



service bulletin

No. 89-4

1989-1/2

ADVANCE SERVICE INFORMATION

A. 250/275 HP Timing / Synchronizing / Adjusting

Timing/Synchronizing/ Adjusting

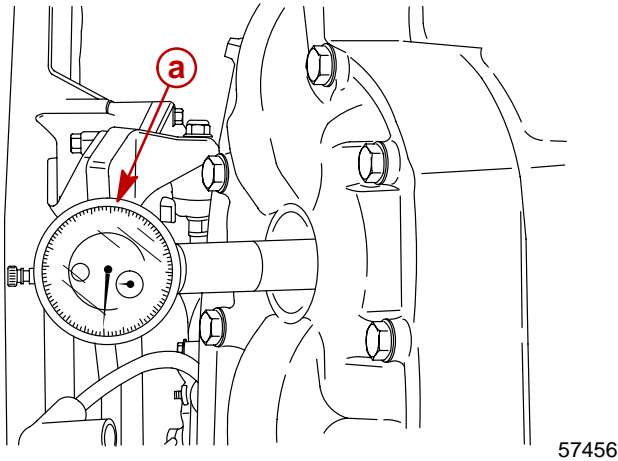
Firing Order	1-2-3-4-5-6
Firing Sequence	60° Consecutive
Spark Plug	NGK-BU8H or Champion L6VC
Spark Plug Gap	Not Adjustable
Timing Maximum	20° BTDC (22° at Cranking)
Throttle Primary Pickup	7° ATDC
Throttle Secondary Pickup	Not Adjustable
Full Throttle RPM	5000-5500
Idle RPM (in Forward Gear)	600-750 (7° ATDC)

Timing Pointer Adjustment

⚠ WARNING

Engine could start when turning flywheel to check timing pointer adjustment. Remove all spark plugs from engine to prevent engine from starting.

1. Remove all spark plugs and install Dial Indicator (C-91-58222A1) into No. 1 cylinder (top cylinder, starboard bank).

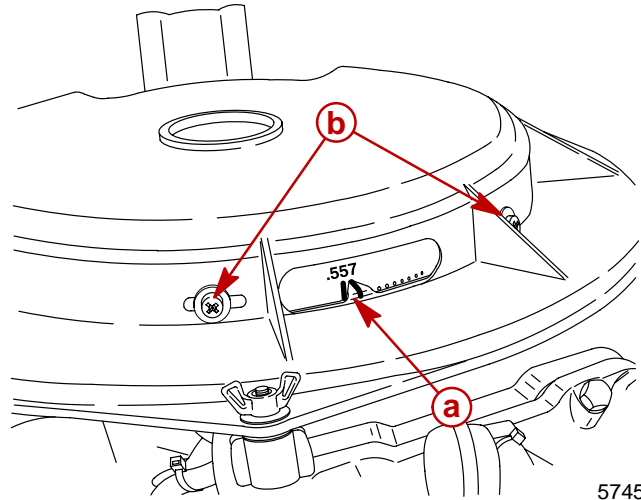


57456

a - Dial Indicator Installed in No. 1 Cylinder

2. Turn flywheel in a clockwise direction until No. 1 piston is at top dead center (TDC). Set dial indicator at "0" (zero) and tighten indicator set screw.
3. Turn flywheel counterclockwise until dial indicator needle is approximately 1/4-turn beyond .557" mark, then turn flywheel clockwise so that dial indicator reads .557" exactly.

4. Reposition timing pointer (if necessary) so that timing pointer is aligned with .557 mark on flywheel, as shown. Retighten pointer attaching screws.



