

SML-205



OIL COOLING SYSTEMS

Touring Models 2014-2016 with Lower Fairings
Liquid Cooled Models 2014-2016 *Includes Trikes
"Naked" Black - 3.0 Dual Fan Assisted
Lower Fairing Mount
For Coolers #SMT-5N

Oil Cooler Installation Guide



Welcome to UltraCool Oil Cooling Systems

Thank you for making UltraCool your oil cooling system of choice. We hope you will find our installation guide helpful in your installation process. If you need more assistance please call our Tech Dept at (951) 698-4962 or email us at info@pcracingusa.com. If you run into a problem with your particular bike or fitting with other accessories etc, please call us before returning as we likely have a solution or part to make it work for you.

Thank you, UltraCool

Tools Required

The tools you will need to complete this installation:

- New hacksaw blade appropriate for plastic
- Small hand pick
- 2" putty knife
- Razor knife and extra blades
- Fine and Ultra Fine Point black markers
- Flat head screw driver
- 1/4", 9/32" and 5/16" drill bit and drill
- 5/32" Allen socket
- 11/16" Open end wrench
- 1/2" and 7/16" Open end wrench
- Ratchet with 3/8" drive
- Extension with 3/8" drive
- 1/2", 7/16", 7/8" and 1" socket
- Oil Filter wrench
- 17mm socket if installing a FLO Oil Filter
- Torque wrench - check your lbs
- Bike lift - nice to have
- Oil can
- Torx #25, 27, and 40
- Wire Strippers and Crimper
- 7/16" Allen driver (Not a common size.

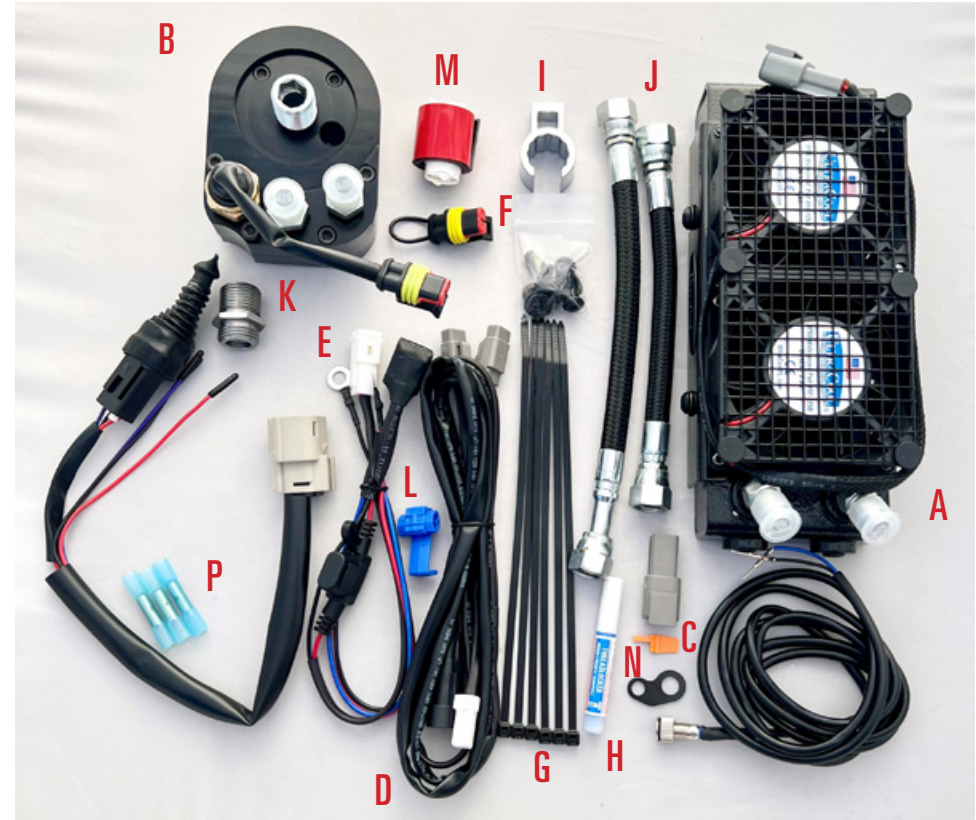
To remove a stock HD Cooler if neccessary.

