

# SPORT TOURING HEADLIGHT UPGRADE INSTALLATION INSTRUCTIONS

## INTRODUCTION

Thank You for purchasing our Sport Touring Headlight Upgrade. We believe you will find night riding entirely more enjoyable with this upgrade to your Ducati Sport Touring motorcycle. Please follow these instructions carefully to ensure proper installation and operation. Installation should require 2-4 hours depending on your skill level and familiarity with the motorcycle. And please, feel free to comment on your installation experience. If you find an error or omission, or just think you know a better way to do something, let us know!

## LIMITED WARRANTY

Ducati Designs, LLC warrants this product to be free of defects in both materials and manufacture for as long as you, the original purchaser, own your bike. We will repair or replace any components which fail during normal use. Exceptions to this warranty include components which fail as a result of accident or collision, racing or off-road use, road hazard, vandalism or improper installation. Bulbs will be replaced free of charge (shipping not included) if they fail within the first year of use. Contact us at [info@ducatidesigns.com](mailto:info@ducatidesigns.com) if you need to make a warranty claim.

No other warranty, either expressed or implied, applies to the use of this product. Ducati Designs, LLC accepts no liability for consequential damages or loss arising from the use or misuse of this product, as a result of accident, collision, negligence, theft or other cause, including damages which occur because of a complete or partial failure of this product, or as a result of improper installation or aiming by the installer.

Motorcycling carries a higher risk of accident and injury than other forms of recreation and transportation. It is incumbent upon the rider to ride safely and defensively. Take precautions to avoid injury or death by always riding within your skill level and the capabilities of your motorcycle. Always wear a helmet and protective clothing, and adhere to local, state and federal laws.

## KIT CONTENTS

Headlight Assembly	Upper Shock-mount Plate	Wiring Harness Assembly
M6 X 16mm SS Cap Screws (2)	Nylon Wire Ties (4)	Installation Procedure
M6 Nylon Lock SS Hex Nut (2)	¼" Nylon Washer (2)	40A Micro Relay (2)
8-32 X 0.5" SS Truss Head Screw (2)	7/8" SS Spacer (2)	20A Fuse (1 + 1 spare)
3M Scotchlok Pigtail connectors (4)	Ducati Logo Stickers (2)	Vinyl Cap (1)

## TOOLS REQUIRED

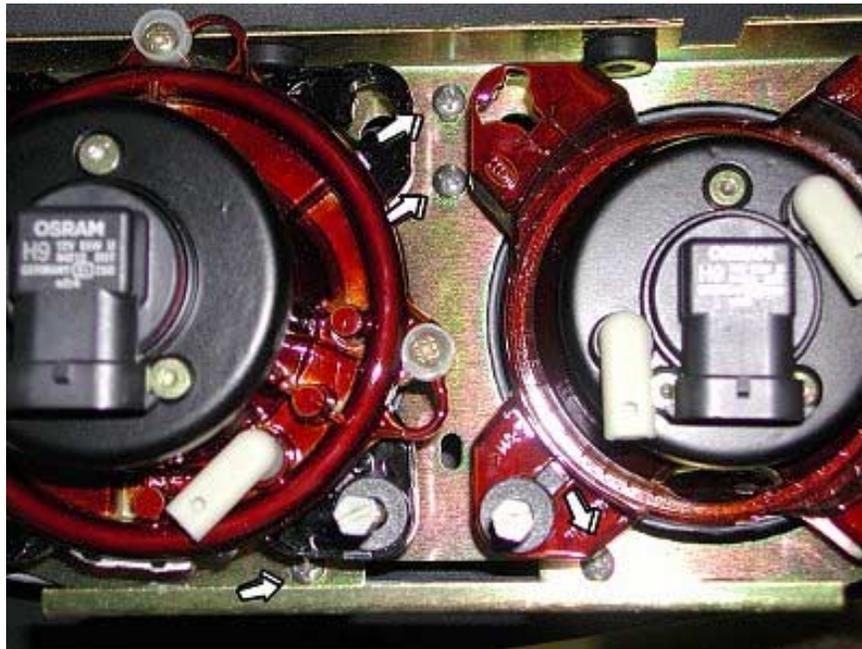
3mm Hex Key	7mm Socket	Slip-joint Plier
5mm Hex Key	8mm Socket	Wire Cutter
6mm Hex Key	10mm Socket	Drill Motor
#2 Phillips Screwdriver	Socket Wrench	3/16 Drill Bit
	Socket Extension	

