Bike Trailer, 12 or 16
Operation and Maintenance

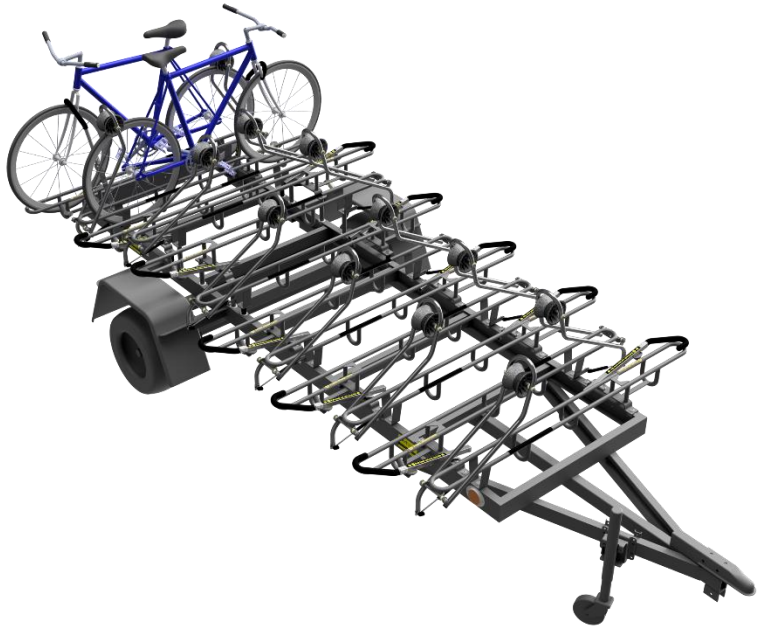

Figure 1 - 100470 - 12-bike trailer

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SCOPE OF THIS DOCUMENT

This document applies to the standard 12 or 16 position Sportworks Bicycle Trailer. P/Ns:
12-bike trailer: 100470
16-bike trailer: 100608