Available from UltraCool #SM-121)



Note: Instructions are illustrated and explained from a rider's point of view

Kit Contents



A Complete Oil Cooler Assembly

B Complete Oil Adapter with thermal switch wire

C LED Indicator Light

D Wiring Harness

E Relay

F Test Jumper

G Tie Straps

H Thread Locker

I Fitting Wrench

J Hoses

K Threaded Bushing

L Blue Wire Connector

M Double Sided Tape

N LED Mount

P RFB-Y130 connector

Step 1a

Remove Oil Filter

Remove oil filter and clean up any oil and dirt. All surfaces must be oil and dirt free.



Step 1b

Remove Old Cooler

If you have a cooler on your non-liquid cooled bike you will need to remove it and all parts associated with it. Use 7/16" allen driver (UltraCool part # SM-121) in the center of adapter and it will come off. After the threads are removed you may need to tap on the stock oil adapter to break it loose. You will need to install our threaded bushing provided in your parts bag.



If you don't have a cooler go to step 3.



Step 2a

Threaded Bushing Installation

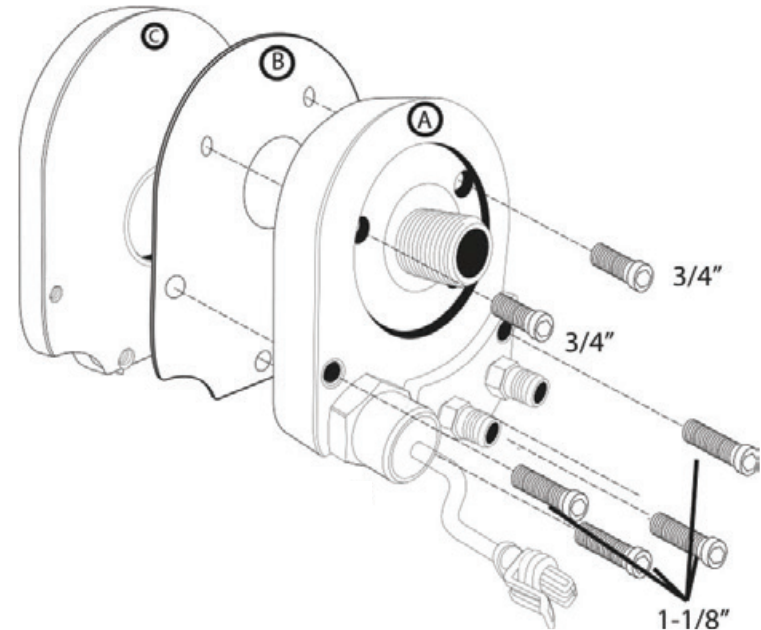
Remove the threaded bushing from your engine with 7/8" socket. Install the new threaded bushing provided in your parts bag. Use red or blue thread locker on short end and torque to 18-22 FT.-Lbs.



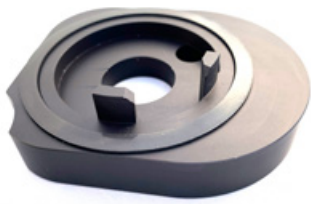
Step 2b

Oil Adapter Installation

Locate the oil adapter and take it to a clean surface. Using a 5/32" Allen driver remove the 6 bolts from the front as shown. Watch out for small washers! Note: there are (4) 1 - 1/8" and (2) 3/4" bolts and (6) washers.