## REMOVE THE SHELL FOR FINISHING

You can easily finish the fiberglass shell to match, or complement, your Ducati fairing. Your local Ducati dealer will be happy to recommend a painter familiar with finishing Ducati components using factory-matched paints. If you do choose to finish the shell using another finish, be sure to avoid using lacquer-based paints, as they are incompatible with the gel-coated fiberglass base coat.

Included in the kit are one each of silver and black Ducati "D-dot" logo stickers. These can be applied to the shell before the finishing clear-coat to match the existing Ducati fairing decals.

1. To finish the headlight shell, you will need to remove it from the assembly. Using a Phillips screwdriver, locate and remove the four, 4mm screws as shown in Figure 1. The shell can then be removed from the headlight frame.
2. It is not necessary to remove the mounting tabs from the fiberglass shell for finishing. Your painter can paint around or over these tabs.



**Figure 1**

3. To replace the shell, carefully slide the shell over the lighting units and install the four, 4mm screws removed in step 1. Center the shell to produce as even a gap around each light before securely tightening the screws.

## REMOVE ORIGINAL HEADLIGHT

1. Remove the following fairing components per the instructions in the Ducati owners manual:
  - Instrument surrounds
  - Upper fairing.
  - Chin fairing (under headlight/air intake).
  - Right-side middle fairing (covers battery)
  - Belly fairing.
2. Disconnect the speedometer cable from the speedometer. Unthread the ring nut at the top of the speedometer cable and retract the cable downward about 4-6 inches.
3. Disconnect the headlight wiring from the headlight bulbs. Retract the rubber boots at the rear of the headlight assembly to gain access to the wire terminals. Note that the two ¼ inch terminals at the high-beam bulb have locking clips that should be depressed before pulling the terminal away from the bulb.
4. Unplug the parking light from the headlight body by grasping the wires and carefully pulling it out.
5. Remove the two rubber caps covering the lower headlight mounting screw access holes beneath the air intake horn.
6. Using an 8mm hex socket inserted through the lower access holes remove the two hex-head bolts securing the bottom of the headlight to the frame.
7. Using the same socket wrench, remove the two 8mm hex-head bolts securing the top of the headlight assembly to the frame.
8. Remove the headlight assembly from the frame.
9. Remove the two rubber grommets and steel reducing sleeves from the frame at the top mounting locations for the headlight. Leave the lower pair in place; these will be re-used, as shown in Figure 6.

## INSTALL WIRING HARNESS, BATTERY-END

**CAUTION:** Batteries can produce explosive gases. To prevent sparks and possible injury, do not install the fuse into the fuse holder until the wiring harness is completely connected to your bike.

1. Locate the battery end of the new harness; it terminates with a fuse holder and two ring terminals.
2. Working from the left side of the bike, thread the battery end of the harness through the triangular frame opening behind the steering head. Lift each of the two rubber air intake horns away from the frame tube and route the harness underneath. The battery end of the harness should emerge from the right side of the frame above the battery, adjacent to the spark plug wire for the rear cylinder.
3. Using one of the supplied nylon wire ties, secure the new harness to the right frame tube along with the existing wiring. The end of the thick portion of the harness, just behind the shrink-tube transition, should be approximately lined up above the right end of the battery as shown in Figure 2.



**Figure 2**

4. The orange-colored wire with the in-line water-resistant fuse holder is the positive supply lead. Connect the ring terminal to the positive terminal of the battery using the original 8mm hex nut (after removing it) and wave washer as shown in Figure 2. Tighten the nut firmly to ensure a good connection.

