

XP4656 HID HEADLIAMP SYSTEM OWNER'S MANUAL KENWORTH INSTALLATION

HID USA



STARR HID USA

WWW.STARRHIDUSA.COM WWW.FACEBOOK.COM/STARRHIDUSA



Limited Product Warranty

STARR HID USA warrants that all STARR headlamps shall be free of defects in material and or workmanship for a period of three years from the date of purchase. Any STARR headlamp that has been determined by STARR to have failed due to defective material or workmanship during the stated warranty period will be repaired or replaced, at STARR's option, through a servicing dealer. At the time of purchase, complete and mail the "Warranty Registration Card" on the back of this manual. Proof of purchase must accompany all warranty claims.

The following are excluded from this warranty:

- Failure due to improper installation or maintenance, modification, misuse, abuse or unauthorized repairs.
- Damage to the product due to vehicle collision
- Automotive lamp bulbs which are subject to varying degrees of normal wear and tear.
- Labor costs, shipping, towing or transportation charges.
- Costs incurred due to loss of the use of vehicle
- Incidental damage due to other components.

STARR will not be liable for any loss, damage, incidental, consequential, or otherwise arising from the installation or use of this product. STARR's maximum liability shall not in any case exceed the purchase price of your HID Upgrade Kit. This limited warranty gives you specific legal rights. You may also have other rights that may vary from state to state.

General Warnings and Cautions

Safety Precautions:

- Always wear eye protection when working near the battery.
- Disconnect the battery when working on electrical components to avoid causing damage to your electrical system.
- Always use the proper tools.
- Do not touch the bulbs. If the H.I.D. bulbs are touched, oils on your hand will be left on the bulb surface which will cause the bulb to explode and will void your warranty.

Warning!

- When installed and operational, cabling and electronic components of this kit may conduct high voltages. User must respect all high voltage warning labels and must completely disconnect the system from the battery before servicing the system.
- HID Lighting systems produce a large amount of intense white light. Avoid looking directly into light beam when operating.

Failure to follow these warnings may result in severe injury or death.

Caution!

- HID lamps will become hot during operation. Allow the lamp assemblies to cool for 15 minutes before attempting to service them. Failure to do so may result in burns.
- Lenses for the lamp assemblies should be kept clean and free from major light-blocking coverings. Failure to keep light path clear may cause overheating, which could cause damage to the lamp assembly. Such damage is not covered under this warranty. In addition, materials accumulated on the lens may cause excess glare.
- To avoid causing excessive glare that may endanger other drivers, be sure lamps are mounted in the proper orientation as marked on the housing and lens.
- Significant changes in passenger vehicle or pickup truck load may change the aim of forward lighting. If hauling heavy loads, check and re-aim the HID headlamps as necessary to avoid causing excessive glare.
- Use caution if installing wiring or ballasts on the front bumper as some vehicles have airbag sensors located in this area. Check vehicle owner's manual for information regarding location of sensors.
- Failures to locate all HID headlamp kit components and wiring away from moving vehicle parts may cause the STARR headlamp kit or the vehicle to fail to operate properly.
- Damage caused by improper installation is not covered under this warranty.

Aiming Your New Projection Lamps

Although this headlamp system is fitted with the most precise optic available, it is of the utmost importance that these headlamps be properly aimed so they do not blind oncoming traffic. Aiming instructions are included in this owner's manual.

Product Description

This HID Upgrade Kit contains the latest in forward lighting technology. Every aspect of the design has been engineered to help increase night-time driving safety and enjoyment.

All STARR™ headlamps provide many significant benefits such as:

- Higher color temperature (whiter lighting) enhances the contrast of road debris, signs and markers and provides better peripheral vision.
- Clean styling complements all vehicle types from sports cars to heavy-duty trucks.
- Designed to last nearly ten times longer than standard halogen products.
- Lower power consumption, which reduces the load on electrical system components.
- Meet US and Canadian Legal requirements. The HID upgrade kits are street-legal in all states and provinces.
- Sophisticated optical design puts more light onto the road and reduces glare to oncoming drivers.

STARR™ headlamp kits are complete headlamp systems. Unlike “retrofit” or “adapter” packages that replace some elements of an existing headlamp system, STARR™ HID upgrade kits include all components necessary to assemble with the stock mounting brackets on your vehicle.

