Boat Trailer Owner's User Manual (EXTREME AND VERSATILE BOAT TRAILERS)

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1. Safety First (Read Before Towing)

- Always support the trailer by the **frame**, not the axle or suspension, when performing service.
- Never work under a trailer that is not properly supported with jack stands.
- Keep hands, clothing, and tools clear of moving components.
- Wear proper eye protection when servicing brakes, bearings, or suspension components.
- Keep bystanders clear when testing brakes or electrical systems.

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2. Axle System Overview — MTP / Lippert

MTP "The Shield" Bearing Lubrication System (If Equipped)

- The MTP Shield system uses a **pressurized lubrication chamber** designed to help prevent water intrusion during boat launching and retrieval.
- Grease **should not be added or replaced during the first five (5) years** unless explicitly approved by MTP, as unauthorized service may void warranty coverage.
- The system operates at approximately **3–6 PSI**, maintaining positive pressure inside the hub to help keep water out.

Annual Bearing Inspection

- At least once per year, jack the trailer safely by the frame and check for wheel play.

- If wheel movement exceeds approximately **1/8 inch**, bearing adjustment or inspection may be required.

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3. Lug Nut / Wheel Torque Specifications

Proper wheel torque is critical for safe operation. Always use a calibrated torque wrench and tighten lug nuts in a star pattern.

Lippert Wheel Torque Specifications

(Verify stud size before torquing)

1/2" Wheel Studs

- Stage 1: 20–25 ft-lbs
- Stage 2: 50–60 ft-lbs
- Stage 3: 90–120 ft-lbs

9/16" Wheel Studs

- Stage 1: 20–25 ft-lbs
- Stage 2: 60–70 ft-lbs
- Stage 3: 120–130 ft-lbs

5/8" Wheel Studs – Cone Nut

- Stage 1: 50–60 ft-lbs
- Stage 2: 100–120 ft-lbs
- Stage 3: 190–210 ft-lbs

5/8" Wheel Studs – Flange Nut

- Stage 1: 50–60 ft-lbs
- Stage 2: 150–200 ft-lbs
- Stage 3: 275–325 ft-lbs

Re-Torque Schedule

- After **10 miles**
- After **25 miles**

- After **50 miles**
- Periodically thereafter, especially after wheel removal or replacement

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4. Best Towing Practices

Hitching and Hookup

- Confirm coupler is fully seated and locked on the hitch ball.
- Install safety pin or coupler lock.
- Cross safety chains under the coupler.
- Connect breakaway cable (if equipped).
- Verify trailer lights and brakes are functioning properly.

Loading and Securing the Boat

- Center the boat properly on the bunks or rollers.
- Secure the bow winch strap and safety chain.
- Use stern tie-downs to prevent movement.
- Do not rely on the winch strap alone for transport.
- Ensure trailer is level when connected to the tow vehicle.

On the Road

- Allow increased following distance.
- Brake early and smoothly.
- Reduce speed on rough roads, steep ramps, and uneven surfaces.
- Avoid sharp turns and aggressive lane changes.
- Stop periodically to check straps, coupler, hubs, and tires—especially during the first 50 miles.

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5. General Trailer Maintenance Schedule

Before Every Trip

- Check tire pressure and condition.
- Inspect lug nut torque.
- Verify lights, wiring, and connectors.
- Inspect winch, straps, safety chains, and bunks/rollers.

Every 3 Months or ~3,000 Miles

- Inspect brake adjustment (if non self-adjusting).
- Check suspension components and fasteners.

Annually or ~36,000 Miles

- Inspect brake assemblies (pads, shoes, rotors, drums).
- Clean and inspect wheel bearings and seals.
- Inspect axle mounting hardware and U-bolts.
- Inspect frame, crossmembers, and welds.
- Inspect electrical wiring and connectors.

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6. Brake System Notes

Electric Brakes

- Adjust brakes as needed using the star wheel adjuster.
- Inspect magnets and brake linings annually or more frequently under heavy use.
- Confirm brake controller settings are properly matched to trailer weight.

Hydraulic Disc Brakes (If Equipped)

- Inspect brake fluid level and condition regularly.
- Follow manufacturer service intervals for actuators and calipers.
- Rinse brakes thoroughly after saltwater use.