5. Route the remaining black-sleeved battery lead along the frame tube above the plastic battery tray and secure the ring terminal to the negative battery terminal using the original 8mm hex nut (after removing it) and wave washer, as shown in Figure 3. Snug the nut firmly to ensure a good connection. A wire tie may be used to replace the one holding the rear-cylinder spark-plug wire and the negative battery lead.



**Figure 3**

6. Apply some dielectric grease or petroleum jelly to the battery terminals to help prevent corrosion.

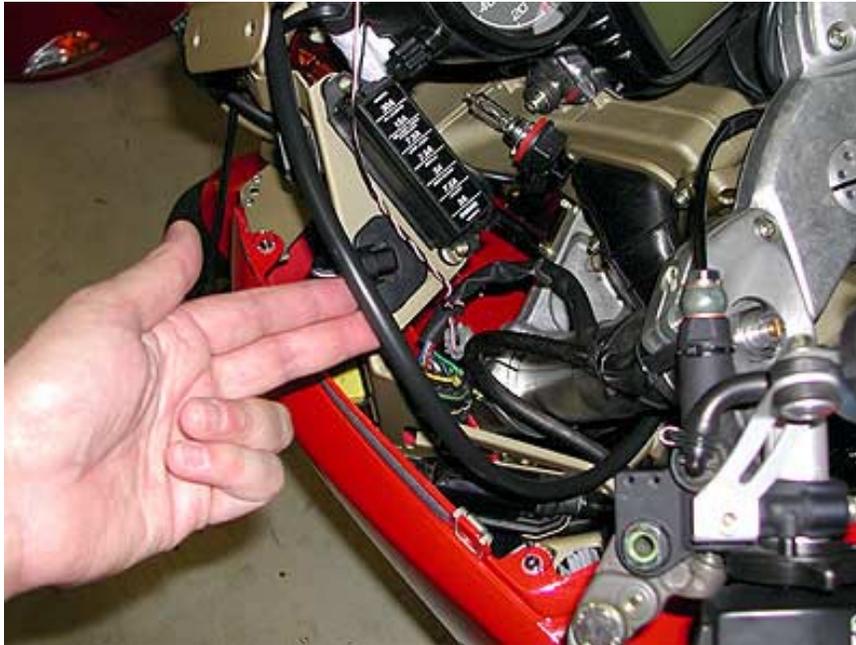
## INSTALL WIRING HARNESS, RELAY-END

1. The new headlight relay sockets will mount to the upper fairing ears; the low-beam relay on the left fairing ear, and the high-beam relay on the right fairing ear. An 8-32 x 1/2" truss-head screw will fasten the relay sockets to the fairing ears in a later step. To add the required hole, use a drill motor with a sharp 3/16" bit to drill a hole in the side of each of the two upper fairing mounting ears approximately two inches above the rear-most mounting bolt flange and approximately centered horizontally on the ear, as shown in Figure 4. Be careful to clean up any metal shavings that fall into the bike below.



**Figure 4**

2. Route the upper (with relay sockets) end of the wiring harness along the left-front frame area adjacent to the fuse-box and temperature sensor, behind the left fairing mounting ear and up onto the top of the headlight frame ring, as shown in Figure 5. Route the harness in such a fashion that it does not snag on other components, get caught behind the headlight fairing when installed, or bind when the steering head is turned from side to side.



**Figure 5**

3. Using one of the supplied nylon wire ties, secure the harness to the existing wiring bundle just in front of the speedometer base. The wire tie should be positioned at the end of the thick portion of the harness, just to the left of the shrink-tube transition.
4. Remove the miniature bulb from the parking light connector. Install the supplied vinyl cap to protect the bulb socket from dirt and moisture.
5. The leads which previously supplied current to the original low-beam headlight bulb will now function as the trigger for the newly-installed low-beam relay. Similarly, the original high-beam headlight bulb leads will trigger the high-beam relay. Using a wire cutter, clip the original quick-disconnect terminals from the leads, preserving about an inch of wire in the clipped-off terminals in case they need to be re-used later. You can trim the original ground lead of the low-beam light (black wire with the narrow terminal and grey sleeving) back to the same length as the original positive (yellow) lead. Trim the sleeving on both sets of leads until about 1-1/2 to 2 inches of the original wire protrudes, as shown in Figure 6.



