



AUTOMATIC TIRE CHAINS

**SERVICE, MAINTENANCE,
AND TROUBLESHOOTING MANUAL**

MAY 2017



TABLE OF CONTENTS

Sec. 1 Getting familiar with your Onspots

How to identify your Onspot Chain Units.....	1-1
Tools required.....	1-2
Application bulletin.....	1-3
General guidelines.....	1-4
Technical information.....	1-7
Tech bulletins.....	1-8
Operating/Maintenance Card.....	1-10
How to Check Your Onspots in 30 Seconds.	1-12
Tune-up Sheet.....	1-13

Sec. 2 Troubleshooting

Chains will not deploy.....	2-1
Chains will not retract.....	2-2
Flat spots on chainwheel.....	2-3
Compressor runs constantly.....	2-4
Chains ball up & do not go under tire.....	2-5
Chainwheel does not reach tire.....	2-6
Chains dragging.....	2-7

Sec. 3 Repair

Oilyte arm bearing.....	3-1
Spherical arm bearing.....	3-3
Sleeve style arm bearing.....	3-5
Brass cap arm bearing (Swedish).....	3-7
Brass cap arm bearing (US).....	3-9
Chainwheel bearing R & R.....	3-11
Chainwheel chainplate R & R.....	3-13
Air cylinder removal & replacement.....	3-15
Air cylinder diaphragm removal & replacement..	3-17
Angle joint removal & replacement.....	3-19

Sec. 4 Mounting Information

Phase I Brackets.....	4-1
03-MCI (MCI 102D3) Chains.....	4-3
04-4380-D OEM (E-450) Saddle Brackets.....	4-4
9942-CT Chain Trays.....	4-6
04 Flat (Phase II).....	4-8
04 Flat Adjustable (Phase II).....	4-10
04 w/Drop (Phase II).....	4-11
04 w/Drop Adjustable (Phase II).....	4-13
04 w/Drop (PHASE III).....	4-14
05 Flat (Phase II).....	4-15
05 w/Rise (Phase II).....	4-17
05 Walk Beam (Cast).....	4-19
05 Walk Beam (Fabricated).....	4-21
05 Walk Beam (Haulmaax®).....	4-23
Adjustable Wheel Instructions.....	4-25
M3504 Mounting Instructions.....	4-26
Ottawa Yard Tractor w/Torque-Link Suspension..	4-28
Chain Unit Mounting Instructions.....	4-30
Solenoid Plumbing.....	4-33
Switch Wiring.....	4-34
Sample Phase 2 Bracket Mounting Document...	4-35
Phase III Brackets.....	4-36
Disc Brake Caliper Pin Bulletin.....	4-38
Model 016 Instructions.....	4-40

ONSPOT

AUTOMATIC TIRE CHAINS

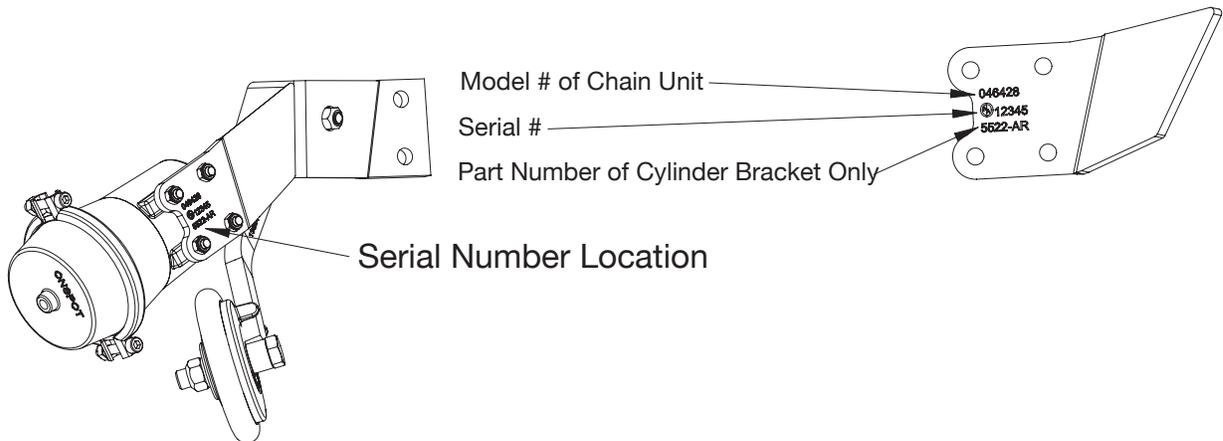
**SECTION 1
GETTING FAMILIAR
WITH YOUR ONSPOTS**

Providing us with your Onspot Model and Serial Numbers will assist in you receiving the proper parts for your chain units.

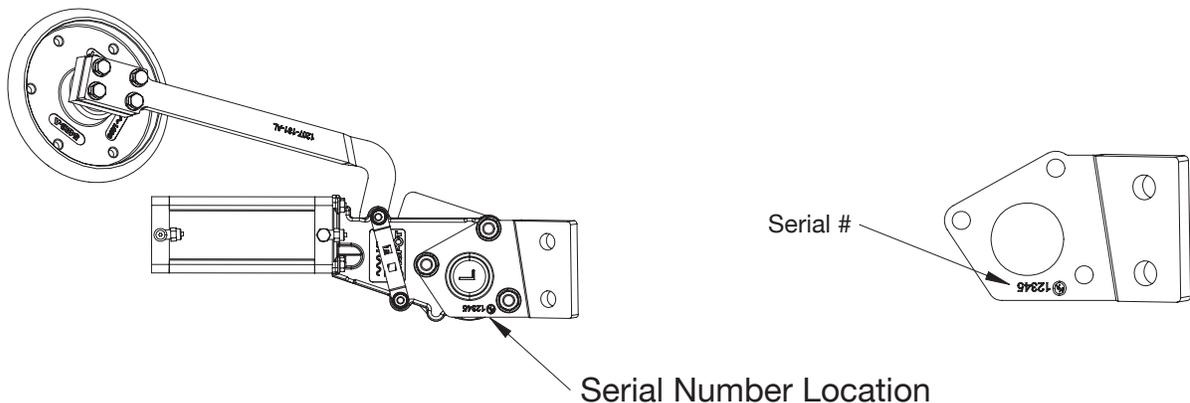
Your Onspot chain units Model # and Serial # are stamped on the cylinder brackets between the four nuts that attach the air can to the bracket. (See picture below) Beginning with serial # 28704 on February 26, 2001, Onspot began stamping the serial number on **BOTH** chain units.

Prior to this, the serial number was only located on one of the units. If your chain units are mounted in front of the axle, the number would be located on the driver side unit. If your chain units are mounted behind the axle, the serial number will be on the passenger side unit.

Standard Models 03, 04, 05



Model 012



QUESTIONS? 1-800-224-2467 ADDITIONAL INFORMATION: www.onspot.com

REQUIRED TOOLS

- Tape measure
- Plumb bob
- Boot Clamp Pliers
- Shop air compressor
- Ball valve – to fill air cylinder using shop compressor
- Angle gauge – to check chain-wheel angles
- Cut-off tool (air or electric) – to cut U bolts (if necessary)
- 3/4" or 1" Impact gun – to remove U bolt nuts (if necessary)
- Appropriate socket for U bolt nuts
- 0 – 600 foot-pound torque wrench – to torque U bolts
- 0 – 150 foot-pound torque wrench – to torque hardware
- 30mm impact socket – for chain-wheel nut
- 22mm open end wrench – for ball joint jam nut
- 19mm open end wrench – for air cylinder extension rod
- 17mm socket & ratchet – for air cylinder nuts
- 1 1/2" x 1/2" drive socket – for adapter nuts
- 15/16" impact socket (deep & shallow)
- 15/16" open end wrench – for mounting bolts
- 3/16" Allen wrench for swing arm set screw
- 8mm Allen wrench for cylinder clamp bolts
- 1/2" drive ratchet and breaker bar
- 5/8" open end wrench – for brass air fittings
- 9/16" open end wrench – for adjustable chainwheel retainer capscrews
- 12 Volt test light
- 1/2" drill bit and drill – for dash switch
- Wire crimping tool
- Assortment of electrical connectors
- Anti-seize coating

QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

APPLICATION OF ONSPOT AUTOMATIC TIRE CHAINS

Background:

The Onspot Automatic Tire chain system was developed in 1977 to fit Large Air Brake equipped vehicles. Onspot has been adapted to fit some smaller vehicles via use of 12 volt air compressor kit part #9803. Due to Onspot's heavy-duty design, there is sometimes interference with fuel tanks, exhaust pipes and shock absorbers. Completion of the appropriate Vehicle Suspension Information Sheet (VSI) outlined below will enable us to tell you if the vehicle can be fit.

Requirements:

Onspot of North America assumes all the engineering responsibility relative to what Model Onspots will fit the vehicle in question. However, we do need to know some things about the vehicle as there are hundreds of combinations of rear axle choices, shock absorber placement, brake chamber placement, tire size, wheel offset and the like. **ALL** these options change the rear end's configuration.

Vehicle Suspension Information Form #3130009 should be completed for those vehicles with Conventional U Bolts and air brakes (U bolt nuts below the saddle plate).

Vehicle Suspension Information Form #3130010 should be completed for those vehicles with Inverted U Bolts (U bolt nuts above the rear axle, i.e. Ford E350).

Vehicle Suspension Information Form #3130008 should be completed for Sprinter, Ford F-Series and Chevrolet/GM K, C & G Series, if these vehicles have conventional U bolt nuts (below rear axle).

Completion of the VSI Form takes approximately 10 minutes of time and requires the use of a tape measure and plumb bob. Good measurements will ensure that what we send you, will in fact work. Onspot has **measuring kits** available under **Part #9056**. A measuring video is available at www.onspot.com or on our CD "The Works".

IN ALPHABETICAL ORDER

Air Brake Trucks with Conventional U Bolts: Most **CAN** be fit. Use VSI Form #3130009.

Caution: Most Fire Trucks have the fuel tank mounted directly behind the rear differential, which prohibits the mounting of Onspots. In this case the chain units would mount forward of the axle UNDER the brake chambers. IF the brake chambers are 10 1/4" off the ground, Onspots CAN be fit. If this dimension is less than 10 1/4", the vehicle **CANNOT** be fit with a standard Model (SEE NOTE ON MODEL 04012HCA9 HAHNSPOTS).

Air Suspension with 4 Air Bags (Tandem axle) - Most **CAN** be fit as bracket can fasten to U Bolts under brake chambers. (Must have 10 1/4" air brake chamber clearance) ("GB" Measurement on VSI form).

Ambulance Applications - Suspensions vary on Type 1, 2, 3 and 7 ambulances. For the most part, we CAN fit the majority of these applications. Call Onspot for assistance. There is also an Ambulance Application Matrix.

AutoCar Xspotter Yard Tractors – Most **CAN** be fit. Chain units mount behind rear axle. Use VSI #3130009

Capacity Yard Tractors with "DURARIDE" Suspension. Most **CAN** be fit. Bracket must be welded to suspension. (Capacity has approved this). Call Onspot for details. See Capacity Yard Tractor VSI Form #3130029.

Chalmers Suspension - Single Rear Axle - Bracket must be welded to rear suspension on the "Triangle Support" behind the rear axle. (Chalmers has approved this). Must have 20 1/2" of linear clearance behind tire centerline. Call Onspot for further details. Tandem axle vehicles with Chalmers Standard 800 Series suspension Front axle **CAN** be fit. Use VSI Form #3130062.

Eaton Axle Four by Four (4x4) – Custom fire apparatus with 2 drive shafts into rear differential and a fuel tank behind rear axle. Most **CAN** be fit. Use VSI #3130009.

Freightliner Tuff Trac – Most **CAN** be fit. Use the new Freightliner Tuff Trac VSI form #3130065. Always measure both drive axles.

Gillig Transit Bus - With Neway ADTB280B Air Suspension - **CAN** be fit. With Neway ADTB280B Suspension use Model 05042HCA955.

Granning Air Suspension – Most can be fit. Use VSI #3130008 Call Onspot for assistance.

QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com



GENERAL GUIDELINES

HAHNSPOTS (MODEL 04012HCA9) - This Model Onspot was developed to fit Hahn fire trucks with front air brake chambers at 9" off the ground. This Model **MAY** be adapted to other low air brake chamber trucks. Call Onspot for details.

Hendrickson Walking Beam Suspensions includes HN/HN-FR/RT/RTE/Cast - Forged/ and Haulmaax - **CAN** be fit. Must have measurement from the bottom of the beam to ground at a point 13 1/2" forward of the tire centerline. Chain Units may require chain trays at an additional cost. See Hendrickson Walking Beam - VSI Form #3130018.

Hendrickson Primaax™ and Firemax™ Suspension – Most can be fit. Use VSI #3130069. Special Pricing applies.

Kelderman Air Suspension – Most can be fit. Call Onspot for assistance.

Kenworth AG400 - 8 Bag air suspension. A challenging application. The Onspot factory has done many of these installations in most cases. Call Onspot factory at 800-224-2467 to discuss.

Large Trucks without Air Brakes - Most **CAN** be fit. Requires 12-volt air compressor kit.

Link Air Ride – Most **CAN** be fit. Please call Onspot for application and measuring information.

Liquid Spring Suspension – Dodge 4500/5500 and Ford F450-500 have kits available. GM 4500/5500 and Ford E450 cannot be fit. Call Onspot for assistance.

Mack Truck - With Camelback Suspension, tandem axle – Onspot recommends mounting chains **BEHIND** rear axle but system may be mounted forward of axle with brake line movement. Use VSI Form #3130034.

MCI Bus - We have kits for MCI Model numbers 102D3, 102DL3 and Renaissance. Use VSI Form #3130038.

Neway Air Suspensions – Neway AD Series **CAN** be fit with Model 016 Onspots. Special Pricing applies. Neway ADL Suspension **CANNOT** be fit.

Ottawa Yard Tractors - Most CAN be fit. See Ottawa Yard Tractor VSI Form #3130021. Special Pricing applies. If equipped with "Ottoride" suspension, use VSI Form #3130009. **NOTE:** Chains units will protrude 7 1/2" out beyond rear of tractor.

Paccar – Air Glide – Kenworth & Peterbilt FlexAir can be fit. Use VSI #3130009. Special Pricing applies.

QUESTIONS? 1-800-224-2467 ADDITIONAL INFORMATION: www.onspot.com

Raydan Air Ride – Walking beam suspension, tandem axle. This suspension **CAN** be fit with Onspots. Use Walking Beam VSI Form #3130018.

Ridewell-Model RAD-241-OS - air suspension, single axle - We **CAN** fit this suspension, **IF** air brake chambers are 11” off the ground.

Ridewell-Dynalastic 202S - **tandem** axle trucks - used by Pierce, E1 and KME, etc. - We choose **NOT** to fit this suspension.

Smaller Vehicles without Air Brakes - Determine if vehicles has conventional or inverted u-bolts. Complete the appropriate VSI Form and include fuel tank and exhaust clearance information. Use VSI 3130008 or 3130010.

Volvo - “T” and “B” ride - The original T ride from Sweden has 20 MM U bolts and we use a front mount Model 04. The U.S. version B ride has 16 MM U bolts. Onspot has a saddle style bracket for this application. Use VSI Form #3130045.

OPERATING RANGE – 2 to 35 MPH. The chains may be engaged when traveling at speeds up to 25 MPH.

TIME TO ENGAGE SYSTEM - 2 seconds

TIME TO DISENGAGE SYSTEM - 3 seconds

POWER SUPPLY - 12 volts - 24 volt is available

SOLENOID AMPERAGE DRAW - .75 AMPS

COMPRESSED AIR REQUIREMENT - 60-psi minimum

AIR CHAMBER VOLUME - 62.8 cubic inches per side. Total air required per actuation - 125.6 cubic inches.

CHAIN UNIT WEIGHT - 36 lbs. per side without mounting bracket

TOTAL SYSTEM WEIGHT - ranges from 90 lbs to 128 lbs. based on application.

CHAINS - Six 12-inch lengths per chain-wheel consisting of 9-twisted directional through hardened alloy links. Replacement chainplates are available.

ARM BEARINGS – Grease-able bearings (2 per side) lubricated via grease fitting in arm.

CHAINWHEEL BEARINGS - 2 per wheel sealed and maintenance free.

12-VOLT AIR COMPRESSOR KIT -

CAPABILITY: 0 - 100 psi in 3 minutes 30 seconds .49 CFM

AIR COMPRESSOR INFORMATION:

Weight - 6 lbs

Dimensions - 8 1/2" long x 6 1/4" tall x 4" wide

AIR TANK INFORMATION:

Weight - 12 lbs

Volume - 600 cubic inches

Dimensions - 18" long x 7" in diameter

- Air compressor can be mounted in any position; i.e. vertical, horizontal, inverted, etc. Must be mounted inside the vehicle.
- A protective housing is also available to protect the air compressor from the elements or possible damage.

QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

PLUGGED BALL JOINTS

“If you haven’t already, you will soon be seeing chain units with plugged ball joints. This is spare part #1005-A. We have had some requests to have a grease-able ball joint. Considering the low request rate and our feeling that the grease fitting was too susceptible to breaking, we had the supplier drill, tap and plug the joint. With this solution, if the customer wants to grease the joint, he can by removing the plug and installing a fitting.”

FREIGHTLINER – AIRLINER ONSPOT KITS

“Freightliner provides both a single axle and tandem axle air suspension option. As a general rule of thumb we can fit both as long as the air brake chambers are at least 10 inches off the ground. All Onspots must mount forward of the axle with these suspensions. Use the standard VSI #313009. PLEASE BE AWARE, that 95% of these kits use phase 1 mounting brackets held in place by the U BOLT nuts (no adapter nuts are used). As a result, the “U” bolts need to be changed with “U” bolts that are 1” longer. At present we DO NOT include “U” bolts in the Onspot kit. We CAN include the “U” bolts if you ask for them and tell us how long you need them. The DEALER price for the 4 “U” bolts is \$80.00 regardless of size. If you need the “U” bolts included please mark your orders accordingly.”

CHAINWHEEL MAINTENANCE

“We would like to present a couple of helpful reminders to pass on to all of your satisfied Onspot customers that will help keep the Onspot system operating properly for years to come. We suggest that users take the chain-wheels off of the vehicle during the spring and summer. This resultant weight reduction will eliminate unnecessary wear and tear on the chain-wheel bearings. Be certain that the customers’ mark which vehicle the chains are removed from and what side of the vehicle (driver or passenger) it came from. (Remember – there is a difference!) It is also advisable to remove the in-line fuse so that the system is not turned on without having the chainwheels in place. Finally a shot of grease in the swing arms will help to keep everything moving easily.”

QUESTIONS? 1-800-224-2467 ADDITIONAL INFORMATION: www.onspot.com

VSI TIPS (Vehicle Suspension Information forms)

“Onspot personnel are often called upon to diagnose installation problems and improperly working chain units. Most of, but certainly not all, the problems can be traced directly back to improper measurements on the VSI form. The VSI form is what we use to establish what type of chain unit and specific mounting bracket will be needed to fit the specific vehicle. As you can imagine, with 4 different basic models and over 400 different brackets, there are a number of combinations that can develop. The importance of having CORRECT and ACCURATE measurements on the VSI cannot be stressed enough.

Many of the questions on the front page of the VSI relate directly with the model of ONSPOT to be used. For example:

Truck #1 – Has front air brake chambers, step side tanks and spring suspension. We would recommend installing rear mount 05’s.

Truck #2 – Has front air brake chambers, rear fuel tanks and air suspension. We would recommend installing front mount 04’s.

Questions on the back page of the VSI relate more to finding the correct bracket to match up with the selected model to fit the vehicle in the best way. For example:

Truck #1 – (measurements) $Y = 6.5$, $Z = 3.875$, $C = 1.5$ 05-5452 Bracket kit

Truck #2 – (measurements) $Y = 6.375$, $Z = 3.875$, $C = 1.5$ 04-4243 Bracket kit

Not only do the measurements entered on the back page give us the information we need to pick the correct bracket, the BF and BB measurements also tell us the amount of spacers needed to achieve the correct height. As you can tell, all the information on the VSI form needs to be answered to the best of your ability.

To summarize, take a few minutes to review and even DOUBLE-CHECK the measurements you have entered on the VSI form. This will save both you the dealer or OEM, and Onspot personnel hours of precious time to rectify a problem that could have been avoided. Thanks and happy measuring!”

QUESTIONS? 1-800-224-2467 ADDITIONAL INFORMATION: www.onspot.com

OPERATING INSTRUCTIONS

- ⚠ Check that your onspots are working properly before your trip.
- ⚠ Chains **MUST BE** engaged and disengaged while the vehicle is moving.
 - chains **MUST BE** engaged when traveling between 2 mph and 25 mph.
 - chains **MUST BE** disengaged when traveling between 2 mph and 35 mph.
- ⚠ Vehicle **MUST NOT** exceed 35 mph with the chains engaged.
- ⚠ Vehicle can stop on the chains, and then start moving again, as long as the switch is still in the engaged position.
- ⚠ Engage chains before reaching slippery conditions. Onspot will assist traction in forward, reverse, and in braking conditions.
 - avoid locking the wheels.
- ⚠ If you have not engaged your onspots before stopping on a slippery road:
 - spin tires up to 5 mph,
 - engage onspots,
 - when you feel chains bite, stop spinning wheels and drive on slowly

MAINTENANCE INSTRUCTIONS

FIRST SERVICE

- Check torque of Onspot vehicle mounting bracket bolts
- Check torque of Onspot chain unit mounting bolts (125 ft-lbs)
- Check torque of chainwheel bolts (125 ft-lbs)

REGULAR VEHICLE SERVICE

- Grease the Onspot arm bearings and ball joints (if applicable)
- Check chainwheel bearings and arm bearings for play
- Check the chain link wear (ensure there are at least 9 links for 190mm wheels and 7 links for 170 mm wheels)
- Engage system and check for air leaks
- Check chainwheel pressure against the tire (should be at least 20 lbs.)

SPRING SEASON

- At minimum, remove chainwheels to prolong arm bearing life.
- Chain units may be removed if desired. (leave mounting brackets in place and plug air lines)
- Disconnect dashboard switch or remove fuse
- Mark passenger side and driver side chainwheels and chain units with vehicle unit number
- Check chainwheels, arm bearings and angle joints for wear to ensure the system is ready for next season

HOW TO CHECK YOUR ONSPOTS IN 30 SECONDS OR LESS

We recommend that your onspot system be checked once each week. Follow this simple procedure:

- 1.** Start the vehicle
- 2.** Move forward at 3 to 5 mph and turn on the Onspot chains
- 3.** Count to 5 and turn the chains off

NOTE: The above can be done in a parking lot or on the street. Snow or ice need not be present.

Observations:

- A.** The chains should go down and pass between the tire and the road surface. On a dry surface the operator should be able to feel the chains under the tire. Keep in mind that at slow speeds the “footprint” coverage will not be 100%
- B.** The chains should retract up out of the way when turned off and the chains should not be dragging on the ground in the resting position
- C.** On vehicles with a 12 volt air compressor, the operator should be able to hear the compressor running once the chains have been retracted. The operator may need to turn the chains on a 2nd time in order to get the compressor to come on.

GENERAL GUIDELINES

Torque Chart		Standard	Extreme Duty
Adapter nuts installed under OEM U-bolt nuts	OEM Spec	150 ft.lbs.	250 ft.lbs.
Adapter nuts replacing OEM U-bolt nuts	OEM Spec	150 ft.lbs.	250 ft.lbs.
Adapter nut Capscrews	OEM Spec	125 ft.lbs.	150 ft.lbs.
Chain Unit Capscrews	OEM Spec	35 ft.lbs.	35 ft.lbs.
Adjustable Chainwheel Retainer Capscrews	OEM Spec	125 ft.lbs.	125 ft.lbs.
Chainwheel Bolt Nut	OEM Spec	125 ft.lbs.	125 ft.lbs.

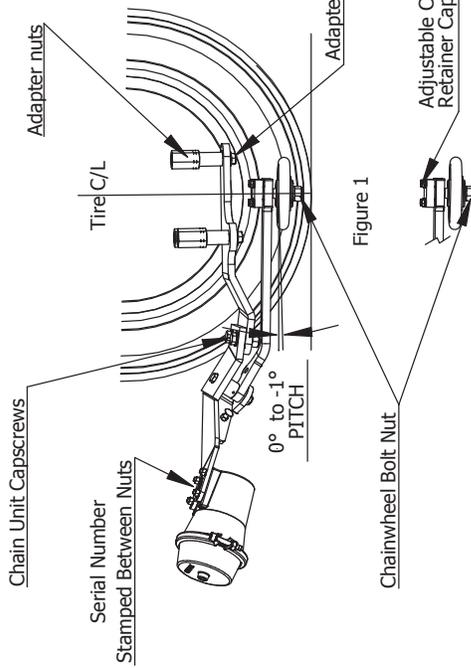


Figure 1

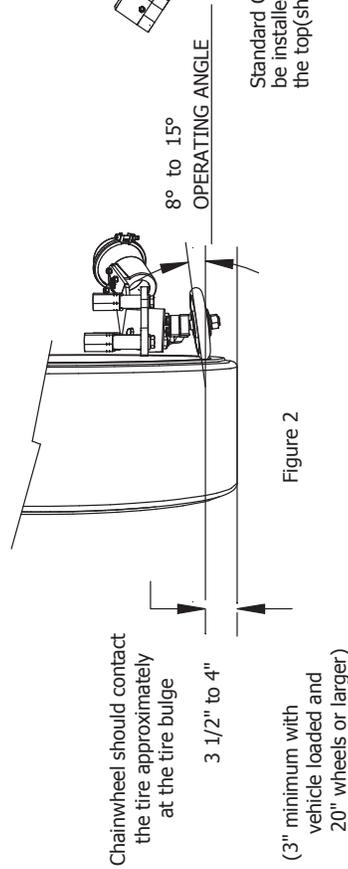


Figure 2

2 3/4" contact on loaded vehicle with 16" wheels and 170mm chainwheel

- Grease Arm Bearings
- Check Play In:
 - Ball Joint
 - Chainwheel Bearings
 - Arm Bearings
- Check Tire Sidewall Pressure
 - Minimum 20 Lbs.
- Check Chainwheel Contact:
 - Operating Angle
 - Pitch
 - Contact Height

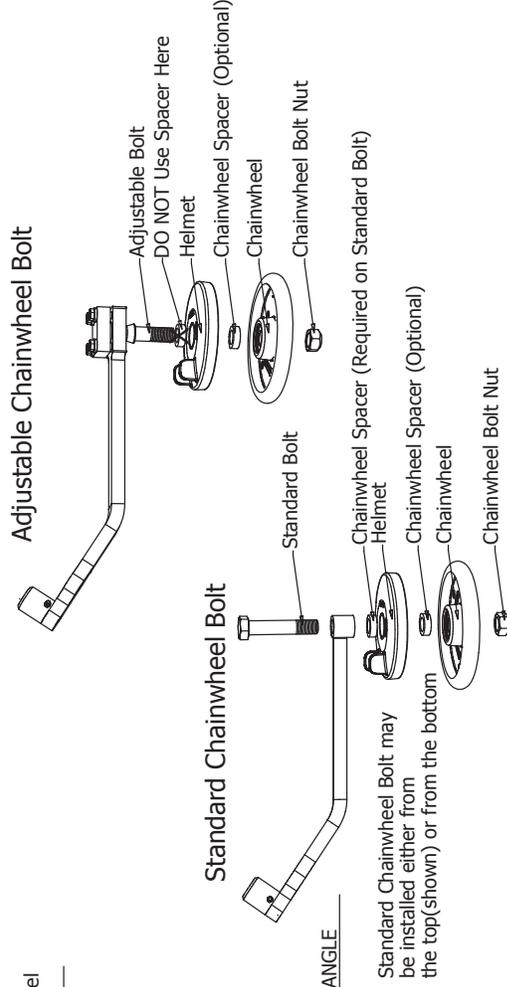
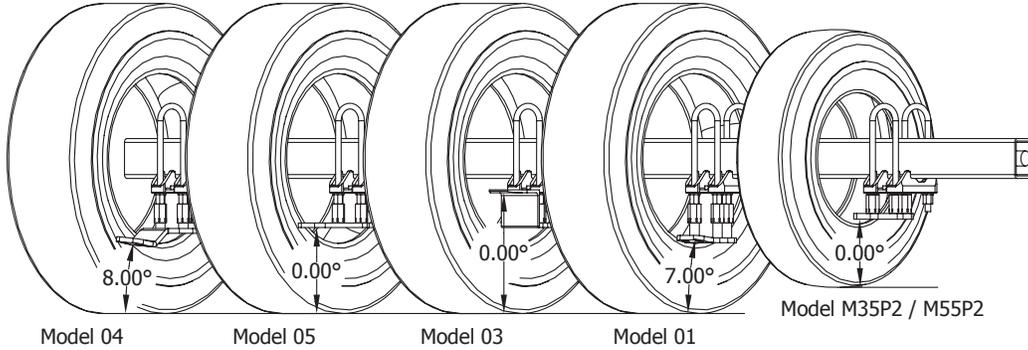


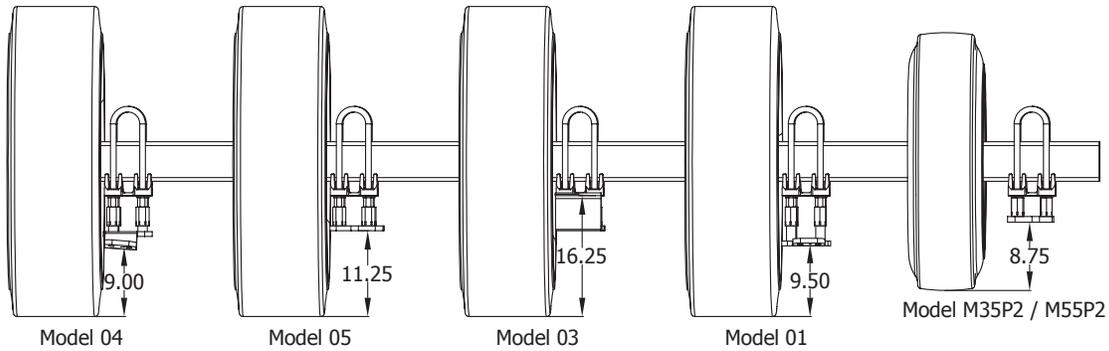
Figure 4

NOTE: Red Chainwheel = Driver Side
Blue Chainwheel = Passenger Side

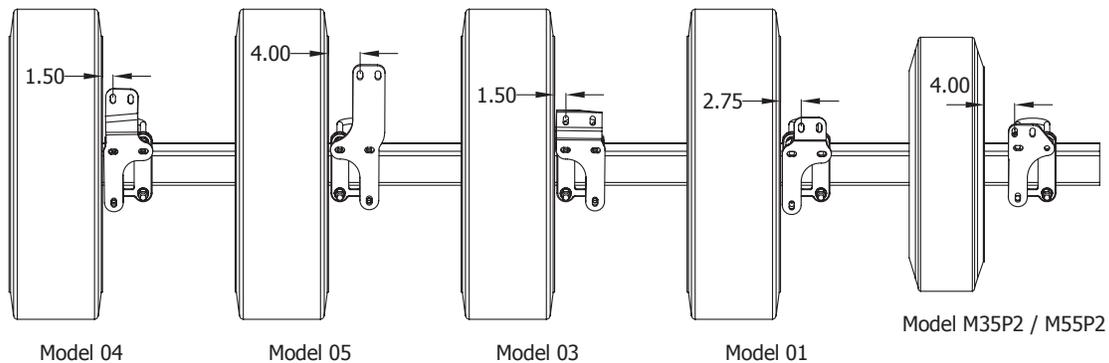
'T' Angle Relative to Ground



'BBG' Dimension Bottom of Bracket to Ground



'S' Dimension



The above dimensions are general guidelines for 190mm wheels at 4" tire contact. See individual Mounting Bracket Instructions for exact guidelines concerning your vehicle. The Model M35P2 and M55P2 use 170 mm chainwheels at 3" tire contact.

