TRAILER SPECIFICATIONS AXLE SPECIFICATIONS

Model	Manufacturer	
Serial No	Weight Rating	_# Each
Mfg. Date	Axle Part No	

This information is needed when ordering axle replacement parts. Call 1.800.835.0209 and ask for the Parts Dept.

ENDURA TRAILER **OWNER'S MANUAL AND OPERATION GUIDE** Contents PLUG WIRING DIAGRAM Adjustment of Brake Controller......7 Chassis: 7 Hub and Drum Brakes: 8 Wheels: 11 Tires: 11 Latch Lubrication: 12 Maintenance Schedule 13

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<u>Manufacturer's Notice:</u> All specifications are subject to change without notice and without incorporating them into prior units.

Safety Decals

This illustration shows the different safety decals and their location on the trailer. Should a decal become unreadable for any reason, the decal must be replaced with a new decal. For replacement contact *Hillsboro Industries* at 1.800.835.0209.





General Guidelines

For safe and efficient trailer operation carefully read owner's manual before hitching and towing trailer and observe the following:

1. Do not exceed vehicle capacity ratings. The Gross Axle Weight Rating (GAWR) is the maximum allowable weight on the vehicle axle. The Gross Vehicle Weight Rating (GVWR) is the maximum allowable weight of a loaded vehicle. The Gross Combined Weight Rating (GCWR) is the maximum allowable weight of tow vehicle and trailer. Trailer GVWR & GAWR can be found on the V.I.N. sticker of the trailer. Consult tow vehicle owner's manual for GCWR information.



<u>CAUTION</u>: Exceeding the tow vehicle or trailer weight ratings could cause component failure resulting in possible injury or death.

2. For your trailer to safely meet its GVWR, you must uniformly distribute the weight over the floor or center a concentrated load on the floor. This transfers approximately 11% to 15% of the payload weight to the towing vehicle, providing greater traction for the towing vehicle.



<u>CAUTION</u>: If trailer is loaded improperly, the trailer may be unstable when towed.

3. Any hitch ball or coupling device used must be of adequate capacity for loaded trailer and must be properly secured to tow vehicle before hitching tow vehicle to trailer.

4. Tow trailer level at all times. Adjust by raising or lowering adjustable coupler pipe of a gooseneck trailer. Torque bolts to 200 ft. lb. and tighten jam nuts. For an Endura bumper hitch trailer the top of hitch ball shall be 21 1/4" above ground level when loaded. Make adjustments at the truck to achieve this dimension.

5. Tailgate of the pickup box must be lowered before hitching/unhitching a gooseneck trailer. When tow vehicle and trailer are properly positioned, engage coupling device. Connect all electrical and other hookups. Place tailgate in upright latched position before towing trailer. Raise the drop-leg jack to maximum raised position and secure handle in transport position. Check to ensure that all brakes and lights are functioning properly. Repair as required before towing trailer.

6. Attach safety chains securely to tow vehicle. Do not attach safety chains to any part of the tow vehicle coupling device. Chains shall be crossed below tongue of straight hitch trailers.

7. Attach breakaway cable securely to tow vehicle. Check Federal, State, and local requirements for your hauling operation.

8. Maintain tire inflation and wheel nut torque as outlined in Trailer Maintenance Section. (See Page 8 & 9)

9. Adjust brakes after first 200 miles, see Page 13 for adjustment procedure and Page 13 for adjustment schedule.

10. Apply grease to the ball and inside of coupler to minimize wear. The electrical system grounding is done through the wiring and not through the hitch.

11. When loading/unloading cargo, trailer must be level and hitched to tow vehicle.

12. All gates, doors, etc. must be secured before towing trailer. Keep all parts of your body clear of path of gates, doors, and other movable parts. Always secure rear gate secondary locking device (if trailer is so equipped) with a pin or padlock when transporting trailer. The rear gate on trailers equipped with Posi-Latch can be released from inside the trailer provided secondary locking device is not engaged. To release Posi-Latch, reach into opening in left hand rear stake, pull lower end of lever forward and lift to open rear gate.

