



Item 85175

# Timber Trailer

## Owner's Manual



**⚠ WARNING**

This trailer is intended for OFF ROAD use ONLY. It is **NOT** intended for use on public roads or highways. Always using an approved helmet and protective gear **COULD SAVE YOUR LIFE!**

Federal, state, provincial, and municipal governments have different regulations pertaining to operating off road vehicles. Learn and follow the regulations in your area.



**⚠ WARNING**





**READ AND UNDERSTAND THIS INSTRUCTION MANUAL PRIOR TO USING THIS PRODUCT. FAILURE TO DO SO MAY RESULT IN SERIOUS INJURY OR DEATH.**

Keep this instruction manual for future reference.

This instruction manual is intended for your benefit. Please read and follow the safety, installation, maintenance and troubleshooting steps described within to ensure your safety and satisfaction. The contents of this instruction manual are based upon the latest product information available at the time of publication. The manufacturer reserves the right to make product changes at any time without notice.
















The safety instructions provided in this manual are not intended to cover all possible conditions and practices that may occur when operating, maintaining and cleaning power equipment.

Always use common sense and pay particular attention to all the DANGER, WARNING, CAUTION and NOTICE statements in this manual.

<b>WARNING SYMBOLS AND DEFINITIONS</b>	
	This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.
 <b>DANGER</b>	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
 <b>WARNING</b>	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
 <b>CAUTION</b>	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
<b>NOTICE</b>	Addresses practices not related to personal injury.
<b>CAUTION</b>	

**Maintain labels.** Labels on this product, if applicable, carry important information. If unreadable or missing, contact Star-Asia USA, LLC for free replacement labels.

The label on your tool may include the following symbols. The symbols and their definition are as follows:

Symbol	Property or Statement	Symbol	Property or Statement
	Read and understand this instruction manual prior to using this product.		<b>MOVING OBJECT HAZARD.</b> Keep all people out of the path of moving equipment and logs when operating or loading.
	Wear ANSI approved (or applicable national standard) goggles or properly fitted protective glasses with top and side protection.		<b>CRUSH HAZARD.</b> NEVER allow bystanders, children, or pets to cross under or near an object being lifted.
	Use approved hearing protection such as ear plugs or ear muffs.		<b>PINCH POINT HAZARD.</b> Keep hands clear of pinch points.
	Use NIOSH approved dust mask or respirator.		<b>MOVING PARTS CAN CRUSH AND CUT</b> Keep away from moving parts and ensure all guards in place during operation.
	Wear anti-vibration safety gloves when operating.		<b>SKIN INJECTION HAZARD.</b> Protect hands and body from high pressure fluids.
	Wear foot protection.		<b>PRESSURIZED SYSTEM.</b> Shut off and relieve system pressure prior to maintenance.
	Do not stand or step on this surface.		<b>RISK OF FIRE.</b> Engine fuel and hydraulic fluids are combustible.
			<b>BURN HAZARD.</b> Hot surface, do not touch. Allow surface to cool prior to maintenance.

**INTENDED USE**

Designed to be used for OFF ROAD and farm applications, for use with ATVs and UTVs, the Timber Trailer is able to carry a maximum load of 4400 lbs (2000kg). The independent tandem trundle axles and a 360 degree pivoting hitch allow the trailer to be towed over rough terrain or obstacles and help to stabilize the trailer while loading and unloading. The hydraulic boom lift is powered by a 212cc, 7HP motor and swings from one side to another to make loading between the six rotating and removable stakes easy. The hydraulic control valves are lever operated to raise and lower the outrigger stabilizer legs, swing the boom from left to right, raise and lower the boom, extend and retract the boom, and to rotate, open, and close the grapple. The crane grapple may be used to lift items up to 330 lbs (150 kg) with the boom horizontal and 440 lbs (200kg) at its closest to the vertical support, and the maximum suggested length of logs is 12 ft.

## SPECIFICATIONS

Specification	Value	Specification	Value
Maximum Load	2000 kg (4400 lbs)	Hydraulic Sys. Oil Volume, Incl. Tank	12 L (12.7 Qt) ISO 32 (10W)
Trailer Weight (no load)	759 kg (1673 lbs)	Hydraulic Sys. Pressure	16 Mpa
Total Length	5370 mm (17 ft. 7 in.)	Hydraulic Sys. Pump Type	Gear Pump
Total Width	2590 mm (8 ft. 6 in.)	Hydraulic Sys. Pump Flow Rate	1.66 GPM @ 3000 RPM (2.1 mL/R)
Width @ bottom of stakes	768 mm (2 ft. 6 in.)	Engine Type	Single Cylinder, 4-Stroke, Air-Cooled, OHV
Width @ top of stakes	1168 mm (3 ft. 10 in.)	Engine Displacement	212 cc
Ground Clearance	445 mm (1 ft. 5-1/2 in.)	Engine Max RPM	3600 RPM
Tire Size	23 x 8.5-12	Engine Idle Speed	1800 RPM
Lifting Boom Min. Length	3050 mm (10 ft.)	Engine Theoretical Horsepower	7.5 HP
Lifting Boom Max. Length	3550 mm (11 ft. 8 in.)	Engine Fuel Type	87+ Octane Unleaded Gasoline
Max. Boom Lift Capacity @ Min. Length	220 kg (485 lbs.)	Engine Oil Capacity	0.6 Qt
Max. Boom Lift Capacity @ Max. Length	200 kg (400 lbs.)	Engine Oil Type	10W-30 @ >32°F / 5W-30 @<10°F
Max. Slewing Angle	+/- 90 deg	Engine Spark Plug	F7TC, F7RTC or equivalent
Gripping Claw Max Lift Capacity	220 kg (485 lbs.)	Engine Spark Plug Gap	0.7-0.8 mm
Gripping Claw Max Opening Size	710 mm (2 ft. 3 in.)	Engine Spark Plug Torque	18-22 N-m
Outrigger Stabilizers Max. Lift Height	1230 mm (4 ft.)		
Clearance between axles	712 mm (2 ft. 4 in.)		
Track Width	820 mm (2 ft. 8 in.)		

## UNPACKING & INSPECTION

When unpacking, please inspect the product carefully to ensure the product is intact and undamaged. If any parts are missing or broken, please call 1-800-386-0191 as soon as possible.



### WARNING

**Do not use this product if damaged during shipment, handling, or after misuse.**

Do not use the product until the parts have been replaced or the fault rectified. Failure to do so may result in serious personal injury or property damage.



### WARNING

**The trailer and its parts are heavy. It is recommended a minimum of two people are needed for unpacking, lifting, moving, and assembling.**

Follow proper lifting techniques at all times as recommended by the Occupational Safety and Health Administration.

Remove the parts and accessories from the packaging and inspect for damage. Make sure that all items in the contents are included.

**Package contents :** See Parts List

### WORK AREA SAFETY

- Assemble, adjust, and operate in a safe work environment. Keep your work area clean, well-lit and free of distractions. Place lights so you are not working in a shadow.
- Keep anyone not wearing appropriate safety equipment away from the work area.
- If working alone, always arrange to have someone check on you at pre-arranged, regular intervals.
- Do not allow children or pets in the work area, and do not allow children or pets on or near the equipment.
- Do not use in the presence of flammable gases, dust, or liquids.

### PERSONAL SAFETY

- Wear Personal Protective Equipment (PPE) approved by the American National Standards Institute (ANSI) or the Canadian Standards Association (CSA).
- Always wear impact safety goggles or eye wear that provide front and side protection for the eyes. Eye protection equipment should comply with ANSI Z87.1 or CSA Z94.3-07 standards based on the type of work performed.
- Wear hearing protection with an appropriate Noise Reduction Rating to withstand increased decibel levels when working near engines.
- Control the tool, personal movement and the work environment to avoid personal injury or damage to the equipment.
- Do not operate, adjust, or perform maintenance on any part of this trailer when tired or under the influence of drugs, alcohol, or medications.
- Wear protective clothing designed for the work environment and equipment.
- Avoid wearing clothes or jewelry that can become entangled when operating or working on the trailer. Keep long hair covered and bound.

- Wear gloves that provide protection based on the work materials.  
**Note:** Do not wear gloves when operating a tool that can snag the material and pull the hand into the tool.
- Do not overreach when using. Wear non-skid footwear to maintain proper footing and balance and to enable better control in unexpected situations.

- Keep fingers away from the pinch points around the trailer.
- The operator’s ability to safely operate this off-road equipment is largely dependent upon the operator’s ability to exercise proper judgment. The operator must be of sufficient age, understanding, mental capacity, and physical capability to safely operate this equipment. ALWAYS FOLLOW THE RECOMMENDED AGE RESTRICTION OF 16 YEARS FOR OPERATORS.

**SPECIFIC SAFETY PRECAUTIONS**

**! WARNING** DO NOT let comfort or familiarity with the product (gained from repeated use) replace strict adherence to the tool safety rules. If you use this tool unsafely or incorrectly, you may suffer serious personal injury.

- Use the correct tool for the job. This equipment was designed for a specific function. Do not modify or alter this equipment or use it for an unintended purpose.
- Do not use the trailer if any parts are damage broken or misplaced. Repair or replace the parts, as necessary.
- Do not use the trailer if it appears or sounds to be operating abnormally. Seek a qualified technician to repair and verify the trailer and its components are operating correctly before using.
- Assembly, maintenance, and/or repair of the trailer and its components should only be performed by persons of sufficient mechanical skill, experience, and judgment (such as outdoor equipment dealers, motorcycle dealer/shops, or power equipment repair shops) so that no unsafe condition or modification is made.
- Ensure the ATV or UTV power is OFF and the brakes are locked prior to hitching, loading, and unloading of the trailer to avoid unintentional movement.
- Slow down and be prepared to stop while towing.
- Loose clothing, long hair, or articles worn by an operator

- must be fully contained or covered to prevent being caught in any rotating parts.
- Wet, slippery, rough, or steep terrain is potentially dangerous and may result in injury if proper caution is not observed. Slow speeds are required to safely operate this trailer under these conditions. The operator must use mature judgment, skill, and experience to choose a speed suitable for terrain and riding conditions.
- Disconnect the trailer from the ATV or UTV and chock the wheels after each use and before servicing the trailer.
- Always extend and engage the stabilizers and landing jack prior to using the crane for greater stability.
- Operators under 18 years of age must always be appropriately supervised by an adult at all times while operating this equipment.
- Operation of this trailer requires skills acquired through practice over a period of time. Take time to learn the basic techniques well before operation of the trailer and any of its components.
- Operate only on safe and familiar terrain. Avoid steep inclines, and allow for extra braking distances, especially on wet surfaces.

**ENGINE SAFETY**

**! WARNING** Refer to the engine manual for important information regarding safety, operation, maintenance, and repair.

- **THE ENGINE IS NOT SHIPPED WITH OIL.** Add oil and check the oil level prior to each use.
- **Gasoline, its vapors, and oil used in the engine are EXTREMELY FLAMMABLE and can be EXPLOSIVE under certain conditions, creating the potential for serious injury or death if improperly handled.**
- **Never operate an engine with a fuel or oil leak.**
- **Never refuel the engine when it is hot.** Turn off the engine and allow it to cool before attempting to add oil or gasoline.
- **Do not fill the tank in a closed area such as a garage, while smoking, or near any source of flame or sparks; this includes any appliance with a pilot light.**
- **Replace cap tightly to prevent spillage of fuel and**

- potential fire hazard.**
- **Immediately clean any fuel or oil spills before starting the engine.**
- **Do not touch the engine.** The engine will become very hot during and after operation.
- **Use only regular unleaded gasoline with an octane rating of 90 or higher.** Using a lower rated fuel may result in poor performance and a shorter life span of the engine.
- **Fuel can damage paint and some types of plastic.** Be careful not to spill fuel when filling your fuel tank.
- **Never run the engine without the air filter in place.**
- **Operating the engine without the air filter in place will allow dust and debris to enter the engine resulting in severe engine damage.**
- **AVOID getting the air filter wet when in operation or while washing the vehicle.**
- **DO NOT use pressurized air to clean the air filter.**

**ASSEMBLY & INSTALLATION**

**! WARNING** **This is a complex and dangerous machine.** The trailer and its components can be dangerous when assembled incorrectly. If you do not feel completely comfortable assembling it, then seek the services of a qualified technician to assemble it.

