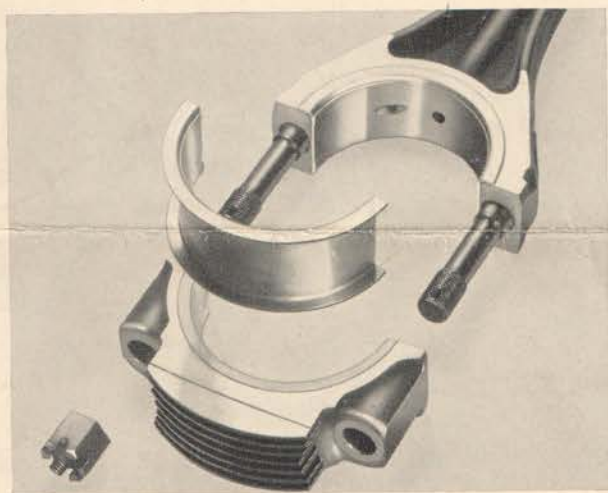




The Twelfth Series Cars

Among the improvements you will be interested in from a service standpoint are:

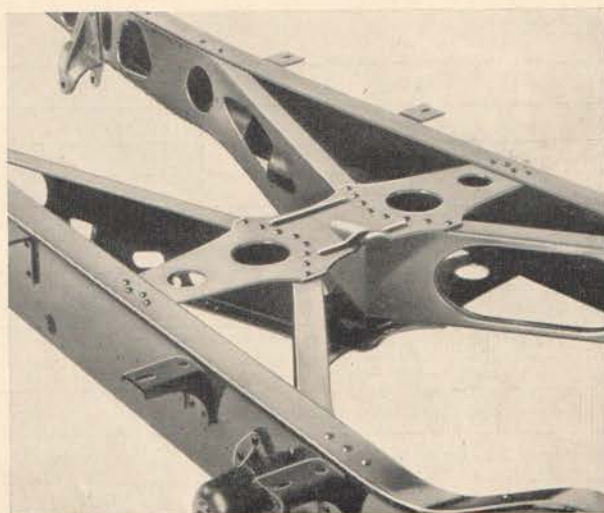
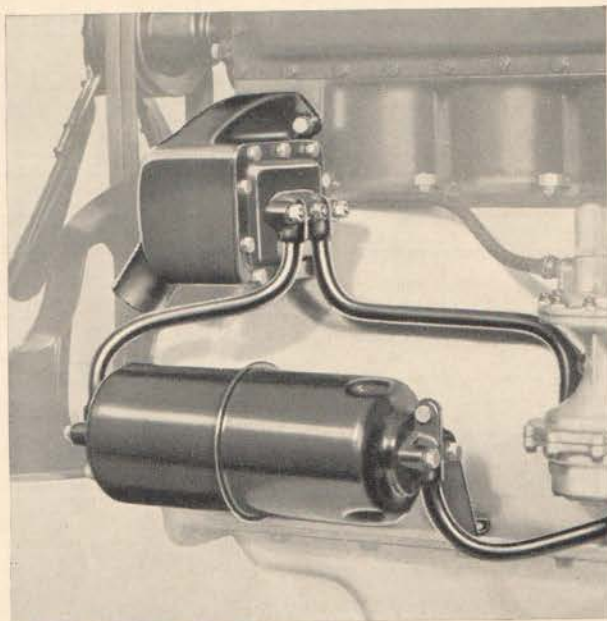


The new, copper alloy replaceable connecting rod bearings resulting from several years of intensive development work give a result far exceeding any other connecting rod bearing. Highly durable and wear resisting.

Improved water distribution greatly decreases valve temperature. Water passages are arranged so that cooled inlet water is discharged to under sides of valve seats. Increases directly life of valve seats and permits higher compression ratios.

New box type frame provides a rigid foundation for the new Twelfth Series bodies.

New, more rigid frame; new method of mounting front fenders, lamps, and radiators at a central



point; reinforced rear end structures and improved method of fastening body to frame; improved weight distribution, improved balance of spring and shock absorber rates—all contribute to a new degree of solidity and a characteristic softness in the ride by eliminating road "harshness."