13. If your trailer is equipped with a spring assisted rear ramp or a rear roll-up door, be careful to keep all parts of your body away from pinch points, including the cable entry to the spool on the overhead shaft.

14. To assure safe and legal operation of this vehicle, familiarize yourself with all local, state, and federal regulations that apply to your hauling operations. The requirements in this Manual DO NOT supersede any local, state, or federal regulations.

15. DO NOT weld on or drill holes into the trailer indiscriminately; this can cause structural failure.

16. Never get under a trailer that is raised by a jack unless it is resting on adequate and properly placed stands.

17. Park your trailer on level ground and place blocks ahead of and behind the wheels before unhooking trailer from towing vehicle.

PLUG WIRING DIAGRAM



Adjustment of Brake Controller

CAUTION:Always make sure area is clear of all traffic before
performing test.Never exceed 30 mph during tests.

The trailer's brakes must work together with the tow vehicle brakes. Synchronization adjustment must be made to achieve proper braking. Make sure trailer brake shoes are properly adjusted. Adjust brake controller while making hard stops from 30 mph. Adjust to engage trailer brakes slightly ahead of tow vehicle brakes. <u>Refer to brake controller</u> <u>instructions.</u> When properly adjusted, trailer will not give a pushing or pulling sensation while braking.

Trailer Maintenance

General Cleanliness: Promptly remove all manure, chemicals and debris from all surfaces of your trailer to preserve its appearance and to minimize chances of deterioration. NOTE: floors covered with rubber matting may darken.

Raising the trailer:

When raising the trailer, always use a jack and stands rated for more than the weight of the trailer. Place jack under frame only. Raise only as high as needed, then promptly place stands under frame and lower trailer onto stands.



<u>CAUTION</u>: DO NOT get under trailer unless it is resting on properly placed stands.



<u>CAUTION</u>: DO NOT lift or place support stands under the running boards. Place stands under the frame.



<u>CAUTION</u>: If any part shows excessive wear, repair or replace immediately to avoid failure of part.

Chassis:

Hub and Drum - Remove and clean bearings annually or every 6,000 miles, whichever occurs first. After bearings are removed, they should be thoroughly cleaned, dried, and inspected. Replace if necessary. Use solvent to clean bearings and parts. Inspect the seals for wear or damage and replace as needed. Inspect hub and drum for heavy scoring, corrosion, or wear and replace if needed.

CAUTION: Solvents may be highly flammable, carefully read label on solvent before using. Do not use solvent near fire or under other conditions that could cause ignition of solvent.

Grease lubricated bearings: The axles are equipped with grease zerks allowing the bearings to be periodically lubricated without removing the hubs. Lubricate by removing rubber plug from the grease cap in hub and pumping high grade wheel bearing grease into zerk until old grease flows out the cap around the nozzle. Remove excess grease and replace plug. This lube option does not replace regular inspection of bearings. Hub and drum must be disassembled and cleaned to inspect bearings. When assembling parts, the locking washer or cotter key for spindle nut must be replaced.

Oil lubricated bearings: Use SAE 90 oil in oil-lubricated wheel bearings. Fill to the level indicated on the axle cap.

To adjust bearings, rotate the hub while tightening the spindle nut. Tighten until there is a slight bind. This assures proper bearing seating. Then back nut off to nearest locking hole and install cotter key or bend locking tab. The desired end play is .001" to .010" for either grease or oil-lubricated bearings.

CAUTION: DO NOT get grease or oil on brake linings or drums.

Brakes: The operation of the brakes should always be checked before the trailer is towed. During use, attention should be paid to how the brakes are functioning and any irregularities should be checked before further use. Periodically check the brake wiring for wear spots in insulation and corrosion in connections. Repair any damaged wire and corroded connections. Locate cause of damage or corrosion and make changes to prevent reoccurrence.

Check linings and magnets when repacking wheel bearings. Replace all worn parts. Shoes should be replaced before the lining is worn to the rivets or support plate.

