PACKARD SERVICE LETTER

VOL. 6, No. 6 MARCH 15, 1932

"900" STANDARD SIZES AND ADJUSTMENTS

Name	900
BRAKE—FRONT	
Clearance around drum—anchor end	.008"
Clearance around drum—adjusting end	.014"
Length of Lining	16"
Width and Thickness	1¾" x 3/16"
No. per Vehicle	2
BRAKE—HAND	
Clearance around drum—anchor end	.008"
Clearance around drum—adjusting end	.014"
Setting Bands Concentric	Inherent
Length of Lining	16"
Width and Thickness	1¾" x 3/16
No. per Vehicle	2
BRAKE—REAR	
Clearance around Drum—anchor end	.008"
Clearance around Drum—adjusting end	.014"
Length of Lining	16"
Width and Thickness	1¾" x 3/16"
No. per Vehicle	4
CLUTCH	
No. of Driving Plates	1
Clearance Plates on Keys—Minimum	Clearance Splined Hub on Clutch Shaft No Perceptible Back Lash
Tension of Clutch	12 springs 115 lbs. at 1 7/16"
Clutch Pedal to Toeboard Clearance—Clutch Engaged	1

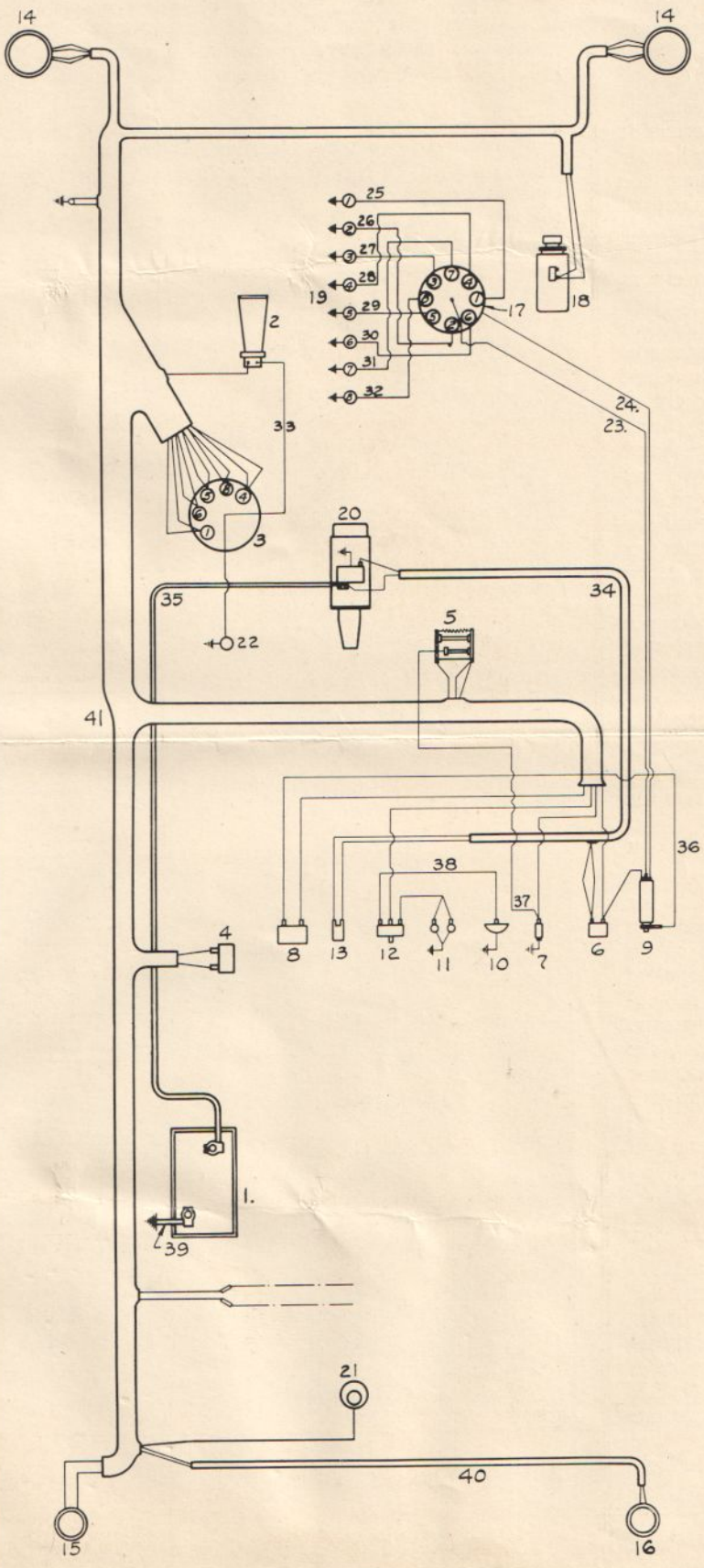
Name	900
COOLING SYSTEM	
Capacity	4¾ Gals.
Gravity Flow of Water Through Radiator per Min.	29 Gals.
Clearance Fan to Radiator core	⅝"
Thermostat Temp. at which Valve Starts to Open	160°
Fan Belt	45° V-type
Length Fan Belt	39⅜"
Adjustment	Deflection between pulleys 1⅛"
Range of Belt Adjustment	¾"
GASOLINE SYSTEM	
Tank Capacity	20 Gals.
Inside Diameter of Inlet Manifold at Flange	1 11/32"
ELECTRICAL SYSTEM	
Generator Charging Rate	9-11 Amps. Automatically Controlled
Battery Capacity—Ampere Hours	152 Amp. Hrs. 6-7 Volts
Lamp Bulbs, Bayonet Lock Type, Headlight	Up. Filament 21 C. P. Low. Filament 21 C. P. Double Contact
Dimmer or Auxiliary	3 C. P.
Instrument Light and Side Light	3 C. P.
Stop Light	15 C. P.
Tail Light	3 C. P.
Dome Light	6 C. P.
Fender, Cowl or Courtesy Lamp	3 C. P.
Spark Timing	Adv. Occurs 9° B. T. D. C.
Breaker Point Gap	.015-.020
Spark Plug Gap	.025

