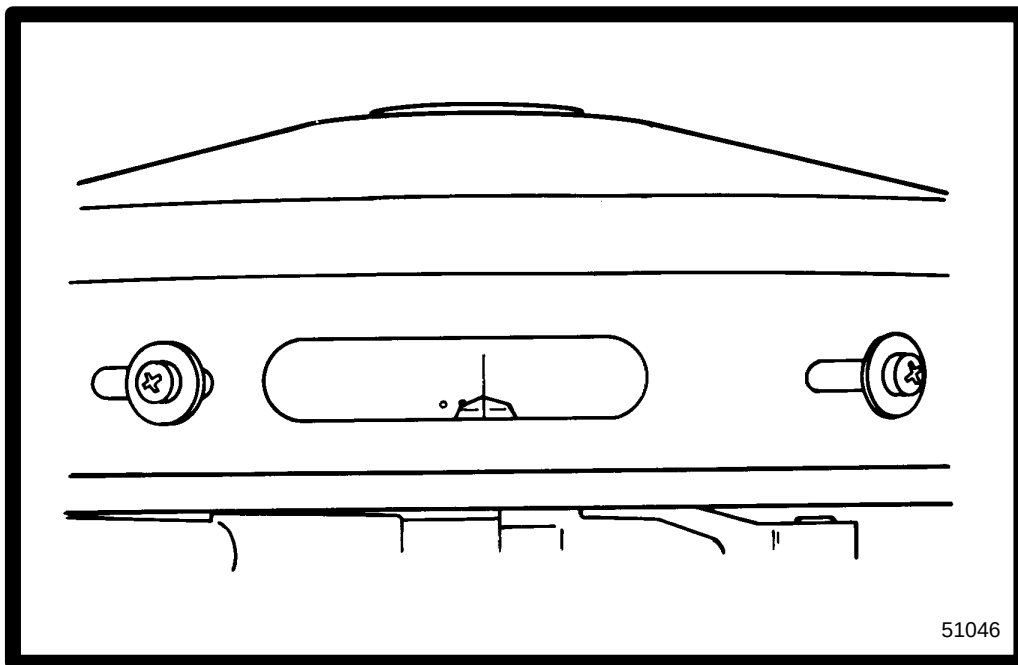




ELECTRICAL and IGNITION

2

C



TIMING/SYNCHRONIZING/ADJUSTING



Table of Contents

	Page
Timing/Synchronizing/Adjusting	2C-1
Specifications	2C-1
Special Tools	2C-1
Timing Pointer Adjustment	2C-1
Carburetor Synchronization	2C-2
(Models With One Piece Throttle Link Rod)	2C-2
(Models With Adjustable Length Throttle Link Rod)	2C-2
(Both One Piece and Adjustable Link Rod)	2C-2
Timing Adjustments	2C-3
Idle Timing Adjustment	2C-3
Maximum Timing	2C-3
Idle Adjustment	2C-4
Throttle Cable Installation	2C-4



Timing/Synchronizing/ Adjusting

Specifications

FULL THROTTLE RPM	5000 - 5500 RPM	
IDLE TIMING	2 - 6° ATDC	
IDLE RPM IN (FORWARD GEAR)	650 - 750 RPM	
MAXIMUM TIMING @ 5000RPM (@ Cranking Speed)	50/60-22° BTDC 50/60-24° BTDC	55-16° BTDC 55-18° BTDC
SPARK PLUG TYPE 50/55/60	NGK BP8H-N-10 * NGK BPZ8H-N-10**	
FIRING ORDER	1 - 3 - 2	

* 50/55/60 Models, Serial No. D000750 to D181999, came standard with NGK BU8H spark plugs. NGK BP8H-N-10 can be used in these models.

** Suppressor (Resistor) Spark Plug.

Special Tools

Part Number	Description
*91-58222A1	Dial Indicator Gauge Kit
*91-59339	Service Tachometer
*91-99379	Timing Light
91-63998A1	Spark Gap Tool

*May be obtained locally.

