

WILLYS MOTORS, INC.

KAISER - WILLYS SALES DIVISION
TOLEDO, OHIO



Service Bulletin

TO ALL DISTRIBUTORS AND DEALERS:

Service information pertaining to the 1954 Kaiser and Willys models is being supplied in this bulletin. Where replacement or repair procedures differ from those for corresponding parts in earlier models, detailed information is given.

K-W No. 229

1954 KAISER MODELS

IDENTIFICATION

For identification of 1954 Kaiser models, refer to the Serial Number Plate on the left hand front door pillar post. The prefix to the car serial number will provide positive identification.

April 2, 1954

<u>Model</u>	<u>Prefix</u>
Kaiser "Manhattan"	K-542
Kaiser "Special"	K-545

ENGINE

The Kaiser 226 engine in the 1954 Kaiser "Manhattan" models furnishes power-on-demand due to a revolutionary new type of secondary power source. Power-on-demand is furnished by the Kaiser Supercharger which delivers a fuel-air mixture to the carburetor under 4 lbs. pressure, instantly providing a highly volatile fuel mixture which is transformed into increased horsepower and torque. The engine will deliver 140 horsepower at 3800 R.P.M. and maximum torque of 215 ft. lbs. at 2600 R.P.M.

Miscellaneous

The Kaiser Supercharger employs an entirely new principle of automobile engine supercharging, which allows the engine to operate more economically at cruising speed than a conventional engine with the same rated horsepower. In addition, it allows the "Manhattan" models to perform with maximum efficiency at all altitudes.

The Kaiser Supercharger is a single-stage, centrifugal-type supercharger driven from the engine crankshaft by a V-belt, through a variable-ratio pulley mounted on the input shaft of the supercharger. With this centrifugal type supercharger it is necessary to drive the impeller at a higher R.P.M. than delivered by the crankshaft to obtain 4 lbs. blower output pressure. This is accomplished by incorporating in the supercharger design two methods of stepping up the impeller shaft speed. The first is the supercharger variable-ratio pulley, keyed to the input shaft, and the second is an internal planetary drive system between the input and output shaft.

PRELIMINARY
SERVICE
INFORMATION

Due to the ratios involved at these two points, the supercharger impeller is being driven approximately ten times faster than the crankshaft when the variable ratio pulley is fully separated or in the "high blower" position. However, when the engine is turning at high R.P.M. the variable-ratio pulley action is regulated by a control system which in turn limits the blower output pressure to a maximum of 4 lbs. The control system consists of a solenoid operated valve in the supercharger which controls the passage of blower output pressure into an air chamber in the supercharger. Within this chamber is an air piston which is coupled to the variable-ratio pulley. Changing pressures against the air piston together with action of the spring loaded idler arm controls the position of the variable-ratio pulley. When blower output pressure starts to exceed 4 lbs. a spring loaded diaphragm in the solenoid opens and by-passes blower output pressure against the air piston which overcomes the idler arm spring tension and pushes the pulley together reducing the crankshaft-to-impeller ratio to maintain a constant blower pressure of 4 p.s.i.

ALL 1954 KAISER
& WILLYS P.C.
MODELS

Full blower output pressure (power-on-demand) can be obtained almost instantaneously by full throttle accelerator action.

Page 2

Servicing of the supercharger will be restricted to the replacement of the following parts or assemblies:

<u>Unit</u>	<u>Part Number</u>
Supercharger Assembly	215706
Idler Arm, Pulley & Spring Assembly	215707
Mounting Bracket with Pins	215708
V-Drive Belt	215718
Solenoid Assembly	216222
"O" Rings	216224
Solenoid Retaining Spring	216225

K-W No. 229

To determine whether the supercharger is functioning properly, make the following checks in the order listed:

1. Make sure supercharger unit as well as all connections and hose, is properly installed.

CAUTION: Supercharger is not to be operated with either intake or outlet hose disconnected.

2. Check adjustment of carburetor and make sure fuel pump is delivering sufficient pressure (see "Fuel" section).
3. Adjust throttle linkage.
4. Check supercharger kick-down switch according to information in Electrical section of this bulletin, and replace if necessary.
5. Check idler arm assembly for smooth action and to assure spring tension is being exerted against the V-belt.
6. Check solenoid as follows:
 - A. Hold the supercharger kick-down switch in the closed position.
 - B. Place a pressure gauge in the pressure line running from the supercharger to fuel pump.
 - C. Attach an electrical tachometer to the distributor.
 - D. With the engine R.P.M. at 3200 or above, the pressure should read from 3-1/2 to 4-1/4 lb. pressure; if not, replace the solenoid assembly.

CAUTION: Do not run engine at high R.P.M. longer than necessary (maximum 10 seconds) to obtain accurate pressure reading.

- E. Access to the solenoid is obtained by removing the supercharger medallion.
 - F. When changing the solenoid, the "O" rings in the case opening for the solenoid must also be replaced.
7. After the above factors have been given adequate consideration, if the supercharger is still not operating properly replace the supercharger unit. Drain the cooling system and remove the supercharger and mounting bracket as an assembly.

Defective supercharger units should be returned to the factory according to the procedure outlined in Section 5 of Service Bulletin K-W 221.

Parts, and labor in the amount of .3 of an hour will be allowed when solenoid replacement is necessary. Parts, and labor in the amount of 1.2 of an hour will be allowed to replace the supercharger unit. A properly executed R.F.C. must be submitted for credit in the case of either of the above replacements.