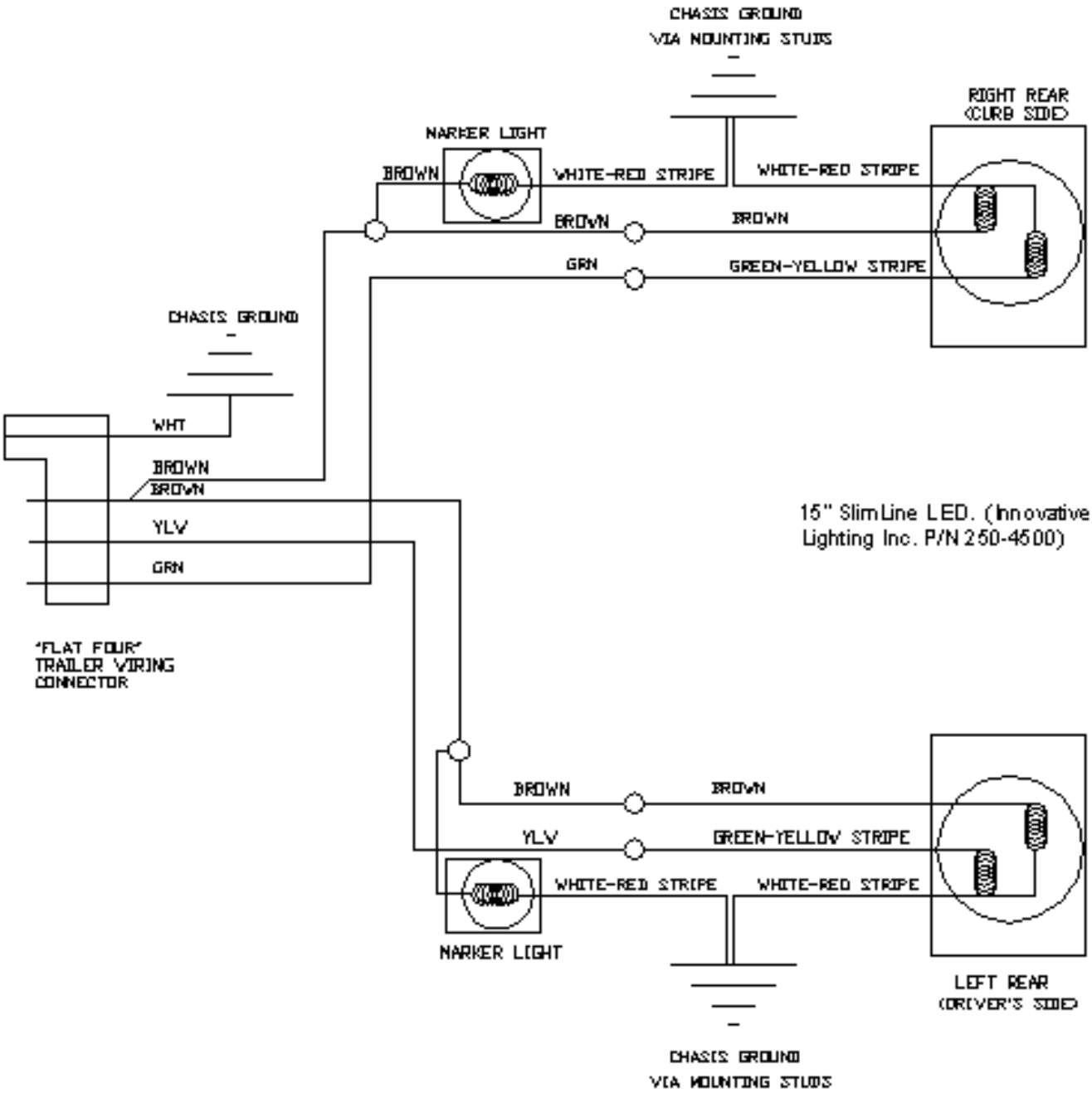
SPECIFICATIONS

DOT Specifications

1. The trailer is WA State and Federal D.O.T. compliant. (Consult your state D.O.T. for local requirements).
2. The trailer is outfitted with specially designed Sportworks' Bike Trays using our patented front wheel hook plus a unique rear wheel retention that does not require any attention from the user.
3. Bike racks are spaced at 12" centerline increments, with adjacent bicycles offset and pointed towards opposite sides of the trailer. This arrangement minimizes the size of the trailer while maximizing the ease of user access. NOTE: bicycles will be loaded from both sides of the trailer, so loading areas safe from traffic must be provided.
4. Two trailer sizes are available: 100470 is a 12-bike trailer, 100608 is a 16-bike trailer.
5. The 16 bike trailer measures 234"long and 78"wide unloaded. The 12 Bike Trailer measures 186" Long and 78" wide unloaded. Loaded with bikes both trailers can be up to 6" longer and 82" wide depending on handlebar width and tire size of the bikes.
6. The load height is approximately 28" to 32". This is how high a bike must be lifted to load into the rack. Load height will vary depending on load, trailer tire pressure, and hitch ball height.
7. The Bike Trays are Stainless Steel Tubing with black powder coated finish, All fasteners and exposed or moving parts on the Racks are either stainless steel or plated with high grade yellow zinc-dichromate.
8. The Trailer frame is constructed of heavy-duty structural steel channels and tubing. After being sandblasted, the frame is finished with three layers of paint: A Zinc Clad II primer, followed by Recoatable Epoxy, then Acrolon polyurethane, providing a very durable surface.
9. Gross Vehicle Weight Rating is 2,000 lbs for both Trailers. Your vehicle and hitch must be rated to tow this GVW. Trailers will attach to any vehicle offering a 2" ball. We recommend using a hitch rated Class III or higher. Optimum ball elevation is 18". No trailer brake connection is required.
10. Trailers are equipped with a wheeled tongue jack rated to 800 lbs.
11. The Trailer employs an independent suspension axle with EZ-lube spindles. Low profile tires and fenders are standard and do not inhibit bike loading.

Electrical Schematic

The Trailer lighting system is connected to the towing vehicle via a common “Flat 4” connector. Brake, tail, and running lights are standard. Reflectors are attached on sides and rear for increased visibility. See Figure below for an Electrical Schematic.



General Torque Specs

The Bicycle Trays are attached to the Trailer with ½-13 Stainless Steel Machine Screws. The Tray Sub-Assemblies use 5/16 and ¼ diameter Stainless Steel Screws.

Recommended torque values:

- ½-13 18-8 SS – 40-45 FT-LB
- 5/16-18 18-8 SS – 125-135 IN-LB
- ¼-20 18-8 SS – 65-75 IN-LB

USING THE TRAILER

Towing

1. The trailers are shipped in accordance with Washington state Department of Transportation (D.O.T.) requirements. Consult your state D.O.T. for local requirements.