QUESTIONS? 1-800-224-2467 ADDITIONAL INFORMATION: www.onspot.com

ONSPOT

AUTOMATIC TIRE CHAINS

SECTION 2
TROUBLESHOOTING

CHAINS WILL NOT DEPLOY

OnSpot switch supplied with 12V key on power & wired according to wiring diagram?	Repair to specification & continue. See Note 1
12V solenoid connected to power source, grounded and functioning properly?	Repair to specification & continue. See Note 2
Are air supply lines to air cylinders connected to correct fittings on 12V solenoid?	Repair to specification & continue
Is pressure protection valve connected to air tank in the direction of air flow?	Repair to specification & continue
Are air supply lines to cylinders kinked, damaged, or disconnected?	Repair to specification & continue
Is air cylinder damaged or leaking?	Please see Note 3 on bottom of page
Are the arm bushing bolts overtightened or not lubricated?	Please see Note 4 on bottom of page
Is any on-board vehicle equipment causing interference with Onspot's?	Please contact an Onspot technician for further troubleshooting instructions

NOTE 1: Ensure that all UNDERCOATING material is removed from solenoid mounting location. Solenoid is self grounding through its casing.

NOTE 2: Inlet is on top of solenoid casing or side marked "IN", outlet is on front of solenoid casing or side marked "CYL". Solenoid mounts vertically.

NOTE 3: Deploy chains. If cylinder leaks, the diaphragm must be replaced. Please see diaphragm R & R procedure in "Repair" section of this manual.

NOTE 4: Lubricate bushing first. If chainwheel will still not deploy, turn switch off, remove 4 nuts holding air cylinder and drop cylinder off of its bracket. Arm should swing freely through its arc; if not, arm bearings are cause of problem and should be replaced. (Refer to arm bearing R & R in "Repair" section of instructions.) If arm does swing freely, the air cylinder is source of the problem.

QUESTIONS? 1-800-224-2467 ADDITIONAL INFORMATION: www.onspot.com

CHAINS WILL NOT RETRACT

Onspot switch supplied with 12V key on power & in “off” position?	Verify & continue
Vehicle should be moving when the Onspot’s are shut off.	Try while moving & continue
Solenoid connected to 12V source grounded and functioning properly?	Repair to specification & continue. See Note 1
Has mounting bracket been damaged or mounted too low?*	Repair to specification & continue. See Note 2
Evidence of damage, wear, lack of lubrication or over tightening of arm bolt?	Please see Note 3 on bottom of page
Is return spring inside air cylinder worn or broken?	Please see Note 4 on bottom of page
Is chainwheel hitting driveshaft or differential on return?	Please contact an Onspot technician for further troubleshooting instructions
Is any on-board vehicle equipment causing interference with Onspots?	Please contact an Onspot technician for further troubleshooting instructions

NOTE 1: Solenoid is self grounding through its casing.

NOTE 2: See tune-up sheet bulletin # 6160063.

NOTE 3: Deploy chains. If cylinder leaks, the diaphragm must be replaced. Please see diaphragm R & R procedure in “Repair” section of this manual.

NOTE 4: Air cylinder spring replacement requires a special tool due to high spring pressure. Please contact Onspot for assistance. Lubricate bushing first. If chainwheel will still not deploy, turn switch off, remove 4 nuts holding air cylinder and drop cylinder off of its bracket. Arm should swing freely through its arc; if not, arm bearings are cause of problem and should be replaced. (Refer to arm bearing R & R in “Repair” section of instructions.) If arm does swing freely, the air cylinder is source of the problem.

QUESTIONS? 1-800-224-2467 ADDITIONAL INFORMATION: www.onspot.com

FLAT SPOTS ON CHAINWHEEL

Is chainwheel bearing damaged or seized?	Please see chainwheel bearing R & R instructions in “Repair” section of manual
Has chain lodged between bottom of arm & top of chainwheel causing lock-up?	Check chainwheel angles using tune-up sheet bulletin # 6160063, and correct or install chainwheel helmet
Is tire sidewall pressure insufficient?	Check “S” dimension using tune-up sheet or adjust extension rod (See Note 3) on bottom for further instructions
Have units been operated in deep snow?	Snow in excess of 6 inches causes Onspot’s performance to deteriorate
Is chain unit and/or mounting bracket mounted correct distance from tire sidewall? See Note 1	Repair to specification & continue
Is chainwheel operating angle and/or pitch correct? See Note 2	Repair to specification & continue

Please contact an Onspot technician for further troubleshooting instructions

NOTE 1: See tune-up sheet bulletin # 6160063

NOTE 2: See tune-up sheet bulletin # 6160063

NOTE 3: Deploy chains. Using a fish scale or similar tool, check and record sidewall pressure (20 lbs. minimum). If bracket is mounted correctly and “S” dimension is correct, verify using our “Tune-Up” sheet #6160063.

1. Loosen jam nut at cylinder end. (Right hand thread)
2. Loosen jam nut at angle joint end. (Left hand thread)
3. Turn extension rod counter clockwise to make assembly longer and increase sidewall pressure.
4. Tighten jam nuts and re-check until satisfactory sidewall pressure is achieved.

QUESTIONS? 1-800-224-2467 ADDITIONAL INFORMATION: www.onspot.com

COMPRESSOR RUNS CONSTANTLY

NOTE: Compressor may turn on independently due to extreme temperature changes.

Check all air lines, fittings and holding tank for leaks.	Repair to specification & continue
Is micro-pressure switch working correctly?	Repair to specification & continue
Has “flapper valve” inside compressor cylinder head been damaged?	Repair to specification & continue
Is compressor building to 100psi or above in holding tank?	Repair pressure switch

Tips on troubleshooting air system:

1. Install gauge in tank and record air pressure.
2. If pressure is less than 100psi, the compressor is running and there are no leaks, it may indicate a damaged flapper valve. Remove compressor head and flapper valve. Flip the flapper over and re-install compressor head. If problem persists, the compressor may need an overhaul.
3. If pressure is greater than 100psi, the pressure switch is most likely at fault.

CHAINS BALL UP & DON'T GO UNDER TIRE

Is vehicle speed at least 2 mph?	Verify & continue
Are the chains trying to be used in deep snow?	Snow in excess of 6 inches causes Onspots' performance to deteriorate
Is chainwheel contact height too low? See Note 1	Repair to specification & continue
Are the operating angle and pitch correct? See Note 2	Repair to specification & continue
Is chainwheel bearing damaged or seized?	Please see chainwheel bearing R & R instructions in "Repair" section of manual
Is chainwheel to tire sidewall pressure at least 20 pounds? See Note 3	Please see Note 4 on bottom of page
Have the chain units been mounted too low? See Note 5	Adjust to specification & continue

NOTE 1: 3 1/2" to 4" (20" wheels or larger). 2 3/4" (16" wheels and 170mm chainwheel)

NOTE 2: See tune-up sheet bulletin # 6160063.

NOTE 3: Contact Onspot for assistance with adjusting sidewall pressure.

NOTE 4: Deploy chains. If cylinder leaks, the diaphragm must be replaced. Please see diaphragm R & R procedure in "Repair" section of this manual.

NOTE 5: Verify using Tune-Up sheet #6160063.

QUESTIONS? 1-800-224-2467 ADDITIONAL INFORMATION: www.onspot.com

CHAINWHEEL DOES NOT REACH TIRE

Does air tank have sufficient air pressure? (100psi minimum)	Repair to specification & continue
Is air cylinder damaged or leaking?	Please see Note 1 on bottom of page
Are supply lines to air cylinders connected to correct fittings on 12V solenoid?	Repair to specification & continue. See Note 2.
Are air supply lines to cylinders kinked, damaged, or disconnected?	Repair to specification & continue
Is pressure protection valve connected to air tank in the direction of air flow?	Repair to specification & continue
Are the arm bearing retaining bolts overtightened or not lubricated?	Please see Note 3 on bottom of page
Is the mounting bracket "S" dimension correct?	Please contact an Onspot technician for further troubleshooting instructions
Have the mounting Brackets been installed on the correct sides of the vehicle?	Verify using Tune-Up sheet #6160063
Is any on-board vehicle equipment causing interference with Onspots?	Please contact an Onspot technician for further troubleshooting instructions

NOTE 1: Deploy chains. If cylinder leaks, the diaphragm must be replaced. Please see diaphragm R & R procedure in "Repair" section of this manual.

NOTE 2: Inlet is on top of solenoid casing or side marked "IN", outlet is on front of solenoid casing or side marked "CYL". Solenoid mounts vertically.

NOTE 3: Lubricate bushings first. If chainwheel will still not deploy, turn switch off, remove 4 nuts holding air cylinder and drop cylinder off of its bracket. Arm should swing freely through its arc; if not, arm bearings are cause of problem and should be replaced. (Refer to arm bearing R & R in "Repair" section of instructions.) If arm does swing freely, the air cylinder is source of the problem.

QUESTIONS? 1-800-224-2467 ADDITIONAL INFORMATION: www.onspot.com

CHAINS DRAGGING

Correct number of links on chainwheel?	Repair to specification & continue. See Note 1
Is vehicle tire pressure too low?	Repair to specification & continue
If equipped, is the air suspension not inflated?	Repair to specification & continue
Arm stop adjusted incorrectly?	Repair to specification & continue
Arm bearing worn or loose?	Repair to specification & continue
Chain unit(s) mounted too low?	See Tune-Up sheet bulletin #6160063
Incorrect "T" angle on mounting bracket?	See Tune-Up sheet bulletin #6160063
Mounting bracket and/or chain unit damaged or bent?	Repair to specification & continue

Please contact an Onspot technician for further troubleshooting instructions

NOTE 1: 7 links + hook on 16" tire, 8 links + hook on 19.5" tire, 10 links + hook on 20" tire & larger

QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

ONSPOT

AUTOMATIC TIRE CHAINS

**SECTION 3
REPAIR**

ARM ASSEMBLY (OILYTE BEARING)

Procedure: Arm bearing R&R

Tools required:

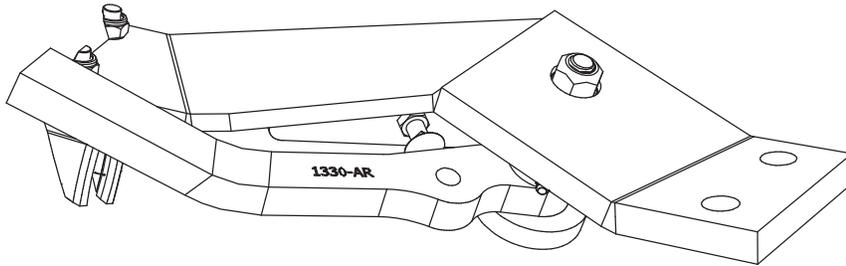
- 17mm x 3/8" drive socket & ratchet
- 19mm open end wrench
- 22mm open end wrench & socket
- 15/16" x 1/2" drive socket & ratchet
- 15/16" open end wrench
- 5/8" open end wrench
- 3/16" Allen wrench or socket
- 1199-A arm bearing tool

Steps:

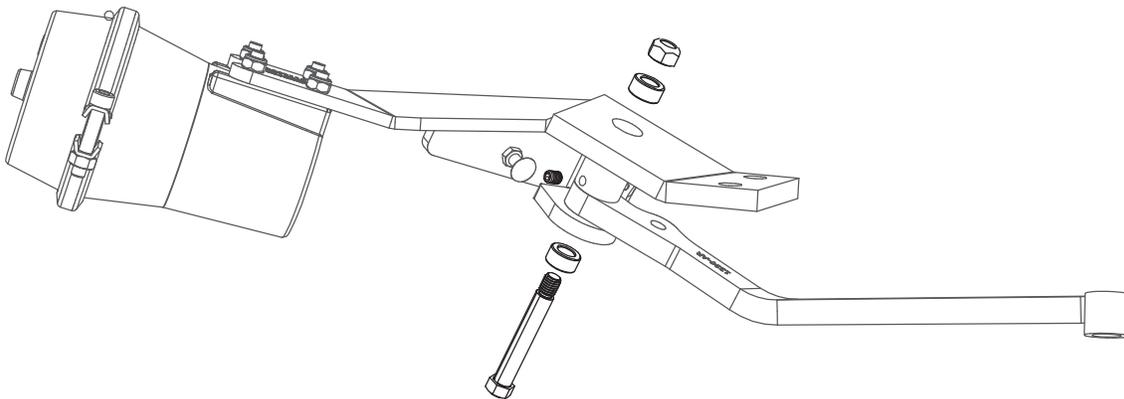
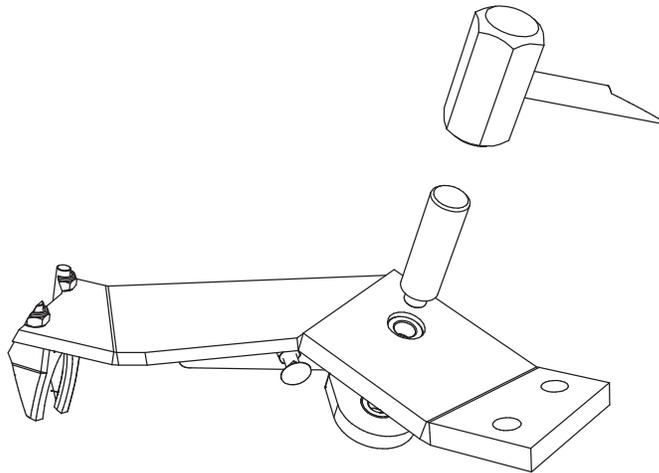
- Unfasten air line & remove chain unit from vehicle
- Loosen jam nut locking angle joint to the extension rod of the air cylinder
(**NOTE:** left hand thread!)
- Remove 4 stud nuts from air cylinder w/17mm socket
- Spin the air cylinder off of the angle joint (left hand thread)
- Remove arm bolt set screw using 3/16" Allen wrench
- Loosen arm bolt & nut and remove swing arm
- Using arm bearing tool; remove oilyte bearings and replace
- Re-install arm bolt and tighten until swing arm does not move, then back-off 1/4 - 1/2 turn and ensure swing arm moves freely.
- Retighten the set screw in the arm making sure the set screw aligns with a flat on the arm bolt.
- Once complete, grease arm bearings for trouble free operation

***Please refer to diagram on the next page for an exploded view of entire assembly.**

ARM ASSEMBLY (OILYTE BEARING)



Using 1199-B Arm Bearing Tool, remove oilyte bearings and replace



QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

ARM ASSEMBLY (SPHERICAL BEARING)

Procedure: Arm bearing R&R

Tools required:

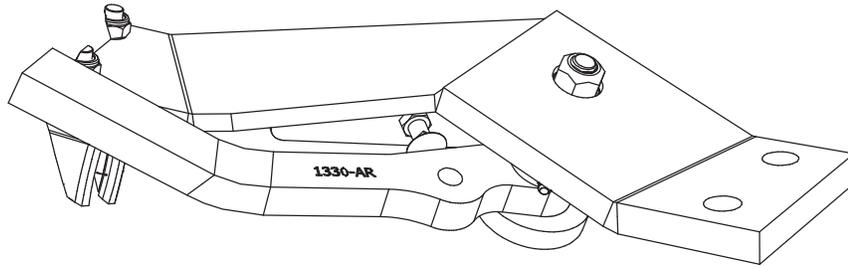
- 17mm x 3/8" drive socket & ratchet
- 19mm open end wrench
- 22mm open end wrench & socket
- 15/16" x 1/2" drive socket & ratchet
- 15/16" open end wrench
- 5/8" open end wrench
- 3/16" Allen wrench or socket
- 1199-A arm bearing tool

Steps:

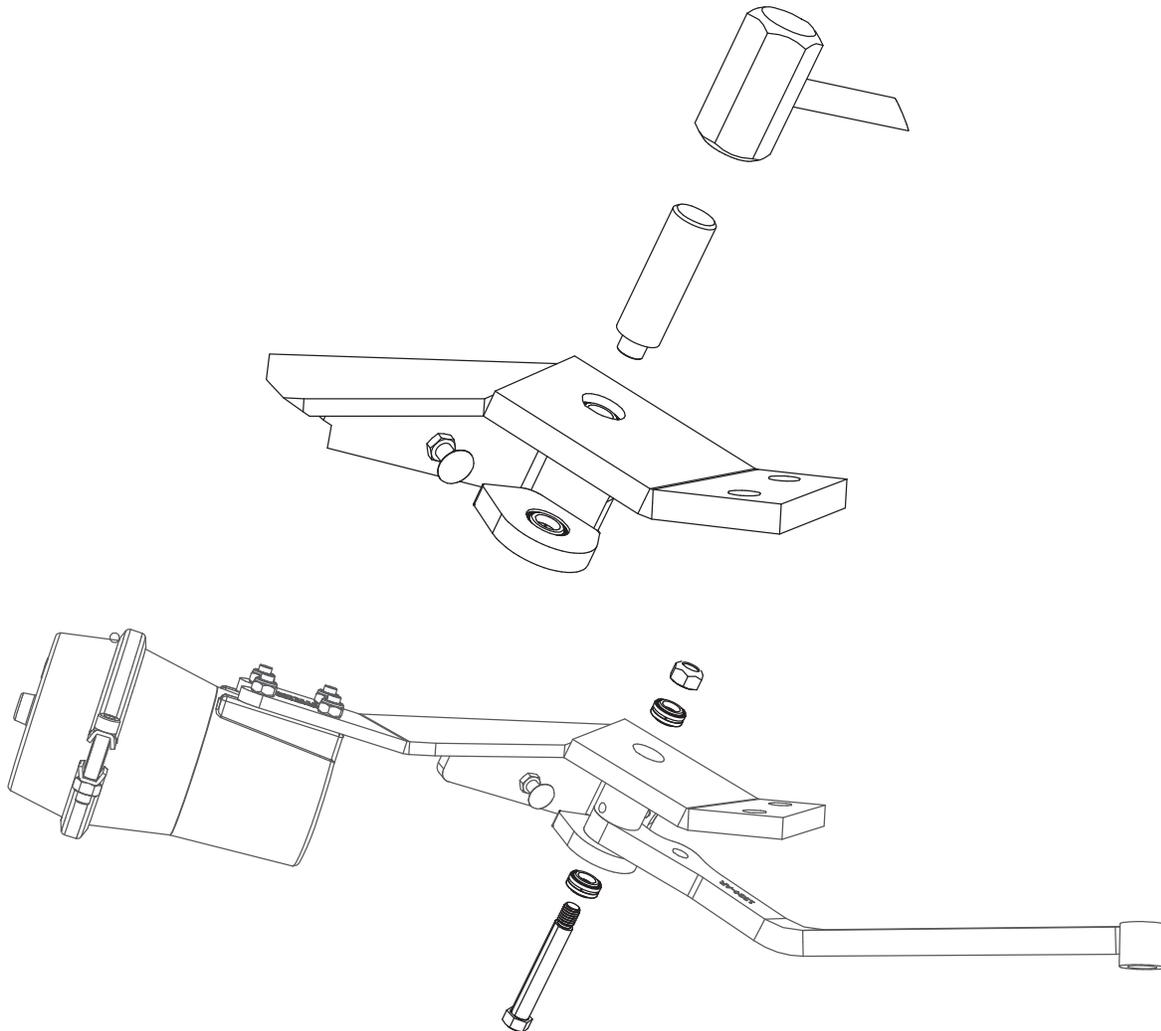
- Unfasten air line & remove chain unit from vehicle
- Loosen jam nut locking angle joint to the extension rod of the air cylinder
(**NOTE:** left hand thread!)
- Remove 4 stud nuts from air cylinder w/17mm socket
- Spin the air cylinder off of the angle joint
- Loosen arm bolt & nut and remove swing arm
- Using arm bearing tool; remove spherical bearings and replace
- Re-install arm bolt and tighten until swing arm does not move, then back-off 1/4 - 1/2 turn and ensure swing arm moves freely. Ensure arm is centered in bore.
- Retighten the set screw in the arm making sure the set screw aligns with a flat on the arm bolt.
- Once complete, grease arm bearings for trouble free operation

***Please refer to diagram on the next page for an exploded view of entire assembly.**

ARM ASSEMBLY (SPHERICAL BEARING)



Using 1199-A Arm Bearing Tool, remove spherical bearings and replace



QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

ARM ASSEMBLY (ARM BEARING SLEEVE)

Procedure: Arm bearing sleeve R&R

Tools required:

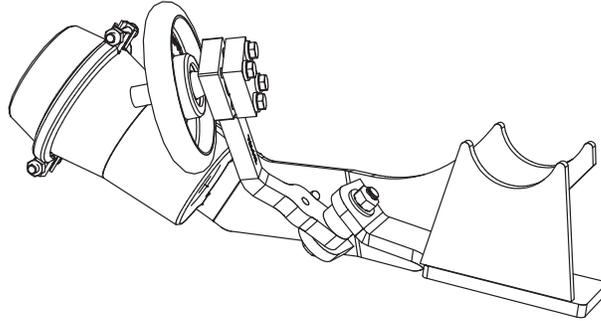
- 17mm x 3/8" drive socket & ratchet
- 19mm open end wrench
- 22mm open end wrench & socket
- 15/16" x 1/2" drive socket & ratchet
- 15/16" open end wrench
- 5/8" open end wrench
- Drill & 1/8" drill bit
- 1199-A arm bearing tool

Steps:

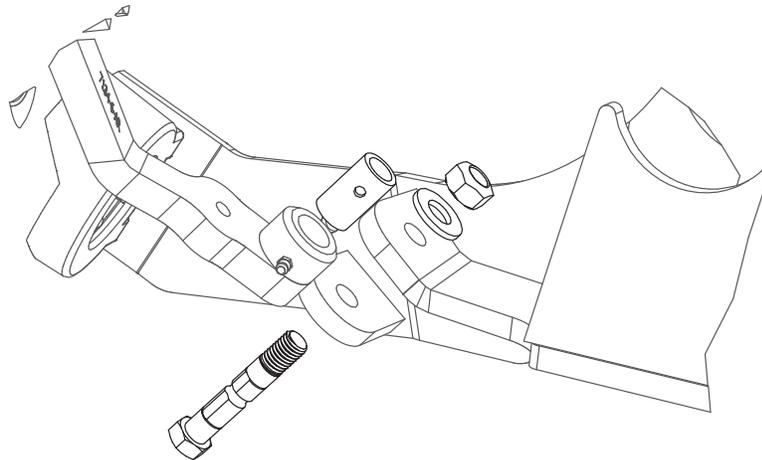
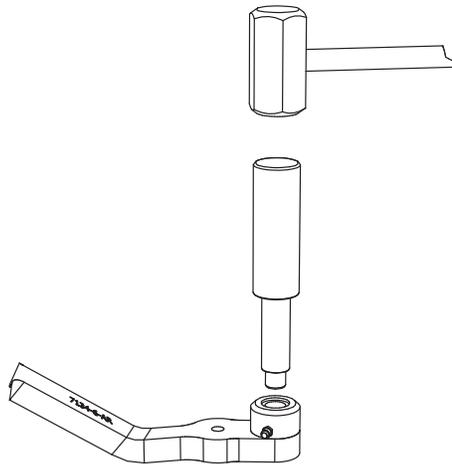
- Unfasten air line & remove chain unit from vehicle
- Loosen jam nut locking angle joint to the extension rod of the air cylinder
(**NOTE:** left hand thread!)
- Remove 4 stud nuts from air cylinder w/17mm socket
- Spin the air cylinder off of the angle joint
- Loosen arm bolt & nut and grease fitting; and remove swing arm
- Using arm bearing tool; remove spherical bearings and replace
- Press old sleeve out of the swing arm and discard; install new sleeve in arm and drill a new grease orifice in the sleeve through the grease fitting hole using a 1/8" drill bit.
- Re-install arm bolt and tighten until swing arm does not move, then back-off 1/4 - 1/2 turn and ensure swing arm moves freely.
- Once complete, grease arm bearings for trouble free operation

***Please refer to diagram on the next page for an exploded view of entire assembly.**

ARM ASSEMBLY (ARM BEARING SLEEVE)



Using 1198-A Arm Bearing Sleeve Tool, remove arm bearing sleeve and replace



QUESTIONS? 1-800-224-2467 ADDITIONAL INFORMATION: www.onspot.com

ARM ASSEMBLY (BRASS CAP-SWEDISH)

Procedure: Brass Cap Arm Bearing R&R

Tools required:

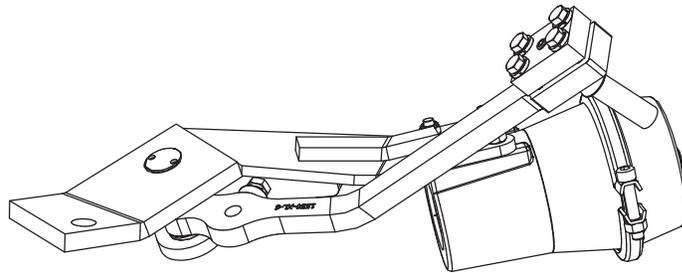
- 17mm x 3/8" drive socket & ratchet
- 19mm open end wrench
- 22mm open end wrench & socket
- 15/16" x 1/2" drive socket & ratchet
- 15/16" open end wrench
- 5/8" open end wrench
- 1526-A arm bearing tool
- Large adjustable crescent wrench

Steps:

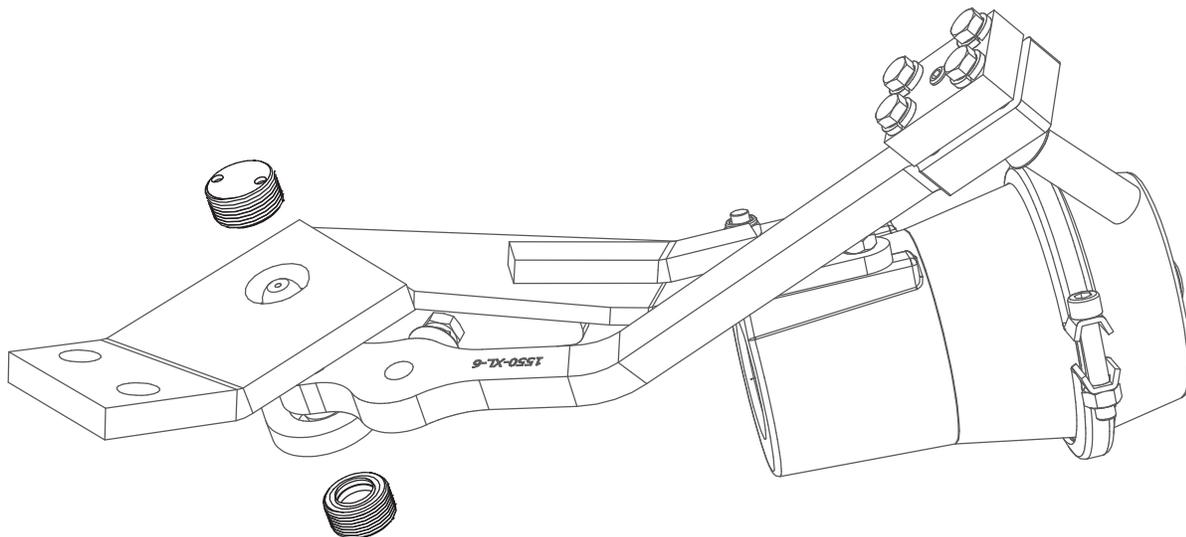
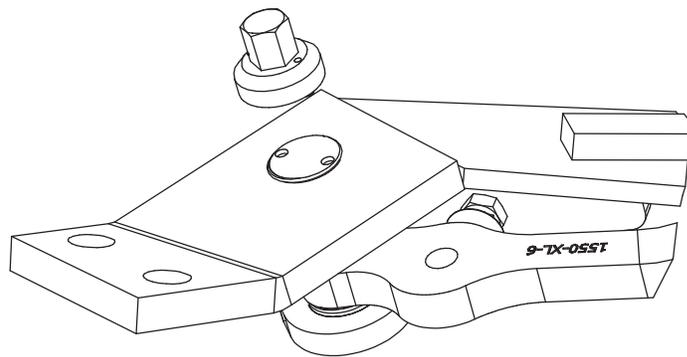
- Unfasten air line & remove chain unit from vehicle
- Loosen jam nut locking angle joint to the extension rod of the air cylinder
(**NOTE:** left hand thread!)
- Remove 4 stud nuts from air cylinder w/17mm socket
- Spin the air cylinder off of the angle joint by turning clockwise
- Remove brass cap bearing assembly using 1526-A brass cap tool
- Re-install brass cap assembly using red loctite and tighten until swing arm does not move, then back-off 1/4 - 1/2 turn and ensure swing arm moves freely.
- Once complete, grease arm bearings for trouble free operation

***Please refer to diagram on the next page for an exploded view of entire assembly.**

ARM ASSEMBLY (BRASS CAP-SWEDISH)



Remove Brass cap bearing assembly using 1526-A brass cap tool



QUESTIONS? 1-800-224-2467 ADDITIONAL INFORMATION: www.onspot.com

ARM ASSEMBLY (BRASS CAP-US)

Procedure: Brass Cap Arm Bearing R&R

Tools required:

- 17mm x 3/8" drive socket & ratchet
- 19mm open end wrench
- 1/2" open end wrench or socket
- 15/16" x 1/2" drive socket & ratchet
- 15/16" open end wrench
- 5/8" open end wrench
- 1 1/2" x 1/2" drive socket
- 1/2" drive breaker bar, ratchet & air gun
- Large adjustable crescent wrench
- Red Loctite

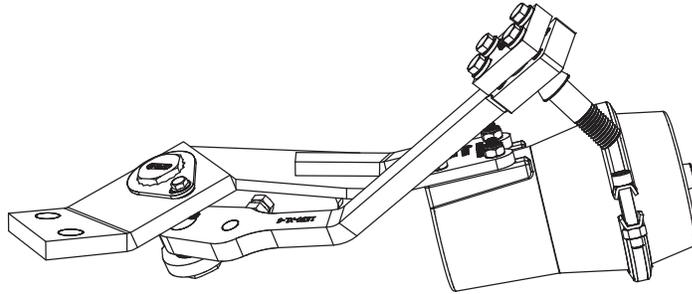
Steps:

- Remove air line using 5/8" open end wrench & remove chain unit from vehicle
- Loosen jam nut locking angle joint to the extension rod of the air cylinder using 19mm & 22mm wrenches (**NOTE:** left hand thread!)
- Remove 4 stud nuts from air cylinder using 17mm socket
- Spin the air cylinder off of the angle joint by turning clockwise
- Remove retainer plate and bolt using 1/2" wrench
- Using 1 1/2" socket remove brass cap assembly
- Re-install lower brass cap assembly using red loctite and thread entire lower cap in until it fully seats
- Install upper cap (no loctite) and tighten until arm does not move, then back-off 1/4-1/2 turn, ensure swing arm moves freely
- Re-install retainer plate and bolt using 1/2" wrench
- Once complete, grease arm bearings for trouble free operation

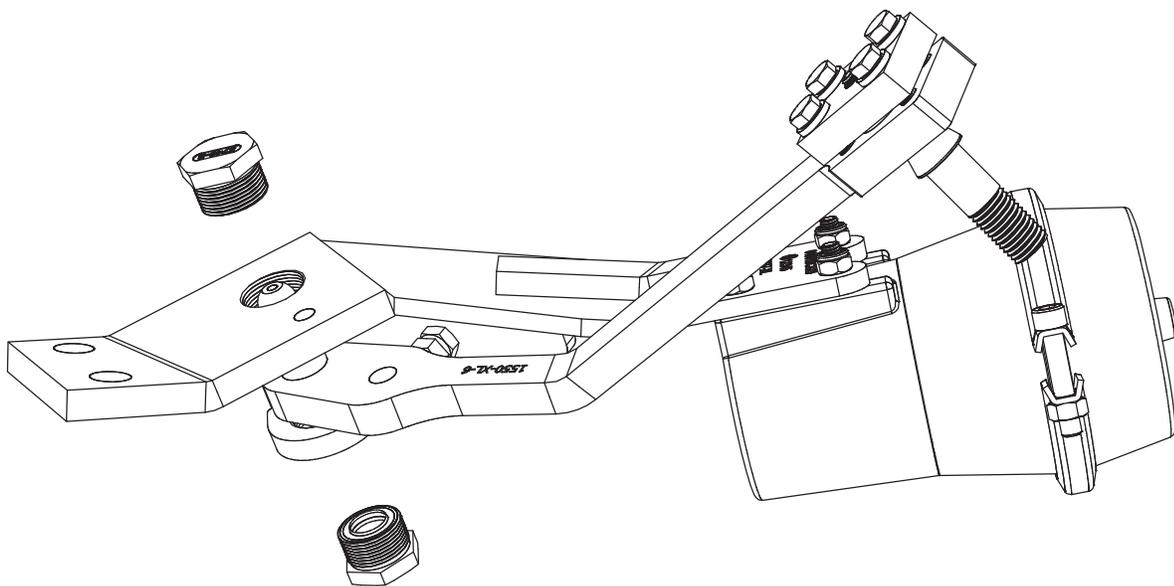
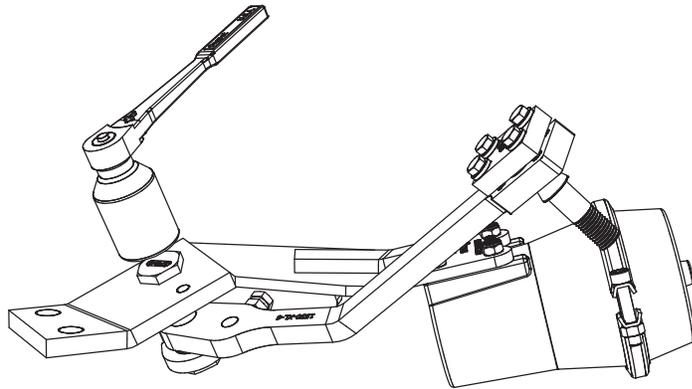
***Please refer to diagram on the next page for an exploded view of entire assembly.**

QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

ARM ASSEMBLY (BRASS CAP-US)



Using 1 1/2" socket remove brass cap assembly



QUESTIONS? 1-800-224-2467 ADDITIONAL INFORMATION: www.onspot.com

CHAINWHEEL

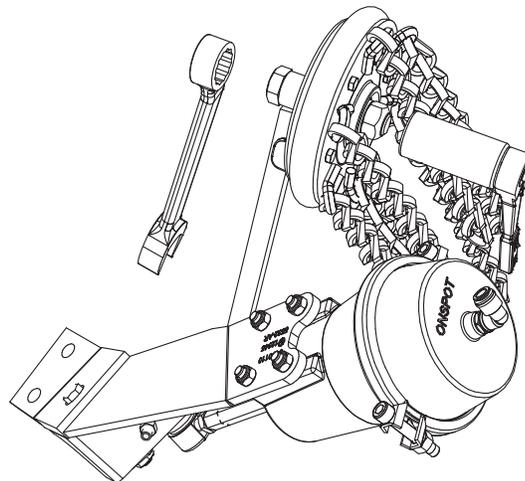
Procedure: Chainwheel Bearing R&R

Tools required:

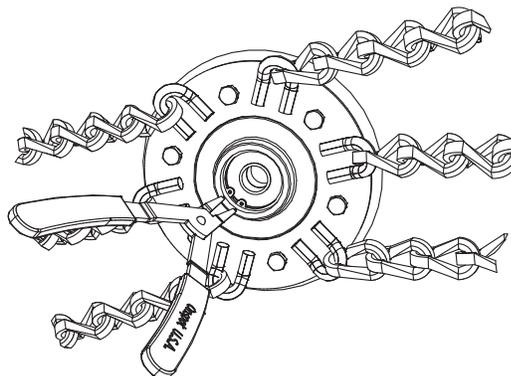
- Snap ring pliers
- Vise
- Hydraulic press
- 30mm socket and wrench

Steps:

- Using 30mm socket and wrench remove chainwheel from arm.



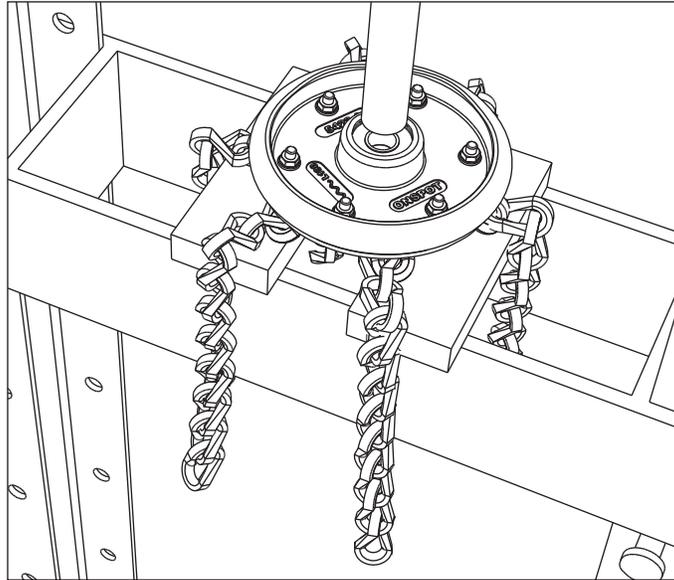
- Mount chainwheel in vise and remove chainwheel bearing snap ring w/ snap ring pliers



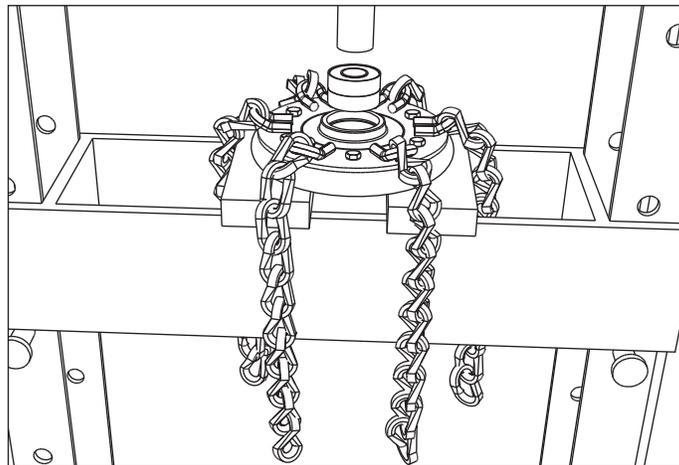
QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

- ❑ Mount chainwheel in press and press out old bearings from the **TOP** of the chainwheel and discard.

CAUTION: Chainwheel hub is made out of aluminum and should be mounted carefully in the press to avoid damage



- ❑ Press new bearings in from the **BOTTOM** of the chainwheel until it is fully seated in the hub



- ❑ Re-install **NEW** snap ring and reverse removal procedure for chainwheel installation

QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

CHAINWHEEL

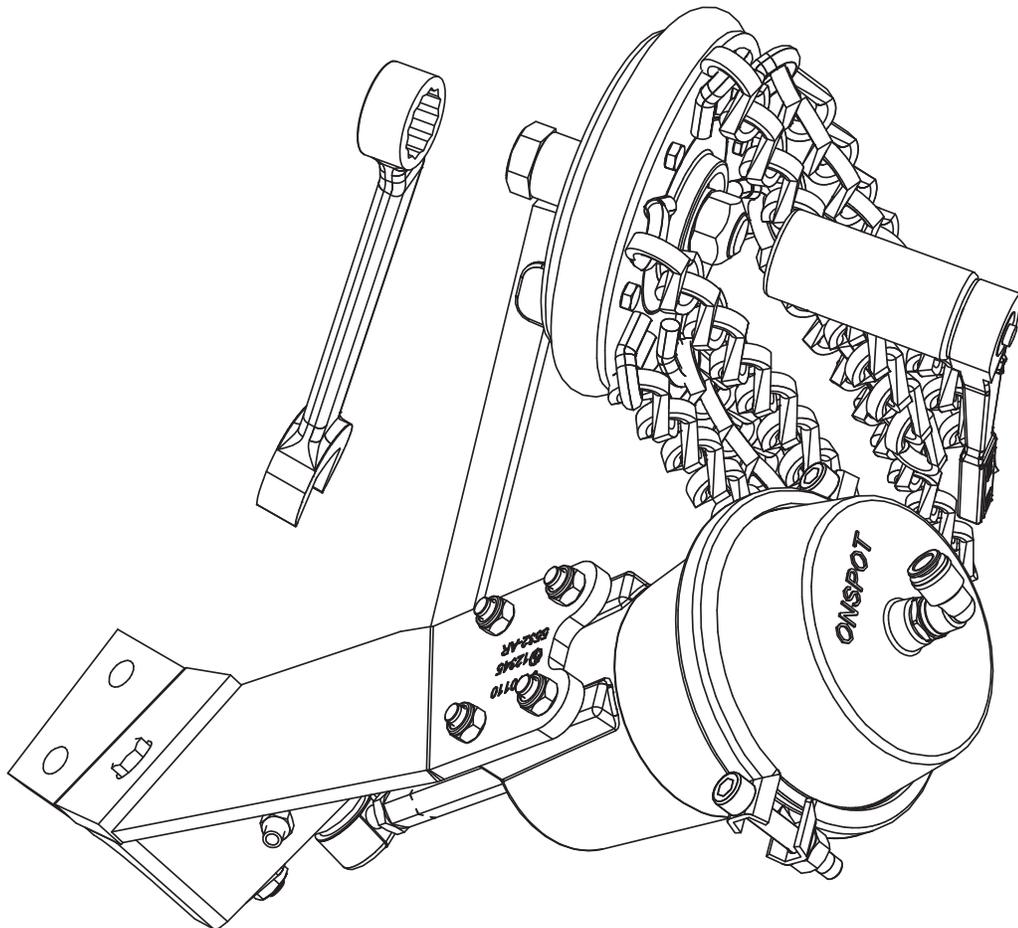
Procedure: Chainwheel Chain Plate R&R

Tools required:

- 30mm socket and wrenchs
- ½" socket and wrench
- Vise

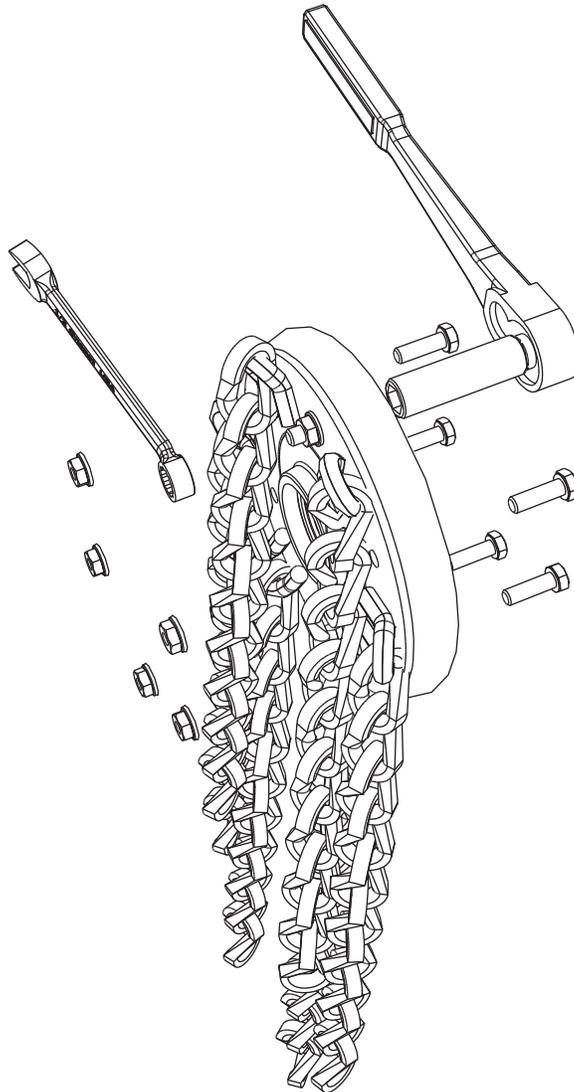
Steps:

- Using 30mm socket and wrench remove chainwheel from arm.



QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

- ❑ Mount chainwheel solidly in vise
- ❑ Using ½" wrench and socket, remove 6 capscrews and nuts attaching chain plate to chainwheel hub



- ❑ Reverse removal procedure for installation. Always use **NEW** grade 8 cap screws & nuts

QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

AIR CYLINDER

Procedure: Air Cylinder R&R

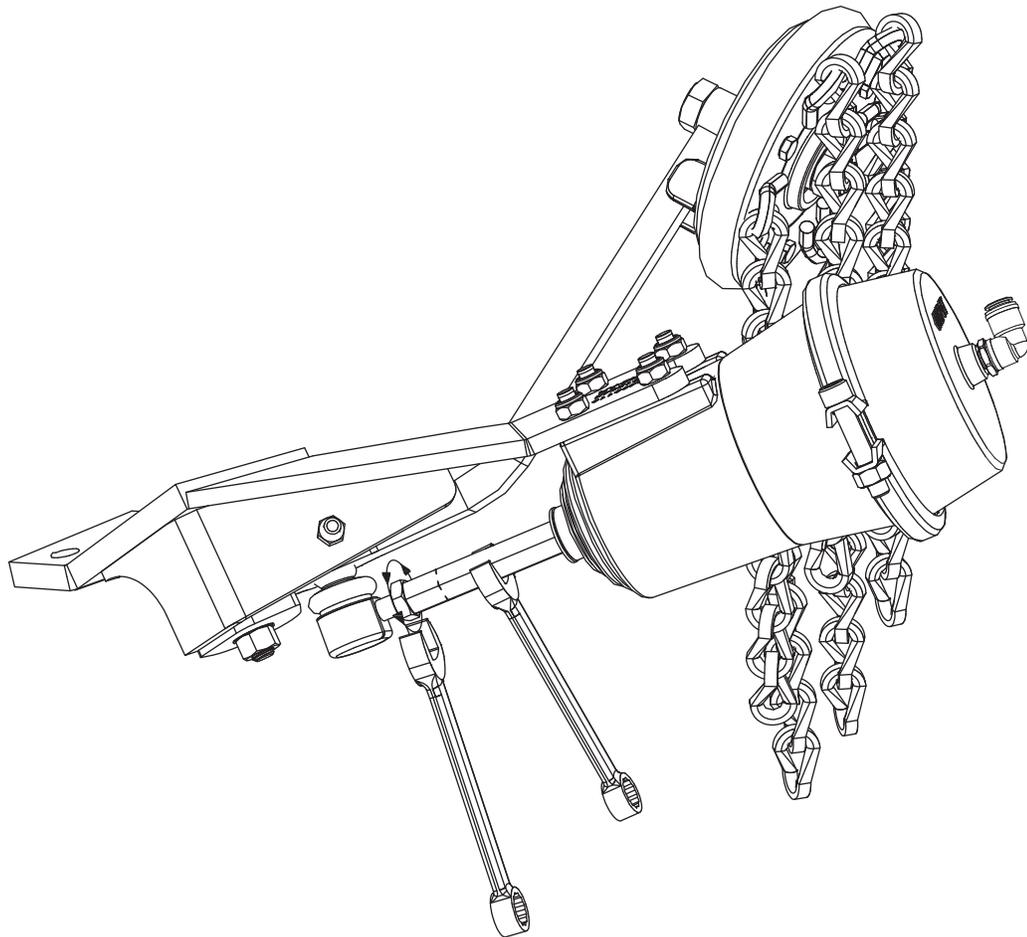
Tools required:

- 17mm wrench or socket
- 19mm wrench
- 22mm wrench

Steps:

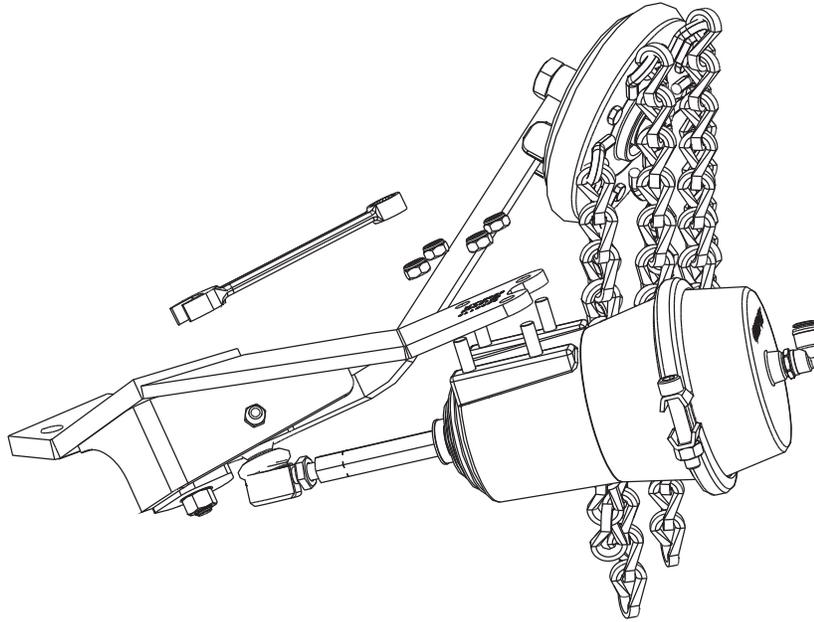
- Loosen connection at the angle joint between the jam nut and extension rod using the 19mm & 22mm wrench

NOTE: This is a LEFT hand thread!

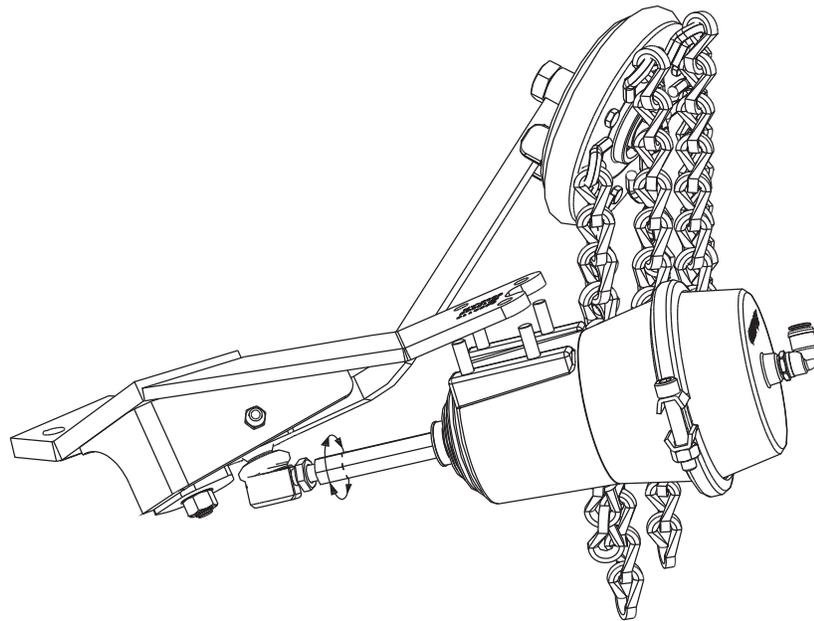


QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

- ❑ Using 17mm wrench remove 4 Nyloc nuts attaching air cylinder to cylinder bracket



- ❑ Unscrew the air cylinder/extension rod assembly from the angle joint.
NOTE: Left hand thread. Turn clockwise to remove



- ❑ Reverse removal procedure for installation. Always use **NEW** Nyloc nuts for re-assembly

QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

AIR CYLINDER DIAPHRAGM

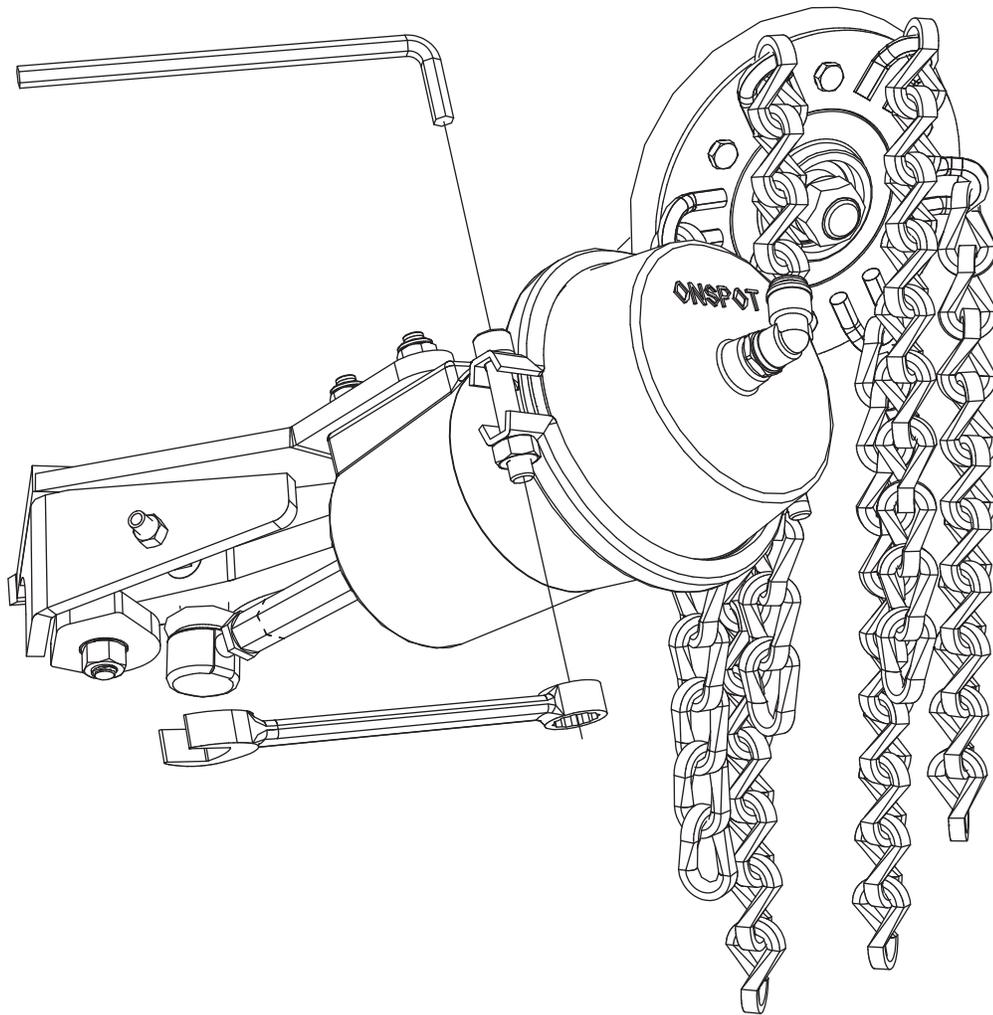
Procedure: Air Cylinder Diaphragm R&R

Tools required:

- 5/16" Allen wrench or socket
- 17mm open end wrench

Steps:

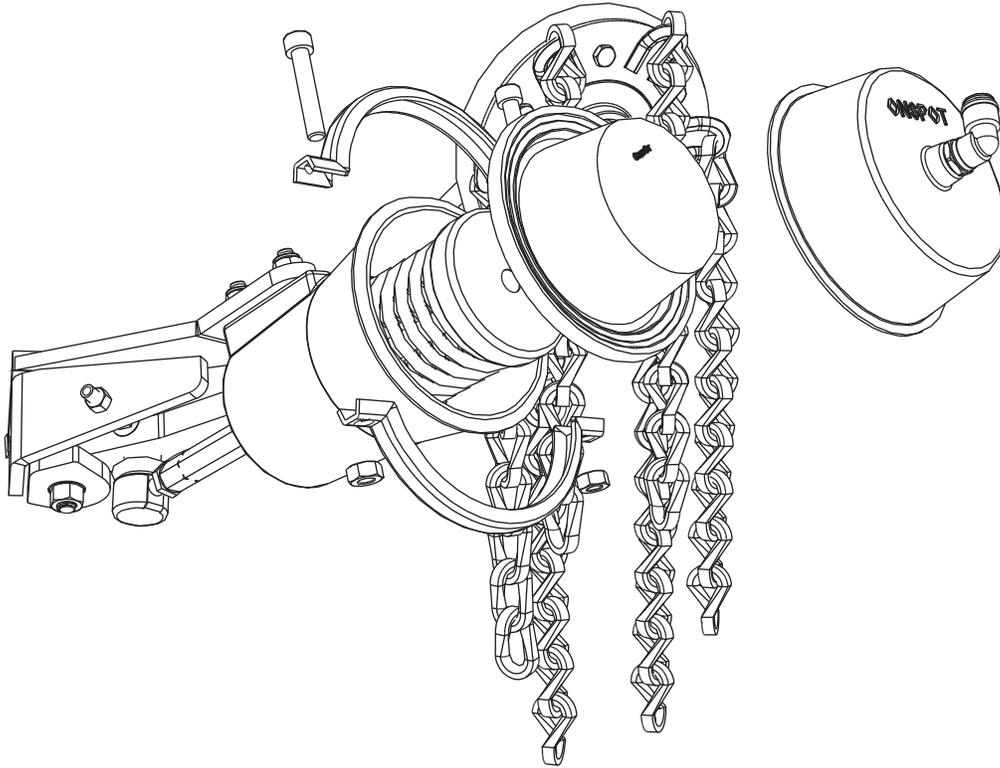
- Remove air line from cylinder
- Using 5/16" Allen socket & 17mm wrench remove air cylinder clamp nuts & bolts



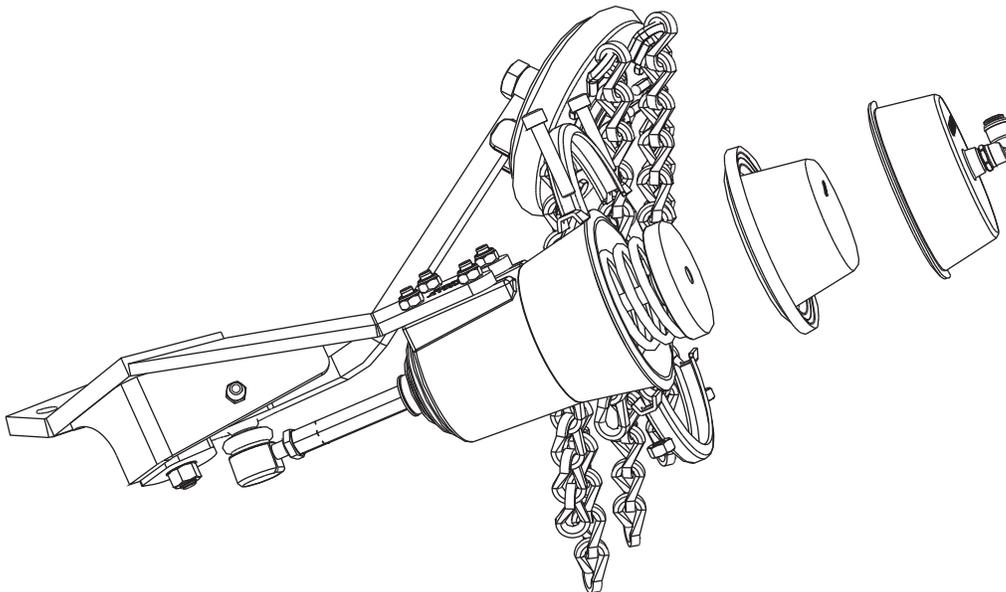
QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

AIR CYLINDER DIAPHRAGM REPAIR

- ❑ **CAUTION:** Please use care when removing cylinder lid
- ❑ Remove old diaphragm and discard



- ❑ Reverse removal procedure for installation and check for air leaks



QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

AIR CYLINDER DIAPHRAGM

Procedure: Angle Joint R&R

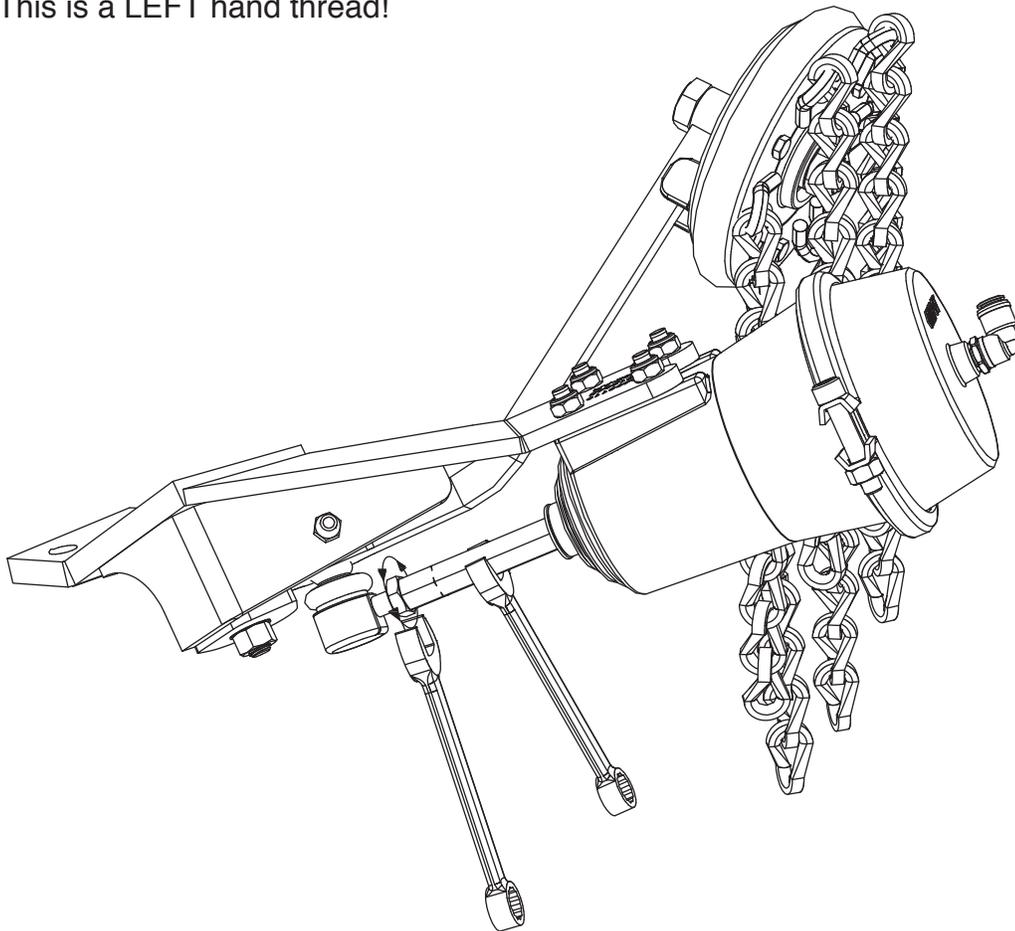
Tools required:

- 17mm open end wrench
- 19mm wrench
- 22mm wrench
- Brass hammer

Steps:

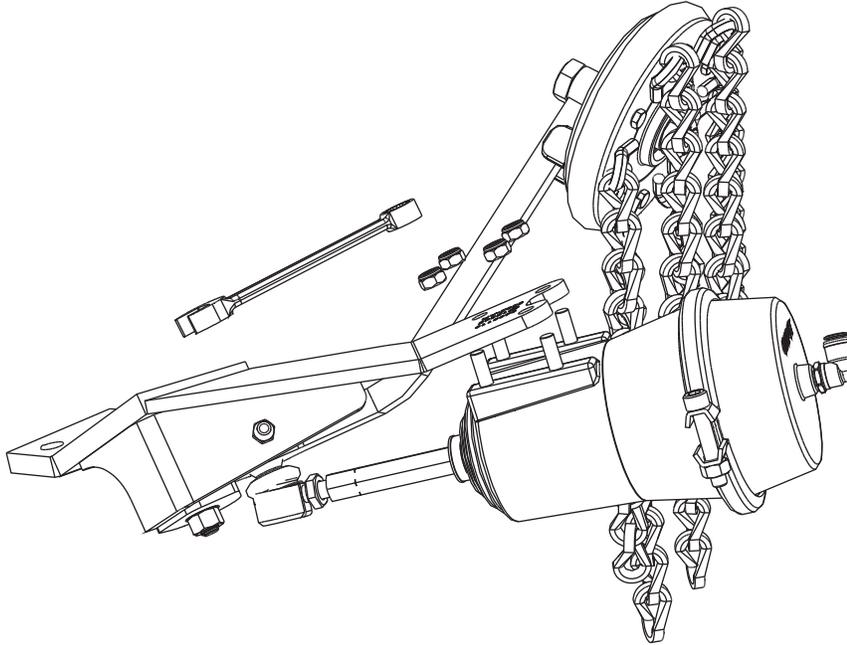
- Loosen connection at the angle joint between the jam nut and extension rod using the 19mm & 22mm wrench

NOTE: This is a LEFT hand thread!

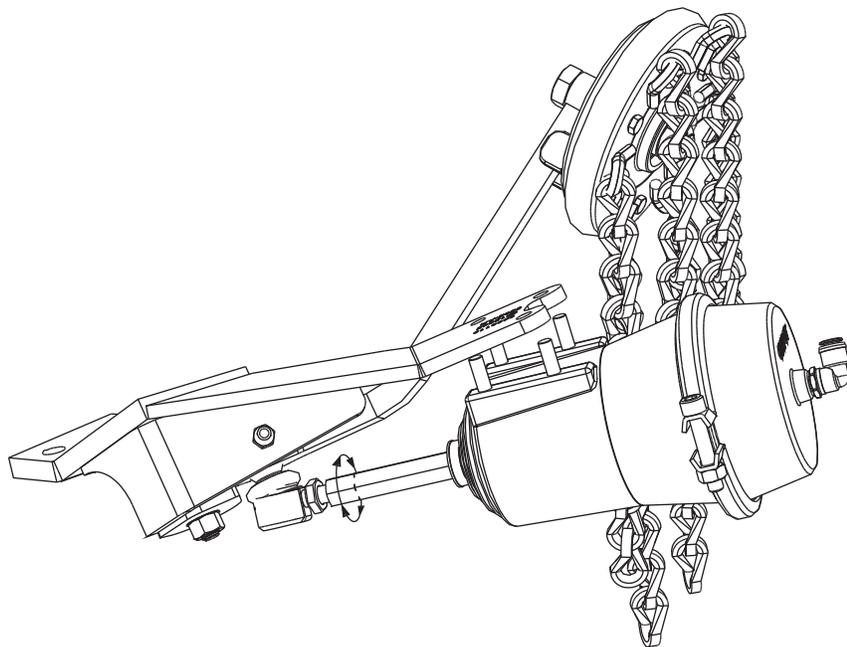


QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

- ❑ Using 17mm wrench remove 4 Nyloc nuts attaching air cylinder to cylinder bracket

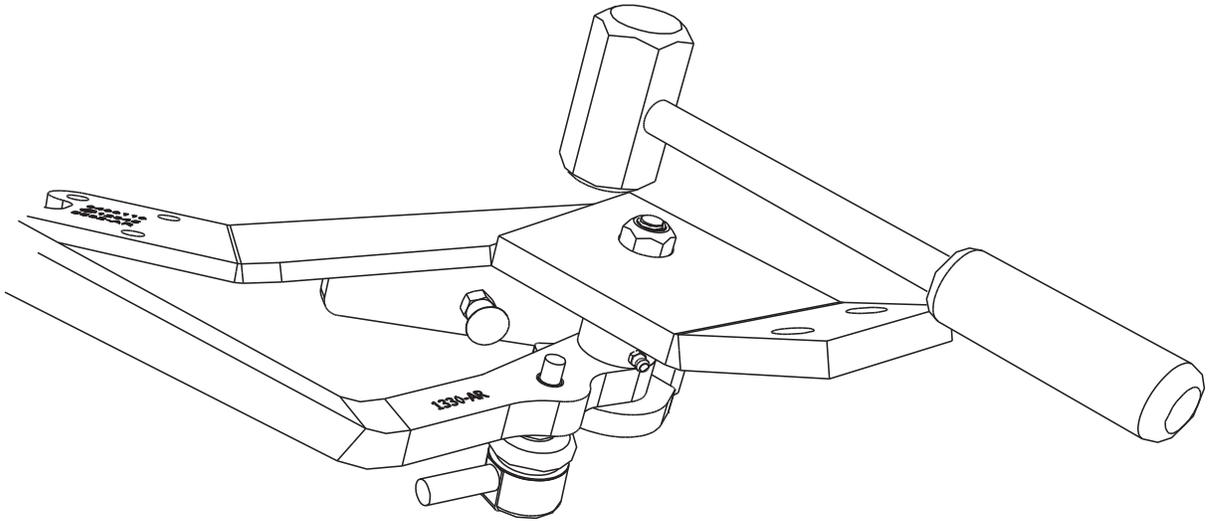


- ❑ Unscrew the air cylinder/extension rod assembly from the angle joint.
NOTE: Left hand thread. Turn clockwise to remove



QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

- ❑ Remove old angle joint from swing arm using hammer & discard



- ❑ Reverse removal procedure for installation. Always use **NEW** Nyloc nuts for re-assembly

ONSPOT

AUTOMATIC TIRE CHAINS

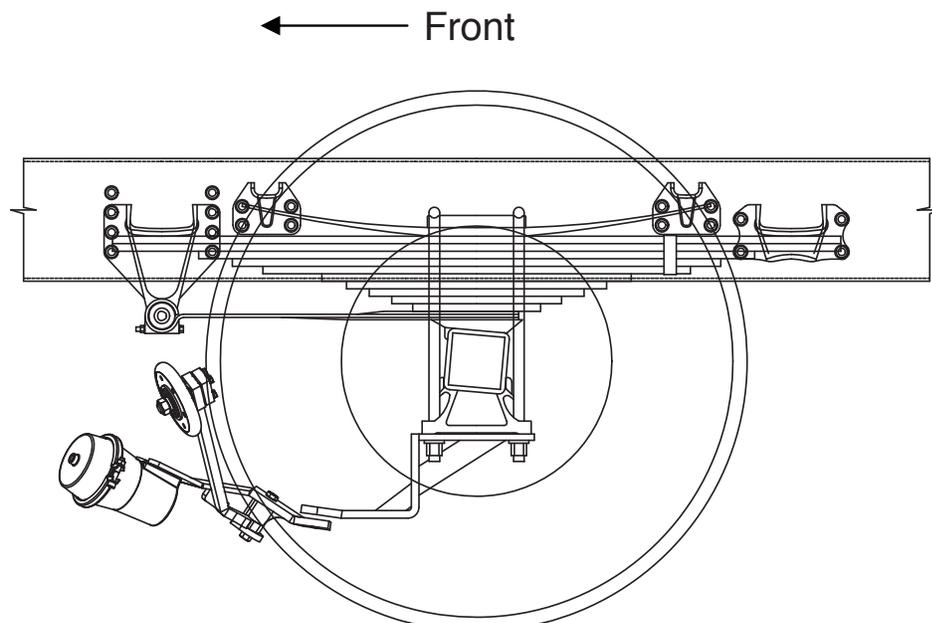
SECTION 4
MOUNTING INFORMATION

INSTRUCTIONS FOR MOUNTING PHASE 1 BRACKETS

- ❑ Remove the four OEM u-bolt nuts.
- ❑ Place the mounting bracket over the ends securing with new u-bolt nuts.
- ❑ The brackets are marked left top and right top and should project toward the front of the vehicle.
- ❑ The bracket should measure approx. 9 3/4" to the bottom at the point where the chain units attach. This end should angle up at 8 degrees. The bracket should measure approx. 1" between the side of the bracket and the sidewall of the tire.
- ❑ Attach the chain units to the bottom of the mounting bracket. Place the 1/2" spacer plate between the mounting bracket and chain unit to lower the unit an additional 1/2" if needed.

Hardware include:

- ❑ 2 – 1240 spacer plate
- ❑ 4 – 2 3/4" cap screws
- ❑ 4 – 5/8" grip nuts
- ❑ 8 – 5/8" flat washers



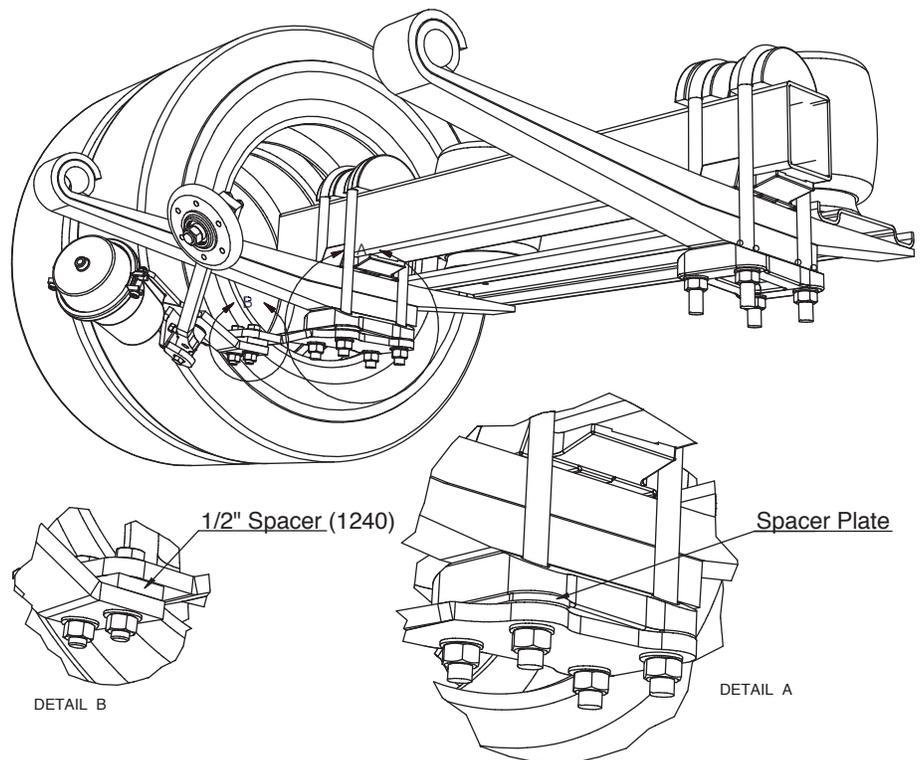
QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

INSTRUCTIONS FOR MOUNTING 04-FL65 BRACKETS

- ❑ Remove the four OEM u-bolt nuts and remove the OEM u-bolts.
- ❑ The Onspot vehicle mounting brackets are marked left top and right top and should project toward the front of the vehicle.
- ❑ Place the new longer (approx. 1" per leg) u-bolts in position and place the mounting bracket over the ends with the 1/4" spacer plate over the front u-bolts between the mounting bracket and the bottom of the spring plate, secure with new u-bolt nuts.
***Note:** Onspot does not include new u-bolts in the kit. New u-bolts will need to be acquired through local vendor. Approximately 1" longer per leg is needed for most applications.
- ❑ The bracket should measure approx. 10 3/4" to the bottom of the bracket at the point where the chain units attach (BBG dimension, see diagram). This end should angle up at 8 degrees. (T Angle, see diagram) The bracket should measure approx. 1 1/2" from the center of the closest chain unit mounting hole to the tire sidewall. (S dimension, see diagram)
- ❑ Attach the chain units to the bottom of the mounting bracket. Place 1 of the 1/2" spacer plates (1240) between the mounting bracket and chain unit to lower the unit an additional 1/2".

Hardware include:

- ❑ 2 – 1240 spacer plate
- ❑ 4 – 2 3/4" cap screws
- ❑ 4 – 5/8" grip nuts
- ❑ 8 – 5/8" flat washers



QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

MOUNTING INSTRUCTIONS FOR THE MCI102D3 ONSPOT AUTOMATIC CHAINS 03-MCI / MODEL 03011A9

- ❑ Locate the jack post on the rear suspension on the front of the rear axle.
- ❑ Remove the U-Bolt from the mounting bracket. (The brackets are marked right and left) Hold the U-Bolt in the pocket behind the jack post and slide the mounting bracket over the top of the U-Bolt and secure in place with the U-Bolts nuts provided.(See Photo) The angle iron area where the chain unit attaches should be level and approx. 16" off the ground to the bottom of the mounting surface (area where the two holes are).
- ❑ After the mounting bracket is positioned correctly, torque the U-Bolt to 177 Ft.lbs.
- ❑ Attach the chain unit to the mounting bracket with the 5/8 x 2" capscrews, flatwashers, and gripnuts provided. Rotate the chain unit toward the centerline of the bus as far as it will go to obtain clearance between the chainwheel and air tanks. Torque the 5/8" gripnuts to 125 Ft.lbs.
- ❑ Attach the Blue chainwheel to the chain unit on the Passenger side and the Red chainwheel to the Driver side. Torque the chainwheel bolt nut to 125 Ft.lbs.
- ❑ Refer to the Adjustable Wheel Instructions for chainwheel adjustments.
- ❑ Proceed with the Chain Unit Mounting Instructions for additional information.



U-Bolt = 5/8" Sq Top 3 1/2" Die 5" Leg

Solenoid & Switch Voltage Requirements will be Indicated on Order

Include 2 - 1250 Spacer Plates & 4 - 2 3/4" Caps to lower unit if necessary.

QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

INSTRUCTIONS FOR MOUNTING 04-4380-D OEM SADDLE BRACKETS

- Install the supplied U-bolts by sliding them over the rear end housing next to the existing inverted U-bolts. Ensure that there is **NO INTERFERENCE** with the brake lines.
- Attach the mounting bracket to the U-bolts with the U-bolt nuts. The saddles should be between the existing (inverted U-bolts). (See diagram) The bracket will project toward the front of the vehicle.
Do **NOT** tighten at this time. Rotate the bracket around the rear end until the mounting bracket is level with the ground. (T Angle, see diagram) The point where the ONSPOT mounts will be angled up at 8 degrees. This can be checked with an angle gauge or level.
- Check the distance from the tire sidewall to the FIRST mounting hole for the ONSPOT chain unit. (S dimension, see diagram) This should be approximately **2 inches from the tire**. The bottom of the mounting bracket should be approximately 8 ¼ inches off the ground. (BBG Dimension, see diagram) Mount the chain unit on **BOTTOM** of the mounting bracket. Adjust the chain unit side to side to clear both the exhaust and torsion bar. If the dimensions are correct, **TIGHTEN** the U-bolt nuts at this time to a torque value of 177 Ft. lbs.
NOTE: The muffler must be moved forward 4 to 6 inches in order to mount the Onspot chain system.
- Proceed with the Chain Unit Mounting Instructions supplied.
- The chainwheel should contact the tire **AT THE BULGE**. This is typically 2 1/2 inches off the ground (NOT 3 1/2 - 4 inches as stated in the Chain Unit Mounting Instructions supplied. The chainwheel should angle up and away from the tire sidewall at 8 to 12 degrees. (Operating angle, see diagram) When viewed from the side the chainwheel should be level with the road. (Pitch, see diagram) Tighten the chain unit mounting bolts and continue with the Chain Unit Mounting Instructions.

Hardware include:

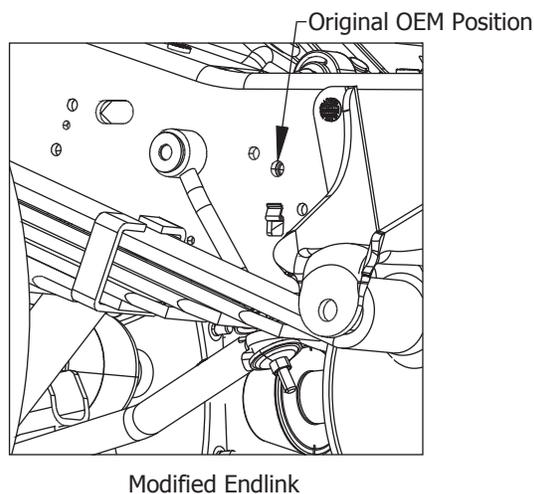
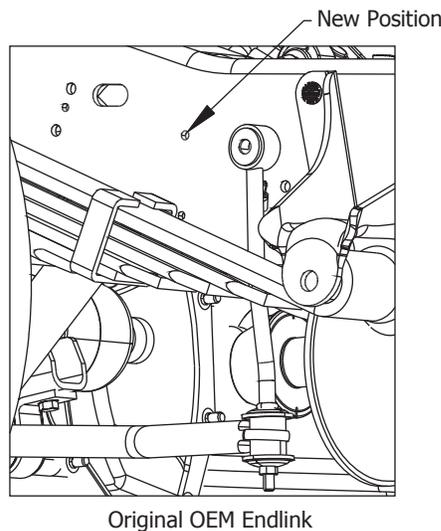
- 4 - 2 1/4" Capscrews
- 4 - 5/8" Gripnuts
- 8 - 5/8" Flatwashers
- 4 - 4" x 9" x 5/8" U-Bolts w/nuts and flatwashers

QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

INSTRUCTIONS FOR SWAY BAR MODIFICATION

The OEM sway bar on the E-450 Super Duty must be raised to allow proper clearance for the Onspot Automatic Chains.

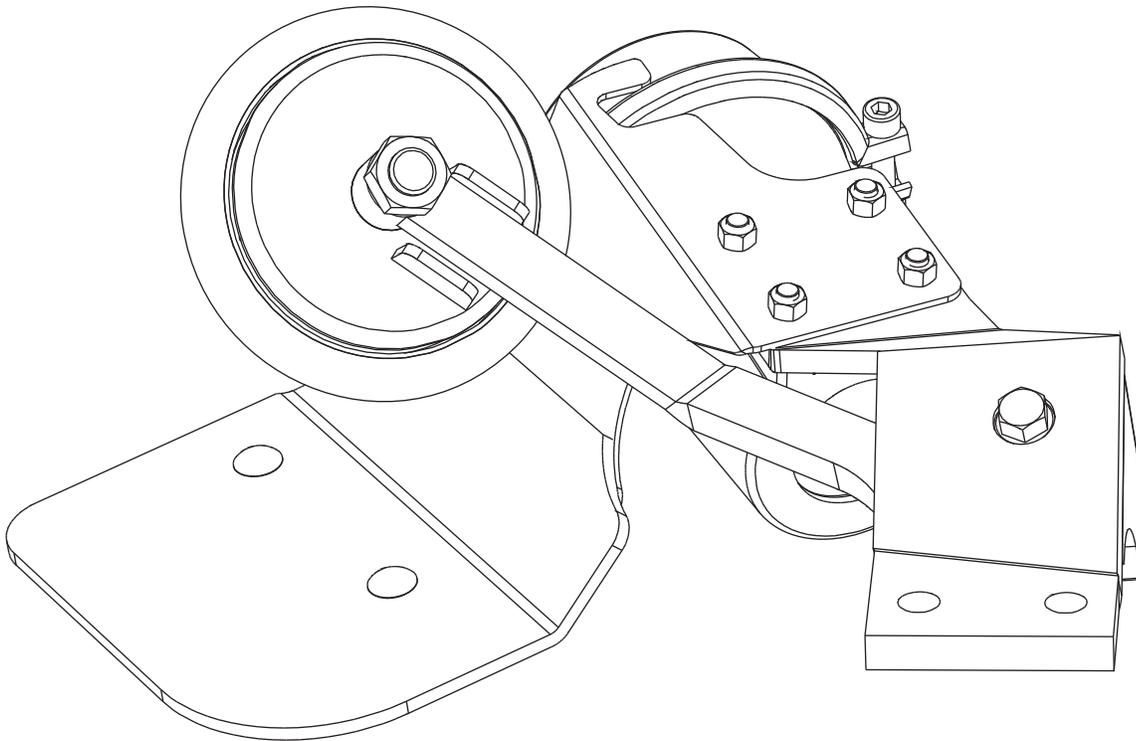
Onspot provides modified end links to accomplish this. Replace the OEM end links with the shorter modified links supplied. Install the modified end links in the new position on the frame. (See diagrams) The new position hole will need to be enlarged to ½" diameter. This will raise the end of the sway bar and provide the clearance needed. The threaded ends of the modified end links may need to be trimmed off after installation to allow clearance between the chain unit and end links.



QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

INSTALLATION OF 9942-CTS CHAIN TRAYS

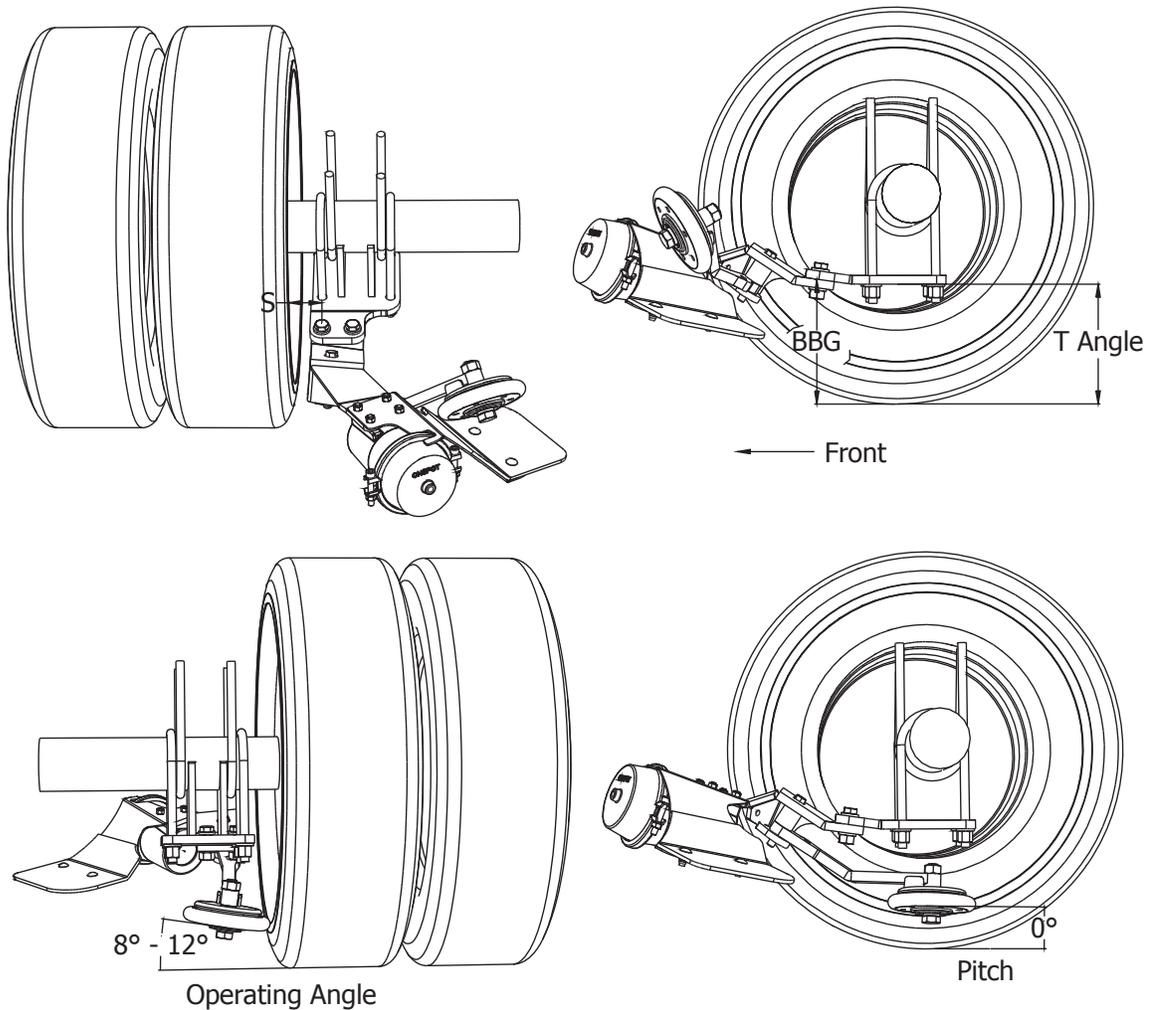
- Remove the nuts from cylinder studs.
- Place the chain tray over the studs.
- Attach nuts to studs & torque to 20 ft. lbs.



QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

INSTALLATION DIAGRAMS FOR 04-4380-D MOUNTING BRACKETS

Passenger Side Shown

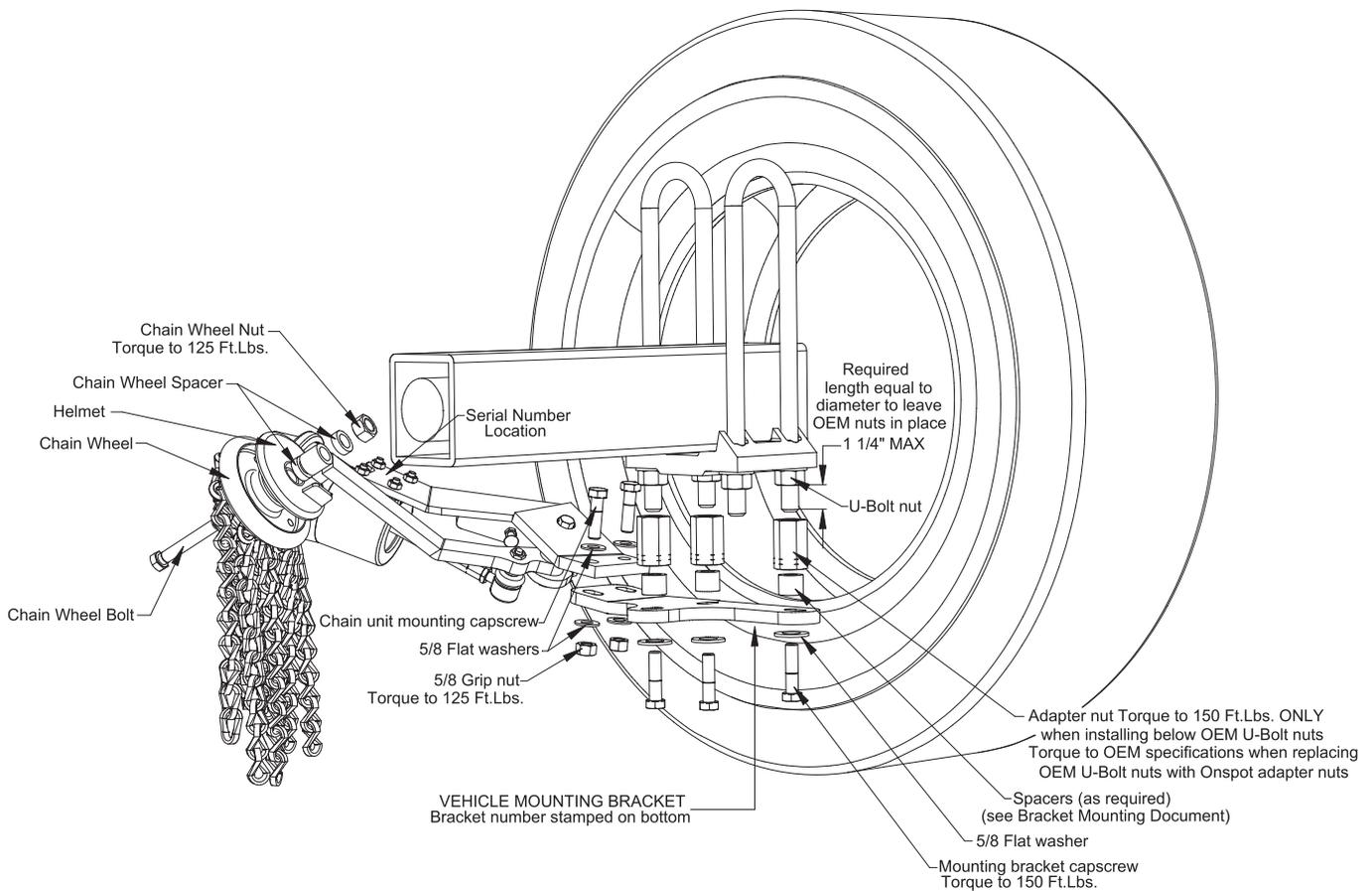


QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

ONSPOT PHASE 2 BRACKET

MODEL 04 FLAT

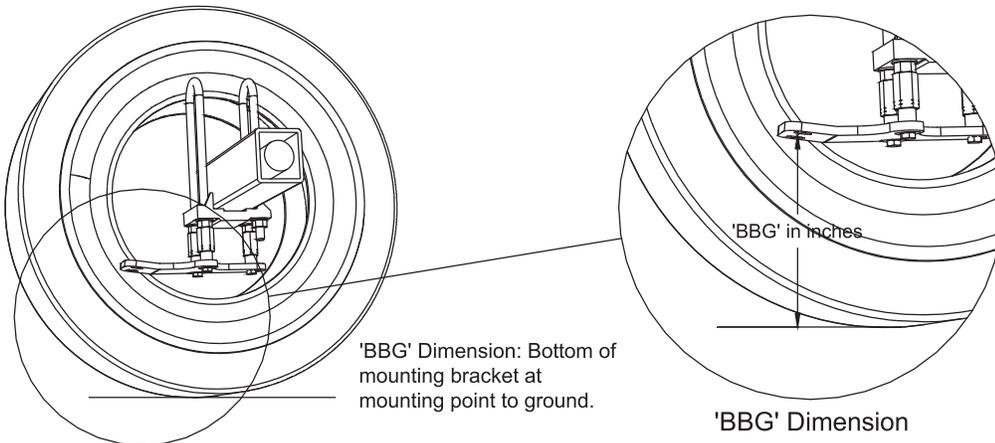
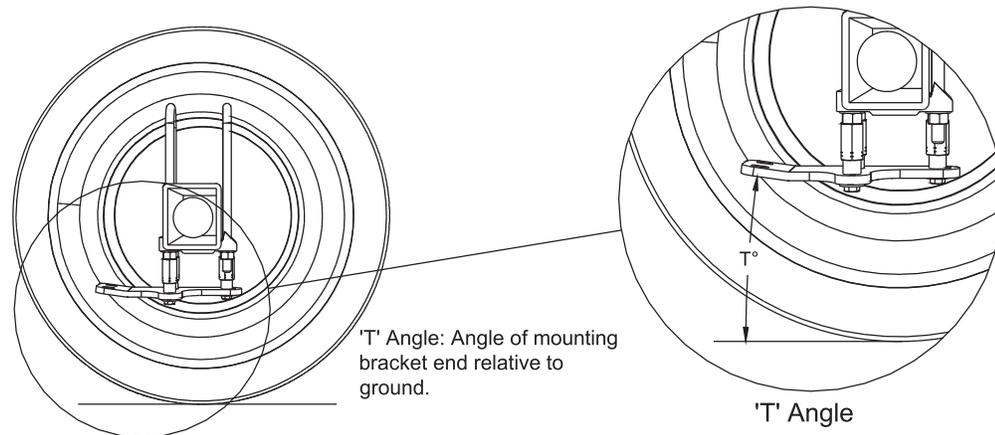
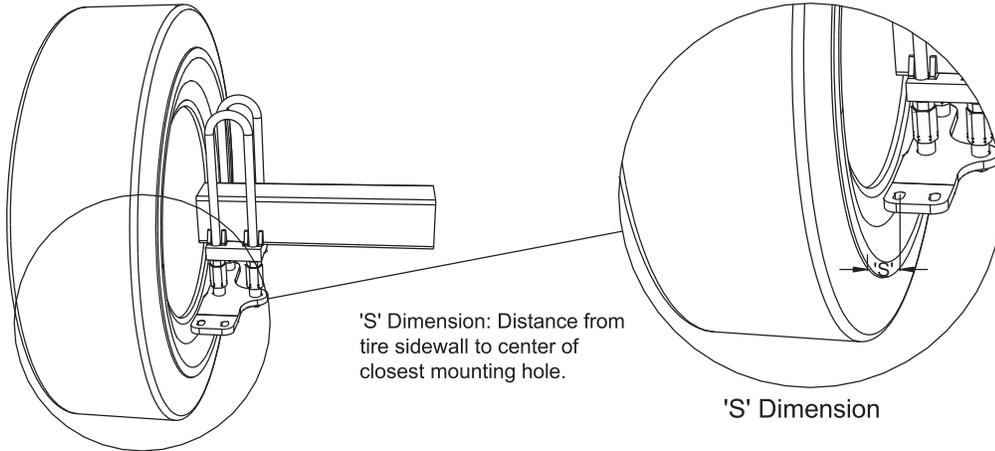
NOTE: Bracket utilizes 2 U-Bolts closest to tire sidewall. Follow Bracket Mounting Document for exact mounting instructions.



QUESTIONS? 1-800-224-2467 ADDITIONAL INFORMATION: www.onspot.com

GENERAL GUIDELINES FOR MOUNTING BRACKETS

MODEL 04 FLAT

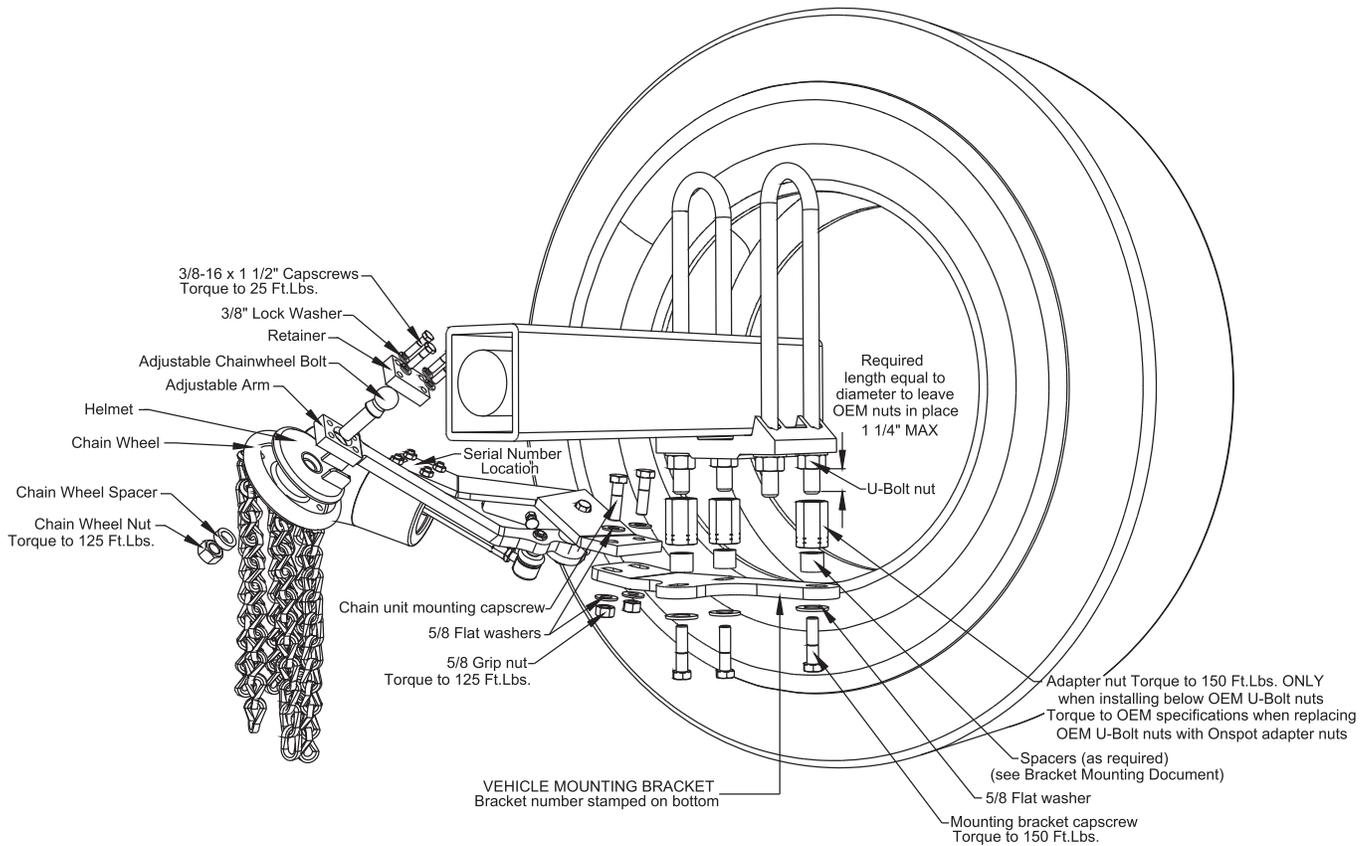


QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

ONSPOT PHASE 2 BRACKET

MODEL 04 FLAT ADJUSTABLE

NOTE: Bracket utilizes 2 U-Bolts closest to tire sidewall. Follow Bracket Mounting Document for exact mounting instructions.

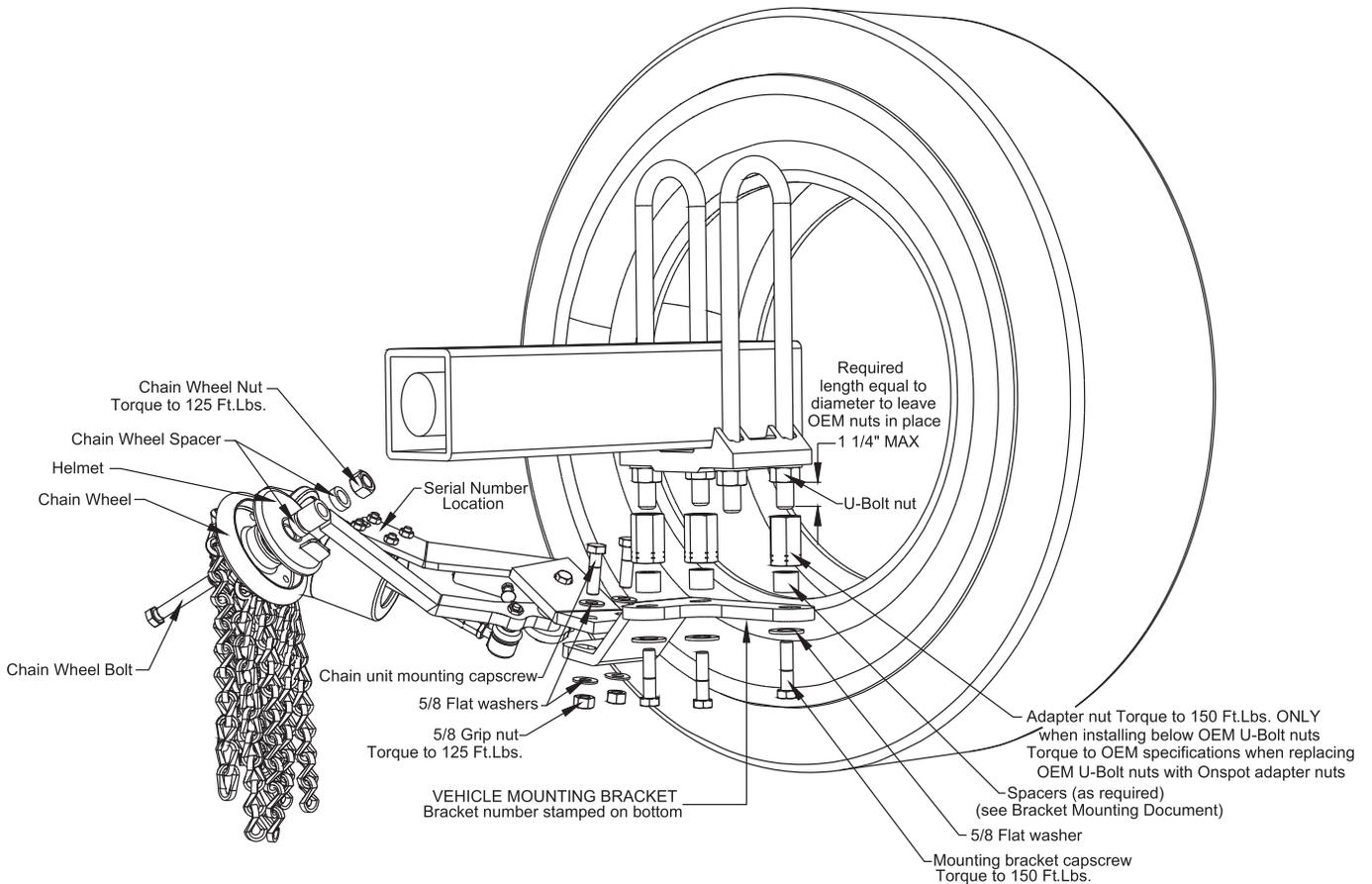


QUESTIONS? 1-800-224-2467 ADDITIONAL INFORMATION: www.onspot.com

ONSPOT PHASE 2 BRACKET

MODEL 04 WITH DROP

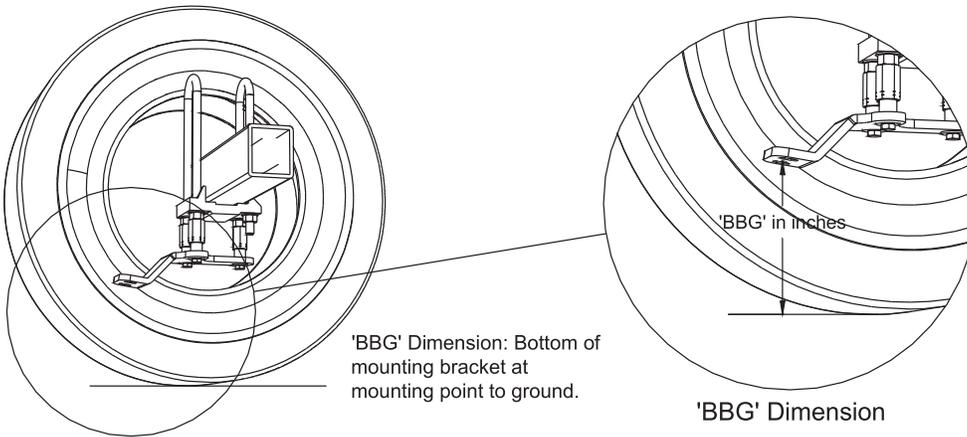
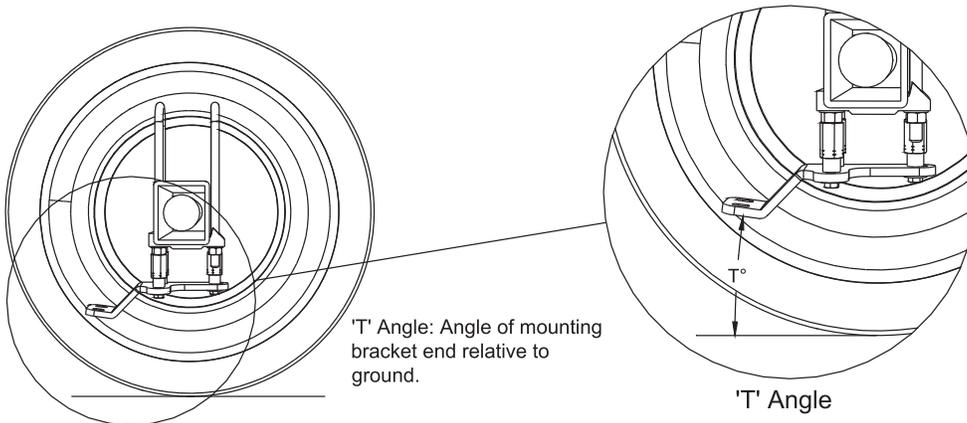
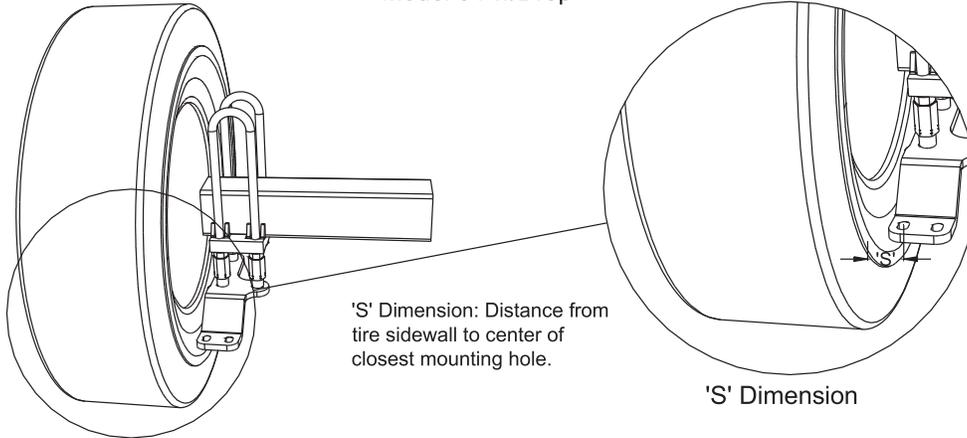
NOTE: Bracket utilizes 2 U-Bolts closest to tire sidewall. Follow Bracket Mounting Document for exact mounting instructions.



QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

GENERAL GUIDELINES FOR MOUNTING BRACKETS

MODEL 04 FLAT

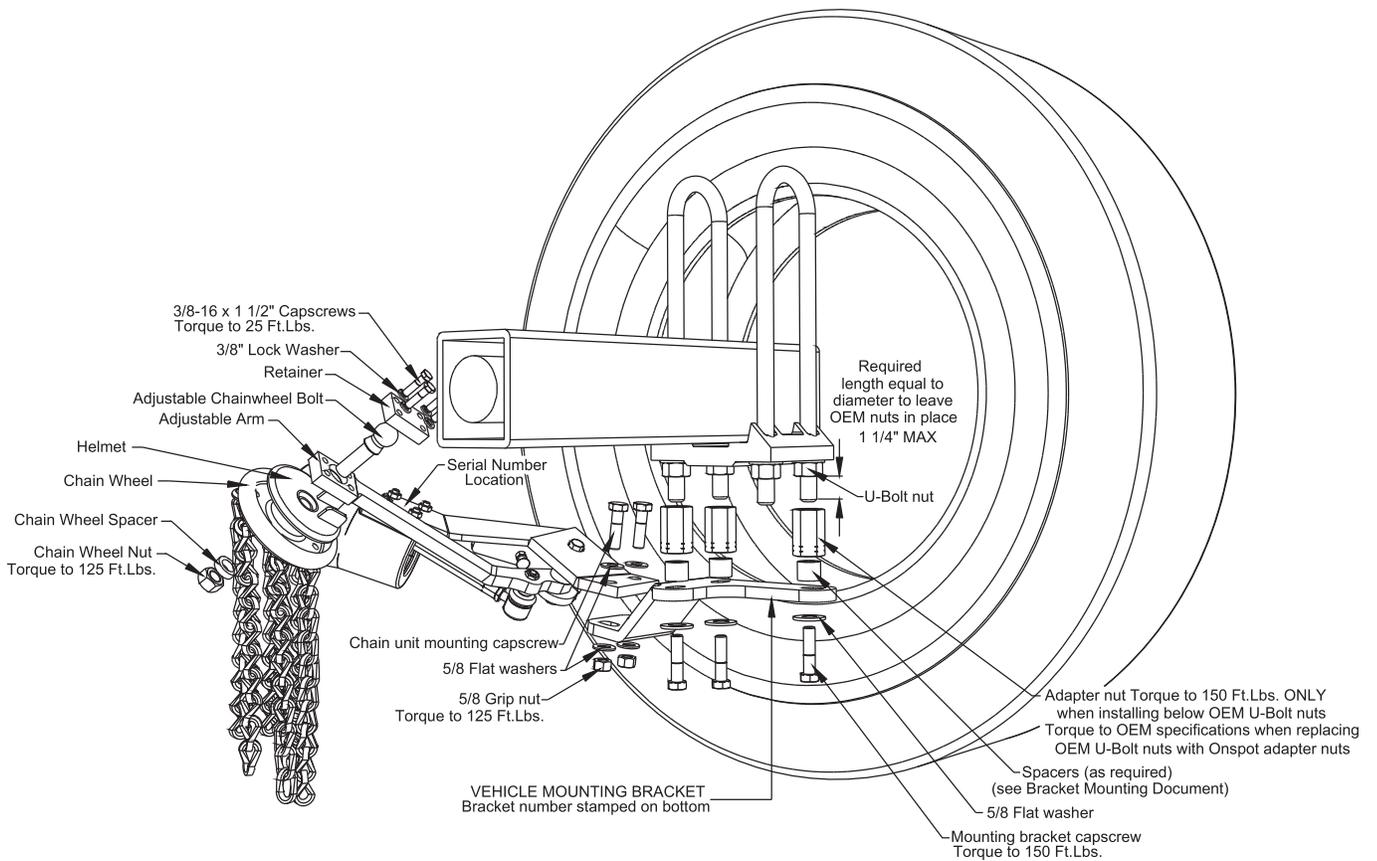


QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

ONSPOT PHASE 2 BRACKET

MODEL 04 WITH DROP

NOTE: Bracket utilizes 2 U-Bolts closest to tire sidewall. Follow Bracket Mounting Document for exact mounting instructions.