57457

- a** - Timing Pointer, Align with .557 Mark
- b** - Timing Pointer Attaching Screws

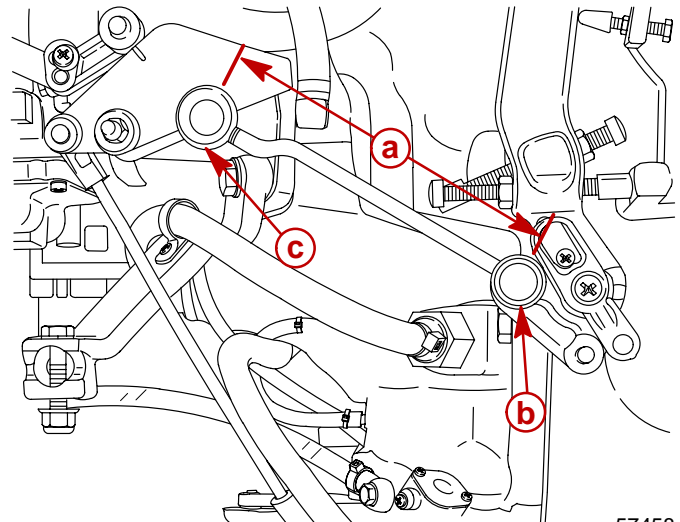
5. Remove dial indicator from cylinder and reinstall No.1 spark plug and spark plug lead.

Carburetor Synchronization

⚠ CAUTION

Disconnect engine battery cables from battery to prevent accidental starting.

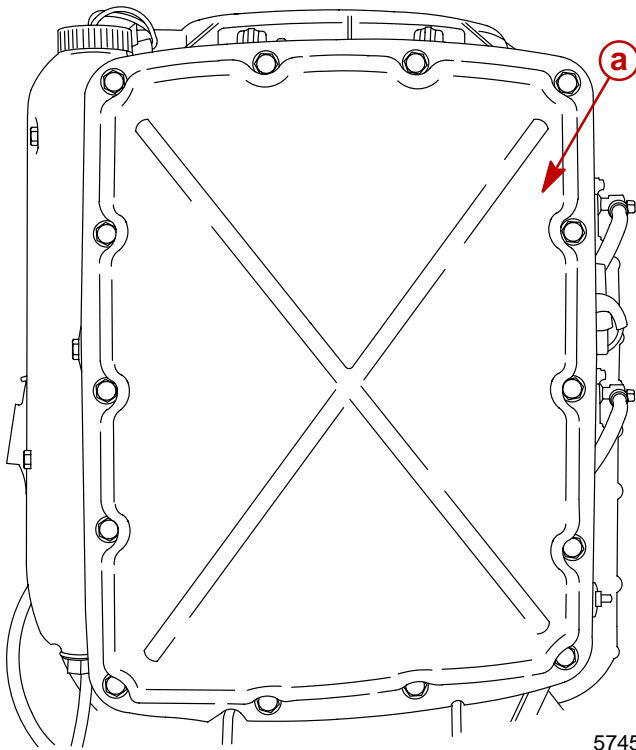
1. Verify distance between throttle arm barrel and cam barrel is 5-13/32" (137.32mm). Adjust as required.



57458

- a** - 5-13/32 (137.32mm)
- b** - Throttle Arm Barrel
- c** - Cam Barrel

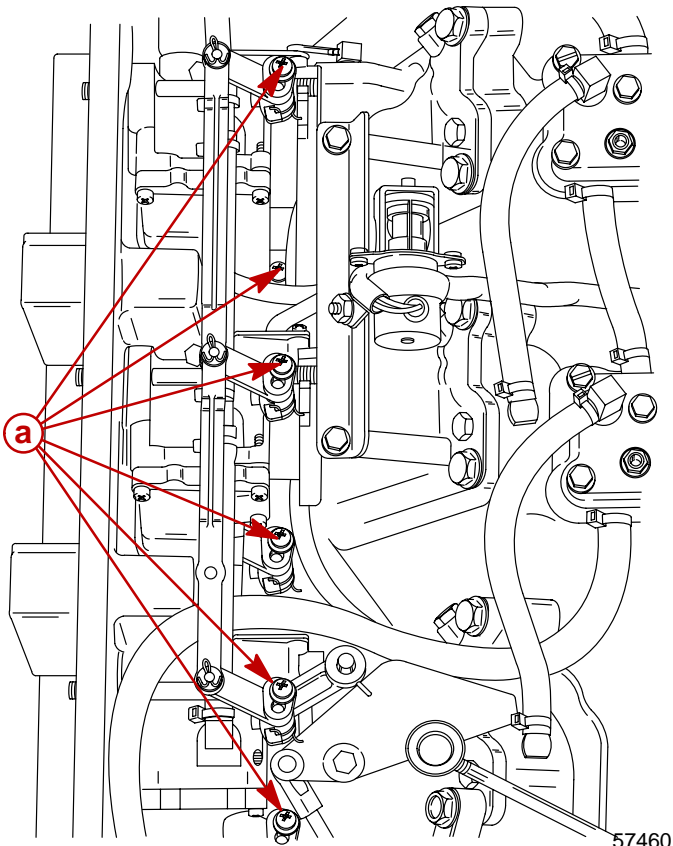
2. Remove sound box cover from engine.



