	Initial Release	9-22-11	KDP



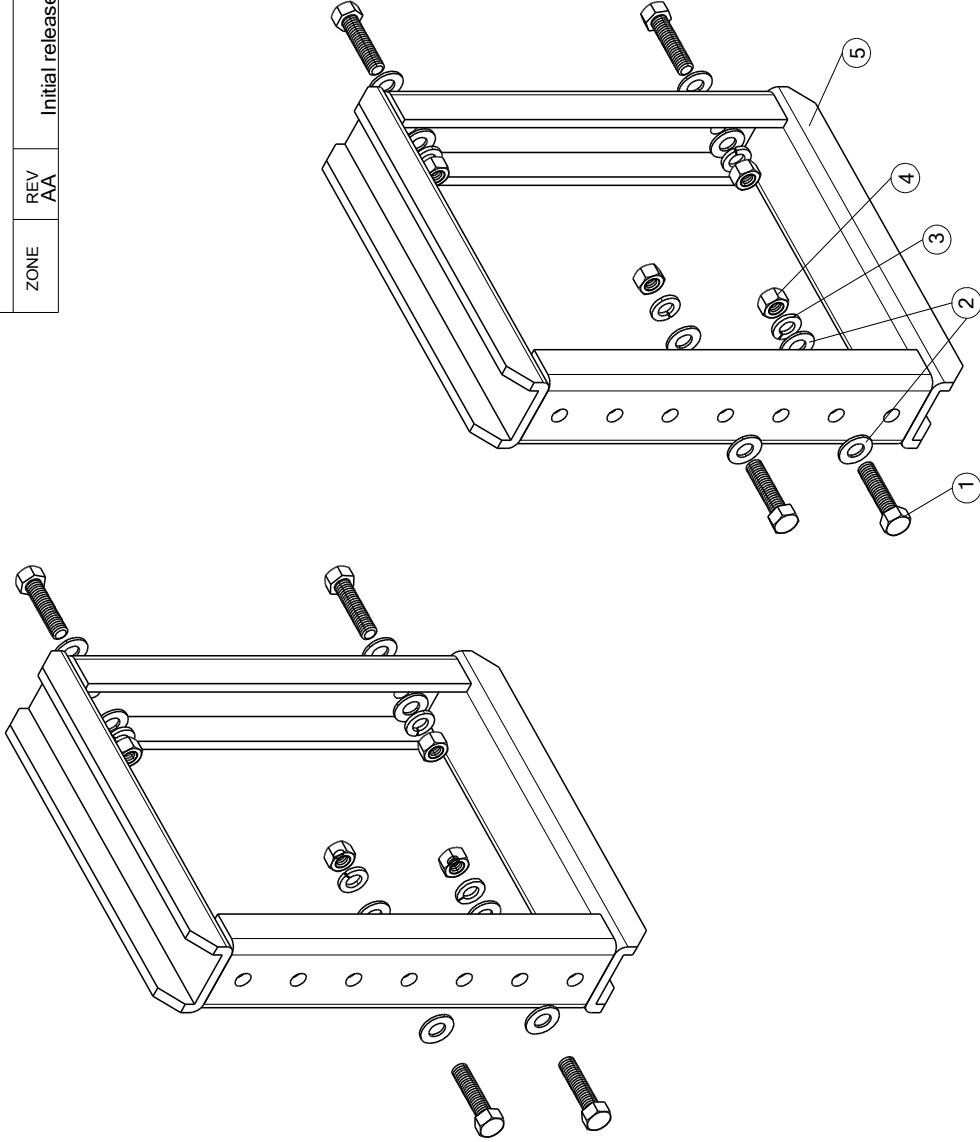
Item #	Qty	Part #	Part Name
1	1	B002-HD	PIVOT BRKT ASM
2	4	Z900109	Bolt M 12-1.75X60MM
3	8	Z900012	FlatWSHR A_~375N
6	1	772	Brkt Lower Mounting
7	4	778	788 Spacer-Mnt Brkt
9	4	Z900010	HEX NUT_~375-16
10	4	Z900009	HEX HD_~375-16
11	4	Z900007	WASHER
12	4	Z900011	LK WSHR~375
13	1	771r	Brkt Upper Mounting



Mounting Kit International		DWG NO.	770 I
SIZE	Scale	Sheet	DATE
A			9-22-11
			Drawn By
			KDP

REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED
	AA	Initial release	9-17-10	KDP



Item	Part #	Description	Qty
1	Z900088	Bolt .375"-16 x 1.25	8
2	Z900012	Washer Flat .375"	24
3	Z900011	Washer Lock .375"	8
4	Z900010	Hex Nut .375"-16	8
5	781	Brkt Mount Asm	2



Brkt Mount Kit Thomas		DWG NO. 782	DATE	Drawn By
SIZE A	Scale	Sheet	9-17-10	KDP

REVISIONS

ZONE

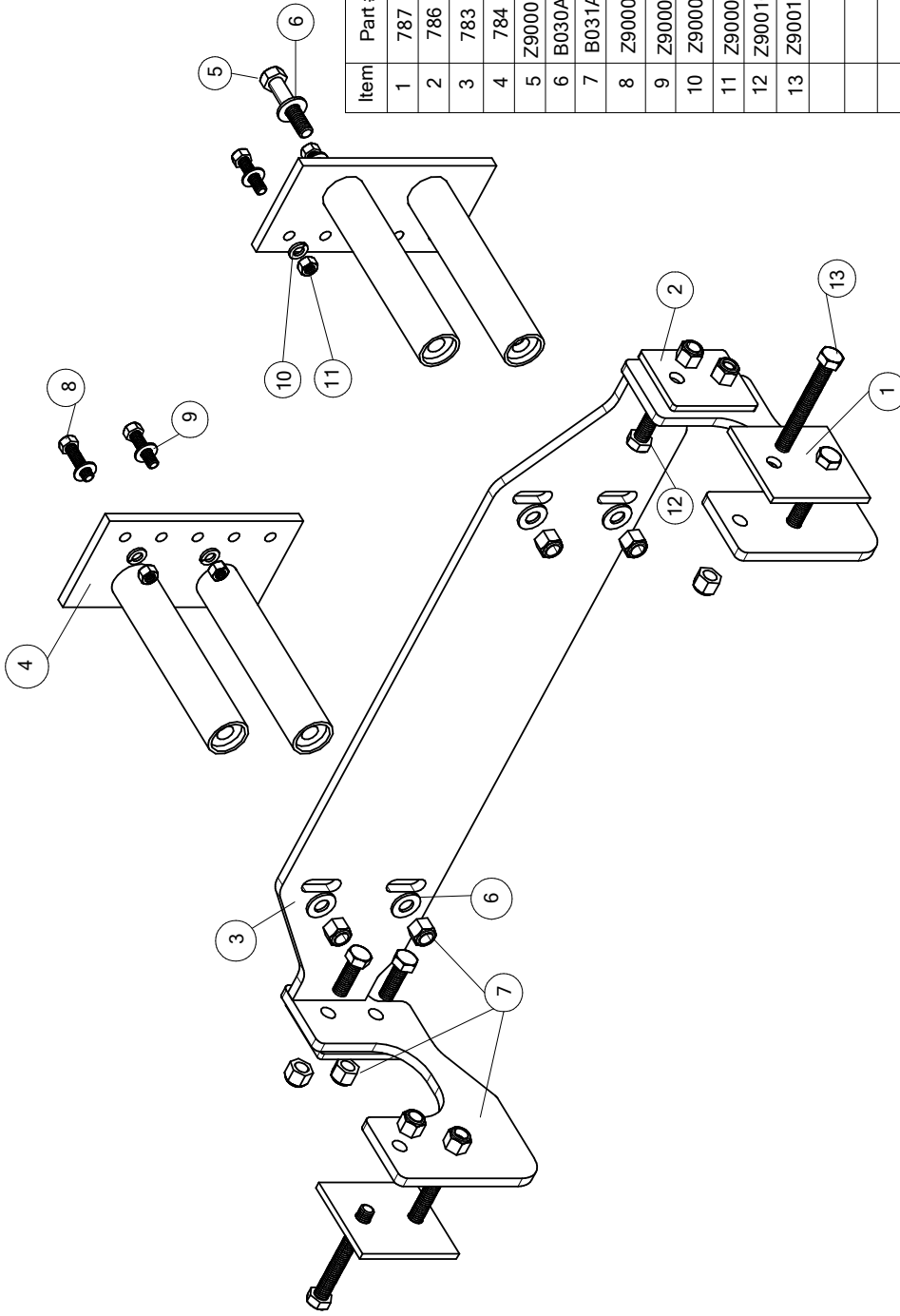
REV
AA

Initial Release

DESCRIPTION

DATE
10-26-10

APPROVED
KDP



Item	Part #	Description	Qty
1	787	Outside Backing Plate C3500	2
2	786	Inside Backing Plate C3500	2
3	783	Mounting Brkt C3500	1
4	784	Standoff Mnt C3500	2
5	Z900015	Bolt 1/2"-13 x 2.5" Grade 8	4
6	B030AC	Flat Washer 1/2"	8
7	B031AC	Lock nut 1/2"-13 Grade 8	12
8	Z900009	Bolt 3/8-16 x 1 1/2"	4
9	Z900012	Washer - 3/8" Flat	4
10	Z900011	Washer 3/8" Lock	4
11	Z900010	Nut - 3/8-16	4
12	Z900107	Bolt 1/2"-13 x 1 1/2" Grd 8 Hex Hd	4
13	Z900108	Bolt 1/2"-13 x 4 1/2" Grd 8 Hex Hd	4



Mnt Brkt Kit C3500

DWG NO. 785

Drawn By
KDP

SIZE A

Scale

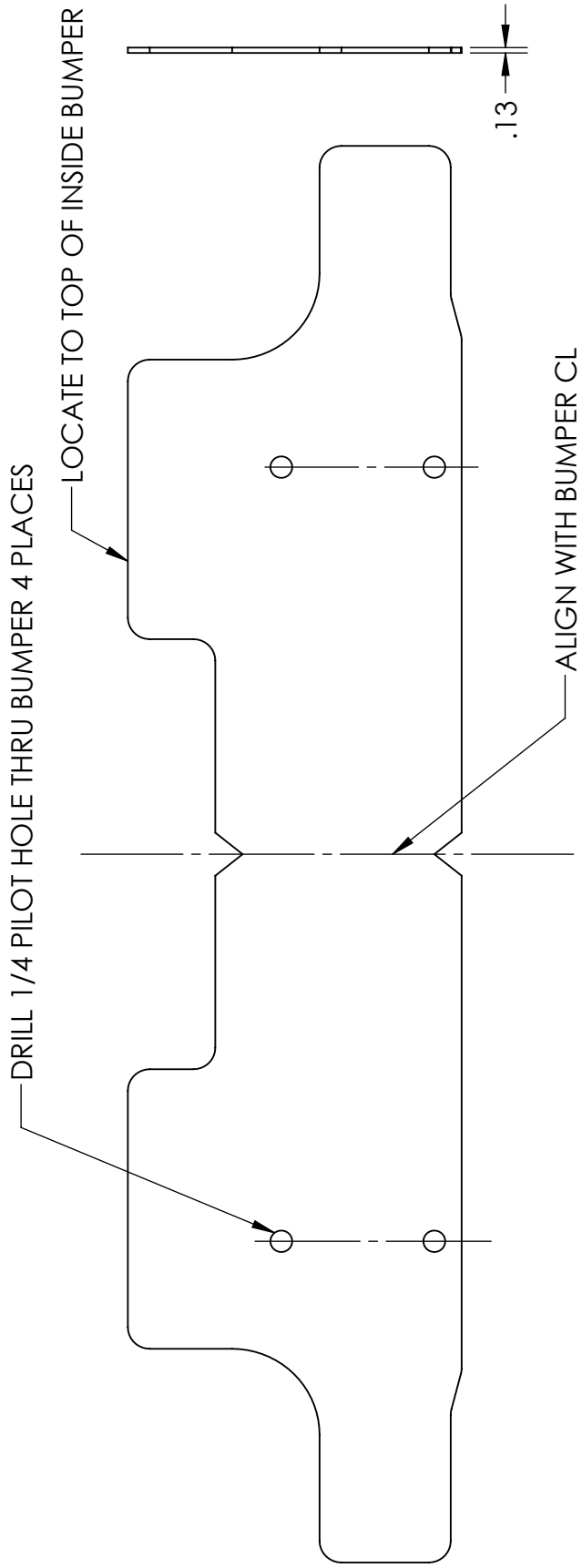
Sheet

DATE
10-26-10

CHEVY 3300 BRACKET INSTALLATION

- 1) Remove bumper from Vehicle
- 2) Locate drill template as shown on inside of bumper, C-clamp to bumper when positioned
- 3) Drill 1/4" pilot hole 4 places
- 4) Remove drill template and cut 1-1/2" diameter holes in bumper with hole saw 4 places
- 5) Install 783 to vehicle frame
- 6) Reinstall bumper to vehicle and mount 784 standoffs thru bumper to 783
- 7) Torque all fasteners to specified torque

REVISIONS		
ZONE	REV.	DESCRIPTION
	AA	INITIAL RELEASE
		DATE
		10/16/2013

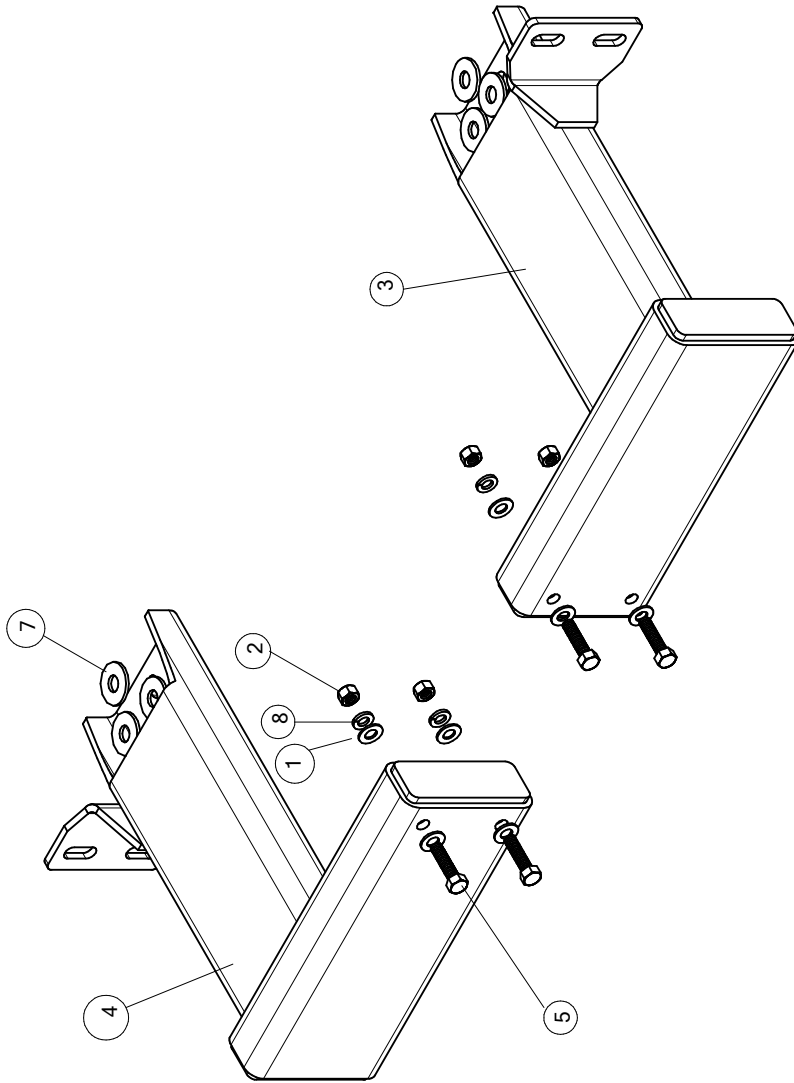


		INSTALLATION SHEET FOR CHEVY 3300 STANDOFF BRACKET	
		SIZE: A DWG. NO.: 785T REV: AA-002	SCALE: 1:4 WEIGHT: 2.27 SHEET 1 OF 1
DIMENSIONS ARE IN INCHES TOLERANCES UNLESS NOTED: FRACTIONAL ± ANGULAR: MACH ±1.0° BEND ±1.0° TWO PLACE DECIMAL ±0.06 THREE PLACE DECIMAL ±0.015 TRIMLINE ±0.06 HOLE SIZE ±0.04 MATERIAL: 6061-O (SS) FINISH: no treatment required	DRAWN: CHECKED: ENG. APPR.: MFG APPR.: Q.A.: COMMENTS:	NAME: ALTAIR DATE:	APPLICATION:
NEXT ASSY: USED ON:	DO NOT SCALE DRAWING		

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REVISIONS

ZONE	REV A	Initial Release	DESCRIPTION	DATE 7-7-11	APPROVED KDP
------	----------	-----------------	-------------	----------------	-----------------



Item #	QTY	Part Number	Part Name
1	8	Z900012	Z900012 FlatWSHR A_ .375N
2	4	Z900010	Z900010 HEX NUT_ .375-16
3	1	798	Brkt Mount Street
4	1	799	Brkt Mount Curb
5	4	Z900113	HEX HD_ .375-16X3"
7	6	Z900114	M 12 FLAT WASHER
8	4	Z900011	Z900011 LK WSHR .375

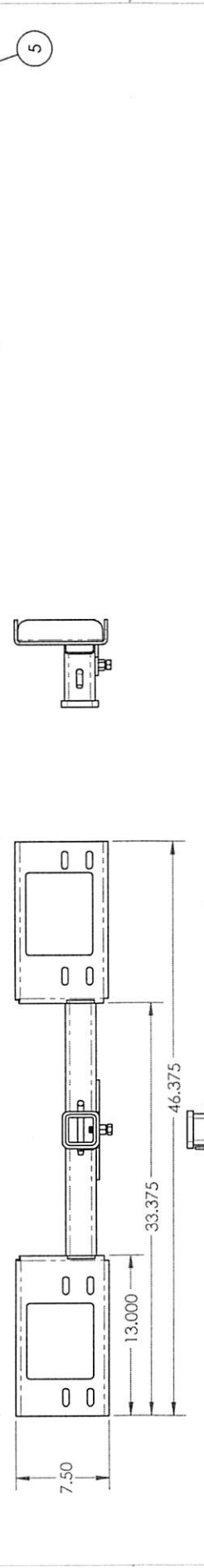
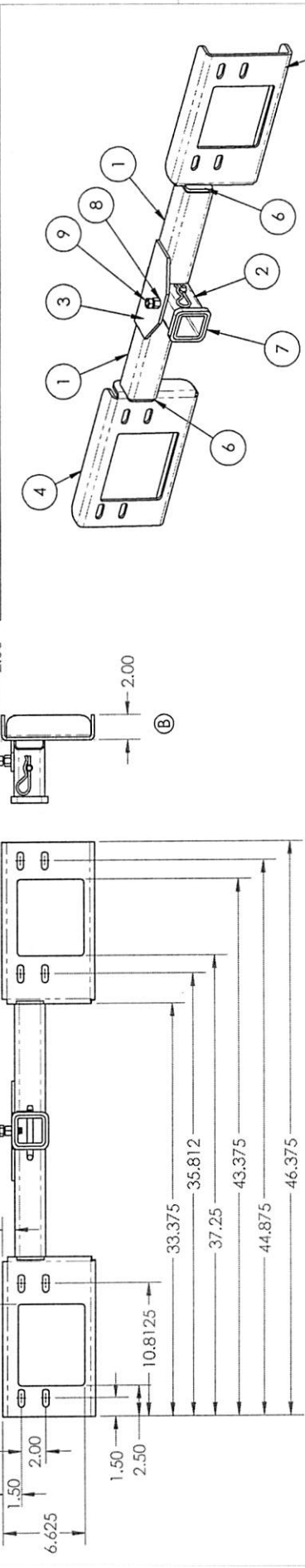


F550 Mount Asm Kit		DWG NO. 800
SIZE A	Scale Sheet	DATE 7-7-11
		Drawn By KDP

1 2 3 4 5 6 7 8

ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		INITIAL RELEASE	10/23/19	JIG
B		WAS 2.5" EDGE FLANGE PRTS 855-4 & 855-5	12/12/2019	JIG

UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 FRACTIONAL: 1/16
 ANGULAR: MACH: 1° BRND: ±2°
 ONE PLACE DECIMAL: ±.06
 TWO PLACE DECIMAL: ±.03
 THREE PLACE DECIMAL: ±.01
 INTERPRET GEOMETRIC TOLERANCES FOR FURTHER INFORMATION:
 MATERIAL: See Part BOM
 FINISH: POWDER OR EPOXY BLACK
 DO NOT SCALE DRAWING



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	855-1	TUBE, 8.938" L X 2.5" X .25" WALL	2
2	855-2	TUBE, 7" L X 2.5" X .25" WALL	1
3	855-3	PLATE, REINFORCEMENT	1
4	855-4	PLATE, MOUNTING CS	1
5	855-5	PLATE, MOUNTING SS	1
6	855-6	CAP, END SEAL	2
7	855-7	TUBE	1
8	855-8	NUT, HEX HIGH STRENGTH 1/2-13	1
9	855-9	CAP SCREW, 1/2-13 X 1-1/2" HS STEEL GR 8	1
10	702	Cotter Pin - Hitch Pin	1
11	700	PIN - HITCH, 1/2" Dia.	1

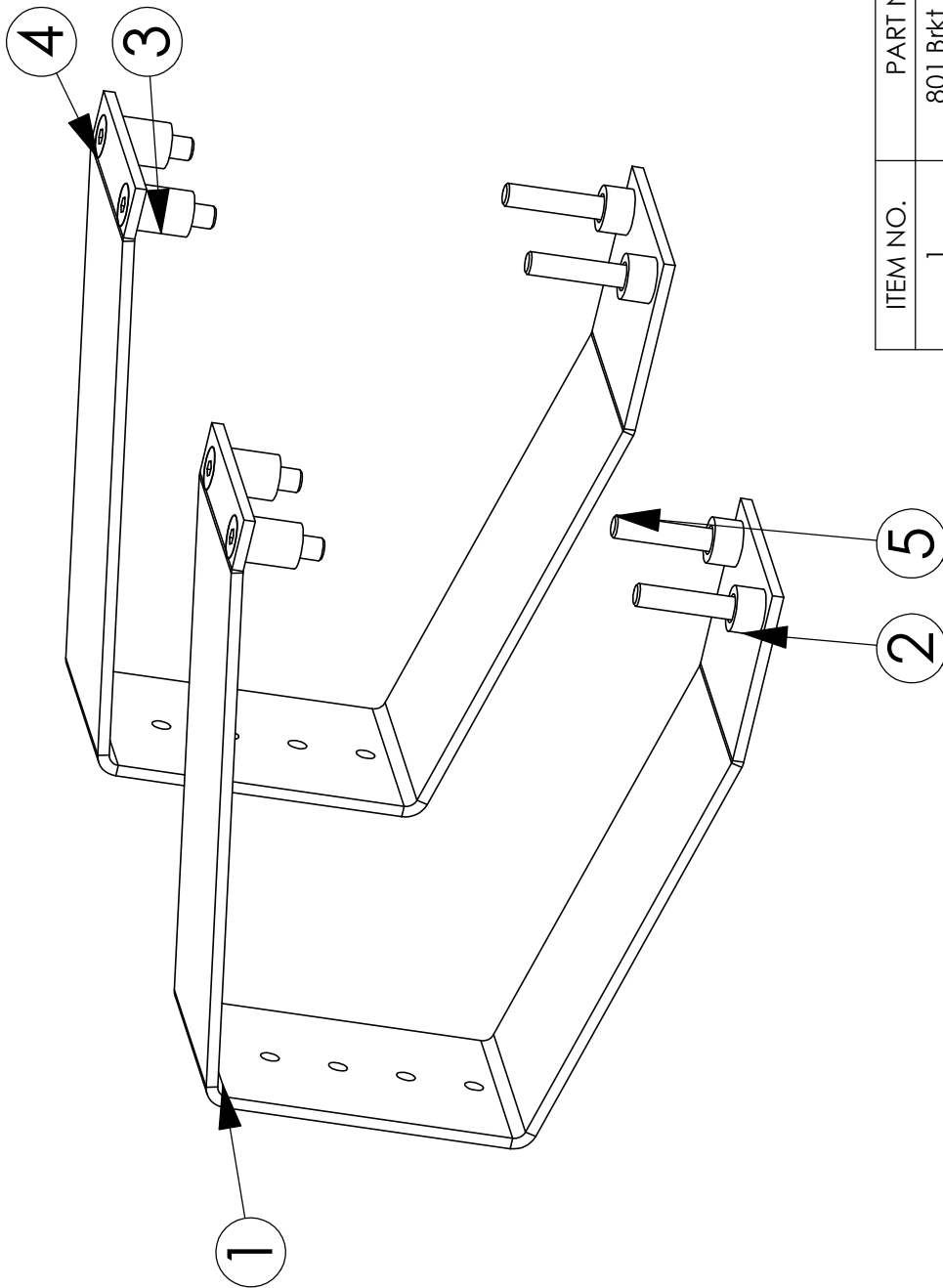
NAME	DATE
JIG	10/23/2019

Byk-Rak

TITLE: F550 4 HOLE MTG BRKT

SIZE DWG. NO. **B** 855 REV **B**

SCALE: 1:8 WEIGHT: 33.34 SHEET 1 OF 11



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	801 Brkt Inveros NF		2
2	801-1 Spacer .63		4
3	801-2 Spacer 1.2		4
4	SCHSCREW 0.5-13x2X2-HX-N	Z900112	4
5	SCHSCREW 0.5-13x3X3-HX-N	Z900046	4

		NAME	KDP	DATE	3-29-11
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ± MATERIAL --- FINISH ---		DRAWN			
DO NOT SCALE DRAWING		CHECKED			
APPLICATION		ENG APPR.			
NEXT ASSY		MFG APPR.			
USED ON		G.A.			
COMMENTS:					

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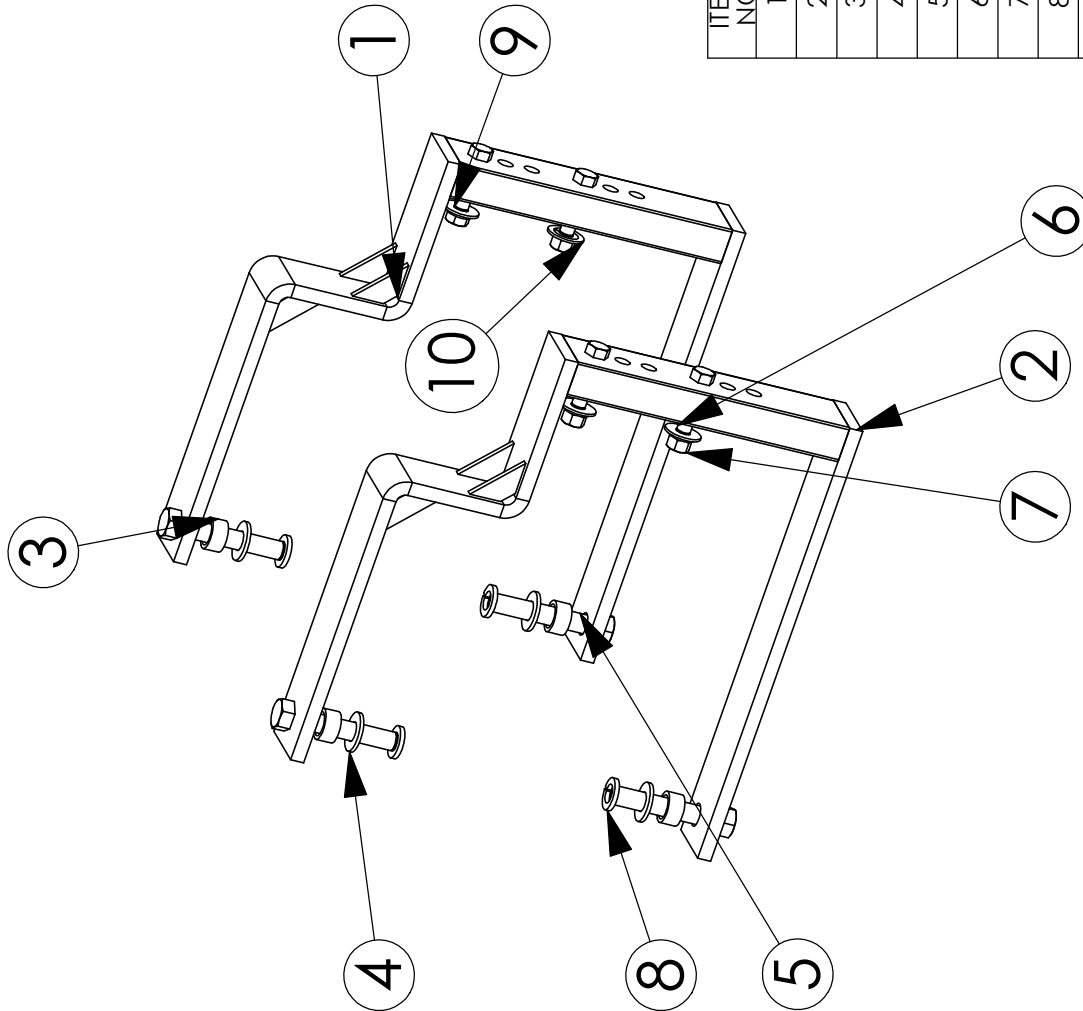
Mounting Kit Inveros NF

SIZE **A** DWG. NO. **802**

SCALE: 1:10 WEIGHT:

REV. **A**

SHEET 1 OF 1

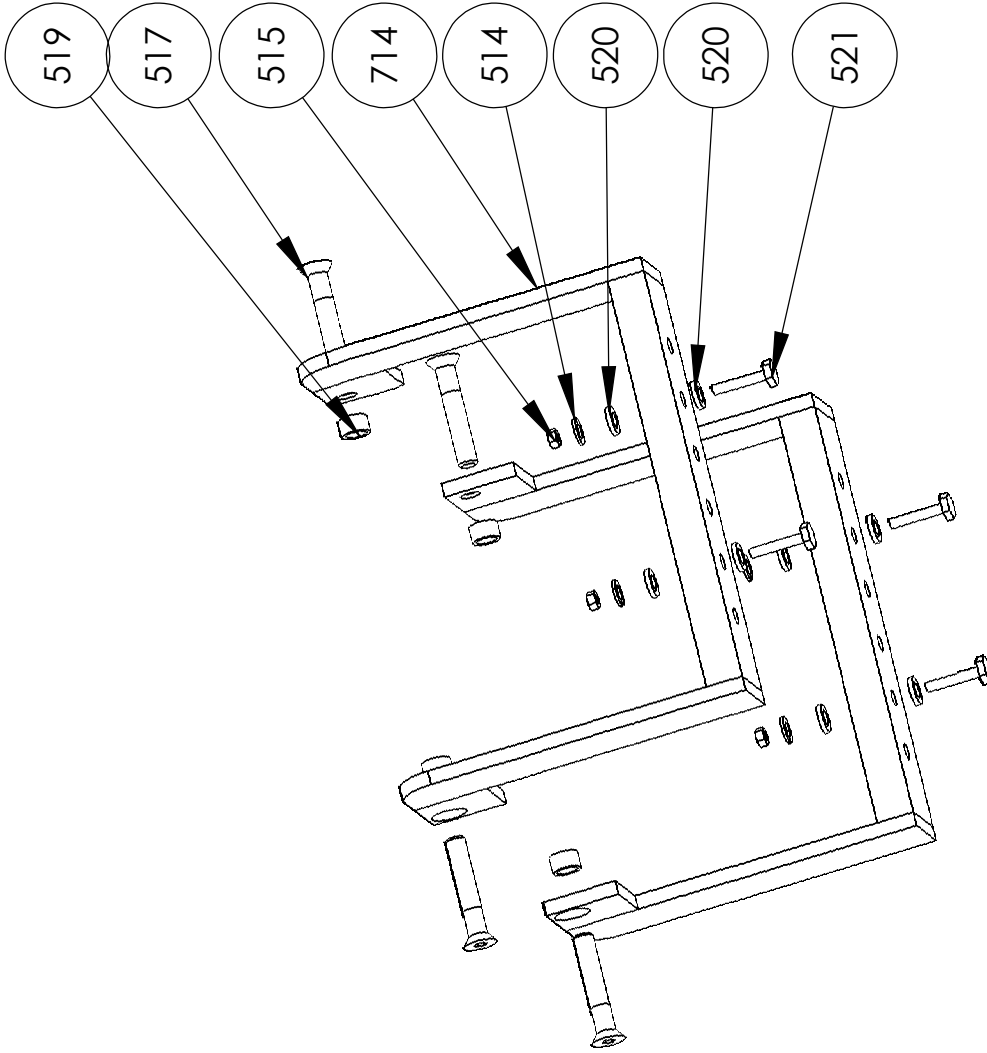


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	803 Brkt Lt 3 Position		1
2	804 Brkt Rt 3 Position		1
3	INV-067-519	spacer 7/16"	4
4	INV067-B030-AC	SAE 1/2" flat washer	4
5	HBOLT 0.5000-13x3x1.25-N	Hex .5-13x3" G8 Yellow Zn	4
6	HBOLT 0.3750-16x1.5x1-N	Hex /375-16x1.5" Yellow Zn	4
7	Z900010	HNut .375-16 Yellow Zn	4
8	Z900008	1/2" Lock washer Zn	4
9	Z900012	.375" Flat Washer Zn	4
10	Z900011	.375" Lock Washer Zn	4

		Mounting Bracket Kit 3 Position
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	DRAWN CHECKED ENG APPR. MFG APPR. Q.A. COMMENTS:	NAME KDP DATE 3-30-11
MATERIAL --- FINISH ---	USED ON NEXT ASSY	DO NOT SCALE DRAWING
APPLICATION		SCALE: 1:10 WEIGHT: 805 REV. A SHEET 1 OF 1

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FILE NAME: J:\DRAWINGS MECHANICAL\FRANK\MISC MACH-JOBS\OA805106PRO-MIDWEST BUS \OA805106PRO-INV-067-713 BRKT KIT FLEXIBLE (#713)



ITEM NO.	PART NUMBER	QTY.
713	OA805106PRO-INV-067-713 BRACKET KIT FLEXIBLE	1
714	OA805106PRO-INV-067-714 BRACKET ASSEMBLY	2
514	OA805106PRO-INV-067-514 WASHER .375 SPLIT LOCK18-8	4
515	OA805106PRO-INV-067-515 NUT .375-16 GRADE 5	4
517	OA805106PRO-INV-067-517 BOLT (.500-13 X 2.500 GRADE 5)	4
519	OA805106PRO-INV-067-519 SPACER .4375	4
520	OA805106PRO-INV-067-520 WASHER .375 SAE FLAT	8
521	OA805106PRO-INV-067-521 BOLT .375-16 X 1.5 GRADE 5	4

REVISIONS	
REV	SEQ
AA	001



DIMENSIONING SYMBOLS	
SR	SPHERICAL RADIUS
SØ	SPHERICAL DIAMETER
X	PLACES, TIMES OR BY
↕	DEPTH
∨	COUNTER SINK
└	COUNTER BORE

JOB NO.: OA805106PRO COMPANY: MIDWEST BUS

713 KIT



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NOTES:
1. TOLERANCES UNLESS OTHERWISE SPECIFIED ±.002

DETAIL NO.: 713 NUMBER REQ'D: 50

MATL REQ'D: N/A

HEAT TREAT: NONE FINISH: BLACK PAINT

DWG. NO.: OA805106PRO-INV-067-713 DATE: JUNE 2, 2008

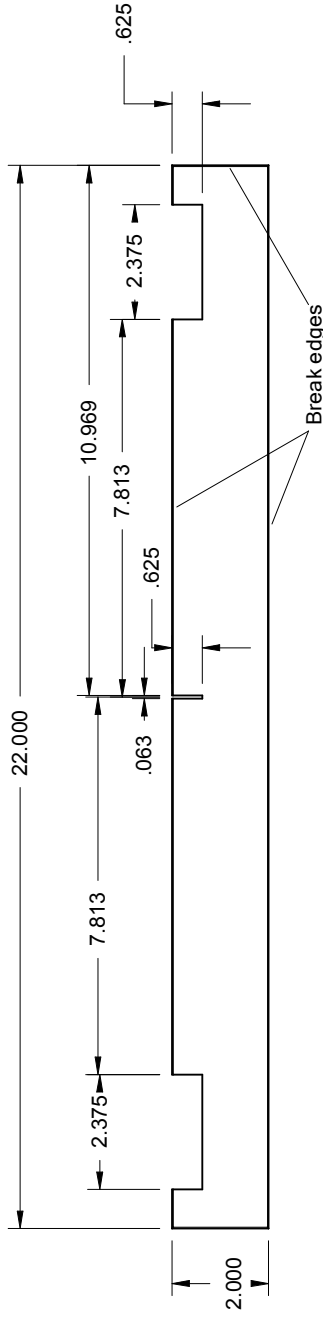
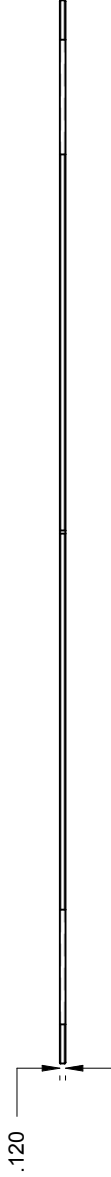
SCALE: 1:5 CHK'D BY:

DWG BY: F.DRENTH DATE CHK'D



REVISIONS

ZONE	REV AA	Initial Release	DESCRIPTION	DATE 12-3-10	APPROVED KDP
------	-----------	-----------------	-------------	-----------------	-----------------



