MERCURY OUTBOARD MOTORS

SERVICE BULLETIN

Subject: Fuel Line Replacement And Conversion

BULLETIN NO. 245

SECTION Parts Manual

DATE May 28, 1956

Mark 55-55E-55H, Mark 30-30E-30H and Mark 25-25E models have improved fabricated fuel and air lines. Numerous requests from the field have been received to make these new fuel-air lines available as replacements on older models which use the extruded neoprene hose.

Since the fabricated fuel and air lines and fittings are used on current models, Kiekhaefer Mercury dealers have a stock of these parts on hand. Therefore, rather than furnish a replacement kit, only the individual parts will be sold. The extruded neoprene line still will be stocked and sold.

Mark 20H and Mark 40H.

The fuel line change on the Mark 20H and Mark 40H is permitted under rules of the American Power Boating Association.

The pressure valve cover has two 1/8" - 27 pipe thread holes rather than the nipple for the extruded hose. Always attach the air pressure line to the lower outlet, otherwise fuel will build up in the housing and prevent correct air pressure from being delivered. The outlet hole on the side is for pressure relief valve and hose on older Mark 20, Mark 15 and Mark 40H models. Insert pipe plug (22-21290) in this hole on other models not using pressure relief system.

A. Mark 20H

Fuel Line Replacement for **32-20476**

Quan.	Part No.	Description
1	25833	Pressure Cover
1	32-23762	Air Line, pressure cover to inlet conn.
1	22-22947	90° Elbow (Flex) Receptacle
1	22-21290	Pipe Plug
2	22-23125	90° Elbow 1/8" - 1/8" Receptacle

Fuel Line Replacement for **32-20576**

1	32-24818	Fuel Line, connector to filter
1	22-22947	Elbow, filter inlet

Fuel Line Replacement for **32-20690**

1	32-24818	Fuel Line, filter to carburetor
1	22-23125	Elbow, carburetor inlet

(OVER)

B. Mark 40H and Mark 40 (Supersedes Bulletin No. 194, June 1954)

Fuel Line Replacement for **32-22952**

1	25833*	Pressure Cover
1	32-25832	Air Line, pressure cover to receptacle
1	22-23595	Connector, pressure cover
1	22-21290	Pipe Plug

* Drill and tap 25833, 18"-27 NPT in center of housing when using pressure relief line (32-23115) and check valve on some Mark 40H engines.

1	32-23439A1	Fuel Line, connector inlet to filter
1	22-20194	90° Elbow, filter inlet

Fuel Line Replacement for **32-23492** Copper and/or **32-20932** Neoprene

1	32-23762	Fuel Line, lower carburetor
1	32-23731	Fuel Line, upper carburetor
1	22-23763	Tee Connector, filter outlet
2	22-25259	90° Elbow 1/8" - 1/8", carburetor top

C. Mark 20 and Mark 15 Without Filter

Fuel Line Replacement for **32-20476**

1	25833	Pressure Cover
1	32-23762	Air Line, pressure cover to receptacle
1	22-22947	90° Elbow, inlet connector
2	32-23125	90° Elbow, pressure cover to form "U". Hose comes straight up.

Fuel Line Replacement for **32-21611**

1	32-24818	Fuel Line, inlet connector to filter
1	35-23719A1	Filter Assembly
1	22-22947	90° Elbow, inlet connector

SERVICE BULLETIN NO. 12
SECTION X
MAY 4, 1959

SUBJECTS

A. CONVERSIONS FOR MARK 55H ENGINES

Mark 55H engines, Serial Nos. 1260725 to 1261024 inclusive, were manufactured with new large throat Tillotson carburetors and with new style "flat top" pistons.

