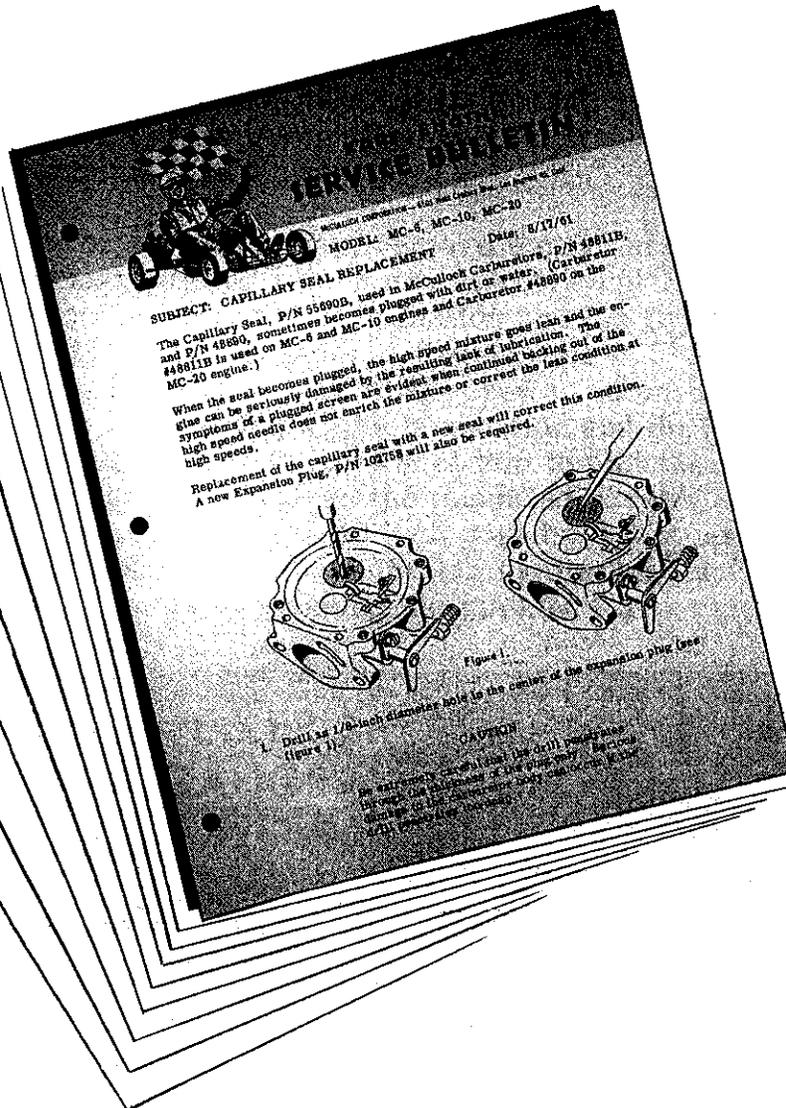


McCULLOCH POWER TOOLS SERVICE BULLETINS

VOLUME
3



**NUMBER K101
THRU
NUMBER K163**

ALL NUMBERS DELETED ARE OBSOLETE
AND HAVE THEREFORE BEEN DISCARDED.