Tolerances
+/- .020" unless otherwise noted

Material
Cold rolled 11 gauge

Treatment/Finish
Powder Coated Black



DWG NO. Z900051

Template C Brkt

SIZE
A

Scale
Sheet

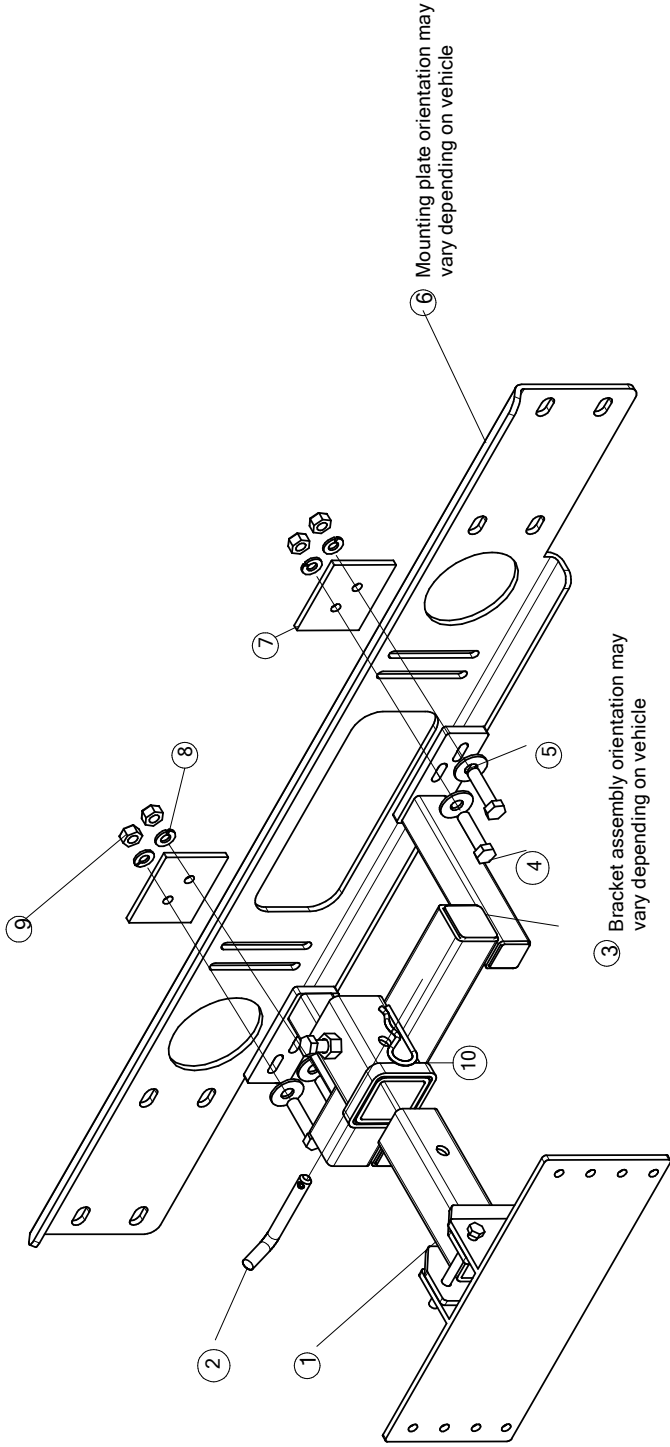
DATE
12-3-10

Drawn By
KDP



REVISIONS


ZONE	REV	Initial Release	DATE	APPROVED
	AA		3-23-2010	KDP



⑥ Mounting plate orientation may vary depending on vehicle

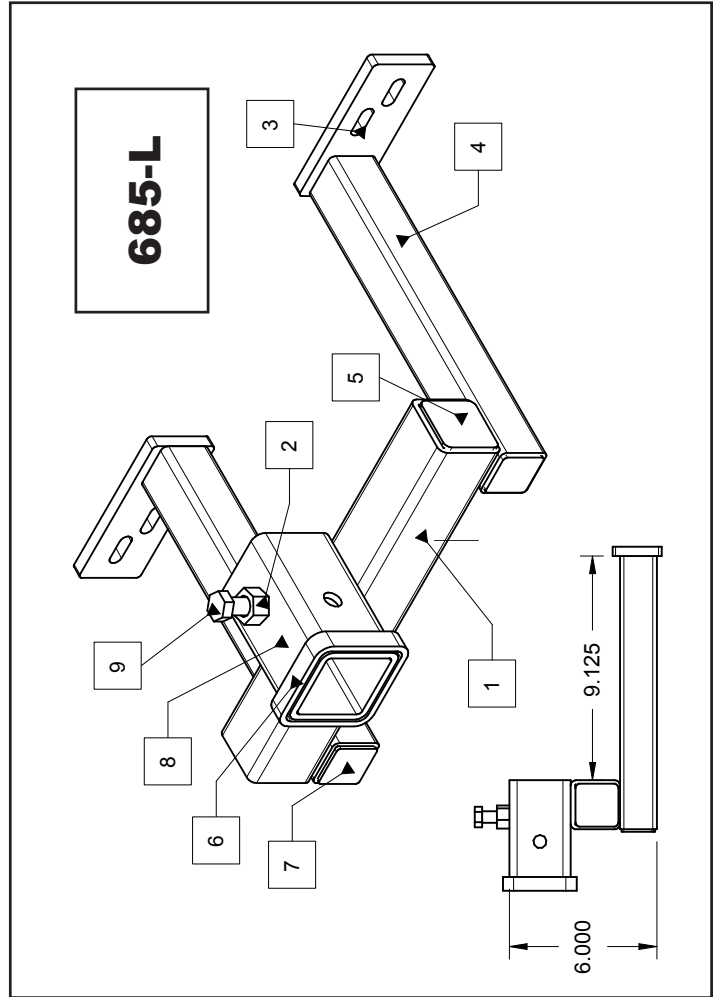
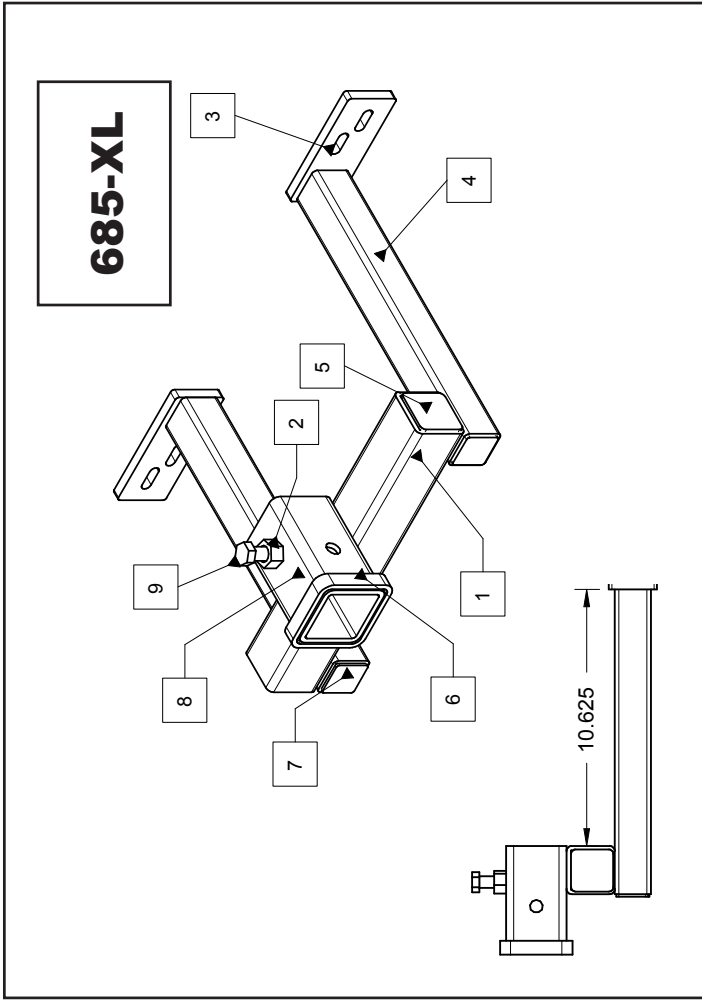
③ Bracket assembly orientation may vary depending on vehicle

* 685, 685S, 685L, 685XL



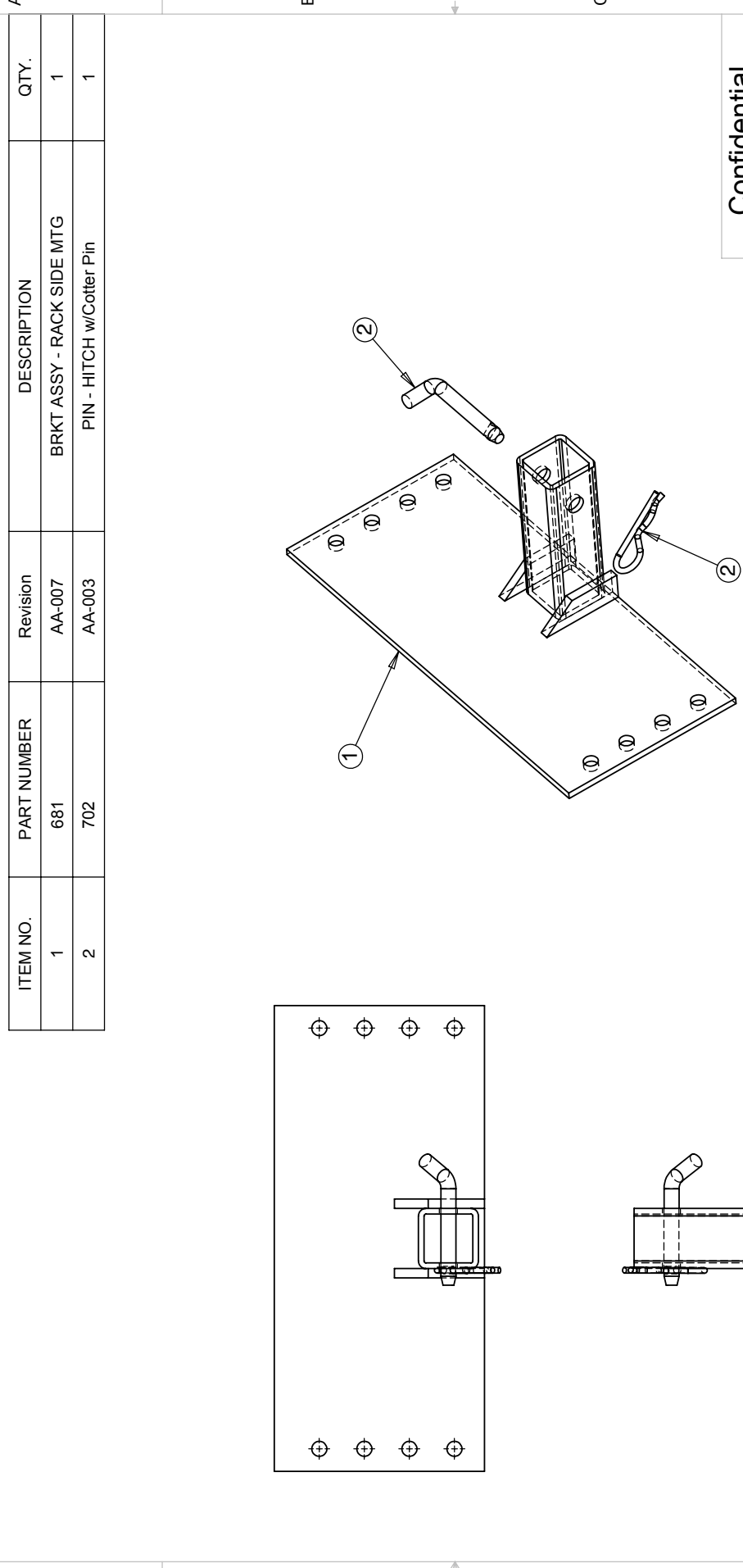
SIZE	DESCRIPTION	DWG NO.	REV
A	Receiver Brkt Exploded	773 E	AA
SCALE	SHEET	DATE	DRAWN BY
		3-23-2010	KDP

Item	Qty	Part #	Description
1	1	681	Brkt Assy Rack
2	1	700	Pin Hitch
3	1	685*	Brkt Assy Vehicle side Mtg
4	4	Z900100	Bolt 3/8-16 x 1 3/4"
5	4	Z900012	Washer -Flat
6	1	711	Mounting Plate
7	2	685-8	Back Washer Plate
8	4	Z900011	Washer-Lock
9	4	Z900010	Nut 3/8"-16
10	1	702	Hair Pin



REVISIONS			
ZONE	REV.	DESCRIPTION	DATE

ITEM NO.	PART NUMBER	Revision	DESCRIPTION	QTY.
1	681	AA-007	BRKT ASSY - RACK SIDE MTG	1
2	702	AA-003	PIN - HITCH w/Cotter Pin	1



Confidential
patents pending

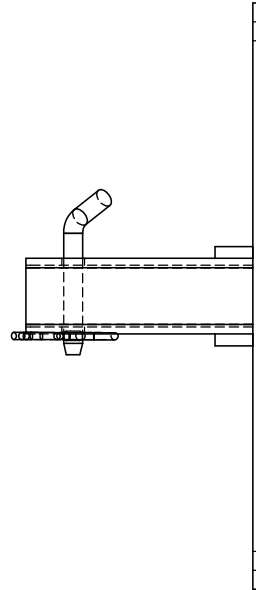
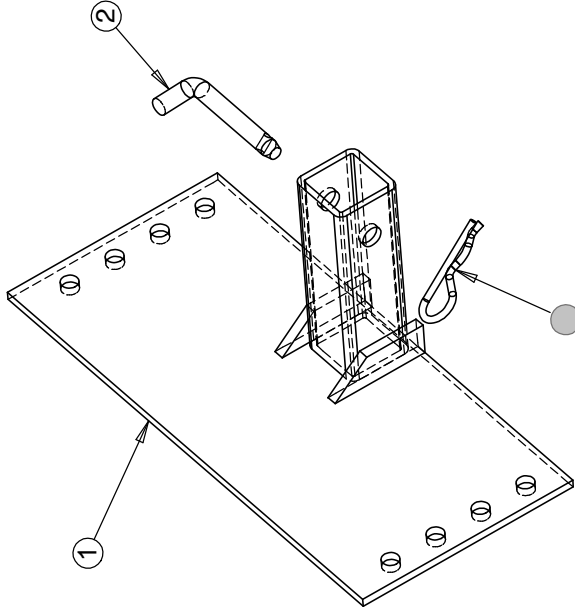
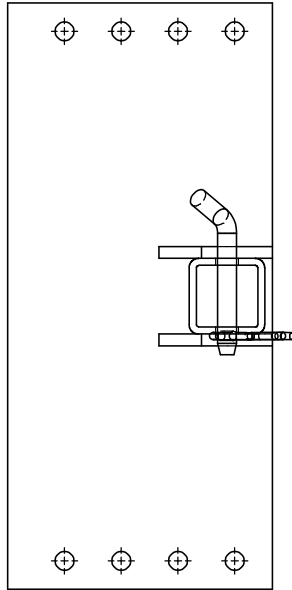
Notes	
CAD Generated Drawing, Do Not Manually Update	Do Not Scale Drawing
Dimensions are in INCH unless otherwise specified	Status:
Tolerances: +/- .04"	Project: Attachment Bracket Systems
Material:	Standard:
Treatment:	
Description BRKT PKG ASSY - RACK SIDE MTG	
Name BRKT PKG ASSY - RACK MTG	
Size A	Dwg. No. 703
Scale 1:5	CAD File INV-067-703
Rev. Seq. AA-003	
Sheet 1 of 1	
Printed: Wednesday, January 06, 2016	



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REVISIONS		
ZONE	REV.	DESCRIPTION
		DATE
		APPROVED

ITEM NO.	PART NUMBER	Revision	DESCRIPTION	QTY.
1	681L		BRKT ASSY - RACK SIDE MTG	1
2	702	AA-001	COTTER PIN - HITCH Pin	1



Confidential
patents pending

Dimensions are in INCH unless otherwise specified	CAD Generated Drawing, Do Not Manually Update	Notes
Tolerances: +/- .04"	Do Not Scale Drawing	Description BRKT PKG ASSY - RACK SIDE MTG
Material:	Status:	Name BRKT PKG ASSY - RACK MTG
Treatment:	Project: Attachment Bracket Systems	Dwg. No. 703L
	Standard:	Size A
		Scale 1:5
		Rev. Seq. A
		CAD File INV-067-703
		Sheet 1 of 1
		Printed: Friday, April 26, 2013



NOTE: 703 & 703L are the same except item 1.
703 uses 681 and 703L uses 681L



REVISIONS

ZONE

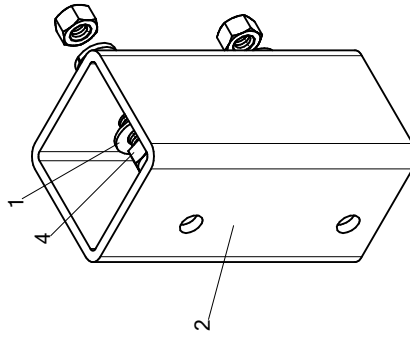
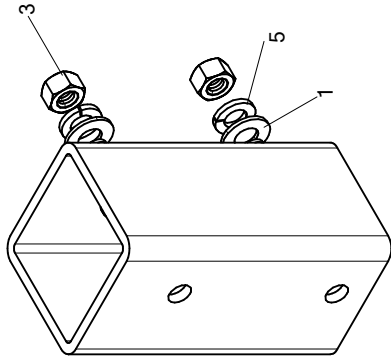
REV
AA

DESCRIPTION

Initial Release

DATE
11-22-10

APPROVED
KDP



Item #	Qty	Part #	Part Name
1	8	Z900012	FlatWSHR A_~375N
2	2	795	Spacer 3 Pos Rack
3	4	Z900010	HEX NUT_~375-16
4	4	Z900009	HEX HD_~375-16
5	4	Z900011	LK WSHR~375



DWG NO. 797

Spacer Kit 3 Pos Rack

SIZE A Scale Sheet

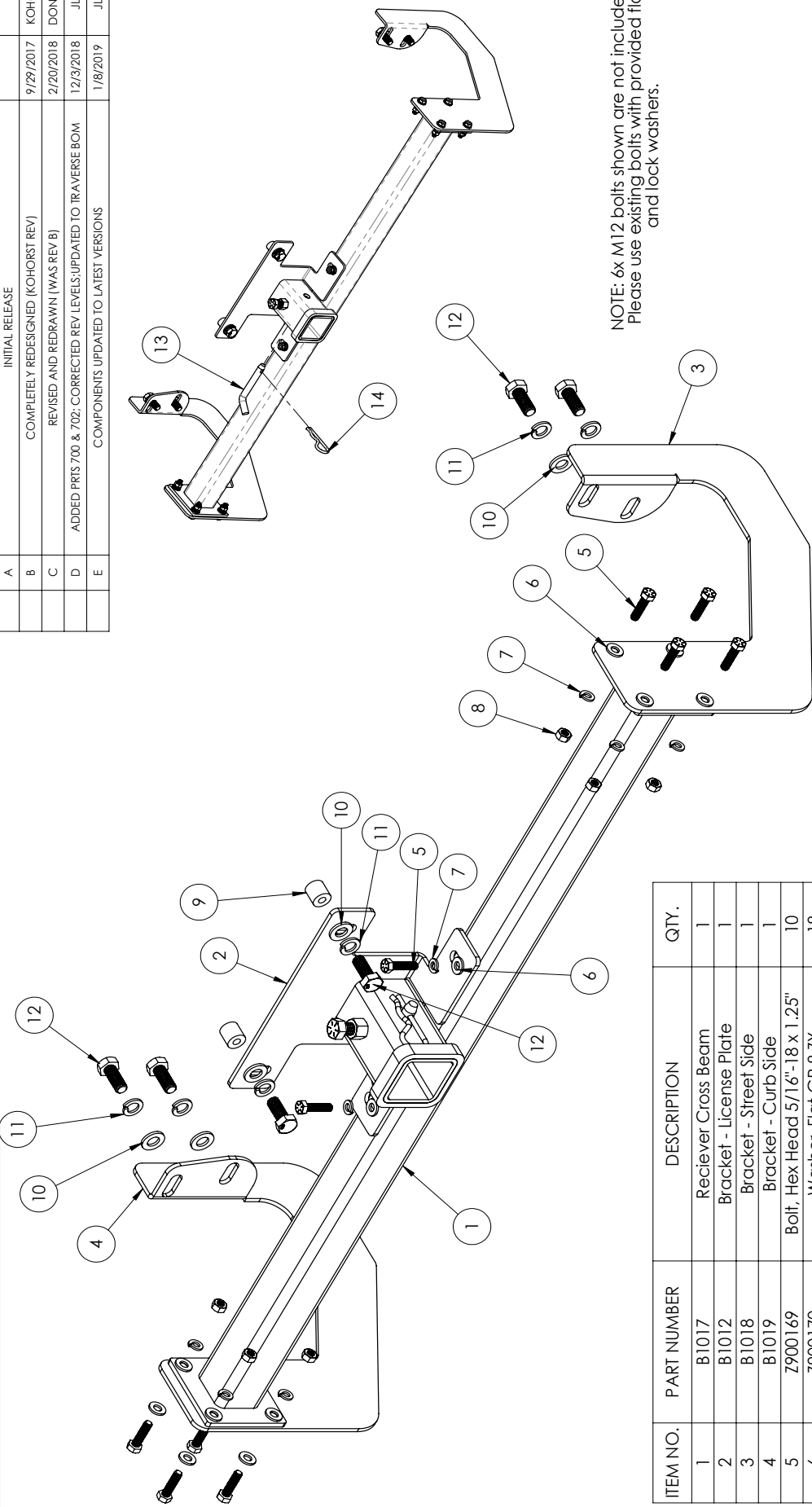
DATE
11-22-10

Drawn By
KDP



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 IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF Byk-Rak LLC, IS STRICTLY PROHIBITED.

REVISIONS		DATE	APPROVED
ZONE	REV.	DESCRIPTION	
	A	INITIAL RELEASE	
	B	COMPLETELY REDESIGNED (KOHORST REV)	9/29/2017 KOHORST
	C	REVISED AND REDRAWN (WAS REV B)	2/20/2018 DONNIERT
	D	ADDED PRIS 700 & 702; CORRECTED REV LEVELS; UPDATED TO TRAVERSE BOM	12/3/2018 JILG
	E	COMPONENTS UPDATED TO LATEST VERSIONS	1/8/2019 JILG



NOTE: 6x M12 bolts shown are not included.
 Please use existing bolts with provided flat
 and lock washers.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	B1017	Receiver Cross Beam	1
2	B1012	Bracket - License Plate	1
3	B1018	Bracket - Street Side	1
4	B1019	Bracket - Curb Side	1
5	Z900169	Bolt, Hex Head 5/16" x 1.25"	10
6	Z900170	Washer, Flat GR 8 ZY	18
7	Z900171	Washer, Lock High Alloy	10
8	Z900172	Nut, Hex Finished GR 8	8
9	B024CA	Spacer, 3/4" 304 SS	2
10	Z900114	Washer, Flat M12	6
11	Z900163	Washer, Lock M12	6
12	670	Bolt, 1/2" - 13 x 1.5"	1
13	700	PIN - HITCH, 1/2" Dia.	1
14	702	Cotter Pin - Hitch Pin	1

Byk-Rak

UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 FRACTIONAL ± 1/16
 ANGULAR: MACH ± .1° BEND ± .2°
 ONE PLACE DECIMAL ± .06
 TWO PLACE DECIMAL ± .03
 THREE PLACE DECIMAL ± .01
 Q.A.
 COMMENTS:
 INTERPRET GEOMETRIC
 TOLERANCING PER:
 MATERIAL:
 FINISH:

NAME: AD DATE: 2/19/2018
 DRAWN: CHECKED: ENG APPR: MFG APPR:
 TITLE: Ford Transit Bracket Assembly

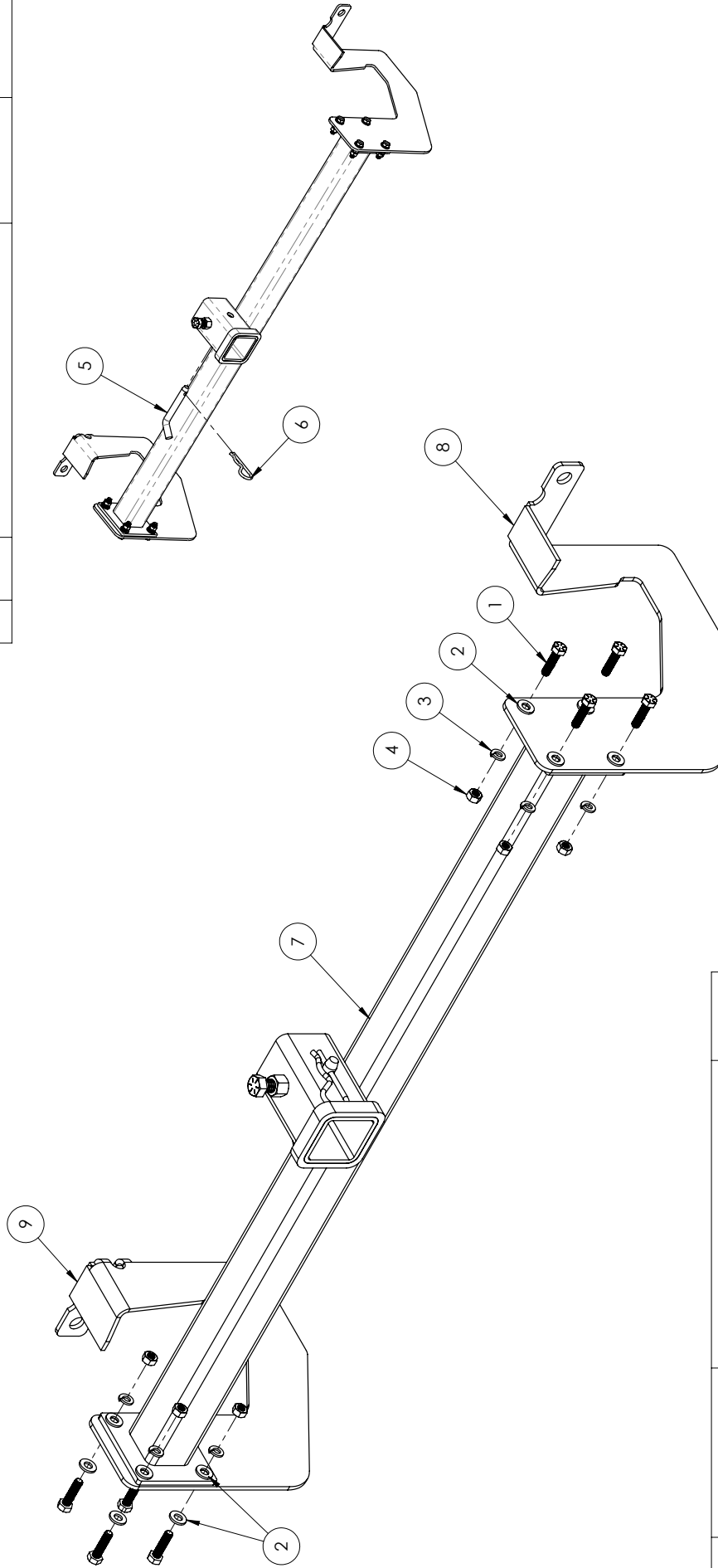
SIZE: DWG. NO. B1015 REV E
 SCALE: 1:1 WEIGHT: SHEET 1 OF 1

DO NOT SCALE DRAWING

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REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	INITIAL RELEASE	1/6/2020	



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	Z900169	Bolt, Hex Head 5/16"-18 x 1.25"	8
2	Z900170	Washer, Flat GR 8 ZY	16
3	Z900171	Washer, Lock High Alloy	8
4	Z900172	Nut, Hex Finished GR 8	8
5	700	PIN - HITCH, 1/2" Dia.	1
6	702	Coffer Pin - Hitch Pin	1
7	B1021	RECEIVER CROSS BEAM	1
8	B1022	BRACKET, STREET SIDE	1
9	B1023	BRACKET, CURB SIDE	1

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/16 ANGULAR: MACH ± 1° BEND ± 2° ONE PLACE DECIMAL ± .06 TWO PLACE DECIMAL ± .01 THREE PLACE DECIMAL ± .01		NAME	DATE
		JLG	1/6/2020
DRAWN		CHECKED	
ENG APPR.		ENG APPR.	
MFG APPR.		MFG APPR.	
Q.A.		Q.A.	
INTERPRET GEOMETRIC TOLERANCING PER:		COMMENTS:	
MATERIAL			
FINISH		SEE PART BOM	
DO NOT SCALE DRAWING			

Byk-Rak

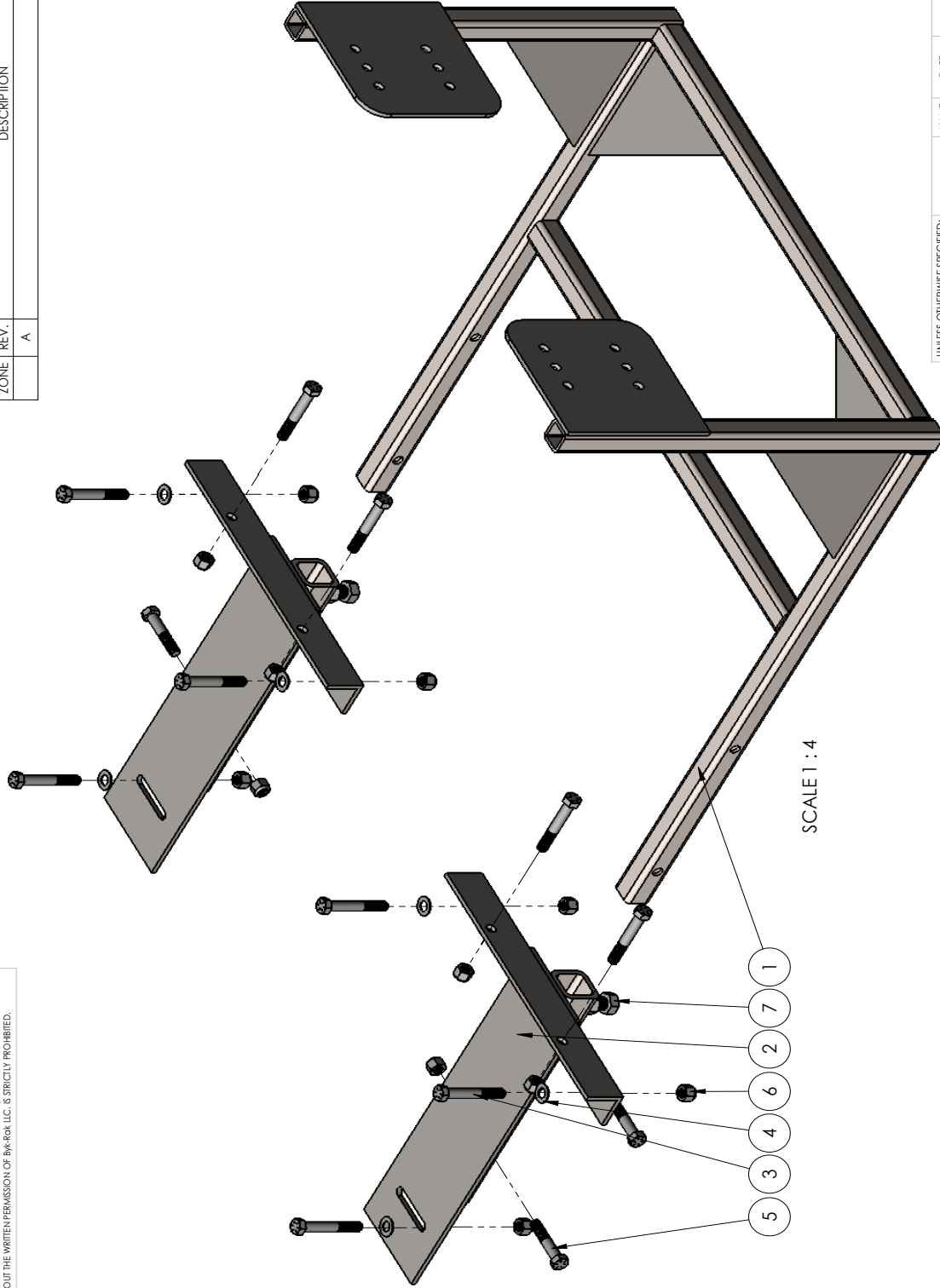
TITLE:
Bracket Kit - DODGE PROMASTER

SIZE DWG. NO. REV
B B1020 **A**

SCALE: 1:1 WEIGHT: 26.11 SHEET 1 OF 1

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REVISIONS		DATE	APPROVED
ZONE	REV.	DESCRIPTION	
	A		JLG



SCALE 1 : 4

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	B677	Attachment, Bracket	1
2	B676	Receiver, Bracket LH/RH	2
3	Z900173	Stainless Steel Hex Bolt 3/8"-16 x 2.5"	10
4	Z900175	Stainless Steel 3/8" Flat Washer	10
5	Z900174	Stainless Steel Hex Bolt, 3/8"-16 x 2.0"	4
6	Z900176	Stainless Steel Hex Lock Nut, 3/8"-16	14
7	Z900177	Stainless Steel Hex Bolt, 1/2"-13 x 1.25"	2

UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 FRACTIONAL: 1/16
 ANGULAR: W/CH: ±.1 - B/ND: ±.2*
 HOLE: W/CH: ±.015 - B/ND: ±.03
 TWO PLACE DECIMAL: ±.03
 THREE PLACE DECIMAL: ±.01
 Q.A.
 COMMENTS:
 MATERIAL: Stainless Steel
 FINISH:

NAME	DATE
AD	2/28/18

Byk-Rak

TITLE:
 Van Hool CX45 Assembly

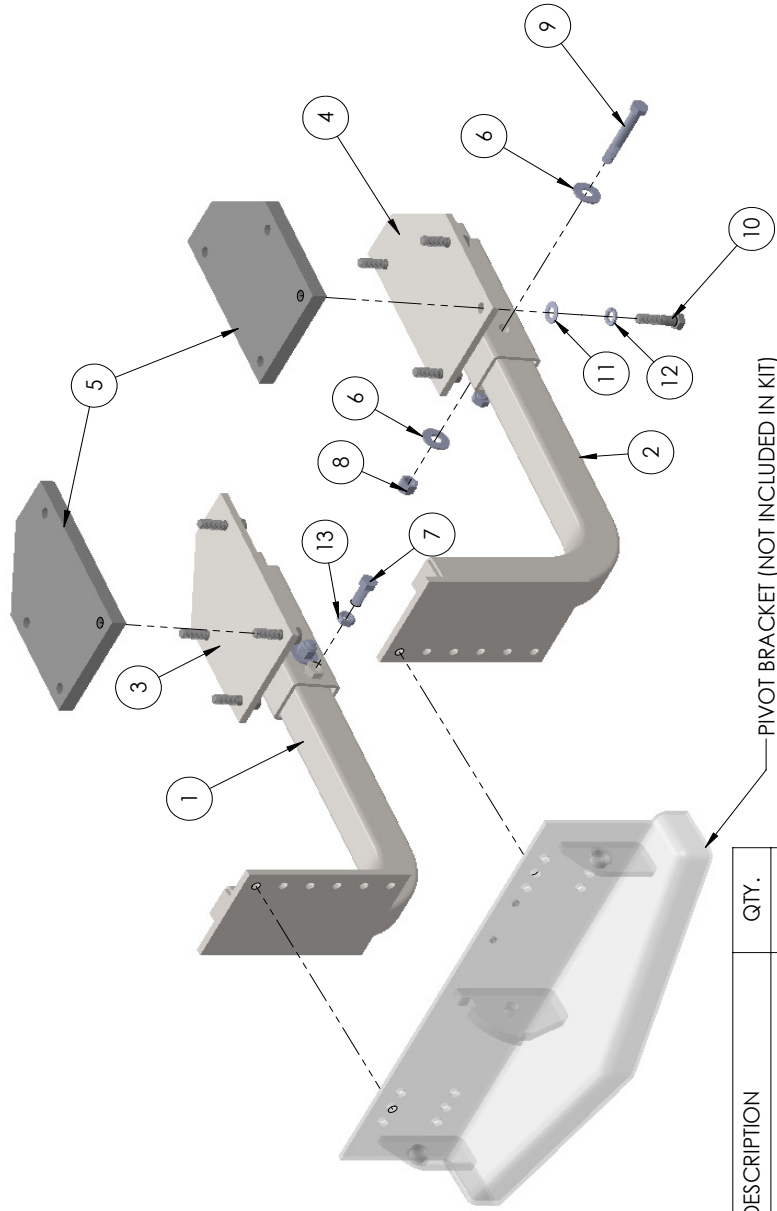
SIZE DWG. NO. **B** B675 REV **A**

SCALE: 1:1 WEIGHT: 37.28 SHEET 1 OF 1

8
7
6
5
4
3
2
1

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ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	INITIAL RELEASE	11/24/2020	JLG

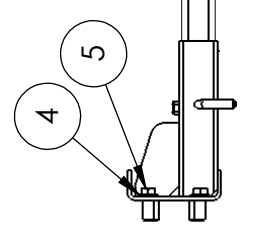
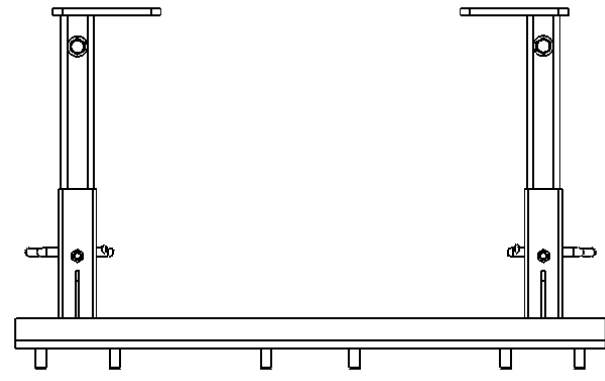
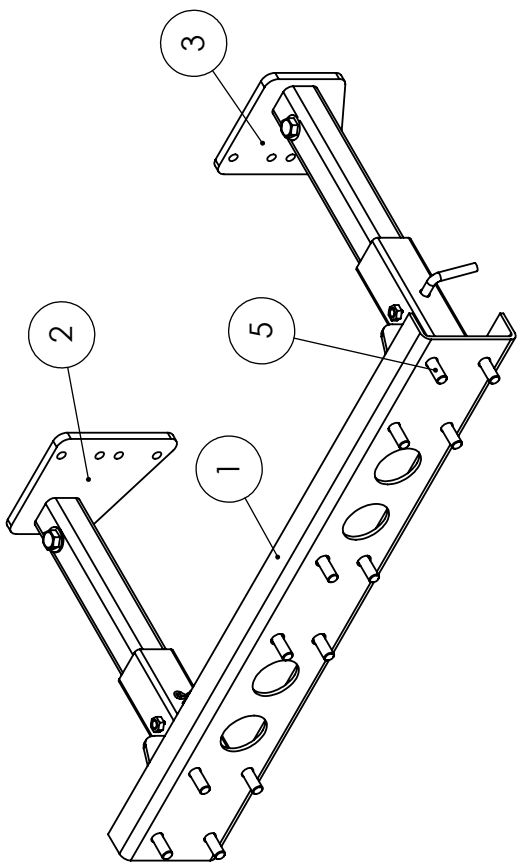