Internal modifications to the engine used in "Manhattan" models include silchrome intake

April 2, 1954

Miscellaneous

PRELIMINARY
SERVICE
INFORMATION

ALL 1954 KAISER
& WILLYS P.C.
MODELS

valves, exhaust valve rotators, a new piston ring set with a chrome plated top compression ring, and a reinforced front main bearing cap.

Other changes or additions on supercharger equipped models include different cylinder head bolts to mount the supercharger bracket, re-designed two-piece fluid-filled vibration damper with three pulley belt grooves, new fan belt pulley, new radiator inlet and outlet hose, new Carter WCD 2146S carburetor sealed in an air-tight enclosure to equalize inside and outside pressure, new fuel pump, distributor, and air cleaner. Detailed information regarding the carburetor, fuel pump, air cleaner and distributor will be found in the "Fuel" and "Specifications" sections of this bulletin applicable to Kaiser models.

The vibration damper consists of two pieces. The single pulley section mounted closest to the engine is filled with fluid and sealed. If the fluid should escape due to damage the damper should be replaced with no attempt made to service the part. The two-pulley section is balanced to within 3 oz. in. - however is not fluid filled.

The Kaiser "Special" engine is of the same tried and proven design as engines which have been used in previous "Dragon" and "Manhattan" models.

Service information applicable to 1954 Kaiser engines is available in 1951 Kaiser-Frazer Shop Manual, 1952-53 Kaiser Shop Manual Supplement, and current Kaiser-Willys Service Bulletins in the "Engine" group.

BODY

Advanced design is evident in the 1954 Kaiser models with distinctive styling of the new front stone shields, fenders, hood assembly and hood medallion. To accomplish the assembly of these parts it has been necessary to re-design or re-locate most of the sheet metal attaching parts. Service procedures for the removal or replacement of the above parts and assemblies are the same as, or very similar to corresponding parts in preceding models.

A new Jet Air-Scoop Grille and matching Air-Intake Hood Ornament provide exceptionally good ventilation for the engine compartment, which will substantially assist the engine cooling system.

When a section or sections of the inner grille only incurs damage, remove the lower radiator shroud (which contains the hood latch support plate) for access to the attaching parts of the damaged grille section. If the radiator grille ring is damaged it will be most practical to remove the entire grille assembly. Access to all bolts necessary for removal of the grille assembly is obtained by removing the headlight doors, in addition to the radiator shroud. When removed, the grille can be disassembled into five sections. Each section will be available individually for service replacement.

The Air-Intake Hood Ornament is easily removed from the under side of the hood for replacement purposes or removal for hood repair.

In addition to the body improvements already mentioned, "Manhattan" models include a new instrument panel design featuring a new steering column cover which extends from the instrument panel to the newly designed steering wheel and horn bar. The cover encloses the shift linkage and directional signal controls. All dials and controls are grouped directly before the driver.

Rear Window

The procedure for removing and replacing the three-piece rear window differs slightly from the same operation in previous models.

When steps have been completed to a point where the window is ready to be removed, the clips should be removed from the outside chrome moulding. Pressure should then be applied to one of the corner glasses until it is forced out of the body opening. Then with proper care to avoid bending, the garnish moulding should be removed from the weatherstrip. The window glass and weatherstrip assembly should then be forced from the body opening taking the necessary precautionary measures to insure the glass does not fall from the weatherstrip and break. When replacing the rear window, first place the three pieces of glass in the weatherstrip. Next install the garnish mouldings and clips to give the window assembly rigidity. The assembly may now be replaced by the accepted method of soaping the weatherstrip and installing the window in place by using a draw cord to pull the weatherstrip over the body opening flange.

April 2, 1954

Miscellaneous

**PRELIMINARY
SERVICE
INFORMATION**

**ALL 1954 KAISER
& WILLYS P.C.
MODELS**

Steering Column Cover

The upper half of the steering column cover may be removed by taking out the four Phillips head screws holding it in place. However, if the lower cover, which is an integral part of the lower instrument panel, is to be removed, the horn bar, steering wheel, top steering column cover, and heater and vent control knobs must be removed before removing the screws to release the lower steering column cover from position.

Paint and Interior Trim

A wide range of exterior body colors and interior trim will be available in 1954 Kaiser models. New exterior colors to be used include "Bristol Red," "Arctic White," "Palm Beach Ivory," "Beryl Green," "Blue Comet (M)," "Signal Green (M)," and "Island Green (M)."

Kaiser "Special" models will have interior trim of a highly accepted quality previously used in "Manhattan" models only. The 1954 "Manhattan" models will be trimmed in new Luxura loop fabrics blended with boucle and satin finish Vinyls.

Information regarding the availability of matching paint for the exterior colors may be found in Service Bulletin K-W 225. To assist in avoiding error and unnecessary delay when ordering trim, be sure to specify the trim code of the vehicle which appears on the Body Code Number Plate and if possible attach a sample piece of trim required to facilitate matching.

FUELCarburetor

The Kaiser "Special" is equipped with a Carter WGD 2052S carburetor. Specifications, adjustment and tune-up instructions appear on Carter Bulletin 4975A which is an attachment to Kaiser-Willys Service Bulletin K-W 156. Overhaul procedures given in the 1951 Kaiser-Frazer Shop Manual for the WGD 781S are applicable to the WGD 2052S carburetor.