The brakes should be adjusted every 3 months or 3,000 miles. (NOTE: 8,000# and 10,000# brakes are self-adjusting.) The adjusting mechanism is inside the brake assembly. It is accessible by removing an oblong rubber plug from the lower backing plate. Use a brake adjusting tool or a screwdriver to adjust brakes. With the wheel lifted off the ground, rotate the wheel while adjusting the brake shoes outward until the shoes lightly touch the drum. You will hear a light rubbing sound. Install the rubber plug when properly adjusted.

To replace magnets, remove the screw clamping the wiring loom to the brake backing plate. Cut and remove the nylon tie. Slide the loom far enough to expose the butt connectors. Remove the butt connectors by cutting the wires just above them (on the side away from the magnet). Remove and replace the magnet. Brake magnets must be wired in parallel and not in series. Connect the magnet to the line wires with new butt connectors. Connect either magnet wire to the white line wire, and the other to the black line wire. You will need to strip a short length of insulation from the end of each wire to be inserted into the butt connectors. Crimp the butt connector onto the wire with a standard crimping tool. Slide the loom over the butt connectors. Install a new nylon tie by weaving it through the loom between the screw clamp and the backing plate end of the loom. Replace the screw to hold the loom in place.

Breakaway Battery: Check condition of battery prior to installation and prior to each trip.

Fully charged voltage = 12.9 volts, discharged voltage = 11.6 volts. Acceptable open circuit voltage is from 12.6 to 12.9 volts at 77° F. Check terminals with a voltmeter.

Note: Improper installation of the breakaway battery will destroy the brake control. The negative terminal must go to ground and positive terminal to the breakaway switch.

Check your breakaway system periodically to ensure that wiring and connections are secure. A short or open circuit can result in improper brake operation.



Breakaway Battery Diagram

BATTERY DATA:

12-volt 5.0 amp-hour Max discharge current = 40 amps Maximum charge current must be limited to 1.2 amps Length - 3.54" Width = 2.76" Height = 4.13" Weight = 3.8 lbs. Terminals: Faston Tab .187" x .032"

UNDER NORMAL OPERATING CONDITIONS:

Service Life: 4-5 years in standby applications or 200-1000 charge/discharge cycles depending upon depth of discharge and rate of charge.

If excessive discharging of the Breakaway battery is required, check battery and recharge with a commercial charger if necessary. Make certain the 12-volt commercial charger (AC to DC) can limit the charge current to less than 1.2 amps.

If Breakaway System is equipped with optional charging circuit, current will be drawn from the tow vehicle's battery any time the tow vehicle is connected to the trailer. The most current which will be drawn is 1.2 amps.

To **ONLY** charge the breakaway battery when the vehicle is running, a battery isolator may be installed in the 12-volt supply line (Black wire for tow charger).

To maximize the life of the Battery, the following conditions should be met:

(1) Avoid over or undercharge. This is the single worst enemy of lead-acid batteries.

(2) Batteries should not be stored in a discharged state or at elevated ambient temperatures.

(3) Avoid exposing batteries to heat! Service life is shortened considerably at temperatures above 86°F.

(4) Due to the characteristics of this battery, after six to nine months of storage, the battery should be recharged.

(5) Charge the battery at the proper rate. Current should be limited to less than 1.2 amps. Charge current above 1.2 amps will result in shortened service life.

(6) Provide adequate air circulation when charging battery. Do not charge battery in any other container besides the breakaway battery box.

(7) DO NOT PLACE BATTERIES IN CLOSE PROXIMITY TO OBJECTS WHICH CAN PRODUCE SPARKS OR FLAMES.

(8) Do not expose battery case to organic solvents or adhesives.

(9) DO NOT ATTEMPT TO DISASSEMBLE BATTERIES. CONTACT WITH SULFURIC ACID MAY CAUSE HARM.

(10) Fasten batteries tightly and make provisions for shock absorption if exposure to shock or vibration is likely.

