INSTRUCTION SHEET

Buell® AMERICAN MOTORCYCLES

-J00969 ***Kit Number 29460-96Y*** REV. 10-26-00

RACE AIR CLEANER KIT

CAUTION

This Race Air Cleaner kit is intended for high-performance racing (OFF ROAD USE) applications only. Operation on public roads may be prohibited or limited by local, state or federal laws and may be restricted to closed-course competition. Not legal for sale or use in California on any pollution-controlled motor vehicles.

This Pro Series Race Air Cleaner Kit is designed to fit all 1998 and earlier S1, S3, S3T, M2 and 1996 S2 and S2T models.

This Kit contains:

QTY	PART NO.	DESCRIPTION
1	P1213.G	Race Element Air Cleaner
1	P1215.G	Air Cleaner Cover
1	P1216.G	Backplate Assembly
2	2405A	5/16-18x3/4 PHHCS bolt
3	AA0412.2CZ	1/4-20x1 1/2 SHCS
1	P1217.G	Carburetor Spacer Ring
1	29179-88	Venturi
2	29059-88A	Air Cleaner Gasket
1	P0235.9A	90 degree breather bolt
1	7573Y	90 degree breather locknut
1		3/8” I.D. Vacuum hose - 31” in.

CAUTION

Do not run engine without filter element in place. Debris could be drawn onto the engine causing damage.

Conventional Air Cleaner Removal

1. Remove screw and nylon washer on top of air cleaner cover.
2. Remove screw and locknut at rear of air cleaner cover.
3. Remove cover with attached filter box and filter.
4. Remove back plate hoses:
   - Detach rear breather hose from tee fitting.
   - Detach snorkel breather hose at snorkel.
   - Remove snorkel breather hose, front head breather hose and tee fitting from the front breather bolt.
   - On California models, slide fresh air hose from canister through backplate.
5. Remove the two allen head screws and snorkel plate.
6. Remove snorkel.
7. Remove the screw that attaches the spacer and gasket.
8. Remove backplate.
   - Remove the two bolts, nuts and washers.
   - Draw the rear breather hose through backplate.
   - Remove the front breather bolt. Detach backplate from the motorcycle.
9. If necessary, remove the air cleaner support ring.
   - Detach breather hose from the rear cylinder head breather bolt.
   - Loosen rear bolt.
   - Slide air cleaner support ring upward and remove.
10. Remove the front cylinder breather bolt and locknut.

Race Air Cleaner Installation

1. Retain the carburetor/air cleaner support.
2. Apply HYLOMAR to threads of the existing and furnished 90 degree breather bolts.
3. Install the 90 degree breather bolt and breather nut to the front cylinder.
   - Orientate both of the breather bolts to accommodate the breather hose routing toward the front or rear of the motorcycle.
4. Tighten each breather bolt to 10-15 ft-lbs. (13.6-20.3 Nm) and then re-tighten locknuts to engine wall.
5. Attach a short breather hose from the rear cylinder breather bolt to the existing breather tee. Attach a second short breather hose from the front cylinder breather bolt to the same existing breather tee. Finally, route a long breather hose from the same existing tee to either the front or rear of the bike. Insert the end of the hose into a clear plastic container approximately 8 ounces or larger. This bottle is used to catch any carry over from the engine.

NOTE

The clear plastic bottle is usually mounted in the front of the triple clamp, but can be optionally mounted in the rear of the motorcycle.

6. Install the two furnished air cleaner gaskets to both sides of the spacer ring.
7. Install the furnished 1/4-20x1 1/2 SHCS allen head bolts through the plastic Venturi, backplate, and carburetor spacer ring. Attach firmly to the carburetor.

NOTE:

The carburetor may have to be re-aligned to accommodate the mounting of the air cleaner support!

8. Install the air cleaner assembly cover to the backplate using the furnished 5/16-18x3/4 PHHCS.
9. Recheck all fasteners for proper tightness.

Buell Race Series All Models 1998 and Earlier

Tuning Tip Sheet -Fall, 2000

Welcome to the world of Buell Racing

The following tips will help you along in building a 95 rear wheel HP Lightning Series engine for your Buell. This is a collection of tips from long time tuners such as Don Tilley, Rick Hutchins, and the folks from the Buell factory, on the preparation of your Buell for racing. We realize that each tuner has their own way of building engines, but we hope these tips will get you going in the right direction for good HP and reliable Buell racing. We definitely discourage radical work, as the top finishers in the Lightning Series ran minimal changes to the engine but paid close attention to the details.