57459

a - Sound Box Cover

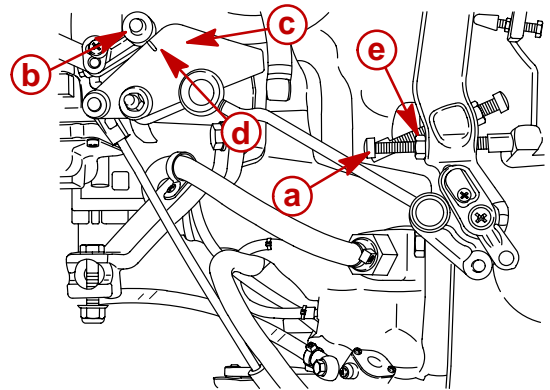
3. Loosen carburetor synchronizing screws and allow all throttle shutters to close completely.



57460

a - Synchronizing Screws

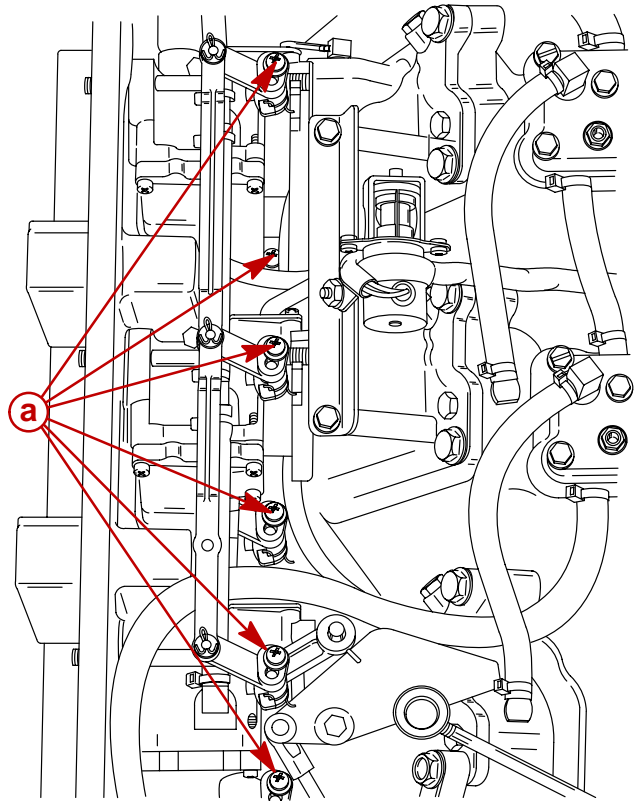
4. With idle stop screw on throttle arm against stop and throttle roller just touching throttle cam, adjust **idle** stop screw to align slash mark on throttle cam with center of throttle roller. Tighten idle stop screw lock nut.



57458

- a** - Idle Stop Screw
- b** - Throttle Roller
- c** - Throttle Cam
- d** - Slash Mark
- e** - Lock Nut