The Kaiser "Manhattan" is equipped with a Carter WCD 2146S carburetor. To compensate for the possible maximum of 4-1/4 lbs. pressure introduced in the carburetor by the supercharger, the carburetor is enclosed in a sealed hood. Supercharger pressure is then blown into the hood creating a condition that equalizes inside and outside carburetor pressure. The mixture and engine idling speed may be adjusted without removing the hood. Access to the mixture screws is through the two metal plugs at the front of the enclosure base. The plug for the idle adjustment screw (setting 1/2 to 1-1/2 turn open) is at the rear of the base. Both of these adjustments should be made at engine operating temperature. The idle adjustment should be set at 500 R.P.M. with standard or overdrive transmissions, and 450 with a Hydra-Matic transmission.

To perform any other carburetor repairs or adjustments the hood must be removed for access to the carburetor. Two separate float adjustments must be made - lateral and vertical. Lateral adjustment: With bowl cover assembly inverted, bowl cover gasket removed and float resting on seated needle, place float gauge T109-162 directly under float with notched portions of gauge fitted over edges of casting. Sides of floats should barely touch the vertical uprights of float gauge. Adjustment should be made by bending arms of floats. Vertical Adjustment: With float gauge in same position floats should just clear the horizontal portion of gauge. (Vertical distance between top of float, and machined surface of casting must be 3/16 inch.) Adjust by bending float arms. Remove float, install bowl cover gasket and then reinstall float. Complete specifications, adjustment and tune-up instructions for the WCD 2146S carburetor will be issued in the near future by an appropriate service publication. Repair procedures for the WCD 723S carburetor appearing in the 1951 Kaiser-Frazer Shop Manual may be used as a guide if major repairs are necessary.

If it is necessary to remove the carburetor or carburetor enclosure base from the manifold, use a crows foot wrench with a 3/8" drive and 1/2" open end to remove and replace the attaching nuts.

Fuel Pump

A single diaphragm fuel pump, Carter model M2145S is used on the Kaiser "Manhattan." The fuel pump differs from previous models used in that it has a tube fitting on the fuel pump cover. A tube, carrying supercharger blower pressure, from the supercharger air outlet to the underside of the fuel pump diaphragm is connected to this fitting and enables

K-W No. 229

April 2, 1954

Miscellaneous

PRELIMINARY
SERVICE
INFORMATION

ALL 1954 KAISER
& WILLYS P.C.
MODELS

the fuel pump to provide a maximum of 9 lbs. pressure. The purpose of supplying blower pressure to the underside of the diaphragm is to equalize the blower pressure being introduced into the carburetor, thereby preventing a condition of fuel starvation at the carburetor.

Repair procedure for this pump is similar to the previous single diaphragm fuel pumps which we have used.

Air Cleaner

A new air cleaner arrangement is used with the supercharger. Air is supplied to the air cleaner through an intake hose attached to the air cleaner. Clean air is then supplied to the supercharger air inlet by the air cleaner outlet hose. The air cleaner should be serviced every 2,000 miles, or more often under sandy or dusty conditions. Refill with one pint of seasonal grade engine oil.

K-W No. 229

CAUTION: Do not operate engine without oil in the air cleaner or with the air cleaner removed.

CHASSIS

Steering

Kaiser "Manhattan" models have a steering wheel of advanced design which blends with the overall styling of the instrument panel. Access to the steering wheel attaching parts is obtained by removing the horn bar which is attached to the steering wheel by two screws located in the underside of steering wheel spokes.

April 2, 1954

An improved two-piece steering column shaft is also a feature of the "Manhattan" models. A rubber insulated universal joint located at the bottom of the upper steering column shaft will reduce road shock from being transmitted to the driver through the steering wheel. The upper steering column shaft can be removed from the upper end of the steering column after removing the upper half of the universal joint from the shaft. When assembling the universal joint during repair be sure to replace the ground wire which runs between the lower and upper universal joint plates.

Front Suspension

The use of new front springs to retain the traditional smooth riding qualities of the Kaiser is necessary on all 1954 models due to the addition and distribution of front end weight. Service procedure for front suspension repairs, front spring replacement and front end alignment specifications remain the same as specified in the 1951 Kaiser Shop Manual.

Miscellaneous

Frame

Minor design changes have been made in the frame to accommodate the required attaching parts for the new front end sheet metal arrangement. If a new frame is required, be sure to order the frame specified by the Parts Department for the model involved.

PRELIMINARY
SERVICE
INFORMATION

Bumpers

The front bumper assembly, consisting of bar and guards, has been given new treatment for styling purposes, but presents no service problems.

ELECTRICAL

Headlights

On all 1954 Kaiser models, styling of the headlight doors includes the parking and directional signal lens. To service the lights on the front of the vehicle, remove the headlight door. This is accomplished by removing three visible screws and releasing it from the hinge at the top of the door. Trade number 4030 sealed beam unit is used in the headlights, and a single bulb in each front parking light, trade number 1154, serves both the front parking and directional signal lights.

ALL 1954 KAISER
& WILLYS P.C.
MODELS

Tail Lights

New tail lights and tail light extension arms add to both the appearance and safety of the

vehicle. Two trade number 1158 bulbs are used in each tail light assembly. One is located in the tail light assembly and the other in the extension arm. Each serves the stop, tail, rear parking and directional signal lights. Access for servicing the bulbs or replacing the tail light unit or arm is obtained by removing the side trim panel on the inside of the trunk compartment. The wiring harness and directional signal flasher used on the 1954 models are not interchangeable with the wiring harness and flasher used on previous models.

Instrument Cluster

Instruments used in the 1954 Kaiser models are the same type as those used in our previous models. The "Manhattan" has a red indicator light on the face of the instrument cluster for oil pressure and the ammeter rather than the dial type unit used in the "Special" models. Any electrical gauge or indicator on a Kaiser model may be tested according to the information in Service Bulletin K-W 162.