Flywheels

- The stock S1 flywheels should need no additional modifications for racing. However, the bottom sides of the connecting wheels should be checked for excessive play periodically. Although some tuners have converted to after-market rods, most tuners are using the stock S1 rods successfully.

Cams

- Excessive cam lifts should be avoided. Many tuners are using stock S1 or slightly larger cams. depending on how well your heads flow air. Tuners that have tried high lift cams have experienced rockers arms hitting the top rocker box cover, causing it to crack and develop an oil leak. HIgh lift cams will also cause a reduction in low end power. You may have to grind extra clearance in top rocker box covers to avoid having rocker arms contacting cover. Stock lifters are used by many tuners, but periodically the roller end of the lifter should be inspected for excessive wear.

- Cam to lifter contact must always be checked if using other than stock cams. If contact is not maintained for 360 degrees, it is possible that the lifter is being held from complete contact by hitting the top edge of the cam bushing. A small relief is needed on the top side of the cam bushing to allow the lifter to drop down a bit to maintain contact with with the cam lobe. Care must also be taken to inspect the anti-rotation pin to lifter travel. Certain cam grinds allow the end of the flat on the lifter to come in contact with the pin. Clearance must be ground on the side of lifter to avoid contact during the highest part of cam lif--usually an extra .100 will do.

- Stock or after-market cams should have an extra .0002 clearance. It is recommended to clearance the cam rather than the bushing.

Exhaust/Intake

- Use a free-flowing air filter with a radiused entry for max air flow. Buell's new "race only" air cleaner kit will achieve this maximum air flow.

- A free-flowing exhaust system should be installed. After-market systems are available, or use the new "race only" header kit and race muffler.

Cylinder Heads

- Thunderstorm Heads (Part No. 16797-98Y FRONT and 16827-98YA REAR) will be the best all-around selection for Lightning Class racing. (Thunderstorm heads require the use of thunderstorm pistons for maximum performance.)

- The most important part of your 95 rear wheel HP package will be cylinder heads that flow well. If you do not have the capabilities to do head work, you will have to go to a professional performance head service. Performance orientated Harley-Davidson/Buell dealerships, along with porting services that do Harley-Davidson heads, can handle this job. We again discourage radical work and emphasize that the following simple modifications are winning. See your Buell dealer for specifications.

- Some head builders will install both larger intake and exhaust valves as part of their package. If this is what you choose, it is important to have the valve pockets in the piston accommodate the larger valves.

- A multi-angle valve job should be done for maximum air flow. Install a Screamin' Eagle valve spring set, Part No. 18223-98. A compression ratio of 10:1 is okay.

Pistons

- If you do try after-market cams and larger valves, it is a must to check piston clearance. Severe damage can result if contact is made between pistons and valves. Exhaust valve-to-piston clearance is .100, and the intake requires .080 valve-to-piston clearance.

- If using stock pistons, piston-to-wall clearance should be set at the service limit. After-market pistons should be set the manufacturer's recommendations for road racing.

- Thunderstorm Heads require the use of Thunderstorm Pistons (Part No. 22676-98Y) for maximum performance.

Oil Pump

- The 1998 oil pump, Part No. 26204-98, will be an excellent choice for racing.

Electrical Components

- Buell Lightning Series engine control model should be installed.

- For track use, the charging system may be removed for weight reduction.

More Information

- Eliminate primary cover gasket. Seal cover using Yamabond #4 or equivalent.

- If rebalance is going to be done, a 60% factor should be used.

- Re-torque alternator nut to 210-215 ft-lbs. Use a drop or two of red Loctite on the nut.

- Inspect primary chain adjuster shoe for cracks. Replace as needed.

- For better front brake lever feel, install a #2 size steel braided brake line. Replace stock DOT 5 brake fluid with a high temperature DOT 3 or 4.

- For racing, it is important to convert to chain drive for a better gear ratio selection.

- It is recommended that race fork springs (Part No. 45989-96Y) be installed.

- For track use, you may wish to contact suspension experts.

- For more information, or to have a question answered, contact your Buell Dealer or call Henry Duga of Buell Racing Support at (262) 642-2020.