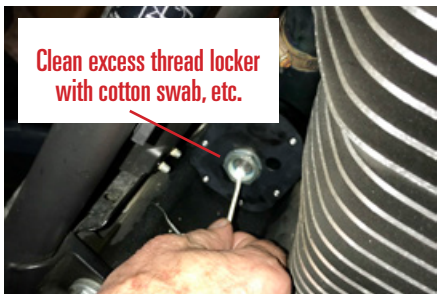
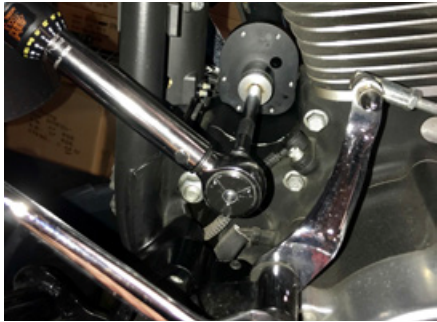
***Note: we have part C for HD Motors and a different part for S&S T-Series motors. The HD part C will not fit on the S&S T-Series motor. The S&S part C will fit on the HD Motors but should not be used - there will not be any anti-rotation for the HD Motor. Make sure you have the correct kit.**



HD Part C shown. The S&S T-Series Part C does not have the anti-rotation tabs.

Step 2c Install Plate "C"

Notice that parts of the adapter are marked A-B-C in drawing on previous page. Take part C and look on the back, there are two alignment cams. Place part C over the oil filter mount in the 11:00 position. Now take the 1" nut and add a few drops of blue thread locker to it, and tighten to threaded adapter on oil filter mount. Torque to 18-22 Ft Lbs, or 216-264 Inch Lbs.



Clean excess thread locker with cotton swab, etc.

Step 2d Plate (A) and Gasket Install

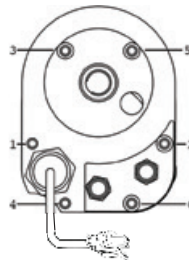
Locate parts A and B of the oil adapter, (2) 3/4" bolts and the washers. Screw the bolts in as shown. This will hold the gasket in place. Now hand start top bolts. Use a 5/32" Allen Wrench for the bottom and hand tighten. Get the (4) 1- 1/8" along the bottom and hand tight.

Use Blue Thread Locker on Bolts.



Step 2e Torque Oil Adapter

Now all of the bolts and washers are installed and hand tight. Use a torque wrench and set it to 5 Ft Lbs or 60 Inch Lbs and tighten in a star pattern as shown.



Step 3 Disassemble Left Lower Fairing

Scan for YouTube Video installation instructions



1a. With a flat head screw driver pop off the inside top cover as shown.



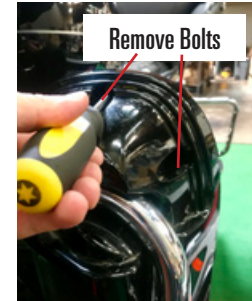
1b. Remove inside top nut as shown to allow removal of opposite side cover.



1c. Remove outer cone cover.



1d. Remove bottom screws and top nut for removal of inside cover.



Remove Bolts

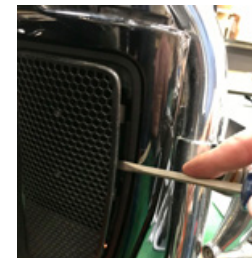
1e. Remove outside bolts to allow removal of inside cover.



1f. Pinch to disconnect door lever and remove the air door & inside cover.



1g. Remove door lever from inside cover.



1h. Pop off front grill.



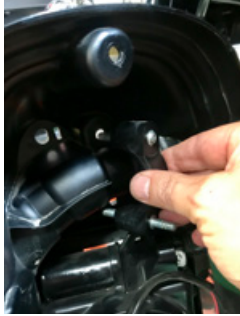
1i. Remove lower fairing while leaving the radiator & water lines in place.

Step 3 Continued

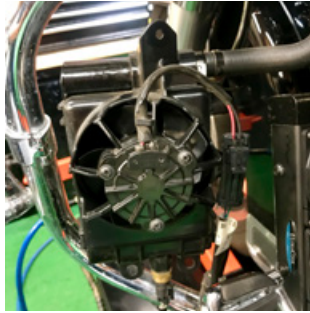
1j.



1k.



1L. Leave the radiator & water lines in place



Step 4 Remove the fairing insert

2a. Fairing insert is double side taped into the fairing. Starting at the top corners pry off the tape connection to remove the insert.

2a.



2b.



2c.



