

Brison Engines

IMPORTANT: THIS ENGINE IS DESIGNED SPECIFICALLY FOR MODEL AIRCRAFT. IT IS NOT FOR USE IN A MANNED VEHICLE, OR FOR ANY OTHER PURPOSE.

OWNER'S MANUAL

SAFETY INSTRUCTIONS TO FOLLOW AT ALL TIMES

- 1. Remember** to keep small children and anyone who might be hurt away from the engine while it is running. Keep all spectators at least 20 feet away from the engine while operating.
- 2. Remember Never** stand or let anyone else stand anywhere in front of the engine while accelerating the throttle.
- 3. Remember Never** start or run the engine in an area containing loose gravel or sand as the prop may cause these materials to blow into your eyes.
- 4. Remember Never** run your engine in a enclosed place (garage, basement, etc.). Like the automobile, model engine's exhaust deadly carbon monoxide-always run your engines in an open area.
- 5. Remember Not** to allow loose clothing (such as shirt sleeves, ties or scarves etc.) near the propeller. Keep loose objects (pencils, screwdrivers, etc.) out of shirt pockets to prevent them from falling into the prop. Keep your hands away from the prop as much as possible. Use a "Chicken Stick" and follow the directions supplied with those devices. **Do not** touch propeller with your fingers!!!
- 6. Remember** to keep your face and body away from the path of the prop as you start and run the engine. Do not lean over the engine as you start it or while it is running. Props are practically invisible when turning.
- 7. Remember** to keep engine fuel in a safe place, away from any sparks, excessive heat, or anything which could ignite the fuel. Remember that gasoline/mixture is highly flammable and must be handled with extreme caution. Do not smoke while running or operating the engine.
- 8. Remember** to install a well-balanced propeller with the curved side facing forward. Securely tighten the propeller. If you use a spinner of any kind, make sure that its edges.

Do not touch the prop blades. Discard any prop with nicks, cracks or any sign of wear and tear.

9. Remember to use safety glasses or a shield when starting or operating your engine.

10. Remember that model engines develop considerable heat as they run; to avoid burns **do not** touch any part of the engine until it has cooled.

11. Remember to always operate your model safely. Follow the AMA Safety Code. Since no engine or installation is 100% reliable, when running and flying, allow sufficient clearance to people, animals, and property such that an engine failure will not cause injury or damage. Safety is your responsibility.

WARRANTY CARD: Warranty on your new **Brisson** engine will be **VOIDED** if you **fail** to return the warranty card. Please fill out the card using a black ball point pen and send to our exclusive factory authorized service center: BJ's Model Engine Service, Attn: Bill Jensen, 51 Hillside Dr., Beacon Falls, CT 06403.

UNPACKING: Inspect the engine for shipping damage. If any is found, call the shipper so we can file the claim with the carrier. **DO NOT RETURN** the engine without specific instructions from the shipper.

BREAK IN: Your engine is ready to fly. Bench running is not required. However, it is always a good idea to run an engine before installation to avoid surprises. This engine will need about 40 hours of flight time to fully run in. Power should increase during this time. During the initial gallon of fuel, a 50 to 1 mix (2 ½ oz./gal) of high quality non-synthetic 2-cycle oil is suggested.

INSTALLATION: Each engine comes with a firewall mounting plate drilled with four holes for #10 size screws. Where the firewall is larger than the engine plate, a spacer is needed to keep the cooling fins away from the firewall. Throttle return springs are left in place to insure that the engine does not speed excessively without a positive control installed. You may unhook the return spring after you have connected to the throttle servo, **BUT DO NOT REMOVE THE RETURN SPRING**, it acts as a spacer for the butterfly. Removing the return spring will cause the butterfly to work loose and it will be ingested by the engine **VOIDING THE WARRANTY!**

The ignition battery switch becomes the engine kill switch and should be mounted externally, near the cowl, at least twelve inches from the receiver or anything that connects to the receiver, like the throttle servo. A throttle kill can be accomplished by backing out the idle screw after the transmitter trim has been set. A throttle kill is not recommended unless there are provisions to eliminate the accidental airborne kill of the engine. When mounting the propeller, the tips should be at 2:00 o'clock and 8:00 o'clock as the engine starts the compression stroke for starting purposes. The engine rotates

counter clockwise. You have purchased an air cooled engine and it is your responsibility to cool it properly. The use of baffles may be necessary. **Baffles are required on all twin engines!** See “Hatcher’s Handy Work” page for examples.