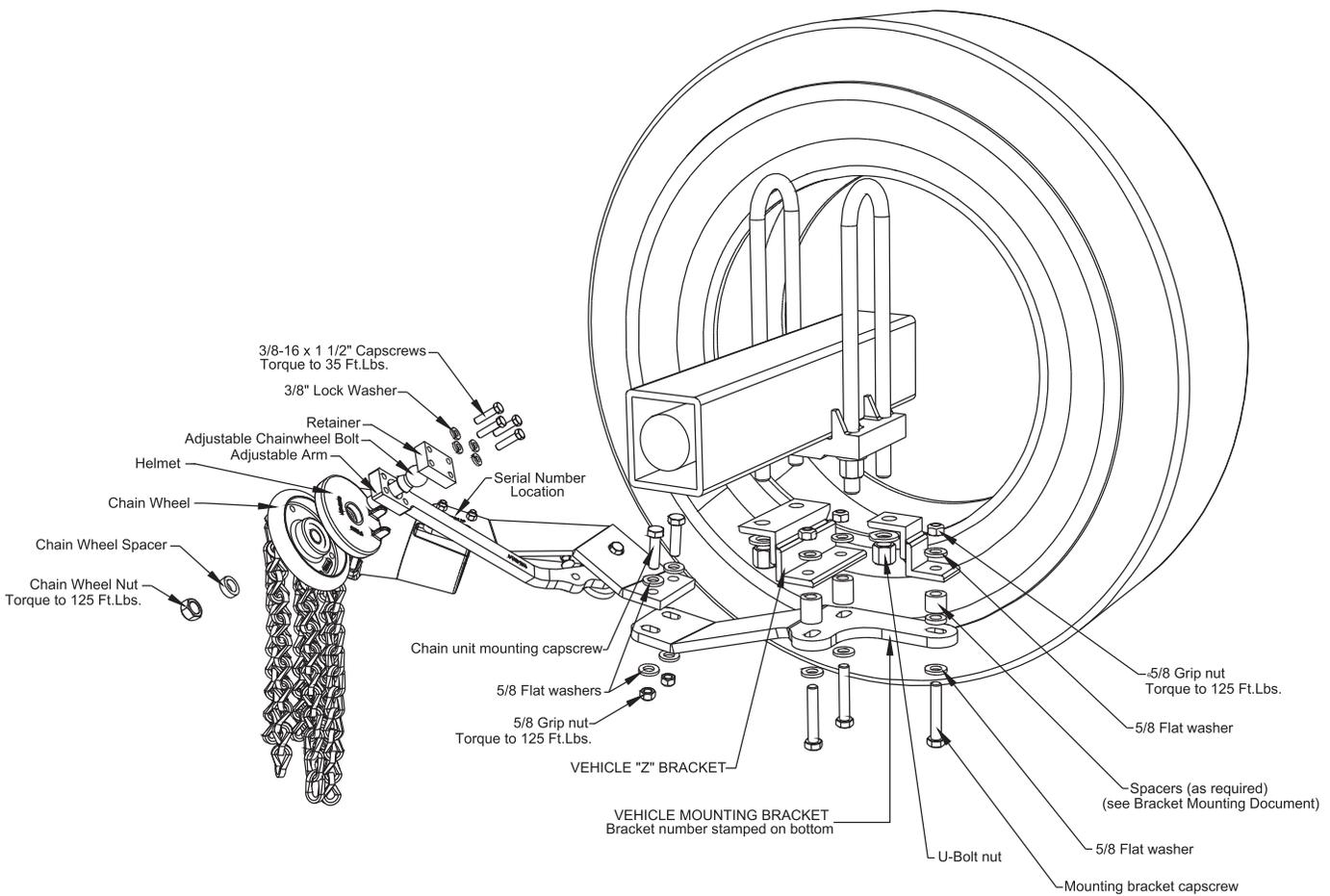


QUESTIONS? 1-800-224-2467 ADDITIONAL INFORMATION: www.onspot.com

ONSPOT PHASE 3 BRACKET

MODEL 04 WITH DROP ADJUSTABLE

NOTE: Bracket utilizes 2 U-Bolts closest to tire sidewall. Follow Bracket Mounting Document for exact mounting instructions.

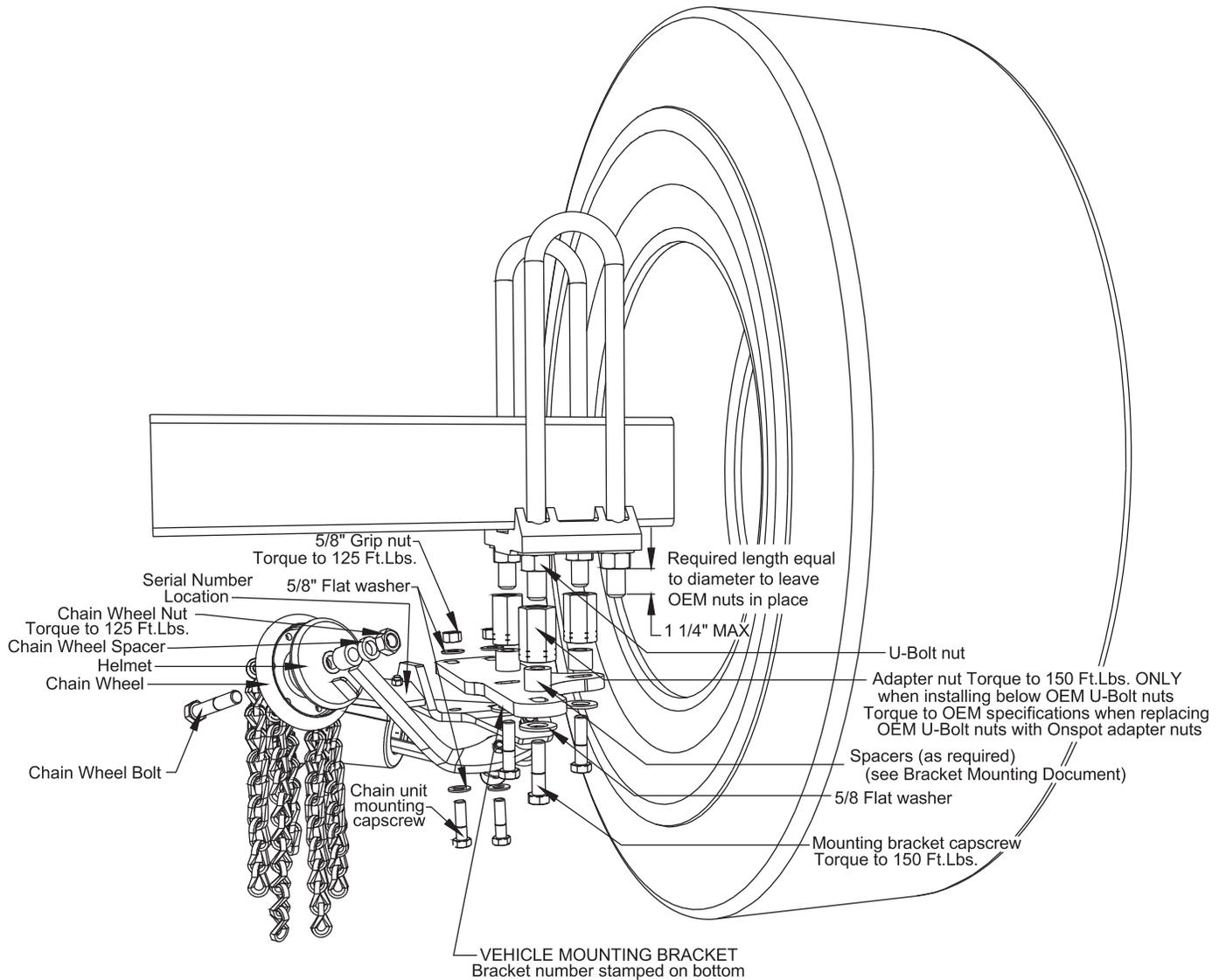


QUESTIONS? 1-800-224-2467 ADDITIONAL INFORMATION: www.onspot.com

ONSPOT PHASE 2 BRACKET

MODEL 05 FLAT

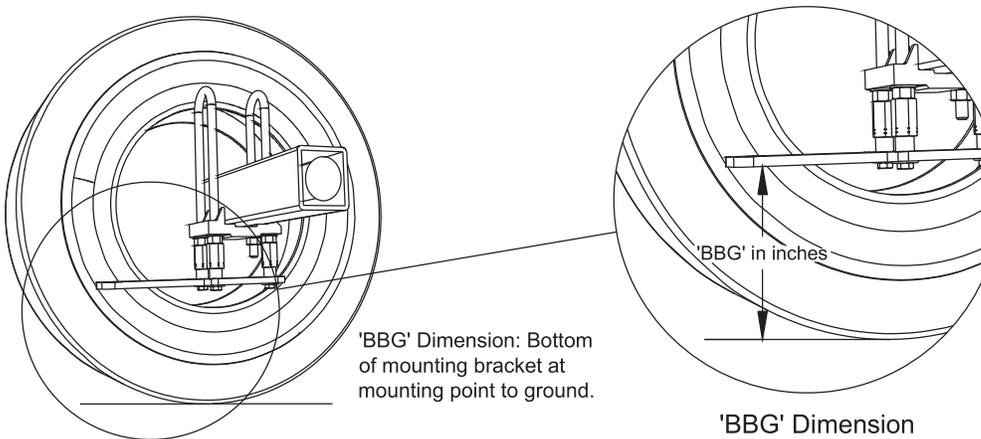
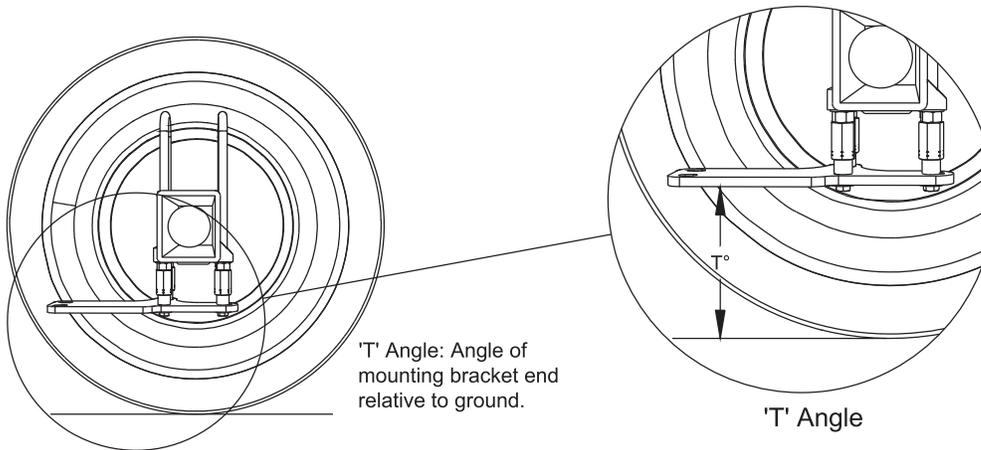
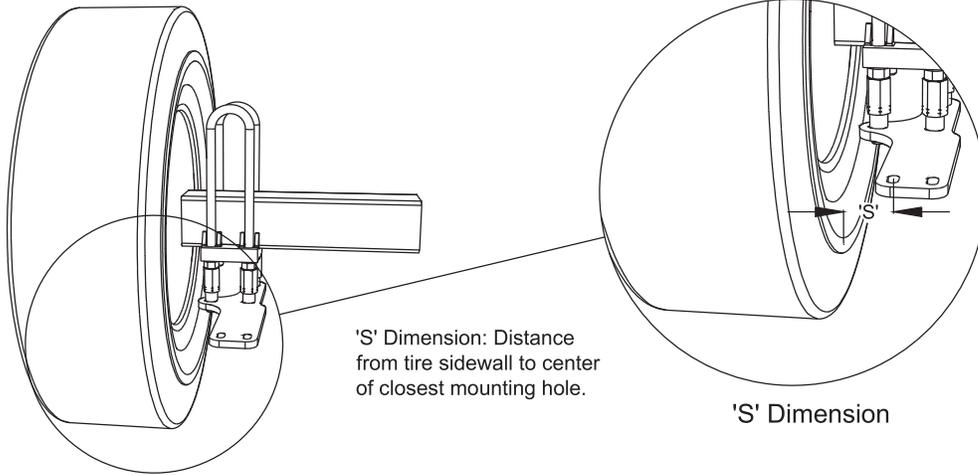
NOTE: Bracket utilizes 2 U-Bolts closest to tire differential. Follow Bracket Mounting Document for exact mounting instructions.



QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

GENERAL GUIDELINES FOR MOUNTING BRACKETS

MODEL 05 FLAT

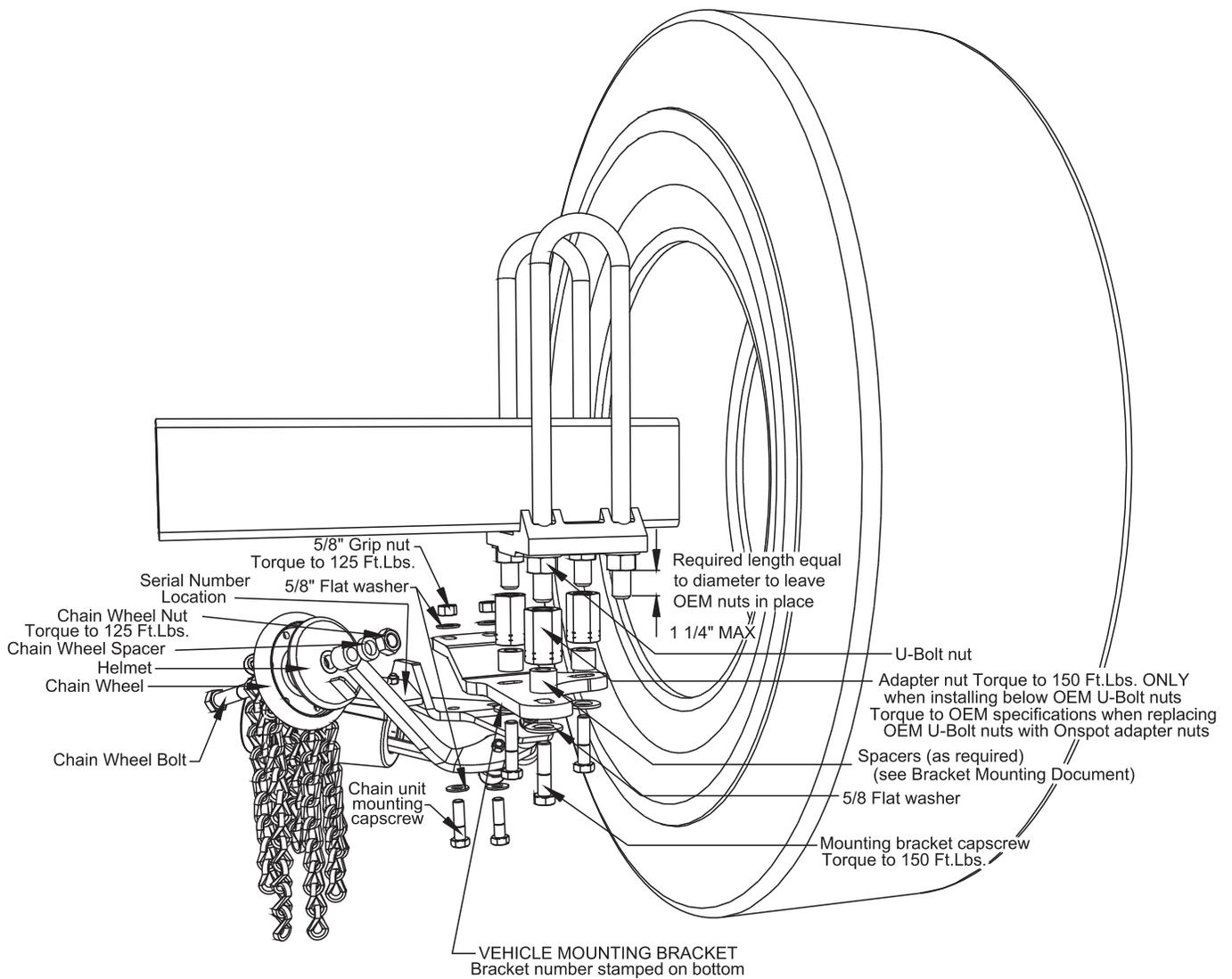


QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

ONSPOT PHASE 2 BRACKET

MODEL 05 WITH RISE

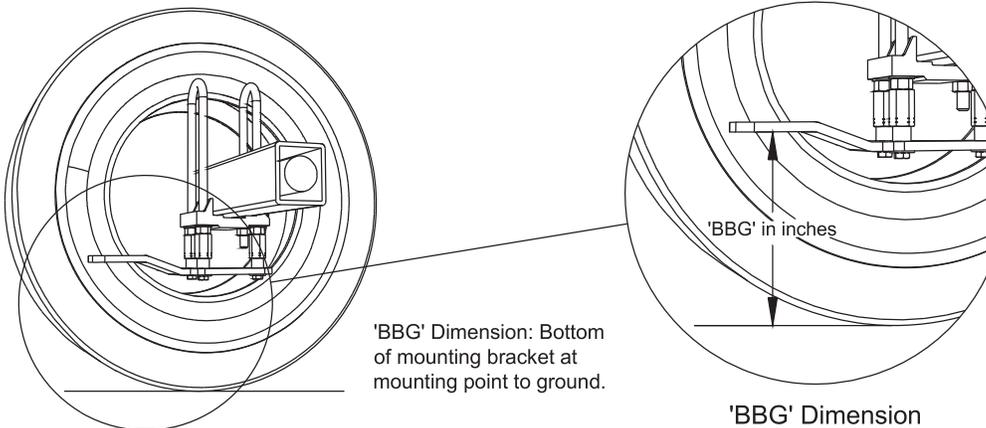
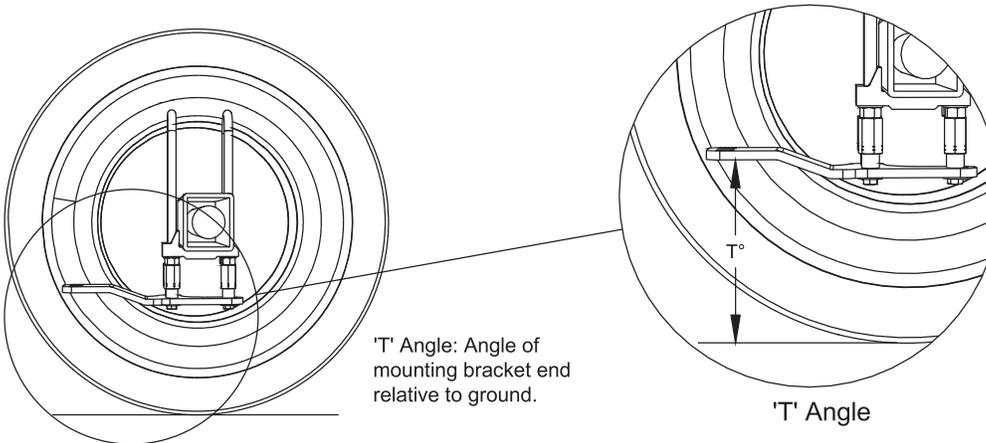
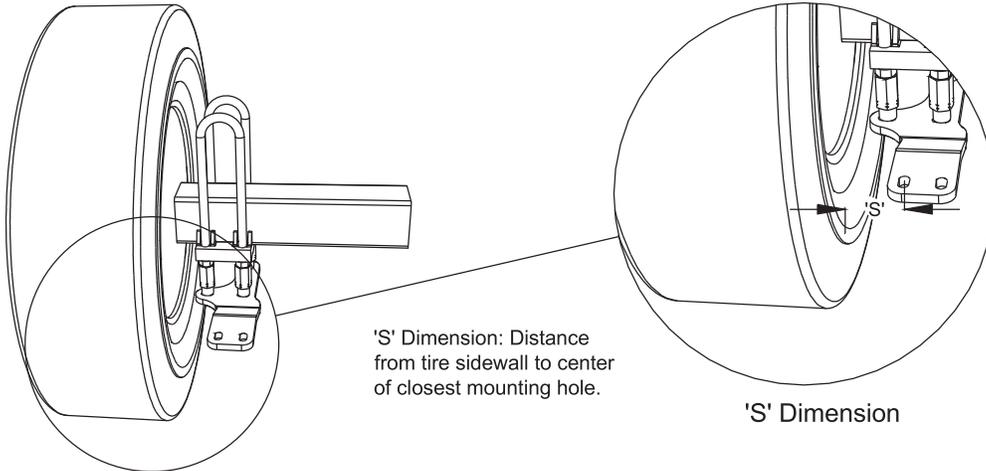
NOTE: Bracket utilizes 2 U-Bolts closest to tire differential. Follow Bracket Mounting Document for exact mounting instructions.



QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

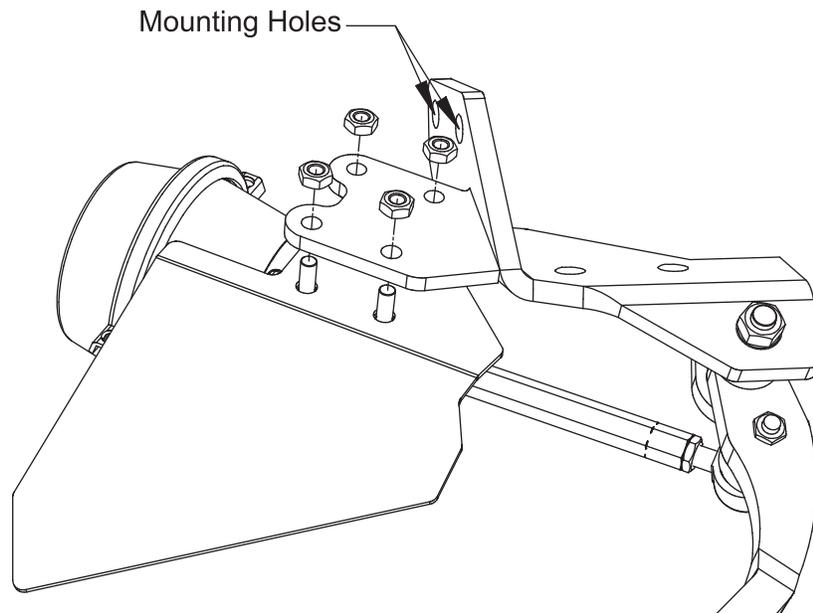
GENERAL GUIDELINES FOR MOUNTING BRACKETS

MODEL 05 WITH RISE



QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

MOUNTING INSTRUCTIONS TO CAST WALK BEAMS



Driver side chain unit on front axle

- ❑ Install chain trays.
 - a. To install the 9999-TR chain tray on the ONSPOT unit, begin by removing the four nylock nuts from the studs that attach the air cylinder to the cylinder bracket. Remove the air cylinder from the cylinder bracket, leaving the ball joint attached.
 - b. Mount the tray on the four studs that protrude from the air cylinder and reattach the air cylinder to the cylinder bracket. The tray should be installed as shown in the picture with the bends toward the air cylinder.
 - c. Replace the nylock nuts and tighten securely. The chain tray will contour slightly to match the contour of the air cylinder.
- ❑ Install the two 05 chain units onto the “H” brackets using the four 2” capscrews, flat washers, and gripnuts supplied. (Fig 3, see diagram) Pass the mounting capscrews through the mounting holes shown on Page 1. The capscrew heads should face the walking beam.
Note: Chain units can be installed as front mount on the rear axle or rear mount on the front axle. However the front axle offers more clearance than the rear.

MOUNTING INSTRUCTIONS TO CAST WALK BEAMS *continued*

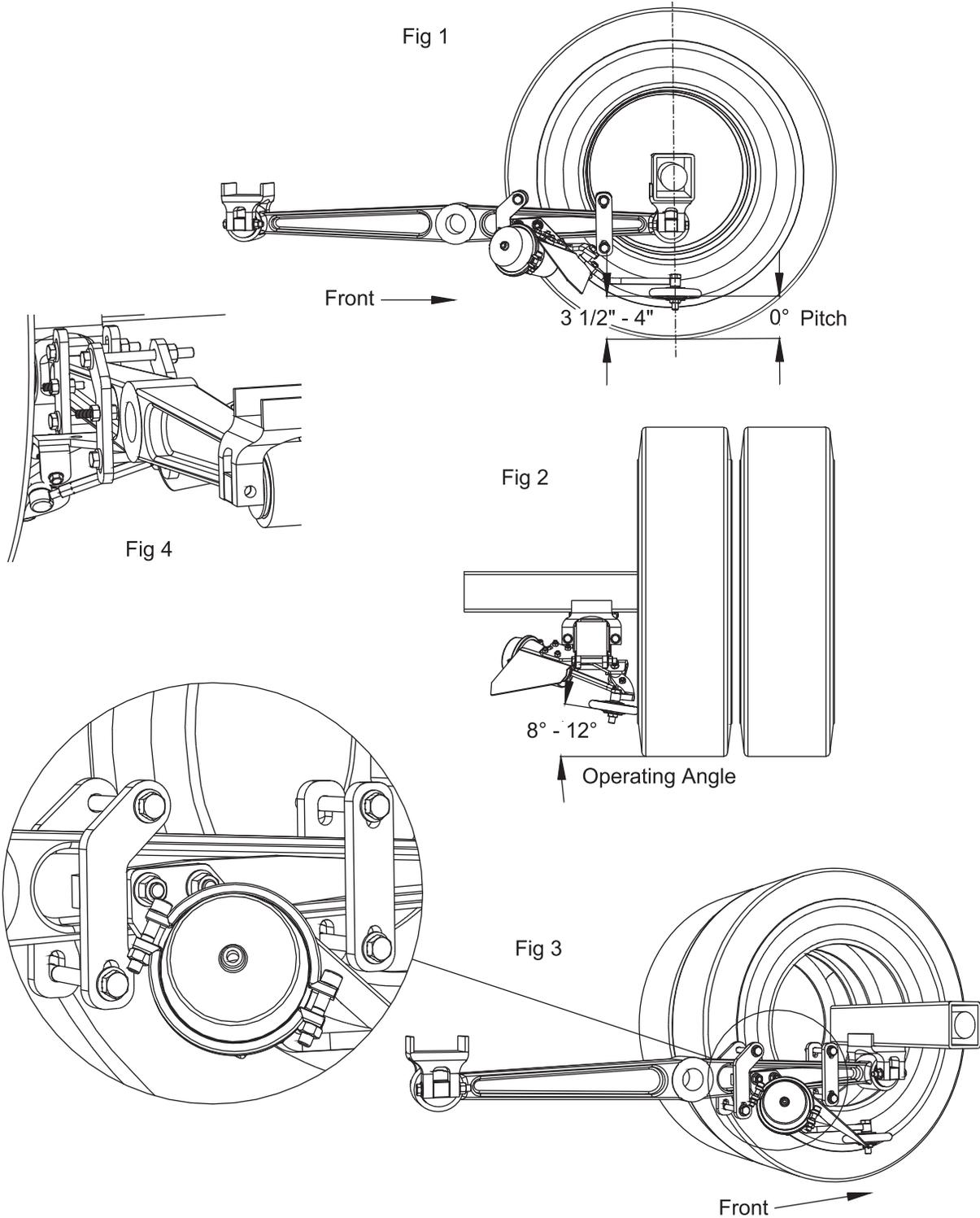
- ❑ Install the walking beam brackets and chain unit assembly onto the beam. The Onspot mounting bracket for the Hendrickson “Walking Beam” consists of three major parts. The mounting bracket is shaped like a wide “H”. Two metal side plates are included with long (6” and 8”) capscrews and set screws. The mounting brackets mount on the DRIVESHAFT side of the walk beam and the side plates are used on the tire side of the walk beam. The mounting bolts pass through the holes in the bracket, over (and under) the walk beam, then through the side plate holes. In essence the bracket is designed to “clamp” around the beam. The gripnuts and flat washers should be installed at the time and the nuts should be tightened to a snug fit. (Fig 3, see diagram)
- ❑ Find the vertical centerline of the tire. Mark the contact point for the chainwheel 3 ½” to 4” above the ground on the vertical centerline of the tire (vehicle unloaded). (Fig 1, see diagram)
 - Install the RED Chainwheel on the Driver Side.
 - Install the BLUE Chainwheel on the Passenger Side.
- ❑ Using a ball valve apply compressed air to the chain unit and slowly lower the chainwheel down against the tire. Adjust the chain units and brackets forward, back, up, or down until the chainwheel hits the tire at the correct heights and angles. (Fig 1 and Fig 2, see diagram)
- ❑ Check for interference between the chainwheels and drive train by sweeping the arm and chainwheel up and down in a full sweep (using compressed air) a few times. If interference does occur, move the assembly just far enough one way or the other along the walking beam to eliminate the interference.
- ❑ Torque down the long spreader bolts to approximately 125 Ft. Lbs. Install the four set screws and jam nuts. The 3 1/2” set screws are used in the “Hockey Stick” side plate and the 3” set screws are used in the straight side plate. (Fig 4 see diagram)
- ❑ Install solenoid valve, air tubing, and wiring as shown in the Chain Unit Mounting Instructions, which is also included with this kit.