**McCULLOCH
CORPORATION**

6101 W. Century Blvd., Los Angeles, Calif. 90045

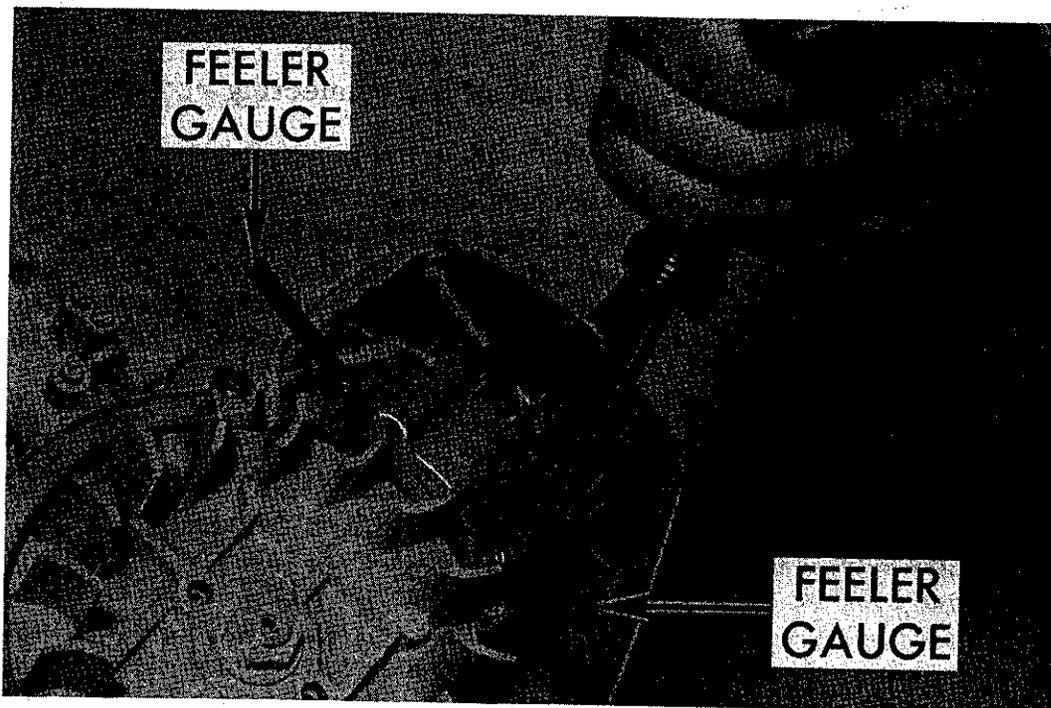
This Master Service Library Index, Volume 3, covers a revised list of Service Bulletins applicable to current production kart engines, and includes selected bulletins for older models for which information may occasionally be required.

SUBJECT	MODEL					BULLETIN NO.
	All	All Except Pulse Carburetor	MC 5, MC 10	Rewind Starter	MC 91, MC 101	
Correct Setting Flywheel Lamination Gap	X					K101
Installation Closed End Bearing, Piston Pin			X			K103
Lubricating Engine Before Starting	X					K105
Cut-Off Switch - Dual Engines	X					K106
Prevention Of Foreign Objects In Crankcase	X					K111
Air Leaks At Fuel Hose Connections	X					K114
Spark Plug Heat Range	X					K117
Analyzing Causes Of Engine Failure	X					K119
Piston & Cylinder Head Gasket Interference	X					K122
Leanout Due To Inadequate Fuel Supply	X					K123
Cleaning Breaker Points	X					K125
Installation Of Throttle & Choke Plate	X					K126
Removal - Starter Ratchet & Rewind Spring				X		K128
Capillary Seal Replacement		X				K129
Use Of Correct Type Ring In 2-Cycle Engine	X					K130
Elimination Of Thrust Washers	X					K138
Breakage Of Crankshaft Keyway	X					K139
Identification Of Kart Engine Head Gaskets	X					K144
Proper Installation - Fuel Pump Diaphragm		X				K146
Torque Values - Rolled Thread Cap Screws	X					K151A
Loose Coils & Coil Retainers	X					K152
Revision Of Torque Values	X					K153A
Fractures Of Crankshafts - Sprocket End	X					K154
Breaker Point Timing	X					K155
Pressure Pulse Carburetor Adjustments					X	K159
Performance - Retarded Timing & Reed Life					X	K160
Torque - Connecting Rod Screws					X	K161
Pressure Pulse Carburetor Booklet ST 136					X	K163

BULLETIN K101
MODELS AFFECTED: MC-10 MC-5
SUBJECT: Correct Setting for Lamination to
Flywheel Gap

At the high speeds at which the MC-10 and MC-5 kart engines operate, correct setting of the gap between the lamination legs and the magnets in the rim of the flywheel is most important. Setting the gap at a minimum of 0.010 inch gives the ignition system components a longer service life with maximum efficiency.