2d. Scrape off double sided tape residue



Step 5 Hack Saw Cuts



With a new hack saw blade cut off the air door pivot arms as flush as possible with the surrounding sides. This area will not show when completed can but not cutting flush can interfere with cooler position.



With a hack saw blade cut the two support pieces off both sides of the air duct. Making this a flat piece will make marking and cutting the air duct much easier and precise. Cut as flat as possible.

Step 6 Mark and Cut Air Door Duct



Carefully cut out the template and tape on the air door duct and trace with a marker. Extend through the bends on each side as you will use these to mark the other sides.

At the corner bend measure 1 1/4 inch from the top and mark with a marker.



Draw a straight marker line from the 1 1/4" mark to the 1/2" mark made from the paper template then also mark the 1/4" measurement line as shown.



On the opposite corner bend, measure 2 inches down the slanted corner.



Draw a straight marker line from the 2 inch corner mark to the 1/4" mark made from the template. For a better fit the 2 inch cut should be right on the corner bend or trim with a razor knife after the cut is made. The opposite end fits well with a small corner lip but this end fits better onto the heat exchanger when it is flat and has no lip.

After carefully reviewing the instructions and photos to be sure you have marked the air door duct correctly, slowly and carefully score your marks with a razor knife. Go over the score marks several times to create a small channel that will prevent slipping out of the mark.



Once your cut lines are scored well, you can use more aggressive tools to speed up the cutting process. One easy trick is to heat up the razor blade with a torch. Although it takes more time, the entire cut can be made with just a good razor knife and new blades. Patiently cutting with a razor knife results in a very clean cut.

Modified Air Duct



Step 7

Drill bolt holes through painted Fairing

From the radiator hose edge measure 5 1/2 inches.



Now make a point on your 5 1/2" mark 3/4" from the edge as shown. Drill a 1/4" hole as precise as possible to your 5 1/2 x 3/4" center point mark. Use a hand pick to mark the center drill point.



Mark your second hole which should be 3 1/2" center to center from your first mark but only 11/16" from the edge as opposed to the 3/4" from the edge that the first hole was. You can use the fan bracket for guidance but precise measurements is best. You want to perfectly measure the two bolt holes to bolt into the heat exchanger. If needed you can enlarge the holes to fit, but ideally your measurements create a perfect alignment of the bolts. Drill 1/4" second hole.



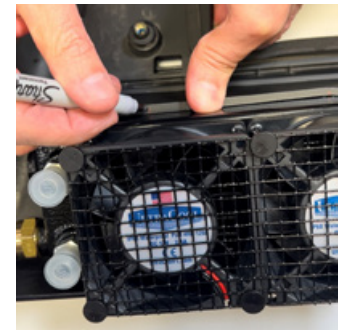
Bolt the UltraCool Oil Cooler to the painted fairing. Ideally your measurements perfectly line up the heat exchanger threads but enlarge the holes to 9/32" if needed or oblong the holes. Be careful not to cross into the aluminum heat exchanger, so make certain you have the holes aligned or enlarge them to avoid cross threading. Do not completely tighten bolts. Insert the modified air duct into the painted fairing and around the UltraCool oil cooler but do not tape in place. If the air duct does not sit flat, trim any area necessary on the air duct.



Step 8

Drill bolt holes through Air Duct

With a Ultra Fine Point marker mark the center of the heat exchanger treads with it already bolted through the painted side.



On the inside of the air duct mark the center alignments and center drilling point using the lock washer supplied. Use a hand pick to mark the center drill point. Leave a 1/16" gap from the top of the slanted side and put the washer to the top on the opposite straight side. Drill marks should be 3 1/3" inches apart.



With a 1/4" bit carefully drill first hole, check alignment and bolt this hole to double check the second drill mark. Adjust second mark if necessary (3 1/2" apart?) and drill the second 1/4" bolt hole. Ideally your measurements perfectly align the bolt holes, but enlarge the holes if needed.



Step 9

Finalize the UltraCool Oil Cooler Installation in the Fairing

Apply provided red double side tape to fairing. Put threadlocker on the two bolts holding the Cooler to the painted fairing. Peel the red from the tape.