NOTE: APPLY NEVER-SEEZ OR EQUIVALENT TO PREVENT THREAD GALLING AND CORROSION

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	B716	MOUNT ASSY, SLIDE IN 2" CURB SIDE	1
2	B717	MOUNT ASSY, SLIDE IN 2" ROAD SIDE	1
3	B718	BRKT ASSY 2" RECEIVER CURB SIDE	1
4	B719	BRKT ASSY 2" RECEIVER ROAD SIDE	1
5	B720	SPACER, RECEIVER BRKT 3/4"	2
6	Z900007	WASHER 1/2" USS FLAT YZ	4
7	Z900089	BOLT, HEX 1/2"-13 X 1.25" YZ	2
8	B031-AC	NUT-LOCK, NYLON 1/2"-13 GR 8 YZ	2
9	Z900251	BOLT, HEX 1/2" X 13 X 3-1/2" YZ	2
10	Z900252	BOLT, HEX 1/2"-13 X 2" SS	8
11	Z900253	WASHER, FLAT 1/2" SS	8
12	Z900254	WASHER, LOCK 1/2" SS	8
13	Z900255	NUT, HEX JAM 1/2-13 YZ	2

UNLESS OTHERWISE SPECIFIED:	NAME	DATE
DIMENSIONS ARE IN INCHES	JLG	11/24/2020
TOLERANCES:	DRAWN	CHECKED
FRACTIONS: 1/16		
ANGULAR: MACH ± .01		
ONE PLACE DECIMAL ± .04		
TWO PLACE DECIMAL ± .03		
THREE PLACE DECIMAL ± .01		
G.A.		
INTERFEREOMETRIC TOLERANCING PER:		
MATERIAL:	See Part BOM	
FINISH:	SEE PART BOM	
DO NOT SCALE DRAWING		

Byk-Rak	
TITLE: KIT, BUMPER MT MCI CRT LE	
SIZE	DWG. NO.
B	B715
REV	A
SCALE: 1:6	WEIGHT: 79.90
SHEET 1 OF 1	



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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	B661	bracket assembly	1
2	B665	bracket assembly	1
3	B666	bracket assembly	1
4	Washer M12	Washer M12	12
5	Bolt M12 x 35	Bolt M12 x 35	12

DRAWN	NAME	DATE
CHECKED	jos	
ENG APPR.		
MFG APPR.		
Q.A.		
COMMENTS:		

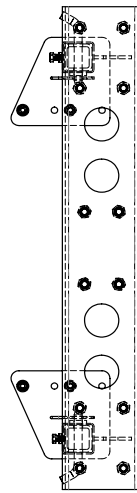
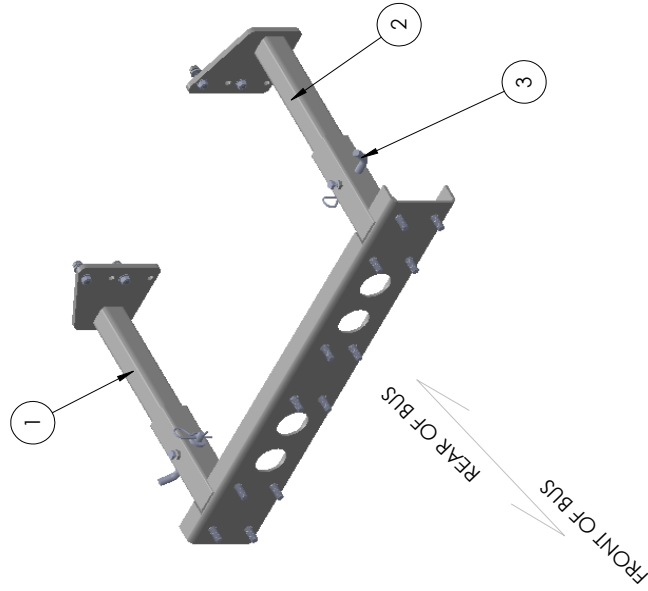
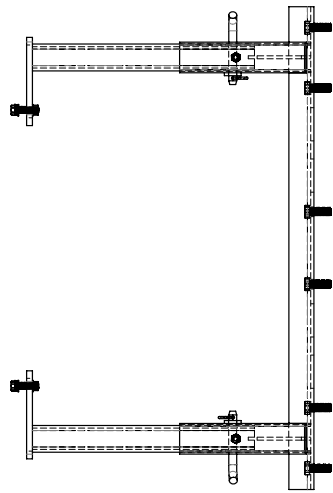
SIZE	DWG. NO.	REV.
A	B660	A1
SCALE:1:5	WEIGHT:	SHEET 1 OF 1



Byk Rak Bracket
Alexander-Dennis

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REVISIONS		DATE	APPROVED
ZONE REV.	DESCRIPTION		
A	INITIAL RELEASE	5/25/2021	JLG



ITEM NO.	PART NUMBER	DESCRIPTION	Default/ QTY.
1	B763	BRKT ASSY, LH SS PC BLACK	1
2	B762	BRKT ASSY, RH SS PC BLACK	1
3	B772	KIT SS HARDWARE ADL BUS	1
4	B761	BRACKET ASSY	1

UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES		JLG	5/25/2021
TOLERANCES:			
FRACTIONAL ± 1/16			
ANGULAR: MACH ± . BEND ± .2°			
ONE PLACE DECIMAL ± .06			
TWO PLACE DECIMAL ± .01			
THREE PLACE DECIMAL ± .01			
INTERPRET GEOMETRIC TOLERANCING PER:			
MATERIAL			
FINISH			
COMMENTS:			
See Part BOM			
SEE PARTS			
DO NOT SCALE DRAWING			

Byk-Rak

TITLE: KIT, BRACKET ASSY AD SL

SIZE DWG. NO. **B** B760 REV **A**

SCALE: 1:8 WEIGHT: 30.10 SHEET 1 OF 2

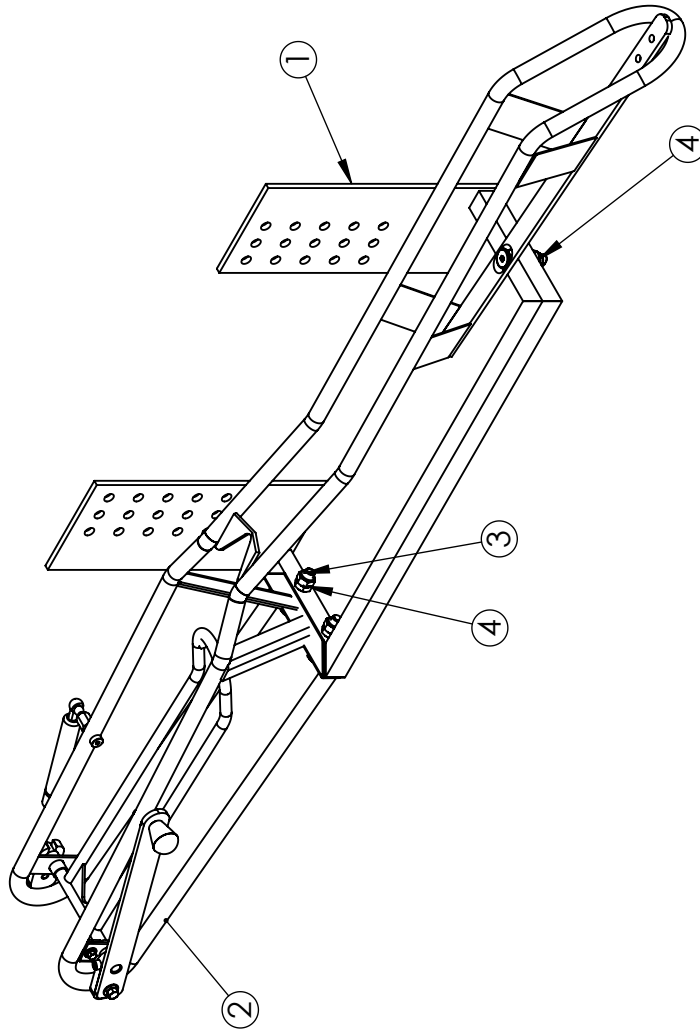
SEE SHEET 2 FOR B772 HARDWARE

REVISIONS

ZONE	REV.	DESCRIPTION	DATE
	A	INITIAL RELEASE	07/01/13
	B	REVISED TO UPDATED SUBASSEMBLY	1/31/2014

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	B0121A	Rack Asy - Single Station
2	1	B087-3D	Asy-Modular Rail
3	2	B2913D	Bolt - Hex Flg Hd
4	3	INV067-B292-3D	Hex Nut Nylon
5	1	B2853D	Bolt - Csk Skt Hd

(B)



DRAWN		NAME		DATE	
ALTAIR		ALTAIR		7-1-13	
CHECKED					
ENG. APPR.					
MFG APPR.					
G.A.					
COMMENTS:					
DIMENSIONS ARE IN INCHES					
TOLERANCES:					
FRACTIONAL: ±					
ANGULAR: MACH ±		BEND ±			
TWO PLACE DECIMAL ± .015"		THREE PLACE DECIMAL ±			
MATERIAL		---			
FINISH		---			
NEXT ASSY		USED ON			
APPLICATION		DO NOT SCALE DRAWING			



RACK ASY - SINGLE STN

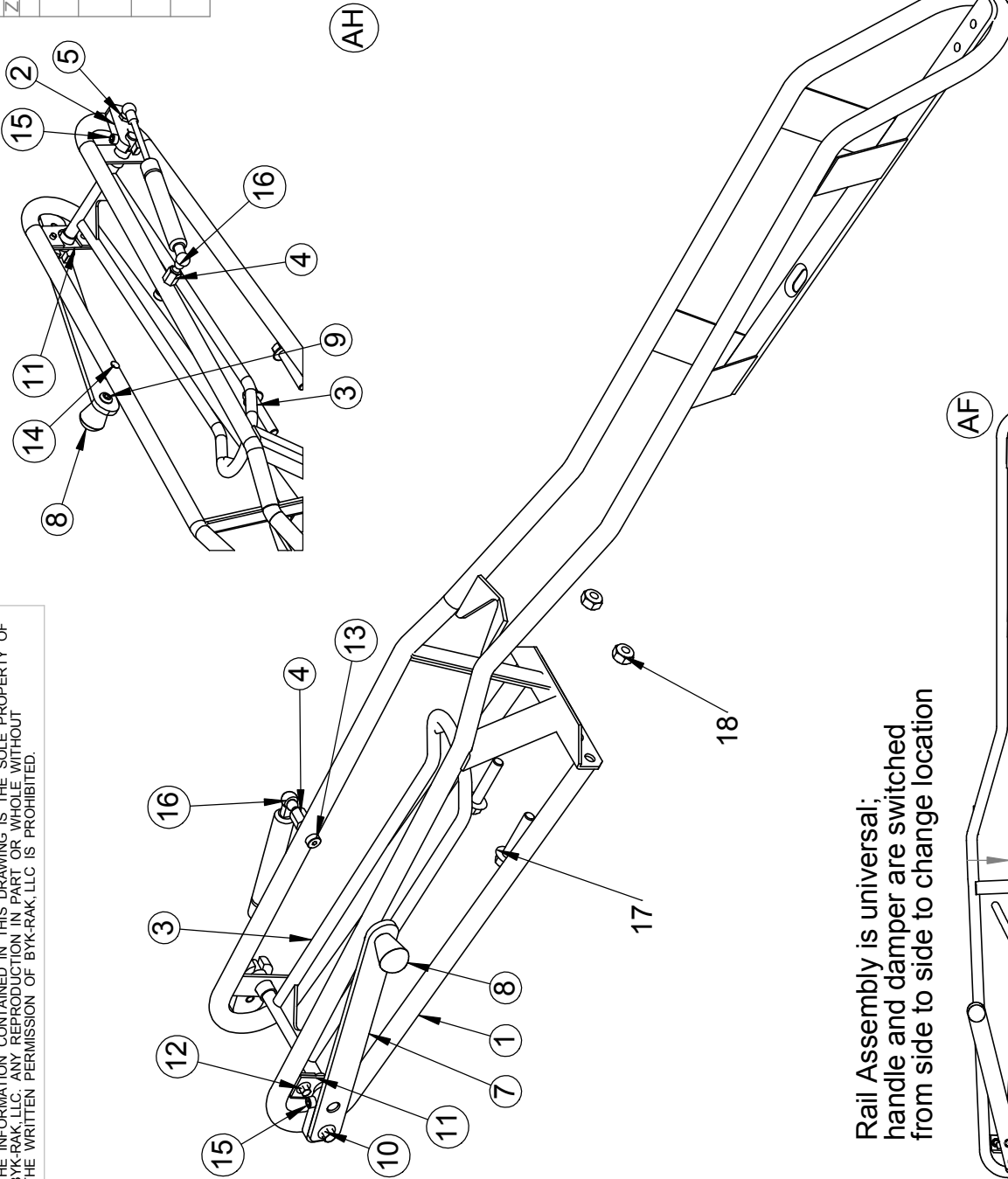
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SIZE	DWG. NO.	REV.
A	B0031A	B
SCALE: 1:8	WEIGHT:	SHEET 1 OF 2

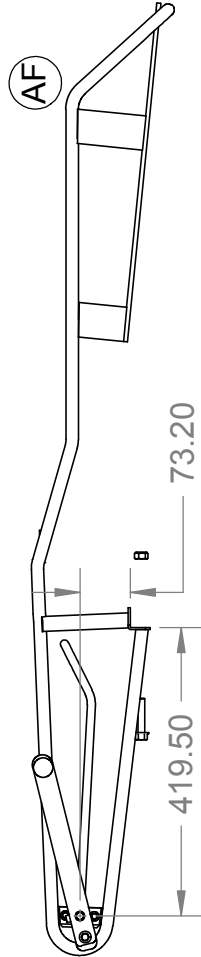
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ZONE	REV.	DESCRIPTION	DATE
AE		Revised To Updated Parts	12/4/2008
AF		REVISED TO UPDATED PARTS SPLIT PIN REPLACED BY SCREW MOVED RAIL MOUNTING	2/19/2009
AG		HARDWARE TO RESPECTIVE FRAME ASSEMBLIES	8/30/2010
AH		REVISED TO UPDATED PARTS	11/12/2010
J		Rail Attachment Hardware Added	6-5-12

BOM Table				
ITEM NO.	PART NUMBER	DESCRIPTION	REV	QTY
1	INV067-B070-3D	Rail Asy	AC-004	1
2	INV067-B016-2D	Plate	AC-005	2
3	INV067-B081-3D	Lock - Wheel	AC-006	1
4	INV067-B051-3D	Extension - Ball Stud	AB-003	1
5	INV067-B051-2D	Stud - Ball	AA-009	1
16	INV067-B056-AC	damper asy	AA-070	1
7	INV067-B017-3D	handle arm	AA-011	1
8	INV067-B102-HD	knob	AA-012	1
9	INV067-B113-HD	Bolt - Button Head	AA-019	1
10	INV067-B296-3D	Bolt - Hex Flg Hd	AB-005	1
11	INV067-B144-3D	D-Plate ass'y	AA-007	1
12	INV067-B293-3D	Bolt - Hex Flg Hd	AB-005	2
13	INV067-B298-3D	Bolt - Shoulder	AD-000	1
14	INV067-B122-3D	Plug - Dome	AA-004	2
15	INV067-B918-2D	Screw-M6x1.0x30 SCKT HD Cap	AA-007	2
16	Z900003	Safety Clip-Ball Socket		2
17	INV067-B291-3D	Bolt - Hex Flg Hd	AB-009	2
18	INV067-B292-3D	Hex Nut Nylon	AB-006	2



Rail Assembly is universal; handle and damper are switched from side to side to change location



Hardware Torque Specs are as follows:

- 6MM - 13.56 N-m (10 lbf-ft)
- 8MM - 27.12 N-m (20 lbf-ft)
- 10MM - 59.94 N-m (42 lbf-ft)

Notes	CAD Generated Drawing. Do Not Manually Update
Description	Asy-Modular Rail
Name	Asy-Modular Rail
Project:	Current production bike racks
Material:	Powder Coat Black, Thickness 0.1mm - 0.2mm
Mass:	5663.94
Scale	1:12
Part Seq.	J
Dwg. Seq.	J
Sheet	1 of 1

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patents pending

Byk-Rak, LLC PO Box 40 Owosso, MI 48867
Phone: 800-627-6627

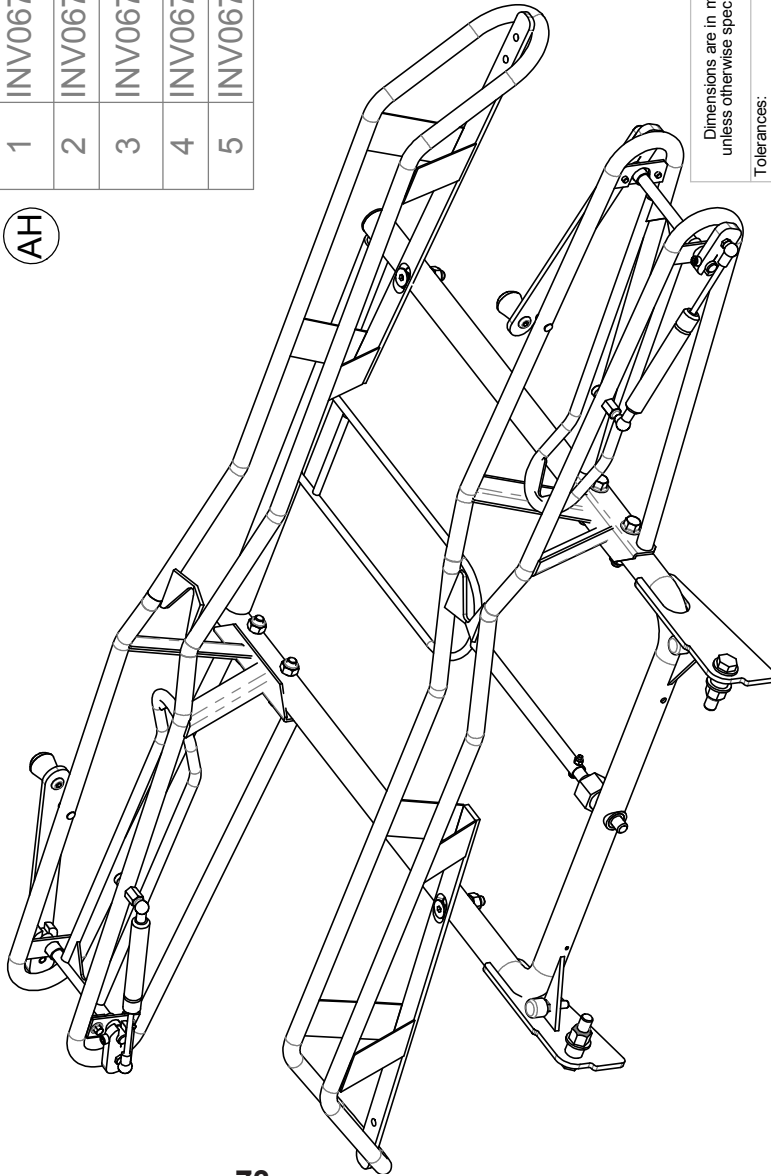
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General Notes:

Rail Assembly is universal: handle and damper are switched from side to side to change location

Hardware Torque Specs are as follows:
 6MM - 13.56 N-m (10 lbf-ft)
 8MM - 27.12 N-m (20 lbf-ft)
 10MM - 59.94 N-m (42 lbf-ft)

Quick Release Mounting kit (#Z900061) is available



REVISIONS			
ZONE	REV.	DESCRIPTION	DATE
	AE	REVISED TO UPDATED SUBASSEMBLIES	11/4/2008
	AF	REVISED TO UPDATED SUBASSEMBLIES	4/30/2009
	AG	RAIL MTG FASTENERS RELOCATED TO THIS ASSEMBLY	8/30/2010
	AH	REVISED TO UPDATED SUBASSEMBLIES	11/15/2010
	J	Remove spacers, updated frame	6/25/2012

ITEM NO.	PART NUMBER	DESCRIPTION	REVISION	QTY
1	INV067-B412-2D	Asy - Fr & Hardware	AD-002	1
2	INV067-B087-3D	Asy-Modular Rail	AG-010	2
3	INV067-B292-3D	Hex Nut Nylon	AB-006	6
4	INV067-B291-3D	Bolt - Hex Flg Hd	AB-009	4
5	INV067-B285-3D	Bolt - Csk Skt Hd	AC-009	2

(AH)

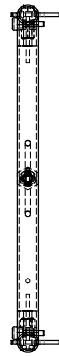
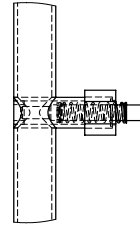
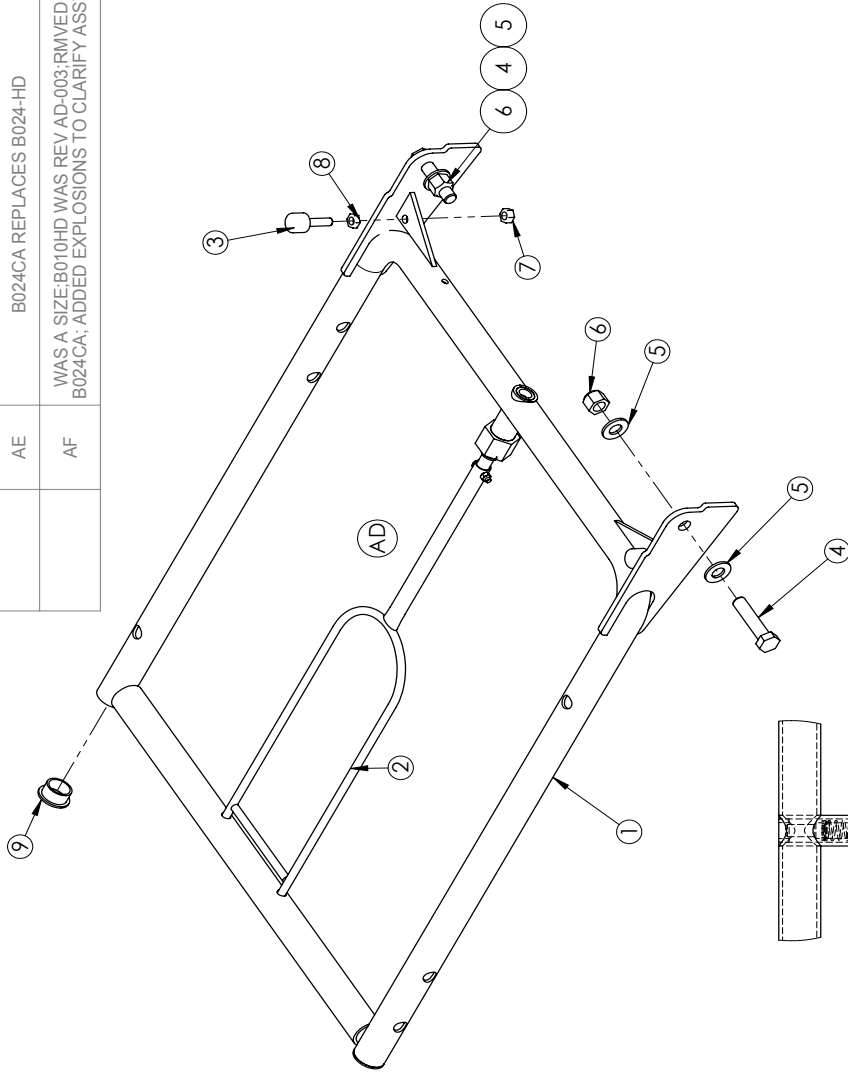
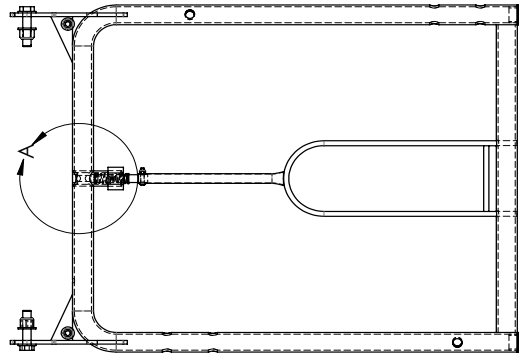
Notes		CAD Generated Drawing, Do Not Manually Update	
Description		Do Not Scale Drawing	
Name		Status:	
Bike Rack Cpt.		Project: Current production bike racks	
Scale		Mass: 17811	
1:8		Treatment: no treatment required	
Part Rev. Seq. J		Material:	
Dwg. No. INV067-B403-2D		Dimensions are in mm unless otherwise specified	
CAD File INV067-B403-2D		Tolerances:	
Scale 1:8		Material:	
Printed: Monday, June 25, 2012		Byk-Rak, LLC PO Box 40 Owosso, MI 48867	
Sheet 1 of 2		Phone: 800-627-6627	

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 patents pending



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REVISIONS			
ZONE	REV.	DESCRIPTION	DATE
	AA	BASILINE RELEASE	1/16/2008
	AB	ADDED HARDWARE TO FRAME ASY FRAME ASY RELEASED AS B410-2D	7/23/2008
	AC	B223-HD WAS B223-AC CORRECTED UNITS TO METRIC	11/4/2008
	AD	REVISED TO UPDATED SUBASSEMBLIES	4/21/2009
	AE	B024CA REPLACES B024-HD	5/21/2014
	AF	WAS A SIZE: B010HD WAS REV AD-003:RMVED B024CA; ADDED EXPLOSIONS TO CLARIFY ASSY	2/14/2020



ITEM NO.	PART NUMBER	REVISION	DESCRIPTION	QTY.
1	B4102D	AB-005	frame weld assembly	1
2	B010HD	AC-013	Handle Cpltd	1
3	B223HD	AE-013	Stopper- M8 x 1.25	2
4	B023AC	AA-027	Bolt 1/2" -13 2 1/4"	2
5	B030AC	AA-015	SAE 1/2" flat washer	4
6	B031AC	AA-018	Nut - Lock	2
7	B230HD	AA-012	Nut - M8 x 1.25 Hex	2
8	B231HD	AA-012	Nut - M8 x 1.25 Low Profile	2
9	B160AC	AA-016	end cap	2

AF **AD** **AC** **AE**

DETAIL A SCALE 1 : 4

UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 TOLERANCES:
 FRACTIONAL: ± 1/16
 ANGULAR: MACH: 1° BEND: ± 2°
 ONE PLACE DECIMAL: ± 0.06 ENG APPR.
 TWO PLACE DECIMAL: ± 0.03 MFG APPR.
 THREE PLACE DECIMAL: ± 0.01
 Q.A.
 INTERPRET GEOMETRIC TOLERANCING PER:
 MATERIAL:
 FINISH: POWDER COAT BLACK, THICKNESS 0.1mm-0.2mm
 DO NOT SCALE DRAWING

NAME: _____ DATE: _____
 ALT: AIR

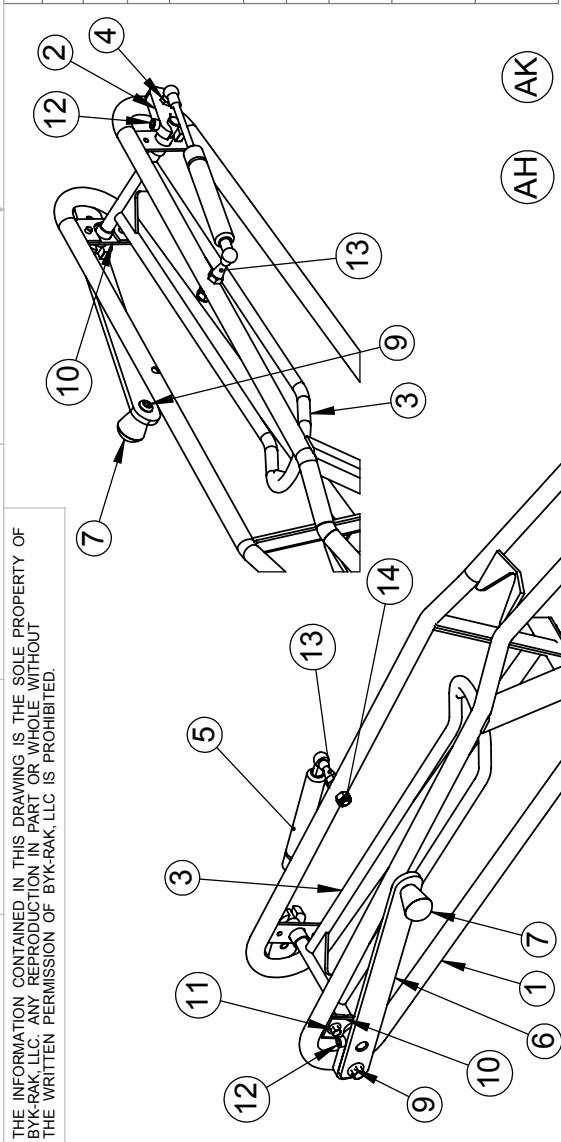
DRAWN: _____ CHECKED: _____
 ENG APPR. _____ MFG APPR. _____
 Q.A. _____

COMMENTS:

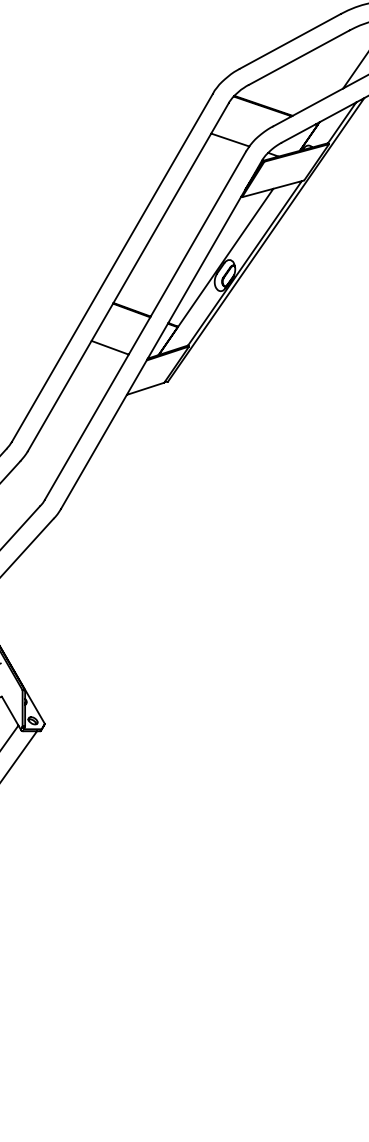
TITLE: **ASY - Fr & Hardware**

SIZE: _____ DWG. NO.: **B 4122D** REV: **AF**
 SCALE: 1:8 WEIGHT: 6903 (g) SHEET 1 OF 1

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ZONE	REV.	DESCRIPTION	DATE	APPROVED
	AE	Revised To Updated Parts	12/4/2008	
	AF	REVISED TO UPDATED PARTS SPLIT PIN REPLACED BY SCREW	2/19/2009	
	AG	MOVED RAIL MOUNTING HARDWARE TO RESPECTIVE FRAME ASSEMBLIES	8/30/2010	
	AH	REVISED TO UPDATED PARTS	11/12/2010	
	AJ	Rail Attachment Hardware Added	6-5-12	
	AK	B070-3D RYSED;RMV'D INV-067 NUMBERING	6/19/2018	JLG
	AL	Z900225 WAS B051-3D;Z900226 WAS B298-39	10/14/2019	JLG
	AM	ADDEDNOTE FOR Z900239 KIT	2/4/2020	2/4/2020



Rail Assembly is universal;
handle and damper are switched
from side to side to change location

*** ONLY AVAILABLE
IN KIT Z900239**

ITEM NO.	PART NUMBER	DESCRIPTION	REV	QTY
1	B070-3D	Rail Asy	AE	1
2	B016-2D	Plate	AC-005	2
3	B081-3D	Lock - Wheel	AC-006	1
4	B051-2D	Stud - Ball	AA-009	1
5	B056AC	Asm-Damper	AA-081	1
6	B017-3D	Handle Arm	AA-011	1
7	B102-HD	Knob	AA-012	1
8	B113-HD	Bolt - Button Head	AA-019	1
9	B296-3D	Bolt-Hex Flg,M8x1,25x25LG		1
10	B144-3D	D-Plate ass'y	AA-007	1
11	B293-3D	Bolt - Hex Flg Hd	AB-005	2
12	B918-2D	M - 6 x 1.0 x 30 Hex SHCS -- 30SHX		2
13	Z900225	EXTENSION, BALL STUD *		1
14	Z900226	LOCK NUT, M8 LOW PROFILE *		1

Notes
CAD Generated Drawing
Do Not Manually Update

Status: Do Not Scale Drawing

Description: Asy-Modular Rail

Name: Asy-Modular Rail

Project: Current production bike racks

Mass: 5482.44

Treatment: Powder Coat Black
Thickness 0.1mm - 0.2mm

Dimensions are in mm unless otherwise specified

Tolerances:

Material:

Scale: 1:12

Part Rev: AK

Dwg Rev: AM

Sheet: 1 of 1

Printed: Monday, February 24, 2020

Byk-Rak, LLC
PO Box 40, Orono, MI 48867
Phone: 800-827-6627

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patents pending

Hardware Torque Specs are as follows:
6MM - 13.56 N-m (10 lbf-ft)
8MM - 27.12 N-m (20 lbf-ft)
10MM - 59.94 N-m (42 lbf-ft)

REVISIONS		
ZONE	REV.	DESCRIPTION
	AA	BASELINE RELEASE
	B	Removed spacers, frame revised

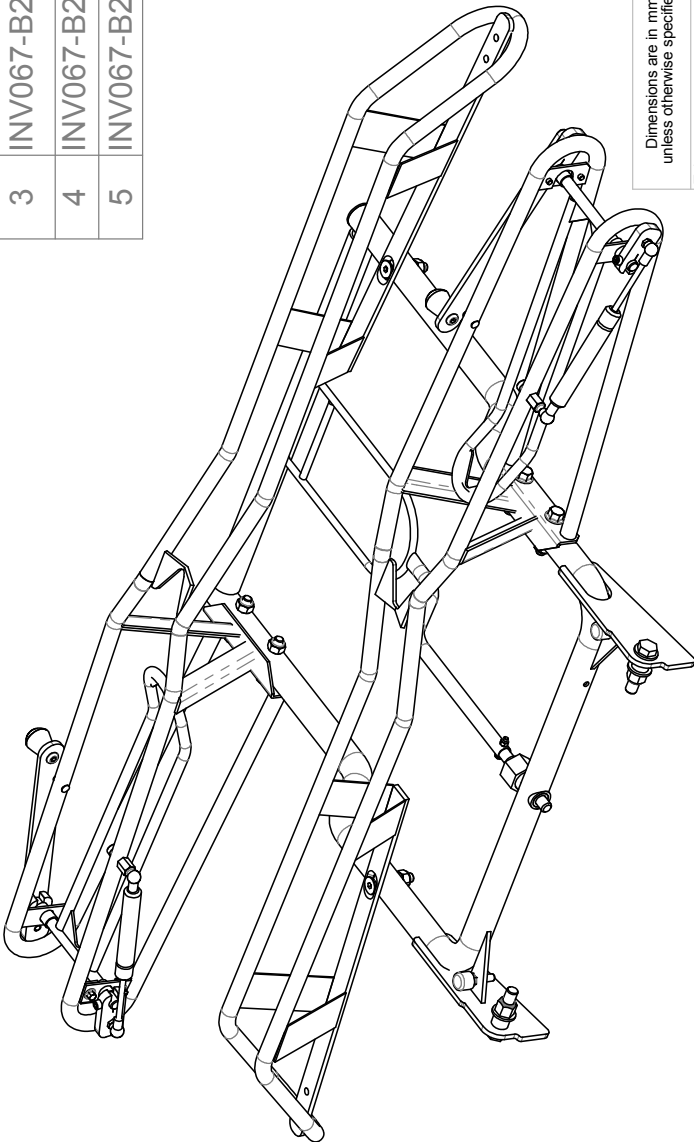
ZONE	REV.	DESCRIPTION	DATE
	AA	BASELINE RELEASE	02/10/2011
	B	Removed spacers, frame revised	6/25/2012

General Notes:

Rail Assembly is universal; handle and damper are switched from side to side to change location

Hardware Torque Specs are as follows:
 6MM - 13.56 N-m (10 lbf-ft)
 8MM - 27.12 N-m (20 lbf-ft)
 10MM - 59.94 N-m (42 lbf-ft)

Quick Release Mounting kit (#Z9000061) is available



ITEM NO.	PART NUMBER	DESCRIPTION	REVISION	QTY
1	INV067-B412-2G	Asy - Fr & Hardware	AA-012	1
2	INV067-B087-3D	Asy-Modular Rail	AG-010	2
3	INV067-B292-3D	Hex Nut Nylon	AB-006	6
4	INV067-B291-3D	Bolt - Hex Flg Hd	AB-009	4
5	INV067-B285-3D	Bolt - Csk Skt Hd	AC-009	2