To check or adjust the gap, remove the fan housing and turn the flywheel until the magnets in the rim are directly under the coil. Check the gap between outer legs of the lamination and the flywheel with a set of feeler gauges. If the gap is under 0.010 or over 0.012 inch, it should be reset. Loosen the lamination mounting screws and put a 0.010 inch feeler gauge between each outer leg of the lamination and the flywheel (see figure below). Allow the magnets in the flywheel rim to pull the lamination legs against the feeler gauges. Tighten the mounting screws. Torque value for the mounting screws is 35 to 40 inch pounds (3 foot pounds). Turn the flywheel several times to make sure the lamination legs do not rub on the rim of the flywheel before replacing the fan housing.



BULLETIN K103
MODELS AFFECTED: MC-10 MC-5
SUBJECT: Installation of Closed-End Bearing and
Piston Pin

To provide for longer piston pin service life, a closed-end bearing and a new, shorter piston pin are available. The new bearing and pin are being used on current production models of the MC-6 and MC-10.

The closed-end bearing, P/N 104378, is installed in place of the roller bearing on the exhaust side of the piston. The new, shorter pin, P/N 57198, must be used with the closed-end bearing because if the old piston pin is used it will damage the closed-end bearing or the piston assembly. The low-drag, racing-type piston assembly, P/N 48695, which is available for the MC-10 and MC-5 engines, comes with the new closed-end bearing installed.

REMOVAL OF PISTON PIN AND OPEN-END OR CLOSED-END BEARING.

1. Remove the piston from the cylinder. Mark the exhaust port side of the piston and connecting rod so they can be reinstalled in their original position for most efficient operation.
2. Heat the piston and connecting rod assembly with a heat lamp or in an oven, to approximately 300 degrees F. This will expand the connecting rod eye so that the piston pin can be pressed out of the connecting rod without damaging the rod.
3. Press the piston pin out of the connecting rod and the piston, from the fly-wheel side of the piston toward the exhaust port side. The bearing in the exhaust port side of the piston may come out with the pin. If it does not, remove the connecting rod and, while the piston is still hot, press the bearing toward the center of the piston until you can remove it from between the piston pin bosses.

NOTE

It is impossible to remove the piston pin from engines which have the closed-end bearing without damaging the bearing.

INSTALLATION OF PIN AND CLOSED END BEARING

1. Heat the piston to 180 to 200 degrees F., with a heat lamp or in an oven.
2. Place the closed-end bearing (shield end out) in the bearing boss of the exhaust port side of the piston.
3. Press the bearing into the piston boss until the inside edge of the bearing is flush with the inside edge of the boss (see figure 1).