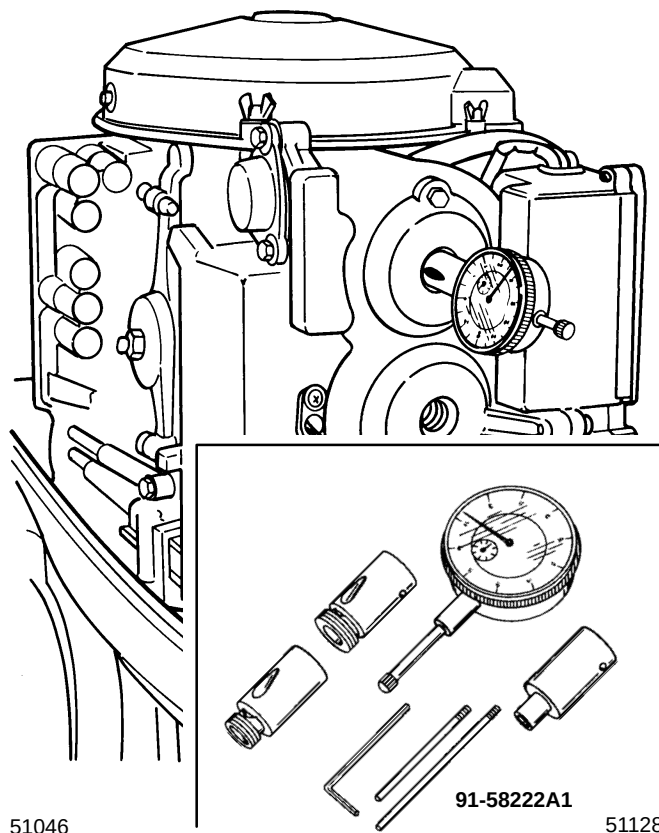
Timing Pointer Adjustment

IMPORTANT: Models equipped with adjustable timing pointer or .459 mark on flywheel require the following procedure before timing engine.

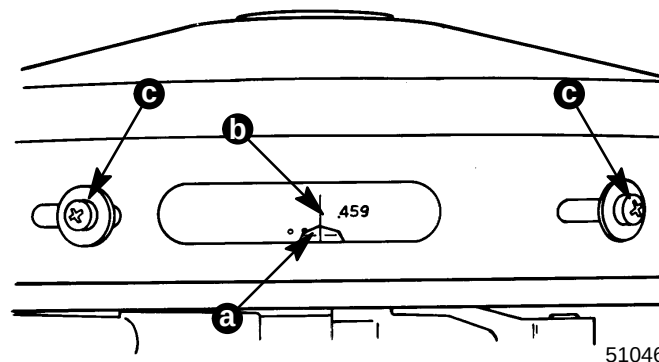
⚠ WARNING

Remove all spark plugs from engine to prevent engine from starting.

1. Remove three (3) spark plugs.
2. Install dial indicator into No. 1 (TOP) cylinder.



3. Turn flywheel clockwise until No. 1 (TOP) piston is at top dead center (TDC). Set dial indicator to "0" (zero).
4. Turn flywheel counterclockwise until dial indicator needle reads .550 in. (14.0 mm) BTDC, then turn flywheel clockwise until needle reads .459 in. (11.7 mm) BTDC exactly.
5. Flywheel cover timing pointer (a) should align exactly with .459 (14.0 mm) timing mark (b) on flywheel. If not, loosen two (2) timing pointer attaching screws (c) and adjust pointer. After adjusting pointer, torque attaching screws to 20 lb. in. (2.26 N·m).



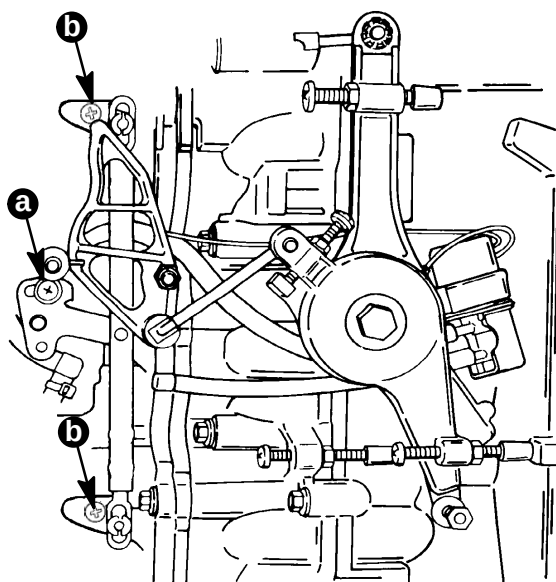
6. Remove dial indicator from No. 1 (TOP) cylinder.