5. While holding throttle roller steady, tighten six carburetor synchronizing screws.



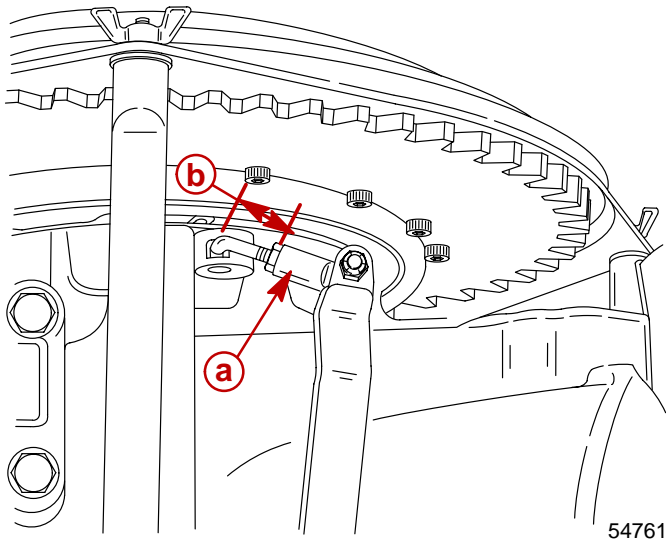
57460

a - Synchronizing screws

6. Look at carburetor throats to verify throttle shutters are closed and open at exactly the same time. Adjust if necessary. Reinstall sound box cover.

Timing Adjustments

IMPORTANT: If link rod was disassembled, make sure that 11/16" (17.5mm) dimension is retained.



- a** - Link Rod
- b** - 11 /16" (1 7.5mm)

⚠ CAUTION

Engine is timed while cranking engine over with starter motor. To prevent engine from starting when being cranked, all spark plugs must be removed.

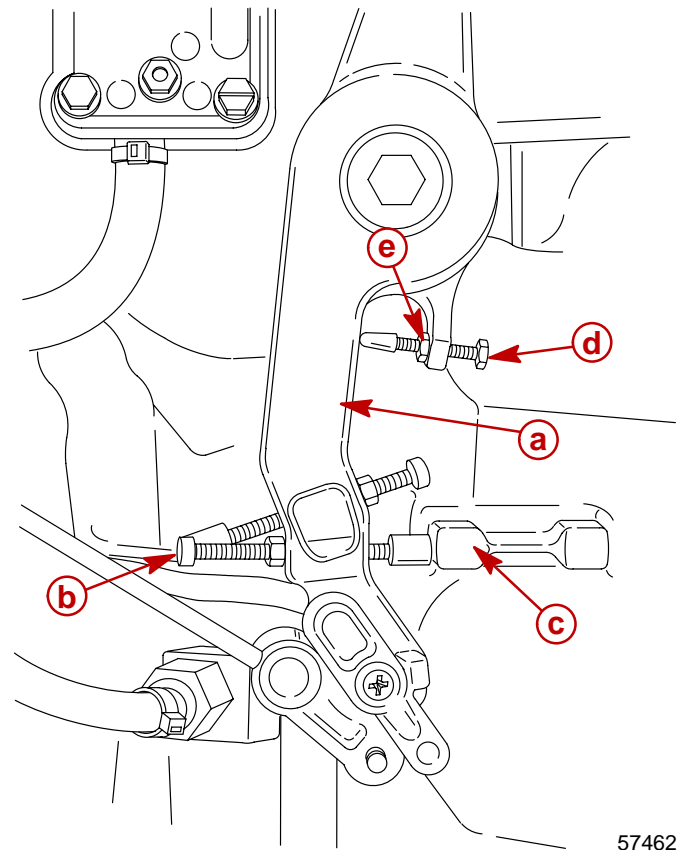
1. Remove all spark plugs from engine.
2. Insert spark gap tool in No. 1 spark plug boot (top cylinder, starboard bank) and attach to good engine ground.
3. Disconnect remote fuel line from engine.
4. Connect electrical harness to engine.
5. Remove throttle cable barrel from barrel retainer on engine.
6. Verify slash mark on throttle cam, aligns with center of throttle roller when roller contacts cam at idle. If not, refer to "CARB SYNCHRONIZATION", preceding.