The trailer comes mostly pre-assembled, however the main pieces will need to be assembled by the user or by a competent technician. Follow these steps to ensure proper assembly.

- Tools needed for assembly:**
- Metric open-end/box end wrench set
  - 18 in. Adj. Open End Wrench x 2
  - Socket driver and metric sockets
  - Grease Gun w/ Grease
  - Torque wrench up to 100 ft-lbs

**NUMBERS IN PARENTHESIS () REFER TO THE ITEM NUMBERS IN THE PARTS LIST.**

**Step 1: Open the shipping crate.** Remove the straps on the shipping crate and remove any covering.

**Step 2: Unpack the accessible items.** With the top removed carefully remove each piece in the crate and set them aside. Place similar items together to easily find them.

**WARNING** The trailer and its parts are heavy. It is recommended a minimum of two people are needed for unpacking, lifting, moving, and assembling. Follow proper lifting techniques at all times as recommended by the Occupational Safety and Health Administration.

**Step 3: Check that the parts in the crate are correct.** Check that parts match the items in the parts list and that the quantity is correct. If any parts are missing or broken, contact Star-Asia at 1-800-386-0191 as soon as possible.

**Step 4: Lay out the frame parts.** In a well-lit area with enough room to assemble and move the trailer around, set the Trailer Frame (144) onto the floor with the axle tangs facing upwards as shown in **Fig. 1**. NOTE: the front end (the end where the hitch is installed) of the trailer is the end with the two bosses with six M12 through holes.

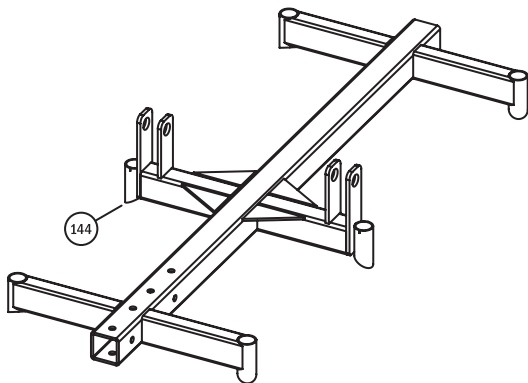


Fig. 1

**Step 5: Assemble the Tandem Trundle Axles.** The tapered wheel bearings (A and B in **Fig. 2**) are shipped on the Trundle Axle (1). Remove the Castle Nut (1), remove

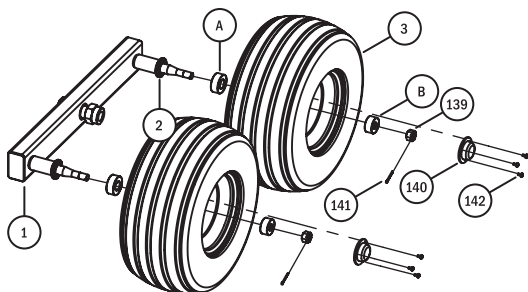


Fig. 2

the bearings. Clean and pack Bearing A with a high-quality, lithium-based grease designed for wheel bearings, then install the bearing onto the axle. Clean the bearing races that are pre-installed inside the wheel hub on the Wheel Assembly (3) and place the Wheel Assembly (3) onto the axle. Clean and pack Bearing B with grease, then install the bearing onto the axle. Check that there are no burrs on the Castle Nut (139), and carefully thread the nut onto the axle by hand. While rotating the wheel by hand, use a socket and socket driver to tighten the Castle Nut (139) until the wheel can no longer rotate. Back off the Castle Nut about 1/4 turn, or until the wheel can be rotated by hand with a slight amount of drag, then install the Cotter Pin (141) to prevent the Castle Nut (139) from loosening. Place the Wheel Bearing Dust Cover (140) on the wheel hub and secure in place using the Phillips Machine Head Screw (142). Note: some units may have a pressed in bearing dust cover. Press the bearing dust cover on by hand and use a rubber mallet to tap the cover into place until the dust cover is seated properly. On the rear of the wheel hub, press in the axle shaft Oil Seal (2) so that it is

flush with the bearing hub outer face. Repeat these steps for the other Tandem Trundle Axle (1).

**Step 6: Assemble the Tandem Trundle Axles (1) to the Trailer Frame.** Assemble the Tandem Trundle Axles from the previous step onto the Trailer Frame (144) as shown in **Fig. 3**. Although the Trundle Pivot Pin (4) can be installed with the threaded portion on either the inside or outside of the trailer, it is recommended they are installed with the threaded portion on the outside for the maximum clearance between the axles. Because the Tandem Trundle Axles (1) require free movement, the Nut (5) need only be tightened until it bottoms out on the Pivot Pin shoulder.

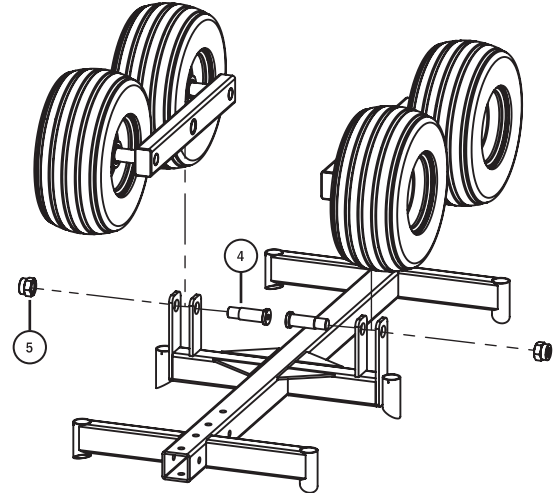


Fig. 3

**Step 7: Turn the Trailer Frame over.**



**PINCH POINT HAZARD.** When assembling, moving, and operating, keep limbs, hands, fingers, and clothing clear of all areas where it is possible to be caught between moving parts or between a moving part and a stationary one.

With the assistance of at least one other person, carefully turn the trailer frame over so it is resting on the tires as shown in **Fig. 4**.

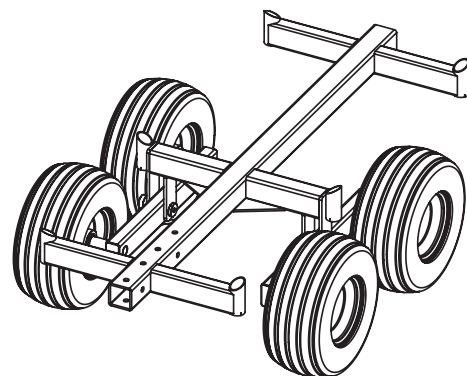


Fig. 4

**Step 8: Assemble the Tow Bar.** Assemble the Swivel Coupler (47) to the Tow Bar (143) using the Bolts (128 & 129), Washers (49 & 69), and Nuts (5 & 50). Torque the M12 Bolts (128) between 50 and 55 ft-lbs, and the M20 Bolt (129) between 240 and 260 ft-lbs. Insert the Tow Bar Assembly (143) into the Stabilizer Frame Base (41), as shown in **Fig. 5**, so that the through holes on the end of the Tow Bar Assembly (143) are not obstructed by the tube on the Stabilizer Frame Base (41), and preferably as close to the swivel coupler as possible. Do not tighten the clamping bolts.

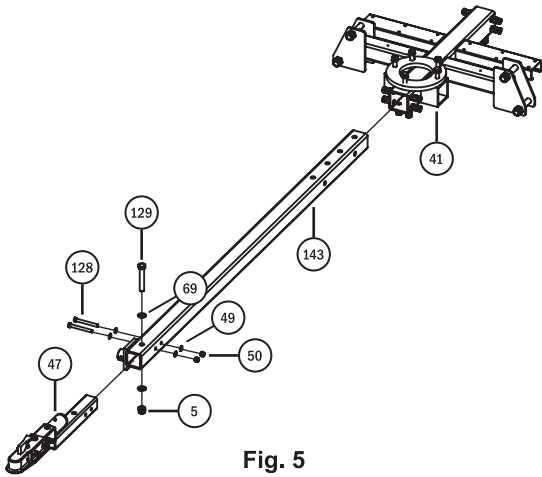


Fig. 5

**Step 9: Insert the Tow Bar into the Trailer Frame.**

Place the Tow Bar assembly near the front end of the Trailer Frame. With the Stabilizer Frame Base (41) close to the Swivel Coupler (47), lift on the end of the Tow Bar assembly while a second person tilts the Trailer Frame and begins to slowly move the Trailer Frame towards the Tow Bar Assembly. Guide the Tow Bar Assembly into the Trailer Frame, align the mounting holes, then install the six (top and side) Bolts (72), Washers (69), Lockwashers (70), and Nuts (71) as shown in Fig. 6. Tighten these fasteners between 240 and 260 ft-lbs.

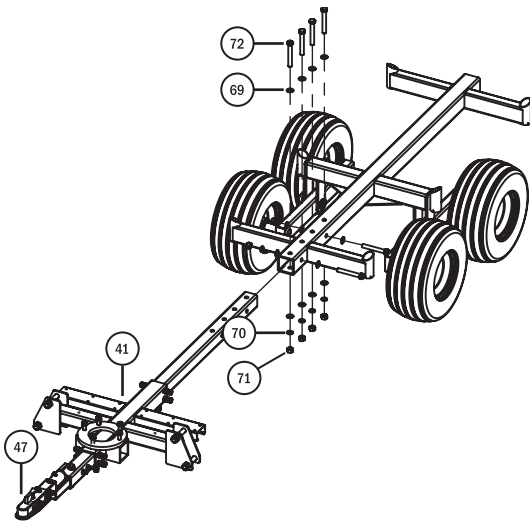


Fig. 6

**Step 10: Adjust the position of the Stabilizer Frame Base and install the Swivel Jack.**

Move the Stabilizer Frame Base (41) until it contacts the Trailer Frame as shown in Fig. 7. Secure it in place by first loosening the twelve Jamb Nuts (61), then tightening the twelve

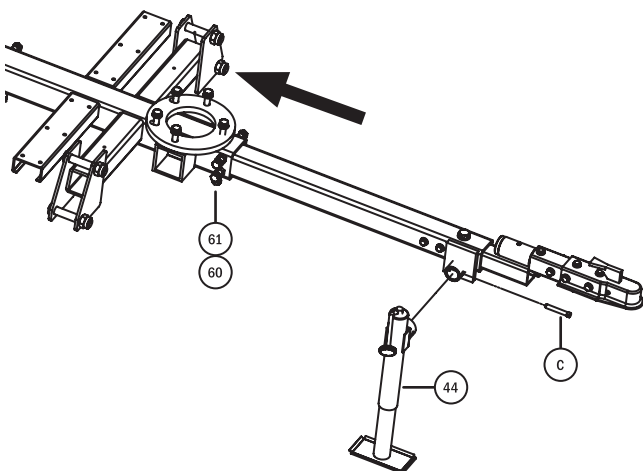


Fig. 7

Clamping Bolts (60) between 100 and 120 ft-lbs, and locking the bolts in place by tightening the twelve Jamb Nuts (61). Next, with someone pushing downward on the back of the Trailer Frame, lift the Tow Bar and install the Swivel Jack (44) in position and lock in place using the Swivel Jack Clevis (C in Fig 7).

**Step 11: Install the Vertical Boom Assembly.**

Remove the bolts and nuts used to mount the Vertical Boom Assembly (40) to the Stabilizer Frame Base (41). As shown in Fig. 8, and with the help of a second person or using a lifting device, place the Vertical Boom Assembly (40) onto the Stabilizer Frame Base. Align the holes and reinstall the Bolts (67 & 68), Flat Washers (66), Lock Washers (66), and Nuts (61), then tighten the fasteners between 120 and 135 ft-lbs.