Improved design of synchronizer clutches gives greater effectiveness and longer life to synchronizers.

Further improvements in oiling system. Oil cooler and self-cleaning full-flow filter added to Twelve. Capacities of external oil lines and filters increased. Advanced design of oil coolers on all models.

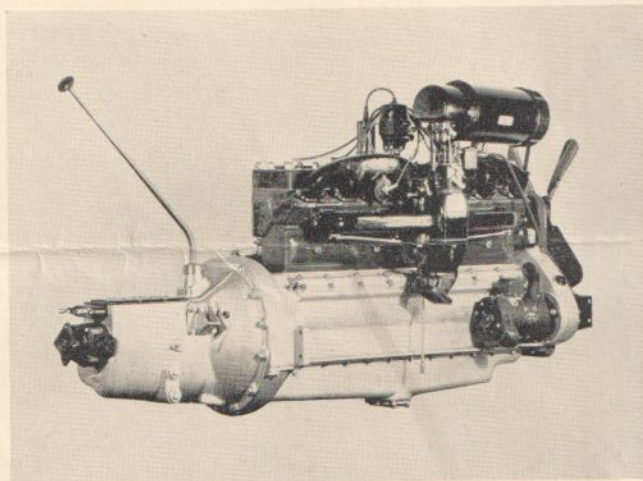
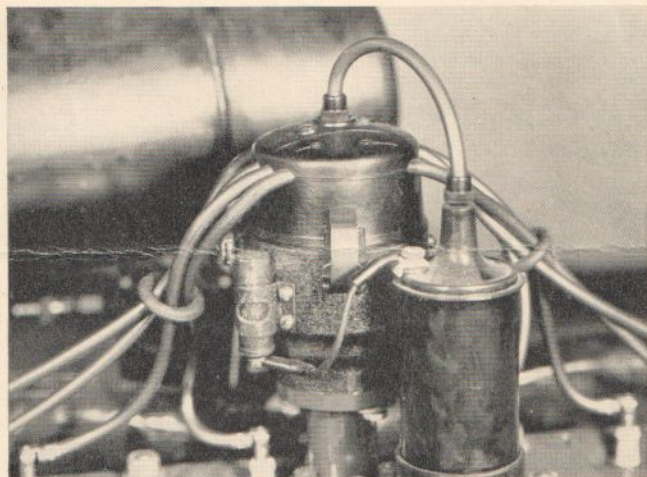
A much more efficient single ignition coil with new water proof terminals is used in conjunction

with a four-lobe double breaker type of distributor. Both have burn-proof bakelite tops. This provides higher ignition efficiency and lower service cost than was obtained from the double coils formerly used and with much less consumption of battery current.

We have moved the condenser to the outside of the distributor, for more efficient operation and servicing.

We have a much improved type of choke mechanism which is built integral with the carburetor. In the case of the Eights in the new series, the bi-metallic coil of the choke is located directly in the exhaust manifold for greater efficiency.

Also there are new, non-warping, non-corrosive valves of austenitic structure which maintain strength at high temperatures.