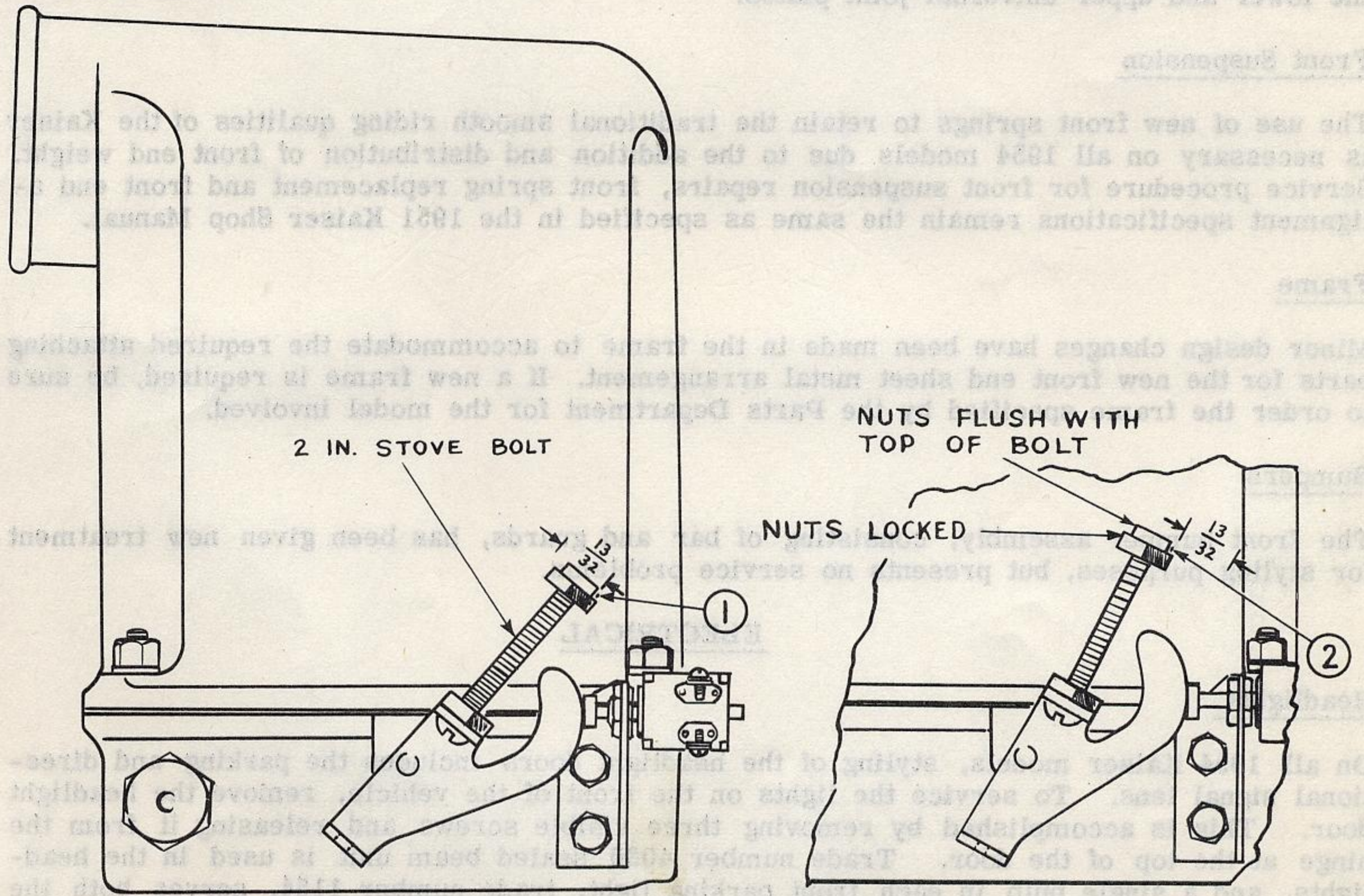
The three No. 55 bulbs used to illuminate the instrument cluster may be replaced by removing the upper steering column cover. To remove the instrument cluster, both the upper and lower steering column cover (see "Body" section) must be removed. In addition, the speedometer cable should be disconnected at the speedometer head. The cluster may then be taken out by removing the three attaching screws.

Horn Blowing Mechanism

On Kaiser "Special" models the horn blowing mechanism is a part of the steering wheel components. On Kaiser "Manhattan" models this mechanism is attached to the horn bar and access for repair is obtained by removing the horn bar from the steering wheel.

Supercharger Kick-Down Switch

The supercharger kick-down switch mounted on the carburetor enclosure base actuates the solenoid in the supercharger control system discussed in the "Engine" section of this bulletin. When properly adjusted this switch must be operated by the throttle lever when the lever is 13/32" before full throttle opening. To check for proper switch adjustment proceed as follows:



FULL OPEN THROTTLE POSITION

POSITION OF PROPER ADJUSTMENT

1. Install 2" stove bolt in throttle bracket as shown in illustration.
2. Lock two square nuts on the end of the bolt as shown in illustration. Top nut should be turned on until end of bolt is flush with top of nut, and right side of the nut is perpendicular to the side of the enclosure hood. Lower locked nut should be turned so a corner extends beyond the right side of the top nut.