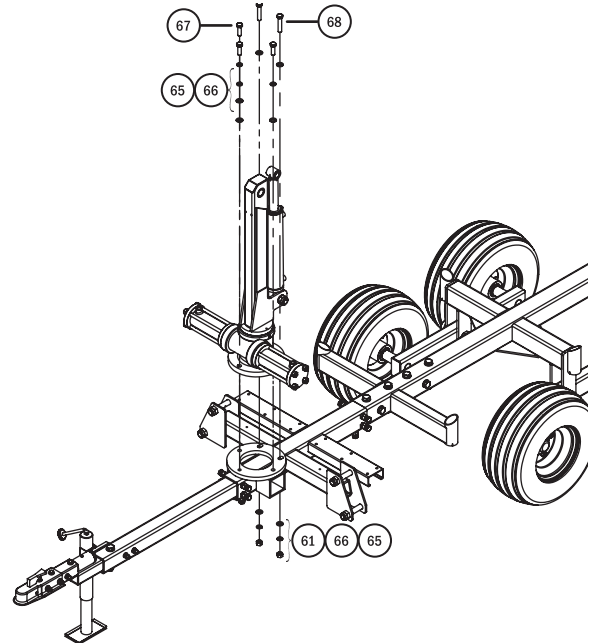


Fig. 8

**Step 12: Install the Boom Arm.**

**CAUTION** The hydraulic system is tested at the factory and there may be residual oil in the cylinders. When moving or unfolding the boom arm, oil may leak from the unconnected

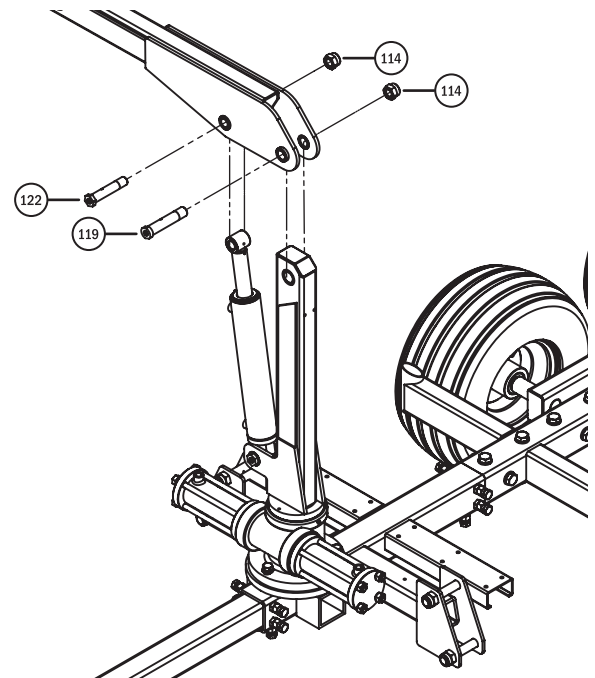


Fig. 9

**hoses.** Use a plastic trash bag and zip tie or duct tape to prevent oil from leaking onto the floor by tying or taping the bag to the end of the hoses.

**⚠ WARNING** The Boom Arm is heavy and flexible. It is recommended a minimum of two people are needed for lifting, moving, and assembling. Use of a mechanical lifting device such as a crane or hoist is recommended. When lifting, follow proper lifting techniques at all times as recommended by the Occupational Safety and Health Administration. Place the Boom Arm Assembly onto the Vertical Boom Assembly as shown in **Fig. 9** using the Pivot Pins (119 & 122) and Nuts (114). Because the Boom Arm Assembly requires free movement, the Nuts (114) need only be tightened until it bottoms out on each Pivot Pin (119 & 122) shoulder.

**Step 13: Install the Safety Cage.** Place the safety cage onto the Stabilizer Frame Base and attach it using the 12 Bolts (64), Flat Washers (62), and Locknuts (64) as shown in **Fig. 10**. Tighten the fasteners to between 170 and 190 in-lbs.

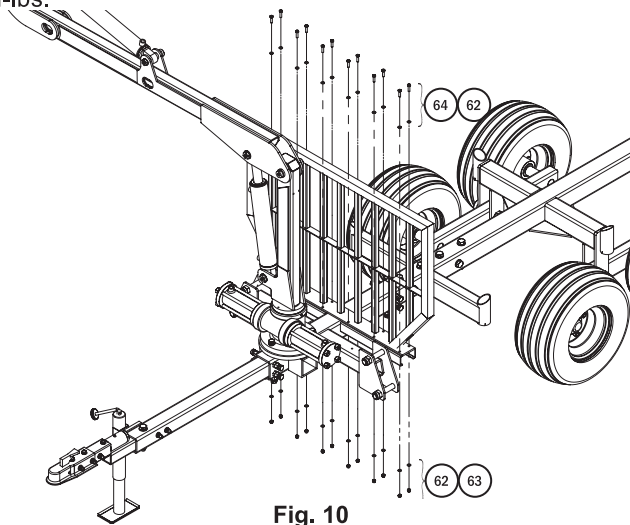


Fig. 10

**Step 14: Install the Stabilizer Support Legs.** Install one Stabilizer Support Leg (E, **Fig. 11**) by removing the lower Pivot Pin (115) and Nut (114), align the holes between the leg and Stabilizer Frame Base and insert the Pivot Pin (115). Because the Stabilizer Support Leg requires free movement, the Nut (114) need only be tightened until it bottoms out on the Pivot Pin (115). Let the Stabilizer Support Leg (E) rest on the ground. The upper Pivot Pin (116) should be installed later, after the hydraulic hoses are connected, to prevent oil from leaking from the cylinder.

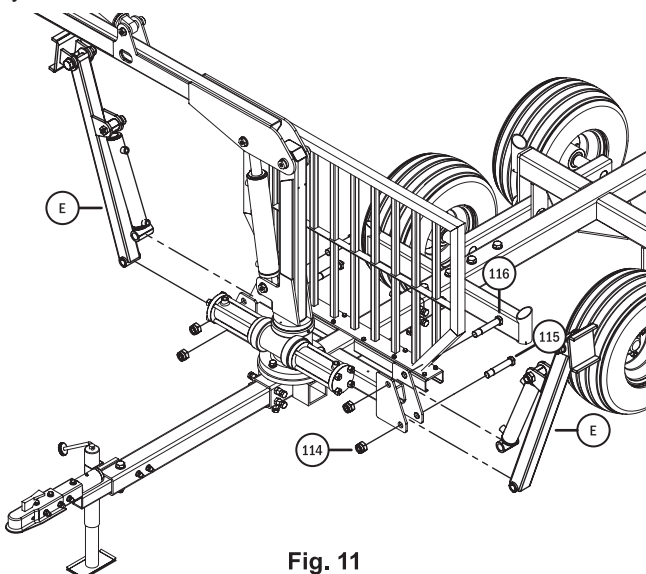


Fig. 11

**Step 15: Install the Engine Assembly.** With the help of another person, place the Engine Assembly (F, **Fig. 12**) onto the tow bar just in front of the Stabilizer Frame Base. Use the two Engine Tray U-Brackets (43), to attach the Engine Assembly (F), to the tow bar using the Bolts (110), Flatwashers (49), Lockwashers (111), and Nuts (82). Tighten the fasteners until the lockwashers are compressed since over-tightening may bend the U-brackets.

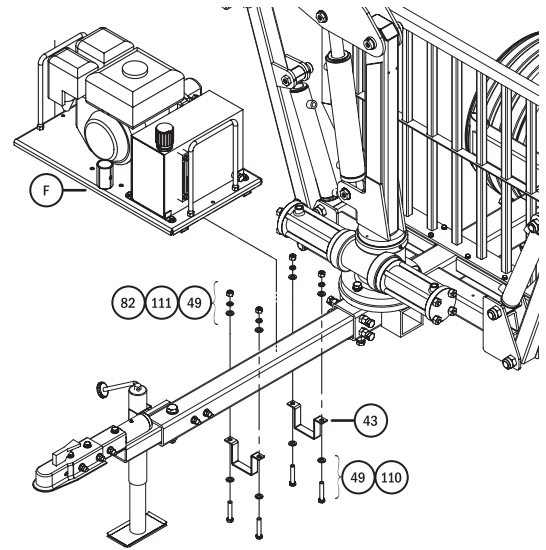


Fig. 12

**Step 16: Install the hydraulic Control Assembly.**

Insert the Control Support Rod (84) into the socket on the engine tray and secure the tube by installing the Bolt (98), Washers (96), and Locknut (99). Tighten the fastener between 28 and 32 ft-lbs. Insert the Control Assembly (G, **Fig. 13**) into the Control Support Rod (84) to your desired height, then secure in place by installing the Locking Knob (90) and tightening by hand.

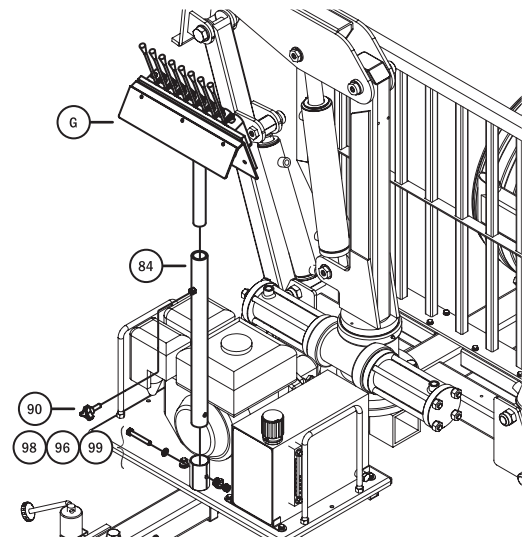


Fig. 13

**Step 17: Attach the Gripper Assembly and its hoses.**

Attach the Gripper Assembly (H, **Fig. 14**) by removing the Pivot Pin (123) from the end of the Boom Arm Assembly. Check that the direction of the hose connectors on the Gripper are orientated so the hoses on the Boom Arm can be connected, then align the holes between the Gripper joint and the Boom Arm. Insert the Pivot Pin (123) and install the Nut (114). Because the Gripper joint requires free movement, the Nut (114) need only be tightened until it bottoms out on the Pivot Pin (123). Each hose on the Boom Arm is marked with a label that corresponds to its connection point on the Gripper (Refer to the Hydraulic Schematic, if necessary). Match the label on each hose to its connection point and attach the hose. While tightening

the connection, move the hose to ensure the taper fitting seats properly.

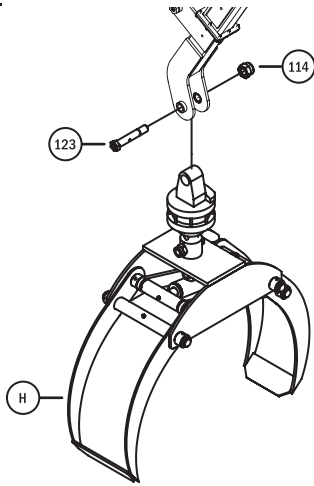


Fig. 14

**Step 18: Connect the Hydraulic Hoses from the Control Assembly and from the Boom Arm.** Each hose on the Control Assembly and Boom Arm is marked with a label that corresponds to its connection point (Refer to the Hydraulic Schematic, if necessary). Match the label on each hose to its connection point and attach the hose. While tightening the connection, move or shake the hose to ensure the taper fitting seats properly. CHECK TO ENSURE THE GRIPPER ASSEMBLY HOSES ARE CONNECTED.

**NOTICE** ONCE THE HOSES ARE CONNECTED TO THE CONTROL ASSEMBLY, THE LEVERS WILL NEED TO BE OPERATED TO MOVE ANY CYLINDER BY HAND (without the engine running). For example, if you now want to swing the boom around, without the engine running, have someone operate the lever to swing the boom while pushing on the end of the boom by hand. If the boom does not move with the lever in one direction, operate the lever in the opposite direction and try again.