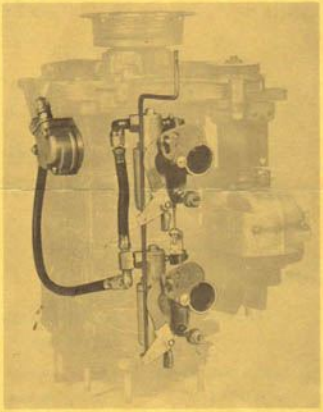
A.P.B.A. has approved the carburetor conversion kit and the new style pistons which are available for those who wish to convert their present Mark 55H engines. The kits must be purchased individually as follows:

1. Mark 55H Carburetor Conversion Kit

The carburetors in the conversion kit -- to replace the Carter carburetors -- have elongated stud mounting holes to adapt directly to the engine. The kit consists of two carburetors, choke assembly, throttle, pickup and bracket, gaskets and mounting nuts.

Instructions for installation:

Drill a choke rod hole in top cowl 1-13/16" forward from present choke rod hole (15/32 drill). Move grommet to new hole. Remove old bowl type filter, fuel line (filter to carburetor) and remove Carter carburetors. Remove fittings and fuel lines from side of both Carter carburetors. Remove filter from crankcase. Remove flex elbow from street el and street el from tee. Screw flex elbow into tee fitting and screw this assembly into bottom carburetor. Place other flex fitting in top carburetor. Screw short fuel line into tee of bottom carburetor and connect flex fitting of top carburetor. Adjust angles of fittings to suit. Tee on bottom carburetor will be nearly vertical. Fuel line from pump then goes into bottom carburetor flex fitting. (See figure, right.) Remove double carburetor pickup from magneto and substitute pickup 23603A1. Set magneto throttle pickup to contact carburetor pickup bracket at approximately 1000 RPM. Reset timing to .320" BTDC or to previous setting.



1333-1609A2

Carburetor (KA7A) Conversion Kit

$47.50

(OVER)

2. Piston Assembly

New piston assemblies (less rings) are available in standard and oversize dimensions for Mark 55H engines. Order from the following descriptions:

726-1611A4	Piston Assembly (Less Rings)	$5.95
726-1612A1	Piston Assy. (Less Rings) .015" Oversize	5.95

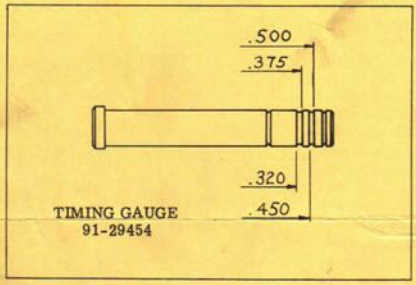
Advise Competition Drivers in Your Area.

Order Conversion Kits from Your Parts Distributor.

B. NEW TIMING GAUGE FOR MARK 55H-30H-20H

New special timing gauge insert (91-29454) for Mark 55H-30H-20H engines has markings of .320"-.375"-.450"-.500" for setting spark advance. Used in conjunction with Timing Gauge 91-24111. To use Timing Gauge (91-24111) with insert (91-29454), thread gauge into No. 1 spark plug hole, set No. 1 piston on top dead center (TDC) and adjust knurled screw on top shaft so top matches bottom of first groove marked on insert. Rotate flywheel counterclockwise, keeping pressure on gauge so that insert follows piston. First line is TDC.

(NOTE: Extreme caution must be used when operating engine above recommended .320" BTDC. Advancing spark beyond recommended degrees may cause pre-ignition and RPM will decrease noticeably after running for several minutes. Continued operation under this condition will result in scored pistons.)



Order:

91-24111	Timing Gauge	$1.60*
91-29454	Special Timing Gauge Insert	.75*

** Net Price*

C. MERCO-LUBE IN 15 OZ. TUBES

Merco-Lube in 15 oz. tubes -- as announced in Parts Bulletin No. 59-3 -- is now being shipped. Sold to dealers in case lots only. Suggested list price: $1.25 per tube. Order now from the following description:

92-29415-24	Merco-Lube, 15 Oz. Tube, Case 24 Tubes	$30.00 Case§

§ *Less regular dealer discount.*

SERVICE BULLETIN NO. 13
SECTION X
JUNE 30, 1959

SUBJECTS

A. Starting and Stopping All 6-Cylinder Engines *(New Information for Section I and Supplements Information in Bulletin No. 8, Section VII, Item D)*

If 6-cylinder engines tend to start hard after engine is warm, turn idle adjustment screw slightly rich (1/16-to-1/8) counterclockwise.