"900" STANDARD SIZES AND ADJUSTMENTS—Continued

Name	900
MOTOR	
Compression	95-100 Lbs.
Firing Order	1-6-2-5-8-3-7-4
Front End Chain 1½" Wide, ½" Pitch, No. of Links	64
Adjustment of Front End Chain	Downward Deflection Not to Exceed ¼"
Camshaft End Thrust	.002-.005
Clearance to Bearings	Min. .001
Clearance Piston Pin Bushing to Pin—Minimum	Palm Push Fit at 160° Heat
Clearance Bearing to Crankpin	Min. .0005
End Play Connecting Rod on Crankshaft	Min. .003
End Play Connecting Rod on Piston Pin—Nominal	⅛"
Diameter of Crankpins	2.1875
Clearance on All Main Bearings	Min. .001
End Play Crankshaft on Main Thrust Bearing	Min. .003
Diameter of Main Journals	2.625
Diameter Cylinder Bore—Standard	3 3/16"
Reground Oversizes	.015-.030-.045 Over Std.
Diameter of Piston Pins	⅞"
Oversizes	.003 and .006 Over Std.
Piston Pin Offset in Piston	0
Install in Motor	Slots on Valve Side
Width of Ring Groove	Comp. ⅛" Oil 5/32"
Depth of Ring Groove	.157
Clearance Piston Skirt to Cylinder Wall	Minimum: —.0015
Piston Ring Gap Compressed to Cylinder Diameter	Seven-thousandths
Pressure Required to Close Ring to Correct Gap	Comp. 6¼ Lbs. Min. Oil 4½-7½ Lbs.
Piston Sizes	Standard .003 .005 .010 .015 .020 .030 .045 over
Clearance to Push Rods—Motor Warm	.004
Width of Contact at Valve Seat	.0883
Clearance Between Valve Stem and Guide	In. Min. .0025 Ex. Min. .0045
Tension of Valve Springs	73 Lbs. at 3 1/16"
Oil Pump Pressure at 20 M. P. H.	Min. 35 Lbs.
Crankcase Oil Capacity	8 Qts.
Rod Clearance to Surface of Oil in Crankcase	1 11/16"
Valve Timing	00's on Crankshaft and Camshaft Sprockets Should be Nearest together and Line up on Each Side of Center