**WARNING** Use care when operating the levers and moving the cylinders by hand, without the engine running. Operating the levers will release pressure in the hydraulic system, and

the weight of the item that a cylinder is supporting will cause the item to fall. KEEP ALL BYSTANDERS CLEAR and only operate a lever with very slight and gradual movement.

**Step 19: Install the Upper Pivot Pin on the Stabilizer Support Legs.** The upper Pivot Pin (116) in STEP 14, Fig. 11 can be installed at this time. Remove the Nut (114) from the Pivot Pin (116), align the hole on the cylinder to the hole on the Stabilizer Frame Base, then install the Pivot Pin (116) and Nut (114). Because the Stabilizer Support Leg requires free movement, the Nut (114) need only be tightened until it bottoms out on the Pivot Pin (116).

**Step 20: Add Oil to the Hydraulic System.** The hydraulic system requires approximately 13L (13.5 Quarts) of ISO 32 (10W) clean and unused hydraulic fluid. Use a funnel to add the oil to the hydraulic tank through the filler cap (89).

**NOTICE** THE HYDRAULIC SYSTEM HAS AIR IN IT BEFORE START UP. ONCE THE SYSTEM IS STARTED FOR THE FIRST TIME, THE SYSTEM WILL NEED TO BE OPERATED TO CYCLE THE OIL THROUGHOUT THE SYSTEM WHICH WILL CAUSE THE OIL LEVEL TO DROP. CHECK THAT THE HYDRAULIC OIL IS SUFFICIENT AFTER FIRST USE.

**Step 21: Add Oil to the ENGINE.** The Engine is shipped without oil. Refer to the included engine manual for recommended oil types.

**WARNING** FAILURE TO ADD OIL TO THE ENGINE WILL RESULT IN DAMAGE TO THE ENGINE. The engine is shipped without oil added.

**Step 22: Add Fuel to the ENGINE.**

**WARNING** RISK OF FIRE. Gasoline, its vapors, and oil used in the engine are EXTREMELY FLAMMABLE and can be EXPLOSIVE under certain conditions, creating the potential for serious injury or death if improperly handled. Read and follow all related safety warning in the engine manual.

**FIRST USE & OPERATION**

**Grease all pivot joints prior to first use.** Refer to the PIVOT POINT GREASE FITTING LOCATION drawing for more information. Use a grease gun that can attach to the grease zerk fittings in each pivot joint and apply a high quality EP, or molybdenum EP grease. Wipe away any excess grease to prevent dust or dirt from collecting on the joint.

**WARNING** Use approved hearing protection. Use NIOSH approved dust mask or respirator.

**Never operate the gasoline powered engine in an enclosed area.** Gasoline engines must be well ventilated and operated outside only. Engine exhaust gases may cause nausea, delirium, and potentially death without adequate ventilation.

**Starting the Engine.** Prior to starting the engine, ensure the leveling jack is lowered and its foot is touching the ground. Read and follow all related safety warnings in the engine manual. Place the choke in the closed position, check that there is fuel, the fuel shutoff valve is open, and

the engine control switch is in the ON position, then start the engine.

**Allow the Engine to warm up.** While the engine is warming up, the hydraulic fluid will begin to flow through the system forcing the air out and into the hydraulic tank.

**WARNING** BURN HAZARD. The engine has hot surfaces, do not touch. Allow surface to cool prior to maintenance. **WARNING** MOVING OBJECT HAZARD. Keep all people out of the path of moving equipment and logs when operating or loading. **WARNING** CRUSH HAZARD. NEVER allow bystanders, children, or pets to cross under or near an object being lifted.

**Removing the air from the hydraulic system.** Once the engine is warm, carefully and slowly use the control levers to raise and lower the stabilizer leveling legs two or three times.

Lower the stabilizer legs so the feet are touching the ground, then raise and lower the boom, move the front

beam closer to the rear beam (bending at the mid-pivot joint), move the boom left and right, extend and retract the telescoping beam, rotate the gripper, and open and close the gripper jaws. Repeat this a number of times to ensure all oil in the system has been cycled.

Due to the air in the system, movement may be slow or intermittent (jerky). This is normal until all of the air has moved out of the system. The flow adjustment valves connected near the Controller Assembly Valve Block (109), between the valve and hoses, are used to adjust the rate of flow and control the speed of the movement. Once the cylinders and movements are smooth, adjust these to your desired speed. Remember, SPEED KILLS. Slower speeds are recommended.

Finally, place the Boom Arm in the stowed position (See section regarding STOWING THE BOOM ARM), shut off the engine, then check that the hydraulic oil level is acceptable. If necessary, add hydraulic oil.

### **HOOKING UP TO THE TOWING VEHICLE:**



**WARNING** When connecting to a vehicle, NEVER exceed the lowest rating of any part of your towing system. Refer to your ATV or UTV manual for information about its tow rating.

- Ensure the ATV or UTV power is OFF and the brakes are locked prior to hitching, loading, and unloading of the trailer to avoid unintentional movement.
- Never use the trailer if the hitch coupler latching mechanism is not functioning correctly.
- Ensure the tires on the both the ATV/UTV and trailer are in good condition and inflated to the maximum recommended air pressure.
- Secure any load using appropriate retaining hardware (such as tie down straps) to prevent the load from falling off or shifting while moving, and ensure the Boom Arm in the stowed position (See section regarding STOWING THE BOOM ARM).
- Always fully retract the Leveling Jack and pin in the horizontal position before towing.
- Use a hitch with a 2 in. (50.8 mm) Hitch Ball that exceeds the trailer haul rating.
- Ensure the tow bar is level. Do not exceed a height differential with the tow bar greater than +/-5°. If it exceeds this amount, then use an adjustable height hitch ball mount or adjust the base plate height so the tow bar is level.
- Place a lock into the locking mechanism on the coupler and lock it to ensure the ball coupler and ball hitch does not come apart.
- Connect a safety chain (if desired) to the vehicle by passing the chains underneath and crossing below the coupler, then securely attaching to the towing vehicle. The chain should not be too loose, and should allow enough slack to permit turning.
- The trailer is NOT configured for use on public roadways and is intended for off-road use ONLY. Consult with your federal and state transportation departments regarding trailer safety regulations. State and provincial laws require a trailer to have working tail lights and turn signals

### **WHEN TOWING:**



**WARNING** Towing the trailer is dangerous and may result in serious injury or property damage. Follow these rules when towing:

- DO NOT use the trailer to transport things other than logs or other comparable long loads. The trailer is

designed to be used for logs.

- DO NOT exceed the trailer's maximum load rating of 2000 kg (4400 lbs).
- SLOW DOWN. A towed trailer that sways or seems unstable is dangerous. DO NOT continue towing if instability continues. Gradually slow down, move to a safe location, and inspect all connections. A towed trailer that is stable at slow speed may not be stable at high speed. Stability decreases when going down hill.
- Installation must be in accordance with the instructions detailed herein.
- Check that the leveling jack and stabilizers have been fully retracted and securely placed in the stowed position, and ensure any wheel chocks or blocking have been removed.
- Do not allow passengers to ride on the trailer.
- Allow for an increased stopping distance due to the added tow weight.
- Allow for an increased turning radius when turning.
- Do not back up with a trailer in tow.
- Adjust the coupler for proper fit to the ball and check all connections before and often during each trip.
- Wet, slippery, rough, or steep terrain is potentially dangerous and may result in injury if proper caution is not observed. Slow speeds are required to safely operate this trailer under these conditions. The operator must use mature judgment, skill, and experience to choose a speed suitable for terrain and riding conditions.
- Disconnect the trailer from the ATV or UTV and chock the wheels after each use and before servicing the trailer.
- Always extend the leveling jack, and deploy the stabilizer leveling legs, ensuring they are touching the ground and the trailer is level, prior to operating the boom.
- Operators under 18 years of age must be appropriately supervised by an adult at all times while operating this equipment.
- Operation of this trailer requires skills acquired through practice over a period of time. Take time to learn the basic techniques well before operation of the trailer and any of its components.
- Operate only on safe and familiar terrain. Avoid steep inclines, and allow for extra braking distances, especially on wet surfaces.
- Align the boom arm to the trailer centerline and stow in the lowest possible position.
- **ALWAYS check the height of the boom and any objects that the trailer will pass under before attempting to drive underneath.**

### **WHEN OPERATING THE CRANE:**



**WARNING** Crane operation is dangerous and may result in property damage, serious injury, or DEATH. Follow these rules when operating:

- **PRIOR TO EACH USE, plan ahead.** If working alone, always arrange to have someone check on you at pre-arranged, regular intervals. Check that sounds and movements of the crane are normal, and there are no hydraulic leaks.
- **DO NOT operate where there are overhead obstacles or power-lines that will interfere with operation of the crane.**
- NEVER attempt to lift a person, pet, or animal.
- DO NOT leave the Hydraulic Control Panel unattended

while the engine is running. Land any load, stow the Boom Arm in a safe position, and shut off the engine prior to leaving.

- DO NOT allow persons or pets near the work area. Ensure they keep a safe distance of at least 30 to 50 ft. (10-15 M) away from the operating 12 ft. (3.5 M) radius of the boom. ALWAYS check and account for each person within the work area before lifting, moving, or landing a load.
- **DO NOT operate the crane without deployment of the stabilizer leveling legs and leveling jack.** Always chock the wheels and set the parking brake on the ATV/UTV after deploying the stabilizer leveling legs.
- DO NOT operate on un-level ground to prevent tippage. Inclines greater than +/-5° are strongly discouraged. If on an incline, NEVER place the frame beam perpendicular to the incline. The crane and stabilizer leveling legs should be on the uphill side and the back of the trailer at the downhill side.
- DO NOT exceed the lifting capacity of 200kg (400lbs) at maximum length the boom arm.
- NEVER attempt to lift a person, pet, or animal.
- The operator's ability to safely operate the crane is largely dependent upon the ability to exercise proper judgment. The operator must be of sufficient age, understanding, mental capacity, and physical capability to safely operate this equipment. ALWAYS FOLLOW THE RECOMMENDED AGE RESTRICTION OF 16 YEARS FOR OPERATORS.
- Operation of the crane requires skills acquired through practice over a period of time. Take time to learn the basic techniques well before operation of the crane and any of its components.
- CONDUCT OF OPERATORS:
  1. The operator shall not engage in any practice that diverts attention while operating the crane.
  2. When physically or otherwise unfit, an operator shall not engage in the operation of the crane or equipment.
  3. Appoint a second person to be a signal person and direct the lift and safety situation around the crane (refer to Fig. 15 - Standard Hand Signals). If a second

person is unavailable, the operator shall be responsible for all safety within the working area.