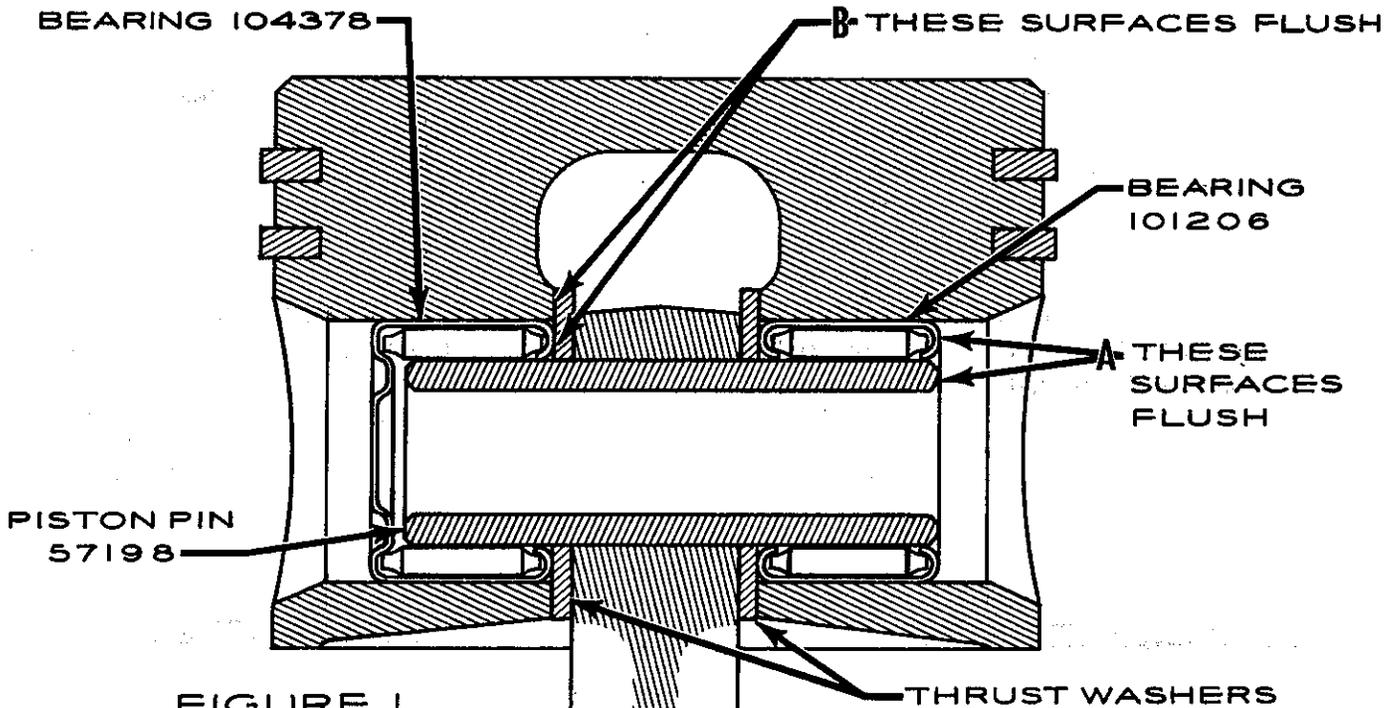


FIGURE 1

CAUTION

Do not damage the bearing shield or the bearing will have to be discarded and a new one installed in its place.

4. Heat the connecting rod to approximately 300 degrees F., with a heat lamp or in an oven.
5. Put a light coat of lubricating oil on the piston pin and the roller bearings.
6. Insert the piston pin through the open-end bearing. Place a thrust washer on the inner end of the pin. Insert the connecting rod between the piston boss on the exhaust port side of the piston and the thrust washer on the end of the pin. Make sure the exhaust side mark on the connecting rod is on the same side as the piston mark. Place a second thrust washer between the connecting rod and the piston boss on the exhaust port side of the piston and press the piston pin through the connecting rod and the

second thrust washer. With the connecting rod in alignment with the closed-end bearing, press the piston pin into the closed-end bearing until the outer end of the pin is from 0.010-inch above, to flush with the outer edge of the open-end bearing (see figure 1).

CAUTION

Do not press the pin below the surface of the open-end bearing, because if the pin is touching the shield of the closed-end bearing while the engine is running, friction will destroy the bearing and may cause serious damage to the engine.

7. If the piston pin is pressed too far into the closed-end bearing, both piston pin and closed-end bearing will have to be pressed out of the piston. When this is done, the piston pin will distort or break the shield of the closed-end bearing and a new bearing will be required.
8. Be sure to reinstall the piston and connecting rod in the cylinder with the closed-end bearing toward the exhaust ports or a serious loss of power will result.