2. Gross Vehicle Weight Rating is 2,000 lbs. Your vehicle and hitch must be rated to tow this GVW. Trailers will attach to any vehicle offering a 2" ball. We recommend using a hitch rated Class III or higher. Tongue jack is rated at 800 lbs. In use you might expect the trailer to weigh as much as 2,000 lbs. fully loaded with large bicycles, with a corresponding tongue weight of as much as 400 lbs.

3. The 12 VDC trailer lighting system is connected to the towing vehicle via a common "Flat 4" connector for brake and taillights. This plug supplies a Ground; bilateral Taillights; Left Turn / Brake; Right Turn / Brake to the dual element lamps. NOTE: if your towing vehicle's Brake Lights bulbs are separate from the Turn Signal bulbs, your vehicle may require a signal splitting device. Your towing vehicle can be fitted with connectors and splitters at any trailer hitch installation center.
4. The safety chains must be connected to vehicle. Chains should cross under the tongue.

Driving Caution and Instructions

1. These trailers will carry 12-16 bicycles. They are designed to carry only pedal powered bicycles. No other equipment should be transported on these trailers.
2. **Caution:** People are not to ride on these trailers. Failure to comply may result in injury or death.
3. **Caution:** These trailers do not employ brakes. Allow extra following room to provide for longer stopping distances. Use extra care stopping on wet surfaces, especially going downhill.
4. **Caution:** The trailer will follow a tighter circle than the towing vehicle when executing turns and may collide with objects that the towing vehicle clears. Damage to persons or property may occur as well as damage to the trailer components or cargo.

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Steps for Loading Bikes

1. Both Trailers will carry 16” to 29” standard bicycles with tire widths up to 2.75”. Prepare your bike for loading. Remove water bottles, pumps, panniers, bags, and other loose items that could fall off while the transit vehicle is in motion.

2. Ensure that the transit operator knows you are loading your bike.

3. Trays must be loaded from the front end, the end with the Front Wheel Support Arm Hook. Lift your bike and place the rear wheel into the tray. Roll it backwards until the front wheel drops into the front wheel section. Extend and raise the Support Arm Hook up and over the front tire and place it was close to the head tube as is possible. See Schematic at the end of this section.

   The Support Arm Hook must be between the highest point of the tire and the head tube. Incorrect Support Arm Hook placement may result in the bike falling from the rack, potentially damaging the transit vehicle or other vehicles. Place the Support Arm Hook over fenders as required to achieve the correct hook position. Some bike accessories such as front racks and baskets with vertical support stays may preclude correct hook placement. Bikes with accessories that conflict with correct support arm placement must not be loaded onto the rack.

4. Walk around to the opposite side of the trailer to deploy the rear wheel strap. Pull to extend the strap, raise it up and over the rear tire. The strap must go past the highest part of the rear tire. If your bike has a rear rack the strap can go up and over the rear rack.

Steps for Unloading Bikes

1. Ensure that the transit operator has fully stopped and is aware that you are unloading your bike.

2. Extend and rotate the Front Wheel Support Arm forward over the front tire. When it is almost horizontal it will self-stow. Lift/roll your bike front wheel out of the front wheel section, roll your bike forward and lift it to remove it from the tray.