Carburetor Synchronization

(MODELS WITH ONE PIECE THROTTLE LINK ROD)

- Remove four (4) attaching screws from sound box cover and remove cover.
- Loosen screw (a) of cam follower.
- Loosen two (2) synchronizing screws (b) located on throttle levers of top and bottom carburetors.
- Look into throats of carburetors and verify all throttle shutters are completely closed. Tighten synchronizing screws.

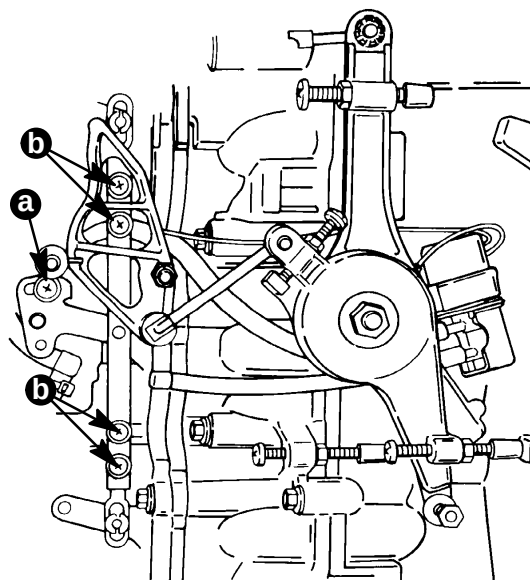


51045

(MODELS WITH 4 ADJUSTABLE LENGTH THROTTLE LINK ROD)

- Remove four (4) attaching screws from sound box cover and remove cover.
- Loosen screw (a) of cam follower.
- Loosen four (4) synchronizing screws (b) located on link rod.

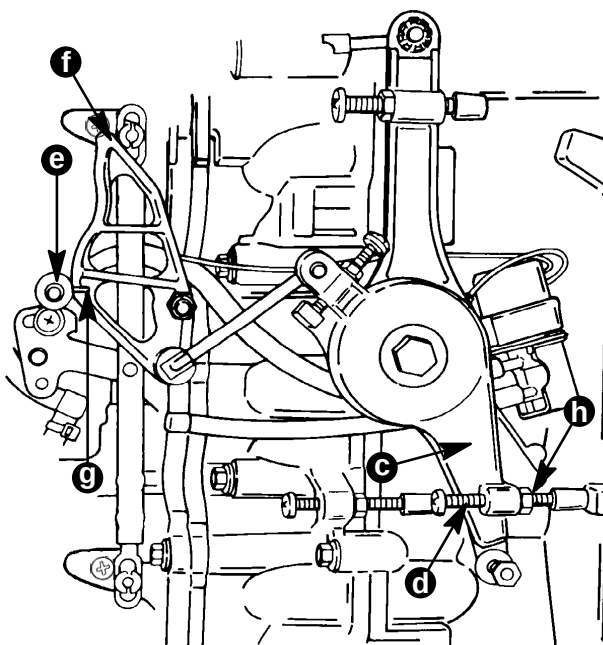
- Look into throats of carburetors and verify all throttle shutters are completely closed. Tighten four (4) synchronizing screws (b).



51045

(BOTH ONE PIECE AND ADJUSTABLE LINK ROD)