Hardware includes:

- | | |
|-----------------------------|-------------------------|
| ❑ 4 – 5/8-11 x 2” Capscrews | ❑ 12 – 5/8” Grip Nuts |
| ❑ 4 – 5/8-11 x 6” Capscrews | ❑ 2 – 3” Set Screws |
| ❑ 4 – 5/8-11 x 8” Capscrews | ❑ 2 – 3 1/2” Set Screws |
| ❑ 24 – 5/8” Flatwashers | ❑ 4 – 1/2” Jam Nuts |

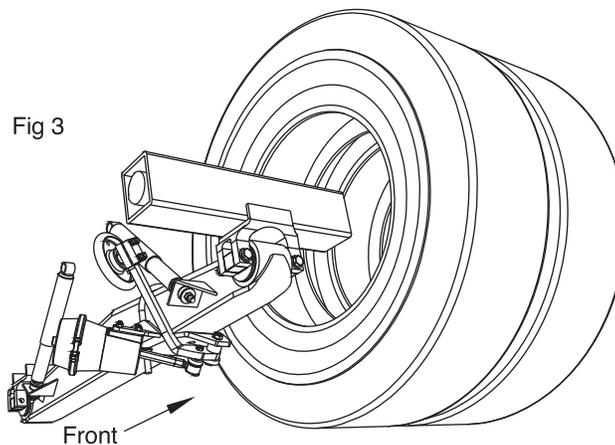
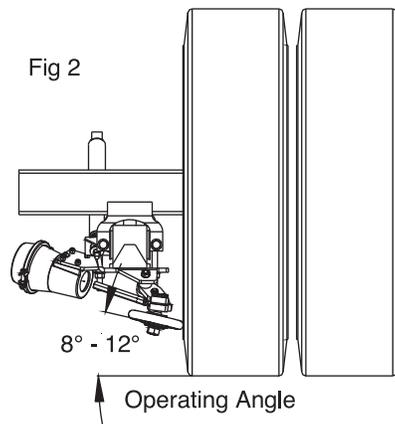
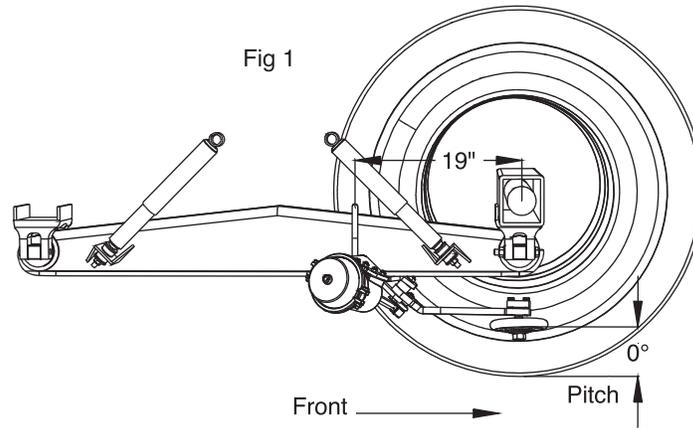
QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

INSTALLATION DIAGRAMS FOR HENDRICKSON CAST BEAM



QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

INSTALLATION DIAGRAMS FOR HENDRICKSON FABRICATED BEAMS



QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

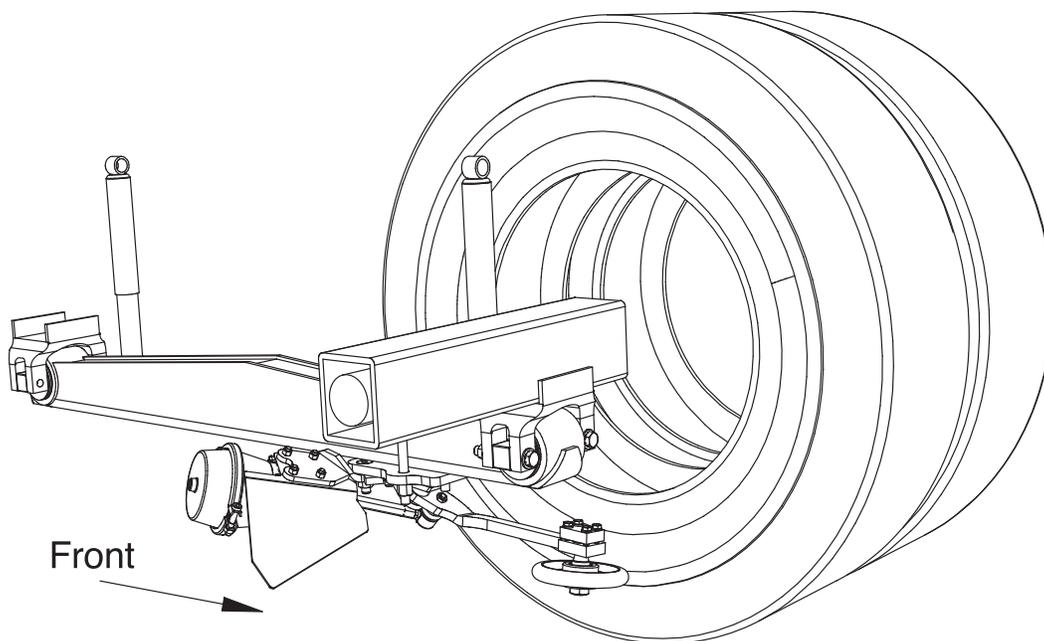
HENDRICKSON HAULMAAX SUSPENSION

MODEL 05711HCA9

- ❑ Install the supplied U-bolts by sliding them over the beam housing approximately 8 1/2 inches behind centerline of front drive axle. (It is suggested to install units on the rear side of the front drive axle due to less interference with driveline and universal components.)
- ❑ Attach the ONSPOT chain unit to the suspension beam U-bolt with U-bolt nuts. The adapter plate of the chain unit will mount flush with the bottom of the suspension beam. (**DO NOT** tighten U-bolt nuts at this time, adjustments will need to be made to insure chainwheel will hit tire centerline.)
- ❑ Attach chainwheel to unit, (**RED** - Driver Side) (**BLUE**- Pass. Side)
- ❑ Activate chain unit with shop air & ball valve. Position unit on beam so that chainwheel contacts tire on centerline. Tighten U-bolt nuts at this time. (Torque to 177 ft. lbs.)
- ❑ Adjust chainwheel for the correct **PITCH** and **OPERATING ANGLE**. (Refer to Onspot Chain Unit Mounting Instructions)

Hardware Includes:

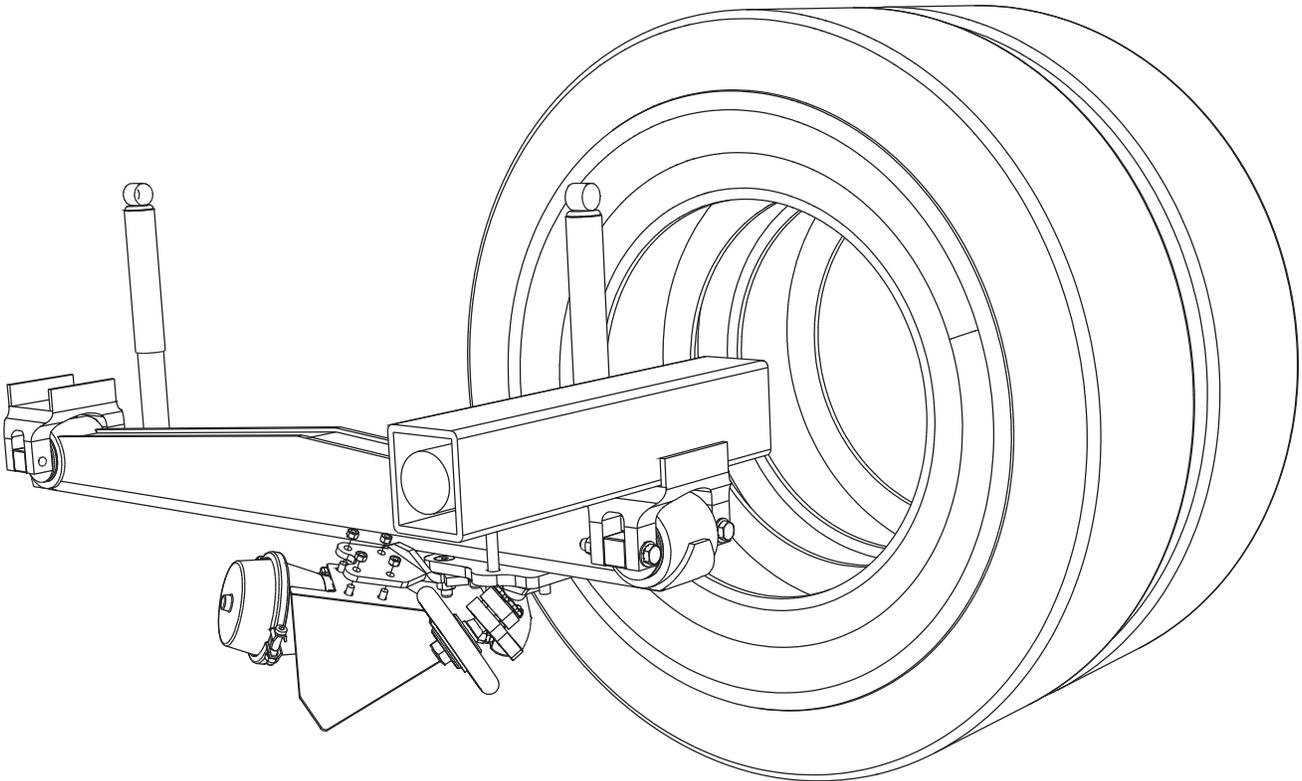
- ❑ 2 - 3 1/2" x 8" Square Top U-bolts w/nuts & washers
NOTE: 9999-TR Chains Trays to be included in kit.



QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

MOUNTING INSTRUCTION FOR 9999-TR TRAYS

- ❑ Install chain trays.
 - a. To install the 9999-TR chain tray on the ONSPOT unit, begin by removing the four nylock nuts from the studs that attach the air cylinder to the cylinder bracket. Remove the air cylinder from the cylinder bracket, leaving the ball joint attached.
 - b. Mount the tray on the four studs that protrude from the air cylinder and reattach the air cylinder to the cylinder bracket. The tray should be installed as shown in the picture with the bends toward the air cylinder.
 - c. Replace the nylock nuts and tighten securely. The chain tray will contour slightly to match the contour of the air cylinder.



Driver side chain unit on front axle

QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

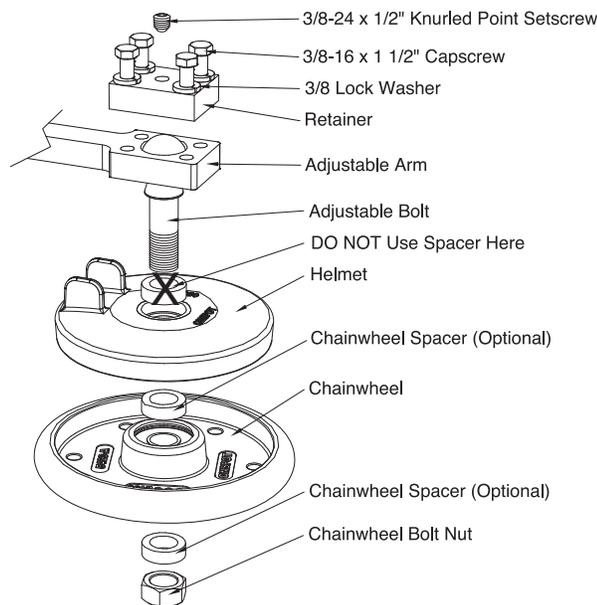
ADJUSTABLE WHEEL INSTRUCTIONS

Once the chain set is mounted, the wheel should be installed on the adjustable chainwheel bolt and brought into contact with the tire sidewall. In this position, establish the proper operating angle of, 8 to 12 degrees, at a height between 3 1/2 and 4 inches above the ground. The operating angle and the pitch can be set simultaneously. Refer to the chain mounting instructions.

Beginning with Serial Number 65942 an addition of a set screw in the retainer requires the following instruction changes. Tighten the four (4) capscrews to the desired torque setting, approximately 35 ft. lbs, thereby locking the wheel into the desired, fixed, position. Each capscrew should be tightened a little at a time, in a circular motion until the required torque is reached. Avoid bending the retainer or arm by over tightening. Once the capscrew torque has been set, tighten the set screw in the top of the retainer firmly, then loosen and retighten the setscrew to set the knurled point into the ball of the adjustable chainwheel bolt. **DO NOT** tighten the set screw before setting the 35 ft lbs. torque on the four capscrews.

Be sure the wheel remains in a horizontal position at all times when viewed from the side (zero pitch, see pitch in chain mounting instructions). This will allow the chains to pass under the wheel, maximize the bite affect and minimize unnecessary wear on the chain wheel due to scuffing.

Place the chainwheel spacer between the helmet and chainwheel if lowering the tire sidewall contact height is desired. Placing the chainwheel spacer under the chainwheel, when lowering the contact height is not necessary, keeps the threaded end of the chainwheel bolt covered aiding in future removal of the chainwheel. **DO NOT** place the chainwheel spacer in the top of the helmet when using the adjustable chainwheel bolt.



QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

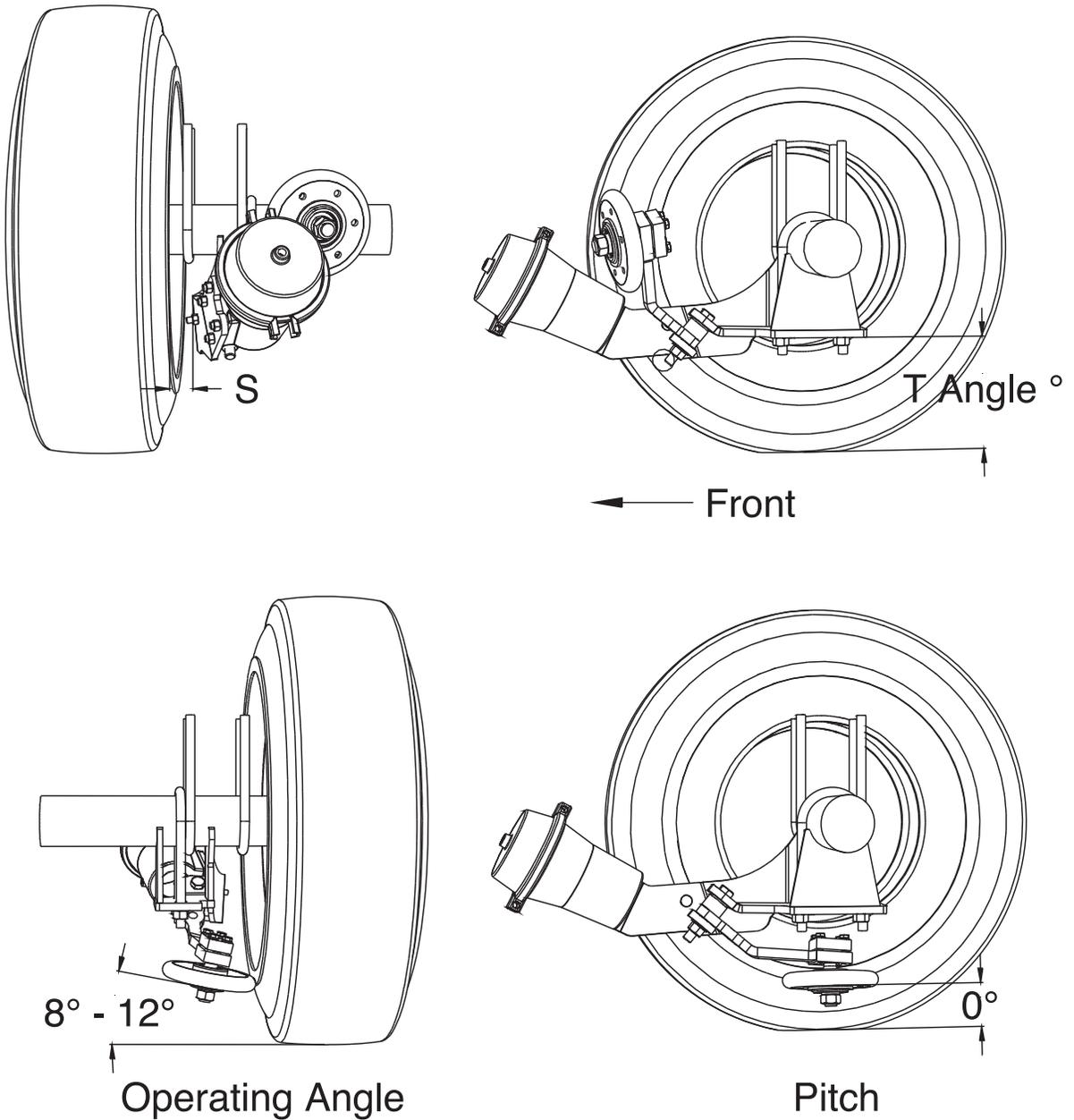
INSTRUCTIONS FOR MOUNTING M-3504 ONSPOT CHAINS

- ❑ Install the supplied U-bolt by sliding it over the rear end housing next to the existing inverted U-bolt closest to the centerline of the vehicle. (See diagram) Ensure that there is **NO INTERFERENCE** with the brake lines. To obtain more clearance between the arm and shock, remove and reinstall lower shock mounting bolt so that the head of bolt is toward the inside of vehicle.
- ❑ Attach the mounting bracket to the U-bolt with the U-bolt nuts. One saddle will rest between the two existing OEM u-bolts. The bracket will project toward the front of the vehicle. Do **NOT** tighten at this time. Rotate the bracket around the rear end until the chain unit is level with the ground (T Angle, see diagram), at the point where the U-Bolt passes through the chain unit. This can be checked with an angle gauge or level.
- ❑ Check the distance from the tire sidewall to the side of the chain unit. (S dimension, see diagram) This should be approx. **1 1/2 inches from the tire**. Tighten the U-Bolt nuts to 177 Ft.Lbs.
- ❑ Using compressed air approx. 100-psi (controlled by a ball valve), engage the chain unit so the chainwheel contacts the tire. Check for **any** interference. **Release the air pressure SLOWLY or the chains will retract very quickly.**
- ❑ The chainwheel should contact the tire **AT THE BULGE**. This is typically 2 1/2 inches off the ground.

Hardware Includes:

- ❑ 3 1/2" x 9" U-Bolts w/nuts and washers

M-3504 INSTALLATION DIAGRAM



QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

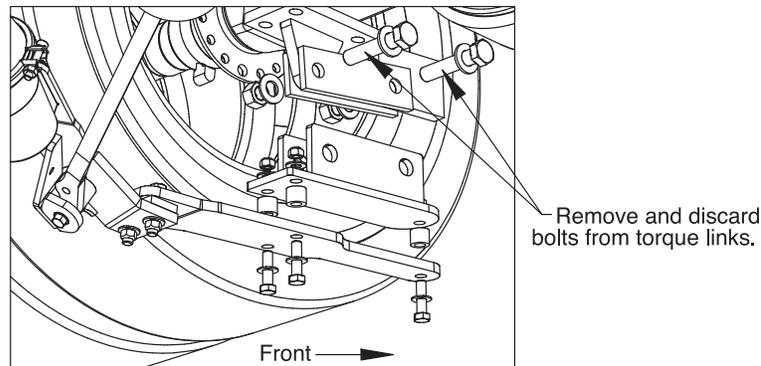
BRACKET MOUNTING DOCUMENT

Vehicle Mounting Bolts		Spacers			Capscrews	
4	1" x 5"	Front	2	1"	2	3 1/2"
8	1" Flatwashers	Rear	4	1"	4	3 1/2"
4	1" Grip Nuts				4	2 1/4"
20	5/8" Flat Washers					

Mounting Guidelines:

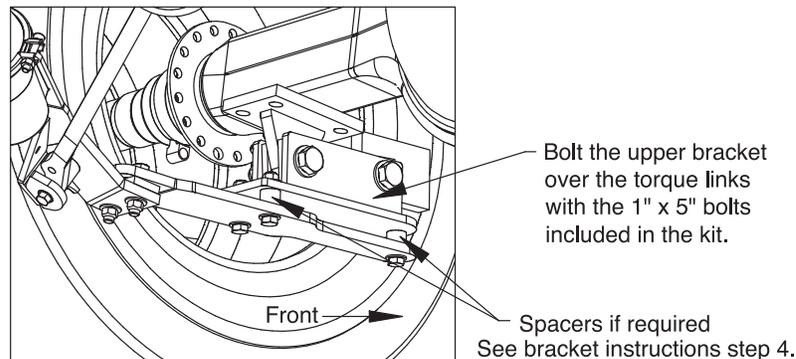
- ❑ Remove the 2 bolts from the torque link on the vehicle and discard the bolts. (Fig 1)

Fig 1



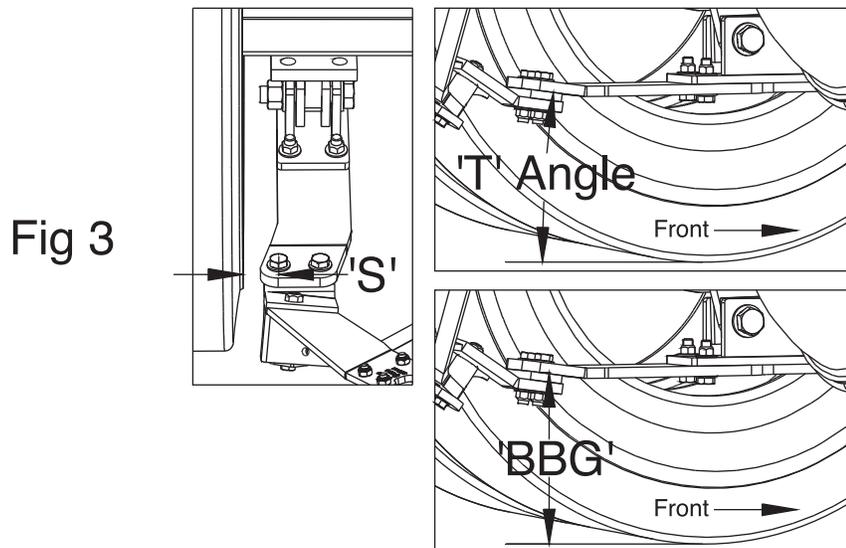
- ❑ Place the torque link on the inside of the “upper bracket” and bolt the upper bracket to the vehicle using the 1" x 5" capscrews and nuts supplied. (**Note:** Installation will be easier if the torque link is tack welded to the upper bracket to hold it in place.) (Fig 2)

Fig 2

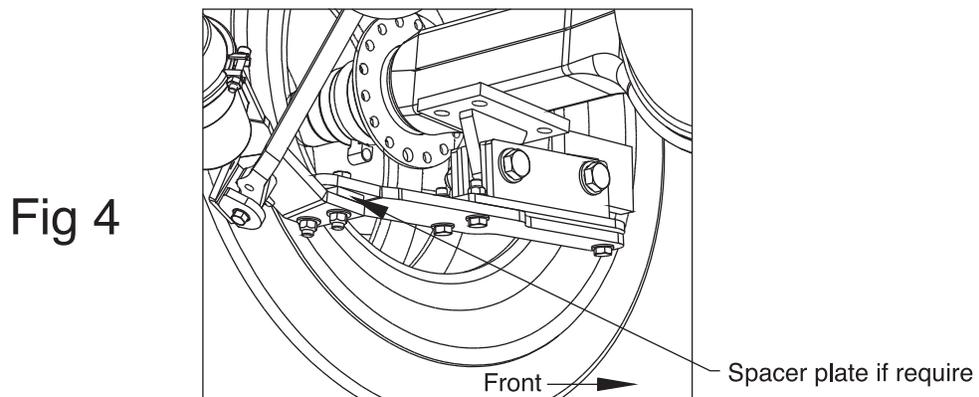


QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

- ❑ The 1" capscrews should be torqued to the vehicle manufacturer's specifications once the chain unit installation is complete.
- ❑ Fasten the "lower bracket" to the upper bracket using 1" spacers and 3 1/2" capscrews in the front, use 1" spacers and 3 1/2" capscrews in the rear. (Fig 2)
- ❑ The lower bracket will project towards the rear of the vehicle. This bracket is marked Driver/ Passenger side as well as Top/Bottom. Once installed, the bottom of the bracket should be approx. 9" off the ground at the point where the Onspot mounts ('BBG') and the bracket should be tilted up at 8 degrees ('T'Angle). The Onspot mounting hole closest to the tire should be 1 1/2" from the tire sidewall ('S'). (Fig 3)



- ❑ The Chain Units will mount on **Bottom** of the mounting bracket.(Fig 4)



- ❑ Once the brackets are installed, proceed with the Chain Unit Mounting Instructions.

QUESTIONS? 1-800-224-2467 ADDITIONAL INFORMATION: www.onspot.com

CHAIN UNIT MOUNTING INSTRUCTIONS

1. Install mounting brackets per the BRACKET MOUNTING INSTRUCTIONS provided with the brackets. Make sure the vehicle's U-Bolt nuts and adapter nuts are torqued to MANUFACTURER'S specifications.
2. Using the two supplied 5/8" Grade 8 bolts, flat washers, and Top Lock® nuts mount the ONSPOT chain unit to the mounting bracket as indicated on the *Bracket Mounting Document*. The mounting bolts should be left loose at this time so adjustments can be made later.
3. Install the chainwheels. Install the helmet between the bottom of the arm and top of the wheel. See Figure 4 for exact method depending on which chainwheel bolt your model has. Make sure the arm passes through the two uprights on the chainwheel helmet.
NOTE: The **RED** chainwheel is for the **LEFT** (driver side); the **BLUE** chainwheel is for the **RIGHT** (passenger side) of the vehicle.
4. Using compressed air approx. 100-psi (controlled by a ball valve) engage the chain unit so the chainwheel contacts the tire. Check for any interference. **Release the air pressure SLOWLY or the chains will retract very quickly.**

The chainwheel should contact the tire as follows:

- a. Chainwheel should contact the tire at the **VERTICAL CENTERLINE of the tire.** (ref Figure 1)
- b. The **PITCH** of the chainwheel should be **0** to **-1** degree (ref Figure 1)

NOTE: Onspot offers a part number 9013-B angle gauge to assist in measuring pitch and operating angle.
- c. **OPERATING ANGLE** of chainwheel should be **8** to **15** degrees (ref Figure 2)
- d. Vertical distance from the ground to the chainwheel contact point should be approx. 3 ½" to 4" with the vehicle unloaded (chassis with no body should be 4 ½". 3" min with the vehicle loaded) (ref Figure 2).
- e. On ambulances and vehicles with small tires (16" or smaller) the chainwheel should contact the bulge of the tire (approx. 2 5/8" from the ground).

Adjustments to chainwheel height may be made via the chainwheel spacers (ref Figure 4). Additional adjustments may be made by moving the mounting brackets. Please contact ONSPOT if necessary for additional adjustment guidance.

QUESTIONS? 1-800-224-2467 ADDITIONAL INFORMATION: www.onspot.com

NOTE: If your Onspot chain set uses the adjustable chainwheel bolt see the included sheet *Adjustable Chainwheel Instructions* for proper assembly.

5. The **MINIMUM** distance from the tire sidewall to the mounting bracket is 1/2". The **MINIMUM** distance from the chainwheel to the drive shaft is 3/8".
6. Once the chainwheel is correctly positioned and there is no interference, **torque the chain unit mounting bolts to 125 Ft - lbs, and the chainwheel bolt to 125 Ft - lbs.**

NOTE: DO NOT USE AIR TOOLS to tighten the chain unit mounting bolts as over torquing these bolts will cause premature failure. **PLEASE** use a TORQUE WRENCH.

7. Install the electric toggle switch in the cab of the vehicle. Connect the switch to a fused 12- volt power "key on" source (powered through the ignition switch). The proper wiring of the ONSPOT switch is as follows:

- F - terminal - Positive (power)
- O - terminal - Positive (power)
- D - terminal - Solenoid valve
- F - terminal - Negative (ground)

(See illustration of 9004 Switch)

When the switch is wired correctly, it will glow white any time the ignition switch is in the ON position. When the ONSPOT switch is in the ON position, the switch color will change to RED.

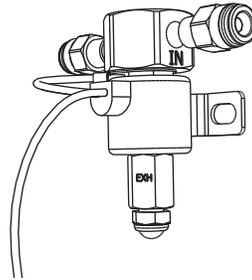
NOTE: An existing switch in the vehicle may be used, but we recommend a switch guard be used.

8. Choose a protected area close to the chain units to mount the air / electric solenoid. Remove any undercoating or protective coating, which may inhibit proper grounding of the solenoid. As with any electrical component, subjecting it to a harsh environment may shorten its life. **Consider mounting the solenoid in the cab or under the hood.**

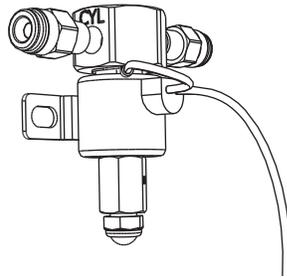
NOTE: The solenoid is grounded through the mounting bracket. Mount the solenoid in the VERTICAL position. Connect the solenoid to the electric switch (ref. Figure 3)

NOTE: If the application is a school bus, consult the vehicle Body Builder manual for proper procedure connecting into the vehicle's air and electrical systems. Consult the dealer where the bus was purchased or Onspot.

- The pressure protection valve **MUST be used at the air source** on vehicles with air brakes. This valve will prevent a complete loss of air from the air source should an ONSPOT air line leak or break. There may already be a protected air source on the vehicle for accessories (check with body builder book or the (dealer). **The air source should never be taken from the foot valve, drain cock, or treadle valve.**
- Install the air lines and fittings provided. The line from the air source must be connected to the side of the solenoid valve marked “IN” using the straight fitting provided.



Use another straight fitting on the side marked “CYL” on the solenoid valve.