Name	900
REAR AXLE	
Oil Capacity	2 Qts.
Back Lash Between Driving Ring Gear and Pinion—Minimum	.004
SPRINGS	
Front Springs Nominal Cap. in Lbs. When in Normal Position	825 Lbs.
Rear Springs Nominal Capacity in Pounds When in Normal Position	Body Type — Lbs. Spring 553, 563 — 1175 Lbs. 558, 559 — 1025 Lbs.
STEERING	
Front Wheel Camber	1° 30'
Front Wheel Toe-In	⅛"
Castor	1° Min. 2° Max.
Adjust Knuckle Stop	Adjust to 4½" Clearance Spring to Wheel Rim
Minimum Turning Radius	21' 6"
Taper Roller Bearing Adjustment for Front Wheel	Tighten Nut as Tight as Possible then Back Off ½ Turn or More and Lock
Recommended Tire Pressure	Front—40 Lbs. Rear—40 Lbs.
Shock Absorber Adjustment	Front Rebound Valve—OC Rear Rebound Valve—OC Front Comp. Valve—G1 GIX Rear Comp. Valve—G1 GIX
Balancing Wheels	Wheels Equipped with Balloon Tires Should be in Static Balance
TRANSMISSION	
Oil Capacity	2½ Qts.
Ratio to Rear Wheels in Direct Drive	4.36-1 4.69-1 4.07-1
In Second	6.65-1 7.15-1 6.21-1
In First	10.71-1 11.53-1 10.0-1
In Reverse	12.56-1 13.5-1 11.72-1
Back Lash Between Helical Gears Always in Mesh	.010
UNIVERSAL JOINT	
Assembling Universal Joints	Grease Plugs on Shaft and Universal Joint Sleeve must be in line

"900" WIRING DIAGRAM



Piece No.	Name
1 202175	Battery assy.
2 183773	Horn
3 178009	Steering gear lighting switch assy.
4 196962	Stop light switch
5 202176	Wiring fuse block assy.
6 197956	Inst. board ammeter
7 197488	Inst. board cigar lighter assy.
8 197963	Inst. board gasoline gauge
9 196851	Inst. board ignition coil and switch assy.
10 126578	Inst. board light—direct (reading light)
11 197497	Inst. board light socket—and cable assy.—indirect
12 197532	Inst. board light switch
13 201511	Inst. board starter motor switch
14 201830	Lamp—front assy.
15 202854	Lamp—rear left
16 202855	Lamp—rear right
17 201691	Distributor
18 182029	Generator
19 202635	Spark plug (K-9)
20 201501	Starter motor and switch assy.
21 197444	Gasoline tank gauge
22 179989	Steering post horn button

Name	Bulk Stock No.	Cable Length	Terminal	Insulators
23 Coil to distributor high ten. cable	78396	43″	163286 coil 156626-M Dist. 156625-F Dist.	
24 Coil to distributor low ten. cable	166404	39″	33287	36111
25 Cable to spark plug No. 1	78396	25″	156626-M 156625-F	
26 Cable to spark plug No. 2	78396	23″	156626-M 156625-F	
27 Cable to spark plug No. 3	78396	17″	156626-M 156625-F	
28 Cable to spark plug No. 4	78396	13½″	156626-M 156625-F	
29 Cable to spark plug No. 5	78396	16″	156626-M 156625-F	
30 Cable to spark plug No. 6	78396	18″	156626-M 156625-F	
31 Cable to spark plug No. 7	78396	20″	156626-M 156625-F	
32 Cable to spark plug No. 8	78396	27″	156626-M 156625-F	
33 Horn button to horn cable assy.	194902			
34 Starter motor to starter switch cable assy.	197617			
35 Battery to starter switch cable assy.	197870			
36 Coil to inst. board gasoline gauge cable	166404	10″	33287	36111
37 Cigar lighter to fuse block cable	194198	23½″	33287	36111
38 Wiring reading light to switch cable	166404	14″		
39 Battery to ground cable assy.	196972			
40 Lamp rear right cable assy.	197543			
41 Wiring assy.	197568			

Notes on Automatic Clutch Control

There are a few items which have come to our attention in connection with the article in Volume 6, Number 3 of February 1st Service Letter on the subject of "Automatic Clutch Operation." The additional experience the factory has had with this equipment indicates that this information should be passed on to the field.

No. I. Under "Adjustments" a statement was made to the effect that if the throttle adjustment is correct it should be possible to maintain a speed of ten miles per hour in high gear on a level pavement without the clutch releasing. This statement has been taken to indicate that the car should not idle below a ten-mile an hour speed. This assumption is not correct, the motor should idle just as though there were no clutch control. What is meant by the statement is that because of the fact that the throttle is in the closed position when the motor is idling, the location of the pistons in the vacuum control valve is such that the automatic clutch control is operating and will release the clutch under this condition. The adjustment of the clutch control unit should be such that with the mechanism in free wheeling and the car in high gear on a level road, the clutch should *not* release at any speed *greater* than ten miles per hour and it may not release until the car speed is retarded to as low as six or eight miles per hour. The way to check this is to have the car running along a level road in high gear, then pull the hand throttle on the dash out part way: remove your foot from the accelerator, then retard the speed of the car by slowly pushing the hand throttle in. When you have reached the idling speed, you will be able to determine at just what speed the clutch releases. This should not be at a speed *greater* than ten miles per hour.