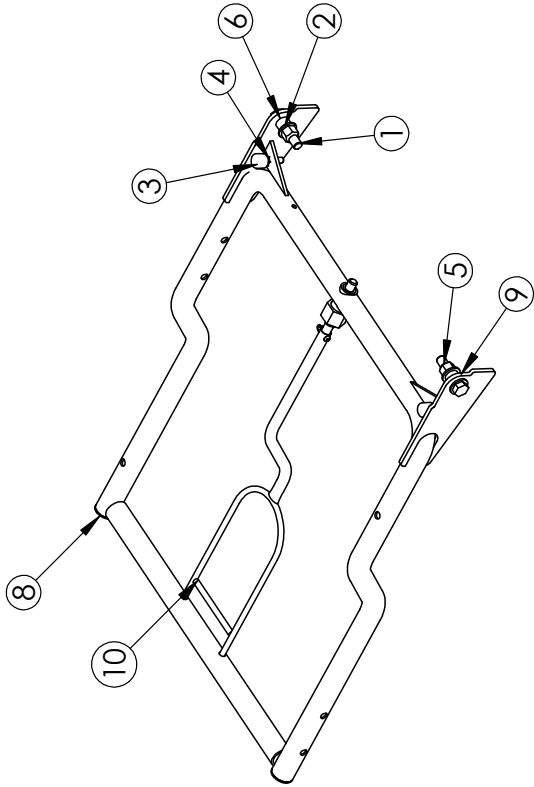
Confidential
 patents pending

Dimensions are in mm unless otherwise specified	CAD Generated Drawing, Do Not Manually Update	Notes
Tolerances:	Do Not Scale Drawing	Description Bike Rack Cplt.
Material:	Status:	Name
Treatment: no treatment required	Project: Current production bike racks	Bike Rack Cplt.
	Mass: 17858	Dwg. No. INV067-B403-2G
		Scale 1:8
		CAD File INV067-B403-2G
		Printed: Monday, June 25, 2012
		Part Rev. Seq. B
		Dwg. Rev. Seq. B
		Sheet 1 of 2

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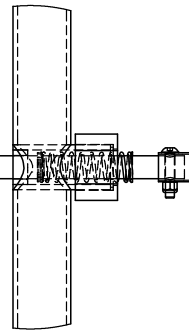
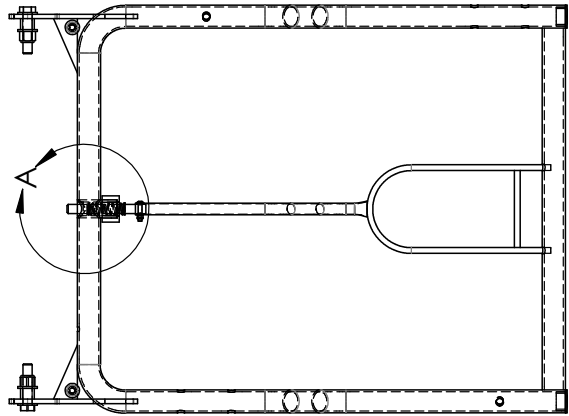
REV. REVISIONS	
REV.	DESCRIPTION
AA	BASELINE RELEASE
B	Frame revised
	DATE
	2/11/2011
	6/25/2012

A



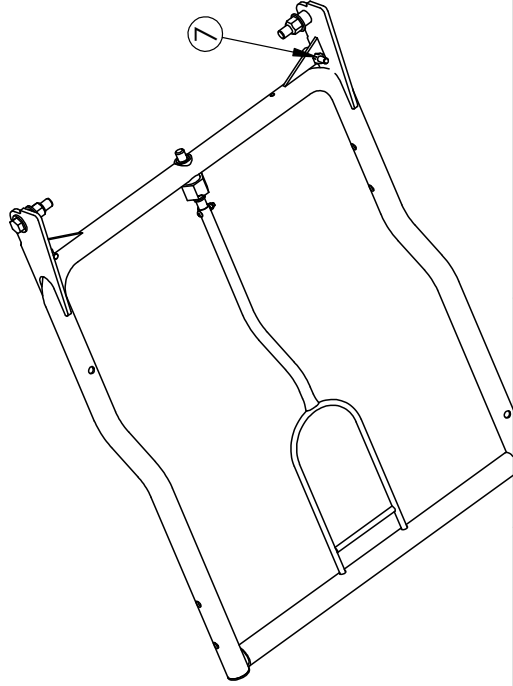
ITEM NO.	PART NUMBER	REVISION	DESCRIPTION	QTY.
1	INV067-B023-AC	AA-025	Bolt 1/2" -13 2 1/4"	2
2	INV067-B030-AC	AA-013	SAE 1/2" flat washer	4
3	INV067-B223-HD	AE-011	Stopper- M8 x 1.25	2
4	INV067-B231-HD	AA-010	Nut - M8 x 1.25 Low Profile	2
5	INV067-B031-AC	AA-016	Nut - Lock	2
6	INV067-B024-HD	AA-017	spacer	2
7	INV067-B230-HD	AA-010	Nut - M8 x 1.25 Hex	2
8	INV067-B160-AC	AA-014	end cap	2
9	INV067-B410-2G	AA-004	frame weld assembly	1
10	INV067-B010-2G	AA-007	Handle Cplt.	1

B



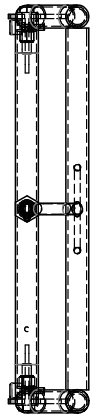
DETAIL A
SCALE 1 : 4

C



Notes	Dimensions are in mm unless otherwise specified
Notes	Do Not Scale Drawing
Description	Status:
Asy - Fr & Hardware	Do Not Scale Drawing
Name	Material:
Asy - Fr & Hardware	Material:
Project:	Treatment:
Current production bike racks	powder coated black, thickness 0.1mm-0.2mm
Size:	Mass:
A	6422 (g)
Dwg. No.	Byk-Rak
INV067-B412-2G	Byk-Rak, LLC PO Box 40 Owosso, MI 48867
Part Seq.	Phone: 800-627-6827
B	
Rev. B	
Dwg. B	
Rev. B	
Sheet	
1 of 1	

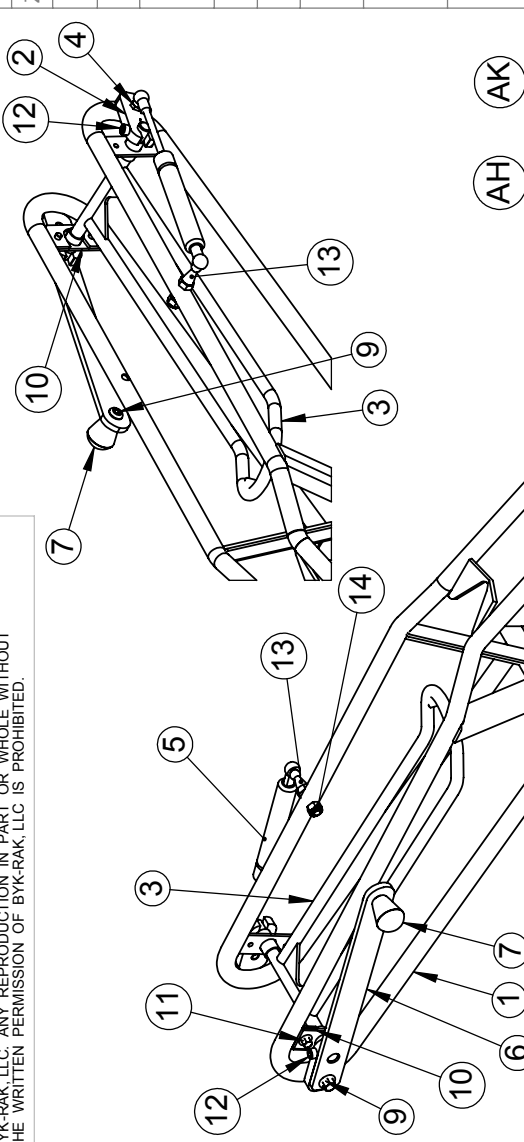
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8 7 6 5 4 3 2 1

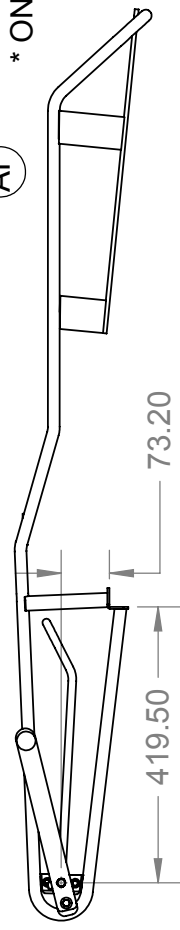
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ZONE	REV.	DESCRIPTION	DATE	APPROVED
	AE	Revised To Updated Parts	12/4/2008	
	AF	REVISED TO UPDATED PARTS SPLIT PIN REPLACED BY SCREW	2/19/2009	
	AG	MOVED RAIL MOUNTING HARDWARE TO RESPECTIVE FRAME ASSEMBLIES	8/30/2010	
	AH	REVISED TO UPDATED PARTS	11/12/2010	
	AJ	Rail Attachment Hardware Added	6-5-12	JLG
	AK	B070-3D RVSED;RMVED INV-067 NUMBERING	6/19/2018	
	AL	Z900225 WAS B051-3D;Z900226 WAS B298-39	10/14/2019	JLG
	AM	ADDEDNOTE FOR Z900239 KIT	2/4/2020	2/4/2020

BOM Table				
ITEM NO.	PART NUMBER	DESCRIPTION	REV	QTY
1	B070-3D	Rail Assy	AE	1
2	B016-2D	Plate	AC-005	2
3	B081-3D	Lock - Wheel	AC-006	1
4	B051-2D	Stud - Ball	AA-009	1
5	B056AC	Asm-Damper	AA-081	1
6	B017-3D	Handle Arm	AA-011	1
7	B102-HD	Knob	AA-012	1
8	B113-HD	Bolt - Button Head	AA-019	1
9	B296-3D	Bolt-Hex Fig.M8x1.25x25LG		1
10	B144-3D	D-Plate ass'y	AA-007	1
11	B293-3D	Bolt - Hex Flg Hd	AB-005	2
12	B918-2D	M - 6 x 1.0 x 30 Hex SHCS -- 30SHX		2
13	Z900225	EXTENSION, BALL STUD *		1
14	Z900226	LOCK NUT, M8 LOW PROFILE *		1

Rail Assembly is universal;
handle and damper are switched
from side to side to change location



Hardware Torque Specs are as follows:
6MM - 13.56 N-m (10 lbf-ft)
8MM - 27.12 N-m (20 lbf-ft)
10MM - 59.94 N-m (42 lbf-ft)

Notes	
CAD Generated Drawing. Do Not Manually Update	
Do Not Scale Drawing	
Status:	Asy-Modular Rail
Name	
Project: Asy-Modular Rail	
Current production bike racks	
Mass:	Size: B087-3D
5482.44	Dwg. No. B087-3D
	Part Rev. AK
	Dwg. Rev. AM
	Sheet 1 of 1
	Scale: 1:12
	CAD File: B087-3D
	Printed: Monday, February 24, 2020

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REV. NO.		DESCRIPTION	DATE
AA		BASELINE RELEASE	08/25/10
AB		REVISED TO UPDATED SUBASSEMBLIES	11/3/2010
AC		REVISED TO UPDATED SUBASSEMBLIES	11/15/2010
AD		Hardware updated	5/8/2012
AE		REVISED TO UPDATED SUBASSEMBLIES	12/3/2014

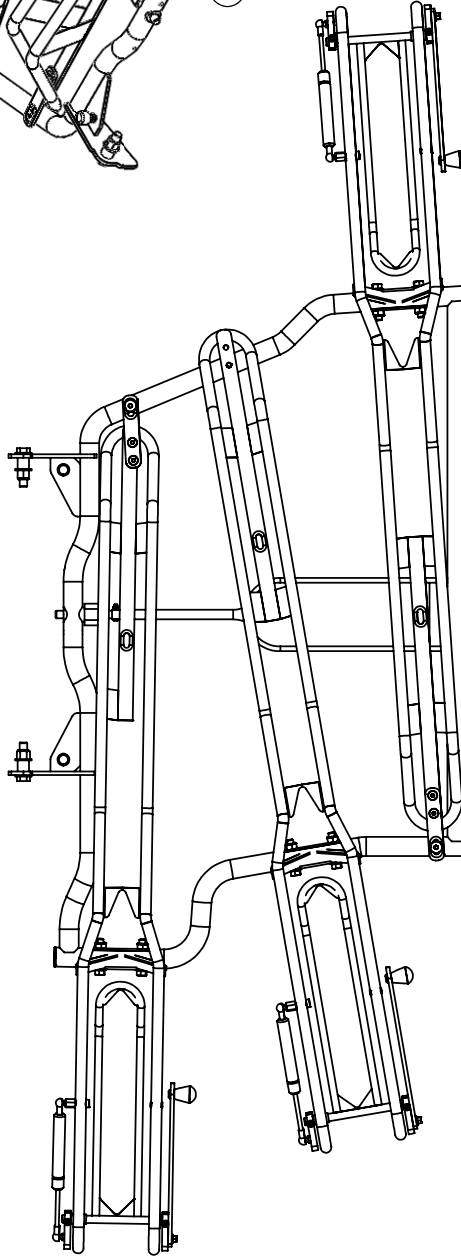
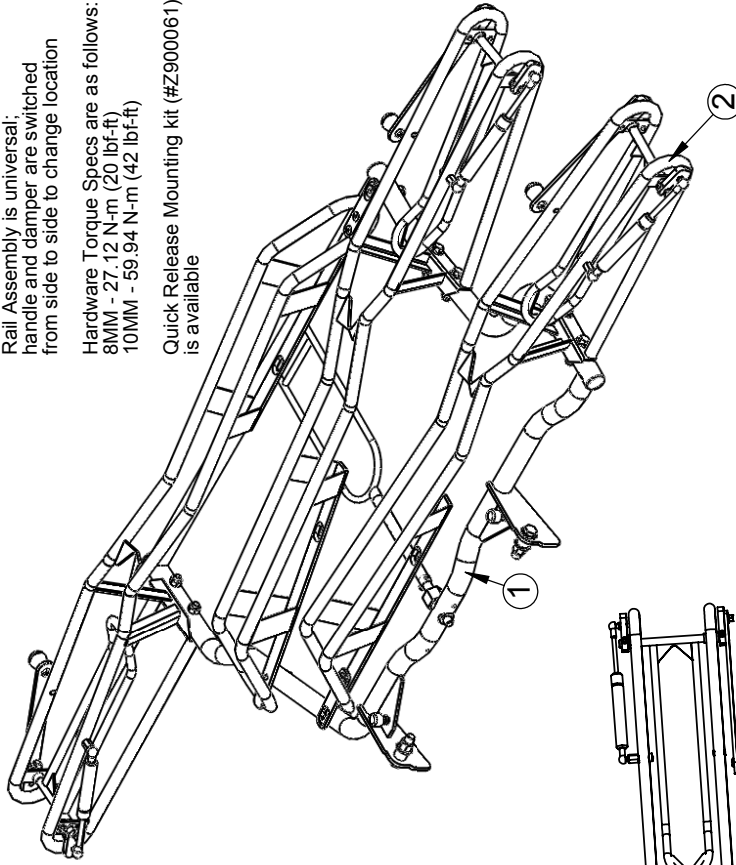
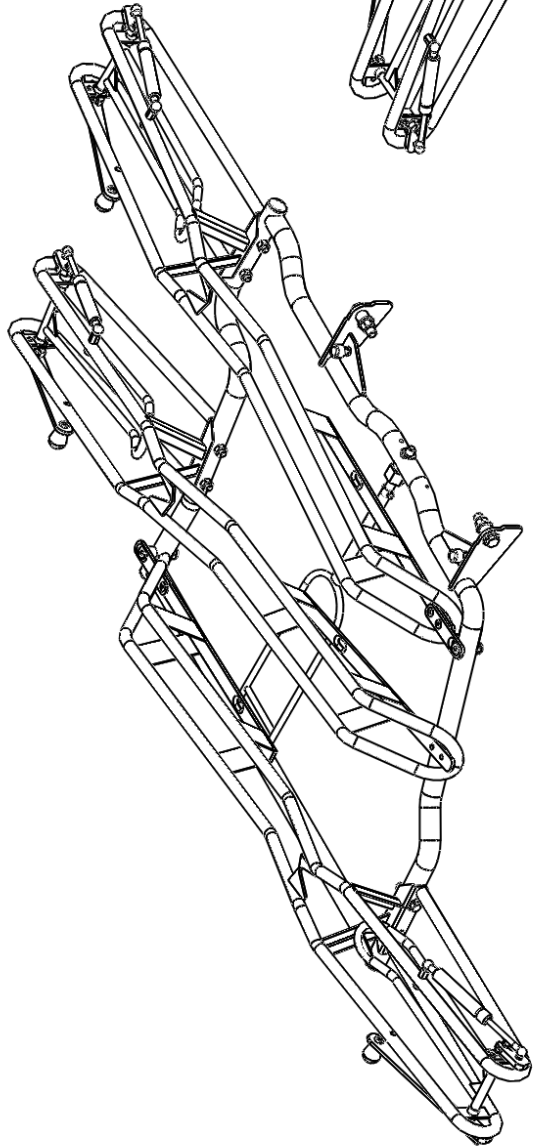
ITEM NO.	PART NUMBER	DESCRIPTION	REVISION	QTY.
1	B0723E	Frame Assy 3-Position Wide	AG-004	1
2	B0873D	Asm-Modular Rail	AJ-015	3

General Notes:

Rail Assembly is universal; handle and damper are switched from side to side to change location

Hardware Torque Specs are as follows:
 8MM - 27.12 N-m (20 lbf-ft)
 10MM - 59.94 N-m (42 lbf-ft)

Quick Release Mounting kit (#Z9000061) is available



		Asm-Rack 3-Position Wide	
NAME	JJK	DATE	12/19/14
DRAWN	CHECKED	ENG APPR.	MFG APPR.
DIMENSIONS ARE IN MM TOLERANCES UNLESS NOTED: FRACTIONAL ± ANGULAR: MACH ±1.0° BEND ±1.0° ONE PLACE DECIMAL ±1.5 TWO PLACE DECIMAL ±0.38 TRIMLINE ±1.5 HOLE SIZE ±.10 MATERIAL			
FINISH no treatment required		COMMENTS:	
NEXT ASSY	USED ON	DO NOT SCALE DRAWING	
APPLICATION			
PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF BYK RAK. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF BYK RAK IS PROHIBITED.			
SIZE	DWG. NO.	REV.	SHEET 1 OF 2
A	B0033E	AE-001	
SCALE: 1:12	WEIGHT: 27827 (g)		

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 IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF BYK-RAK LLC IS STRICTLY PROHIBITED.

REVISIONS		
REV.	DESCRIPTION	DATE
AA	BASELINE RELEASE	9/1/2010
AB	REVISED TO UPDATED SUBASSEMBLIES	11/3/2010
AC	Hardware and components added	2/8/2012
AD	Updated hardware	5-8-12
AE	Removed 1 spacer updated Bolt B285-3D	5-18-12
AF	Bolt B296-3D Added	6-5-12
AG	REVISED TO UPDATED ASSEMBLIES	2/3/2014
AH	WAS A SIZE-REVISED TO LATEST ASSYS. RMV'D SECT A-A; ADD EXPLODED VIEW	2/12/2020

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	B2103E	Frame Weld Assy 3-Position Wide	1
2	B010HD	Asm-Release Handle	1
3	B2833D	Support Extension	2
4	B024CA	Spacer	1
5	B223HD	Stopper- M8 x 1.25	2
6	B023AC	Bolt-Hex Head, 1/2-20x2 1/4Lg	2
7	B2853D	Bolt-C/Sink Skt Hd, 10x1.5x50Lg	1
8	B2853E	Bolt-C/Sink Skt Hd, 10x1.5x65Lg	1
9	B2963E	Bolt-Hex Flange, M8x1.25x40Lg	1
10	B2863D	Bolt-C/Sink Skt Hd, M8x1.25x15Lg	4
11	B030AC	Washer-Flat 1/2"	4
12	B031AC	Nut-Lock Nylon, 1/2-13	2
13	B292-3D	M10 Hex Nut Nylon	2
14	B230HD	Nut-Hex, M8x1.25	2
15	B231HD	Nut - M8 x 1.25 Low Profile	2
16	B160AC	Cap-End	3

UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 TOLERANCES:
 FRACTIONAL: 1/16
 ANGULAR: MACH: 1° BEND: ± 2°
 ONE PLACE DECIMAL: ± .06
 TWO PLACE DECIMAL: ± .03
 THREE PLACE DECIMAL: ± .01

INTERPRET GEOMETRIC TOLERANCING PER:
 MATERIAL:
 FINISH:

DO NOT SCALE DRAWING

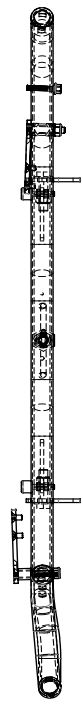
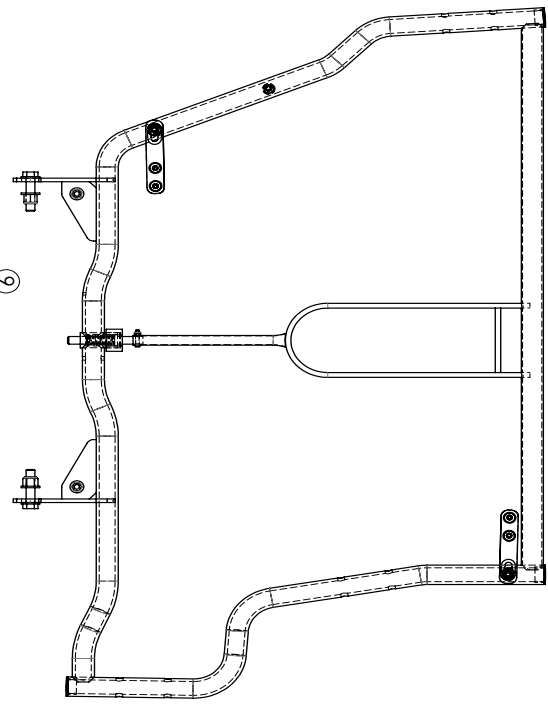
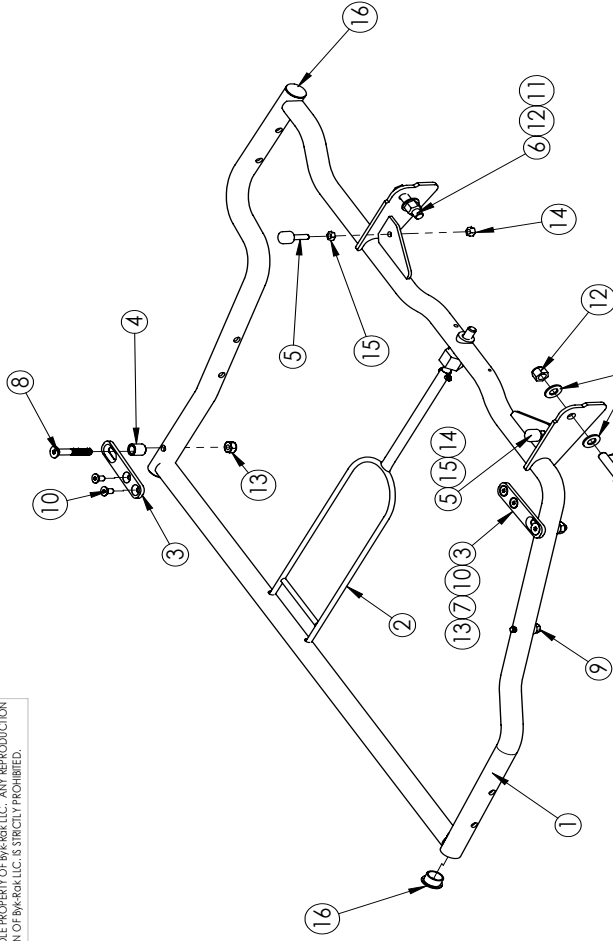
BYK-RAK™
Frame Assy 3-Position Wide

SIZE DWG. NO. **B** **B0123E** REV **AH**

SCALE: 1:8 WEIGHT: 11064 g SHEET 1 OF 1

(AB) (AG)

NOTE: ITEMS 9 & 10
 SUPPLIED LOOSE
 IN ASSEMBLY



REVISONS			
ZONE	REV.	DESCRIPTION	DATE
	AA	BASELINE RELEASE	05/19/10
	AB	REVISED TO UPDATED SUBASSEMBLIES	11/15/2010
	AC	ACTUATOR WAS B903-HD	8/12/2013

ITEM NO.	PART NUMBER	DESCRIPTION	REVISION	QTY
1	B403-2D	Bike Rack Cplt.	AJ-004	1
2	B903-3D	Brkt Asy - Actuator Mtg	AA-004	1

General Notes:

Rail Assembly is universal; handle and damper are switched from side to side to change location

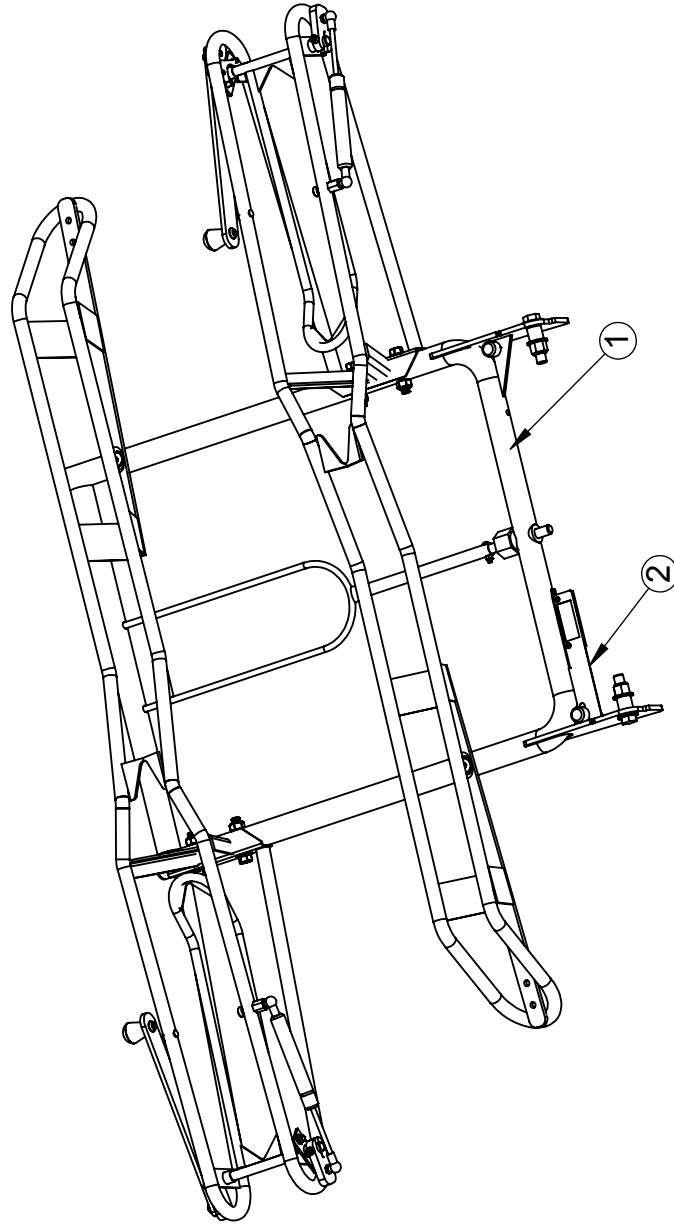
Hardware Torque Specs are as follows:
 6MM - 13.56 N-m (10 lbf-ft)
 8MM - 27.12 N-m (20 lbf-ft)
 10MM - 59.94 N-m (42 lbf-ft)

Quick Release Mounting kit (#Z9000061) is available


Part # Description
 B403-2DSB Powder Coated Black
 B403-2DSN Non-Glare
 B403-2DSE Electro Polished

Material: Stainless Steel

All Hardware Zinc Plated

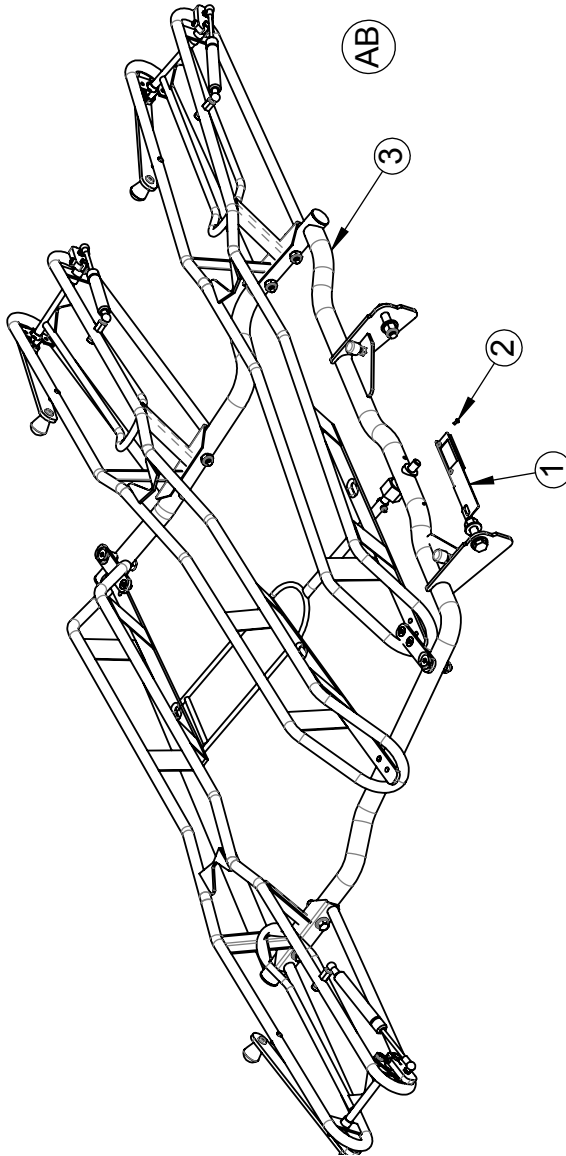


81

		NAME DATE ALTAIR	
DIMENSIONS ARE IN MM TOLERANCES UNLESS NOTED: FRACTIONAL ± ANGULAR: MACH ±1.0° BEND ±1.0° ONE PLACE DECIMAL ±1.5 TWO PLACE DECIMAL ±0.38 TRIMLINE ±1.5 HOLE SIZE ±1.0 MATERIAL		DRAWN CHECKED ENG APPR. MFG APPR. Q.A. COMMENTS:	
NEXT ASSY USED ON	APPLICATION DO NOT SCALE DRAWING	FINISH	
PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF BYK RAK. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF BYK RAK IS PROHIBITED.		SCALE: 1:8 WEIGHT:	
SIZE DWG. NO. B4032DS		REV. B	
SHEET 1 OF 2		SCALE: 1:8 WEIGHT:	

REVOLUTIONS		
REV.	DESCRIPTION	DATE
AA	BASELINE RELEASE	7/22/2014
AB	ITEM 3 REVISED	1/10/2015

ITEM NO.	PART NUMBER	DESCRIPTION	REVISION	QTY.
1	INV067-B903-3D	Brkt Asy - Actuator Mtg	AC-007	1
2	INV067-B913-HD	rivet 1/8", 5/16" long	AA-006	1
3	B003-3E	Asm-Rack 3-Position Wide	AE-001	1




General Notes:

Rail Assembly is universal; handle and damper are switched from side to side to change location

Hardware Torque Specs are as follows:
 8MM - 27.12 N-m (20 lbf-ft)
 10MM - 59.94 N-m (42 lbf-ft)

Quick Release Mounting kit (#Z900061) is available

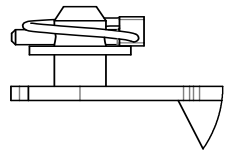
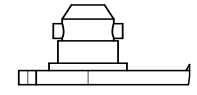
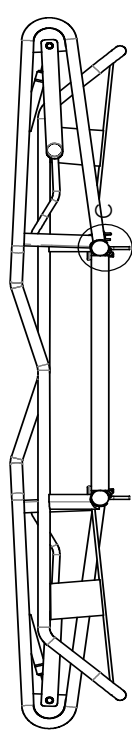
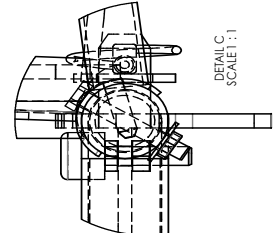
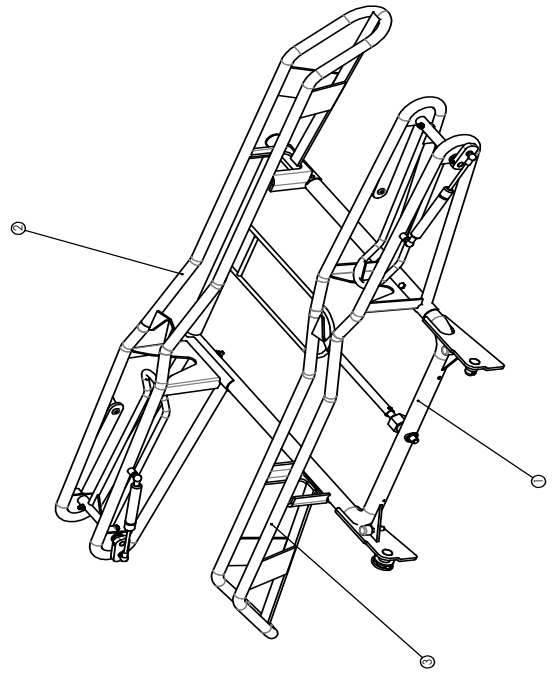
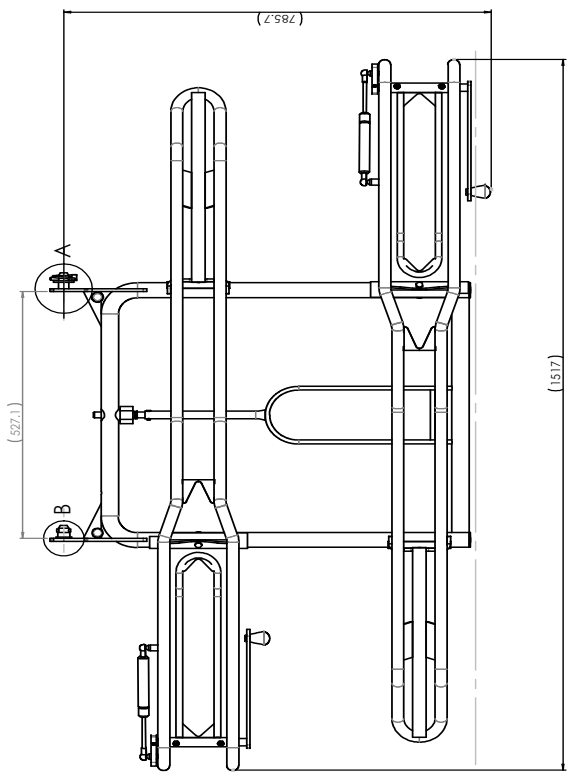
		Bike Rack 3 Pos with Sensor	
NAME	DATE	SIZE	REV.
ALTAIR		A	AA-010
DRAWN	CHECKED	SCALE:1:12	WEIGHT:
ENG APPR.	MFG APPR.		
Q.A.	COMMENTS:		
DIMENSIONS ARE IN MM TOLERANCES UNLESS NOTED: FRACTIONAL ± ANGULAR: MACH ±1.0° BEND ±1.0° ONE PLACE DECIMAL ±1.5 TWO PLACE DECIMAL ±0.38 HOLE SIZE ±1.0 MATERIAL		DO NOT SCALE DRAWING	
NEXT ASSY	USED ON	APPLICATION	

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REV.	DATE	DESCRIPTION
001	05/17/2008	Initial Release
002	05/17/2008	Initial Release
003	05/17/2008	Initial Release
004	05/17/2008	Initial Release
005	05/17/2008	Initial Release
006	05/17/2008	Initial Release
007	05/17/2008	Initial Release
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099	05/17/2008	Initial Release
100	05/17/2008	Initial Release

AG

ITEM NO.	PART NUMBER	DESCRIPTION	REVISION	QTY
1	11110208	Frame Assembly, incl. wheels	1	1
2	11110209	Quick Release Kit	1	1
3	11110210	Quick Release Mounting Kit	1	1
4	11110211	Quick Release Mounting Kit	1	1
5	11110212	Quick Release Mounting Kit	1	1



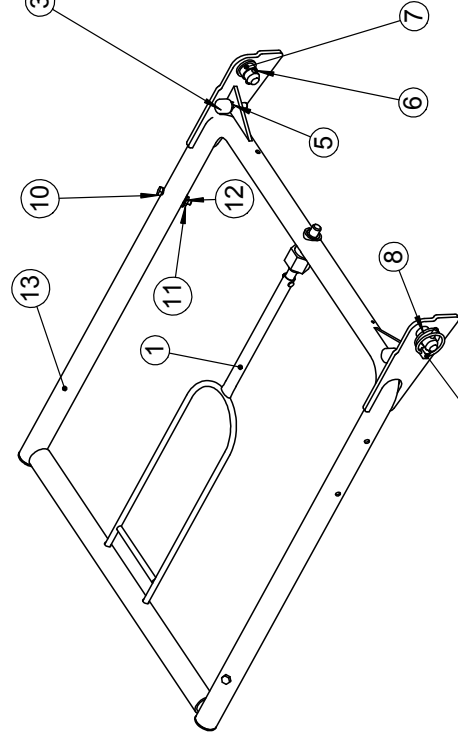
General Notes:
 (A) Hardware Torque Specs are as follows:
 1/4"-20 UNC - 8 ft lbs (10.85 N-m)
 (B) Quick Release Mounting kit (#7900061) is available



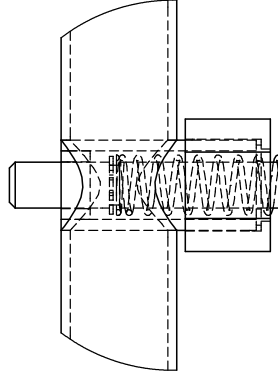
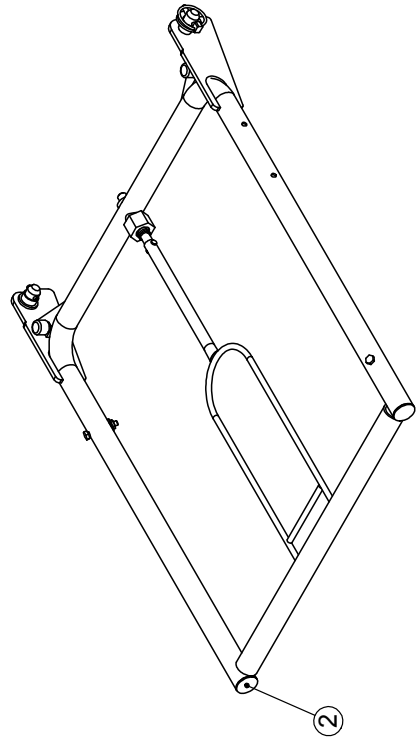
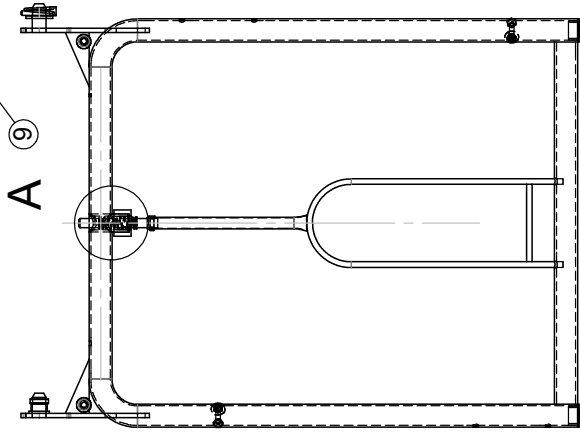
Byk-Rak Bike Rack Cplt. B403hd