7. Connect timing light to No. 1 spark plug lead.

⚠ WARNING

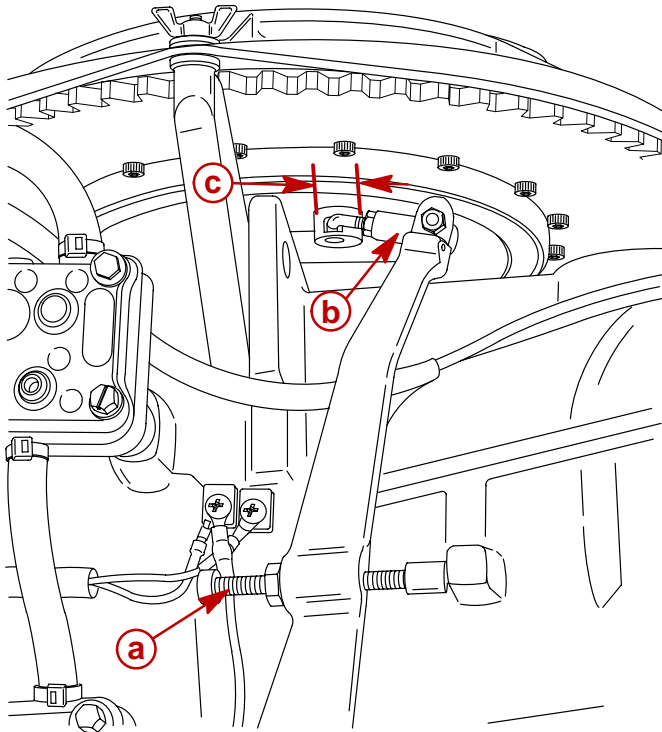
Before cranking engine, keep clear of propeller, as it may rotate.

8. With engine in neutral, hold throttle lever so that idle stop screw is against stop, then crank engine with starter motor and adjust throttle primary pickup screw to align 7 degrees ATDC throttle primary pickup mark on flywheel with timing pointer. Retighten nut on adjustment screw.



- a** - Throttle Lever
- b** - Idle Stop Screw
- c** - Stop
- d** - Primary Pickup Screw
- e** - Nut

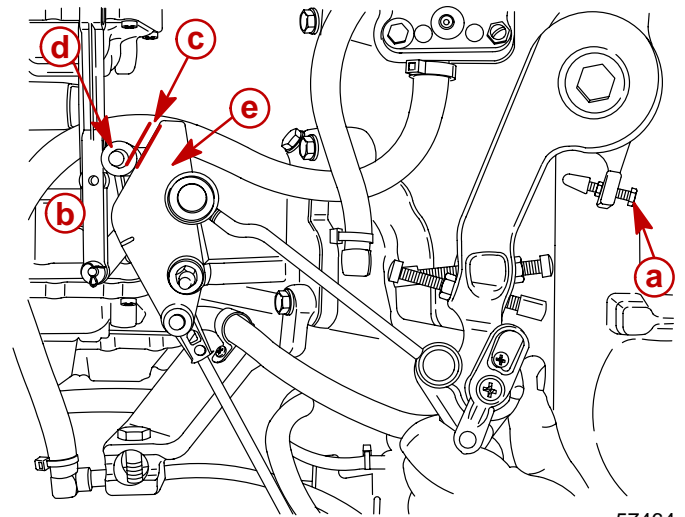
- With engine in neutral, move throttle lever to place maximum spark advance screw against stop. Crank engine with starter motor and adjust maximum spark advance screw to align 22° mark on flywheel with timing pointer. Due to the spark advance characteristics of this ignition system, this adjustment will result in a spark advance of 20° BTDC at 5500 RPM.



57463

- a** - Maximum Spark Advance Screw
- b** - Link Rod
- c** - 11/16" (17.5mm); Make Sure that This Dimension is Retained if Link Rod Was Disassembled

- With engine NOT running, move throttle lever to wide-open throttle (WOT) and adjust full throttle stop screw to allow full throttle opening at WOT. Make sure that throttle shutters do not act as a throttle stop. Allow .010" – .015" (0.25mm to 0.38mm) clearance between roller and throttle cam at WOT. Retighten nut on adjustment screw.