FUEL TANK: These engines burn between one and two ounces of fuel per minute. Therefore, a 24 ounce or larger tank is recommended. The engines are equipped with a diaphragm pump carburetor making tank location not critical relative to the carburetors fuel entry position. Place the tank on the aircraft’s center of gravity (CG). Then aircraft trim changes during flight will not be necessary from a full to an empty tank.

FUEL: Use high octane gasoline, leaded or unleaded with a good quality 2 cycle oil. After the first gallon, you should use only high quality synthetic oils such as Amsoil or Klotz. The recommended ratios are 64:1 to 100:1 with 64:1 being the maximum for petroleum-based, non-synthetic, oil and 80/100:1 being the maximum ratios for the synthetics. Our engines will run at 100:1 with GOOD synthetic oils. For all ratios, measure the fuel mix accurately, as excessive oil may stick the rings, causing the piston to be damaged, while insufficient oil may cause friction damage, either **voiding** your warranty. Damage caused by fuel additives, such as nitro, over-lean carb settings, over-advanced timing, and over-heating are not covered under warranty.

PROPELLER: Engine RPM should be kept between 6500 and 7500 RPM (static) for best torque. Keep in mind the diameter of the propeller you wish to use. The tip speed can easily exceed the speed of sound which will dramatically effect the prop efficiency, causing excessive vibration and prop failure. A 20” diameter prop turning 7800 RPM has a tip speed of 572 MPH. The speed of sound at sea level is 738 MPH. Crankshaft threads should be wiped clean before and after mounting the prop. Should you encounter resistance while removing the prop nut stop immediately and have an experienced person use a nut splitter to remove the nut and chase the threads with a 3/8x24 die. We suggest and it would be a good idea to put a small amount of lubricant on the threads from time to time. Damage caused by over-propping (over loading) the engine is not covered by warranty.

STARTING:

1. Fill the tank with fresh filtered fuel.
2. Have a friend hold the aircraft or secure the aircraft to a stationary object or other suitable apparatus if help is not available. **Never** fly alone!
3. Close the choke.
4. Turn on the ignition switch.
5. With a chicken stick, **not your fingers**, begin flipping the prop through its compression stroke until the engine fires. It should not continue to run with choke closed.
6. Open the choke and continue flipping the prop counter clockwise. The engine should start in less than 5 flips. Maintain a fast idle for at least 60 seconds, then accelerate the engine and check for good response. **ON MECHANICAL TIMING ADVANCE**

ENGINES - NEVER START WITH THE THROTTLE FULLY OPEN. IT WILL BACKFIRE!

RUN: Brison test runs each engine and sets the carburetor, and timing. **NO adjustments should be necessary.** If adjustments are required, make them when the engine is warm and has been cleared out. Let the engine warm up for a full minute before applying throttle. If acceleration hesitates, then shut the engine off and adjust the low mixture screw open about 1/16 turn. Restart and repeat run up. The idle mixture or low needle settings are between 2-1/2 and 2 3/4 out on the 2.0-2.4-2.6-and 3.2 sizes; 5/8 to 7/8 out on the 4.2 and 5.8 size engines. The high speed mixture is set between 7/8 and 1 1/8 on the 2.0-2.4-2.6-3.2 and 3/4 out on the 4.2 and 5.8 engines. Note: 2.0-2.4-2.6-3.2 engines mfg. before Feb. 2004 with a Walbro WT 76-1 carburetor had low mixture settings or 1 1/2 to 2 1/4 and high mixture settings of 5/8 to 7/8. Use a tachometer to adjust the high speed mixture for maximum RPM and leave as far open without rpm loss "the rich side of the setting". Do not force the mixture screws when closing against the seat, be very careful, then open the required amount. The 4.8 and 6.4 Twin engine needle settings are between 7/8 and 1-1/4 for the high and 1 1/2 on the low. Too lean a setting of the high needle will cause overheating and **DAMAGE** to the engine. Too lean a setting of the low needle will cause acceleration to hesitate. The low needle also sets the transition point on the single cylinders. The transition point should be kept below 4500 R.P.M. to control vibration. Remember that a cowl and airspeed can affect the required settings on Walbro carbs, so precise final settings can only be made by flight trials.

ENGINE TIMING: The engine timing is factory set between TDC and 4 degrees BTDC at the idle position, and 28 to 30 degrees BTDC at the high speed position. The timing can be adjusted by lengthening (advancing) or shortening (retarding) the timing linkage rod that connects the white round timing wheel to the carburetor. The white timing wheel on automatically timed engines are locked at 28 degrees and can be adjusted by loosening the 6-32 button head cap screw that holds the sensor in the white timing wheel. Engines timed over 30 degrees can cause rod bearing failure, which can cause damage to the piston and cylinder. This damage is not covered under the warranty.