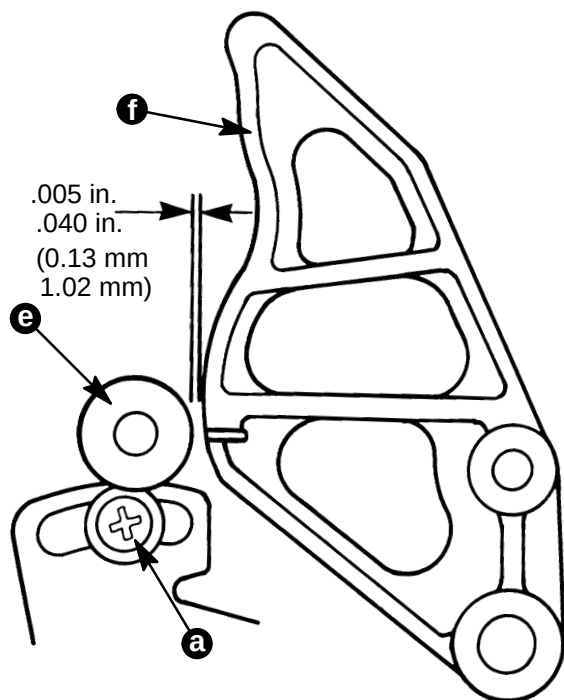
- Recheck throttle shutters and make any necessary adjustments.
- Hold throttle arm (c) so that idle stop screw (d) is against stop.
- Place roller (e) of cam follower against throttle cam (f) and adjust idle stop screw (d) to align raised mark (g) of throttle cam with center of cam follower roller. Tighten locknut (h).



51045

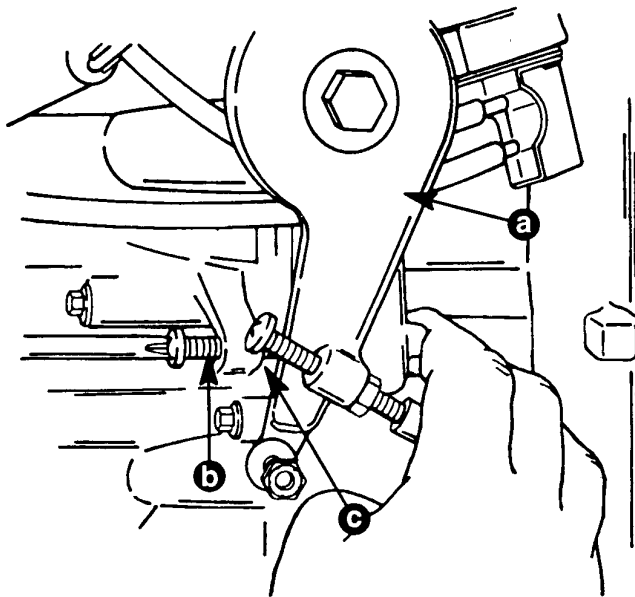


4. Hold throttle arm at idle position. Adjust cam follower so that a clearance of .005 in.-.040 in. (0.13 mm-1.02 mm) exists between roller (e) of cam follower and throttle cam (f). Tighten screw (a) securing cam follower.



51069

5. Hold throttle arm (a) against full throttle stop screw (b). Adjust full throttle stop screw to allow throttle shutters to open fully while providing approximately .015 in. (.38 mm) freeplay in throttle linkage to prevent carburetor throttle shutters from acting as throttle stops at wide open throttle. Tighten locknut (c) on stop screw (b).



51045

6. Reinstall sound box cover.

Timing Adjustments

⚠ CAUTION

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

1. Insert Spark Gap Tool (91-63998A1) into each spark plug boot and attach alligator clips to good engine ground.
2. Disconnect remote fuel line from engine.
3. Connect remote control electric harness to engine wiring harness.
4. Remove throttle cable barrel from barrel retainer.

IDLE TIMING ADJUSTMENT

1. Connect timing light to No. 1 (TOP) spark plug lead.

⚠ WARNING

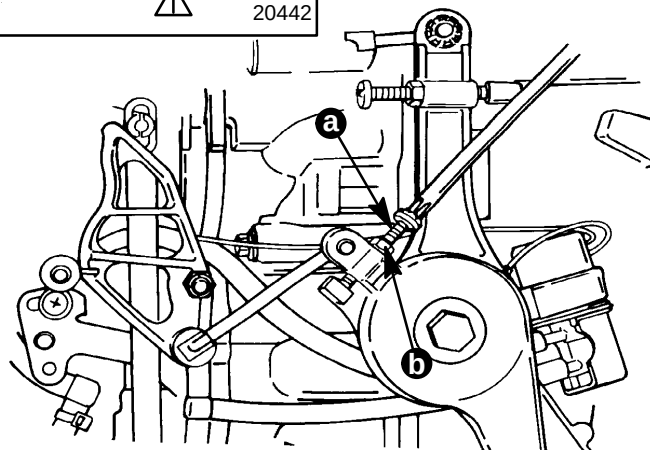
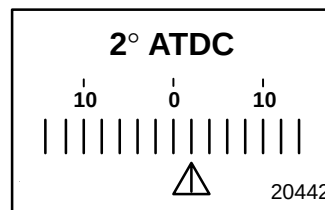
While cranking engine, keep clear of propeller as it may rotate.