K-W No. 229

April 2, 1954

Miscellaneous

**PRELIMINARY
SERVICE
INFORMATION**

**ALL 1954 KAISER
& WILLYS P.C.
MODELS**

3. Turn lever to full throttle position.
4. Using the right side of the top locked nut as a guide and the lower locked nut as a rest, scribe a point on the enclosure hood as indicated (No. 1) in the illustration.
5. Using the same method, allow the lever to return toward the closed position until a second point may be marked 13/32" from the first point scribed (No. 2 in illustration)
6. From the point 13/32" before full throttle position, to full throttle position, the switch contacts should be closed. Checking with a test light, the light should not come on until the lever is 13/32" from full open throttle position (No. 2 in illustration). At the same time the lever must not travel past the 13/32" mark without lighting the test lamp. If it lights before or after the lever reaches the 13/32" mark, make necessary adjustment at the switch adjusting nuts and/or switch mounting bracket.

K-W No. 229

Distributor

Distributors on the Kaiser "Special" and "Manhattan" models are not interchangeable. Specifications and adjustments differ as shown in the "Specifications" section of this bulletin.

LUBRICATION

Lubrication recommendations remain the same as for 1953 Kaiser models with the exception of automobiles equipped with Power Steering and/or the Kaiser supercharger.

April 2, 1954

Power Steering

Two fittings on each tie rod and one fitting in the Pitman arm stud at the power link must be lubricated with chassis lubricant every 1,000 miles. Apply with pressure gun.

Check oil level in the pump reservoir every 2,000 miles and maintain to the full mark on the dip stick or reservoir. Always check for leaks before adding fluid to the system. Use only Automatic Transmission Fluid (Type A) from containers marked "AQ-ATF" followed by a number.

Miscellaneous

Supercharger

Check oil level in the reservoir and maintain level to a point between the marks on the dip stick. Use Automatic Transmission Fluid (Type A) from containers marked "AQ-ATF" followed by a number.

At 1,000 mile intervals, one or two drops of seasonal grade engine oil should be placed in the lubrication hole at the pivot end of the idler arm lever.

SPECIFICATIONS

<u>General</u>	<u>K542</u>	<u>K545</u>	<u>Engine</u>	<u>K542</u>	<u>K545</u>
Wheelbase		118½"	Type	In Line	
Minimum Road Clearance . .		7"	No. of Cylinders	6	
Overall Length		215-5/8"	Bore	3-5/16"	
Overall Width		74-7/8"	Stroke	4-3/8"	
Overall Height		60-1/4"	Piston Displacement	226.2	
Weight (lbs.)	3375	3210	Taxable Horsepower	26.3	
Turning Diameter		38"	Max. Brake H.P.	140 at	118 at
Effective Brake Area.		176 sq. in.	Maximum Torque	3800	3650
				215 at	200 at
				2600	1800
<u>Tires</u>			Compression Ratio	7.3:1	
Size	4-ply	6.70x15	Idling Speed:		
Recommended Pressure:			Std. or Overdrive	500 RPM	
Front	(cold)	24 lb.	Hydra-Matic	450 RPM	
Rear	(cold)	24 lb.	Ignition Timing	4° BTDC	
Tread:				at 450 RPM	
Front		58"	Firing Order	1-5-3-6-2-4	
Rear		58-3/4"	Compression (lbs.)	120 to 130	

PRELIMINARY
SERVICE
INFORMATION

ALL 1954 KAISER
& WILLYS P.C.
MODELS

	<u>K542</u>	<u>K545</u>		<u>K542</u>	<u>K545</u>
<u>Engine (cont'd.)</u>			<u>Spark Plug:</u>		
<u>Valve Timing:</u>			Type	Auto-Lite	
Intake opens	10° BTC		Gap	A7	
Intake closes	60° ATC		Battery Capacity:		
Exhaust opens	55° BTC		Ampere Hours	100	
Exhaust closes	10° ATC		No. of Plates	15	
<u>Tappet Clearance for Timing:</u>			<u>Generator:</u>		
Intake . . . . .	.018"		Type	Delco	
Exhaust . . . . .	.020"			Shunt	
<u>Operating Tappet Clearance:</u>			Brush Spring Tension	24-32 oz.	
Intake . . . . .	.014"		<u>Front End Alignment</u>		
Exhaust . . . . .	.014"				
<u>Fuel</u>			Caster	+1° to -1°	
Tank Capacity	17 gal.			(0° pref)	
Fuel Pump Pressure	9 lb. 5 lb.		Camber	0° to +3/4°	
	at 1800 at 1800			(1/2° pref.)	
Float Level	15/64" 9/32"		Toe-in	1/6" to	
Fuel Pump Type	Mechanical			1/8"	
Carburetor Type (Carter)	WCD- WGD-		King Pin Inclination	(1/8" pref)	
	2146S 2052S			4-3/4° to 5 1/2°	
				(5° pref)	
<u>Lubrication System</u>			<u>Lamp Chart</u>		<u>Trade No.</u>
Type	Pressure		Headlight	4030	
Pressure	35 lb. at		Parking License Plate	63	
	35 mph		Front Parking & Directional		
Crankcase Capacity	5 qts.		Signal	1154	
Oil Pump Type	Gear		Tail, Stop, Directional	1158	
Oil Intake Type	Floating		Instrument Panel	55	
<u>Cooling System</u>			High Beam Indicator	51	
Capacity without Heater	12.5 qts.		Turn Signal Pilot	51	
Capacity with Heater	13.5 qts.		Ignition Key Pilot	51	
Radiator Pressure Cap	4 lbs.		Cigar Lighter Lamp	51	
Thermostat starts to open	148°F to 156°F		Courtesy Light & Trunk		
<u>Electrical System</u>			Light	81	
Distributor Breaker Gap . . . . .	.016" .022"		Circuit Breaker Headlamp	30 amp.	
Breaker Arm Tension (oz.)	19-23 17-21		Fuse - Radio	SAE 14 amp.	
Ignition Timing	4° BTDC at		Heater	SAE 14 amp.	
	450 RPM		Overdrive	SAE 20 amp.	