(11) Do not throw batteries into fire; batteries so disposed may rupture or explode.

Suspension: Rubber Torsion axles have no serviceable suspension parts. Periodic inspection must be made for signs of abnormal wear or damage. If any damage is present the axle must be serviced before use.

Wheels: When mounting wheels, start installation of all wheel nuts by hand to prevent cross-threading. Wheel nuts are torqued in three stages, always in sequence shown below. 1st stage, torque nuts to 1/3 torque value shown. 2nd stage, torque to 2/3 torque value shown. 3rd stage, torque wheel nuts to final torque value shown. Check wheel nut torque after 10, 25, 50, and 200 miles after mounting wheel. Check torque every 3,000 miles.

 Torque
 (€) (╹)

 1/2" 60° nut - 90 ft. lbs.
 (8) 8 BOLT (?)

 9/16" 60° nut - 110-120 ft. lb.
 (4) (2)

 9/16" 90° nut - 120-150 ft. lb.
 (5)

 9/16" 90° nut - Flat Disc Wheel 175-225 ft. lb.
 Torque Sequence

 5/8" 90° nut - Clamp Ring 190-210 ft. lb. (Greased Threads)

Carefully check each wheel for dents, cracks, or distortion every 6,000 miles. Regular cleaning of the wheels with soap and warm water will prolong their beauty.

Tires: Maintain proper air pressure in tires at all times: (check the sidewall for tire size and load range rating)



CAUTION: Do not replace with tires requiring more air pressure than maximum air pressure rating of the wheels.

<u>Tire size</u>	Load range	PSI (radial)
ST235-85R16	E	80
ST235-85R16	G	110
LT235-85R16	G	110
LT215-75R-175	Н	125

Inspect tire tread condition for unusual wear every 3,000 miles. Correct any condition causing unusual wear before replacing tire. The following is a variety of wear patterns, causes, and possible remedies:

WEAR PATTERN	Possible Cause	Possible Remedy
1. Center wear	Over inflation	Adjust air pressure
2. Edge wear	Under inflation	Adjust air pressure
3. Side wear	Incorrect camber	Align axle

WEAR PATTERN	Possible Cause	Possible Remedy
4. Toe wear	Incorrect toe-in	Align axle
5. Cupping	Out of balance	Balance tire
	Bearings loose	Check bearing adj.
6. Flat spots	Tire skidding	Adjust brakes or
	controller Tow the trailer level	

Cleaning Exterior Surfaces:

Fiberglass components may be washed by hand with warm soapy water or spray washed at a car wash. Mild discoloration of aluminum surfaces may be removed at a car wash. To enhance the brilliance of aluminum surface or to remove stubborn stains, acid wash your trailer at a truck wash.

Lighting:

Every time the trailer electric circuit is connected, check the function of all lights. When a light fails to function, find the cause and make all necessary repairs before towing trailer. Promptly replace all damaged lamps to provide safe and legal trailer operation.

Periodically check the light and brake connector sockets for loose connections or loose prongs. Repair or replace if socket or plug becomes worn or corroded. At the same time check the wiring throughout the trailer for damage or corrosion at connections. Take necessary corrective action.

Latch Lubrication:

If your trailer is equipped with rear gate Posi-Latch, use a dry lubricant, such as graphite, from an aerosol can. Apply periodically to the slide areas of the vertical tube inside the latch rear stake. Aerosol dry graphite may be used on the latch in enclosed escape doors. Be careful not to spray lubricant on aluminum door. It may stain the door.

Storage

If trailer is to be stored for an extended period of time it is important that the trailer be prepared properly.

- 1. Remove the safety breakaway battery and store indoors.
- 2. Remove all mud and manure from trailer.

3. Raise the trailer and place jack stands under the trailer frame so that the weight will be off the tires. See raising the trailer procedure Page 7 before raising trailer.

4. Lubricate moving parts that are exposed to the weather.

<u>NOTE</u>: On oil lubricated hubs the upper part of the roller bearings are not immersed in oil and are subject to corrosion. For maximum bearing life it is recommended that you revolve your wheels periodically (every 2-3 weeks) during periods of prolonged storage.