It is recommended that all 6-cylinder engines be stopped with the control lever by retarding the throttle to reverse stop or to forward stop position. After engine is stopped, turn key "OFF" to avoid battery drain. Never turn key to "OFF" position while engine is running at speeds above idle, or it may result in damage to rectifier.

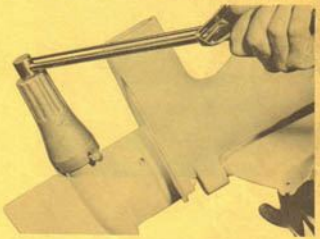
B. Carburetor Idle Adjustment on 2-Cylinder Engines *(New Information for Section I)*

It may be necessary to readjust the carburetor idle adjustment screw on 2-cylinder engines up to 1¼ turn with each change in brand of gasoline in order to compensate for varying volatility and differences in refining processes.

C. Torquing Water Pump Covers in A, B and C Quicksilver Gear Housings *(New Information for Section III)*

When installing water pump cover in Class A, B and C Quicksilver gear housings, observe the newly recommended torque value of 100 ft. lbs. (See figure on right, below.)

To obtain maximum seal when installing, cover threads of water pump cover with 4 drops of Loc-Tite (92-29426), equally spaced. (Figure on left, below) Place water pump cover plate (stainless steel) in place on locating pin and insert cover over shaft to seal. Turn cover into gear housing by hand. Set pins of Water Pump Cover Tool (91-24117) into cover holes and tighten counterclockwise (left hand thread), torquing to 100 ft. lbs. Use Torque Wrench 91-25667, as shown in figure on right, below.



D. Tuneup Recommendation for All 6-Cylinder Engines *(New Information for Section III)*

When completing customer engine tuneups or performing engine repairs on 6-cylinder models, follow the regular tuneup procedure, and also inspect the 2 water valves (21-26491) in the gear housing to be sure that they are in good condition. The water valve end should be closed. If open, deteriorated, torn or set out of shape, replace with a new part.

(OVER)

E. Installation of Oil Seals *(New Information)*

When installing oil seals, be sure to lubricate the oil seal inner lip with grease before placing over shaft to prevent seal lips from wearing off on dry surface.

F. New Service Tools *(New Information for Section IX)*

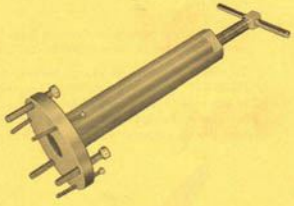
1. **New Breaker Point Spring Torque Scale**

A new Breaker Point Spring Torque Scale (91-29406) has been designed by the Kiekhaefer Engineering Division. It provides easier reading and attachment more simple than the previous Spring Tension Gauge (91-28993) which is no longer available. (See figure on left, below.)

The end of the Torque Scale Tool slips over the breaker cam follower -- one arm of yoke fits into crook of cam follower. The handle is turned until the breaker points just begin to open, as indicated by the Magneto Analyzer (91-25213) or Continuity Meter (91-22966). The Torque Scale indicator arm then shows correct spring tension (33-37 oz.).

91-29406 **Breaker Point Spring Torque Scale** $ 7.95 Net

(This tool is not being sent on Perpetual Tool Order Cards.)



2. **Counter-Rotating Carrier and Adaptor Puller Tool**

A new device tool is available for pulling the oil seal carrier and bearing ring adaptor from counter-rotating 6-cylinder engine gear housings. (See figure on right, above.)

How to use:

To remove oil seal carrier, thread three ¼-20 thread screws into carrier securely and turn center screw down. To remove ball bearing ring adaptor, thread 3 small screws (6-32 thread) into adaptor and turn down center screw.

91-29456A2 **Counter-Rotating Carrier and Adaptor Puller** $ 3.95 Net

(This tool is not being sent on Perpetual Tool Order Cards.)