1954 WILLYS MODELS

IDENTIFICATION

Willys 1954 models include the Lark, Ace, Eagle, Lark DeLuxe, Ace DeLuxe, Eagle DeLuxe and Eagle Custom.

Refer to the car serial number for positive model identification. The car Serial Number Plate is located on the left front door pillar post.

<u>Model</u>	<u>Body Type</u>	<u>Engine</u>	<u>Prefix</u>
Ace DeLuxe	2 Dr. Sn.	6-226	654-MA1
Ace DeLuxe	4 Dr. Sn.	6-226	654-MB1
Eagle DeLuxe	2 Dr. Sn.	6-226	654-MC1

<u>Model</u>	<u>Body Type</u>	<u>Engine</u>	<u>Prefix</u>
Eagle Custom	2 Dr. Sn.	6-226	654-MC2
Lark DeLuxe	2 Dr. Sn.	685B	654-KA3
Lark DeLuxe	4 Dr. Sn.	685B	654-KB3
Ace DeLuxe	2 Dr. Sn.	685B	654-MA2
Ace DeLuxe	4 Dr. Sn.	685B	654-MB2
Eagle DeLuxe	2 Dr. Sn.	685B	654-MC3

The prefix for Lark, Ace and Eagle models is the same as above, however all serial numbers are below 10,000.

ENGINE

All Ace DeLuxe and Eagle DeLuxe models are available with either the 685B or 6-L-226 engine; however the Eagle Custom is available with the 6-L-226 engine only. The 6-L-226 engine provides 115 horsepower at 3650 R.P.M. and a maximum torque of 190 ft. lbs. at 1800 R.P.M.

K-W No. 229

The front engine supports and cross member have been redesigned to permit the 6-L-226 installation. A stay cable is installed between the lower right hand transmission to bell housing bolt flange and bracket welded to the rear cross member.

A negative ground Auto-Lite electrical system is used in all 1954 Willys models. Identification of the major electrical units installed in models with the 6-L-226 engine is supplied in the Willys "Electrical" section of this bulletin.

April 2, 1954

Detailed repair procedures applicable to the 6-L-226 Willys engine are contained in the 1951 Kaiser-Frazer Shop Manual.

Proper valve adjustment is extremely important if maximum performance is to be obtained from a modern high compression engine. Valve adjustment for the 685B engine is covered in the current Willys Mechanics Manual. To adjust valves in a Willys model equipped with a 6-L-226 engine, proceed as follows:

1. Remove right hand air vent.
2. Remove carburetor.
3. Remove manifold stud nuts.
4. Disconnect exhaust pipe from manifold.
5. Loosen right and left motor mounts so maximum engine movement is allowed. Do not entirely disconnect mounts from cross member.
6. With suitable jack, force engine to left until manifold can be freed of all studs except long center stud below other manifold studs.
7. Pull manifold as far as possible from engine block and saw off center stud flush with engine side of manifold.
8. Remove manifold.
9. Remove valve cover.
10. Adjust valves according to procedure in Kaiser-Willys Service Bulletin K-W 173.
11. Install valve cover.
12. File rough edges of center stud and use as pilot when installing manifold. This stud is not required to hold manifold to cylinder block and will be discontinued in later production cars.
13. Reverse procedure in Steps 1 through 5.
14. Torque manifold stud nuts to 3-35 ft. lbs.

Miscellaneous

**PRELIMINARY
SERVICE
INFORMATION**

**ALL 1954 KAISER
& WILLYS P.C.
MODELS**

BODY

Numerous improvements have been made in interior trim and appointments of all DeLuxe and Custom models. Vertical control levers are located on both sides of the shielded circular instrument cluster. The radio knobs and bezel have been redesigned to compliment the smart new instrument panel. A larger pull type ash tray has been installed in the new style instrument panel.

Interior trims feature an eye-catching combination of vinyl and cloth interiors in all Ace and Eagle DeLuxe models. A luxurious Naugahyde upholstery in the Eagle Custom and a striking gray cloth material in the Lark DeLuxe models round out the impressive trim selection in the 1954 DeLuxe models. Improved full width metal scuff plates are installed on all Willys DeLuxe and Custom models.

K-W No. 229

All Ace and Eagle models have air ride sponge rubber seat pads in both front and back seats. A newly designed seat combining jack springs and coil springs contributes to an improved ride in all 1954 DeLuxe and Custom models.

An increased number of exterior body colors, accentuated by new chrome trim, will enhance the beauty of the 1954 DeLuxe and Custom models. The new colors to be used are the same as listed for the 1954 Kaiser in the Kaiser "Body" section of this bulletin.

New shielded headlight and parking light bezels, newly styled bumper guards and distinctive chrome grille moulding add to the beauty of all 1954 Willys models.

April 2, 1954

All 1954 DeLuxe and Custom models have a one-piece wrap-around rear window. Installation procedure is given in the 675 - 685 Passenger Car Supplement to the Willys Shop Manual.

