

# WILLYS MOTORS, INC.

KAISER - WILLYS SALES DIVISION  
TOLEDO, OHIO



## Service Bulletin

TO ALL DISTRIBUTORS AND DEALERS:

K-W No. 224

The following is a brief summary of pre-ignition problems occurring under certain conditions in present day high performance internal combustion engines.

### SPARK PLUG FOULING

This usually occurs in crowded metropolitan areas where a period of city driving with low engine speeds causes formation of deposits on the spark plug insulators. Failure of the spark plugs becomes evident as poor acceleration, engine roughness, and reduced vehicle top speed. This is due to the fact that the deposits become more conductive electrically with rise in temperature during acceleration and, therefore, reduce ignition system effectiveness.

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### CARBON PING OR RATTLE

Carbon ping and deposit induced pre-ignition are quite similar and are produced from the same source, namely, carbon deposits in the combustion chambers. Here again these deposits usually result from extensive metropolitan or city driving with low engine speeds and excessive idling. The carbon ping is usually audible during acceleration and can be reduced or eliminated by retarding ignition timing or removal of carbon. Carbon deposit rattle, if occurring, is audible upon deceleration and can be mistakenly identified as a bearing knock or tappet maladjustment. It can be eliminated by removal of carbon.

ENGINE

### DEPOSIT INDUCED PRE-IGNITION

This will occur when carbon deposits in the combustion chambers continue to glow after the power and exhaust cycles have been completed. It is sometimes audible as carbon ping. The audible effects can sometimes be eliminated by use of fuels with greater anti-knock qualities. However, where a condition of deposit induced pre-ignition is in existence and a higher octane fuel eliminates the audible effect, the inaudible effects such as engine roughness may still be in existence. Should the inaudible effects be allowed to remain, serious damage such as burned pistons can result. Deposit induced pre-ignition can be eliminated by cleaning of carbon.

PRE-IGNITION

Use of the following suggestions can eliminate or reduce the possibilities of spark plug fouling, carbon ping or rattle, or deposit induced pre-ignition:

1. Check carburetor - set float and metering rod to specifications.
2. Adjust idle mixture to smoothest engine operation; then set to specified R.P.M. as follows:

Willys	4 cylinder	600 R.P.M.
"	6 cylinder	575 R.P.M.
Kaiser	6L-226 Standard Transmission	550 R.P.M.
"	6L-226 Hydra-Matic	425-450 R.P.M.
Henry J	4 cylinder	550 R.P.M.
"	6 cylinder	500 R.P.M.

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3. Make certain the spark plugs are torqued to specifications.
4. Recommend the use of hotter spark plugs (such as Champion J-11 or Auto-Lite A-9) if the owner is a slow driver or uses his vehicle mostly for city driving.
5. Recommend the use of heavy duty or detergent oil.
6. Suggest the vehicle be subjected to open highway, moderate-to-high speed driving to permit normal "blow-out" of lead and carbon deposits.

The oil industry has recognized the problem developing in the modern high performance engines and research departments are working on improvements in automotive fuels which will greatly assist with the problem.

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PRE-IGNITION

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