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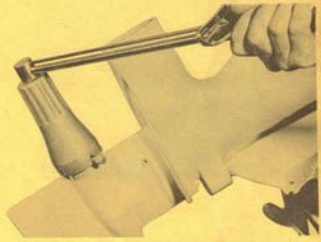

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(OVER)

SERVICE BULLETIN NO. 14

SECTION X

AUG. 7, 1959

SUBJECTS

A. Mark 20H Operation

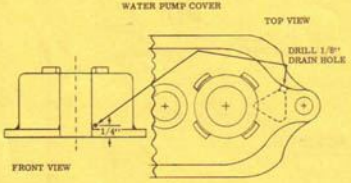
If a Mark 20H, equipped with a carburetor conversion kit, has a tendency to flood or "overload" when running in choppy water, it can be corrected by installing a 1399-1138 inlet needle and seat in the carburetor and replacing fuel pump cover 23008 (having two pressure holes) with fuel pump cover 29044 (having only one pressure hole). This reduces fuel pump pressure to the carburetor. Any tendency to run lean at part throttle in the turns can be corrected by enriching the low speed needle valve setting to approximately 2½ turns open and by adding a spray shield in front of the carburetor.

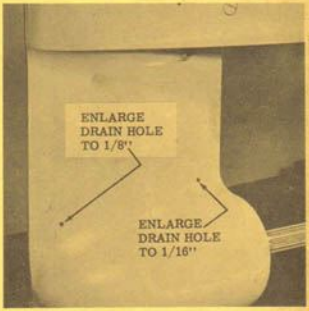
B. Flywheel Puller Change, 4-and-6 Cylinder Engines

All 1960 4-and-6 cylinder engines incorporate 5/16"-24 thread puller screw holes in the flywheel. Your present flywheel pullers can be modified by drilling out the three puller screw holes to 11/32" diameter and using three 10-21449 screws (5/16"-24 thread x 2" long).

C. Preventive Maintenance, 6-Cylinder Engines

When servicing Mark 75-78-75A-78A engines or preparing the engines for winter storage, we recommend that the water pump covers (26219) have a 1/8" drain hole drilled into the housing as shown in figure below, left. This will prevent water from freezing in the chamber, which possibly could force the water pump cover gasket out of place and distort the water pump cover face plate. Either could cause loss of pumping pressure and result in engine overheating. In addition, the drain holes in the gear housing (figure below, right) should be drilled out as specified in the illustration to prevent possible clogging from sediment.





D. Trouble Shooting, 6-Cyl. Starter Solenoids

A defective starter solenoid can be hard to find if the symptoms are not known. Sometimes too much time is spent examining and testing other electrical components when the starter solenoid is at fault. The symptoms of a defective starting solenoid are as follows:

1. Engine will continue to run after the ignition key has been turned off.
2. The starter continues to run after the engine has been started.

(OVER)

PARTS BULLETIN NO.60-14
NOV. 15, 1960
PARTS MANUAL

SUBJECTS

A. LUBRICATION OF MERC 500 GEAR HOUSING ASSEMBLY

Lubricate Merc 500 gear housings only with EXTRA-DUTY Quicksilver Gear Lubricant (92-30295). All 6-cylinder models use EXTRA-DUTY Lubricant in the gear case.

92-30295-24 EXTRA-DUTY Quicksilver Gear Lubricant, Case of 24 15-Oz. Tubes $30.00

B. REMOTE CONTROLS AND RIDE-GUIDE STEERING FOR MERC 60

Remote Controls and Ride-Guide Steering attachments, available for Merc 60 engines, are added conveniences for fishermen and others who prefer steering wheel operation to twist-grip throttle steering handle operation. Order from the following descriptions:

1. Merc 60 Remote Controls (Require two 29564-_S Cables)

Control Housing Part No.	Motor Attaching Kit	Price	Shorting Switches		
			Part No.	Length	Price
30063A1		$19.50**	31051A10	10 Ft.	$ 5.45**
	30917A2	10.00**	31051A15	15 Ft.	6.00**
			31051A20	20 Ft.	6.45**