BULLETIN K105
MODELS AFFECTED: MC-10, MC-6, MC-5
SUBJECT: Lubricating Your Engine Before Starting It

When your engine has not been used for a while, the lubricating oil film drains from the cylinder wall and the bearings and leaves them in a dry, unlubricated condition.

If the engine is started and run in this dry condition, the friction of metal to metal contact causes excessive heat, the connecting rod needle rollers may seize and the piston and piston rings are likely to scuff on the cylinder wall. The excessive heat can also damage the crankshaft and the oil seals.

Pre-lubrication of your engine before starting will give all the moving parts sufficient oil for starting and running until the fuel/oil mixture is supplying the necessary lubrication.

To pre-lube your engine:

1. Pour 3 to 4 tablespoonfuls of a rich 75%-fuel/25%-oil mixture through the carburetor air intake into the crankcase.
2. Remove the spark plug and pour a spoonful of the rich mixture into the spark plug hole.
3. Turn the crankshaft 8 or 10 times to give the cylinder wall and bearings a coating of the lubricating mixture.
4. Replace the spark plug.
5. Start your engine and run it at a moderate speed for the first 2 or 3 minutes until the regular fuel mixture has a chance to take over the lubrication chore.

BULLETIN K106
MODELS AFFECTED: All
SUBJECT: Cut-Off Switch: Dual Engines

When setting up a dual-engine kart, do not use a single -pole, single-throw switch as a common switch to control both engines. It simply won't work.

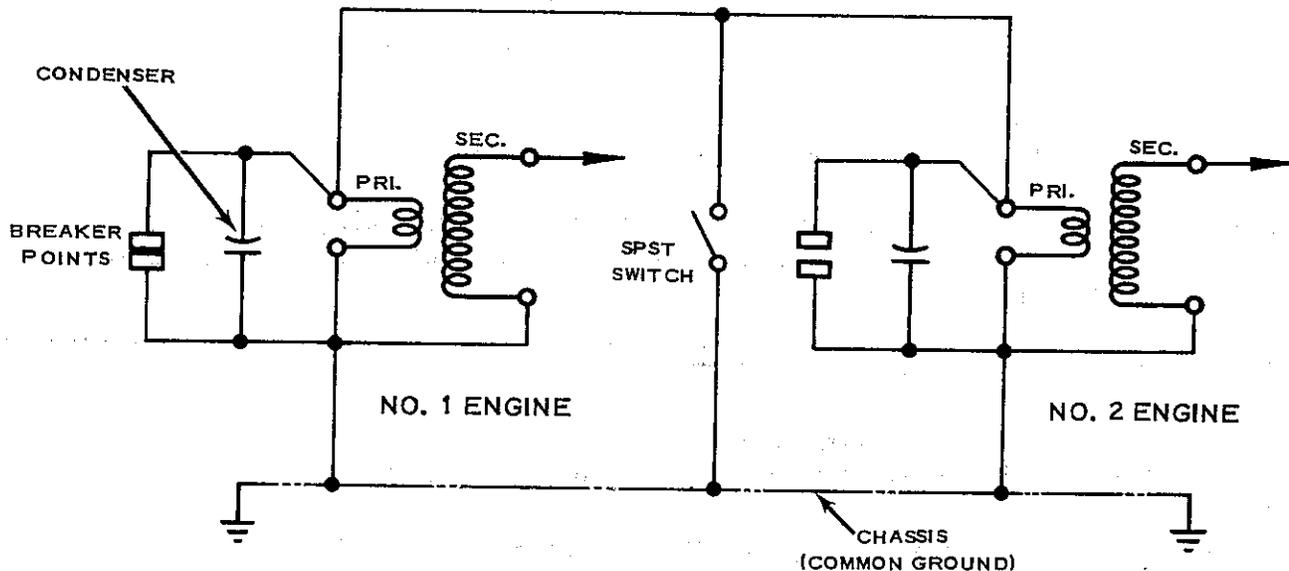


FIGURE 1 - Incorrectly wired shut-off switch.