The 1954 Eagle DeLuxe and Custom models will have a chrome plated trim panel between the rear window and the rear quarter window. Decorated with an Eagle medallion, the chrome plate carries out the smooth flow styling of the hard top bodies. To remove and replace the medallion plate, proceed as follows:

Miscellaneous

1. Loosen the headlining in the area underneath the plate to provide access to the nut attached to a plate lock bolt. The bolt is installed through the car top and is used to hold the top of the medallion plate to the body.
2. Loosen the nut and turn the bolt 1/2 turn with a screw driver.
3. Working outside the car, place a screw driver between the top of the medallion plate and the body.

CAUTION: Wrap the screw driver with masking tape to prevent damage to the car finish.

PRELIMINARY
SERVICE
INFORMATION

4. Pry the plate away from the body far enough so the plate can be slipped forward across the rear quarter window releasing the plate from the rear window weatherstrip flange which holds the rear edge of the plate in place.
5. To install, place a pull cord under the rear window weatherstrip flange.
6. Place the plate against the top with the end of the rear plate extension slipped over the end of the upper garnish moulding of the rear window.
7. Force the plate forward into proper position with a rubber hammer; at the same time pull the cord from the top down, pulling the weatherseal flange over the rear edge of the plate.
8. From inside the car turn the bolt, protruding through the top, with a screw driver until the offset bolt head is turned into the upper lip of the medallion plate locking the upper edge of the plate against the car top.
9. Tighten the nut on the bolt.
10. Replace the headlining.

ALL 1954 KAISER
& WILLYS P.C.
MODELS

Concealed spring loaded rear deck lid hinges give balanced deck lid opening action on all 1954 DeLuxe and Custom models. These hinges cannot be used on previous model cars

without a considerable amount of sheet metal rework.

Installation of the 6-L-226 engine necessitated the revision of the front end sheet metal. The lower grille panel, grille center bar, the upper grille panel and radiator "A" frame assembly, have been redesigned to permit mounting of the radiator further forward. Plates are supplied to fill the cutouts in the upper and lower grille panel in the cars equipped with the 685B engine.

FUEL

The 6-L-226 engine is equipped with a Carter WGD 2052S down-draft carburetor and a Carter vacuum booster fuel pump. Service information for these units is available in the 1951 Kaiser Shop Manual and Service Bulletin K-W 156. Use repair information for the WGD 781S carburetor.

K-W No. 229

CHASSIS

Steering

1954 Custom and DeLuxe models feature a newly designed steering column assembly. Construction of this steering assembly is similar to the type used on previous Willys models equipped with a Hydra-Matic transmission. The toe board opening has been changed to permit the removal of the entire steering and remote shift assembly.

April 2, 1954

Front Suspension

Most Lark DeLuxe models and all other DeLuxe and Custom models will have a newly designed parallelogram type front suspension. The thickness of the lower "A" frame pivot shaft and the steering knuckle support has been increased. The lower control arm trunion has been modified to provide a straight through trunion bolt to reduce front suspension friction. The distance from the center of the upper trunion bolt to the center of the lower trunion bolt changes from 10-3/4 inches to 11-5/16 inches.

Miscellaneous

The capacity of the front shock absorber has been increased and its position and action reversed for a better controlled ride. The length of the front coil spring used in conjunction with the new front suspension has been increased from 17-1/2 inches to 18-1/2 inches to provide a softer ride.

Parts of the 1954 type front suspension are not interchangeable with parts of the earlier type suspension. It is possible to install the 1954 type suspension on previous models provided that the entire suspension assembly is changed on both sides of the car.

Clutch

A new higher torque capacity is used in conjunction with the 6-L-226 engine. Adjustment of the free pedal is made on the pedal adjustment link. Desired free pedal travel is 3/4 inch to 1 inch. Service procedures for clutch overhaul are given in the 1951 Kaiser Shop Manual.

PRELIMINARY
SERVICE
INFORMATION

Transmission

Models with the 6-L-226 engine are equipped with transmissions designed for use with this engine. Service information for transmission equipment is given in the 1951 Kaiser Shop Manual and the Kaiser Hydra-Matic Shop Manual and Supplement.

Propeller Shaft & Universal Joints

Models with the 6-L-226 engine have a Spicer drive shaft with cross type universal joints. Service procedures are given in the Willys Mechanics Manual.

Rear Axle

A standard semi-floating rear axle with Hypoid drive gears is used in the 6-L-226 models. The gear ratios will be as follows:

ALL 1954 KAISER
& WILLYS P.C.
MODELS

Standard Transmission	3.54 to 1
Overdrive Transmission	4.10 to 1
Hydra-Matic Transmission	3.31 to 1

Service procedures will be found in the Willys Mechanics Manual. Step "D" gauge block should be used when employing the W99 tool set for setting the differential pinion depth.

Power Steering

Power steering is optional equipment on all 1954 Willys DeLuxe and Custom models. Service procedures are covered in the "Power Steering" portion of the Kaiser "Chassis" section. The Gemmer steering gear is used with the power steering unit. The Ross gear is used with all standard models.

Cooling System

The 6-L-226 Willys models have a 11-1/2 quart capacity radiator to provide adequate cooling for the larger engine.