Connect an air line from the “CYL” end fitting to the union tee fitting. Connect an air line from the union tee to each of the chain units.(ref. Figure 3)

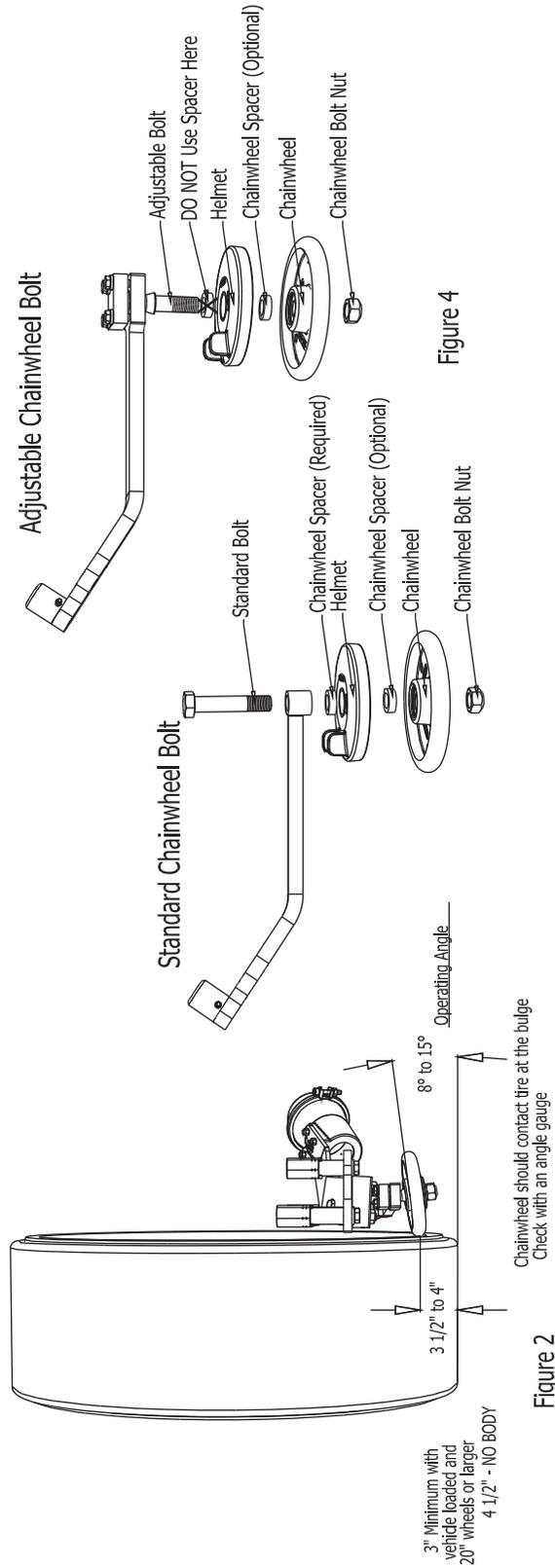
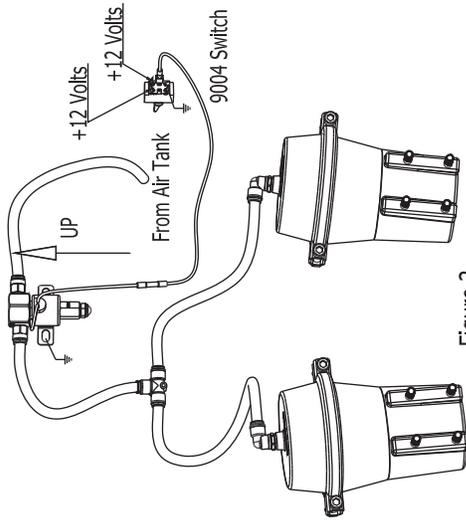
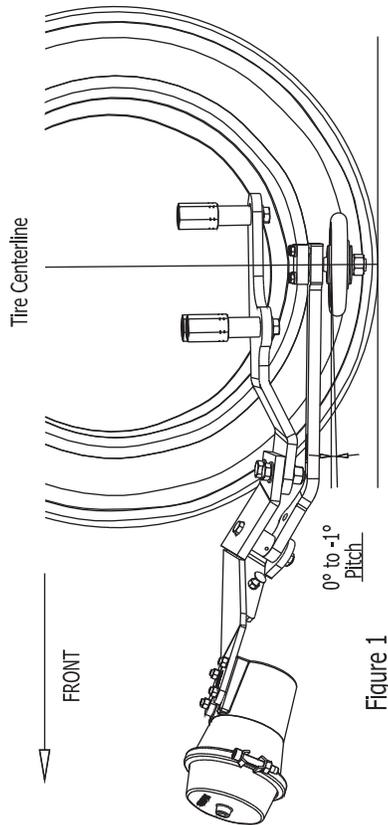
Slide the protective tubing over the air lines where chassis contact may occur. Place the sticker labeled “*Operating Instructions*” on the dashboard in plain sight of the operator.

- Once the installation is complete engage the chain units and (using a fish scale) pull the chainwheel away from the tire. This should require at least 20 lbs. of effort.
- We recommend the Onspot system be checked via a road test in forward and reverse. Engage and disengage the chains while the vehicle is MOVING between 3 and 5 MPH. Refer to the *Operation and Maintenance* card.

***** CAUTION *****

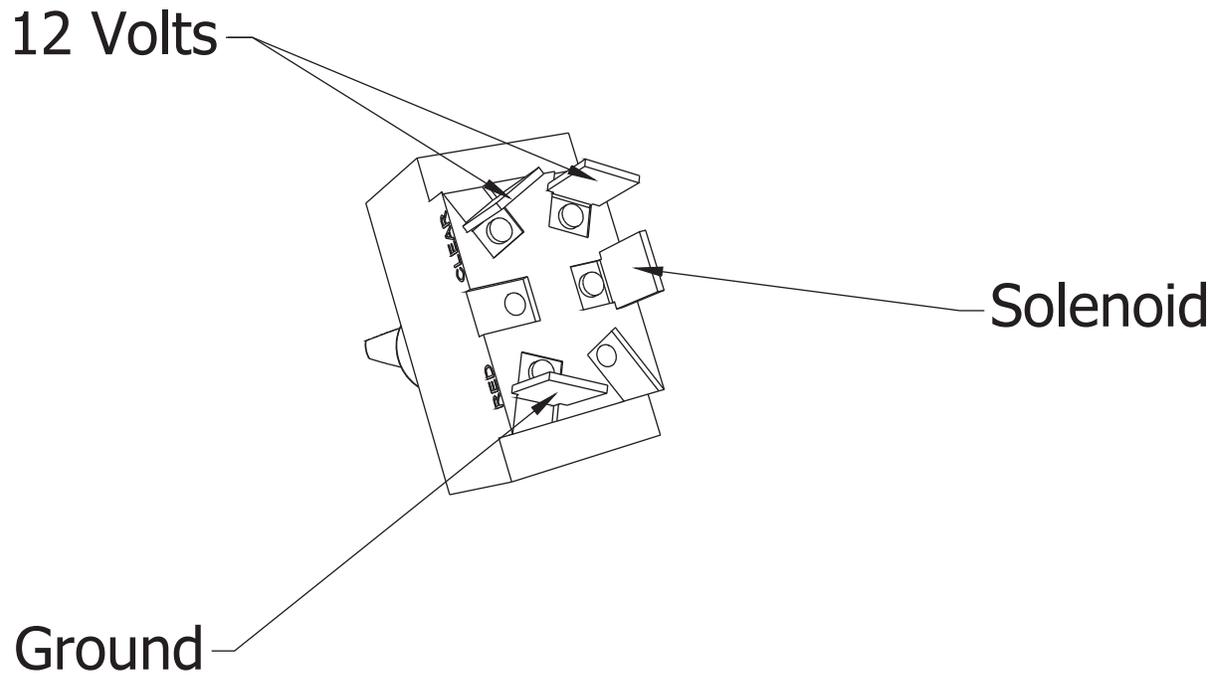
Due to high spring tension, **DISASSEMBLY / ASSEMBLY** of the air cylinder should be done only by qualified personnel.

Chain units may be mounted in front of or behind the rear axle depending on application. Refer to Bracket Mounting Document



QUESTIONS? 1-800-224-2467 ADDITIONAL INFORMATION: www.onspot.com

9004 DASH SWITCH



QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

BRACKET MOUNTING DOCUMENT

Adapter Nuts		Spacers			Capscrews	
6	7825	Front	4	1"	4	2 ½"
14	1" Flatwashers	Rear	2	¾"	2	2 ¼"
					4	4 - 2 ¼"

Mounting Guidelines:

- These are Phase 2 brackets.
- The chain units mount in FRONT of the drive axle.
- The OEM U-Bolt nuts SHOULD BE LEFT IN PLACE.

Special Instructions:

Torque the U-Bolt nuts to OEM specification.

The remaining U-Bolt threads below the OEM nuts must be shortened to 1 ¼" so that the adapter nuts can be installed below the U-Bolt nuts.

Use 1" spacers on the FRONT bracket mounting bolts between the adapter nuts and mounting bracket.

Use ¾" spacers on the REAR mounting bolts.

Attach the ONSPOT bracket using 2 ½" capscrews in front and 2 ¼" capscrews in the rear.

The BOTTOM OF THE BRACKET should be approx. 9" off the ground after installation at the point where the ONSPOT mounts to the bracket.

Mount the chain units ON TOP OF THE MOUNTING BRACKET.

Use flatwashers and anti-seize on all bracket mounting bolts.

Use the 2 ¼" capscrews, 8 flatwashers, and 4 locknuts to mount the chain units on the mounting brackets.

QUESTIONS? 1-800-224-2467 ADDITIONAL INFORMATION: www.onspot.com

INSTALLATION OF PHASE 3 MOUNTING BRACKETS

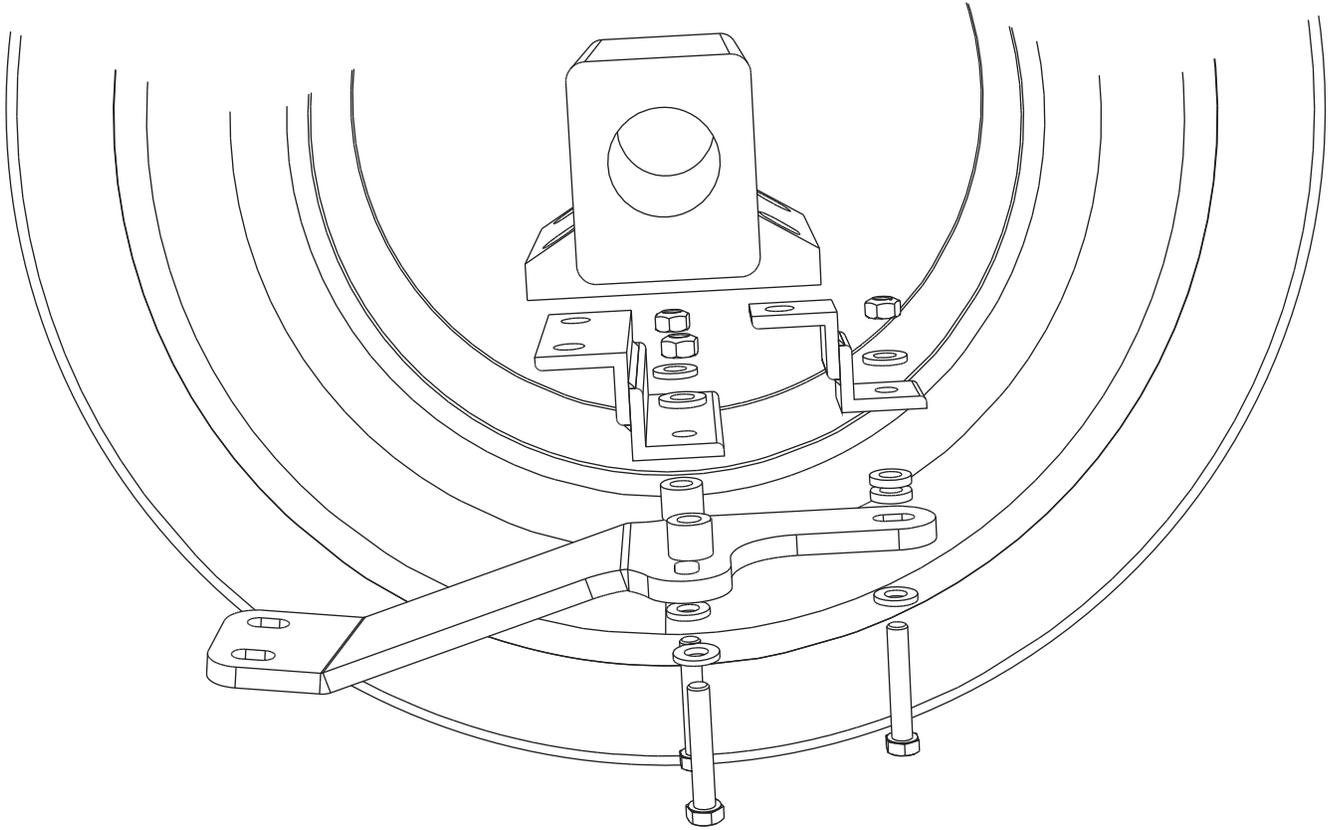
Mounting Guidelines:

- Remove the U-Bolt nuts and install the “Z” brackets. There are 2 - “Z” brackets per side, 1 two hole and 1 single hole. The “Z” brackets mount behind the front U-Bolts (two hole) and behind the rear U-Bolt (single hole).
- The ground to the bottom of the installed “Z” brackets should be 12 7/8” in front and 12 1/2” in the back. If not STOP, call 800-224-2467 as adjustments will be needed.
- Mount the lower plate to the “Z” brackets using the 4” capscrews in front and the 4” capscrews in the rear. Place 2” spacers between the “Z” bracket and lower plate in the front and 2” spacers between the “Z” bracket and lower plate in the rear.
- The ground to the bottom of the lower plate should be 9” at the point where the chain unit mounts. The bracket should be tilted up at 8 degrees and the first mounting hole should be 1 1/2” from the tire sidewall. If not STOP, call 800-224-2467 as adjustments will be needed.
- Mount the chain units on top of the lower plate using the 2 1/4” capscrews and gripnuts. Use flatwashers on all mounting hardware.
- Torque all 5/8” hardware to 125 Ft lbs.
- Proceed with the Chain Unit Mounting Instructions.

Hardware includes:

- 4 - 2” Spacers for front
- 2 - 2” Spacers for rear
- 4 - 4” Capscrews for front
- 2 - 4” Capscrews for rear
- 10 - 5/8” Gripnuts and 20 - 5/8” Flatwashers
- 4 - 2 1/4” Capscrews

VEHICLE MOUNTING BRACKET PHASE 3



Front ←

QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

APPLICATION BULLETIN

DISC BRAKE CALIPER PIN INTERFERENCE

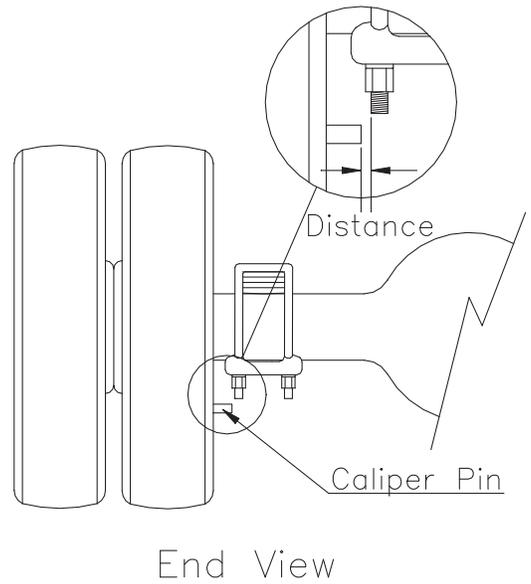
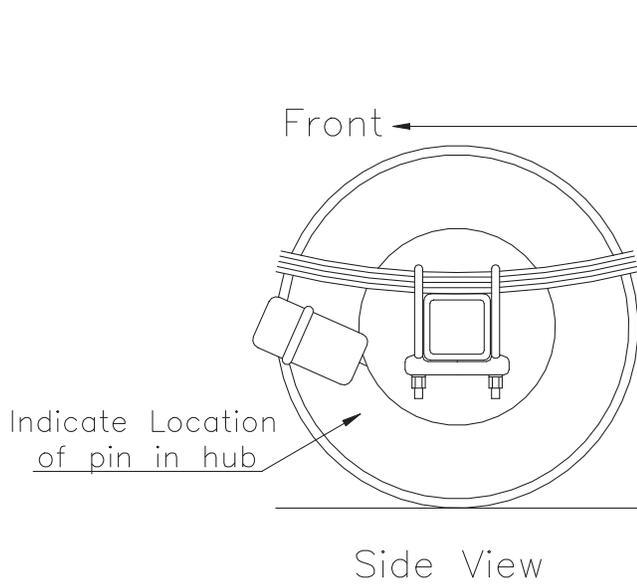
11/5/2008

We have been made aware of a POSSIBLE interference problem between ONSPOT adapter nuts and disc brake caliper pins on MACK and SPARTAN chassis.

In some cases, the disc brake pin is directly below the front tire side u-bolt nut. When this is the case, it is NOT possible to install the ONSPOT adapter nut. In SOME cases, we have been able to utilize a "Phase 3" style mounting bracket, held in place with the u-bolt nuts. In some cases, we simply cannot fit the vehicle.

CAUTION: When measuring a vehicle with disc brakes, watch out for this potential interference problem.

CALIPER PIN LOCATION



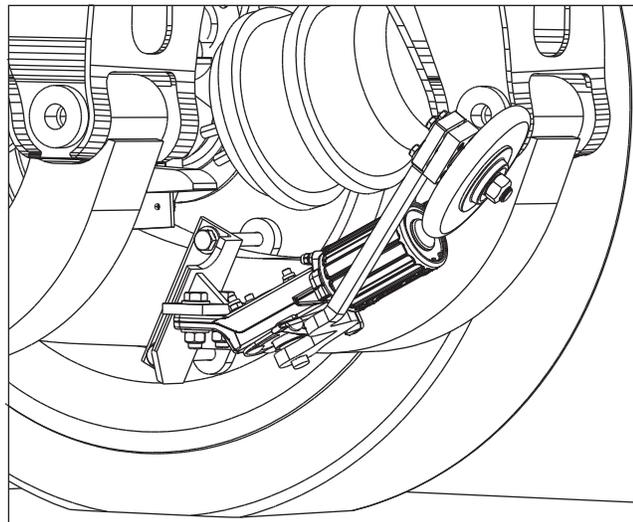
MODEL 016 CHAIN SET CONTENTS

- 1 - Driver side chain unit assembly
- 1 - Passenger side chain unit assembly
- 1 - Driver side chainwheel - red
- 1 - Passenger side chainwheel - blue
- 2 – 1202-131 mounting brackets (right and left) (6 3/8" hole pattern)
- 2 – 1203-131-A mounting bracket side plates
- 4 – Mounting bracket mounting capscrews, flat washers and grip nuts (5/8" NC X 7")
- 4 – Chain unit mounting capscrews w/grip nuts and flat washers (5/8" NC X 2 1/4")
- 1 – Clippard Valve
- 1 - Pressure protection valve
- 100' - Air hose
- 1 - Box air fittings

MODEL 016 MOUNTING INSTRUCTIONS

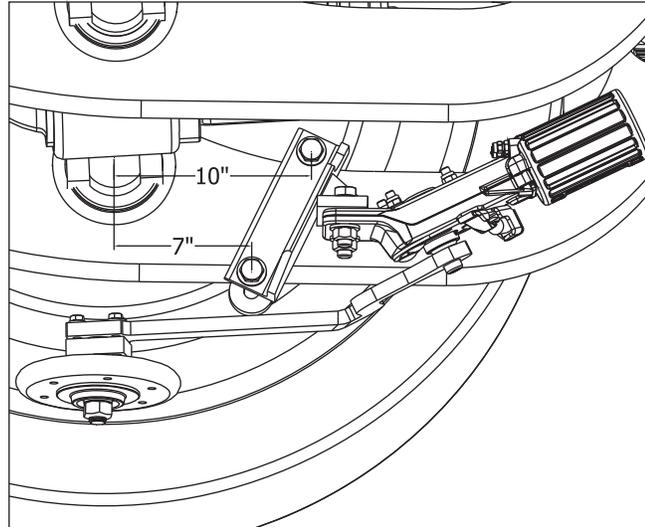
- ❑ Lay out material in kit and compare with content list
- ❑ Measure truck to ensure kit will fit. Take ALL measurements 11" FORWARD of axle face.

Item to Measure	Actual	Target
Ground to beam:		7.5"
Tire Sidewall to beam:		4.5"
Height of beam		4.5"
Width of beam		4.75"
Inside dimension Beam to beam		31"

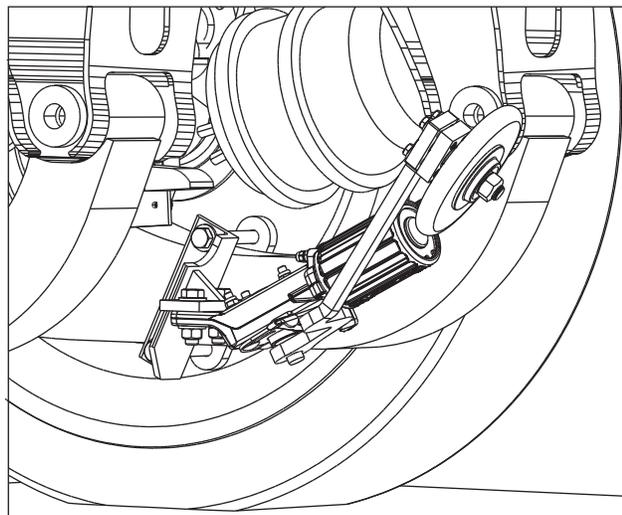


- ❑ Install mounting brackets on beam
 - NOTE:** The chain units mount **FORWARD** of the axle
 - NOTE:** Use flat washers on all mounting surfaces
 - a. Place 2 – 7" long cap screws through the bracket
 - b. Place the mounting bracket up against the differential side of the beam.
 - c. Slide the side plate over the cap screws. Fasten using flat washers and 5/8" grip nuts. Tighten but do not torque at this time.
- ❑ Adjust mounting bracket.
 - a. The mounting bracket mounts at 65 degree angle relative to the ground with the top cap screw angled toward the front. Chain Unit mounting surface will be level.
 - b. The top cap screw should be approx. 10" from the suspension center pivot. The bottom cap screw should be approx. 7" from the center pivot.

QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com

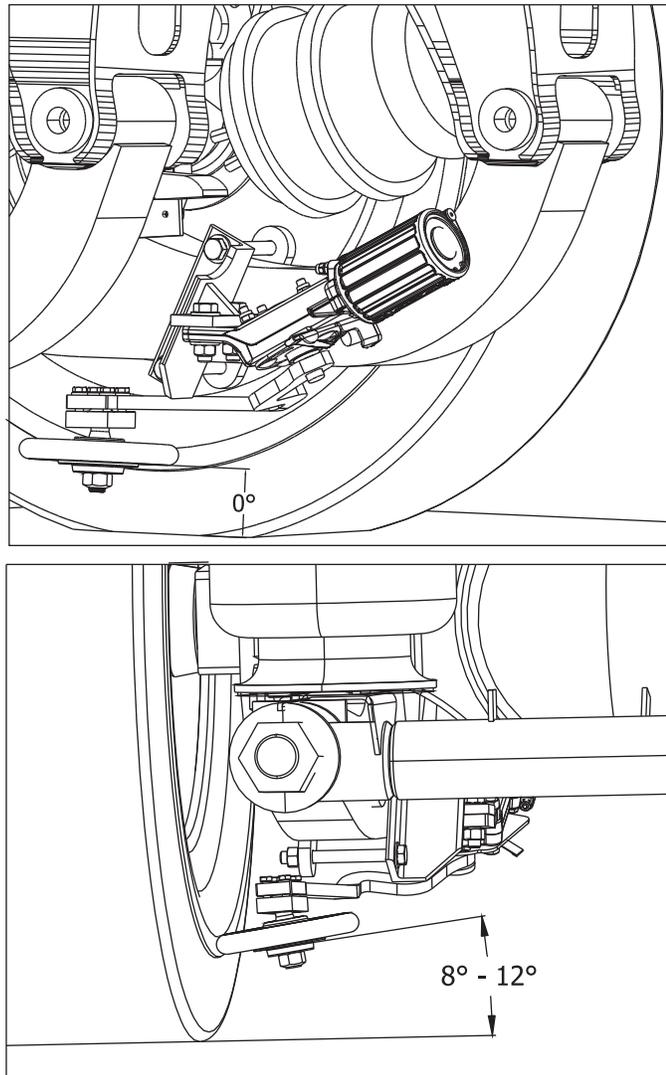


- ❑ Install the chain units on the mounting brackets
 - a. Install the chain units on the bottom of the mounting bracket using the 2 1/4" cap screws, flat washers, and grip nuts.
 - b. Torque the chain unit cap screws the 125 Ft.lbs.



- ❑ Install chainwheels and check angles
 - a. Install the chainwheels on the chainwheel bolts (red is driver's blue is passenger side)
Place the spacer and nut **BELOW** the chainwheel. Tighten but do not torque at this time.
 - b. Find and mark tire centerline. We recommend the dripline method.
 - c. Check chainwheel contact. Slide the mounting bracket forward or backward on the beam until the chainwheel hits the tire centerline.

QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com



- d. Adjust the operating angle and pitch of the chainwheel. See diagrams above. Refer to the Adjustable Chainwheel Instructions to tighten retainer cap screws once angles are obtained.
 - e. Move the swing arm through its arc. Be sure it does not hit anything.
 - f. The chainwheel nuts get torqued to 125 Ft.lbs.
- Air Plumbing (See Illustration)
- a. Plumb an airline from the dash switch port marked “4” to a tee fitting on the frame rail, then from each side of the tee to the outside chain unit fittings. (Marked “A”)
 - b. Plumb an airline from the dash switch port marked “2” to a tee on the frame rail, then from each side of the tee to the inside chain unit fittings. (Marked “B”)
 - c. The air source will enter the switch in the port marked “1”.

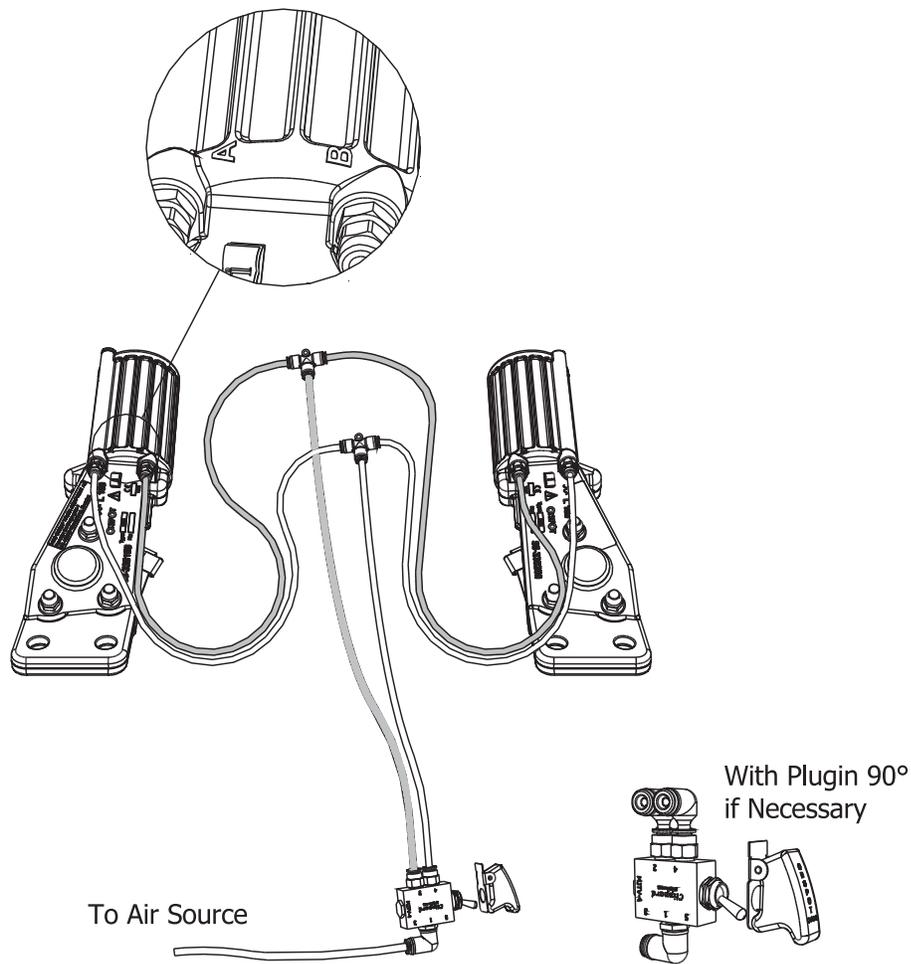
QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com



AUTOMATIC TIRE CHAINS

MODEL 016 MOUNTING INSTRUCTIONS

- ❑ Install the dashboard switch
 - a. Find a location in the dash to mount the switch. Included are two 90° connectors that plug into the straight fittings. (See Illustration)
 - b. The switch in the illustration is in the OFF position.
 - c. Install the safety cover on the switch.
- ❑ Check chain unit operation
 - a. Road test the vehicle and operate the chain system per the dashboard instructions, in forward and reverse.
 - b. Ensure the truck has full air pressure.
 - c. Ensure NO ONE is in the way of the chain units.
 - d. Turn the ignition switch on.
 - e. Turn the dash switch on. The chain wheels should lower and contact the tires. Check the chain wheel sidewall pressure with a fish scale. It should be at least 20 lbs.



QUESTIONS? 1-800-224-2467 **ADDITIONAL INFORMATION:** www.onspot.com



DEALER NOTES

QUESTIONS? 1-800-224-2467 ADDITIONAL INFORMATION: www.onspot.com