- A. Although switch is on, breaker points of #1 engine are closed. This, in turn, shorts out the coil primary of #2 engine and prevents functioning of the coil.
- B. Even if both engines are timed (through the drive chains) to fire at the same time, change of pitch - due to chain stretch and sprocket wear - will cause the engines to go out of time. This, in turn, will create the condition described in paragraph "A".

C. Correct wiring is shown in Figure 2. Either a double-pole, single-throw (DPST) switch, or two single-pole, single-throw (SPST) switches should be used.

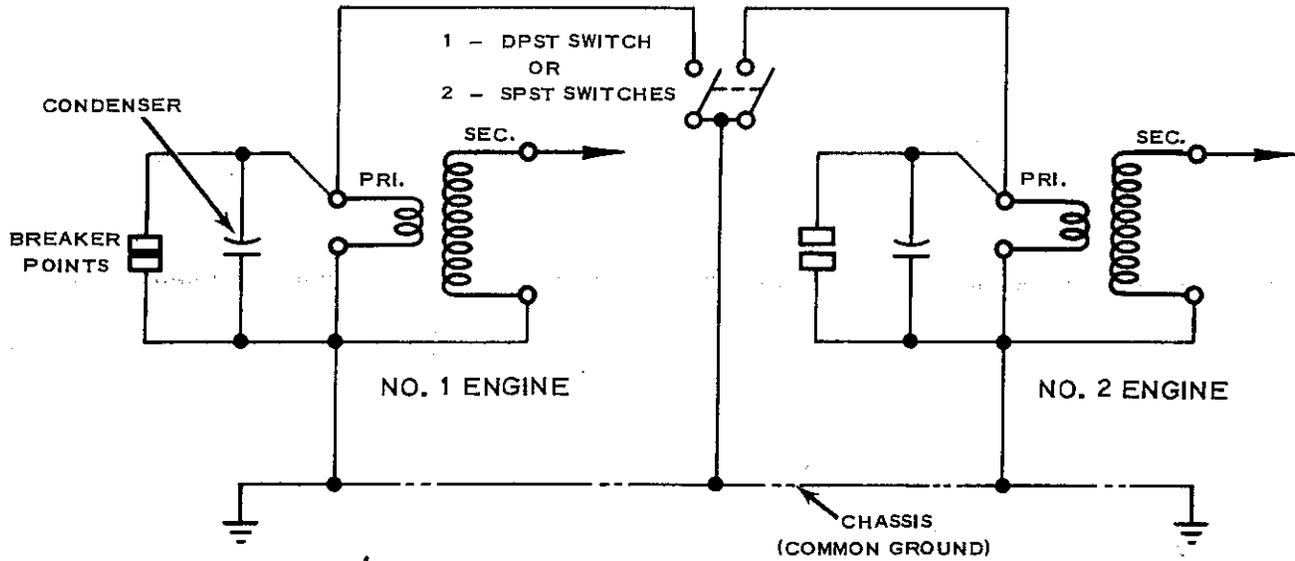


FIGURE 2 - Correctly wired shut-off switch (or switches).

BULLETIN K111
MODELS AFFECTED: All
SUBJECT: Prevention of Foreign Objects in Crankcases



A major cause of kart engine failure results from "spare parts" and dirt falling into the engine.

This condition can be prevented by keeping the carburetor and exhaust openings plugged AT ALL TIMES except during operation or while the engine is on the bench for overhaul.

Special care should be taken in your shop as small parts can easily drop from the workbench into the carburetor intake or exhaust stack.

Protective devices can consist of cork or rubber stoppers, masking or cellophane tape, cloth or plastic drawstring covers, paper bags large enough to fit over the engine, even old pillowcases, or any other product of your own ingenuity that will serve the purpose.