2. Merc 60 Ride-Guide Motor Attaching Kit (also Requires One Ride-Guide Steering Wheel and one 30509A_ Cable)

Part No.	Motor Model	Description	Installation	Price
30773A2	Merc 60 Only	Standard	Single	$ 8.40**

** *Short Discount*

C. MERC 800 (FULL GEAR SHIFT) CRANKSHAFT

Crankshaft 417-1750 for Merc 800 Direct Reversing engines cannot be used on Merc 800 Full Gear Shift engines because of the spline height difference. Use only crankshaft 417-1787 as replacement part on Merc 800 Full Gear Shift.

D. MARK 20H ALCOHOL CRANKCASE

We now have available a Mark 20H crankcase (912-1627A1) which is especially designed for alcohol racing. IT IS NOT LEGAL FOR STOCK OUTBOARD RACING! We suggest that you advise racing enthusiasts in your area of its availability.

912-1627A1 Crankcase (Alcohol) $58.50

E. SWIVEL PIN BUSHINGS FOR CLASS A STOCK UTILITY ENGINES

The solid upper swivel pin bushing (23-29669) and lower swivel pin bushing (23-29670) can be used as replacement parts in place of the rubber upper and lower bushings (23-20970 and 23-20972) on Class A Stock Utility engines.

(OVER)

SERVICE BULLETIN NO. 15
SECTION IX
APRIL 20, 1961

SUBJECTS

A. MERC 500 TOOLS

1. Driver Cup

Installs forward gear tapered roller bearing outer cup in gear housing.

§ 91-31361 **Driver Cup** $ 1.40 Net

2. Forward Gear Bearing Cup Puller

Removes forward gear tapered roller bearing outer cup from gear housing. (Figure 1) Used in conjunction with 91-31228A1 Forward Gear Bearing Cup Puller. Any dealer with 91-31228A1 tool, order 91-31368 Puller Cup only. (91-31228A2 has the 91-31368 Puller Cup as part of the assembly.)

§ 91-31368 **Puller Cup** $ 2.30 Net

B. MAGNETO BEARING PULLER, 4-CYL. MODELS

Removes ball bearings from magnetic rotor shafts on 4-cyl. engines.

91-31483 **Magneto Bearing Puller** $ 2.75 Net

C. CENTERMAIN BEARING TOOL FOR MARK 20H

In response to race driver and dealer requests for a Mark 20H centermain bearing tool, the Mark 25 Centermain Tool (91-25061) has been revised to accommodate the Mark 20H centermain bearing.

91-25061 **Centermain Bearing Tool, Mark 25-20H** $ 11.25 Net

D. SPEEDMASTER TOOLS

(Servicing Instructions Are Furnished with Speedmaster Lower Units When Shipped from Factory.)

1. Gear Housing Cover Tool

Removes and installs inner gear housing cover on LEFT HAND rotation Speedmaster and Mark 75H lower units. (Figure 2)

91-28737 **Gear Housing Cover Tool** $ 3.50 Net

2. Bearing Retainer Cover Tool (LH)

Removes and installs propeller shaft ball bearing retainer and is used as a bearing driver for pressing propeller shaft ball bearing into gear housing on LEFT HAND rotation Speedmaster and Mark 75H lower units. (Figure 3)

91-28738 **Bearing Retainer Cover Tool (LH)** $ 4.50 Net

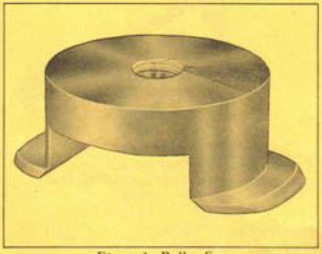


Figure 1. Puller Cup
91-31368

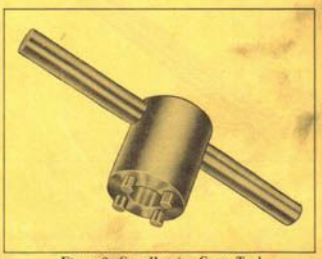


Figure 2. Gear Housing Cover Tool
91-28737

MERCURY MARINE
OUTBOARDS

SERVICE BULLETIN

Section: X
Number: 65-2
Date : 3/2/65

Cut individual items along broken lines & paste in appropriate sections of your Mercury Service Manual.