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ZONE	REV.	DESCRIPTION	DATE
	AA	Baseline release	5/18/2006
	AC	ADDED HARDWARE TO FRAME ASYFRAME ASY RELEASED AS B410-HDCORRECTED UNITS TO METRIC	11/10/2008
	AD	INV067-B411-HD WAS INV067-B010-HD INV067-B223-HD WAS INV067-B223-AC	1/9/2009
	E	Frame Weld Asm Updated	12-11-12



ITEM NO.	PART NUMBER	Revision	DESCRIPTION	QTY.
1	INV067-B411-HD	AA-001	Handle Cpt.	1
2	INV067-B160-AC	AA-014	end cap	2
3	INV067-B223-HD	AE-011	Stopper- M8 x 1.25	2
4	INV067-B230-HD	AA-010	Nut - M8 x 1.25 Hex	2
5	INV067-B231-HD	AA-010	Nut - M8 x 1.25 Low Profile	2
6	INV067-B432-HD	AA-006	roll pin	1
7	INV067-B047-HD	AA-009	bushing	1
8	INV067-B430-HD	AB-001	SAE 3/4" flat washer	1
9	INV067-B431-HD	AB-004	Pin - Linch	1
10	INV067-B042-HD	AA-002	bolt 1/4"-20 1 3/4"	2
11	INV067-B032-AC	AA-009	lock nut 1/4"-20 grade 5	2
12	INV067-B028-HD	AA-011	SAE 1/4" flat washer	2
13	INV067-B410-HD	B	Frame Weld Assembly	1



DETAIL A
SCALE 1:2

Dimensions are in mm unless otherwise specified	CAD Generated Drawing, Do Not Manually Update	Notes
Tolerances: +/- 1.0 mm	Do Not Scale Drawing	Description Frame Assembly Cpt
Material:	Status:	Name Frame Assembly Cpt
Treatment: powder coated black thickness 0.1mm-0.2mm	Project: Current production bike racks	Size Dwg No A INV067-B412-HD
Mass: 6356.602(g)	Material: 6061-T6	Scale 1:10
		Part Seq AD-001
		Dwg Seq E
		Rev. Seq E
		Sheet 1 of 1
		Printed: Tuesday, December 11, 2012

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patents pending

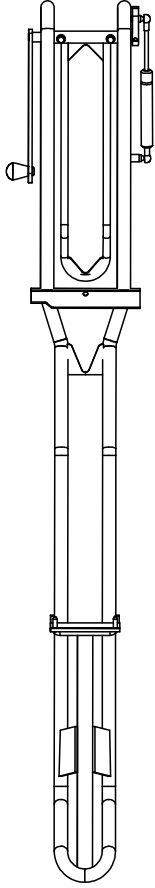
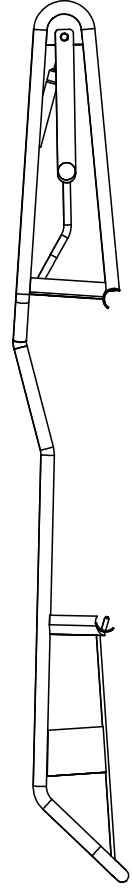
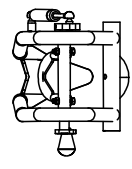
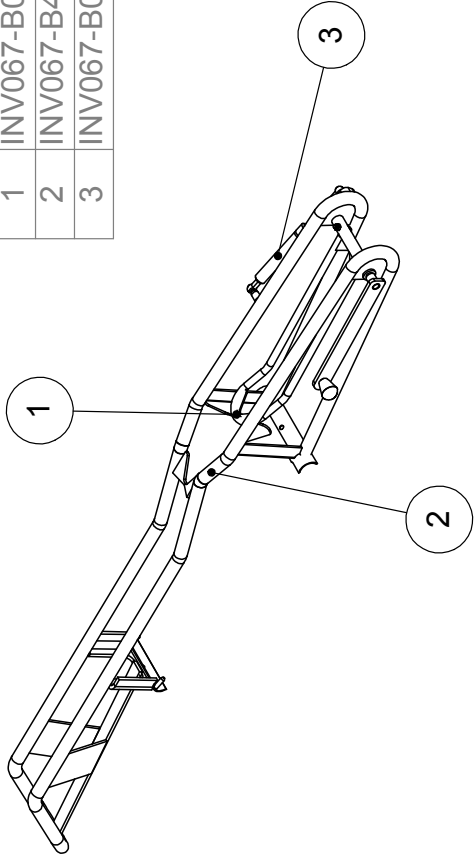


1 2 3 4 5 6 7 8

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REVISIONS		DATE
ZONE	REV.	DESCRIPTION
	AA	Baseline Release
		11/11/2008

ITEM NO.	PART NUMBER	Revision	DESCRIPTION	QTY.
1	INV067-B080-HD	AE-014	Wheel Lock Cplt - Outside Rail	1
2	INV067-B470-HD	AC-005	Rail Ass'y	1
3	INV067-B056-AC	AA-070	damper asy	1



Confidential
patents pending

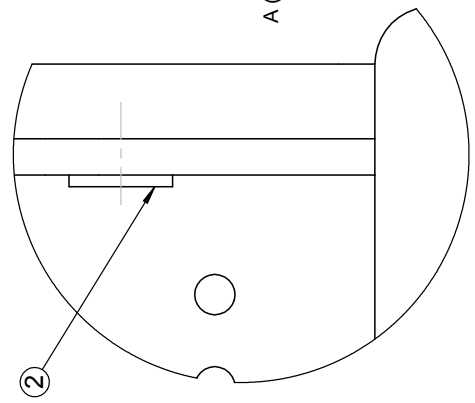
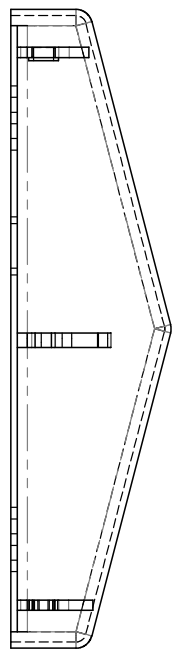
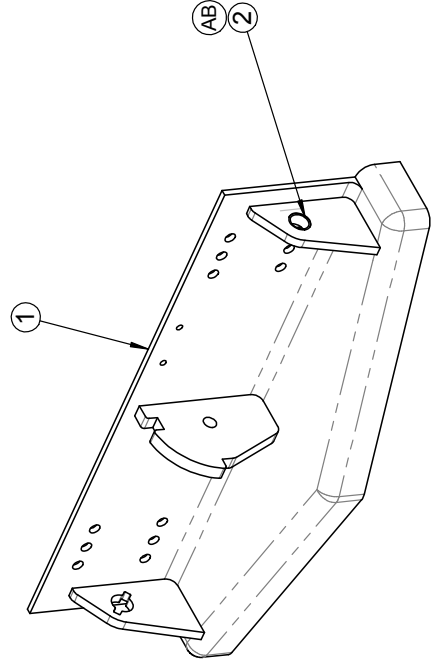
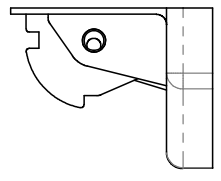
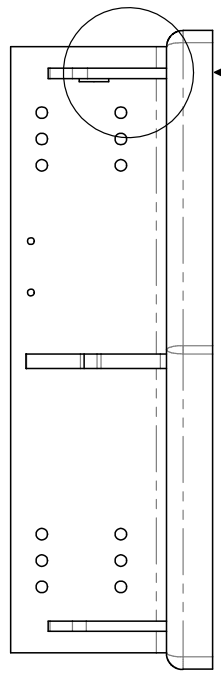
Notes	CAD Generated Drawing, Do Not Manually Update
Description	Assy-Modular Rail
Name	Assy-Modular Rail
Size	A
Dwg. No.	INV067-B471-HD
Rev. Seq.	AA-007
Scale	1:12
CAD File	INV067-B471-HD
Sheet	1 of 1
Printed:	Friday, July 20, 2012



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ZONE	REV.	DESCRIPTION	DATE
	AA	Baseline release	5/18/2006
	AB	bushing (INV067-B044-AC) replaced by bushing (INV067-B047-HD)	7/10/2006
	AC	Revised To Updated Subassemblies	11/10/2008
	D	B413HD revised	4-30-12

ITEM NO.	PART NUMBER	Revision	DESCRIPTION	QTY.
1	INV067-B413-HD	AC-000	Attachment Bracket	1
2	INV067-B047-HD	AA-009	bushing	1



A (1 : 5)

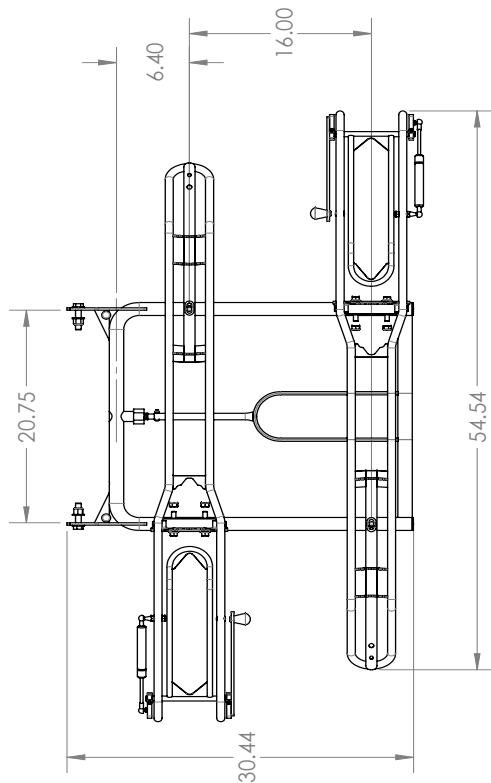
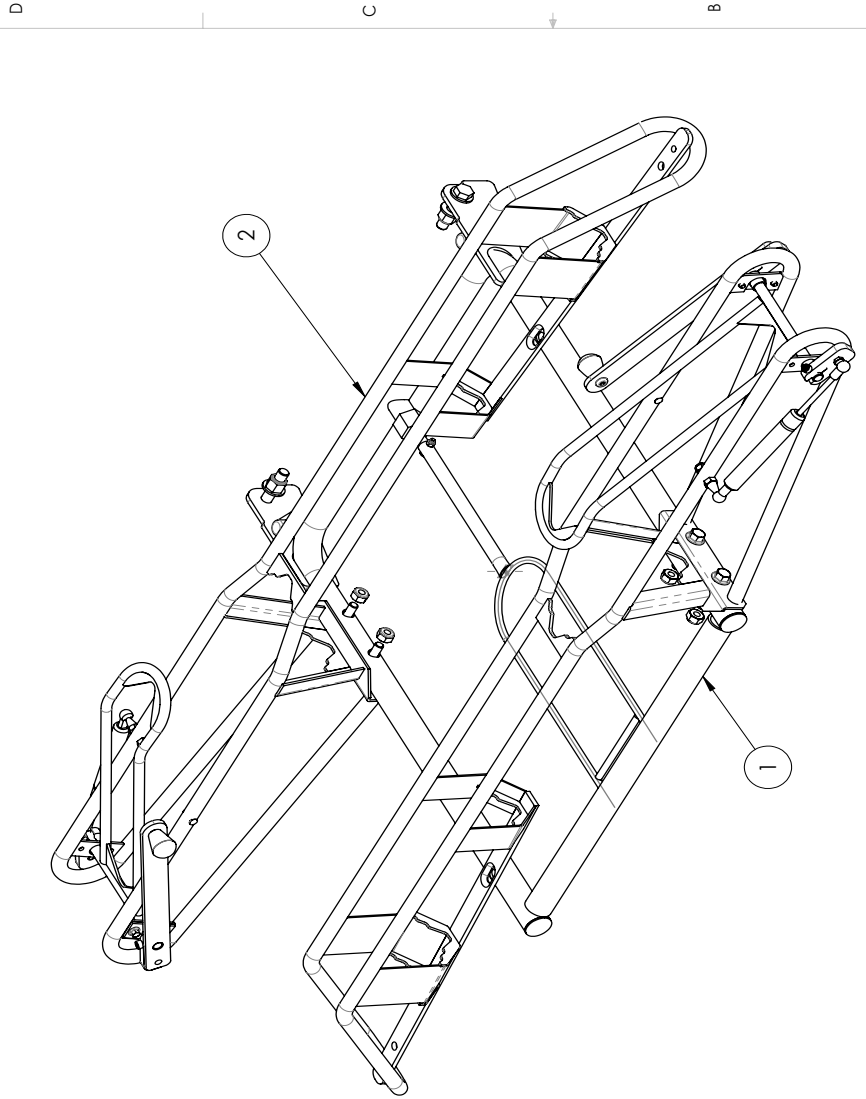
Notes	CAD Generated Drawing. Do Not Manually Update
Description	Hinge Bracket
Name	Hinge Bracket
Size	A
Dwg. No.	INV067-B402-HD
Scale	1:7
CAD File	INV067-B402-HD
Part Seq.	D
Rev. Seq.	D
Sheet	1 of 1
Printed:	Monday, April 30, 2012



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patents pending

ZONE	REV.	DESCRIPTION	DATE	APPROVED
B		REDRAWN IN SOLIDWORKS. BOM ADDED	2/20/2020	JIG

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UNLESS OTHERWISE SPECIFIED:	NAME	DATE
DIMENSIONS ARE IN INCHES	JIG	2/20/2020
TOLERANCES:		
FRACTIONAL: ± 1/16		
ANGULAR: MACH: ± BEND: ± 2°		
ONE PLACE DECIMAL: ± .06		
TWO PLACE DECIMAL: ± .03		
THREE PLACE DECIMAL: ± .01		
INTERPRET GEOMETRIC TOLERANCING PER:		
MATERIAL:		
See Part BOM		
FINISH:		
DO NOT SCALE DRAWING		

REV	B	SIZE	DWG. NO.	B4033D
APPROVED	JIG	DATE	2/20/2020	
TITLE: Bike Rack 2 Position with 3" Wide Rails				
SCALE: 1:6 WEIGHT: 23.16 SHEET 1 OF 1				

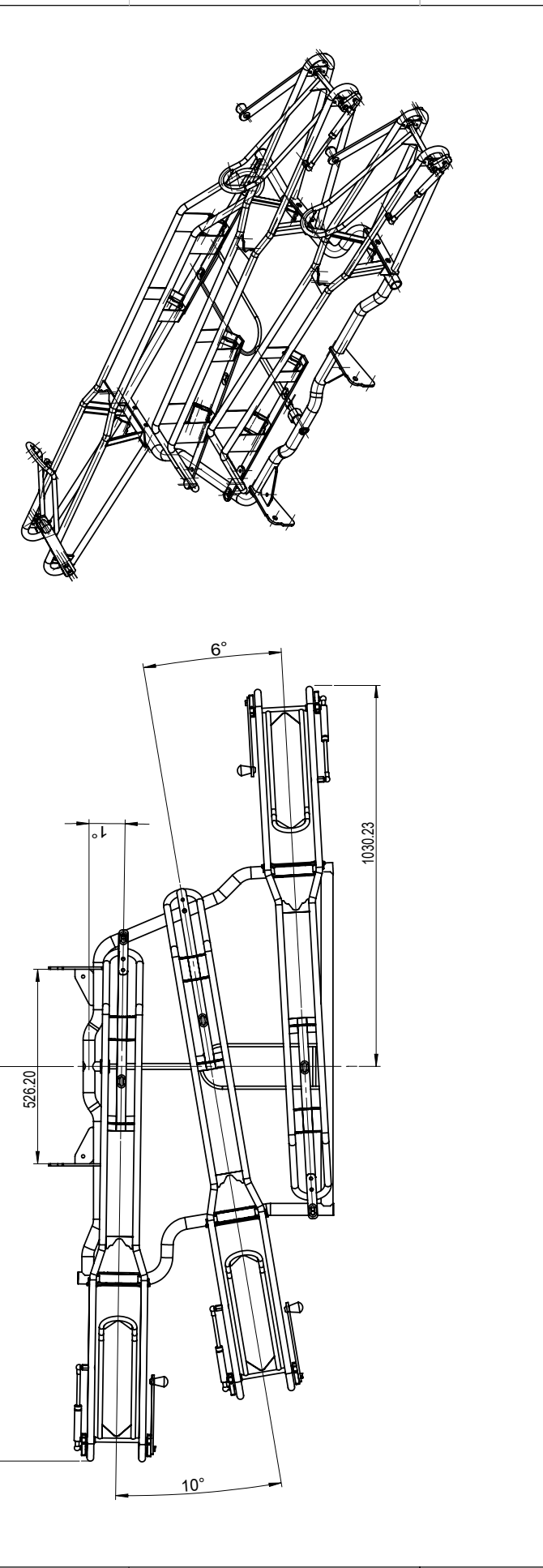
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	B4122D	Asy - Fr & Hardware	1
2	B097-3D	ASSY, MODULAR RAIL 3"	2

8 7 6 5 4 3 2 1

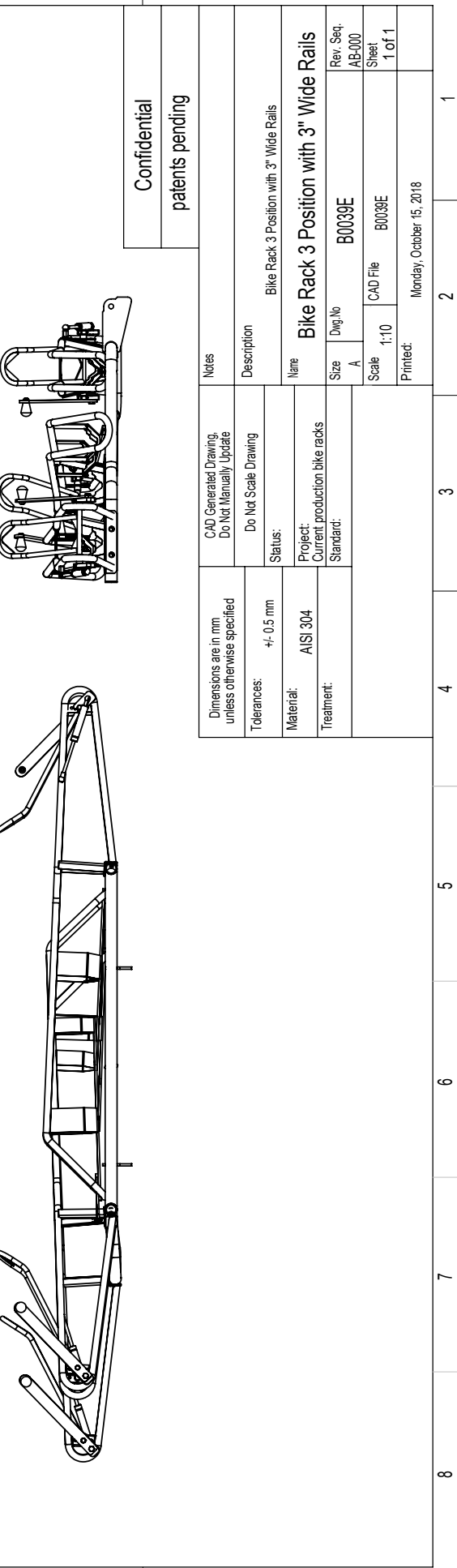
ZONE		REV.	DESCRIPTION	DATE

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A



B



C



D

Notes		CAD Generated Drawing, Do Not Manually Update	
Description		Do Not Scale Drawing	
Name		Status:	
Size		Project:	
Dwg. No		Standard:	
Rev. Seq.		Material:	
AB-000		Treatment:	
Sheet			
1 of 1			
Printed:			
Monday, October 15, 2018			

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patents pending

Bike Rack 3 Position with 3" Wide Rails

B0039E

B0039E

1:10

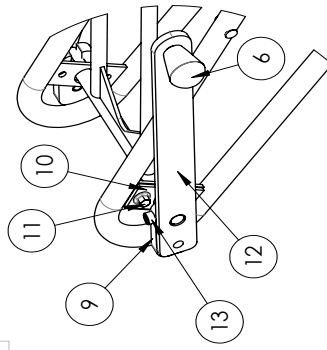
1 of 1

Monday, October 15, 2018

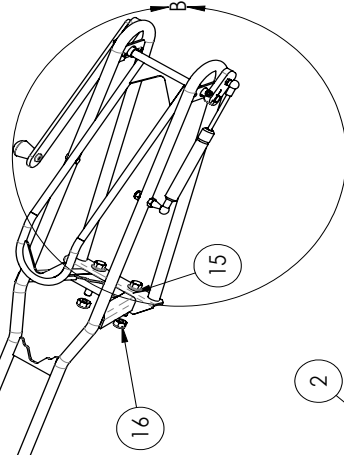
ZONE		REV.		DESCRIPTION		DATE		APPROVED	
	A			INITIAL RELEASE		10/29/19		JLG	
	B			ADDED Z900239 KIT NOTE		2/24/2020		JLG	

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	B090-3D	ASSY, RAIL (NOT AVAILABLE SEPARATELY)	1
2	B091-3D	LOCK, WHEEL 3"	1
3	B056-AC	Asm-Damper	1
4	Z900225	EXTENSION, BALL STUD *	1
5	Z900226	LOCK NUT, M8 LOW PROFILE *	1
6	B102-HD	Knob	1
7	B113-HD	Bolt - Button Head	1
8	B051-2D	Stud - Ball	1
9	B016-2D	Plate	2
10	B144-3D	D-Plate ass'y	1
11	B293-3D	Bolt - Hex Flg Hd	2
12	B017-3D	Handle Arm	1
13	B918-2D	M - 6 x 1.0 x 30 Hex SHCS -- 30SHX	2
14	B122-3D	Plug - Dome	2
15	B291-3D	Bolt - Hex Flg Hd	2
16	B292-3D	Nut-Lock, Nylon, M10x1.5, GR8	2

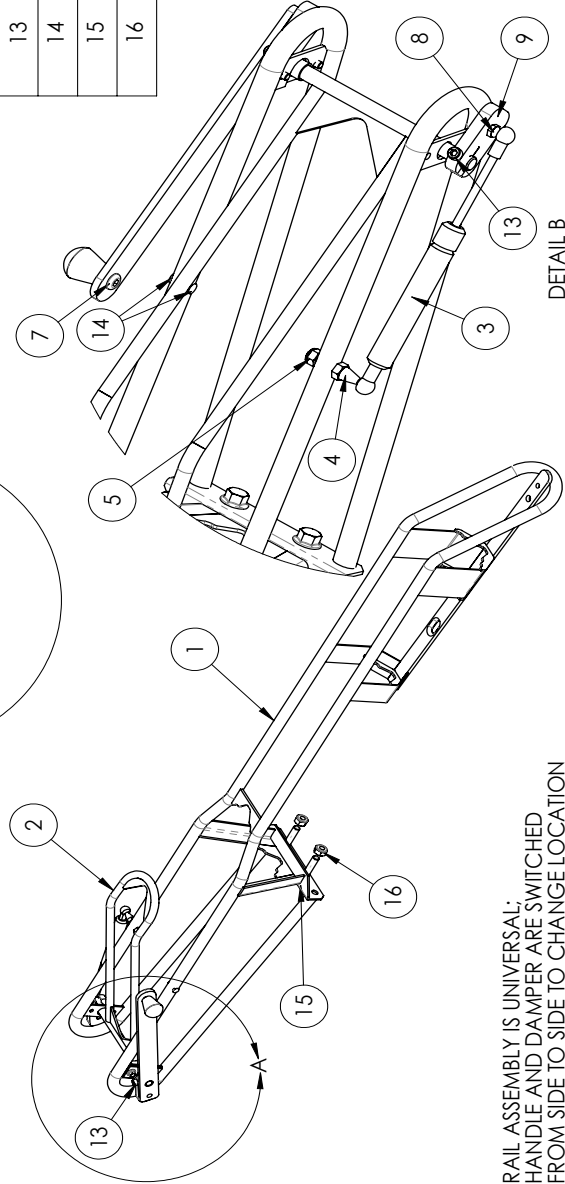
ONLY AVAILABLE
IN Z900239 KIT



DETAIL A
SCALE 1 : 4



DETAIL B
SCALE 1 : 4



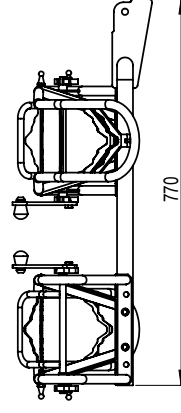
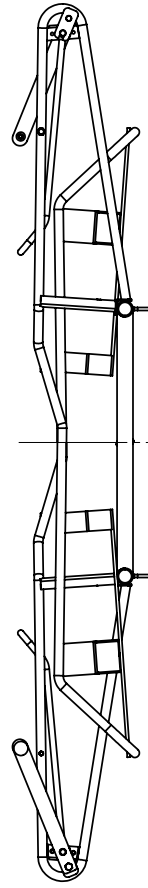
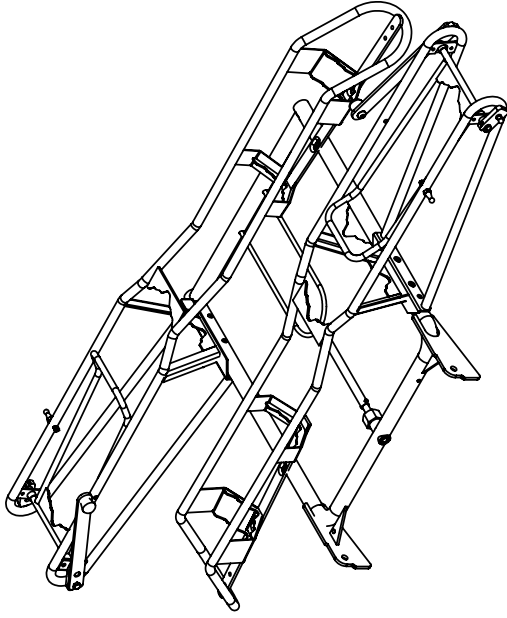
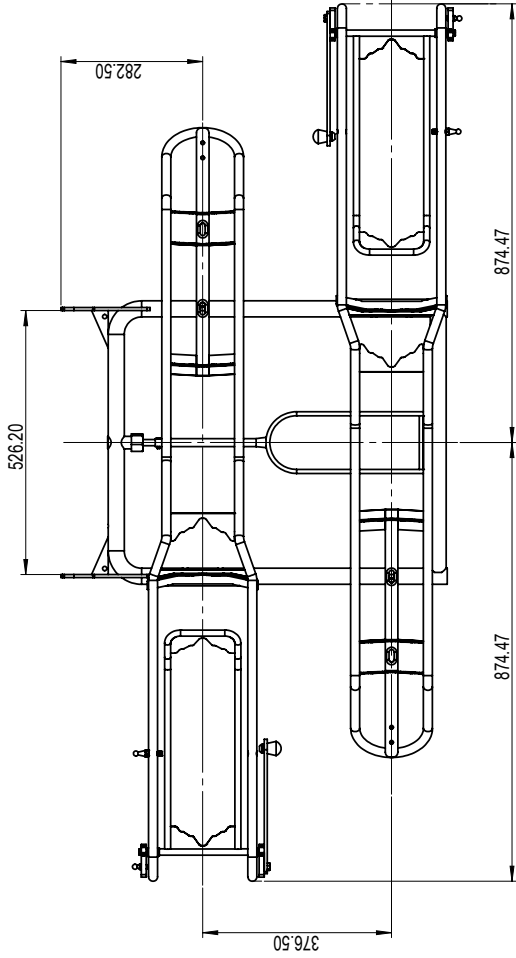
RAIL ASSEMBLY IS UNIVERSAL;
HANDLE AND DAMPER ARE SWITCHED
FROM SIDE TO SIDE TO CHANGE LOCATION
HARDWARE TORQUE SPECS ARE AS FOLLOWS:
6MM - 13.56 N-m (10 LBF-FT)
8MM - 27.12 N-m (20 LBF-FT)
10M - 59.94 N-m (42 LBF-FT)

UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	JLG	10/29/2019
TOLERANCES:	CHECKED		
FRACTIONAL: $\pm 1/16$	ENG APPR.		
ANGULAR: MACH: \pm BEND: $\pm 2^\circ$	MEG APPR.		
ONE PLACE DECIMAL: $\pm .06$	Q.A.		
TWO PLACE DECIMAL: $\pm .03$	COMMENTS:		
THREE PLACE DECIMAL: $\pm .01$			
INTERMET GEOMETRIC TOLERANCING PER:			
MATERIAL:	See Part BOM		
FINISH:			
DO NOT SCALE DRAWING			

Byk-Rak
TITLE:
ASSY, MODULAR RAIL 3"
SIZE: DWG. NO. **B B0973D**
SCALE: 1:8 WEIGHT: 3.97 SHEET 1 OF 1

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ZONE	REV.	DESCRIPTION	DATE



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patents pending

Dimensions are in mm unless otherwise specified	CAD Generated Drawing, Do Not Manually Update	Notes
Tolerances: +/- 0.5 mm	Do Not Scale Drawing	Description 4.75"BIKE RACK
Material: AISI 304	Status:	Name 2 Pos Rack Asm Fat Tire
Treatment:	Project: Current production bike racks	Size A
	Standard:	Scale 1:10
		Sheet 1 of 1
		Printed: Tuesday, February 18, 2020
		Rev. Seq. AB-000
		Dwg.No B0052F
		CAD File S107-2IWD

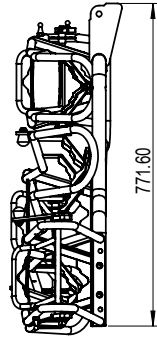
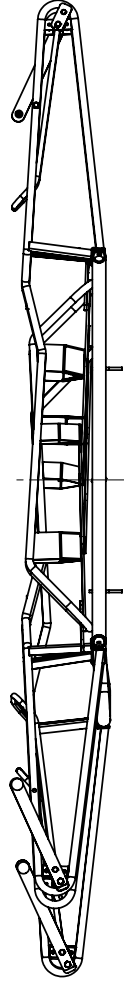
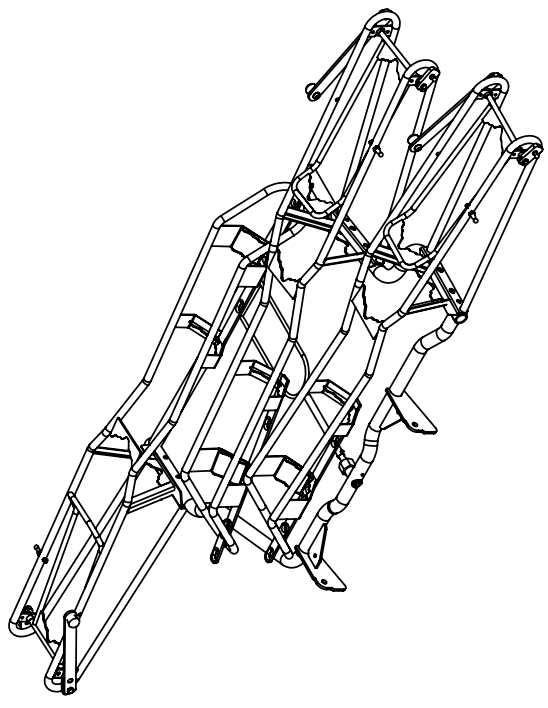
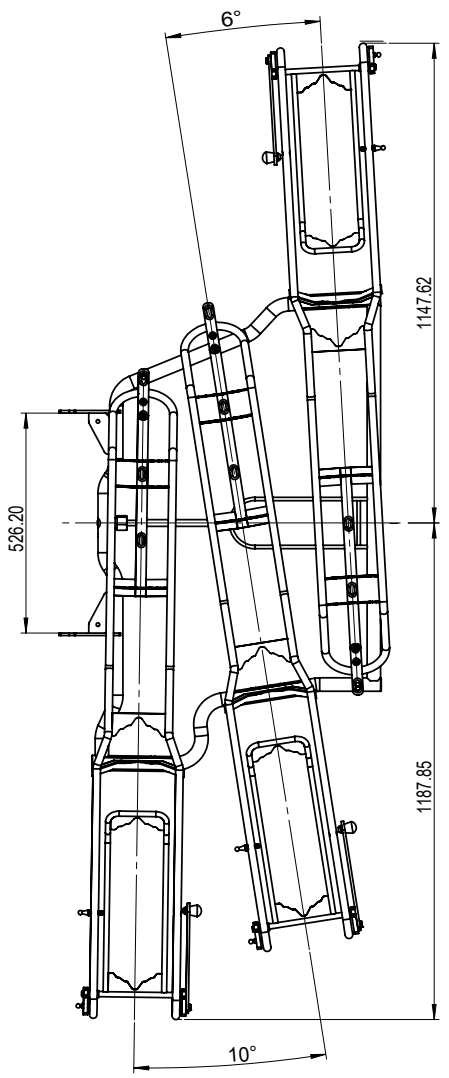


8 7 6 5 4 3 2 1

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ZONE	REV.	DESCRIPTION	DATE

A A B C D



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patents pending

Dimensions are in mm unless otherwise specified	CAD Generated Drawing, Do Not Manually Update		Notes
	Do Not Scale Drawing		
Tolerances: +/- 0.5 mm	Status:	Description 4.75"BIKE RACK	
Material: AISI 304	Project: Current production bike racks	Name 3 Pos Rack Asm Fat Tire	
Treatment:	Standard:	Size A	Dwg. No. B0055F
		Scale 1:10	Rev. Seq. AB-000
		CAD File S107-3WD	Sheet 1 of 1
		Printed: Tuesday, February 18, 2020	



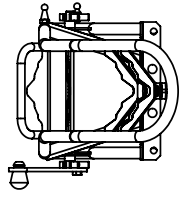
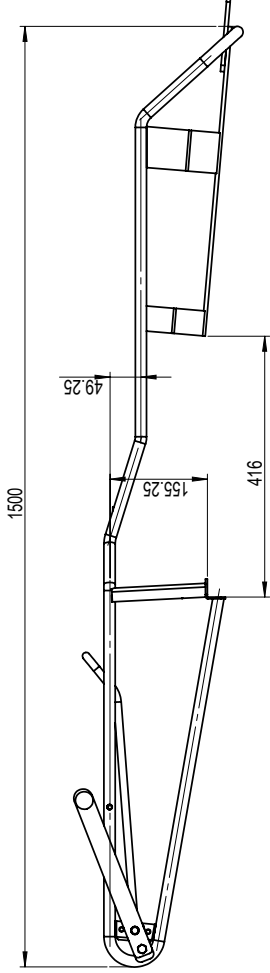
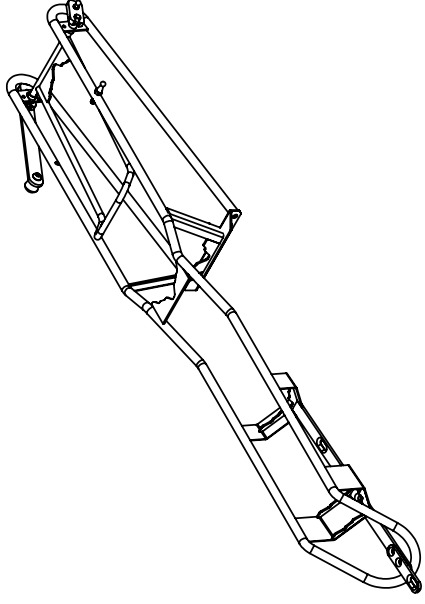
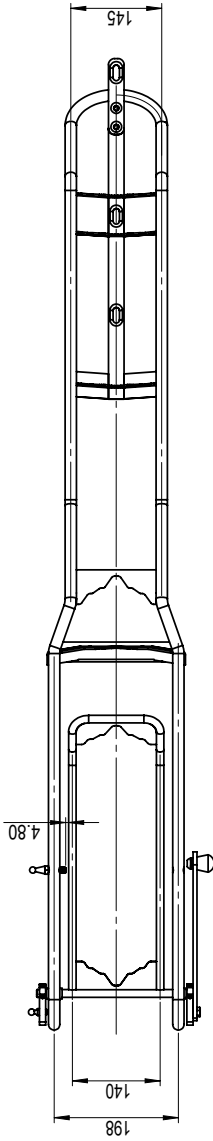
8 7 6 5 4 3 2 1

1 2 3 4 5 6 7 8

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REVISIONS		DATE
ZONE	REV.	DESCRIPTION

A A B C D



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patents pending

Dimensions are in mm unless otherwise specified	CAD Generated Drawing. Do Not Manually Update	Notes
Tolerances: +/- 0.5 mm	Do Not Scale Drawing	Description 4.75" rail
Material: AISI 304	Status:	Name
Treatment:	Project: Current production bike racks	Size A
	Standard:	Scale 1:10
		Printed: Tuesday, February 18, 2020
		Rev. Seq. AB-000
		Sheet 1 of 1
		4.75" Rail Fat Tire B0573F
		S1073D