Electrical System

The following component parts are used in the 6-L-226 Willys with the negative ground Auto-Lite electrical system:

Auto-Lite Distributor	Model No. IAT-4019
Auto-Lite Generator	Model No. GGW-4801EN
Auto-Lite Voltage Regulator	Model No. VBE-6105A
Auto-Lite Starter (Standard Trans.)	Model No. MCH-6210
Auto-Lite Starter (Hydra-Matic Trans.)	Model No. MCH-6211

Service procedures for the electrical system are given in that part of the Willys Mechanics Manual Supplement applicable to 685 models with the exception of the following specifications for the 6-L-226 engine:

- Distributor Centrifugal Advance starts at 650 engine R.P.M.
- Maximum Centrifugal Advance: 9° at 1675 engine R.P.M.
- Vacuum Advance starts at 10 inches of vacuum.
- Maximum Vacuum Advance: 5° at 15 inches of vacuum.
- Timing: 5° B.T.D.C. at 450 R.P.M.
- Distributor Point Gap: .020"
- Distributor Cam Dwell Angle: 36° - 42°
- Distributor Breaker Arm Tension: 17 - 20 oz.
- Spark Plug Gap: .030"
- Spark Plug Torque: 28 - 30 ft. lbs.

Courtesy, dome and instrument lights on all DeLuxe and Custom models are controlled with a rotary switch mounted at the lower left of the instrument panel. The rotary switch has a rheostat for instrument light control.

The slip fit couplings on all DeLuxe and Custom models for the horns, headlights, parking lights and turn signal connections have been replaced with junction boxes for more positive circuit contact.

PRELIMINARY
SERVICE
INFORMATION

SPECIFICATIONS

	<u>685B</u>	<u>6-L-226</u>		<u>685B</u>	<u>6-L-226</u>
<u>General</u>			<u>Tires (cont'd.)</u>		
Wheelbase	108"		Recommended Pressure:		
Minimum Road Clearance	6-1/2"		Rear (cold)	24 lbs.	
Overall Length	183"		Tread:		
Overall Width	72"		Front	58"	
Overall Height	60-3/4"		Rear	57"	
Turning Diameter	38'		<u>Engine</u>		
Effective Brake Area	132-3/4"		Type	In Line	
<u>Tires</u>			No. Cylinders	6	
Size	4-ply - 6.40x15		Bore	3-1/8"	3-5/16"
Recommended Pressure:			Stroke	3-1/2"	4-3/8"
Front	(cold) 24 lbs.		Piston Displacement	161 cu.in.	226 cu.in.

ALL 1954 KAISER
& WILLYS P.C.
MODELS

April 2, 1954

Miscellaneous

K-W No. 229

	685B	6-L-226		685B	6-L-226
<u>Engine (cont'd.)</u>			<u>Cooling System (cont'd.)</u>		
Taxable Horsepower	23.44	26.3	Capacity with heater	12 qt.	12½ qt.
Max. Brake H.P.	90 at 4200	115 at 3650	Radiator Pressure Cap	7 lb.	4 lb.
Maximum Torque	135 at 2000	190 at 1800	Thermostat starts to open	151°	148°-150°
Compression Ratio	7.6-1	7.3-1	<u>Electrical System</u>		
Idling Speed:			Distributor Breaker Gap	.020	.020
Std. & Overdrive	600 RPM	500 RPM	Breaker Arm Tension	17-21 oz.	
Hydra-Matic	550 RPM	450 RPM	Ignition Timing	5° BTDC at 600 RPM	4° BTDC at 450 RPM
Ignition Timing	5° BTDC at 600 RPM	4° BTDC at 450 RPM	Spark Plug:		
Firing Order	1-5-3-6-2-4		Type	Champion J8	
Compression	145 lb.	120-130 lb.	Gap . . . . .	.030	.030
Valve Timing:			Battery Capacity:		
Intake opens	9° BTC	10° BTC	Ampere Hours	90	
Intake closes	50° ATC	60° ATC	No. Plates	15	
Exhaust opens	47° BTC	55° BTC	Generator:		
Exhaust closes	12° ATC	10° ATC	Type	Auto-Lite Shunt	
Tappet Clearance for Timing:			Brush Spring Tension	35-53 oz.	
Intake . . . . .	.026	.018	<u>Front End Alignment</u>		
Exhaust . . . . .	.020	.020	Caster	10 + 1/20 Positive	
Operating Tappet Clearance:			Camber	10 + 1/40 Positive	
Intake . . . . .	.018 hot or cold	.014 cold	Toe In	3/32" to 5/32"	
Exhaust . . . . .	.016 hot or cold	.014	King Pin Inclination	8-1/4	
<u>Fuel</u>			<u>Lamp Chart</u>		
Tank Capacity (Gal.)	18	18	<u>Trade No.</u>		
Fuel Pump Pressure (lbs.)	3½-4½	5	Headlight	35-45 Watt 7"	
Float Level	9/32"	9/32"	Seal Beam Unit		
Fuel Pump Type	Mechanical		63		
Carburetor Type (Carter)	YF924S	WCD2052S	Parking License Plate	1154	
<u>Lubrication System</u>			Front Parking & Direc- tional Signal	1154	
Type	Pressure		Tail, Stop, Directional	1154	
Pressure (lbs.)	35 at 35 mph	35 at 1700 RPM	Instrument Panel	55	
Crankcase Capacity	5 qts.		High Beam Indicator	51	
Oil Pump Type	Gear		Turn Signal Pilot	51	
Oil Intake System	Floating		Dome Lamp & Courtesy Light	87	
<u>Cooling System</u>			Circuit Breaker Headlamp	30 amp.	
Capacity without heater	11 qt.	11½ qt.	Fuse - Radio	SFE 9 amp.	
			Heater	SFE 9 amp.	
			Overdrive	SFE 20 amp.	

K-W No. 229

April 2, 1954

Miscellaneous

PRELIMINARY
SERVICE
INFORMATION

J. W. Alexander
J. W. Alexander
General Service Manager

ALL 1954 KAISER
& WILLYS P.C.
MODELS

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