DOT Compliance Information

All STARR™ Headlamp Kits are certified as complying with all applicable performance, construction, and durability requirements under US Federal Motor Vehicle Safety Standard 108 and under Canadian Motor Vehicle Safety Standard 108 for headlamp systems for use in on-road vehicles. Examine the lenses of the headlamps contained in your headlamp package. Note the “DOT” lens marking. This is your assurance that these headlamps, when properly installed and correctly aimed, are legal for on-road use in cars and trucks in all states, provinces, and territories in the US and Canada.

IMPORTANT: In order for your vehicle to remain compliant with state, provincial and/or federal lighting laws, you must install ALL components of the HID Upgrade Kits. Do not attempt to mix components of this package with parts from any other headlamp system. Doing so may cause non-compliance with applicable regulations and requirements, and will reduce your roadway safety after dark. If replacement parts are required, use only genuine STARR™ components that were specifically designed for this purpose.

Beam Pattern Information

A headlamp beam is not simple. It is **not** a floodlight that sprays light in all directions, nor is it merely a spot beam that concentrates light in one direction **only**. Headlamp beams are specifically designed to place light where it needs to go so that you can safely see at night in good and bad weather, while at the same time not blinding other road users. Proper beam pattern design is very important not only to maintain and improve your roadway safety and to protect the safety of other drivers, but also to comply with state, provincial and federal forward lighting regulations. ALL STARR™ headlamps produce a safe, high-performance and legally compliant beam pattern when properly aimed.

Unpacking and Assembly Information

Unpack your STARR™ Headlamp Kit. Follow your vehicle’s owner manual to change the headlamp unit. Use the following wiring diagram to make the appropriate connections to your existing wire harness.

STARR™ 4-Headlamp System Kits

STARR™ 4-headlamp system kits are designed as an HID low beam and halogen high beam on separate headlamp assemblies. Lay out all of the parts so that you can have ready access to them as you assemble your headlamp package and install it in the vehicle.

4 Headlamps (2 HID low & 2 Halogen high)
2 HID Ballasts
2 Ballast-to-Bulb cable connectors

2 Complete Wiring Harnesses
2 HID Bulbs & 2 Halogen Bulbs
1 Notice of Equipment Compliance

Installation of the STARR™ headlamps will require both mechanical placement of components, and electrical wiring of components. All components must be secured to the vehicle as directed and all wiring and splicing must be done in a good and durable manner. Use quality terminals and supplies. Work carefully and ensure that none of the wiring work done in the process of installing the headlamp system will interfere with other vehicle systems or deteriorate due to vibration, corrosion, heat, exposure to moisture or dirt. Also make sure that it will not present a hazard to service personnel.

KENWORTH INSTALLATION INSTRUCTIONS



1. Remove the headlamp trim and retaining rings from the headlamps.



2. With all of the existing headlamps still connected, confirm the location of the vehicle's low beam (+) and high beam (+) terminals on the outboard headlamps (using a voltmeter). Ensure that the low beam terminal will align with the green relay activation wire and that the high beam terminal will align with the other end of the black diode jumper on each of the wiring harnesses provided.



3. Turn off the headlamp switch and disconnect the factory headlamps. {1}

4. Remove the individual terminals from both the high and low beam headlamp plugs, noting the specific location of each terminal. {2}



5. Pull each wire out through the hole in the back of the factory headlamp bucket. It will be necessary to remove the grommet from the hole with the wiring. It is recommended that this is done carefully so that the grommet is not damaged and may be reused. {5}

6. Cut the ends off each cylindrical protrusion on the back of each headlamp bucket approximately one inch from the end (where the cylindrical profile meets the conical profile). {3}

7. Install the HID bulbs into the HID projector headlamps.



8. Check the fit of your STARR HID projector headlamps in the outboard headlamp mounts. {3}

9. If necessary, widen the opening in the back of the outboard headlamp mounting pots to accommodate the projector headlamp using a die grinder or other appropriate tool.