DON'T TAKE CHANCES! Remember that more things "fall" into your engines than are "left" in. Be sure that you protect the kart engines in your shop.



BULLETIN

K114

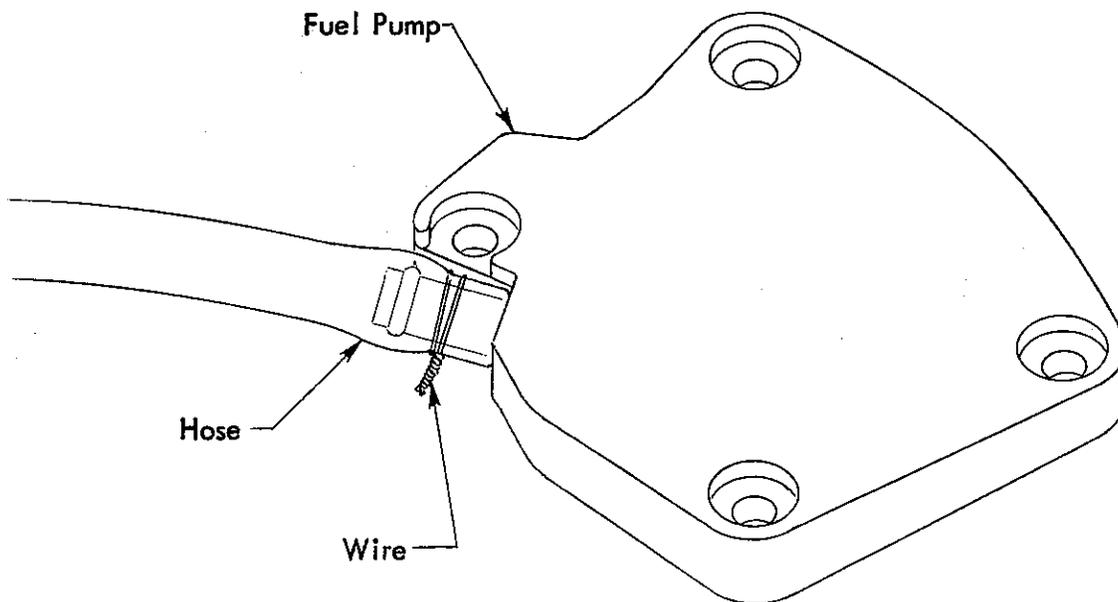
MODELS AFFECTED: MC-5, MC-6 & MC-10

SUBJECT: Air Leaks at Fuel Hose Connections

A poor fuel hose connection at either the fuel pump or the fuel tank on MC-5, MC-6 or MC-10 engines using McCulloch Carburetor, P/N 48811A, can cause a condition similar to fuel starvation. This condition is more apparent when operating the engine at the high end.

When installing the fuel hose on a kart, don't push the hose on the connections (fuel pump or fuel tank) and then depend on the tightness of the connection to hold the fuel hose in place. When the hose is not clamped or otherwise secured on both the pump and the tank connections, engine vibration can shake the connections enough to cause an intermittent air leak. When an air leak occurs at either of the connections, it is easier for the fuel pump to suck air into the fuel line than it is for it to pump fuel. The air entering the fuel line causes a condition similar to a vapor lock and will prevent fuel being pumped to the carburetor.

To eliminate air leaks at these connections, use 0.020 to 0.025-inch (0.051 to 0.064 Cm) diameter brass safety wire to fasten the fuel hose securely on the fuel pump and fuel tank connections. Make two complete turns around the hose as shown in the illustration, pull the wire tight with pliers, and twist the ends together at least three times.