A. CONTROL CABLE INSTALLATION - MERC 1000-900-650

(For Pages 95 & 99 of Ignition Section IV)

Late Merc 1000-900 and 650 engines employ a nylon cap (A-38802) on the throttle cable brass barrel to eliminate chafing or rattling of the cable barrels. (Figure 1)

Some Merc 650 engines (Serial No. 1845850 & up) were shipped with incorrect instructions for installing the nylon cap. A tag with the correction instruction (Figures 2-3) is illustrated below. Disregard incorrect tag which may be attached to the engine.

NOTE: Nylon cap (A-38802) may be installed on earlier Merc 1000-900 and 650 engines if chafing or rattling of cable barrels occurs. It may be necessary to file approximately 1/32" (0.792mm) from top of shift cable barrel to provide the required clearance or to install a new control cable bracket (A-37897) which has the required clearance.

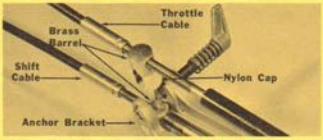


Figure 1. Nylon Cap on Throttle Cable Brass Barrel

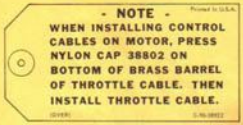


Figure 2. Front of Tag with Correct Instruction

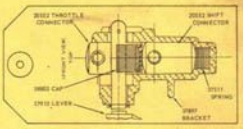


Figure 3. Back of Tag with Correct Instruction

B. REVERSE LOCK CAMS - MERC 1000-900-650 *(For Page 81 of Lower Unit Section III)*

A 3/16" (4.752mm) hole has been added to the leading edge of the gear housings for Merc 1000-900-650 engines to prevent a silt buildup around the reverse lock cams.

If any of your customers experience hard shifting after running for extended periods of time in silt laden waters, inspect gear housing for silt buildup. This condition can be improved by drilling gear housing as shown in Figure 4.

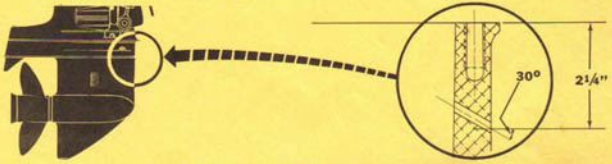


Figure 4. Drilling Gear Housing

C. MARK 20H OPERATION

(For Page 17 of Carburetor Section V)

There have been several field complaints of Mark 20H engines, equipped with Tillotson KA7A carburetors, which are malfunctioning in fast turns. This lean-out condition, or engine "hunting", can be corrected by installing a carburetor conversion kit (A-1399-2619A1). The carburetor conversion kit consists of a new, longer, main discharge nozzle and a new "full" throttle shutter. All carburetor adjustments--such as float level, high speed adjustments and idle mixture adjustment--are the same, however, it is suggested that the high speed and idle mixture be slightly "rich" to further minimize this condition.

A-1399-2619A1 Carburetor Conversion Kit

D. STEERING HANDLE ASSEMBLY - MERC 500 (1965)

(For Page 50B of Miscellaneous Section VIII)

A tiller control handle (A-38445A1) for 1965 Merc 500 engines is available now for customers who want twist-grip throttle-shift control and steering at the engine.

A-38445A1 Steering Handle Assy. $59.95 U.S. List

E. CO-PILOT REPLACEMENT KIT - MERC 500 (1965)

(For Page 50B of Miscellaneous Section VIII)

Available now: A co-pilot replacement kit (A-29738A5) which provides friction control for 1965 Merc 500 engines equipped with tiller control handle. The co-pilot also can be used to provide friction for rope-and-pulley steering.