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7. Corrosion Prevention and Care

- Rinse trailer thoroughly after saltwater or brackish water exposure.

- Wash off road salts and de-icing chemicals as soon as possible.
- Touch up paint or coating damage promptly.
- Store trailer in a dry, well-ventilated area when possible.

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8. Component Inspection — Bunks, Hitch, Winch, and Mounted Hardware

Regular inspection of trailer components is essential for safe towing and long-term durability. The following items should be inspected before each season and periodically throughout the year, especially on trailers that see frequent launching or saltwater exposure.

Wood Bunks and Bunk Hardware

- Inspect wood bunks for:
    - Cracks, rot, splitting, or excessive wear
    - Soft spots caused by prolonged water exposure
    - Carpet wear that may expose fasteners or abrade the hull
- Ensure bunk boards remain straight and properly aligned to support the hull evenly.
- Check all bunk brackets, lag bolts, carriage bolts, and mounting hardware for tightness and corrosion.
- Replace any damaged bunks immediately to prevent hull damage.

Pivot Hitch (If Equipped)

- Inspect the pivot hitch mechanism for smooth operation and full engagement.
- Check pivot pins, bushings, and locking mechanisms for:
    - Excessive wear
    - Looseness
    - Corrosion
- Verify all retaining clips, bolts, or locking pins are installed and secure.
- Lubricate pivot points as recommended to maintain smooth articulation.

- Do not tow unless the pivot hitch is fully locked in the towing position.

Winch and Winch Stand

- Inspect the winch strap or cable for:
    - Fraying
    - Cuts
    - Broken strands
    - UV or abrasion damage
- Confirm the winch ratchet and pawl engage fully and hold load securely.
- Inspect the winch handle and mounting bolts for tightness.
- Verify the winch stand is:
    - Straight
    - Securely mounted
    - Free of cracks or weld damage
- Ensure the bow safety chain or secondary bow strap is in good condition and properly attached.

U-Bolts and Mounted Component Hardware

U-bolts are commonly used to secure axles, steps, guide-ons, fenders, winch stands, and other mounted accessories.

- Inspect all U-bolts for:
    - Proper torque
    - Corrosion or rust pitting
    - Elongated holes or deformed brackets
- Verify U-bolts remain tight after initial use and periodically thereafter.
- Re-torque U-bolts after the first several trips and as part of routine maintenance.
- Replace any U-bolt that shows signs of stretching, corrosion, or damage—do not reuse compromised hardware.

U-Bolts and Mounted Component Hardware

U-bolts are commonly used to secure axles, steps, guide-ons, fenders, winch stands, and other mounted accessories. Because these fasteners can settle after initial use, routine torque checks are critical.

- Inspect all U-bolts for:
    - Proper torque
    - Corrosion or rust pitting
    - Stretched threads or deformed hardware
    - Elongated mounting holes or shifted components

U-Bolt Torque Check Reminder

- Check U-bolt torque:
    - After the **first 10–50 miles** of towing
    - After the **first few boat launches**
    - At the **start of each season**
    - Periodically throughout the year, especially on frequently used trailers
- U-bolts may loosen slightly as components seat and settle. This is normal during initial use.
- Always re-torque U-bolts using a calibrated torque wrench.
- Replace any U-bolt that shows signs of stretching, corrosion, or damage. **Do not reuse compromised U-bolts.**

9. Brake Actuation Systems — Hydraulic Surge & Electric-Over-Hydraulic (If Equipped)

Boat trailers may be equipped with either a **hydraulic surge coupler** or an **electric-over-hydraulic (EOH) brake system**. Proper inspection and maintenance of these systems is critical for safe braking performance.

Hydraulic Surge Coupler Inspection (If Equipped)

A hydraulic surge coupler activates the trailer brakes using the forward motion of the trailer during deceleration. Regular inspection ensures proper operation and braking response.

Coupler and Actuator Inspection

- Inspect the coupler housing for:
    - Cracks, deformation, or damage
    - Loose mounting bolts or fasteners
- Verify the coupler slides smoothly in and out without binding.
- Ensure the coupler is fully seated on the hitch ball and securely latched before towing.
- Confirm the safety pin or lock is installed.