After the trailer has been in storage for an extended period of time, inspect all brake and hub parts for rust. Rust on armature or braking surfaces can be removed with fine emery cloth. Lubricate all brake moving parts with a high temperature brake lubricant. Do not get lubricant on brake shoes, pads, drum, or disc. Check tightness of all bolts before using trailer.

Maintenance Schedule

ITEM INSPECT / SERVICE PERIOD

Brakes	Test Operation Safety Breakaway Switch & Battery Adjustment Wiring Magnet & Lining Wear	Every use Every use 3 mo. or 3,000 mi 3 mo. or 3,000 mi 12 mo. or 6,000 mi
Hub & Drum	Check for Damage Repack Bearings Inspect Seals	12 mo. or 6,000 mi 12 mo. or 6,000 mi 12 mo. or 6,000 mi
Suspension	All Parts	6 mo. or 6,000 mi
Wheels	Lug Nuts Check for Damage	3 mo. or 3,000 mi 6 mo. or 6,000 mi
Tires	Inflation Condition	Every use 3 mo. or 3,000 mi
Lighting Trouble Sho	Lamps Wiring & Plug oting Electric Brakes	Every use 3 mo. or 3,000 mi
<u>Problem</u>	What could cause it	<u>How to fix it</u>

No brakesDefective magnetsReplace magnetsOpen circuitFind & correctDefective controllerTest & correctShort circuitLocate & repairIncorrect AdjustmentAdjust brakes

Problem What could cause it

Weak breaks Loose or corroded electrical connections

> Worn magnet or linings Glazed linings Scored or grooved drum Wrong resistor setting Oil or grease on lining or magnet

Incorrect Adjustment Improper Synchronization Overloaded Trailer Bent backing plate

How to fix it

Check that all connections are clean

Replace magnet or lining Burnish or replace Machine or replace Readjust resistor Replace seals & clean or replace oily parts Adjust brakes Correct Load only to GVWR Replace bent plate

Intermittent or surging brakes Drums out of round Oil or grease on lining or magnet

> Loose wheel bearing Loose or corroded electrical connection **Defective Controller**

Locking or grabbing breaks Loose or bent parts

Machine or replace Replace seals & clean or replace oily parts Check & adjust Check that all electrical connections are clean Test & correct or replace

Incorrect Adjustment Improper Synchronization Drums out of round Defective controller Excessive brake power

Check for broken part Remove & replace Adjust brakes Adjust Machine or replace Test & correct Adjust resistor, add one if none used (see brake controller manual)

Side Pulling brakes

Incorrect adjustment Oil or grease on lining or magnet

Broken wires Bad connections

Adjust Replace seals & clean or replace oily parts Find & repair Find & repair

Noisy Brakes Incorrect Adjustment Lining worn thin Loose or damaged parts

Bearing misadjusted

Adjust Replace shoes Check for broken parts Remove & replace Adjust

Problem What could cause it

How to fix it

Dragging brakes

Defective controller Incorrect adjustment Fatigued or broken shoe return spring Loose or damaged parts

Brake assembly corrosion Drums out of round Loose wheel bearing Bent spindle Faulty break-away switch Test & correct or replace Adjust

Replace shoe return spring Check for broken parts Remove & replace Clean & lubricate Machine or replace Adjust Replace axle beam Replace

Stop light failure

Improper wiring Broken wire Rewire per diagram Locate & repair or install new wire

Rust Non-use or Storage Remove drum, remove rust with fine emery cloth. Reinstall drums, Adjust bearings

Reporting Safety Defects

If you believe that your vehicle has a defect which could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying Hillsboro Industries.

If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer, or Hillsboro Industries.