STANDARD SIZES AND ADJUSTMENTS

Model	1200-1-2	1203-4-5	1206-7-8
BRAKE			
Clearance around Drum	Free	Free	Free
Lining Size—Front Left	15 $\frac{1}{8}$ " x 1 $\frac{3}{4}$ " x $\frac{1}{4}$ "	15 $\frac{1}{8}$ " x 1 $\frac{3}{4}$ " x $\frac{1}{4}$ "	16 $\frac{1}{8}$ " x 1 $\frac{3}{8}$ " x $\frac{1}{4}$ "
Lining Size—All Others	15 $\frac{1}{8}$ " x 2 $\frac{1}{4}$ " x $\frac{1}{4}$ "	15 $\frac{1}{8}$ " x 2 $\frac{1}{4}$ " x $\frac{1}{4}$ "	16 $\frac{1}{8}$ " x 2 $\frac{1}{2}$ " x $\frac{1}{4}$ "
No. of Linings per Car	8	8	8
CLUTCH			
No. of Driven Plates	1	1	1
Lining—Hyco—Size	7" x 12"	7" x 12"	7" x 12"
Clearance Hub to Clutch Shaft	No Perceptible Back Lash—All Models		
Clutch Spring Load	125 Lbs. at 1 $\frac{1}{16}$ "	Inner—50 Lbs. at 1 $\frac{1}{16}$ " Outer—100 Lbs. at 1 $\frac{1}{16}$ "	Inner—50 Lbs. at 1 $\frac{1}{16}$ " Outer—115 Lbs. at 1 $\frac{1}{16}$ "
Clearance Pedal to Toeboard	1"	1"	1"

STANDARD SIZES AND ADJUSTMENTS—Continued

Model	1200-1-2	1203-4-5	1206-7-8
COOLING SYSTEM			
Capacity in Gallons	5	5½	10
Gravity Flow per Minute—Min.	30 Gal.	30 Gal.	50 Gal.
Clearance Fan to Radiator Core	1½"	7⁄8"	1½"
Thermostat Valve Starts to Open at	155 Deg.	155 Deg.	155 Deg.
Fan Belt—Two Used per Motor—45 Deg. Vee	39½"	39½"	49½"
Range of Adjustment	¾"	¾"	¾"
GASOLINE SYSTEM			
Capacity of Tank in Gallons	25	25	30
Carburetor Make and Type	Packard-Stromberg Duplex Down-Draft—All Models		
Gasoline Feed	Mechanical Fuel Pump	Mechanical Fuel Pump	Mechanical Fuel Pump
ELECTRICAL			
Generator Charging Rate—Hot	Twenty-four to Twenty-seven Amperes—All Models		
Battery Capacity in Ampere Hours	One Hundred and Forty-four—All Models		
LAMP BULBS	2-Filament 32-32 Candlepower—All Models		
Headlight	Standard Single Contact 15 Candlepower—All Models		
Stoplight	Standard Single Contact 6 Candlepower—All Models		
Domelight	Standard Single Contact 1 Candlepower—All Models		
Instrument Board Pilot	Standard Single Contact 3 Candlepower—All Models		
All Others	Standard Single Contact 3 Candlepower—All Models		
Spark Timing—Full Advance Occurs	6° B. T. D. C.	8° B. T. D. C.	8° B. T. D. C.
Breaker Point Gap	.018 to .022 of an Inch—All Models		
Spark Plug Gap	.025 of an Inch—All Models		
Generator Fuse	3 Amperes—¼" x ⅝" in Size—All Models		
Body Wiring Fuse	20 Amperes—1½" x 1½"—All Models		
MOTOR			
Compression	110	110	110
Firing Order	1-6-2-5-8-3-7-4	1-6-2-5-8-3-7-4	1R-6L-5R-2L-3R-4L-6R-1L-2R-5L-4R-3L
Clearance Bearing to Crankpin	.0017—.0022		
End Play Connecting Rod on Crankshaft	Minimum .003"	Minimum .003"	Minimum .008"
End Play Connecting Rod on Piston Pin—Nominal	⅜"	⅜"	⅝"
Diameter of Crankpins	2.1875"	2.1875"	2½"
Clearance on All Main Bearings	Minimum—.001 of an Inch—All Models		
End Play Crankshaft on Main Thrust Bearing	Minimum—.003 of an Inch—All Models		
Diameter of Main Journals	2.625"	2.625"	2¾"
Diameter Cylinder Bore—Standard	3 ⅞"	3½"	3 ⅞"
Reground Oversizes	.005 to .045 oversize at our option—All Models		
Diameter of Piston Pin	⅞"	⅞"	⅞"
Oversizes	.003"-.006" over Standard—All Models		
Piston—Install in Motor	Slots on Valve Side	Slots on Valve Side	Slots on Valve Side
Width of Ring Groove	Comp. ⅜" Oil ⅜"	Comp. ⅜" Oil ⅜"	Comp. ⅜" Oil ⅜"
Depth of Groove—Oil	.157"	.157"	.158"
Clearance Piston Skirt to Cylinder Wall	Minimum .0015"	Minimum .0015"	Minimum .0015"
Piston Ring Gap Compressed to Cylinder Diameter	.007" Minimum—All Models		
Pressure Required to Close Ring to Correct Gap	Comp. 6¼ Lbs. Oil 4½-7½ Lbs.	Comp. 6¾ Lbs. Oil 4½-7½ Lbs.	Comp. 6½ Lbs. Oil 4½-7½ Lbs.
Piston Sizes	Standard .003"	Standard .003"	Standard .003"
	.005"	.005"	.005"
	.010"	.010"	.010"
	.015"	.015"	.015"
	.020"	.020"	.020"
	.025"	.025"	.025"
	.030"	.030"	.030"
	.035"	.035"	.035"
	.045" over	.045" over	.045" over