No. II. One item of importance is the fact that any change in the location of the steering column affects the adjustment of the control valve.

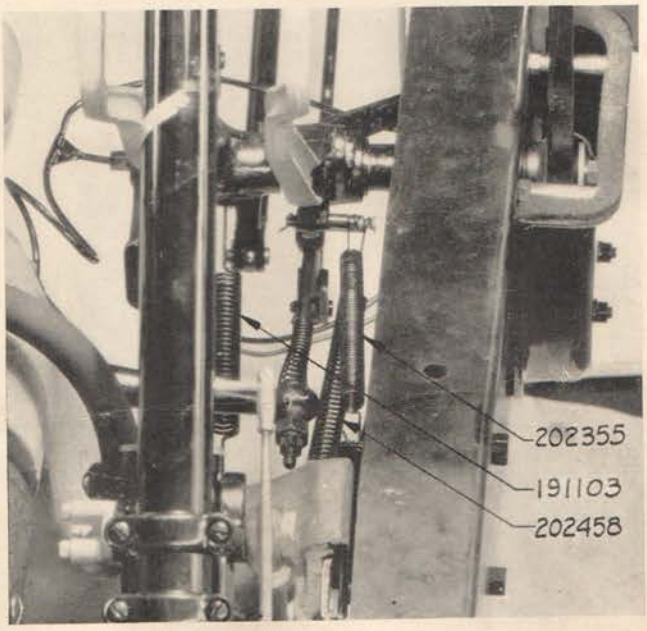
No. III. Under the heading "Bleeder Adjustment" the statement is made that the bleed valve should be adjusted so that the distance from the outer end of the hex on the bleed valve to the plate through which it projects should be approximately three-quarters of an inch. It was not intended to convey the idea that when three-quarters of an inch was obtained on this adjustment that the bleed valve would operate correctly. This distance will vary with different adjustments, the idea being that you should start to make an adjustment from approximately three-quarters of an inch at this point. You *may* find that the correct adjustment will be obtained when this distance measures seven-eights of an inch, or it *may* be some other measurement. You should start the adjustment from three-quarters of an inch.

No. IV. We have not endeavored, in giving you the set of instructions on this mechanism, to indicate that all clutch control mechanisms must operate in exactly the same manner. The mechanism is so flexible in its adjustments that it is possible to suit the individual owner as to what he feels he desires in the way of a clutch operating mechanism. If he wishes a quick pick-up, that is quicker than the standard adjustment would give you, then change the adjustment to give him the quick pick-up. On the other hand, if he feels that a slower pick-up would suit his particular requirement better, then make the adjustment accordingly. Do not try to make all clutch mechanisms operate in just exactly the same manner, but rather try to suit the individual taste as soon as the owner has determined just what he wants in the way of an automatic clutch operating device.

No. V. When the operation of the clutch control mechanism, suits the customer, you will generally find that only one service adjustment is necessary and that is the one to take care of wear. The first step to take is to make sure that the clearance of one inch between the clutch pedal and the toe board is correct. It is very important that this clearance be maintained and it will generally be found that this will be the only adjustment required when a customer comes in with the information that his clutch control is not working properly. The re-adjustment of the pedal simply restores the original cushion adjustment which is determined by the pull rod operated by the vacuum cylinder.

No. VI. When installing clutch control equipments, or if for any reason the position of the control valve on the steering column has been changed, make sure that the lower end of the valve does not touch the steering adjusting nut. If it does, it will be necessary to raise the position of the valve on the steering column. This may necessitate the bending of the lever on the accelerator shaft which connects the bleeder plunger to the accelerator pedal.

No. VII. You have undoubtedly noticed that the control valve bracket is attached to the steering column by means of two bolts. The upper bolt is fitted through an elongated hole, this is for the purpose of lining up the valve body with the bleeder plunger linkage in order to obtain freely operating linkage.



CORRECT LOCATION OF RETRACTING SPRINGS

We Welcome Suggestions and Inquiries from Packard Service Men. Address All Communications Care Editor, Packard Service Letter.

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