Thread the two bolts far enough into the air duct to be able to put a drop of blue threadlocker on the 2bolts and apply lock washers. Insert the air duct into the painted fairing as shown so the lock washers stay in place. Tighten all four bolts on the Cooler assembly and apply pressure to the taped area.



Step 10

Modify the Glove box frame

From the end of the air door handle slot measure 1 $\frac{3}{4}$ inches. Then with a ruler aligned on the edge of the slot draw a line from your 1 $\frac{3}{4}$ " mark as far a feasible as the part slants down.

From the edge that the water line comes out mark 2 $\frac{1}{2}$ inches. Then hand draw to connect your lines so the final mark is as shown.

Modified Glove Box frame: With a razor knife (new blade) score your marks several times then cut the marked section completely.



Install the radiator duct then glove box to check fitment. Trim if needed for a better fit.



Once everything fits well remove the glove box frame and radiator air duct. Install the modified fairing back on the bike and water cooling if applicable.

Step 11

Oil Fittings & Tighten Hoses

Very important to oil the oil line fittings then install the hoses as shown.

Do not over tighten.

Use fitting tool to tighten the short hose on the oil adapter first then use 11/16" wrench to tighten the hose to the oil cooler. Use a 1/2" wrench on the small nut to keep the hose from twisting. The 15 degree fitting should be tightened as shown.

Use provided tool to tighten.



Install Oil Filter

For best results and to take some pressure off the fans, we recommend using a FLO Oil Filter for additional cooling. The 17mm nut on the filter also makes oil changes much easier.

FLO Oil Filters must be torqued to 15ft lbs and checked after the first ride.



Step 12a

Installing Relay Harness

Remove left saddle bag, left side cover and seat. Remove main power fuse. Connect black ring connector to battery negative side. Connect red ring connector to battery positive side.

2014-2016 models

Connecting the Blue Trigger Wire (2 options)

- 1) Recommended connection: Use UltraCool #RFB-Y130. Connect blue wire to purple wire.
- 2) Use our tap provided. Connect blue wire to violet/blue wire of gray connector at the bottom of the fuse box.

Relay Harness

- 1) Black Ring Connector-Battery Negative.
- 2) Red Ring Connector-Battery Positive.
- 3) White Power Connector to Harness.
- 4) Blue Trigger Wire to RFB-Y130 Purple Wire
- 5) Black with Logo is Relay





Accessory connector for 2014-2016 models UC #RFB-Y130



Loosen indicated bolts to put white connector through.



Step 12b

Install Wiring Harness

The black connector is for the thermal switch. The grey connectors are for the fans and LED. (Does not matter which one).

From the adapter run and attach harness down left frame rail, up along side of electrical fuse box and connect white connectors. Secure harness with zip ties provided.

Wiring Harness

- 1) White Power Connector
- 2) Grey Connectors to Fan and LED Light (Interchangeable)
- 3) Black Connector to Thermal Switch

Step 13

Installing LED

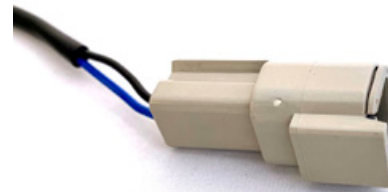
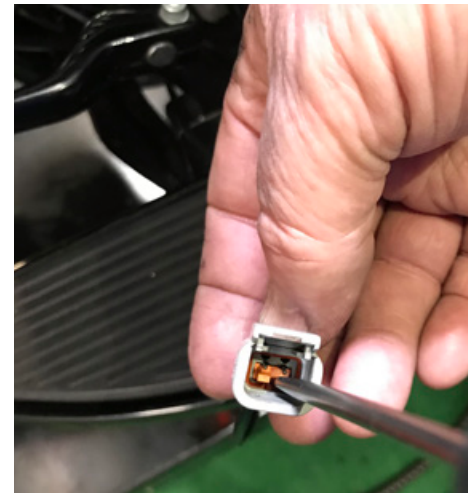
4 Options:

- 1) In your kit is a small toggle mount that fits under a screw on your handlebar controls. This is usually the best option.
- 2) We have a handlebar LED light clamp for 1" handlebars only. Available in Chrome part #AC-20C, Black part #AC-20B, and Black Chrome part #AC-20BC. These are available at UltraCoolfl.com or any UltraCool Dealer.
- 3) You can also mount the LED light in a fairing by drilling a 5/16" hole.
- 4) A nice option is mounting the LED light under a speaker grill so it is only seen when on.