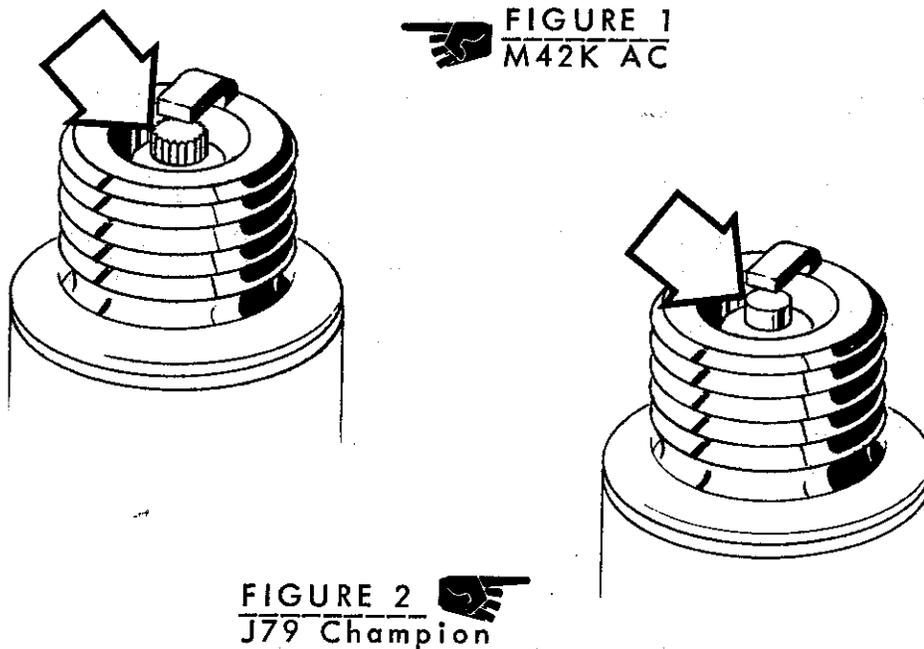


BULLETIN K117
MODELS AFFECTED: MC-20
SUBJECT: Spark Plug Heat Range

The MC-20 kart engine requires a spark plug that has a colder heat range than those used on the MC-5, MC-6 and MC-10 engines.

The M42K, marine-type, made by AC and the J79 made by Champion meet requirements and are being used on production engines.

NOTE: As a point of information, the M42K, AC spark plug has the center electrode knurled, as seen in the illustration, while the J79 Champion spark plug has a smooth finish on the center electrode.



Both the M42K and the J79 spark plugs have a colder heat range than that of the J4J used on the MC-10 engine. However, their heat range is hotter than the HO-3 spark plug.

Using either the M42K or the J79 spark plug reduces the possibility of pre-ignition.

Assuming both breaker point and spark plug gaps are correct and the carburetor is adjusted properly, the decision to use an M42K or a J79 spark plug or whether a hotter or a colder spark plug should be installed, falls upon the engine user. His decision must be based on the following:

A. Operating Conditions

1. If the kart is to be run on a tightly coupled track having many turns to lug down the engine, a hotter spark plug may be needed.
2. On tracks having few turns and long straightways it may be found that the colder type spark plug is necessary.
3. The weather conditions---temperature, humidity and the like---also enter into the selection of the correct spark plug heat range.

NOTE: A good method which helps determine if the spark plug being used has the correct heat range, is to make 8 or 10 turns around the track, remove the spark plug and examine the appearance of the electrodes.

B. Spark Plug Appearance

1. If the electrodes are black, wet and oily, a hotter spark plug is needed.
2. If the electrodes have a white appearance with the center insulator looking cooked, a colder spark plug is required.
3. When a spark plug having the correct heat range is used, the electrodes will have a brown or light tan appearance.

C. Fuel Mixture Used

1. Using hot, exotic-type fuels will require a colder heat range spark plug while the standard gasoline/oil mixture recommended calls for a hotter heat range spark plug.

CAUTION

Using a spark plug having an incorrect heat range can seriously affect engine performance, and, if the spark plug is too hot, may result in engine seizure or piston burning.