3. Step away from the trailer.

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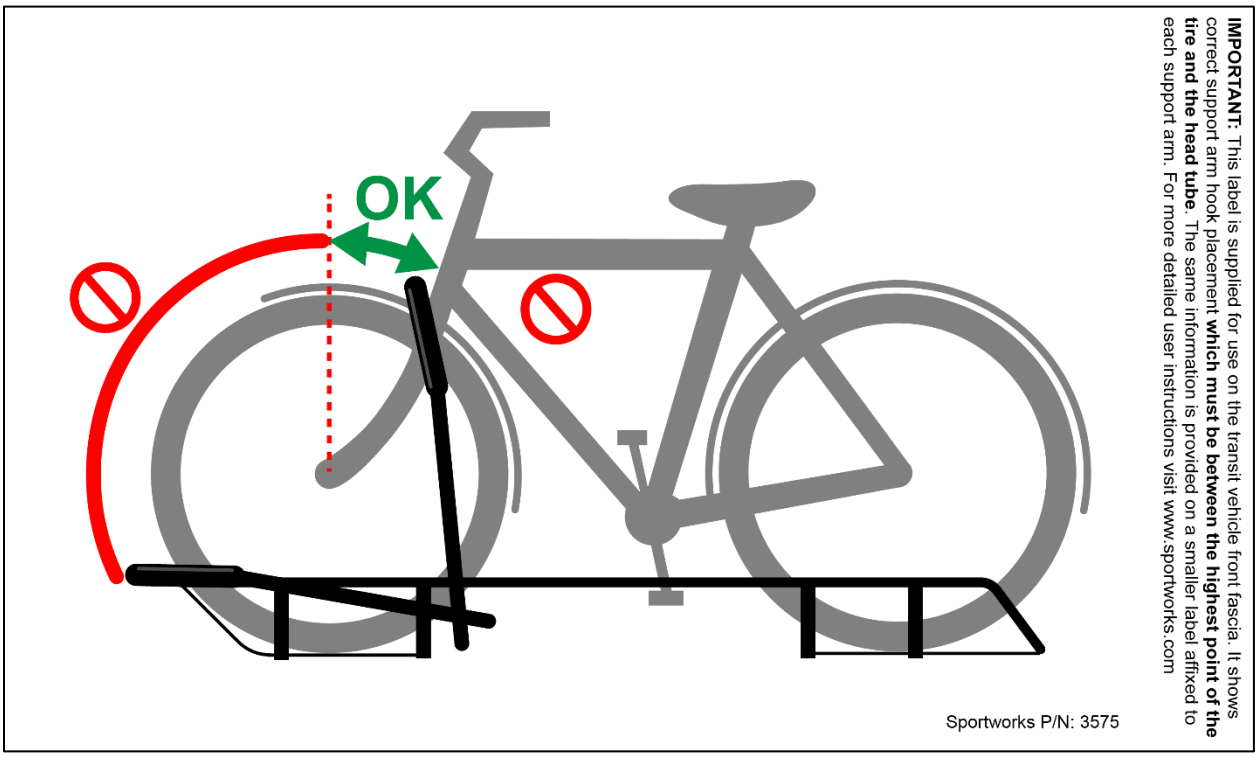

VISUAL INSPECTION

Visual Inspection Checklist

Sportworks recommends the following quick visual inspection to ensure an operable bike rack. Use this page as an inspection sheet for your transit operators.

Examine the items below before operating your coach. If the bike rack does not function properly, service it before putting it into operation.

1. _____√ TRAY ATTACHMENT BOLTS ARE TIGHT
   Tighten if required.

2. _____√ CLEVIS PINS AND SPLIT RINGS ARE PRESENT
   SECURE ARMS TO TRAY
   Replace missing parts.

3. _____√ SUPPORT ARMS SLIDE IN/ OUT (3 PLACES)
   Hooks move smoothly in/out and self-stow on magnet.
   DO NOT LUBRICATE.

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4. _____√ SUPPORT ARM SIDE PLAY NOT EXCESSIVE (3 PLACES)
Verify that the Support Arm side to side play is less than 1.5" (measured at the hook with the support arm retracted, but not resting on the magnet). Possible Causes: Broken or bent support arm bracket. Missing, bent, worn or broken hinge clevis pin, ensure clevis pin is held in place with hair pin clip. Bent or broken support arm spar. Worn or missing bushings in the support arm housing.

5. _____√ REAR WHEEL STRAP IS UNDAMAGED
Give the strap a pull to ensure that the bungee cord is functional

MAINTENANCE

1. **Washing** - regular washing will enhance both the appearance of your trailer as well as keep the moving parts free of debris. We recommend spray or hand washing instead of automated washing systems due to possible interference with the brush rollers.

2. Lubrication points

a. Front Wheel Support Arms - Occasionally wipe the telescoping hook arms with silicon spray. At the same time, apply a light oil to all arm hinge joints.

b. Axle Wheel Bearings - Your axles are equipped with EZ lube fittings accessed directly through the rubber cover at the center of the hubs. Inject grease with a "flush" type (conical or needle) grease coupler. Use a No. 2 Lithium grease (or comparable) every 10,000 miles or twice per year.

c. Axle Torsion Arms - Do not require lubrication or maintenance.

3. Tires & Wheels

a. Tires - 6 ply Nylon cord, Load range E, 20.5 x 8.0 on 10 x 6 rims.

b. Tire Wear and Pressure - Check the tire air pressure daily. Adjust tire air pressure for smooth ride and to provide even tire wear across the face of the tire. Do not inflate tires to more than 90 psi.

c. Wheel Spacers - Spacers may be used to provide clearance between the tires and the spindle arms. These 5/16" spacer plates must be used when remounting wheels.