A-29738A5 Co-Pilot Replacement Kit

F. TACHOMETERS

(For Page 53 of Miscellaneous Section VIII)

We have had a number of complaints of engine malfunction or misfiring when tachometers of various types, other than Kiekhaefer Tachometers (C-91-33550 and C-91-27708), have been installed on 6-cylinder Mercury Outboards.

The greatest offenders are tachometers that are wired in series with the ignition points. We have run a number of acceptance tests on this type tachometer and have found them unsuitable for use on our engines because of inaccuracy of operation and reduction in available ignition system voltage. As a result of this reduction, poor engine performance may occur.

Because of the time and cost involved, it is impossible to test all of the various marine accessories that are presently on the market. Therefore, WARRANTY IS VOID if engine is operated with accessories that are not of our manufacture and/or are not recommended by the Kiekhaefer Corporation or certified in writing by our Engineering Department as having design characteristics suitable for use with or on the engine. This is consistent with our practice of conducting extremely thorough tests on any device before release for production and/or sale.

G. NEEDLE BEARING A-29-38586

(For Page 41 of Powerhead Section II)

DO NOT MIX new needle bearing A-29-38586 on same connecting rod with needle bearing A-29-30403, even though bearings are similar in appearance. Both type bearings, however, can be used in the same powerhead, but not mixed on the same connecting rod.

ENHANCED MERCURY OUTBOARDS

SERVICE BULLETIN

Section: X
Number: 66-1
Date : 11/1/65

Cut individual items along dotted lines and paste in appropriate sections of your Mercury Service Manual.

A. IGNITION TIMING - Merc 500 & Merc 350

(For Page 100 [Merc 500] of Ignition Section IV)

Spark advance on Merc 500 models for 1966 and 1965 is .200" BTDC (before top dead center). Use Timing Gauge C-91-45123A1. Spark advance on Merc 350 engines for 1966 is .300" BTDC (before top dead center). Do not use on Merc 350 models prior to 1966. Use Timing Gauge C-91-39735A1.

C-91-45123A1	Timing Gauge, Merc 500 (1966-65)	
C-91-39735A1	Timing Gauge, Merc 350 (1966)	$ 1.75 Net U.S.

B. MAGNETO/DISTRIBUTOR CORROSION AND RUST FORMATION

(For Page 27 and 34 of Ignition Section IV)

If an excessive amount of corrosion or oxidation is found internally when servicing the magneto or distributor of 4 or 6-cylinder outboard ignition systems, check the following:

1. Kinked or bent vent hoses
2. Foreign matter in vent hoses or vent elbow
3. Vent elbow restricted by flashing or foreign matter

Lack of proper ventilation in the magneto or distributor will result in excessive corrosion or oxidation which causes hard starting and loss in ignition efficiency.

C. MARK 20H and 55H OPERATION

(For Page 17 of Carburetor Section V)

There have been several field complaints of Mark 20H and Mark 55H engines, equipped with Tillotson KA7A carburetors, which are malfunctioning in fast turns. This lean-out condition -- or engine "hunting" -- can be corrected by installing a carburetor conversion kit (A-1399-2619A1). The carburetor conversion kit consists of a new, longer main discharge nozzle and a new "fall" throttle shutter. All carburetor adjustments -- such as float level, high speed adjustments and idle mixture adjustment -- are the same, however, it is suggested that the high speed and idle mixture be set slightly "rich" to further minimize this condition.

A-1399-2619A1	Carburetor Conversion Kit	$ 1.35 U.S.

NOTE: The information on Mark 20H has been issued previously in Service Bulletin No. 65-2.

D. INSTALLING THROTTLE SHAFT ASSEMBLY - 1966 Merc 39

(For Page 8 of Miscellaneous Section VIII)

When installing throttle shaft assembly A-39217A1 on 1966 Merc 39 engines below Serial No. 1914878, the shaft must be assembled in a definite position with respect to the throttle control socket (A-31200). This must be done to prevent disengagement of the control linkage while advancing throttle with handle in tilted-up position.

When engaging the throttle shaft into the throttle socket, the magneto must be retarded against the idle stop screw. The assembly then must be installed with the tongue in a position between zero and 90°, as shown in figure on right.