Mounting LED light with provided Toggle mount to the throttle/Front brake perch is usually a good option. Mounting to the clutch perch is also a good option.

Install LED light connector last so you can feed the LED wire through tight areas on the handle bars, frame, etc. To install the LED connector, push the 2 wires through the back of the connector – either way is fine. Be careful not to break wire connectors when pushing through. Use the orange clip as shown to snap/lock the wires in place.



Step 14

Test Electrical Connections

Locate the test jumper in your parts bag. Unplug harness from the thermal switch and plug jumper into the harness instead. Turn on bike ignition. Fans and LED light should run.



If the fans and LED work with the test jumper, remove the jumper and plug in the thermal switch. Save the test jumper to trouble shoot in the future.

Step 15

Check List

- Check Hoses are tight
- Install Oil Filter and Clean up any oil
- Start Engine and Check oil

Note: the UltraCool system requires only about 5 oz of additional oil. Initially, add the OEM recommended amount oil in the bike. Warm the bike up, then add additional oil until the dipstick reads full.

Trouble Shooting:

If the oil line fittings leak at all, simply loosen and retighten the fitting with the provided tool.

Step 16

Check List

- Check Hoses are tight
- Install Oil Filter and Clean up any oil
- Start Engine and Check oil

Note: the UltraCool system requires only about 5 oz of additional oil. Initially, add the OEM recommended amount oil in the bike. Warm the bike up, then add additional oil until the dipstick reads full.

Congratulations!
You are good to go!

Note: On your next warm day ride (after a minimum of 10 miles) the fans will turn on when the oil reaches 210 degrees. Do not test by letting your engine idle in your driveway as this will not get your oil hot.



Accessories



FLO Oil Filter

Provides additional 10 degrees of cooling power and consistent filtering across the entire surface. Flows 7 times more than paper or synthetic filters while filtering to 35 microns (absolute, 1 pass test). Unaffected by water, heat or pressure and the bypass valve will not open on cold startups and high RPM. Built in 17mm hex nut for easy removal. It is easily cleaned and reused, paying for itself. Available in Polished Aluminum with clear anodize part #PCS4C or Black anodize part #PCS4B. (We do not chrome or paint our filters as that holds in heat)

LED Light Handlebar Clamp

A very stylish way to mount your LED light to 1" handlebars.