10. Install the HID projector headlamps into the headlamp buckets in the outboard locations.



11. Check the clearance of the ballast-to-bulb cable when installed into the back of the projector headlamp. {4}

12. If necessary, trim the headlamp bucket to accommodate the ballast-to-bulb cable. {4}

13. Install the high-beam reflectors into the headlamp buckets in the inboard locations.

14. Install the HID ballast into the headlamp bucket extension. {6}

15. Connect the wiring harness and the ballast-to-bulb cable to the HID ballast. {6}

16. If necessary, drill an 11/16 inch hole in the back of the headlamp bucket extension. A step-drill is recommended for this task.

KENWORTH INSTALLATION INSTRUCTIONS



17. Feed the factory headlamp wiring in through the hole in the back of the headlamp bucket extension and seal the hole with the factory grommet. {5}

18. Insert each of the headlamp wires back into the headlamp plugs in their original locations. {7}

19. Connect the high beam plug to the bulb in the high beam reflector using the high-beam adapter provided. {7}



20. Connect the high/low-beam plug to the wiring harness provided. {7}

21. Connect the ballast-to-bulb cable to the HID bulb in the back of the projector headlamp.

22. If necessary, drill a hole in the back of the headlamp bucket extension to accommodate power leads.



23. Run a pair of power leads (+12V power and ground) of 14 gauge (or heavier) wire, from a suitable source such as the alternator, into each of the headlamp bucket extensions. It is recommended that the connection at the power source is made after the wires are properly connected to the HID headlamp wiring harness inside the headlamp bucket extension. {9}

24. Connect the power leads to the free red (+12V) and black (ground) wires on the wiring harness.



[For 2008 and newer Kenworth Models, mount a 6 Ohm, 50 watt power resistor to a suitable (metal) member of the truck near each set of headlamps. {8} Connect to the green wire on the wiring harness and run a lead to one terminal on the resistor. {8} Connect the other terminal on the resistor to an appropriate ground. {8}]

25. Turn on the headlamps.

26. Once correct operation is confirmed, install the headlamp bucket extensions onto the back of the factory headlamp buckets

- If necessary, drill a 1/4 inch hole into the back of the protrusions on each end of each headlamp bucket extension. {10}

- Secure the extension to the factory headlamp bucket using #14x1.25" self-tapping screws threaded into the back of the headlamp aiming screw holes on each end of the factory headlamp bucket. {11}



27. Reinstall the headlamp trim and enjoy quality HID lighting!

XP4656 WIRING DIAGRAM



NOTES

- Protect all power connections with silicone grease
- Check polarity of factory high/low headlamp plug (3 terminals) with original halogen headlamps connected.
- Connect the H.I.D. ballast to the H.I.D. bulb before powering the ballast.
- Connect power and ground leads to the battery, alternator or other suitable location (must have power at all times).

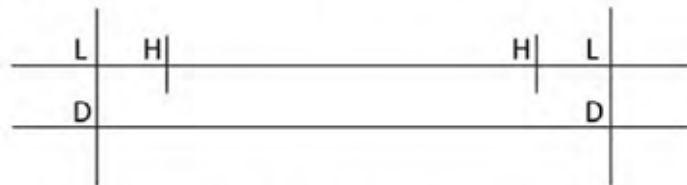
HEADLAMP AIMING INSTRUCTIONS for a 4-Lamp System

ATTENTION: ALL HEADLAMPS are DANGEROUS and INEFFECTIVE if they are not aimed properly. Improper aim robs your headlamps of their ability to shine light where you need it in order to see your way through the night. High-performance headlamps such as these can also create blinding glare for other road users. Improper aim can also be cause for a police citation. It is very important for you to have your headlamps aimed properly. We strongly recommend taking your vehicle to a professional that has the proper tools.

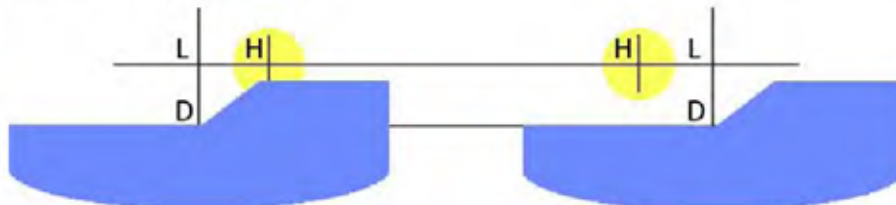
Our DOT compliant headlamps will be effective only if they are aimed properly. Improperly aimed headlamps are dangerous and illegal. Following the OEM headlamp design, each one of our headlamp models uses a different aiming procedure, (either Visual Optical Aim or Mechanical Aim). When the following instructions are performed properly, they offer a safe way to aim your headlamps for maximum performance and no glare.