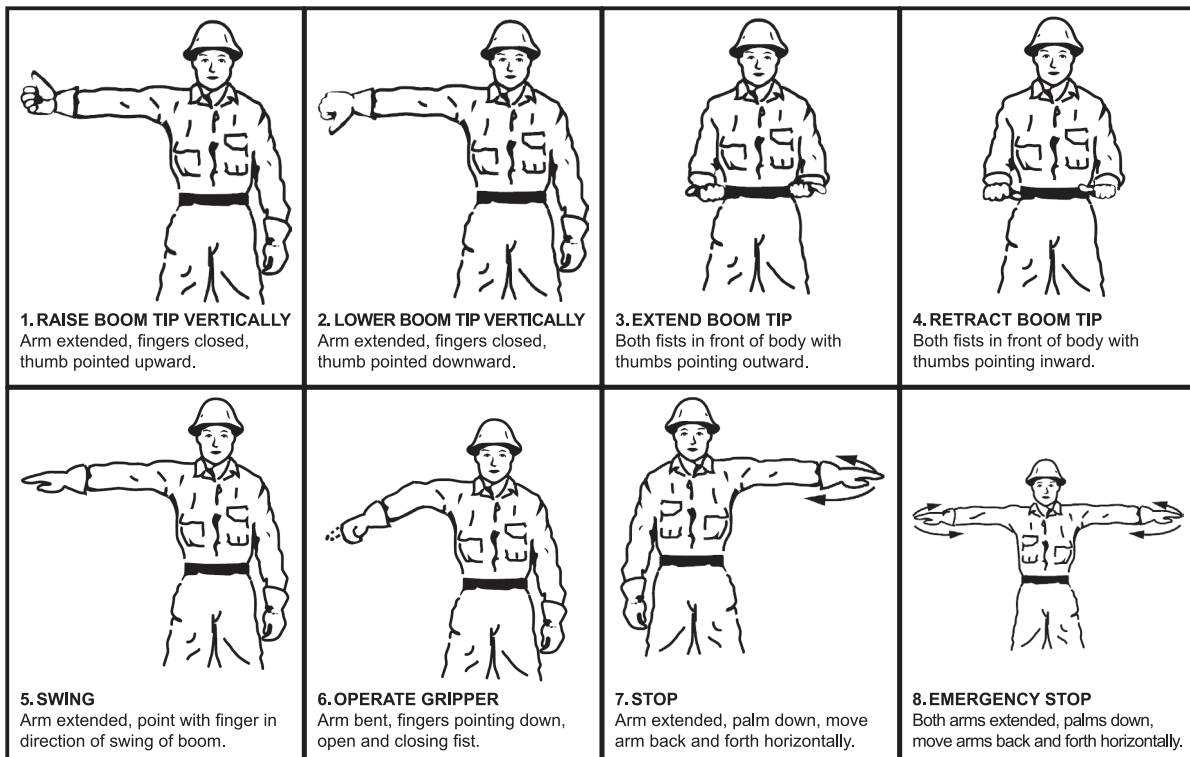
4. The operator shall at all times obey a STOP SIGNAL from any other person.
- DO NOT leave a load hanging after shutdown. Always land the load, retract the boom extension, and place the boom arm in a safe position prior to shutdown.
  - DO NOT attempt maintenance or repair with the engine running or with a load. Relieve system pressure prior to any maintenance or repair.
  - DO NOT use the crane for dragging loads sideways. If the load is too far away to lift with the gripper, move the load or reposition the trailer.
  - DO NOT load the trailer too high. Always allow room for the Boom Arm to be properly stowed (See section regarding STOWING THE BOOM ARM).

**WHEN LIFTING A LOAD:**




**CRUSH HAZARD.** NEVER allow bystanders, children, or pets to cross under or near an object being lifted. **NEVER LIFT A LOAD OVER A PERSON.**

- Ensure the load being lifted is seated in the gripper arms. If the load is held only by the end plates of the gripper arms, the load is either too large a diameter or it needs to be re-seated.
- Check that the load is balanced in the gripper. If it is not balanced, land the load and reposition the gripper.
- Reduce the speed of movement when lifting and when a load is in the gripper by moving the control levers very slowly and in slight increments while checking the surroundings of the work area and the load.
- AVOID sudden stops that will cause the load to swing when moving the boom from side to side.
- When starting to lift, and throughout the lifting process, check that the stabilizer leveling legs and wheels are supporting the load and touching the ground. If any of these begin to lift, STOP and land the load. Do not attempt to move the item until its weight is reduced.



**Fig. 15 - Standard Hand Signals**

**STOWING THE BOOM ARM:**


 **WARNING** **DO NOT MOVE THE TRAILER UNLESS THE BOOM ARM IS IN THE STOWED POSITION.** Moving the trailer without the boom arm in the stowed position may result in damage to property, serious injury, or **DEATH**.

1. **When the trailer is empty:** the correct stow position is with the boom arm parallel the trailer frame beam with the extension fully retracted and the Gripper clamped onto the frame beam.

2. **With a load in the trailer:** the stow position is with the boom arm parallel to the frame beam with the extension fully retracted and the boom and/or gripper resting on the load. If necessary, the gripper may hang off the back of the load.

**CARE & MAINTENANCE**

To keep your machine looking optimal and running smoothly for many years, proper periodic maintenance is recommended.

 **WARNING** **Only qualified service personnel should repair this equipment. An improperly repaired device may present a hazard to the user and/or others.**

- Maintain the trailer and crane with care. A machine in good condition is efficient, easier to control and will have fewer problems.
- Inspect the trailer and crane components periodically, at least every six-months and prior to each use. Repair or replace damaged or worn components. Use only identical replacement parts when servicing.
- Keep the surfaces clean, dry and free from oil/grease at all times.
- Maintain the tool's labels and name plates. These carry important information. If unreadable or missing, contact Star-Asia LLC for replacements.
- Have a qualified technician inspect the engine and hydraulic system:
  - a. At least once a year,.
  - b. after receiving a shock load, or
  - c. if the system is performing abnormally or making abnormal sounds.

**RUST AND CORROSION:**

Although the trailer has been treated to help eliminate rust and corrosion, it may be necessary to protect the trailer from the elements by parking it under a tin roof or carport to help prevent weathering from rain and snow. It is recommended to apply car wax to painted surfaces at least once a year. Use a rust inhibiting paint in areas where the color coating may have chipped or become deeply scratched.

Apply a coat of lithium grease on all exposed threads, adjustment bolts, and inside nuts or threaded holes that are not being used.

Use a tarp to cover the machine when stored for an extended period.

**GREASE ALL PIVOT JOINTS AT LEAST ONCE PER YEAR.** Refer to the PIVOT POINT GREASE FITTING LOCATION drawing for more information. Use a grease gun that can attach to the grease zerk fittings in each pivot joint and apply a high quality EP, or molybdenum EP grease. Wipe away any excess grease to prevent dust or dirt from collecting on the joint.

**MAINTAIN THE ENGINE.** Read and follow all related safety maintenance guidelines in the included engine manual. Make a schedule for periodic engine maintenance and keep a record for future reference.

**BEFORE EACH USE:**

- Check that the tires are properly inflated.
- Check fasteners have not become loose. On fasteners that have lock nuts, be sure to back off the lock nut, check the fastener, then tighten the lock nut to prevent the fastener from backing off.

**SKIN INJECTION HAZARD.**

Protect hands and body from high pressure fluids.

**PRESSURIZED SYSTEM.**

Shut off and relieve system pressure prior to maintenance.

- Carefully check the hydraulic hoses and connections are not leaking. Keep hands and other body parts clear of any leak. **DO NOT** attempt to stop a leak with any part of the body. **IN CASE OF ACCIDENTAL SKIN INJECTION, SEEK IMMEDIATE MEDICAL TREATMENT!**
- Make sure there is adequate lighting to perform work.
- Check that there is oil and fuel in the engine. Add or fill, as necessary.
- Ensure adequate ventilation for engine operation.
- Check that there is nothing obstructing movement of the operator, the crane, or for things that may hinder operation or cause a hazardous situation.
- Clear all bystanders and pets from the work area and ensure they are at least 30 to 50 ft. (10-15 M) away from the operating 12 ft. (3.5 M) radius of the boom.
- Ensure operator and others in the work area are wearing the proper Personal Protective Equipment.

**AFTER EACH USE:**

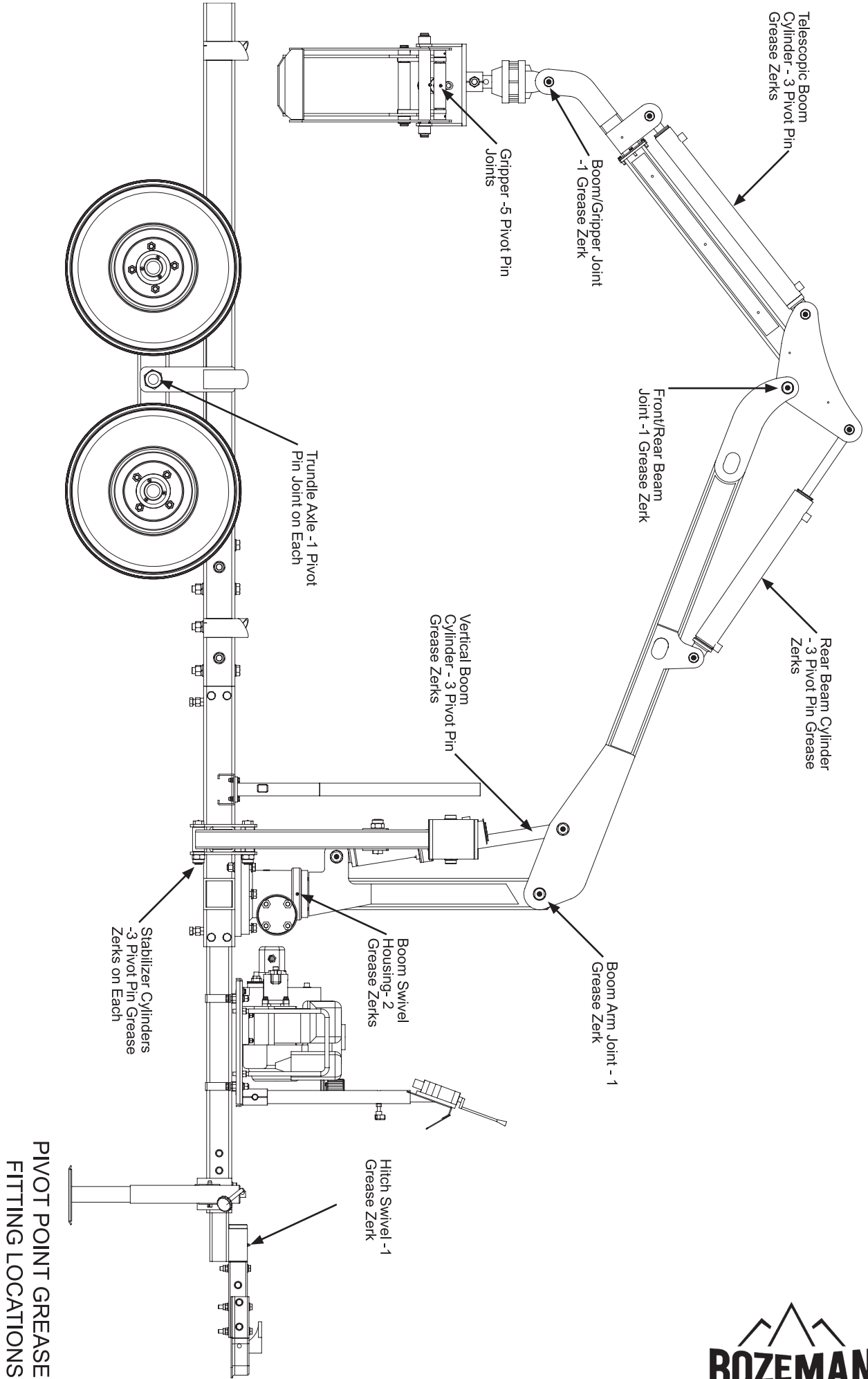
- Ensure the Boom Arm is in the stowed position (See section regarding STOWING THE BOOM ARM).
- Turn the Engine control switch to the OFF position.
- Clean the machine and around it. Use a horsehair bench brush to brush debris off the machine.
- To prevent others from starting the machine, consider unplugging the spark plug.
- Cover the machine to protect it from the elements.