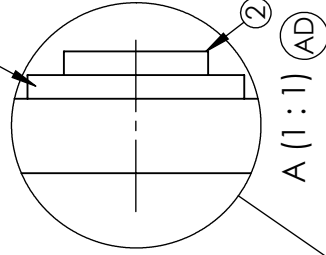


1 2 3 4 5 6 7 8

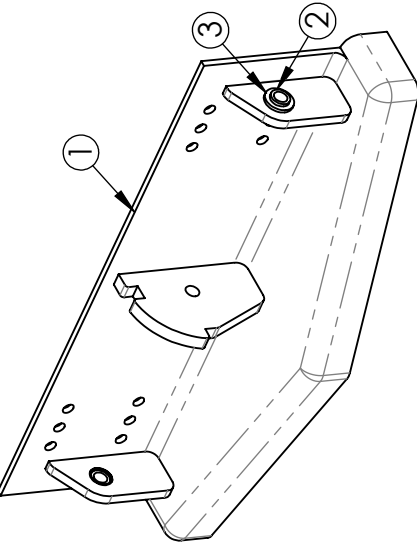
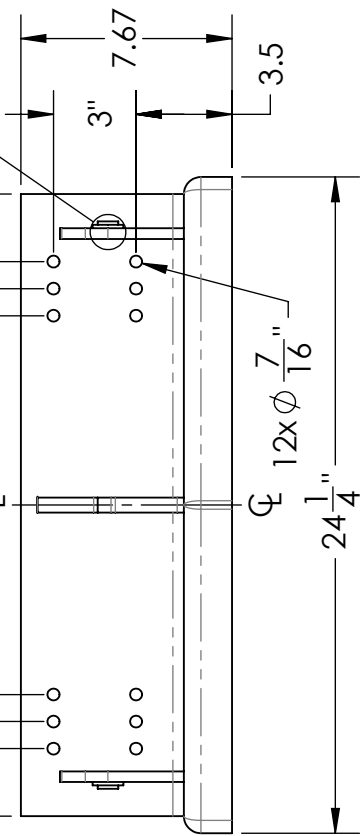
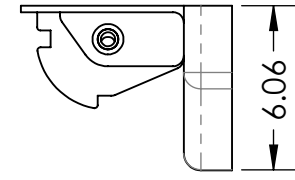
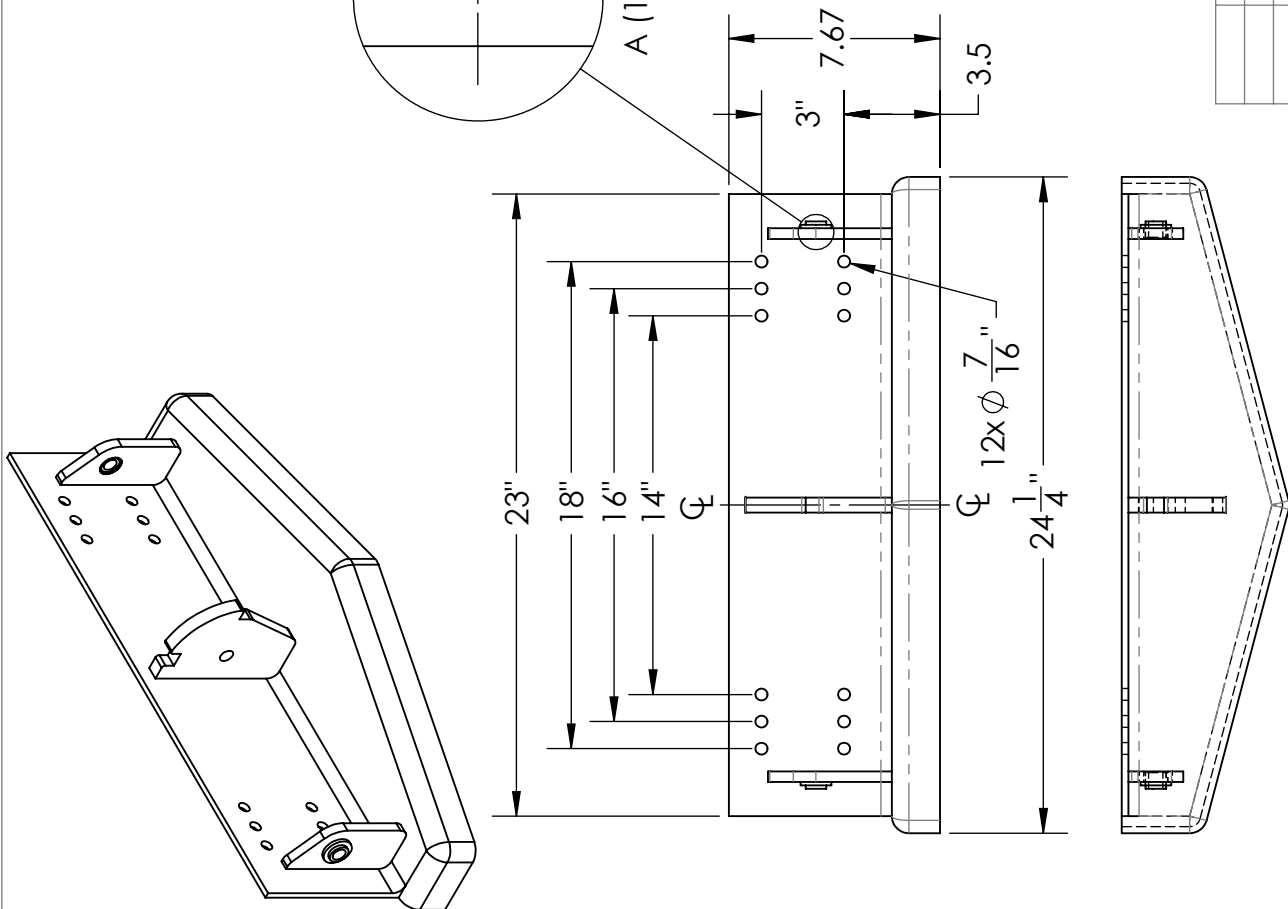
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	AA	Baseline Release		
	AB	Revised To Updated Subassemblies	11/10/2008	
	AC	REVISED TO UPDATED B013-HD	4/30/12	KDP
	AD	Included Item#3 B024CA	11/18/2015	JJK
	E	B024HD WAS B024CA;UPDATED ALL COMP TO BOM	6/4/2019	JLG

ITEM NO.	PART NUMBER	Revision	DESCRIPTION	QTY.
1	B013HDB	AB-006	Attachment Bracket	1
2	B024HD	AA-017	SPACER. HEAVY DUTY	2
3	B047HD	AA-009	BUSHING, 3/4" ID X 7/8" OD	2
4	Z900023		DECAL- BYK-RAK LOGO LARGE	

(AC) (AB)



(E)



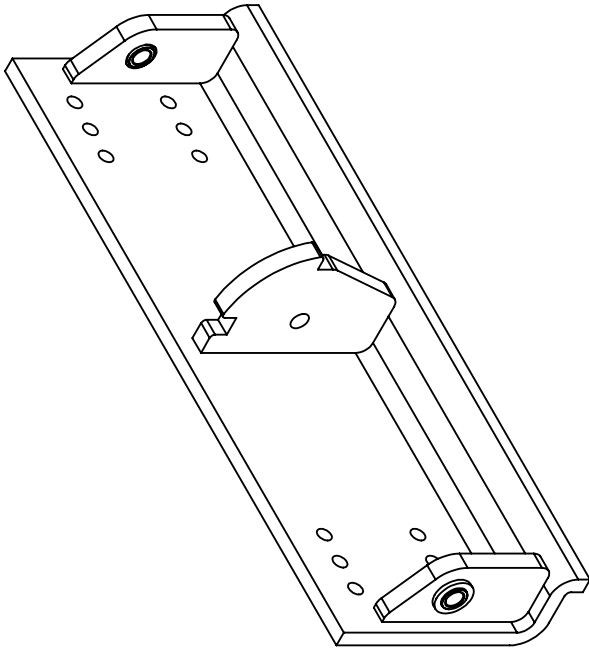
PROPRIETARY AND CONFIDENTIAL
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DRAWN		NAME		DATE	
	ALTAIR				
CHECKED					
ENG. APPR.					
MFG APPR.					
G.A.					
COMMENTS:					
FINISH		no treatment required			
USED ON		DO NOT SCALE DRAWING			
NEXT ASSY		APPLICATION			

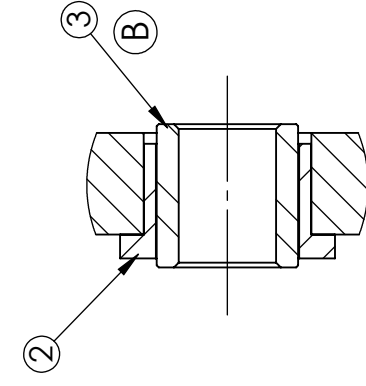


Hinge Bracket Heavy Duty

SIZE	DWG. NO.	REV.
A	B002HD	E
SCALE:1:7	WEIGHT: 10473.43	SHEET 1 OF 1



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	Release	1/7/2013	KDP
	B	Item # 3 added B024CA	11/18/2015	JJK



SECTION A-A
SCALE 1:1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	B013CA	Pivot Bracket	1
2	B047CA	BUSHING PIVOT	2
3	B024CA	Spacer	2

DRAWN	NAME	DATE
CHECKED	KDP	1-7-13
ENG APPR.		
MFG APPR.		
Q.A.		
COMMENTS:		

DIMENSIONS ARE IN INCHES	
TOLERANCES:	
FRACTIONAL ±	
ANGULAR: MACH ±	BEND ±
TWO PLACE DECIMAL ±	
THREE PLACE DECIMAL ±	
MATERIAL	---
FINISH	---
NEXT ASSY	USED ON
APPLICATION	DO NOT SCALE DRAWING



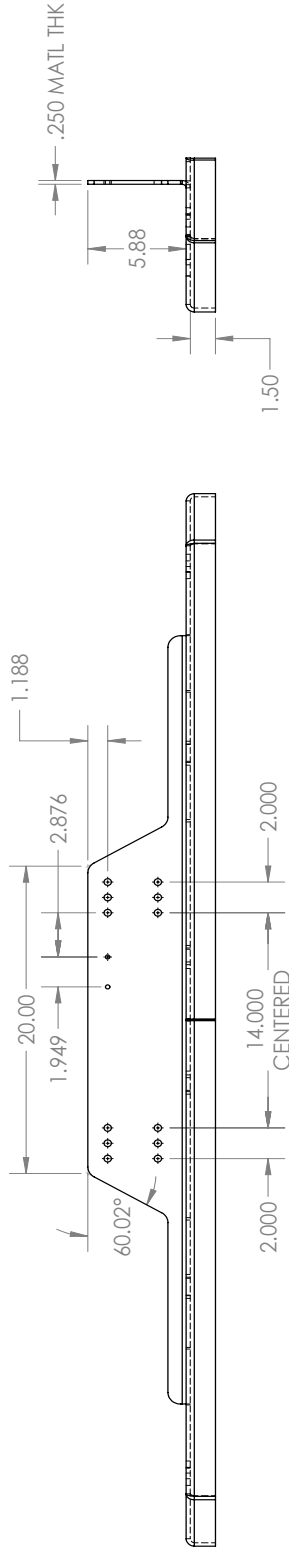
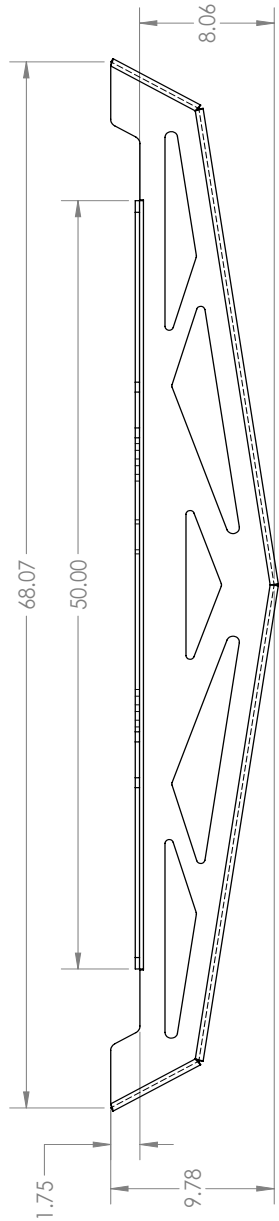
PIVOT BRACKET ASM

SIZE	DWG. NO.	REV.
A	B002CA	B
SCALE: 1:5	WEIGHT:	SHEET 1 OF 1

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REVISIONS			
ZONE	REV.	DESCRIPTION	DATE
	A	INITIAL RELEASE	
	B	ADDED MATERIAL & MATERIAL THICKNESS	11/28/2017
	C	UPDATED BEND RADIUS	11/28/2017

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.250 MATL THK

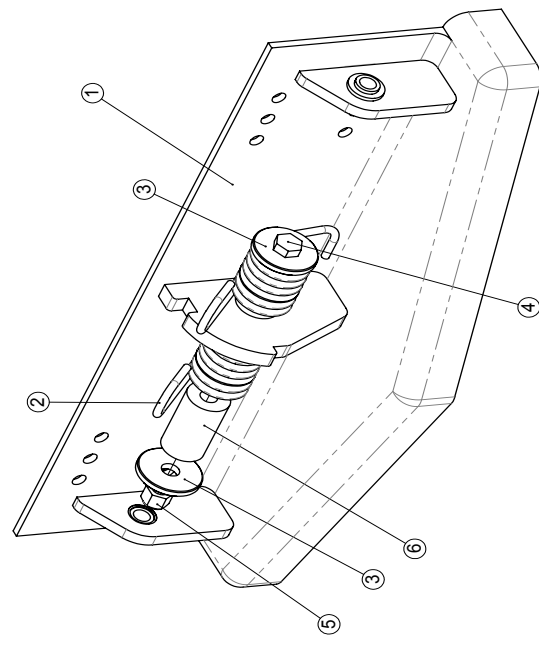
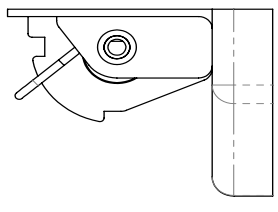
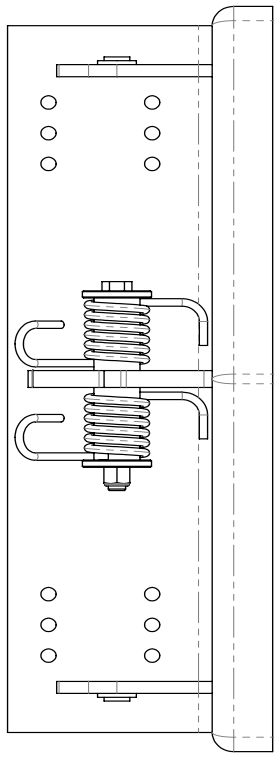


UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES			
FRACTIONS: 1/16			
ANGULAR: MACH ± .1° BEND ± .2°			
ONE PLACE DECIMAL ± .06			
TWO PLACE DECIMAL ± .03			
THREE PLACE DECIMAL ± .01			
INTERPRET GEOMETRIC TOLERANCING PER:			
MATERIAL: Plain Carbon Steel			
FINISH: PLAIN			
DOI/NOI SCALE/DRAWING			

BYK-RAK	
TITLE:	
PIVOT BRACKET	
SIZE	DWG. NO.
B	B002EDB
REV	C
SCALE: 1:8 WEIGHT: 40.36 LBS SHEET 1 OF 2	

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ZONE	REV.	DESCRIPTION	DATE	APPROVED
	AA	Baseline Release		
	AB	B002:HD WAS B013:HD	11/4/2008	
	AC	Revised To Updated Subassemblies	11/10/2008	
	D	Revised B002:HD	4-30-12	
	E	PART NAME WAS INV067-B002-3D; B002:HDB WAS INV067-B002:HD; SPRING WAS INV067-B203-3C; SPRING MT WAS INV067-B440-3C; REDRAWN ON BYK-RAK DWG FORMAT & NAME CONVENTIONS	6/4/2019	JLG



(AC)
 (AB)
 (E)

ITEM NO.	PART NUMBER	Revision	DESCRIPTION	QTY.
1	B002HDB	E	Hinge Bracket-Heavy Duty	1
2	B2033HD	A	SPRING, TORSION	2
3	B4503C	AA-008	fender washer	2
4	B4413C	AA-011	Bolt - Hex Head	1
5	B031AC	AA-016	Nut - Lock	1
6	B4403CNL	B-001	spring mount	2

Byk-Rak™

Bracket - Hinge Spring Assist

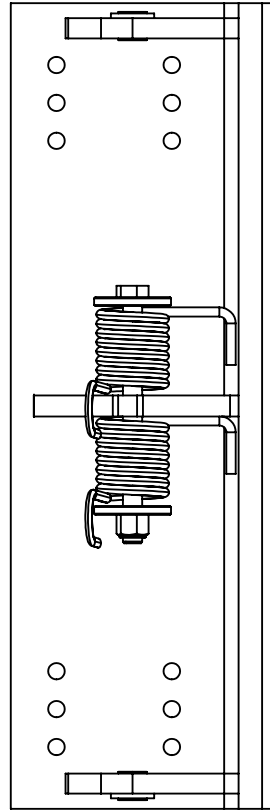
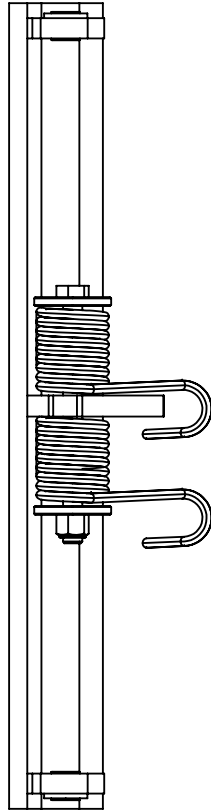
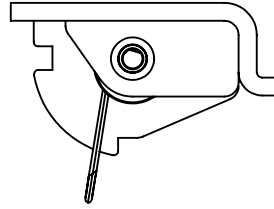
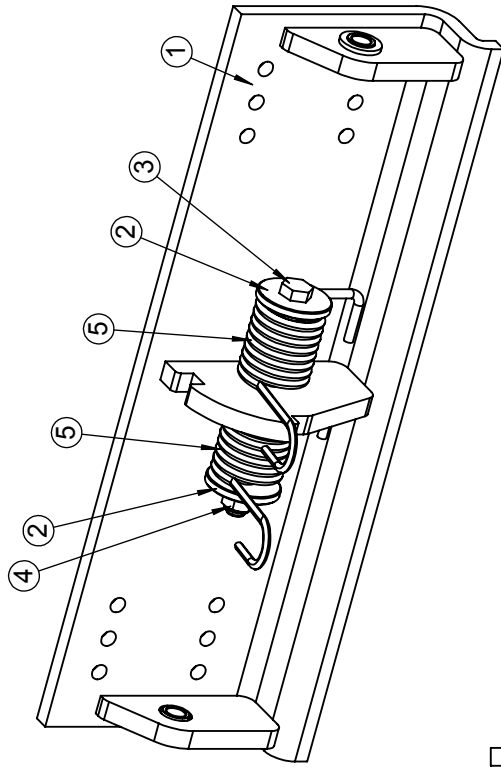
REV **E**

SIZE DWG. NO. **B0023DB**

SCALE: 1:4 WEIGHT: 11008.42# FEET 1 OF 1

UNLESS OTHERWISE SPECIFIED:	NAME	DATE
DIMENSIONS ARE IN INCHES	JLG	6/5/2019
TOLERANCES:		
FRACTIONAL: ± 1/16	DRAWN	
ANGULAR: MACH: ± BEND: ± 2°	CHECKED	
ONE PLACE DECIMAL: ± .06	ENG APPR.	
TWO PLACE DECIMAL: ± .03	MFG APPR.	
THREE PLACE DECIMAL: ± .01	Q.A.	
INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:	
MATERIAL:	FINISH:	
DO NOT SCALE DRAWING		

REVISIONS		
ZONE	REV.	DESCRIPTION
	A	Baseline Release
		DATE
		9/26/14
		APPROVED
		JJK



ITEM NO.	PART NUMBER	Revision	DESCRIPTION	QTY.
1	B002CA	A	PIVOT BRACKET ASM	1
2	B4503C	AA-008	fender washer	2
3	B4413C	AA-011	Bolt - Hex Head	1
4	B031AC	AA-016	Nut - Lock	1
5	B2033C	AC-007	torsion spring	2



NAME	DATE	UNLESS OTHERWISE SPECIFIED:
JJK	9/26/2014	DRAWN
		CHECKED
		ENG APPR.
		MFG APPR.
		G.A.
		COMMENTS:
		DIMENSIONS ARE IN INCHES
		TOLERANCES:
		FRACTIONAL: 1/16"
		ANGULAR: MACH ± .02 BEND ±
		TWO PLACE DECIMAL ± .03
		THREE PLACE DECIMAL ± .01
		INTERPRET GEOMETRIC TOLERANCING PER:
		MATERIAL
		FINISH
		USED ON
		APPLICATION
		NEXT ASSY
		DO NOT SCALE DRAWING

TITLE:

Bracket - Hinge Spring Assist

SIZE DWG. NO. **A B0024CA** REV **A**

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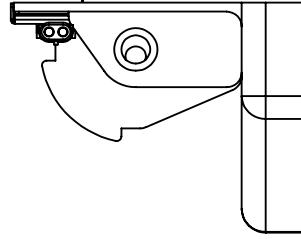
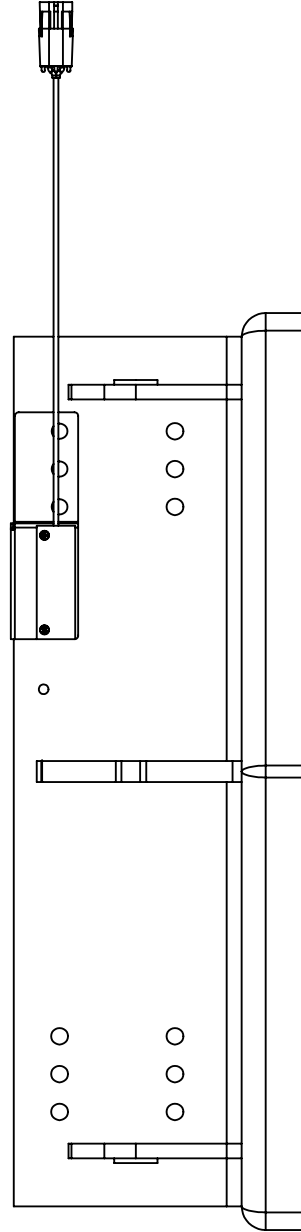
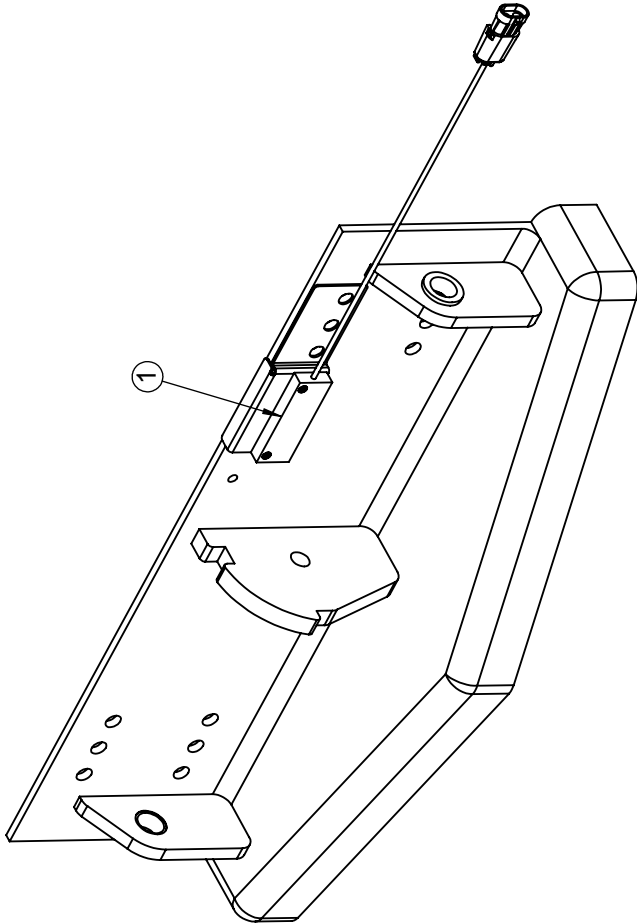
SCALE: 1:5 WEIGHT: SHEET 1 OF 1

REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	AA	BASELINE RELEASE	05/19/10	
	AB	REVISED B002HD	4-30-12	
	AC	ACTUATOR WAS B902-HD	8/12/2013	

ITEM NO.	PART NUMBER	Revision	DESCRIPTION	QTY.
1	B902-3D	AA-005	Sensor - Bike Rack Deployment	1
2	B002HD	AA-010	Hinge Bracket-Heavy Duty	1

(AC)



DRAWN		NAME		DATE	
CHECKED		ALTAIR			
ENG. APPR.					
MFG APPR.					
G.A.					
COMMENTS:					
DIMENSIONS ARE IN MM					
TOLERANCES UNLESS NOTED:					
FRACTIONAL ±					
ANGULAR: MACH ±1.0° BEND ±1.0°					
ONE PLACE DECIMAL ±1.5					
TWO PLACE DECIMAL ±0.38					
TRIMLINE ±1.5					
HOLE SIZE ±1.0					
MATERIAL					
FINISH					
USED ON					
APPLICATION				DO NOT SCALE DRAWING	

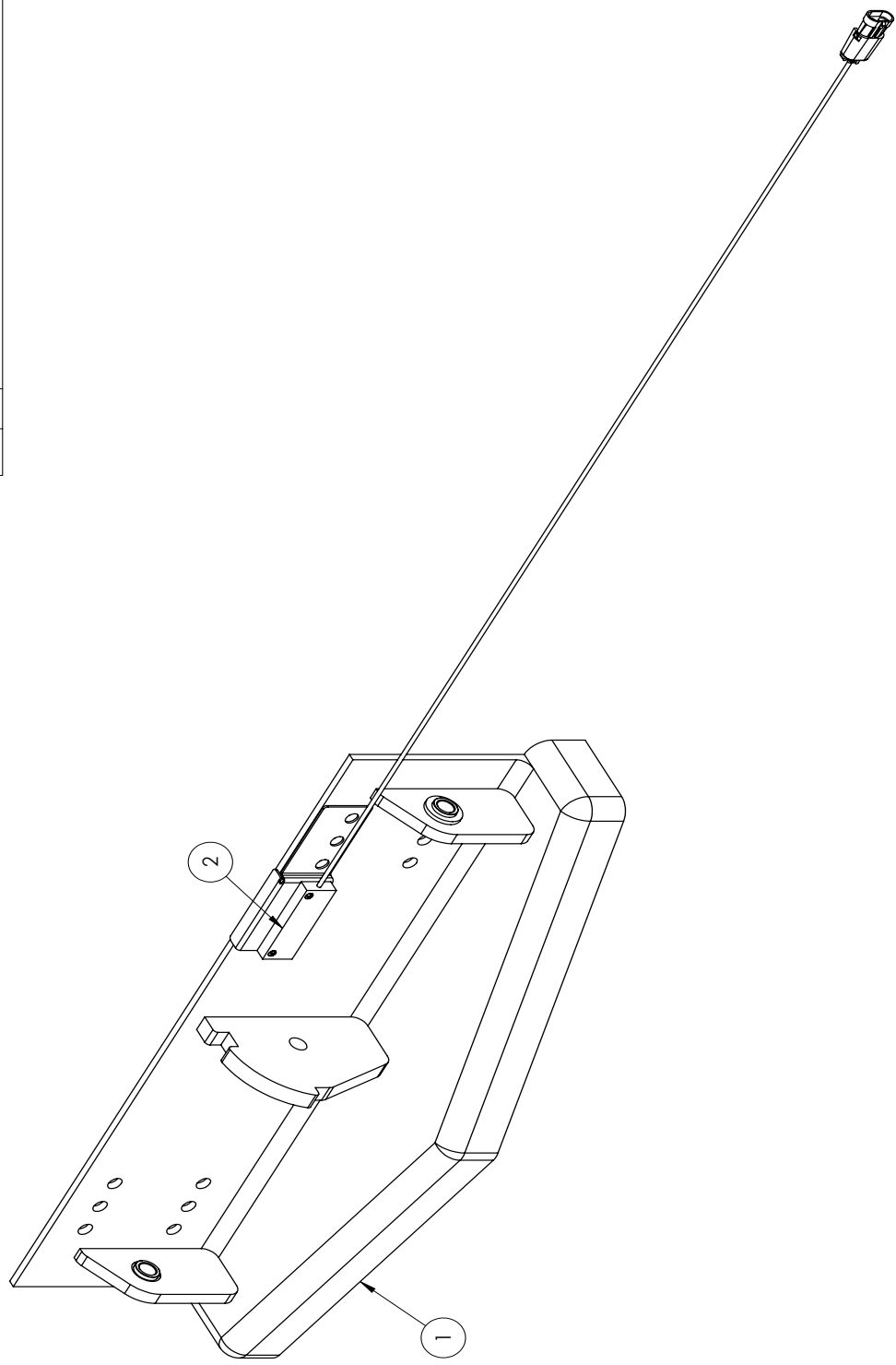


Brkt - Hinge w/Sensor

SIZE	DWG. NO.	REV.
A	B002HDS	B
SCALE: 1:5	WEIGHT:	SHEET 1 OF 1

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ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A			JIG



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UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES		DRAWN	
FRACTIONS: 1/16		CHECKED	
ANGULAR: MACH ± .1° BEND ± .2°		ENG APPR.	
ONE PLACE DECIMAL ± .06		MEG APPR.	
TWO PLACE DECIMAL ± .03		Q.A.	
THREE PLACE DECIMAL ± .01		COMMENTS:	
INTERFERE GEOMETRIC TOLERANCING PER:			
MATERIAL			
FINISH			
DO NOT SCALE DRAWING			

Byk-Rak™

TITLE: HINGE BRACKET ASSY W/36" LEAD

SIZE DWG. NO.: **B** B002HDSLB

SCALE: 1:8

WEIGHT:

REV **A**

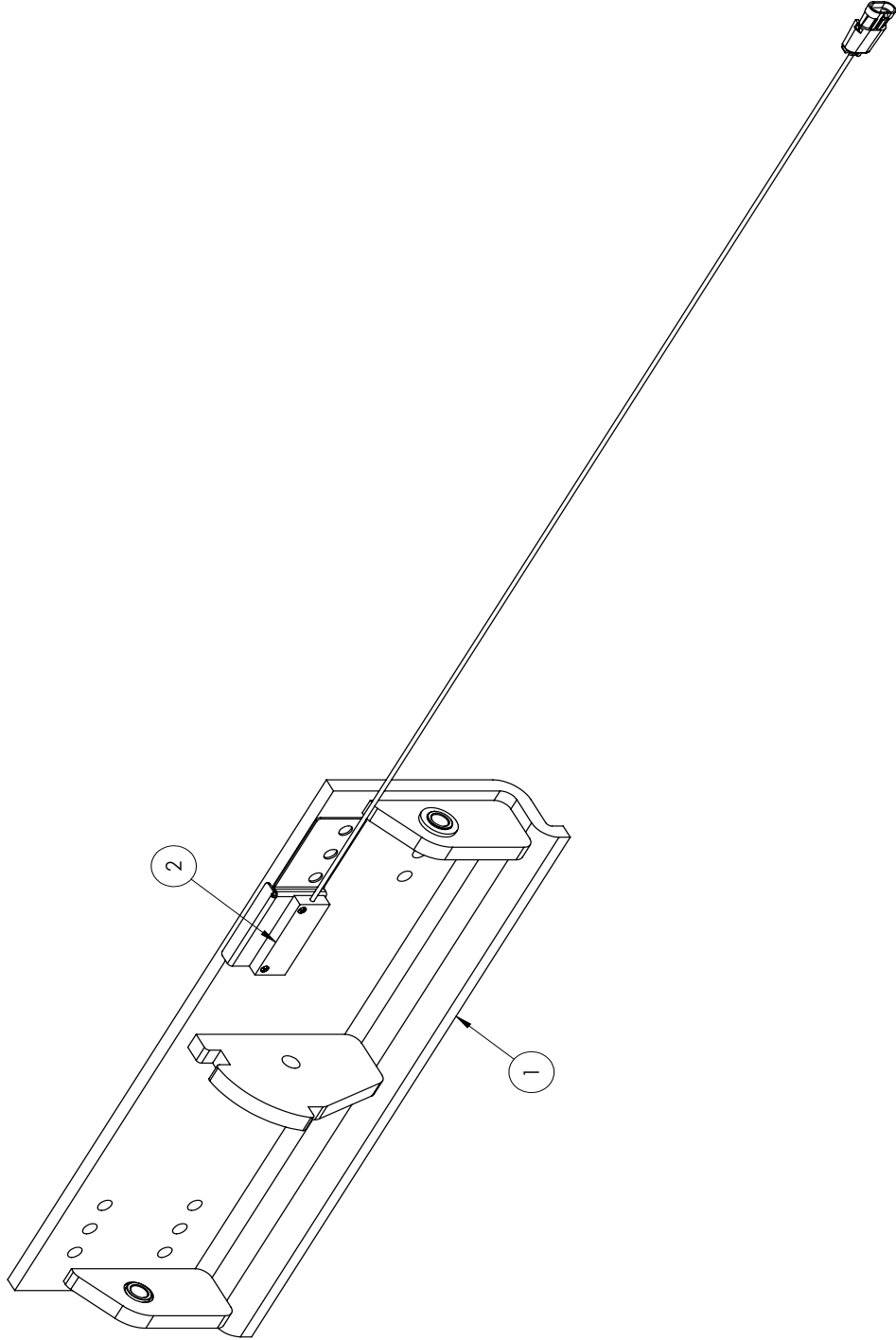
SHEET 1 OF 1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	B002HD	Hinge Bracket-Heavy Duty	1
2	B9023DL	Sensor - Rack Deployment 36" LEADS	1

8 7 6 5 4 3 2 1

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ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		INITIAL RELEASE	3/27/17	JIG



D C B A

UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES		JIG	3/23/2017
TOLERANCES:		DRAWN	
FRACTIONAL ± 1/16 + .000 - .02		CHECKED	
DECIMAL ± .005 + .000 - .01		ENG APPR.	
ONE PLACE DECIMAL ± .04		MFG APPR.	
TWO PLACE DECIMAL ± .03		QA.	
THREE PLACE DECIMAL ± .01		COMMENTS:	
INTERPRET GEOMETRIC TOLERANCING PER:			
MATERIAL:			
FINISH:			
DO NOT SCALE DRAWING			

Byk-Rak™

TITLE:
 BRACKET ASSY W/36" SENSOR LEADS

SIZE DWG. NO. **B** B002CASLB REV **A**

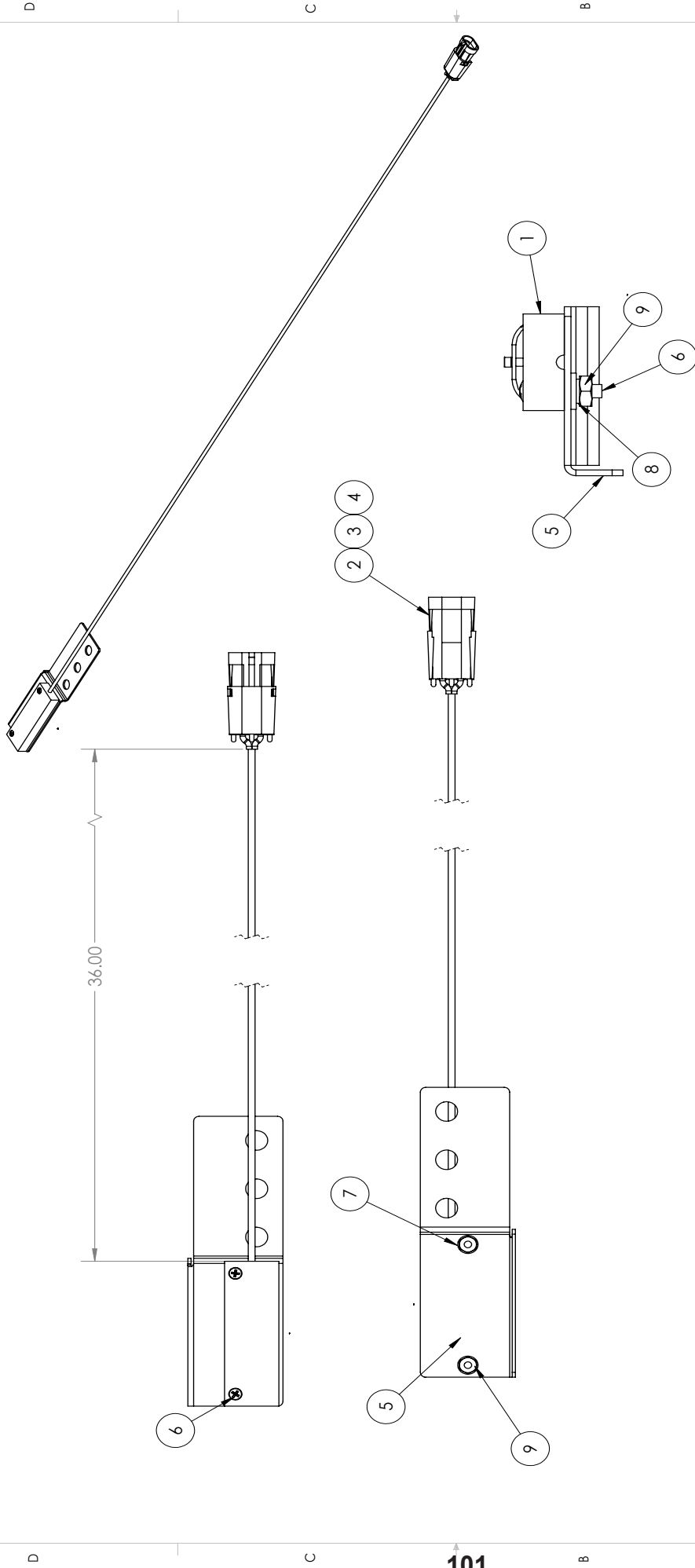
SCALE: 1:8 WEIGHT: SHEET 1 OF 1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	B002CA	PIVOT BRACKET ASM	1
2	B9023DL	Sensor - Rack Deployment 36" LEADS	1

8 7 6 5 4 3 2 1

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 IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF BYK-RAK LLC, IS STRICTLY PROHIBITED.

ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		INITIAL RELEASE	3/23/17	JIG

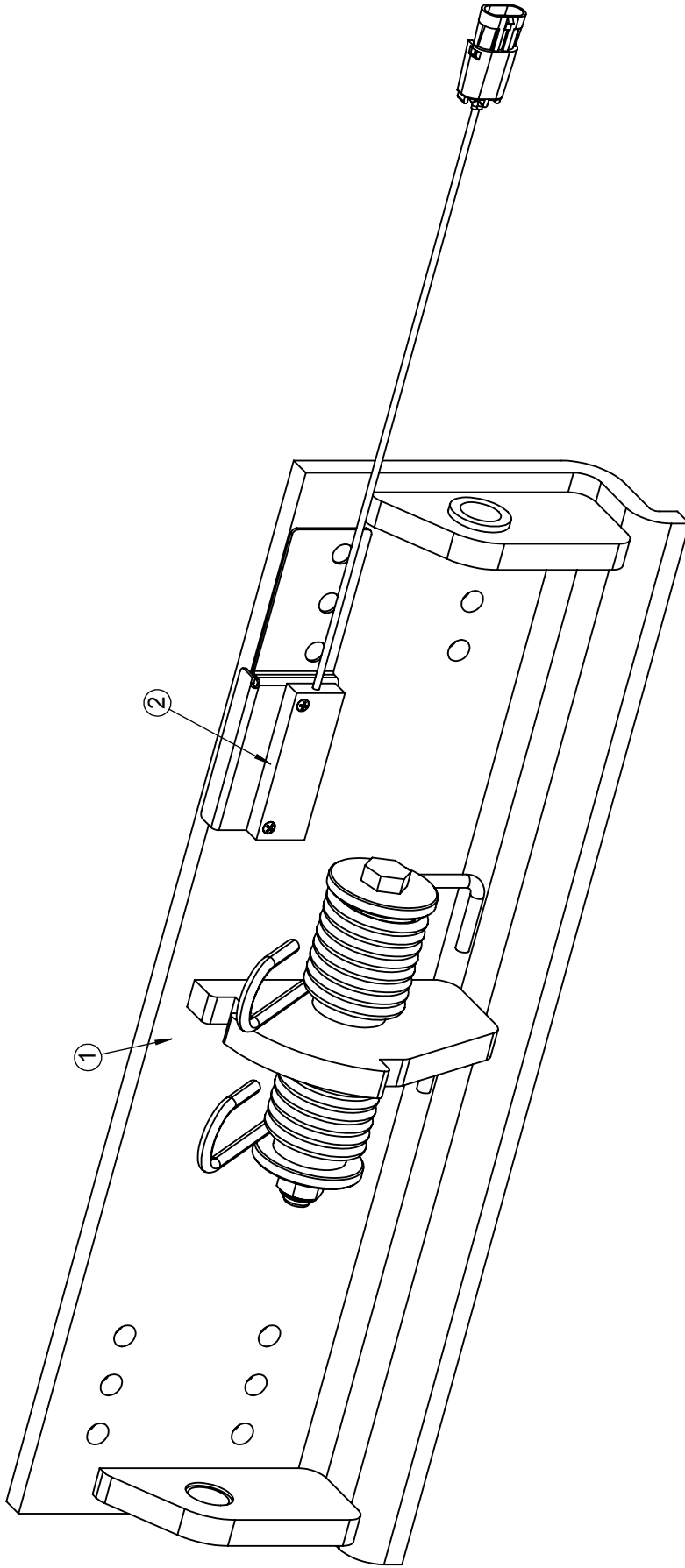


ITEM NO.	PART NUMBER	DESCRIPTION	Default/ QTY.
1	B176	SENSOR W/WIRE	1
2	Z900081	2P MALE BLK 20 AMP WEATHER PACK SHROUD	1
3	INV067-B915-HD	Cable Seal - Red	2
4	Z900080	Terminal - Male	2
5	B177U Brk1 Sensor Pivot	Screw - #6-32 Machine	1
6	INV067-B914-HD	Washer - flat #6	2
7	INV067-B912-HD		2
8	Z900123 #6 Lock Washer		2
9	INV067-B911-HD	Nut - Hex #6-32	2

UNLESS OTHERWISE SPECIFIED:	NAME	DATE
DIMENSIONS ARE IN INCHES	JIG	3/23/2017
TOLERANCES:		
FRACTIONAL: 1/16		
ANGULAR: MACH ± .06		
ONE PLACE DECIMAL ± .06		
TWO PLACE DECIMAL ± .03		
THREE PLACE DECIMAL ± .01		
INTERPRET GEOMETRIC TOLERANCING PER:		
MATERIAL:		
FINISH:		
DO NOT SCALE DRAWING		

Byk-Rak
 TITLE: Sensor - Rack Deployment 36" LEADS
 SIZE DWG. NO. **B B9023DL** REV **A**
 SCALE: 1:8 WEIGHT: 131.9 SHEET 1 OF 1

REVISIONS		
ZONE	REV.	DESCRIPTION
	A	Baseline Release
		DATE
		12/15/14
		APPROVED
		JJK



ITEM NO.	PART NUMBER	Revision	DESCRIPTION	QTY.
1	B0024CA	AC-004	Bracket - Hinge	1
2	B902-3D	AA-005	Sensor - Bike Rack Deployment	1

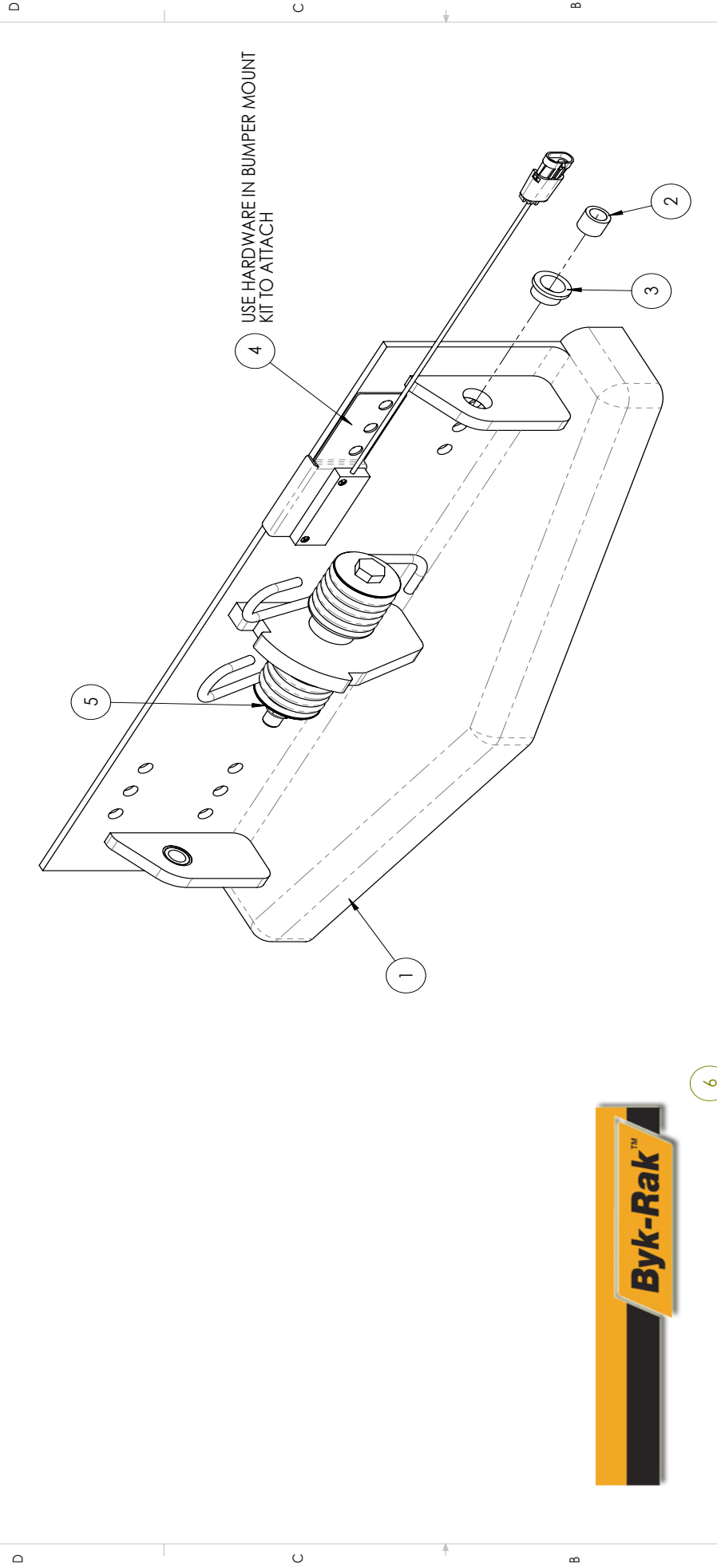
TITLE:	
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL: $\pm 1/16$ " ANGULAR: MACH \pm BEND \pm TWO PLACE DECIMAL \pm THREE PLACE DECIMAL \pm	DRAWN JJK 12/15/2014
INTERPRET GEOMETRIC TOLERANCING PER: MATERIAL	CHECKED ENG APPR. MFG APPR. G.A. COMMENTS:
NEXT ASSY	USED ON
APPLICATION	DO NOT SCALE DRAWING

SIZE A B0024CASB	DWG. NO. A B0024CASB	REV A
SCALE: 1:3	WEIGHT:	SHEET 1 OF 1

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ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	INITIAL RELEASE	1/22/2019	JIG



USE HARDWARE IN BUMPER MOUNT
 KIT TO ATTACH

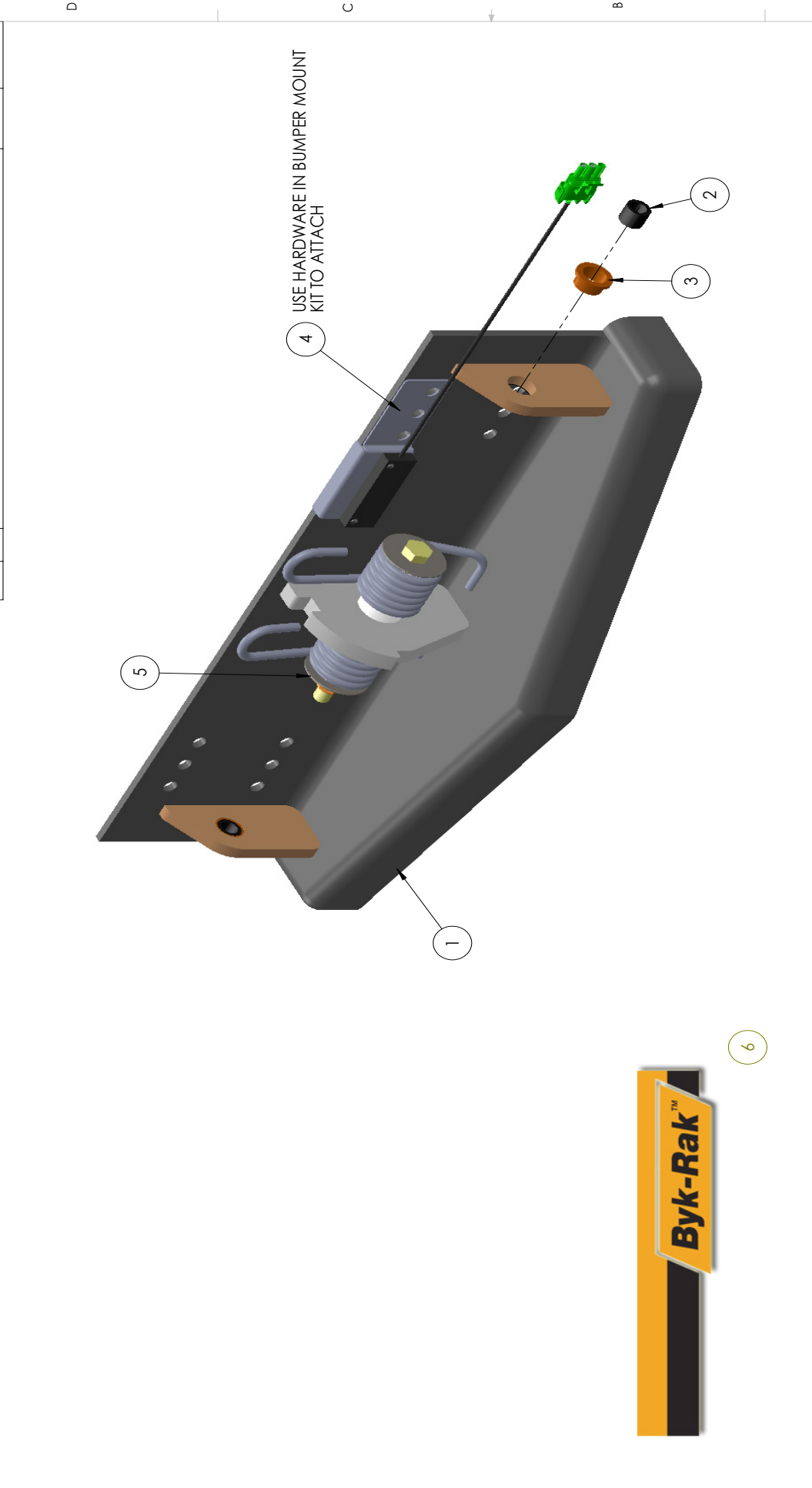


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	B013HDB	Attachment Bracket	1
2	B024HD	SPACER. HEAVY DUTY	2
3	B047HD	BUSHING, 3/4" ID X 7/8" OD	2
4	B9023D	Sensor - Bike Rack Deployment	1
5	Z900205	KIT-S/S SPRING ASSIST FOR AD SIGN	1
6	Z900023	DECAL, BYK-RAK LOGO LARGE	1

UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES		JIG	1/22/2019
TOLERANCES:			
FRACTIONALS: 1/16 - .001			
DECIMALS: .001 - .010			
ONE PLACE DECIMAL: .01 - .03			
TWO PLACE DECIMAL: .03 - .05			
THREE PLACE DECIMAL: .05 - .09			
FOUR PLACE DECIMAL: .09 - .15			
FIVE PLACE DECIMAL: .15 - .99			
INTERPRET GEOMETRIC TOLERANCING PER:			
MATERIAL:			
FINISH:			
COMMENTS:			
See Part BOM			
DRAWN			
CHECKED			
ENG APPR.			
MFG APPR.			
Q.A.			
TITLE:			
BRACKET, PIVOT W/SENSOR			
SIZE		DWG. NO.	REV
B		B0053DSBAD	A
SCALE: 1:8		WEIGHT: 24.15	SHEET 1 OF 1

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	INITIAL RELEASE	1/22/2019	JIG

REVISIONS	
ZONE	REV.
	A



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	B013HDB	Attachment Bracket	1
2	B024HD	SPACER. HEAVY DUTY	2
3	B047HD	BUSHING, 3/4" ID X 7/8" OD	2
4	B9053D	KIT, SENSOR NORMAL OPEN	1
5	Z900205	KIT,S/S SPRING ASSIST FOR AD SIGN	1
6	Z900023	DECAL, BYK-RAK LOGO LARGE	1

UNLESS OTHERWISE SPECIFIED:	NAME	DATE
DIMENSIONS ARE IN INCHES	JIG	1/22/2019
TOLERANCES:		
FRACTIONAL ± 1/16		
ANGULAR: MACH ± 1° BEND ± 2°		
ONE PLACE DECIMAL ± .06		
TWO PLACE DECIMAL ± .03		
THREE PLACE DECIMAL ± .01		
G.A.		
INTERPRET GEOMETRIC TOLERANCING PER:		
MATERIAL:		
See Part BOM		
FINISH:		
DO NOT SCALE DRAWING		

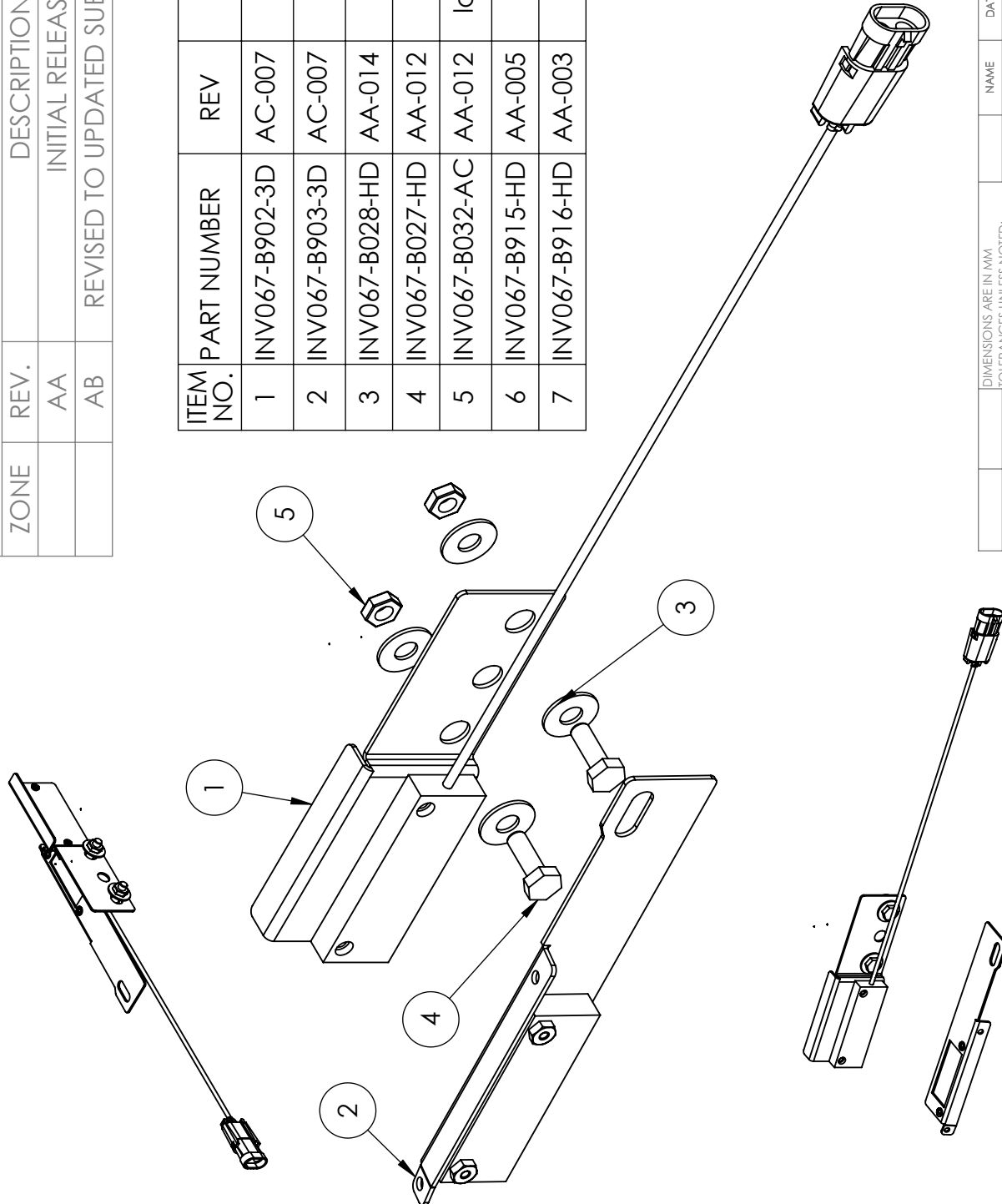
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BYK-RAK™		BYK-RAK™
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TITLE: BRACKET, PIVOT W/SENSOR		REV A
SIZE B	DWG. NO. B0053DSBNO	SHEET 1 OF 1
SCALE: 1:8		WEIGHT: 24.13

REVISIONS			
ZONE	REV.	DESCRIPTION	DATE
	AA	INITIAL RELEASE	12/15/08
	AB	REVISED TO UPDATED SUBASSEMBLIES	8/12/2014

ITEM NO.	PART NUMBER	REV	DESCRIPTION	QTY.
1	INV067-B902-3D	AC-007	Sensor - Bike Rack Deployment	1
2	INV067-B903-3D	AC-007	Brkt Asy - Actuator Mtg	1
3	INV067-B028-HD	AA-014	SAE 1/4" flat washer	4
4	INV067-B027-HD	AA-012	bolt 1/4"-20 3/4"	2
5	INV067-B032-AC	AA-012	lock nut 1/4"-20 grade 5	2
6	INV067-B915-HD	AA-005	Cable Seal - Red	1
7	INV067-B916-HD	AA-003	Terminal - Female	1



		NAME	DATE
		ALTAIR	
DIMENSIONS ARE IN MM TOLERANCES UNLESS NOTED:	DRAWN	CHECKED	
FRACTIONAL ±			
ANGULAR: MACH ±1.0° BEND ±1.0°			
ONE PLACE DECIMAL ±1.5			
TWO PLACE DECIMAL ±0.38			
TRIMLINE ±1.5			
HOLE SIZE ±1.0			
MATERIAL			
FINISH			
USED ON			
no treatment required			
APPLICATION			
DO NOT SCALE DRAWING			

Sensor Assembly

SIZE	DWG. NO.	REV.
A	B9013D	AB-005
SCALE:1:1	WEIGHT:	SHEET 1 OF 2

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ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	INITIAL RELEASE	1/22/2019	JLG

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	INITIAL RELEASE	1/22/2019	JLG

UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 DECIMALS - 1/16
 FRACTIONS - 1/4
 ANGULAR: MACH ± .1° BEND ± .2°
 ONE PLACE DECIMAL ± .06
 TWO PLACE DECIMAL ± .03
 THREE PLACE DECIMAL ± .01
 G.A.
 COMMENTS:
 INTERPRET GEOMETRIC TOLERANCING PER:
 MATERIAL
 See Part BOM
 FINISH
 NONE
 DO NOT SCALE DRAWING

BYK-RAK™
 TITLE:
 KIT, SENSOR NORMAL OPEN
 SIZE
 DWG. NO. B9053D
 REV A
 SCALE: 1:2 WEIGHT: 0.08 SHEET 1 OF 1

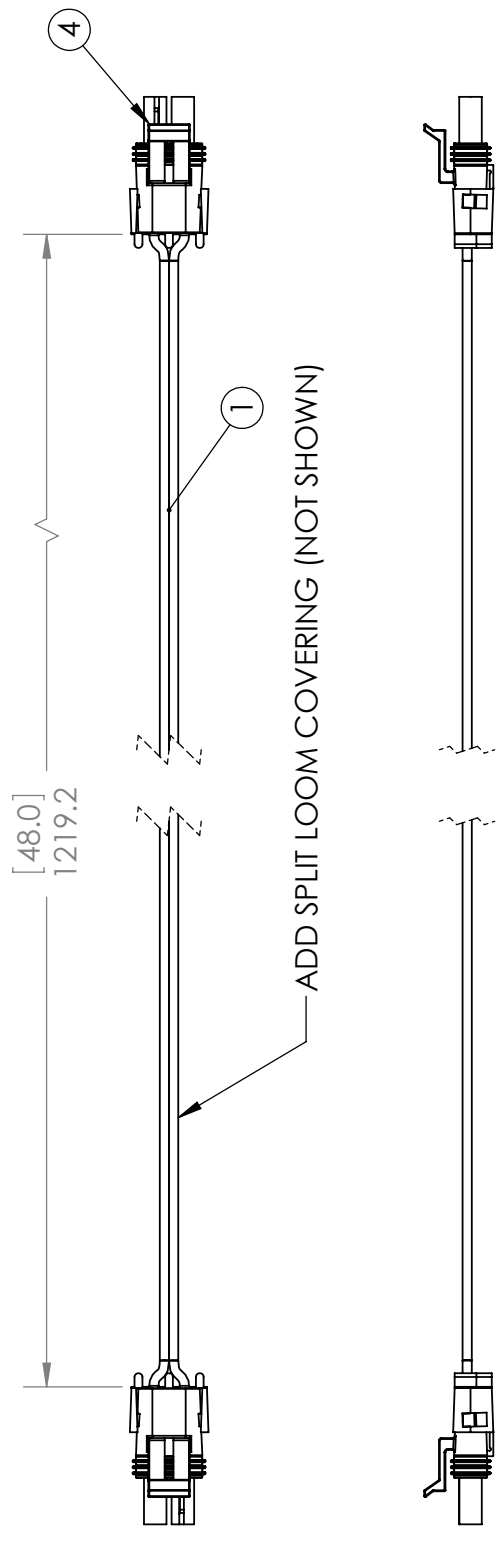
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	B914-HD	Screw - #6-32 Machine	2
2	B180	SENSOR W/WIRE	1
3	B177U	BRACKET, SEPLOYMNT SENSOR PIVOT	1
4	B912-HD	Washer - flat #6	2
5	Z900123	WASHER, LOCK #6	2
6	B911-HD	NUT, HEX #6	2
7	Z900196	CONNECTOR, WETHERPACK 3 PIN FEMALE	1
8	Z900084	TERMINAL, 18GA FEMALE	2
9	Z900195	CAVITY PLUG	1
10	B915HD	CABLE SEAL, RED	2
11	B9011	ASSEMBLY INSTRUCTIONS, SENSOR KIT	1



* NOT SHOWN

ZONE	REV.	DESCRIPTION	DATE
AA	AA	RELEASED FOR PRODUCTION	4/19/2010
AB	AB	ADD LOOM NOTE	5/15/2018

ITEM NO.	PART NUMBER	Revision	DESCRIPTION	QTY.
1	Z900085	AA-003	WIRE-18GA WHITE	2
2	Z900083	AA-000	Cable Seal - Green	4
3	INV067-B916-HD	AA-003	Terminal - Female	4
4	INV067-B917-HD	AA-009	CONNECTOR	2



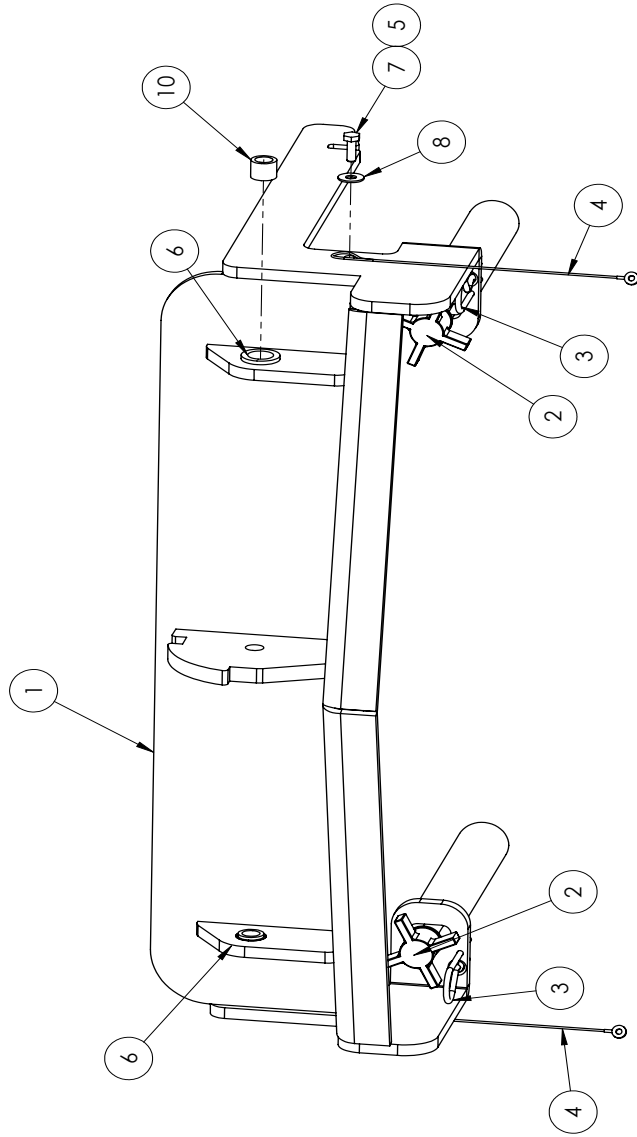
Dimensions are in mm unless otherwise specified	CAD Generated Drawing. Do Not Manually Update	Notes
Tolerances:	Do Not Scale Drawing	Description Harness-4 sensor extension
Material:	Status:	Name
Treatment:	Project: Current production bike racks	Harness- Sensor Extension
	Mass: 26.72	Size Dwg. No. Z900101
		Scale 1:1
		CAD File Z900101
		Printed: Tuesday, May 15, 2018
		Part. Seq. AA-005
		Rev. Dwg. Seq. AB
		Sheet 1 of 1

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patents pending



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ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		INITIAL RELEASE	3/26/17	JILG
B		REVISED AFTER PROTOTYPE REVIEW	4/26/2017	JILG
C		B047HD WAS B047CA.Z900023 & B024HD ADDED, RMV'D INV067 PREFIX	3/17/2020	JILG



SCALE 1 : 4

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	B0026HDB-WELDMENT	WELDMENT, QUICK RELEASE BRKT *	1
2	B0442	HAND SCREW ASSEMBLY	2
3	B0443	PIN, HAIRPIN COTTER MCMMASTER 98335A088	2
4	B0444	HOOK TO EYE LANYARD 8" MCMMASTER 303451124	2
5	B033AC	NUT - NYLON LOCK, 1/4-20 Y/ZINC GR8	2
6	B047HD	BUSHING, 3/4" ID X 7/8" OD	2
7	B027-HD	BOLT 1/4"-20 3/4"	2
8	B028-HD	SAE 1/4" FLAT WASHER	2
9	Z900023	DECAL - BYK-RAK LOGO LARGE (NOT SHOWN)	1
10	B024HD	SPACER, HEAVY DUTY	2

* NOT AVAILABLE SEPERATELY

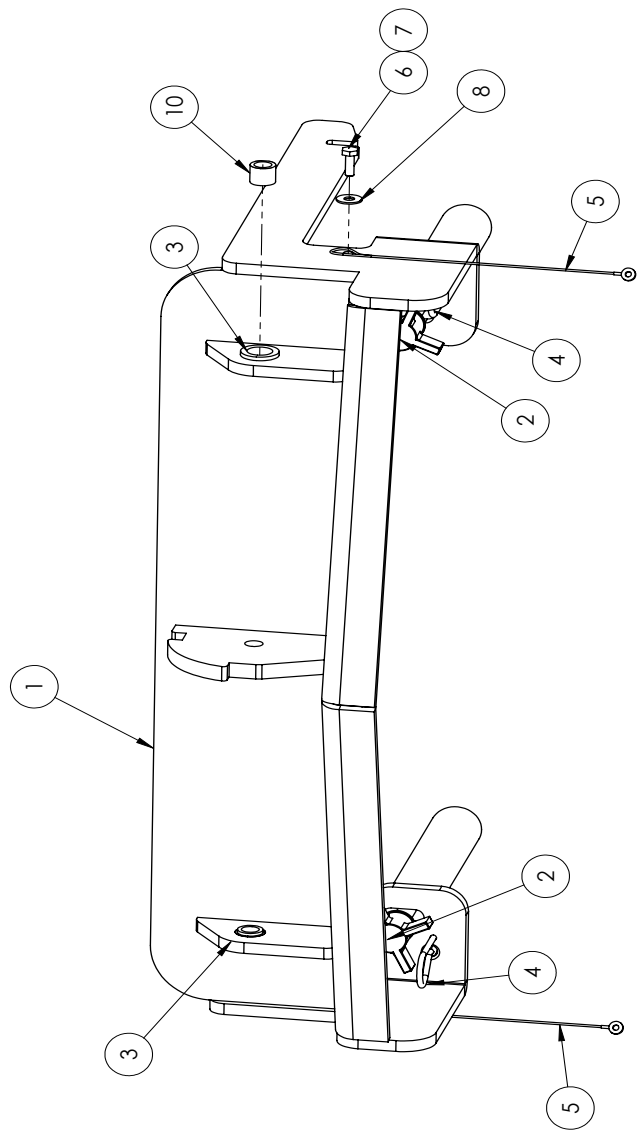
UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES		JILG	2/23/2017
TOLERANCES:			
FRACTIONAL: 1/16			
ANGULAR: MACH ± .005			
ONE PLACE DECIMAL ± .06			
TWO PLACE DECIMAL ± .03			
THREE PLACE DECIMAL ± .01			
INTERPRET GEOMETRIC TOLERANCING PER:			
MATERIAL:			
FINISH:			
DO NOT SCALE DRAWING			

Byk-Rak

TITLE:
 ASSEMBLY, QUICK RELEASE BRKT

SIZE DWG. NO. **B** B0026HDB REV **C**
 SCALE: 1:8 WEIGHT: 39.13 SHEET 1 OF 1

ZONE REV.		REVISIONS		DATE	APPROVED
A		DESCRIPTION	INITIAL RELEASE	12/11/19	JILG
B		B047HD WAS B047CA.Z900023 & B024HD ADDED RMVED INV067 PREFIX		3/17/2020	JILG



SCALE 1 : 4

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	B0027HDB-WELDMENT	WELDMENT, QUICK RELEASE BRKT *	1
2	B0442	HAND SCREW ASSEMBLY	2
3	B047HD	BUSHING, 3/4" ID X 7/8" OD	2
4	B0443	PIN, HAIRPIN COTTER MCMASTER 98335A088	2
5	B0444	HOOK TO EYE LANYARD 8" MCMASTER 30345T124	2
6	B027-HD	BOLT 1/4"-20 3/4"	2
7	B033AC	NUT - NYLON LOCK, 1/4-20 Y/ZINC GR8	2
8	B028-HD	SAE 1/4" FLAT WASHER	2
9	Z900023	DECAL - BYK-RAK LOGO LARGE (NOT SHOWN)	1
10	B024HD	SPACER, HEAVY DUTY	2

* NOT AVAILABLE SEPERATELY

Byk-Rak

UNLESS OTHERWISE SPECIFIED:	NAME	DATE
DIMENSIONS ARE IN INCHES	JIG	12/11/2019
TOLERANCES:	DRAWN	
FRACTIONS: 1/16 + RND - 2"	CHECKED	
DECIMALS: 0.0005	ENG APPR.	
ONE PLACE DECIMAL ± .04	MFG APPR.	
TWO PLACE DECIMAL ± .03	QA.	
THREE PLACE DECIMAL ± .01	COMMENTS:	
INTERPRET GEOMETRIC TOLERANCING PER:		
MATERIAL:		
FINISH:		
DO NOT SCALE DRAWING		

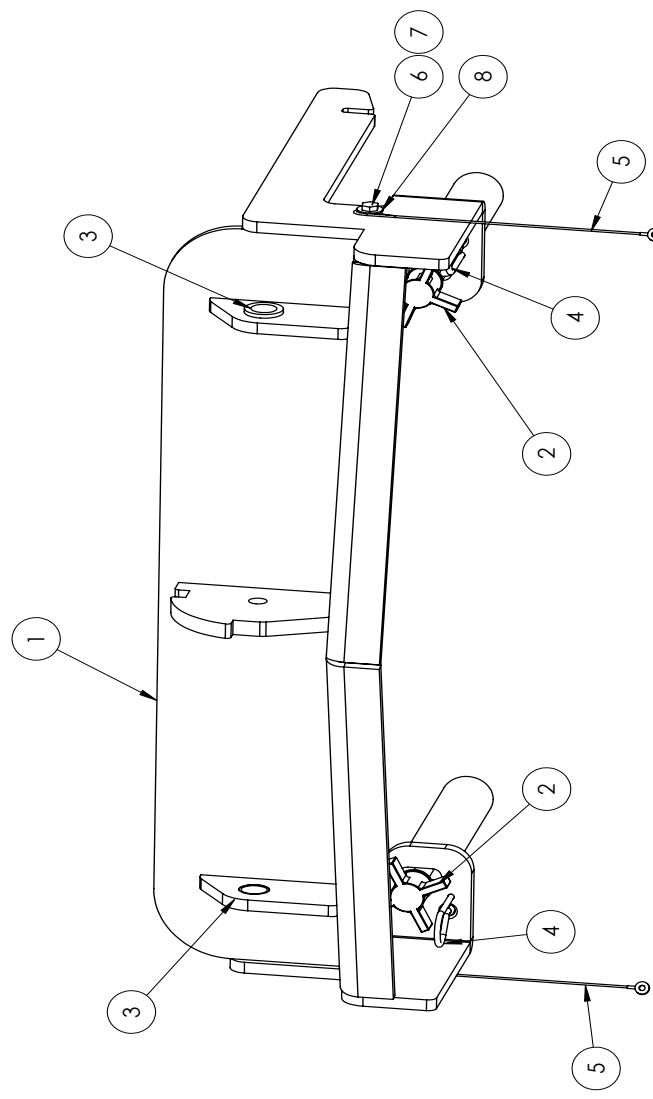
TITLE:
ASSEMBLY, QUICK RELEASE BRKT A-D

SIZE DWG. NO. **B** B0027HDB REV **B**

SCALE: 1:8 WEIGHT: 40.01 SHEET 1 OF 1

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ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	INITIAL RELEASE	11/4/2017	JIG



SCALE 1 : 4

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	S0028HDB	WELDMENT, QUICK RELEASE BRKT	1
2	B0445	HAND SCREW ASSEMBLY	2
3	B047-CA	bushing	2
4	B0443	PIN, HAIRPIN COTTER MCMMASTER 98335A088	2
5	B0444	HOOK TO EYE LANYARD 8" MCMMASTER 30345T124	2
6	INV067-B027-HD	bolt 1/4"-20 3/4"	2
7	B033AC	NUT - NYLON LOCK, 1/4-20 Y/ZINC GR8	2
8	INV067-B028-HD	SAE 1/4" flat washer	2

UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	JIG	11/4/2017
FRACTIONS: 1/16	CHECKED		
ANGULAR: MACH ± .1° BEND ± .2°	ENG APPR.		
ONE PLACE DECIMAL ± .06	MFG APPR.		
TWO PLACE DECIMAL ± .03	Q.A.		
THREE PLACE DECIMAL ± .01	COMMENTS:		
INTERPRET GEOMETRIC TOLERANCING PER:			
MATERIAL:			
FINISH:			
DO NOT SCALE DRAWING			