2. Shift engine to neutral.

IMPORTANT: To time engine at cranking speed, a fully charged battery must be used.

3. Hold throttle arm at idle position, crank engine with starter motor and adjust idle timing screw (a) to align 2 degrees ATDC timing mark of flywheel with timing pointer. Tighten locknut (b).

NOTE: Timing will be 2° - 6° ATDC after adjusting idle RPM.

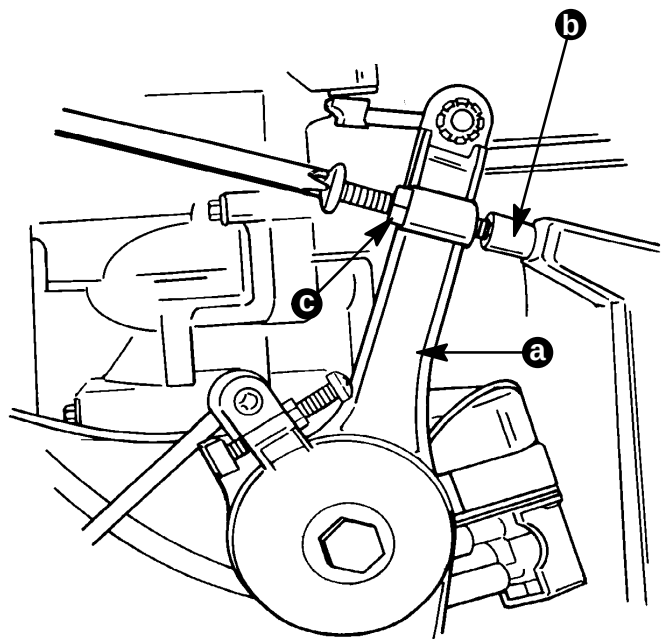


51045



MAXIMUM TIMING

1. Hold control arm (a) so that maximum spark advance screw (b) is against stop. Crank engine with starter motor and adjust maximum spark advance screw to align the specified BTDC timing mark on flywheel with timing pointer. Tighten locknut (c).



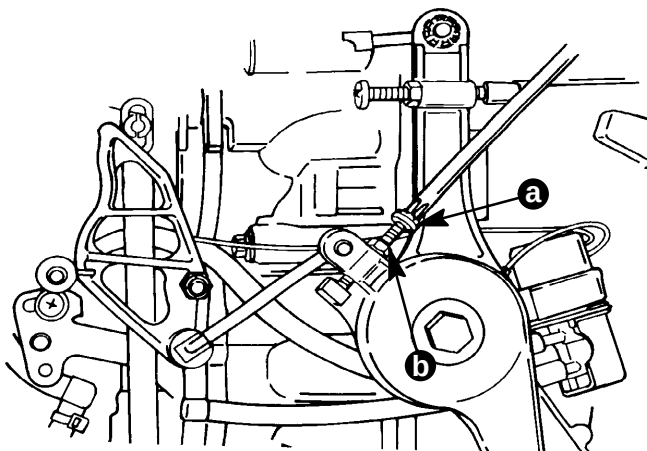
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NOTE: All timing adjustments made to engine under cranking speed conditions should be verified with engine running and adjustments made if necessary. This is due to advance characteristics of individual ignition systems.

Idle Adjustment

1. With engine is water, connect electrical harness and fuel line to engine. Start engine and allow to warm up.
2. Properly adjust carburetor low speed mixture screws. Initial setting is 1-1/4 turns off seat.

3. Hold throttle arm at idle position (throttle cable barrel removed from barrel retainer). Adjust idle timing screw (a) to attain an engine idle RPM of 650-750 RPM in "FORWARD" gear. Tighten locknut (b) and turn off engine.



51045

Throttle Cable Installation

1. 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.

IMPORTANT: Excessive preload on throttle cable will cause difficulty when shifting from forward to neutral. (Re-adjust throttle cable barrel, if necessary.)

2. 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. Re-adjust throttle cable barrel, if necessary.