Please note that the instructions below can NOT be used on any other mechanically aimed headlamps that are not manufactured by STARR™. Our Mechanical Aim headlamps can be aimed visually only because we use our HID low beam projector that has the correct cut-off needed to allow Visual Optical Aiming. Other headlamps were designed to be aimed with mechanical aim only and CANNOT be aimed visually.

1. Your vehicle must have an average traveling load. This includes average traveling weight for passengers, fuel, and trunk.
2. Tires should have the correct pressure.
3. Make sure the suspension is on a standard mode.
4. Find a level location in front of a flat vertical wall. Ensure you have enough level space to back your car up 25 feet. This wall will be your aiming screen.
5. Drive your car up to the wall.
6. Using a marker, mark on your screen the center of each headlamp. All our headlamps have a small circle on the lens to show where the center is. Mark with the letter "L" the center of each low beam, and an "H" for the center of each high beam. Be sure the centers are marked clearly and as accurately as possible.
7. Drive your car straight backward exactly 25 feet. Measure the distance on each side of the car to be sure the car is straight backwards and perpendicular to the wall.
8. Draw a vertical line straight downwards from each of the two "L" center marks. Make a mark on these lines at exactly 2.5" below the "L" marks. We will call this Mark "D" on each side.
9. Draw a horizontal line between the two "L" center marks. We will call this line "L-L."
10. Draw a horizontal line between the two "D" marks. We will call this line "D-D."
11. Extend each vertical and horizontal line at least 6 inches from each mark to allow for better reference when aiming. Your screen should look like this:



12. Using the aiming mechanism on each headlamp, move the low beam pattern cut-off of the headlamp vertically on line "D-D" and to the center of point "D" right in front of each headlamp. The cut-off is the distinctive line where the light starts to go up to the right. For the high beam, aim the hot spot on each beam pattern on the center of point "H". This is how the beam pattern should look on your screen:



NOTES:

- Be sure the wall is vertical in reference to the ground (90 degrees).
- Make sure the ground is level.
- Make sure the car is straight backwards (perpendicular) to the wall.
- Make sure all your measurements are clear and centered.
- Work on one headlamp at a time. Unplug the light that is not being aligned to achieve accuracy.

Maintenance

Headlamp aim should be checked and, if necessary, corrected on a regular schedule, especially in high-vibration or high-mileage applications. Remember that headlamp aim is normally checked upon replacing a burnt-out headlamp. Your STARR™ headlamp, however, is designed to last many times longer than conventional headlamps, so it is important to remember to check the aim frequently over the life of the product.

No routine maintenance is required. Headlamp lenses should be cleaned with plenty of clean water and soap. The polycarbonate lenses on your STARR™ headlamps are designed to withstand most standard cleaning chemicals, but still use caution.

It is strongly recommended that copies of these instructions be kept with the vehicle service manual should the headlamp system require service at a future date. It is also recommended that copies of these instructions be kept in the vehicle at all times, should the headlamp system require service in a location other than that where it was originally installed. Questions or comments concerning the installation or performance of your STARR headlamp system should be referred to the authorized STARR dealer the headlights were purchased from.



This Certificate verifies that the products enclosed have been tested by an accredited laboratory and have been found to be in compliance with jurisdictional standards FMVSS108 and CMVSS108

WARRANTY REGISTRATION CARD

Please fill out the following information, detach or photocopy card and mail to the authorized STARR dealer the headlights were purchased from to activate your warranty.

FULL NAME:

MAILING ADDRESS:

CITY:

STATE/PROV:

POSTAL CODE:

PHONE:

EMAIL:

STARR™ PRODUCT NUMBER: XP4656

PRODUCT SERIAL NUMBER:

VEHICLE INFORMATION

MAKE:

MODEL:

YEAR:

PRODUCT WAS PURCHASED FROM:

DATE PURCHASED:

Warranty claims will require Proof of Purchase at time of claim. Please retain your sales receipt. Information provided is for STARR HID USA Company use only and will not be given to a third party for any reason without your prior written consent.

Visit us at www.STARRHIDUSA.com