**Figure 6**

6. Locate the relay sockets on the upper end of the wiring harness. Position each relay socket near the location of the newly drilled holes inside the upper fairing mounting ears. The sockets are identical and interchangeable; use whichever one fits best on the respective fairing mount. Remove the red adhesive protector from each relay socket and apply the socket to the inside surface of its respective mounting ear so the newly drilled hole aligns with the clip nut and the wiring protruding from the socket points down the fairing mount. Secure each relay to its respective mounting ear using the supplied 8-32 X 1/2" truss-head Phillips screws. A view of the installed high-beam relay is shown in Figures 7 and 8.
7. Locate one of the 3M Scotchlok wire connectors in the kit. Insert either of the newly-trimmed high-beam leads into a hole in the bottom of the connector, then insert either lead from the high-beam (right) relay socket into one of the other holes (slide the black sleeve up as far as possible to allow the wire to protrude fully). Be sure the wires are completely inserted into the connector by looking through the translucent connector body. Using a slip-joint pliers, crimp the blue button of the Scotchlok connector down until it is flush with the surrounding body, as shown in Figure 7. Some insulating gel will squeeze out of the connector; simply wipe this away with a paper towel. Using another Scotchlok connector, connect the remaining high-beam relay lead to the remaining high-beam relay wire.



**Figure 7**

8. Connect the low-beam relay socket to the newly-trimmed low-beam wires using the remaining pair of Scotchlok connectors.
9. Locate the bulb connector ends of the harness. Route these to the back of the headlight mounting frame area by lifting the wiring bundle near each end and slipping the connector underneath and behind. The bulb connectors should dangle down to the bottom of the headlight mounting frame.
10. Apply one or two of the supplied nylon wire ties as shown in Figure 8 to secure the upper wiring bundle. Make sure all of the wiring is neatly bundled and that no lead is stressed or pinched.
11. If not already done, install the supplied relays in the relay sockets. Seat the relays fully to prevent them from vibrating out of the sockets. Apply a bit of dielectric grease applied to the relay terminals if available before installing.
12. Lastly, install the supplied 20A mini-fuse in the fuse holder near the positive battery terminal. Apply a bit of dielectric grease to the fuse terminals if available before installing. Close the fuse holder cap fully to minimize contamination of the fuse.



**Figure 8**

## INSTALL THE HEADLIGHT ASSEMBLY

NOTE: The headlight assembly cannot be installed with the bulbs installed in the lighting units. To facilitate installation, remove the H9 bulbs from the lighting units by grasping the plastic body and turning 45 degrees counter-clockwise while extracting the bulb. Connect each bulb to the new headlight connectors dangling in the mounting frame. Carefully (without touching the quartz globes of the bulbs with your fingers) push them back behind the headlight mounting ring. Avoid having the low-beam bulb come in contact with the speedometer cable, which is greasy.

NOTE: If you happen to touch the quartz globe of the lamps, clean them with a soft towel and isopropyl alcohol before install the lighting units. Failure to do so could lead to early failure or explosion of the bulb.

1. Locate the upper shock-mount plate in the kit. Attach it to the headlight assembly by inserting the tapered pins of the mount plate into the rubber grommets on the top of the headlight frame. The threaded studs should point upward and face the rear of the light assembly.
2. Grasp the headlight assembly by the front and/or sides and tip the upper shock-mount studs up into the oversized holes in the mounting frame, as shown in Figure 9.