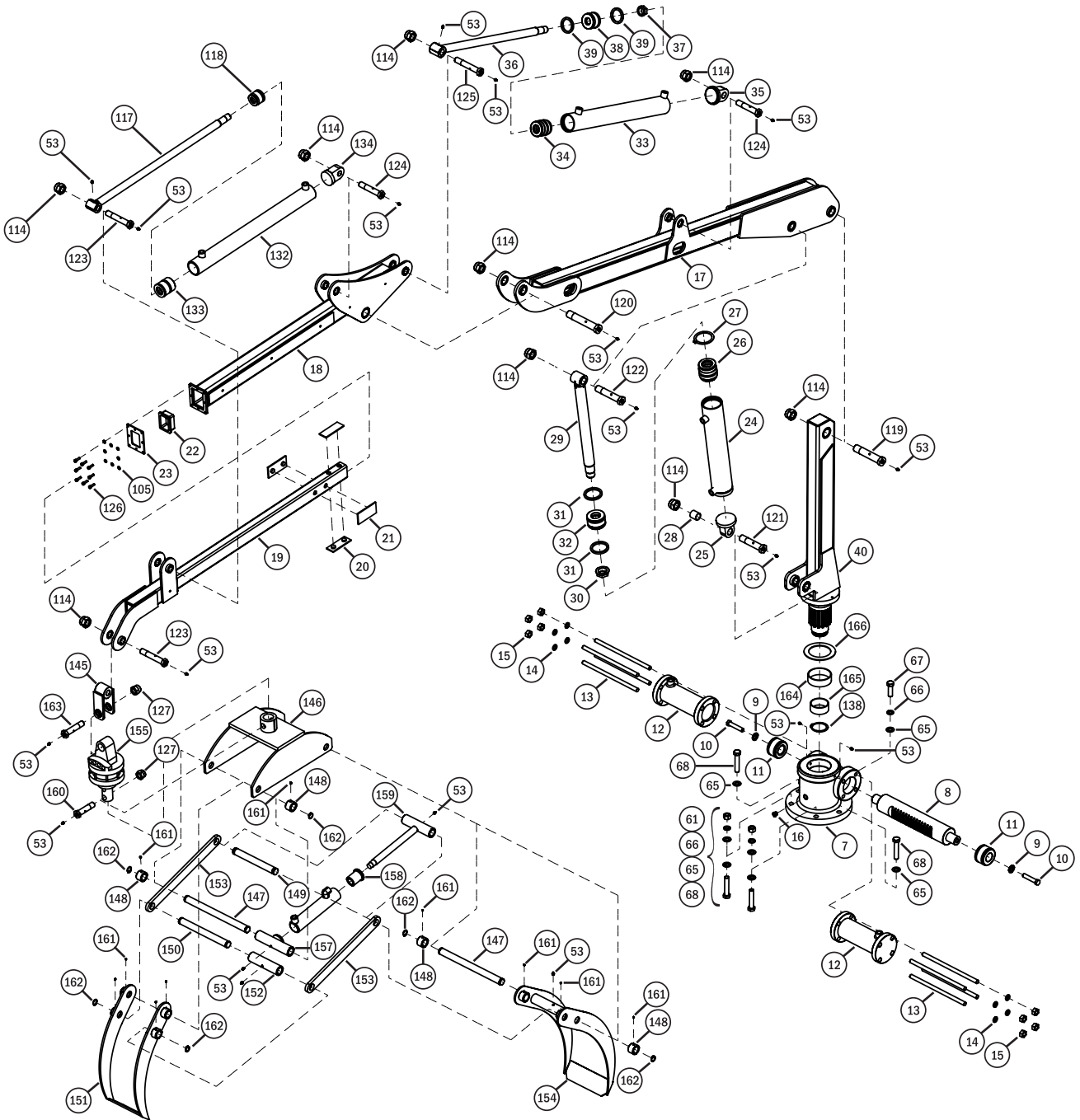
**DISPOSAL**

Recycle a trailer damaged beyond repair at the appropriate facility.

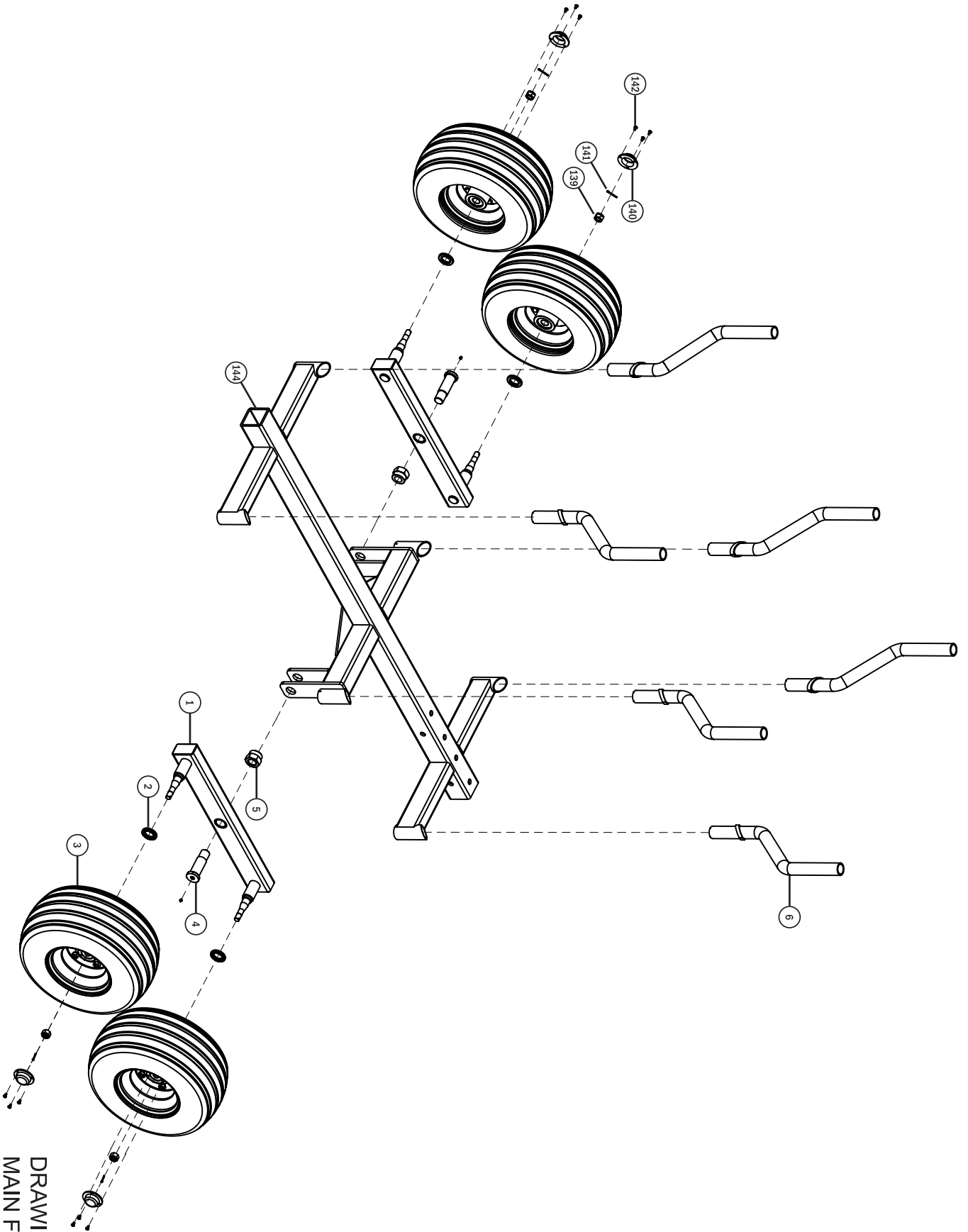
Contact your local municipality for a list of disposal facilities or by-laws for electronic devices, batteries, oil or other toxic liquids.