Chrome #AC-20C

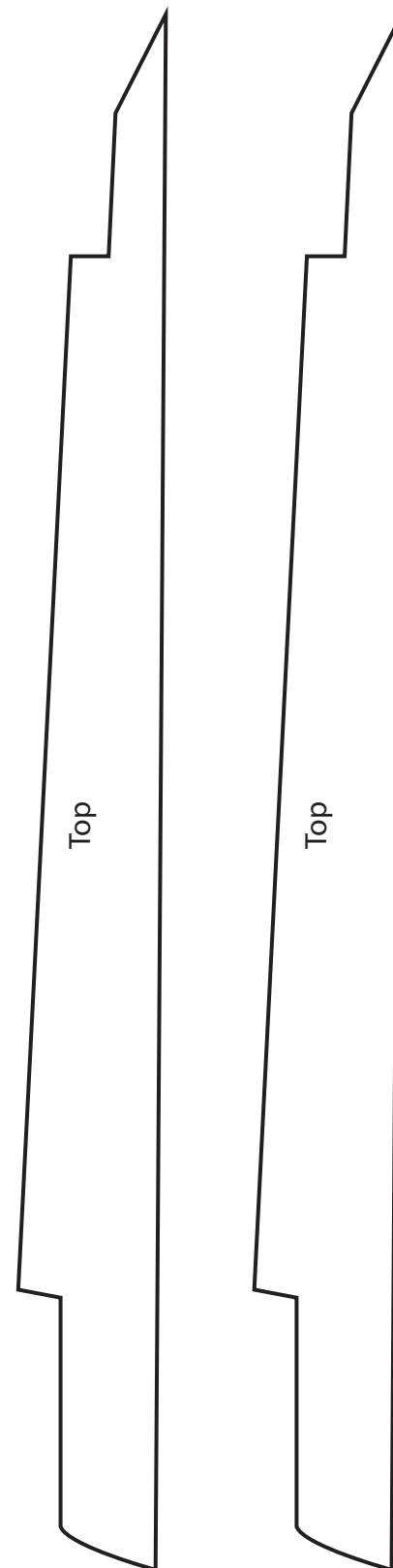


Black #AC-20B



Black Chrome #AC-20BC

Template



Trouble Shooting

Fans are not turning on when the bike is hot:

Keep in mind that the oil is always circulating through the UltraCool system and therefore always working. The fans typically only turn on hot days after the bike has been ridden at least 10 miles and you get stuck in some traffic or city driving (stoplights etc). The fans normally will not activate during highway riding. If they regularly do, then we highly recommend using a FLO Oil Filter as the additional 10 degrees of cooling power will usually keep your fans from having to activate at highway speeds.

Anytime you feel your 3.0 UltraCool fans are not working, the first action is to unplug the thermal switch and plug in the test jumper. With the test jumper plugged in, the fans and LED light should turn on when you turn your ignition key to the accessory position. If the fans and LED light turn on with the test jumper installed, but you feel the fans are not turning on around 210 degrees of oil temperature, you can easily check the bikes oil temperature with a thermal gun. When the bike is at an oil operating temperature you feel is above 210 degrees, turn the bike off, remove the oil dipstick and shoot the oil directly with a thermal gun. If the oil temperature is well above 210 degrees and the fans turned on with the test jumper installed then visit www.UltraCoolFL.com for a new 3.0 thermal switch. If the oil temperature is slightly below 210, you can let it idle and the thermal switch will likely turn on the fans within a few minutes. **DO NOT LET THE BIKE IDLE FROM A COLD START UP TO TRY TO ACTIVATE THE FANS. THIS SHOULD ONLY BE DONE AFTER RIDING THE BIKE FOR AT LEAST 10 MILES.**

Fans and LED Light DO NOT turn on with the test jumper installed:

Check the fuse on the UltraCool Relay Harness that is connected to the battery and replace if necessary. If the fuse breaks again, search for the source of the short (burned or worn wires, stuck or damaged fan etc). If the UltraCool Relay fuse is ok, check the bikes accessory fuse if it has one.

If the fuses are ok, you can test the UltraCool Relay by touching the blue wire on the Relay directly to the positive battery terminal. When doing so the fans and LED light should turn on with the test jumper installed. If fans do not turn on when touching the positive terminal with the blue relay wire, the Relay may be bad. You can cut the protective wrap off the Relay and check for damaged wires or disconnected wire solder. Repair wires or visit www.UltraCoolFL.com for a new 3.0 Relay Harness.

Fan Maintenance or Replacement

UltraCool uses IP68 sealed waterproof fans. You can extend fan life by simply spraying them with water when you wash your bike to keep them clean.

Fans typically go out one at a time, so unless you didn't notice that only one fan was working it is unlikely that both are bad at the same time.

Replacement 3.0 fans are available at www.UltraCoolFL.com

If you are still having trouble, contact UltraCool Customer Support at info@pcracingusa.com or 1(951) 698-4962



OIL COOLING SYSTEMS

(951)698-4962 • info@pcracingusa.com
UltraCoolfl.com

WARRANTY

One year parts only from date of purchase.

Warranty registration must be completed in full and received
within 45 days of purchase to validate warranty.

Warranties are non-transferrable

Register for warranty at www.UltraCoolfl.com/warranty-registration/

Disclaimer: PC Racing UltraCool is not liable or responsible whatsoever
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installation or modification of our products. Intended for stock motorcycles.

Patent #6955150

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