**Figure 9**

3. While pressing the headlight assembly upwards to compress the upper shock-mount, slide the bottom of the assembly into the mounting frame until the press-in nuts approximately align with the lower mounting holes. It will take some upward pressure to clear the horizontal screw at the bottom of the headlight mounting ring.
4. Insert the supplied 6mm x 16 bolts into the lower mounting locations and tighten using a long 6mm hex key. You will feel some resistance in the last few turns; they are locking nuts and this is normal.

5. Place one of the supplied  $\frac{1}{4}$ " nylon washers on each of the upper shock-mount studs; these prevent distortion of the mount plate when the mount is tightened. See Figure 10, showing one nylon washer installed and one stainless centering washer installed.
6. Place one of the supplied  $\frac{7}{8}$ " stainless-steel centering washers over each of the upper shock mount studs.



**Figure 10**

7. Place one of the supplied 10mm nylon locking hex nuts over each of the upper shock-mount studs and, while centering the headlight assembly, tighten the nuts firmly. Do not over-tighten or damage will occur to the upper mount plate.
8. From the rear of the headlight assembly, insert the bulbs back into the lighting units. The connector end of the bulb base should point to the 4 o'clock position for insertion, and then rotate the bulb base 45 degrees clockwise to secure the bulbs. Look carefully to ensure that the headlight leads are not pinched or rubbing on the assembly or frame parts.
9. Reconnect the speedometer cable in the order reverse to its removal.

## AIMING THE HEADLIGHTS

NOTE: Proper headlight aim is critical for safe operation of your motorcycle. Follow these aiming instructions carefully. The goal is to attain a balance of the best possible road illumination without blinding oncoming drivers. Test your aiming thoroughly on a darkened two-lane road where you can sample the response of opposing drivers. If you are flashed frequently, you probably have your lights aiming too high.

CAUTION: DO NOT stare directly into the headlight units while they are operating! They are extremely bright and can do serious eye damage if they strike your eye directly.

NOTE: It is far easier to access the aiming adjusters while the upper fairing is removed. If the fairing is installed, remove the dash-covers to access the adjusting screws.

1. Turn on the ignition and verify that the headlights are functioning correctly. You should be easily able to hear both the low and high beam relays actuate.
2. At dusk, find a level spot on a driveway, playground or parking lot surface to park the bike. Find a vertical wall or other surface to aim the bike at. The bike should be approximately 25 feet back from the aiming wall surface, perpendicular to the surface as best possible.
3. Have someone sit on your bike, holding it upright with one foot on the ground and their weight positioned properly on the seat. Have them bounce up and down a few times to level the suspension.
4. Using a tape measure, measure the distance from the road surface to the center of the low-beam lens.
5. Measure the image of the low-beam light projected on the wall. The low-beam unit is properly aimed when the top of the main light pattern is 2 to 2-1/2 inches below the measurement you made in the prior step. Use a 7mm socket to turn the upper left adjusting screw from the rear of the low-beam lighting unit.
6. It is generally unnecessary to adjust the horizontal aim of the low-beam lighting unit, but if required, do so by turning the lower right adjusting screw using a 7mm socket. Check the gap around the lighting unit to ensure that there is a small airspace between it and the fiberglass shell.
7. Switch on the high-beam light. Measure the image on the vertical surface. Using a 7mm socket, turn the upper-right adjusting screw of the high-beam lighting unit until the top of the projected beam is approximately 1 inch below the measurement height made in step 4 above.
8. Avoid adjusting the horizontal aim of the high-beam lighting unit until you have verified its aim by riding on a darkened road; it projects quite a distance and a slight misadjustment of aim will result in a large error down the road. If it is necessary to adjust the horizontal aiming of the high-beam light, turn only the lower-left adjusting screw of that unit. Again, check to ensure that a small airspace exists between the lighting unit and the fiberglass shell.

## FINISHING UP

1. Reinstall the fairings in the reverse order of removal. Be careful to avoid scratching the new headlight shell on the inside of the upper fairing. Verify that you have no extra parts.
2. Enjoy your new lighting experience!