**IMPORTANT! DO NOT pollute the environment by allowing uncontrolled discharge of waste oil.**



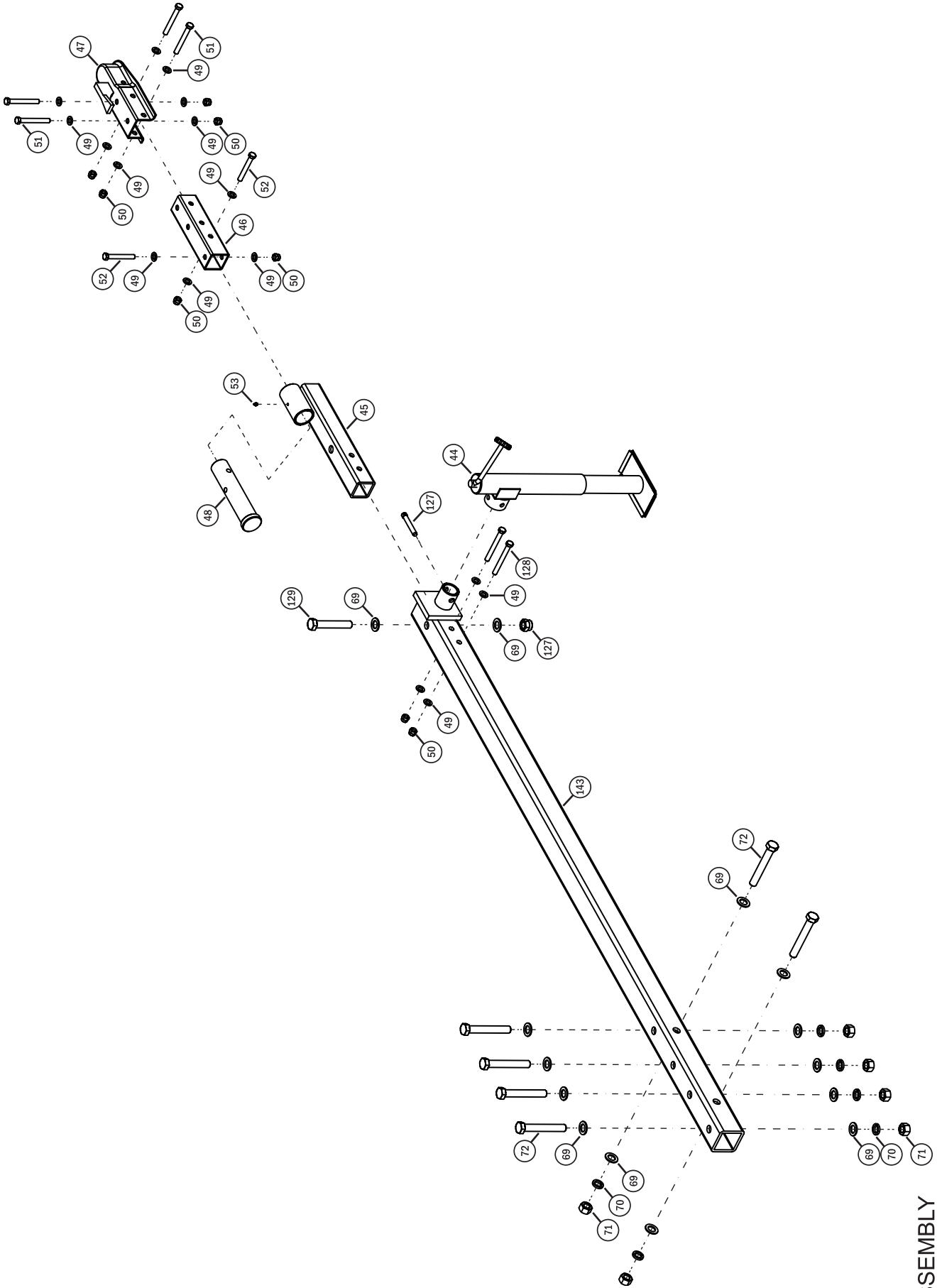


DRAWING 1  
BOOM ASSEMBLY

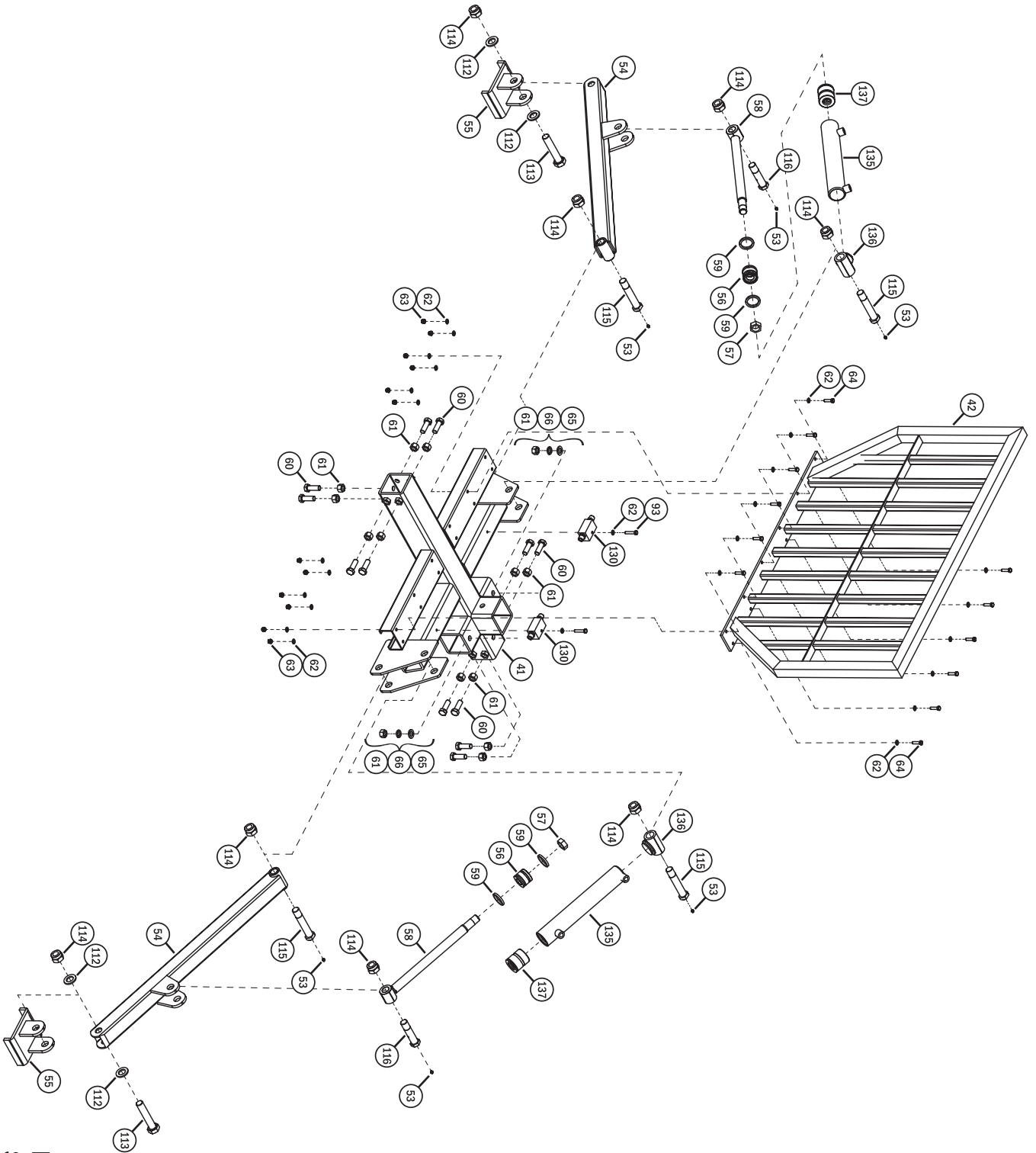


DRAWING 2  
MAIN FRAME ASSEMBLY





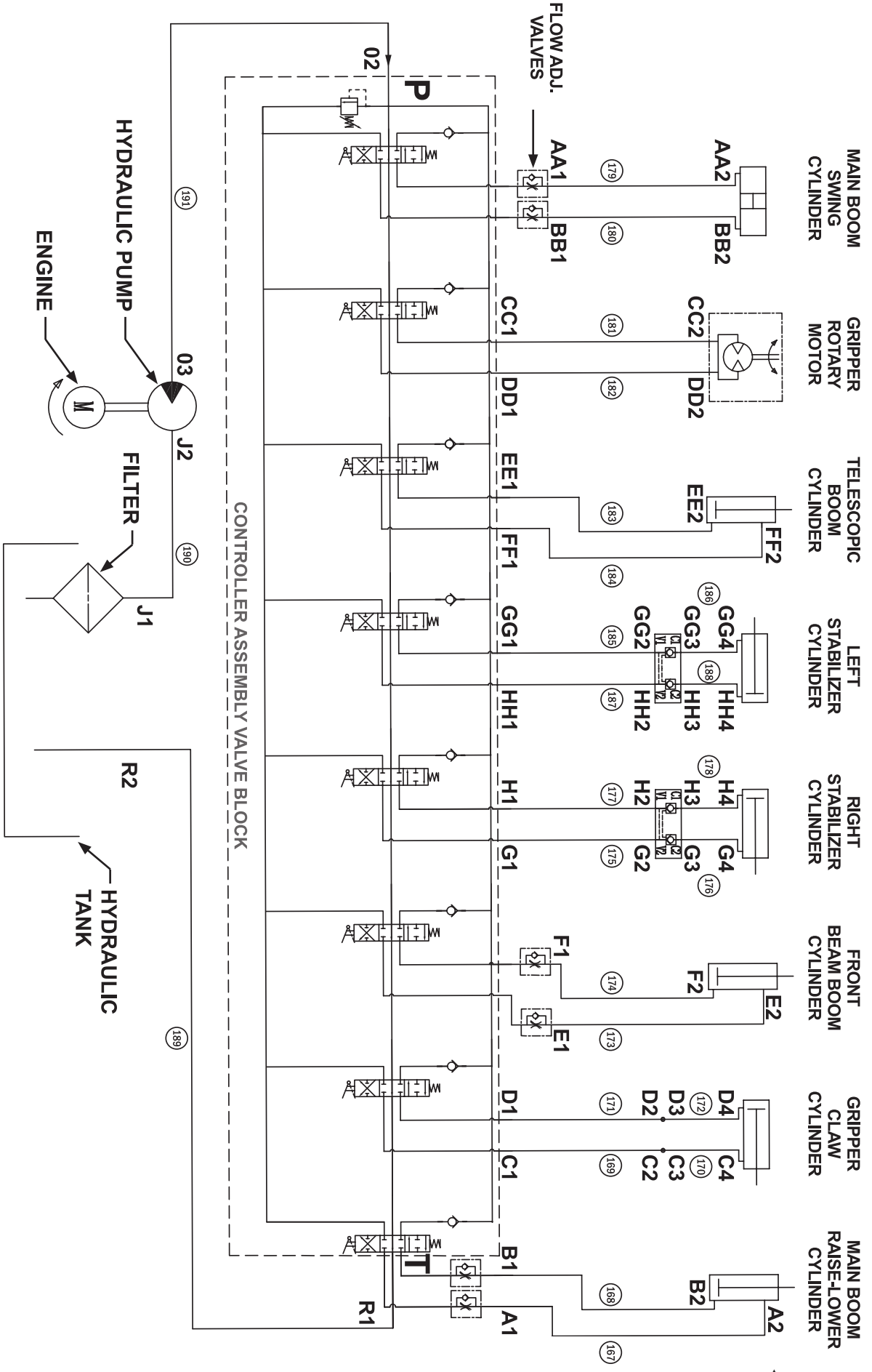
DRAWING 3  
TOW BAR ASSEMBLY



DRAWING 4  
STABILIZER ASSEMBLY







DRAWING 6  
HYDRAULIC SCHEMATIC



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**PARTS LIST**


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Item	Description	Qty
1	Axle, Tandem Trundle	2
2	Oil Seal, 62x38x8	4
3	Wheel Assembly	4
4	Pivot Pin, Trundle	2
5	Nut, Self-Locking Hex M36	2
6	Bed Stake Tube	6
7**	Boom Swivel Housing	1
8**	Rack Gear, Swivel	1
9**	Washer, Flat M14	2
10**	Bolt, Hex Hd. M14	2
11**	Piston, Swivel Rack	2
12**	Hydraulic Cylinder, Swivel Rack	2
13**	Rod Threaded, M14	8
14**	Washer, Split Lock M14	8
15**	Nut, Hex M14	8
16	Plug, Oil	1
17	Boom Arm, Rear Beam	1
18	Boom Arm, Front Beam	1
19	Boom Arm, Telescopic Beam	1
20	Glide Plate, Boom Top/Bottom	2
21	Glide Plate, Boom Left/Right	2
22	Bushing, Boom Slide	1
23	Cover Plate, Boom Beam	1
24**	Hydraulic Cylinder, Vertical Boom	1
25**	Endcap, Vertical Boom Cylinder	1
26**	Cover, Vertical Boom Cylinder Tube	1
27**	Circlip, Vertical Boom Cylinder Cover	1
28**	Bushing, Vertical Boom Cylinder End Cap	1
29**	Piston Rod, Vertical Boom Cylinder	1
30**	Nut, Vertical Boom Cylinder Piston Rod	1
31**	Seal, Vertical Boom Cylinder Piston	2
32**	Piston, Vertical Boom Cylinder	1
33**	Hydraulic Cylinder, Boom Rear Beam	1
34**	Cover, Boom Rear Beam Cylinder Tube	1
35**	Endcap, Boom Rear Beam Cylinder	1
36**	Piston Rod, Boom Rear Beam Cylinder	1
37**	Nut, Boom Rear Beam Piston Rod	1
38**	Piston, Boom Rear Beam Cylinder	1
39**	Seal, Boom Rear Beam Piston	2
40	Boom, Vertical Beam	1

\* SEE HYDRAULIC SCHEMATIC

\*\* REPLACEMENT SOLD ONLY AS PART OF ASSEMBLY



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**PARTS LIST**


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Item	Description	Qty
41	Base, Stabilizer Frame	1
42	Cage, Safety	1
43	U-Bracket, Engine Tray	2
44	Jack, Swivel	1
45	Tube, Swivel Coupler Main	1
46	Tube, Swivel Coupler Secondary	1
47	Coupler, Trailer 2"	1
48	Bar, Swivel Coupler Pivot	1
49	Washer, Flat M12	24
50	Nut, Self-Locking M12	8
51	Bolt, Hex Hd. M12x100	4
52	Bolt, Hex Hd. M12x90	2
53	Grease Zerk	28
54	Stabilizer, Support Leg	2
55	Stabilizer, Support Foot	2
56**	Piston, Stabilizer Support Cylinder	2
57**	Nut, Stabilizer Support Piston Rod	2
58**	Piston Rod, Stabilizer Support Cylinder	2
59**	Seal, Stabilizer Support Piston	4
60	Bolt, Hex Hd. M16x45	12
61	Nut, Hex M16	16
62	Washer, Flat M8	52
63	Nut, Self-Locking M8	12
64	Bolt, Hex Hd. M8x30	12
65	Washer, Flat M16	9
66	Washer, Split Lock M16	5
67	Bolt, Hex Hd. M16x50	1
68	Bolt, Hex Hd. M16x80	4
69	Washer, Flat M20	14
70	Washer, Split Lock M20	6
71	Nut, Hex M20	6
72	Bolt, Hex Hd. M20x140	6
73	Tray, Engine Support	1
74	Tank, Hydraulic Oil	1
75	Housing, Hydraulic Pump Coupler	1
76	Engine, 212cc Single Cyl. 4-Stroke	1
77	Coupler Half, Engine-Hydraulic Pump	1
78	Coupler Half, Hydraulic Pump-Engine	1
79	Adapter, Hydraulic Pump Coupler Housing	1
80	Pump, Hydraulic Gear 1.66 GPM @ 3000 RPM	1