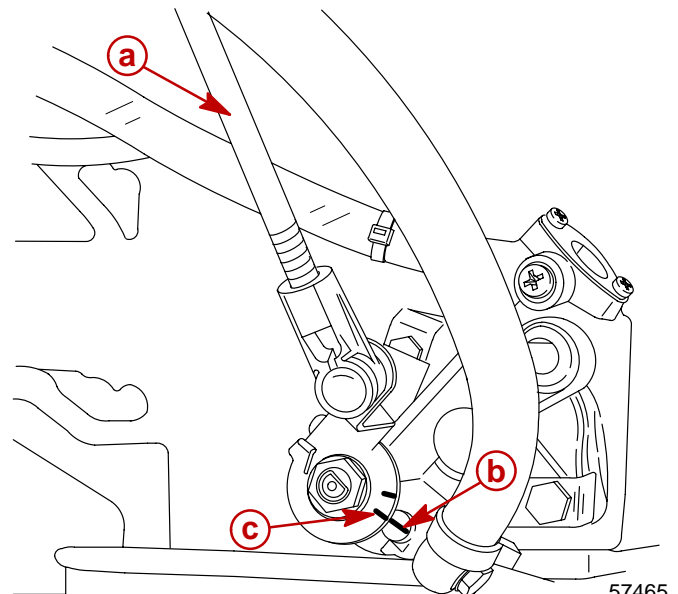


57464

- a** - Full Throttle Stop Screw
- b** - Push Throttle Linkage Downward
- c** - .010" to .015" (0.25mm to 0.38mm) Clearance
- d** - Roller
- e** - Throttle Cam

Carburetor/Oil Pump Synchronization

- While holding throttle arm at idle position adjust length of link rod (a) so that stamped mark (b) of oil pump body aligns with first (shortest) stamp mark (c) of oil pump lever.



57465

- a** - Link Rod
- b** - Stamped Mark
- c** - Stamped Mark

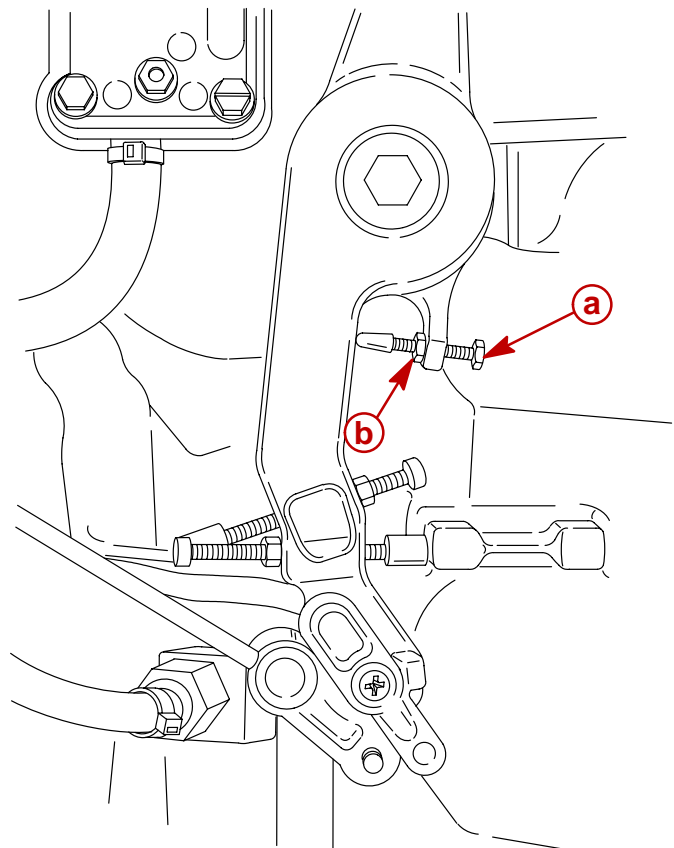
Idle RPM ADJUSTMENT

⚠ CAUTION

Engine idle RPM must **NEVER** exceed 750 RPM in gear.

1. With engine in water, connect electrical harness and fuel line to engine. Start engine and allow to warm up.
2. With throttle cable barrel removed from barrel retainer, adjust primary pickup timing screw (a) to obtain specified idle RPM (600–750) with the engine running in forward gear. Retighten nut (b) on adjustment screw.
3. With end of throttle cable connected to throttle lever, hold throttle lever against idle stop. Adjust throttle cable barrel to slip into barrel retainer on cable anchor bracket with a very light preload of throttle lever against idle stop. Lock barrel in place.
4. Check preload on throttle cable by placing a thin piece of paper between idle stop screw and idle stop. Preload is correct when paper can be removed without tearing but has some drag on it. If necessary, readjust cable barrel.

IMPORTANT: Excessive preload on throttle cable will cause difficulty when shifting from forward to neutral. If necessary, readjust throttle cable barrel.



57462

- a - Pickup Timing Screw
- b - Nut