Hydraulic System

- Inspect the master cylinder and actuator area for:
    - Fluid leaks
    - Damaged seals or boots
- Check brake fluid level and condition per manufacturer recommendations.
- Inspect hydraulic brake lines and fittings for:
    - Leaks
    - Cracks
    - Corrosion
- Bleed the brake system if the pedal feel becomes soft or braking performance is reduced.

Breakaway System (If Equipped)

- Inspect the breakaway cable for proper routing and secure attachment to the tow vehicle.
- Verify the breakaway lever or pin is intact and operational.
- Test the breakaway system periodically according to manufacturer guidelines.

Electric-Over-Hydraulic Brake System — HydroStar (If Equipped)

Electric-over-hydraulic systems, such as **HydroStar**, use an electrically powered hydraulic actuator to apply braking force. These systems provide consistent braking and are commonly used with in-cab brake controllers.

Electrical System Inspection

- Verify all electrical connections are clean, secure, and corrosion-free.
- Inspect wiring for:
    - Abrasion
    - Pinching
    - Loose or damaged connectors
- Confirm proper ground connection directly to the trailer frame.
- Ensure the tow vehicle brake controller is compatible with EOH systems and properly configured.

Hydraulic Actuator and Brake System

- Inspect the HydroStar actuator mounting location for:
    - Secure attachment
    - Protection from road debris and water intrusion
- Check hydraulic fluid level and condition as specified by HydroStar.
- Inspect hydraulic lines, fittings, and calipers for leaks or damage.
- Bleed the brake system if braking response becomes inconsistent or spongy.

Operational Check

- Before towing, apply the brake controller manually to confirm trailer brakes activate smoothly.
- During initial towing, perform low-speed brake tests to verify proper braking response.
- If error codes or warning indicators appear on the actuator, discontinue use until the issue is diagnosed.

General Brake System Best Practices

- Always match brake controller settings to trailer weight and load.
- Rinse brake components thoroughly after saltwater or brackish water use.
- Never tow with a brake system that is leaking, binding, or malfunctioning.
- Follow all component manufacturer service intervals and specifications.

10. Trailer Wiring Diagrams — Vision Harness Systems

Proper wiring is critical for safe towing, lighting operation, and brake functionality. This trailer is equipped with a **Vision wiring harness**, available in either a **7-way RV blade connector** or a **4-way flat connector**, depending on configuration.

Always inspect wiring before towing and repair any damaged or corroded connections immediately.

7-Way RV Blade Wiring Diagram (Vision Standard)

Typical 7-Way Wire Functions (Vision Standard Colors)

Wire Color	Function
White	Ground
Brown	Tail / Marker / Running Lights
Yellow	Left Turn Signal & Brake
Green	Right Turn Signal & Brake
Blue	Center Pin/ Reverse back up lights

Notes

- Electric brake or electric-over-hydraulic systems require the **blue brake signal wire**.
- A solid ground connection (white wire) to the trailer frame is critical for proper operation.

- Always verify tow vehicle wiring matches RV blade standards before towing.

4-Way Flat Wiring Diagram (Vision Standard)

Typical 4-Way Wire Functions (Vision Standard Colors)

Wire Color	Function
White	Ground
Brown	Tail / Marker / Running Lights
Yellow	Left Turn Signal & Brake
Green	Right Turn Signal & Brake

Notes

- 4-way harnesses **do not support trailer brakes**.
- If brakes are installed, a **7-way connector is required**.
- Ensure the ground wire is securely attached to a clean, bare-metal surface on the trailer frame.

Wiring Inspection & Best Practices

- Inspect wiring before each trip for:
    - Chafing or abrasion
    - Loose connectors
    - Corrosion at plugs and grounds
- Secure wiring away from sharp edges, suspension travel, and moving components.
- Apply dielectric grease to connectors to reduce corrosion, especially for boat trailers.
- If lights flicker or brakes operate inconsistently, **check the ground first**.

Important Disclaimer

Wire colors and functions shown reflect **common Vision wiring standards**. Always confirm wiring configuration against:

- Trailer-specific build documentation
- Component labels
- Tow vehicle wiring configuration