To contact NHTSA, you may either call the Vehicle Safety Hotline toll-free at 1-888-327-4236 (TTY: 1-800-424-9153), or go to http://www.safercar.gov; or write to: Administrator, NHTSA, 1200 New Jersey Avenue S.E., Washington, DC 20590. You can also obtain other information about motor vehicle safety from <u>http://www.safercar.gov</u>. Call (620)947-3127 to reach Hillsboro Industries.

MANUFACTURER'S WARRANTY Endura Aluminum Products from *Hillsboro Industries*

Hillsboro Industries (HI) warrants the main frame of its Endura line of products against structural failure for ten (10) years from the date of purchase by the original owner. This includes weld failures and failure of tubes in the side walls, the neck and deck structure, as well as adhesive failure in the side walls.

The floor, tubular framed gates and roof components are warranted against structural failure, including weld and/or tubular component failure for two (2) years from the date of purchase.

All other Endura components manufactured by HI are warranted for one (1) year from the date of purchase.

Warranty on any HI product used by the customer in the transportation of goods for compensation or in rental enterprises will be one-half of the above-stated length.

This warranty applies to the original owner only.

The warranty card that accompanies each new product must be properly completed by the owner and returned to Hillsboro Industries, 220 Industrial, Hillsboro, Kansas 67063 within 30 days of the purchase date in order to initiate and ensure warranty coverage. All warranty claims must be submitted through an authorized HI dealer for processing.

Hillsboro Industries will not be responsible for any damage caused by the abuse, misapplication or misuse of their products. Products loaded in excess of the Gross Vehicle Weight Rating (GVWR), as listed on its "VIN" or Certification Plate, will immediately invalidate the warranty and all future warranty claims on that specific unit.

Any part or workmanship, subject to this warranty, if defective, as determined solely by HI, will be repaired or replaced, at the option of HI, without charge. Photos may be required by HI to assess extent of damage. If repairs or replacements are made at a location other than HI, reimbursement to the original owner will be made at an amount not to exceed the amount HI would charge for the parts and labor. All parts for warranty consideration must be returned to Hillsboro Industries* freight prepaid. All warranty claims must be filed with HI no later than 30 days after the warranty period expires.

MANUFACTURER'S WARRANTY (continued)

THE FOLLOWING COMPONENTS MAY BE COVERED BY THE WARRANTY OF THEIR RESPECTIVE MANUFACTURERS, BUT ARE NOT COVERED BY THE HI WARRANTY:

- Tires: any tire defect must be handled by the tire manufacturer or a representative of theirs, such as a tire dealer, and not through HI
- Axles, wheels, lighting, wiring, jacks, hydraulic pumps and cylinders and any other components not manufactured by HI. However, warranty claims for these components may be handled through HI. Contact HI dealer for details when needed.

HOW TO FILE FOR WARRANTY:

- First contact the selling dealer and process the claim through the dealer.
- Any HI product found to have defective material or workmanship must be serviced or corrected through an authorized HI dealer. All warranties must then be authorized by a Hillsboro Industries factory representative. Hillsboro Industries will not make reimbursements for any repairs and or adjustments made without prior written consent from the HI factory.
- Always provide the last 5 digits of the VIN

HI neither assumes nor authorizes any person to create or assume for it any obligation or liability in connection with its products or to undertake any responsibility to any purchaser for representation or warranty made by a dealer beyond those expressly set forth herein.

HI shall not be held liable for consequential commercial damages resulting from any breach of this warranty or any other warranty, all of which are expressly disclaimed, for any delay in the performance of this warranty due to causes beyond its control.

THESE EXPRESS WARRANTIES ARE IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. TO THE EXTENT THAT ANY LIMITATION CONTAINED HEREIN IS PROHIBITED BY ANY STATE OR FEDERAL LAW, SUCH LIMITATION IS VOID.

For more information see your dealer or contact: Hillsboro Industries 220 Industrial Road Hillsboro, Kansas 67063 Call toll free 1.800.835.0209

**Gross Vehicle Weight Rating includes the weight of the trailer and its payload. The load must be positioned to place the center of the weight at the center of the trailer while accommodating required loads on hitch / tow vehicle.