CARBURETOR CARE: From time to time your carburetor screen will need to be cleaned. First clean the outside of the carburetor. Remove the cover closest to the gas inlet and remove the screen. Wash the screen with clean gasoline and blow off with compressed air. Do not lose the screen. **Never** run the engine without the carburetor screen in place. Check the choke and throttle plates for tightness. **DO NOT DISASSEMBLE BUTTERFLY SHAFTS.** The screws are flared and disassembly will weaken shafts causing ingestion of parts and **voiding the warranty.**

MAINTENANCE: Your new Brison engine will be, practically, maintenance free for several seasons. We do recommend a crank pin needle bearing replacement every time you have a prop strike or crash. Maintenance of these bearings should be considered

every 200 to 300 flying hours. Periodically check the sensor and ignition leads for chaffing.

STORAGE: A gasoline stabilizer such as the “Stabil” brand, should be used following the makers directions, during the last flight, or for 5 minutes of ground running, before long term storage of over one month. Alternatively, two cycle oil containing a fuel stabilizer may be used for all running. Remove the fuel line from engine and follow the starting instructions repeatedly to remove all fuel before storing. The engine will run with choke open for 15 to 30 seconds before all gas in removed. Continue flipping prop until popping sound stops completely.

WARRANTY POLICY

New Brison engines include a limited TWO YEAR WARRANTY ON MATERIALS AND WORKMANSHIP to the original purchaser.

NOT COVERED UNDER WARRANTY:

- SPECIALTY MANUFACTURER’S CARRY THEIR OWN WARRANTIES SUCH AS MUFFLERS, AND PROPS.
- SPARK PLUGS, FILTERS, OR OPTIONAL EQUIPMENT
- CARBURETOR AND TIMING ADJUSTMENTS, ENGINE MAINTENANCE.
- CUSTOM MUFFLERS
- SHIPPING COSTS ON ALL REPAIRS, both ways. Return packing, shipping, and insurance \$18, twins \$24 domestic ground, approximately.
- Consequential damages of any type or amount.

ITEMS THAT VOID THE WARRANTY:

- FAILING TO RETURN YOUR WARRANTY CARD. (Send card to our factory authorized service center: BJ’s Model Engine Service, 51 Hillside Dr., Beacon Falls, CT 06403, Attn: Bill Jensen)
- THE ENGINE IS CRASH DAMAGED, INCLUDING PROP STRIKES.
- THE ENGINE IS MODIFIED OR ALTERED IN ANY WAY.

- THE ENGINE IS DAMAGED THROUGH IMPROPER HANDLING, OPERATION, OR MAINTENANCE.
- THE ENGINE INGESTS FOREIGN MATTER, SAND, ETC
- THE ENGINE INGESTS CARBURETOR PARTS or REED VALVES.

(DO NOT DISASSEMBLE BUTTERFLY SHAFTS ON CARBURETOR! THE SCREWS ARE FLARED, DISASSEMBLY WEAKENS THE SHAFTS, CAUSING INGESTION OF PARTS.)

- USING FUEL ADDITIVES, SUCH AS NITRO.
- UNINTENDED USE , IMPROPER USE AND OPERATION, ACCIDENTS, NORMAL WEAR AND TEAR, LACK OF OR IMPROPER MAINTENANCE.

See “Repair Policy” below for Warranty Returns.

REPAIR POLICY

BRISON factory authorized warranty and repair service is performed exclusively by:

BJ's MODEL ENGINE SERVICE

Attn: Bill Jensen, 51 Hillside Dr.

Beacon Falls, CT 06403

Phone and Fax: 203-888-4819

Email: wbilljensen@cs.com

Web: www.bj-model-engines.com

Please contact BJ's for all repairs, warranty and non-warranty.

General repair info:

Estimates: For common repairs, you may do your own estimate on-line at www.bj-model-engines.com; or, email, phone, or fax for a prompt free estimate.

Quotes: Accurate, detailed, diagnosis and repair quote with disassembly as required; included with repair, \$30 minimum without repair plus return S&H. Twins may be higher.

General: Minimum charge for repairs and quotes: \$30. Typical repair labor charge \$25/hr. Payment required before return shipping. Allow about 10 workdays in our shop for most repairs. Please include muffler, prop nut and washer. No need to send the prop, but, specify prop size and type if you have a favorite,

Return packing and shipping: \$18 for singles, \$24 for twins.

Payment options: Major credit cards, PayPal, check, money order.

We wish you many years of Happy and Safe Flying with your new

BRISON engine!

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