4. Electrical

a. Vehicle connection - See the "Towing" section of this manual.

b. Lamps - CE 115 12 VDC Dual Element or 15" SlimLine LED. (Innovative Lighting Inc. P/N 250-4500)

c. Troubleshooting - See electrical schematic, enclosed. Most lighting problems can be traced to either bad bulbs or faulty grounding connections. The lighting system is a "chassis ground" type, which uses the trailer frame as a ground conductor. The lamps ground to the frame through the lamp housing mounting screws. The Flat 4 plug ground connects to the frame through the white wire attached on the trailer tongue.

30 Day General Maintenance Inspection & Service

Check every 30 days to ensure that:

1. Each support arm hinge allows the support arm to raise and lower without undue constraint. Inspect Support Arm Clevis Pin located at the lower end of the Support Arm. Inspect for wear in the area that the pin contacts the square Support Arm Housing and near the Split Ring. If wear is evident replace pin, washers and the split ring. See section on servicing the support arm for further detail.

2. Each support arm gas spring provides self-stowing and rear arm bias when it is in deployed position.

3. Each support arm hook pulls out smoothly, easily slides back into the stored position. If resistance is encountered, see section on servicing the support arm for further detail.

4. Verify that the Support Arm side to side play is less than 1.0" (measured at the hook with the support arm retracted. Possible Causes: Broken or bent support arm bracket. Missing, bent, worn or broken hinge clevis pin, ensure clevis pin is held in place with hair pin clip. Bent or broken support arm spar. Worn or missing bushings in the support arm housing.

5. All fasteners are tight attaching the bicycle tray to the trailer frame.

6. The instruction labels on the bicycle tray and support arm are intact. Replace if shredded, partially removed, non-readable, or not adhering properly. Clean the rack surface thoroughly (isopropyl alcohol) before replacing. Pay attention to the chain guard sticker.

7. If surface rust develops on stainless steel use naval jelly to remove.

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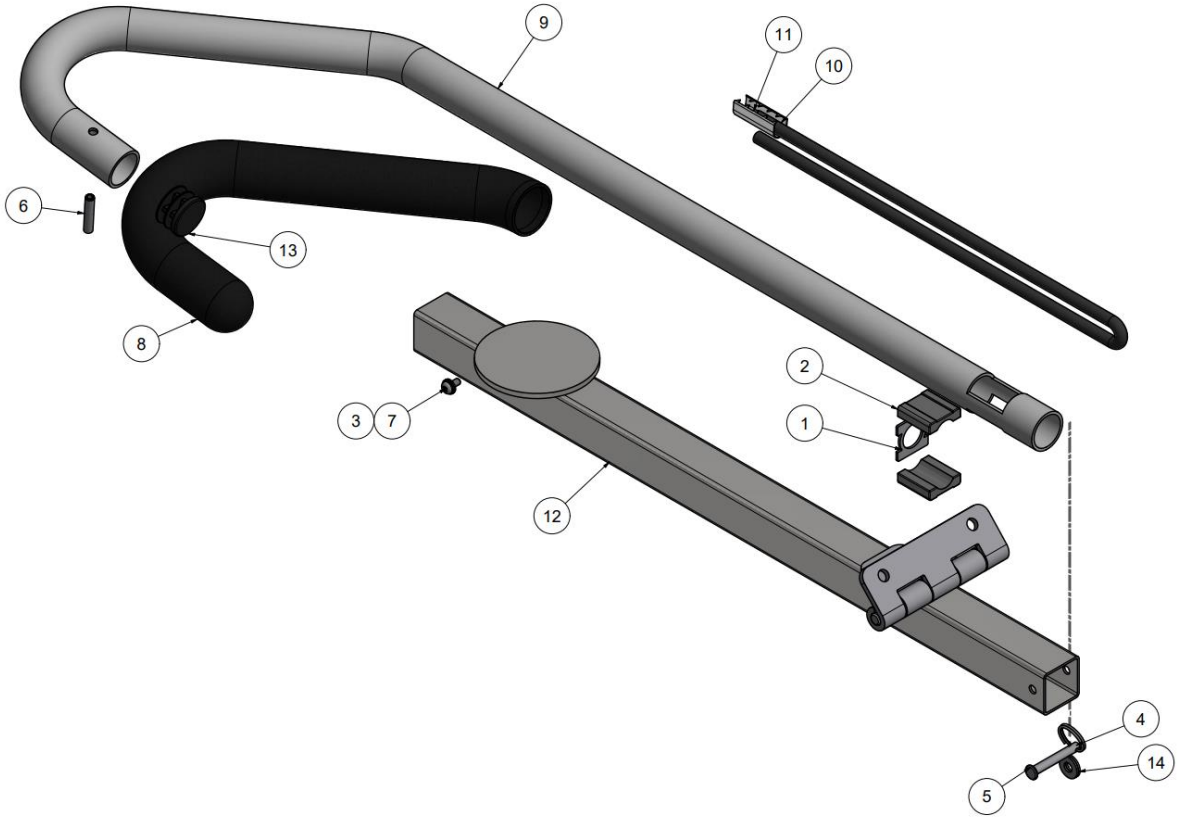
Servicing the Apex Support Arm