Byk-Rak™

TITLE:
ASSEMBLY, QUICK RELEASE BRKT

SIZE DWG. NO.
B B0028HDB

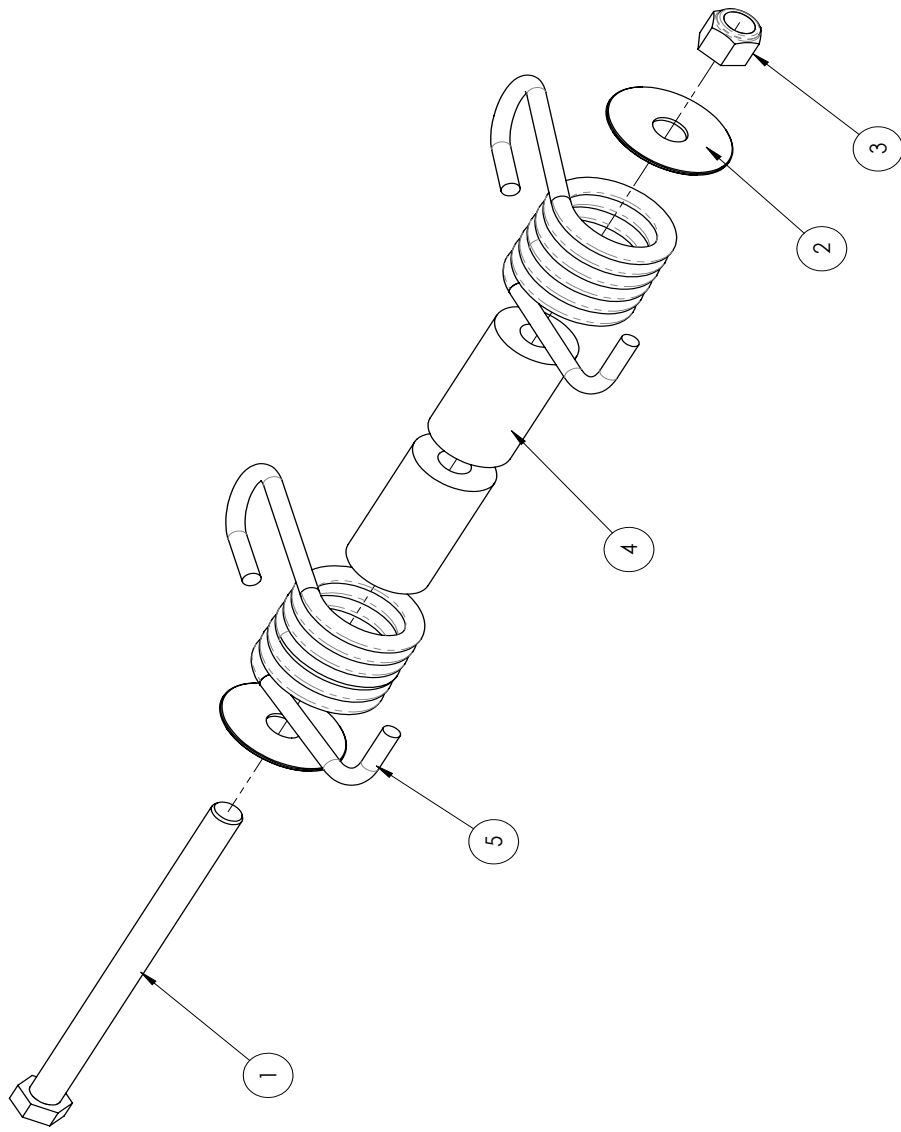
REV
A

SCALE: 1:8 WEIGHT: 38.55 SHEET 1 OF 1

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ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	INITIAL RELEASE	1/23/19	JIG

UNLESS OTHERWISE SPECIFIED:	NAME	DATE
DIMENSIONS ARE IN INCHES	JIG	1/23/2019
TOLERANCES:	DRAWN	
FRACTIONAL: $\pm 1/16$	CHECKED	
ANGULAR: MACH: $\pm .000$ BEND: $\pm .2$	ENG APPR.	
ONE PLACE DECIMAL: $\pm .06$	MFG APPR.	
TWO PLACE DECIMAL: $\pm .03$	Q.A.	
THREE PLACE DECIMAL: $\pm .01$	COMMENTS:	
INTERPRET GEOMETRIC TOLERANCING PER:	MATERIAL	
	See Part BOM	
	FINISH	
	DO NOT SCALE DRAWING	



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	Z900202	Bolt - Hex Head	1
2	Z900204	WASHER - FENDER	2
3	Z900203	Nut - Lock	1
4	B4403CNL	spring mount	2
5	B2033HDXAD	SPRING, 6 COIL EXTRA HD AD SIGN	2

UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES		JIG	1/23/2019
TOLERANCES:		DRAWN	
FRACTIONAL: $\pm 1/16$		CHECKED	
ANGULAR: MACH: $\pm .000$ BEND: $\pm .2$		ENG APPR.	
ONE PLACE DECIMAL: $\pm .06$		MFG APPR.	
TWO PLACE DECIMAL: $\pm .03$		Q.A.	
THREE PLACE DECIMAL: $\pm .01$		COMMENTS:	
INTERPRET GEOMETRIC TOLERANCING PER:		MATERIAL	
		See Part BOM	
		FINISH	
		DO NOT SCALE DRAWING	

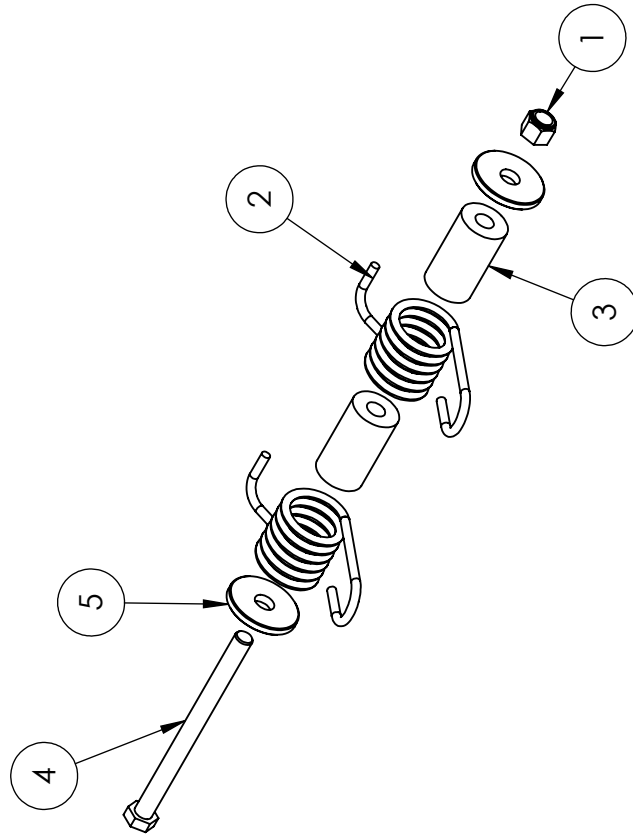
BYK-RAK™		SIZE	DWG. NO.	REV
KIT S/S SPRING ASSIST FOR AD SIGN		B	Z900205	A
TITLE:		SCALE:	1:2	WEIGHT:
		1.02	SHEET 1 OF 1	

8	7	6	5	4	3	2	1
---	---	---	---	---	---	---	---

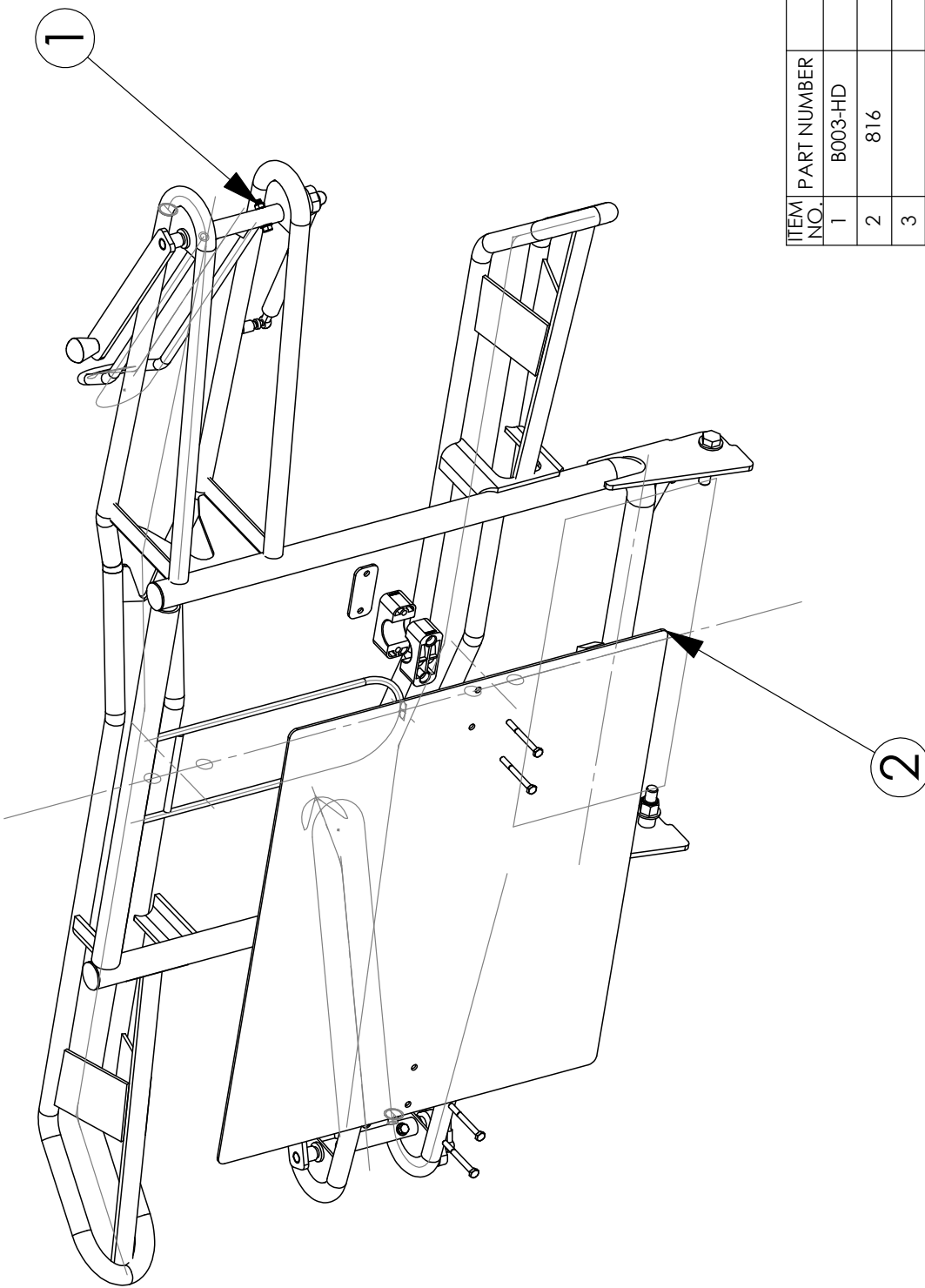
REVISIONS		ZONE	REV.	DESCRIPTION	DATE
			AA	RELEASED	9/3/2014
			B	SPRING WAS INV067-B203-3C	5/30/2019

ITEM NO.	PART NUMBER	REV	DESCRIPTION	QTY.
1	Z900203	AA-016	Nut - Lock SS	1
2	B2033HD		6 Coil Spring Heavy Duty	2
3	B4403CNL	AB-006	Nylon spring mount	2
4	Z900203	AA-011	SS Bolt - Hex Head	1
5	Z900204	AA-008	Washer 1/2 x 2 SS	2


(B)



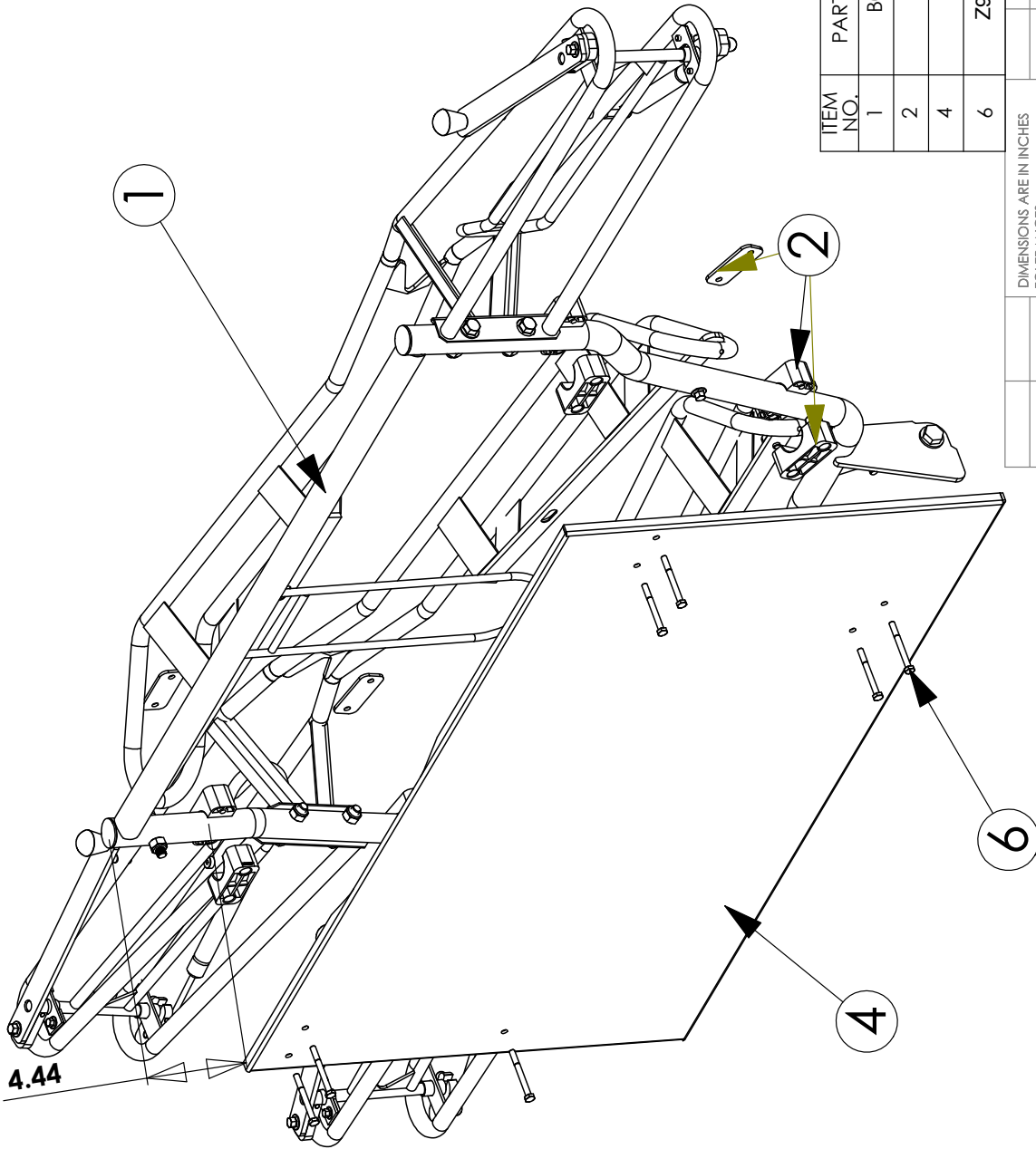
		KIT - SPRING ASSIST 3 POS	
DIMENSIONS ARE IN MM TOLERANCES UNLESS NOTED: FRACTIONAL ± ANGULAR: MACH ±1.0° BEND ±1.0° ONE PLACE DECIMAL ±1.5 TWO PLACE DECIMAL ±0.38 TRIMLINE ±1.5 HOLE SIZE ±1.0 MATERIAL	DRAWN CHECKED ENG APPR. MFG APPR. G.A. COMMENTS:	NAME ALTAIR	DATE
FINISH USED ON APPLICATION	DO NOT SCALE DRAWING	SIZE A	DWG. NO. Z900248
PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF BYK RAK. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF BYK RAK IS PROHIBITED.	REV. AA-002	SCALE:1:5 WEIGHT:	SHEET 1 OF 1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	B003-HD	Bike Rack Cpl't	1
2	816	Sign Kit 2 Place	1
3			
4			

		Installation Exploded	
DRAWN CHECKED ENG APPR. MFG APPR. Q.A. COMMENTS:	NAME KDP	DATE 9-10-12	SIZE A
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±		DWG. NO. 816 I	
MATERIAL --- FINISH ---		SCALE: 1:20	
NEXT ASSY USED ON	APPLICATION DO NOT SCALE DRAWING		
REV. A			
SHEET 1 OF 1			

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Installation Instruction

1. Clamp consists of upper, lower and attachment plate.
2. Sign frame has pre-drilled holes to secure frame to clamps.
3. Position top left clamp approximately 4-7/16" for top of frame
4. Remaining 3 clamp position to frame are established from pre-drilled holes in sign.
5. Use screws (7) provided to secure sign and clamps to frame.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	B003-3E	Rack Assy 3-Position Wide	1
2	814	Clamp	4
4	813	Sign Frame	1
6	Z900197	1/4-20 x 3" SS CTRSNK HD Cap Screw	8

DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	NAME: KDP DATE: 9-28-11 DRAWN: CHECKED: ENG APPR.: MFG APPR.: Q.A.: COMMENTS:
MATERIAL: -- FINISH: --	APPLICATION: DO NOT SCALE DRAWING
NEXT ASSY: USED ON:	REV. A DWG. NO. 812I SCALE: 1:20 WEIGHT: SHEET 1 OF 1

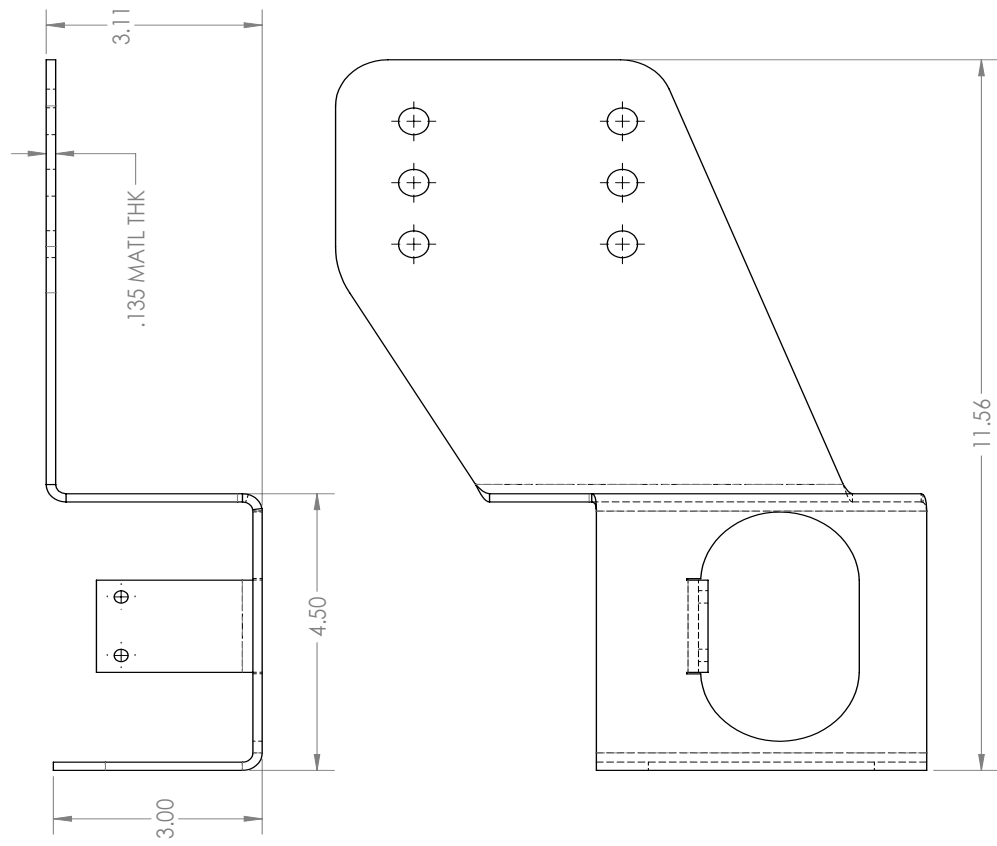
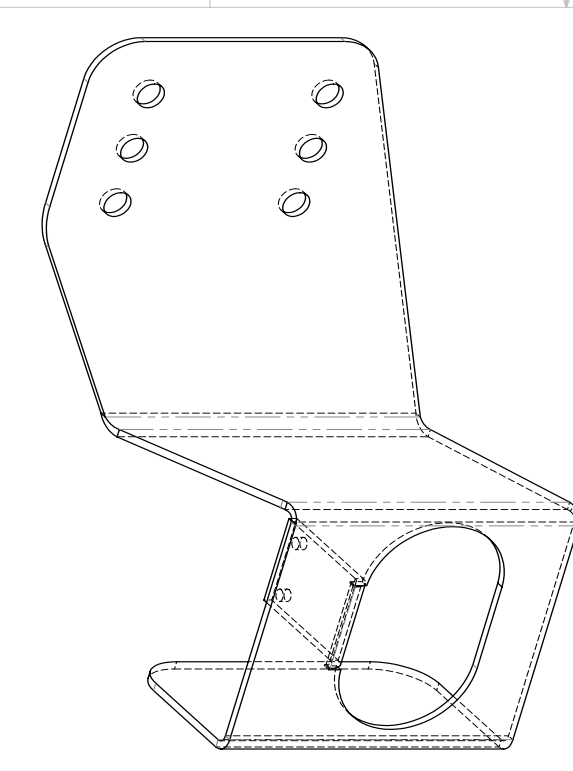
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Installation Exploded



**Part No. 850
Supplemental Light Kit**

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	INITIAL RELEASE	6/13/2019	JIG



NOTE: SAME AS BYK-RAK PART 851 BUT BENT OPPOSITE - SEE PART 851 FOR FLAT PATTERN

UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	JIG	6/13/2019
FRACTIONS: 1/16	CHECKED		
ANGULAR: MACH ± .1° BEND ± .2°	ENG APPR.		
ONE PLACE DECIMAL ± .06	MFG APPR.		
TWO PLACE DECIMAL ± .03	Q.A.		
THREE PLACE DECIMAL ± .01	COMMENTS:		
INTERPRET GEOMETRIC TOLERANCING PER:	MATERIAL		
	Plain Carbon Steel		
	FINISH		
	POWDER OR EPOXY BLACK		
DO NOT SCALE DRAWING	SIZE	DWG. NO.	REV
	B	852	A



TITLE:
BRACKET, AUX LIGHTING CURB SIDE

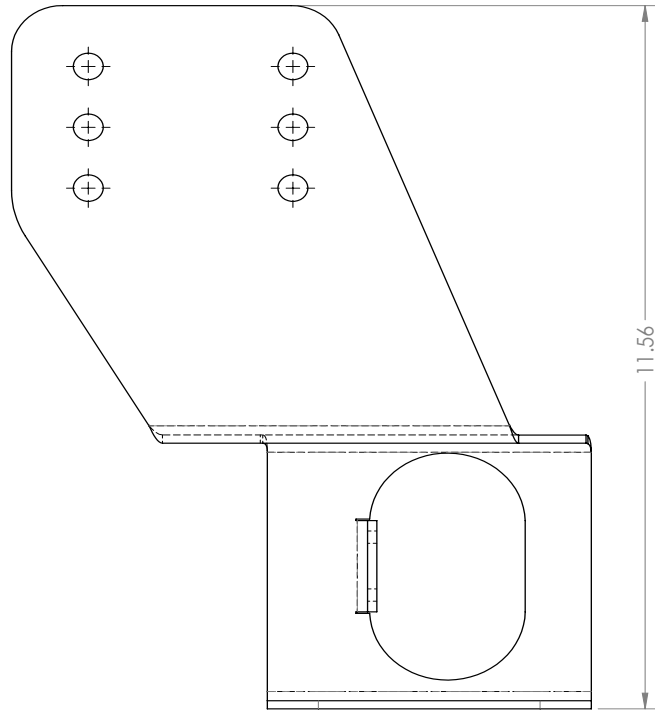
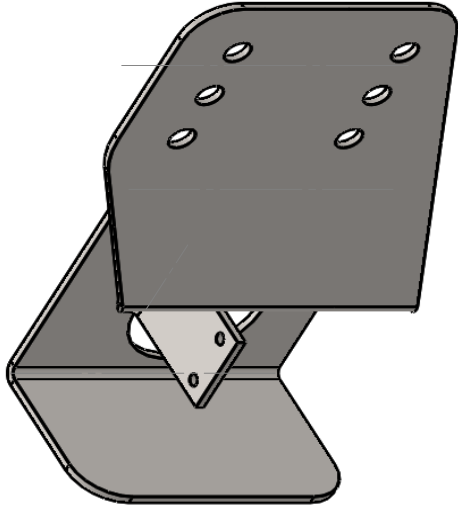
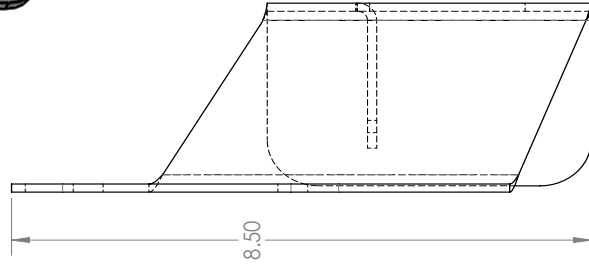
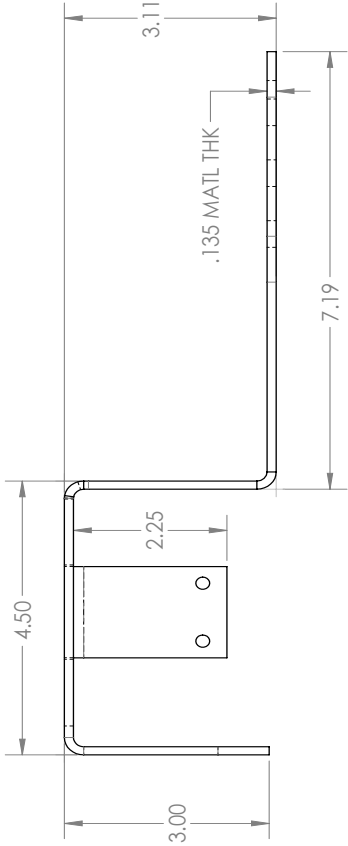
SCALE: 1:2 WEIGHT: 3.09 SHEET 1 OF 1

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1 2 3 4 5 6 7 8

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ZONE		REV. A	
REVISIONS		DATE	APPROVED
DESCRIPTION		6/13/2019	JLG
INITIAL RELEASE			



SEE FLAT PATTERN FOR DIMENSIONS NOT SHOWN

UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES		JLG	6/13/2019
TOLERANCES:		DRAWN	CHECKED
FRACTIONAL: 1/16		ENG APPR.	MFG APPR.
ANGULAR: MACH: 1° BEND: 2°		G.A.	COMMENTS:
HOLE POSITION: ±.01		MATERIAL: Plain Carbon Steel	
TWO PLACE DECIMAL ±.03		FINISH: POWDER OR EPOXY BLACK	
THREE PLACE DECIMAL ±.01		DO NOT SCALE DRAWING	
INTERPRET GEOMETRIC TOLERANCING PER:		TITLE: BRACKET, AUX LIGHTING STREET SIDE	
SIZE DWG. NO. B 851		REV A	
SCALE: 1:2		WEIGHT: 3.09	
		SHEET 1 OF 2	



1 2 3 4 5 6 7 8

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ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	INITIAL RELEASE	1/23/2019	JIG

CAUTION - PRECAUCION



**LOAD / UNLOAD
 BICYCLES
 THIS SIDE ONLY**

**MONTE / DESMONTE
 BICICLETAS POR
 ESTE LADO
 SOLAMENTE**

UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	JIG	1/23/2019
PLACEMENT FRACTIONAL: 1/16	CHECKED		
ANGULAR: MACH ± .1° BEND ± .2°	ENG APPR.		
ONE PLACE DECIMAL ± .06	MFG APPR.		
TWO PLACE DECIMAL ± .03	Q.A.		
THREE PLACE DECIMAL ± .01	COMMENTS:		
INTERPRET GEOMETRIC TOLERANCING PER:	MATERIAL		
	FINISH		
	DO NOT SCALE DRAWING		



TITLE:

DECAL, CAUTION

SIZE DWG. NO. REV
B Z900200 A

SCALE: 1:1 WEIGHT: SHEET 1 OF 1

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	INITIAL RELEASE	1/23/2019	JIG

EASY-LOADING Byk-Rak™

SQUEEZE to unlock
LOWER into position

EXPRIMIR para desbloquear
BAJAR de posición

LOAD front wheel

CARGAR rueda delantera

SECURE front wheel

ASEGURAR rueda delantera

RAISE the bike rack to the stowed position after use

LEVANTAR el estante de la bicicleta en la posición original después de su uso

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UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	JIG	1/23/2019
FRACCTIONS: 1/16	CHECKED		
ANGULAR: MACH ± .1° BEND ± .2°	ENG APPR.		
ONE PLACE DECIMAL ± .06	MFG APPR.		
TWO PLACE DECIMAL ± .03	Q.A.		
THREE PLACE DECIMAL ± .01	COMMENTS:		
INTERPRET GEOMETRIC TOLERANCING PER:	MATERIAL:		
	FINISH:		
DO NOT SCALE DRAWING			



TITLE:
DECAL, EASY LOADING

SIZE DWG. NO.
B Z900201

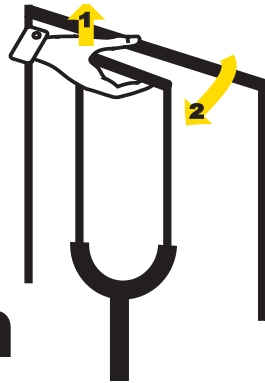
REV
A

SCALE: 1:1 WEIGHT:
 SHEET 1 OF 1

EASY LOADING

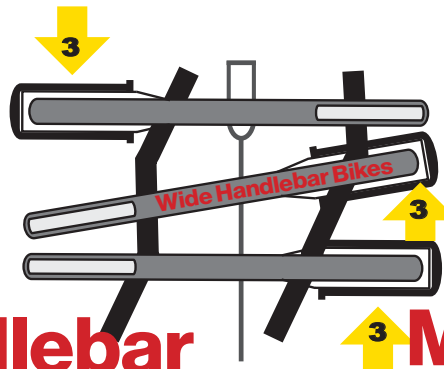
Byk-Rak

SQUEEZE
to unlock
LOWER
into position



EXPRIMIR
para
desbloquear
BAJAR
de posición

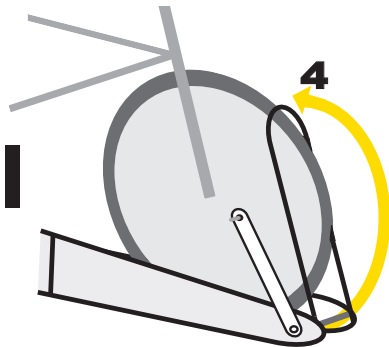
LOAD
front
wheel



Wide Handlebar
Bikes middle
tray **ONLY**

CARGAR
rueda
delantera
Manillar ancho
Bicicletas medio
bandeja **SOLAMENTE**

SECURE
front wheel



ASEGURAR
rueda
delantera

RAISE
the bike rack to
the stowed
position
after use

LEVANTAR
el estante
de la bicicleta
en la posición original
después de su uso

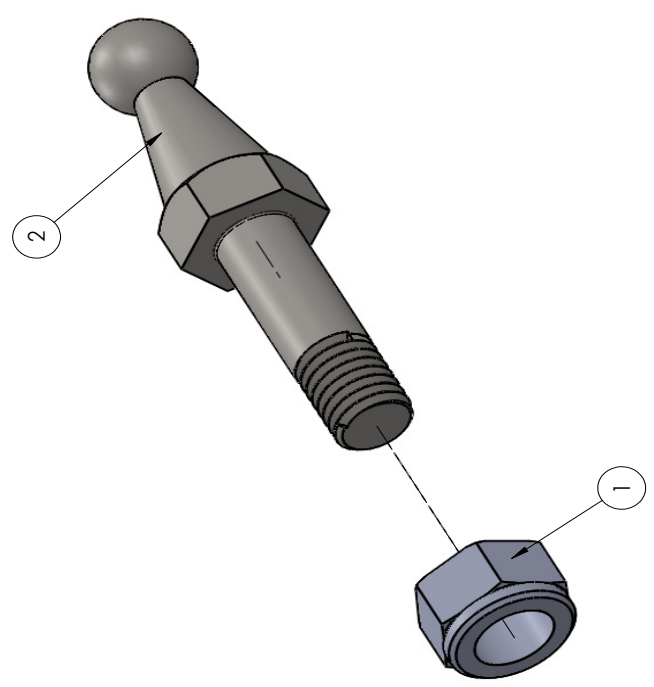
Part # Z900288

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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	Z900226	LOCK NUT, M8 LOW PROFILE *	1
2	Z900225	EXTENSION, BALL STUD *	1

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	INITIAL RELEASE	2/4/2020	JIG

D C B A



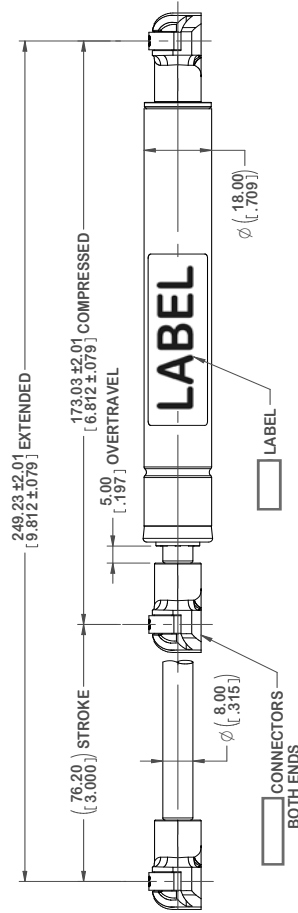
NOTE: SOLD AS KIT ONLY

UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES		JIG	2/4/2020
TOLERANCES:			
FRACTIONAL: ± 1/16			
ANGULAR: MACH: ± BEND: ± 2°			
ONE PLACE DECIMAL: ± .06			
TWO PLACE DECIMAL: ± .03			
THREE PLACE DECIMAL: ± .01			
INTERPRET GEOMETRIC TOLERANCING PER:			
MATERIAL			
FINISH			
DO NOT SCALE DRAWING			

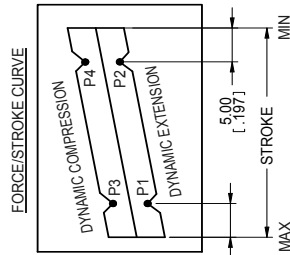
TITLE: KIT, BALL STUD AND NUT	
SIZE DWG. NO. B Z900239	REV A
SCALE: 2:1	WEIGHT: 0.07
SHEET 1 OF 1	SHEET 1 OF 1



ISO VIEW



(B) Connector Mat'l: 50% Glass Filled Nylon 6/6
 Clip Mat'l: Stainless Steel, Heat Treat Using Condition RH950 Process to Rockwell Hardness 81.5-85.5 HR15N.



PIN	B056AC
P1 @ 20°C	311.4±31.0 N [70.00±7.00 LBS] (ST)
P2 @ 20°C	454.2 N [102.10 LBS]
EXT. TIME @ 20°C	1.35±0.80 SEC.

NOTES

- 1) APPLY A LIGHT FILM OF OIL TO SHAFT SEAL AND O-RING PRIOR TO ASSEMBLY.
- 2) FINISH: BLACK CATHODIC EPOXY ED-4 OR POWDER PAINT
- 3) CONNECTOR ORIENTATION MAY VARY FROM PRINT.
- 4) PACK TYPE: #4
- 5) FEATURES IDENTIFIED AS STATISTICALLY TOLERANCED (ST) SHALL BE PRODUCED WITH STATISTICAL PROCESS CONTROLS.
- 6) DIMENSIONAL LIMITS APPLY AFTER FINISH UNLESS OTHERWISE SPECIFIED.
- 7) DIMENSIONAL LIMITS APPLY PRIOR TO FINISH.

DECIMAL Y ± 0.25 [0.010] XX ± 0.13 [0.005] X ± 0.075 [0.0025] OTHERWISE SPECIFIED	DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE SPECIFIED	DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5M-1994
DRAFTED IN ACCORDANCE WITH BYK-RAK LLC. ENGINEERING CAD STANDARDS CURRENT AT INITIAL RELEASE	BYK-RAK LLC.	SOLID EDGE CAD IS MASTER
FOR REFERENCE ONLY UNLESS STAMPED IN RED: "CONTROLLED DOCUMENT"	CURRENT AT	THIRD ANGLE

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BYK-RAK Patented Product

PART NAME

GAS PROP ASSEMBLY _ ED

PART NO.

REV

SCALE: 1:1 DWG SIZE: A2 SHEET: 1 OF 1



Byk-Rak has teamed up with Parkis to be a stocking distributor of all their Bike Lifts and Accessories

			
<p>BLD104 Parkis EXCLUSIVE 2.4"</p> <p>The first-rate version of Parkis with its outstanding mirror shiny looks. It combines excellent durability with elegance. Made of anodized aluminum and stainless steel.</p>	<p>BLD101 Parkis STAINLESS STEEL 2.4"</p> <p>The superior version of Parkis. Its durability meets the level of excellence. Made of anodized aluminum and stainless steel.</p>	<p>BLD103 Parkis BASIC 2.4"</p> <p>The famous yellow color has made this model the most recognizable and favorite version of Parkis. Made of anodized aluminum, galvanized, painted steel.</p>	<p>BLD107 Parkis MTB 3.0"</p> <p>Wide or narrow tires - it does not matter. Universal and simple Parkis version for all your needs. Made of anodized aluminum, galvanized, painted steel.</p>

ACCESSORIES

Z900210 Extension Bracket Set

One set includes 2 units of extension brackets to install PARKIS against a wall with a skirting board (plinth). This Bracket pulls PARKIS additional 2,5 cm (0,98") off the wall, so the floor skirting is not an obstacle. Made of stainless steel.



Z900209

SS Universal Mounting Extension Set

The Mounting Extension helps you to save even more space by installing multiple PARKIS units very closely. It pulls PARKIS from a wall while neighboring PARKIS is attached straight to a wall. That prevents handlebars from hitting each other and allows to take out any bike in whatever order.



Z900208 SS Angle Extension Set

Angle Extension accessory is designed for mounting Parkis at a 45-degree angle to a wall. Made of Stainless Steel.



Z900289 SS Rear Wheel Support

Rear Wheel Support accessory is recommended for Parkis installations on means of transportation or with some distance from a wall. Made of Stainless Steel.



Z900206 2.4 SS Locking Gates

Z900274 MTB 3.0 SS Locking Gate

Z900287 Transit 3.0 SS Locking Gates

Locking Gates accessory is needed for installing Parkis in public places. Allows locking a bicycle and protects the lift from too wide tires. Made of stainless steel.