\* SEE HYDRAULIC SCHEMATIC

\*\* REPLACEMENT SOLD ONLY AS PART OF ASSEMBLY



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**PARTS LIST**


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Item	Description	Qty
81	Gauge, Oil Level	1
82	Nut, Hex M12	12
83	Handle Bar, Engine Tray	2
84	Control Support Rod	1
85	Control, Valve Panel	1
86	Control, Operator Information Plate	1
87	Hydraulic Connector, Tank Output w Filter	1
88	Hydraulic Connector, M16	1
89	Filler Cap, Oil Tank	1
90	Knob, Threaded Stud M10x40x30	1
91	Seal, O-Ring 10x1.8	5
92	Bolt, Hex Hd. M8x25	8
93	Bolt, Hex Hd. M8x40	6
94	Washer, Split Lock M8	15
95	Nut, Hex M8	11
96	Washer, Flat M10	4
97	Washer, Split Lock M10	2
98	Bolt, Hex Hd. M10x70	1
99	Nut, Self-Locking M10	1
100	Bolt, Hex Hd. M14x1.5x60	1
101	Bolt, Cap Hd. M10x35	2
102	Connector Adapter, M22	2
103	Bolt, Hex Flange Hd. M10x40	2
104	Bolt, Hex Hd. M8x60	3
105	Washer, Flat M6	11
106	Washer, Split Lock M6	3
107	Bolt, Hex Hd. M6x25	3
108	Screw, Flathead Phillips Machine M4x12	3
109	Valve Block, Controller Assembly	1
110	Bolt, Hex Hd. M12x65	4
111	Washer, Split Lock M12	4
112	Washer, Flat M24	4
113	Bolt, Hex Hd. M24x120	2
114	Nut, Self-Locking M24	17
115	Pivot Pin, Long Threaded M24	4
116	Pivot Pin, Short Threaded M24	2
117**	Piston Rod, Telescopic Beam Cylinder	1
118**	Piston, Telescopic Beam Cylinder	1
119	Pivot Pin, Vertical Boom M24	1
120	Pivot Pin, Boom Rear Beam M24	1

\* SEE HYDRAULIC SCHEMATIC

\*\* REPLACEMENT SOLD ONLY AS PART OF ASSEMBLY



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**PARTS LIST**


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Item	Description	Qty
121	Pivot Pin, Vertical Cylinder Lower M24	1
122	Pivot Pin, Vertical Cylinder Upper M24	1
123	Pivot Pin, Telescoping Boom M24	2
124	Pivot Pin, Boom Cylinder Ends M24	2
125	Pivot Pin, Boom Rear Beam Cylinder M24	1
126	Bolt, Cap Hd. M6x20	8
127	Nut, Self-Locking M20	3
128	Bolt, Hex Hd. M12x110	2
129	Bolt, Hex Hd. M20x120	1
130	Hydraulic Block, Single Outlet Straight	2
131	Pivot Pin,	1
132**	Hydraulic Cylinder, Telescopic Beam	1
133**	Endcap, Telescopic Beam Cylinder	1
134**	Cover, Telescopic Beam Cylinder Tube	1
135**	Hydraulic Cylinder, Stabilizer Leg	2
136**	Endcap, Stabilizer Leg Cylinder	2
137**	Cover, Stabilizer Leg Cylinder Tube	2
138	Circlip, Vertical Boom OD 60	1
139	Nut, Hex Castle M20	4
140	Dust Cover, Wheel Bearing	4
141	Pin, Cotter 4x36	4
142	Screw, Phillips Machine M6x12	12
143	Tow Bar, Trailer	1
144	Frame, Trailer	1
145	Universal Joint, Gripper Attachment	1
146	Gripper Frame	1
147	Pivot Rod, Long Gripper	2
148	Collar, Pivot Rod Locking	4
149	Pivot Rod, Short Right Gripper	1
150	Pivot Rod, Short Left Gripper	1
151	Gripper Clamp, Outer	1
152	Stanchion, Gripper Pivot Rod	1
153	Push Bar, Gripper Clamp	2
154	Gripper Clamp, Inner	1
155	Rotary Motor, Hydraulic	1
156**	Hydraulic Cylinder, Gripper	1
157**	Endcap, Gripper Cylinder	1
158**	Cover, Gripper Cylinder Tube	1
159**	Piston Rod, Gripper Cylinder	1
160	Pivot Pin, Gripper Frame M20	1

\* SEE HYDRAULIC SCHEMATIC

\*\* REPLACEMENT SOLD ONLY AS PART OF ASSEMBLY



## PARTS LIST

Item	Description	Qty
161	Setscrew M6x6	10
162	Circlip, OD 20	6
163	Pivot Pin, Gripper Motor M20x68	1
164	Bushing, Vertical Boom Upper	1
165	Bushing, Vertical Boom Lower	1
166	Bushing, Vertical Boom Face	1
167*	Hose A1-A2: 1/4 in. Straight & 1/4 in. Hollow Bolt+ Two Sealling Washers, 1.3M (51.2 in.) Long	1
168*	Hose B1-B2: 1/4 in. Straight & 1/4 in. Hollow Bolt+ Two Sealling Washers, 1.3M (51.2 in.) Long	1
169*	Hose C1-C2: 1/4 in. Straight & 1/4 in. Bent, 5M (196.9 in.) Long	1
170*	Hose C3-C4: 1/4 in. Straight & 1/4 in. Straight, 0.28M (11 in.) Long	1
171*	Hose D1-D2: 1/4 in. Straight & 1/4 in. Bent, 5M (196.9 in.) Long	1
172*	Hose D3-D4: 1/4 in. Straight & 1/4 in. Straight, 0.23M (9.1 in.) Long	1
173*	Hose E1-E2: 1/4 in. Straight & 1/4 in. Hollow Bolt+ Two Sealling Washers, 2.44M (96.1 in.) Long	1
174*	Hose F1-F2: 1/4 in. Straight & 1/4 in. Hollow Bolt+ Two Sealling Washers, 1.94M (76.4 in.) Long	1
175*	Hose G1-G2: 1/4 in. Straight & 1/4 in. Bent, 1.25M (49.2 in.) Long	1
176*	Hose G3-G4: 1/4 in. Straight & M14 Bent, 0.75M (29.5 in.) Long	1
177*	Hose H1-H2: 1/4 in. Straight & 1/4 in. Bent, 1.25M (49.2 in.) Long	1
178*	Hose H3-H4: 1/4 in. Straight & M14 Bent, 0.63M (24.8 in.) Long	1
179*	Hose AA1-AA2: 1/4 in. Straight & 1/4 in. Straight, 0.94M (37 in.) Long	1
180*	Hose BB1-BB2: 1/4 in. Straight & 1/4 in. Straight, 0.94M (37 in.) Long	1
181*	Hose CC1-CC2: 1/4 in. Straight & 1/4 in. Bent, 5M (196.9 in.) Long	1
182*	Hose DD1-DD2: 1/4 in. Straight & 1/4 in. Bent, 5M (196.9 in.) Long	1
183*	Hose EE1-EE2: 1/4 in. Straight & 1/4 in. Hollow Bolt+Two Sealling Washers, 3.1M (122in.) Long	1
184*	Hose FF1-FF2: 1/4 in. Straight & 1/4 in. Hollow Bolt+Two Sealling Washers, 3.8M (149.6in.) Long	1
185*	Hose GG1-GG2: 1/4 in. Straight & 1/4 in. Bent, 1.25M (49.2 in.) Long	1
186*	Hose GG3-GG4: 1/4 in. Straight & M14 Bent, 0.75M (29.5 in.) Long	1
187*	Hose HH1-HH2: 1/4 in. Straight & 1/4 in. Bent, 1.25M (49.2 in.) Long	1
188*	Hose HH3-HH4: 1/4 in. Straight & M14 Bent, 0.63M (24.8 in.) Long	1
189*	Hose R1-R2: 1/2 in. Straight & 1/2 in. Bent, 0.85M (33.5 in.) Long	1

\* SEE HYDRAULIC SCHEMATIC

\*\* REPLACEMENT SOLD ONLY AS PART OF ASSEMBLY



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**PARTS LIST**

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<b>Item</b>	<b>Description</b>	<b>Qty</b>
190*	Hose J1-J2: 1/2 in. Straight & 22mm Bent, 0.25M (9.8 in.) Long	1
191*	Hose O1-O2: 1/2 in. Straight & 22mm Bent, 0.85M (33.5 in.) Long	1

\* SEE HYDRAULIC SCHEMATIC

\*\* REPLACEMENT SOLD ONLY AS PART OF ASSEMBLY



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## 90 DAY LIMITED WARRANTY

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Star Asia-USA, LLC (hereinafter "seller") warrants to the original purchaser only, that this product will be free from defects in material or workmanship for a period of 90 days from date of purchase for home domestic use.

### Warranty Performance

Warranty coverage is conditioned upon purchaser furnishing seller or its authorized service center with adequate written proof of the original purchase date. Products returned, freight prepaid and insured, to our factory or to an Authorized Service Center will be inspected and repaired or replaced, at seller's option, free of charge if found to be defective and subject to warranty. Defective parts not subject to normal wear and tear will be repaired or replaced, at our option during the above stated warranty periods. In any event, reimbursement is limited to the purchase price paid. Other than the postage and insurance requirement, no charge will be made for repairs or replacements covered by this warranty. Under no circumstances shall the manufacturer bear any responsibility for loss of the unit, loss of time or rental, inconvenience, commercial loss or consequential damages. There are no warranties which extend beyond the description of the face hereof.

### Exclusions

This warranty does not cover parts damaged due to normal wear, abnormal conditions, misapplication, misuse, abuse, accidents, operation at other than recommended pressures or temperatures, improper storage of freight damage. Parts damaged or worn by operation in dusty environments are not warranted. Failure to follow recommended operating and maintenance procedures also voids warranty. Additional items not covered under warranty: product failure caused by rain, excessive humidity, corrosive environments or other contaminants; cosmetic defects that do not interfere with product's functionality. This warranty shall not apply when: the product has been used for commercial or rental purposes; defects in materials or workmanship or damages result from repairs or alterations which have been made or attempted by others or the unauthorized use of nonconforming parts; this damage is due to abuse, improper maintenance, neglect or accident; or the damage is due to use of the product after partial failure or use with improper accessories. Warranty does not apply to accessory items. Seller will not be liable for: labor charges, loss or damage resulting from improper operation, maintenance or repairs made by persons other than a Star Asia-USA, LLC Authorized Service Center. The use of other than genuine Star Asia-USA, LLC repair parts will void warranty.

### Warranty Disclaimers

NO WARRANTY, ORAL OR WRITTEN, OTHER THAN THE ABOVE WARRANTY IS MADE WITH REGARD TO THIS PRODUCT, ANY IMPLIED WARRANTIES OF SELLER REGARDING THIS PRODUCT INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE EXCLUDED. BUYER'S OR USER'S REMEDIES ARE SOLELY AND EXCLUSIVELY AS STATED ABOVE. STAR ASIA-USA, LLC SHALL IN NO EVENT BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, INDIRECT, OR SPECIAL DAMAGES. IN NO EVENT, WHETHER AS A RESULT OF A BREACH OF CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE) OR OTHERWISE, SHALL SELLER'S LIABILITY EXCEED THE PRICE OF THE PRODUCT WHICH HAS GIVEN RISE TO THE CLAIM OR LIABILITY. ANY LIABILITY CONNECTED WITH THE USE OF THIS PRODUCT SHALL TERMINATE UPON THE EXPIRATION OF THE WARRANTY PERIODS SPECIFIED ABOVE.

### Limitations on Warranty Disclaimers

Any implied warranties shall be limited in duration to 90 days from the date of purchase. In some states of the U.S.A. and in some provinces of Canada there is no limitation for how long an implied warranty is valid, so the aforementioned limitation may not apply to you. In no event shall a seller be liable for any incidental or consequential damages (including but not limited to liability for loss of profits) arising from the sale or use of this product. In some states of the U.S.A. and in some provinces of Canada the exclusion or limitation of incidental or consequential damages is not allowed, so that aforementioned limitation or exclusion may not apply to you.

This Limited warranty gives you specific legal rights, and you may also have other rights which vary from state to state in the U.S.A., Canada and the Commonwealth of Puerto Rico. For warranty coverage within other countries, contact your local star Asia-USA, LLC dealer or importer.

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