Contact Sportworks Sales and Support for replacement P/Ns.



ITEM	QTY	TITLE
1	1	STOP PLATE
2	2	ACETAL SLIDER PIECE
3	2	WASHER. NYLON, .312 OD X .156 ID X .031
4	1	RING, SPLIT, .670 O.D. X .051 WIRE DIA, SS
5	1	PIN, CLEVIS, 3/16 X 1 1/4 SS
6	1	PIN, ROLL, .1875 x 1, 18-8 Stainless, Import
7	1	PHCS, 6-32 X 5/16, SS
8	1	GRIP, Molded, .815 ID x 11 in long, dip molded vinyl
9	1	Support Arm Hook, Trailer
10	1	Shock Cord, 1/4 dia., Nylon, Black Cold
11	1	Channel Clip, Plated,(shock cord splice)
12	1	BRFB Arm Housing Weldment, 430 Stainless Washer, Bead Blast
13	1	PLUG, Tube End, Flat End, Black, for 7/8 in. tube
14	2	WASHER, FLAT, #10, SAE, Stainless, Import

1. Examine the components inside of the support arm.

    a. Remove the split ring (4) from the clevis pin (5) at the bottom of the support arm housing. Remove the clevis pin.

    b. Loosen the stop screw (7) and remove the Support Arm Hook (9) from the housing (12).

    c. Examine the Acetal Slider pieces (2) and stop plate (1) for wear and replace if necessary.

    d. Clean the inside of the stainless-steel support arm housing (1) using a stainless-steel brush. Do not use a non-stainless wire brush.

    e. Re-assemble the support arm in the reverse order of steps a-b. Use needle nose vise-grips similar tool to pull the shock cord (10) into position when re-inserting the clevis pin (5) through the base of the support arm housing and the end hook of the spring.

    f. Check the operation of the support arm once again. Each support arm hook should pull out smoothly, easily slide back into the stored position, and properly self-stow on the magnet when it is released.

2. Replace the spar tube if it is bent. The arm may bind if bent. DO NOT LUBRICATE.

3. Examine the support arm pivot. Check clevis pin for wear. Replace if damaged or worn.

4. Examine the rubber grip. Replace it if ripped, gouged, or bent.

UNLOADING FROM CARRIER'S BOX-TRAILER

1. Your trailer frames are stacked upon each other.

2. Do **not** maneuver or remove the stacked trailers using the bottom trailer's tongue jack. Damage to the jack may occur. This jack is rated for an 800 lb. load – more than enough for one trailer, but not for all three and certainly not suitable for the side loading incurred in crossing a dock board while exiting the truck trailer.

3. Use a tow vehicle to unload these trailers and move them around your lot while stacked.

4. The bottom trailer is blocked up to prevent excessive loading of its suspension while in transit. To remove this blocking, lift the front end of the bottom trailer using the ball hitch adapter. Raise it far enough to remove the front block. Then lower the front end of the trailer to remove the rear block. Once the tire chocks are removed, the stacked trailers may be towed out of the carrier's van.

5. Use a forklift to un-stack the trailers. Use care to protect the paint. Remove the padded wooden spacers by pushing one end of the spacer towards the front or back of the trailer until it can be lifted out. No unbolting is required.

6. The trailers have been partially assembled for shipping. Axles, wheels, tongue jack, and Bike Rack Trays may need to be assembled prior to use. Please refer to this manual and to the Bike Rack Tray Manual for assembly instructions.

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