STANDARD SIZES AND ADJUSTMENTS—Continued

Model	1200-1-2	1200-3-4-5	1206-7-8
MOTOR—Cont.			
Clearance to Push Rods—Motor Warm Ex.	.006"	.006"	Automatic Takeup
Clearance to Push Rods—Motor Warm In.	.004"	.004"	Automatic Takeup
Width of Contact of Valve Seat	Eight Hundred Eighty-three Ten-thousandths		.062"
Clearance between Valve Stem and Guide	Inlet—Minimum—.0025" Outlet—Minimum—.0045"	Same Same	.0025" .005"
Tension of Valve Springs	43 Lbs. at 3 1/8"	43 Lbs. at 3 1/8"	70 Lbs. at 2 1/2"
Oil Pump Pressure at 1000 R. P. M.	Minimum—35 Lbs.—All Models		
Crankcase Oil Capacity	8 Qts.	9 1/2 Qts.	10 Qts.
Rod Clearance to Surface Oil in Crankcase	1 3/8"	1 3/8"	Front 2 1/4" Rear 1 1/8"
Valve Timing	00's on Crankshaft and Camshaft Sprockets Should be Nearest together and Line up on Each Side of Center	00's on Crankshaft and Camshaft Sprockets Should be Nearest together and Line up on Each Side of Center	00's on Crankshaft and Camshaft Sprockets Should be Nearest together on Center Line
REAR AXLE			
Oil Capacity	Six Pints—All Models		
Back Lash Between Driving Gear and Pinion—Minimum	Four Thousandths of an Inch—All Models		
Model	1100-1-2	1103-4-5	1108
STEERING			
Front Wheel Camber	1 Deg.	1 Deg.	1 Deg.
Front Wheel Caster	1 1/2 Deg.	1 1/2 Deg.	1 1/2 Deg.
Front Wheel Toe-in	1/8"	1/8"	1/8"
Front Wheel Bearing Adjustment	Tighten Nut as Tight as Possible and Back off 1/2 Turn or More and Lock		
Recommended Tire Pressure	35-40 Lbs.	35-40 Lbs.	35-40 Lbs.
Shock Absorber Valving—Standard	1200-1-2 Std. Front Rebound—IE Front Compression—G2 Front Static—IA Rear Rebound—ONF Rear Compression—GO Rear Static—IA	1200-1-2 DeLuxe IE GI IA 5GR GO IA	1203-4-5 1206-7-8 2GH E4 2-7 5GR G-1 1-7
TRANSMISSION			
Oil Capacity	Four and One-half Pints—All Models		
Ratio to Rear Wheels in Direct Drive	5.07 4.36 4.69—Std.	4.06 4.41—Std. 4.69 5.07	4.06 4.41—Std. 4.69 5.07
In Second	7.63 6.65 7.15	6.21 6.74 7.15 7.63	6.21 6.74 7.15 7.63
In First	12.49 10.71 11.53	10.01 10.86 11.53 12.49	10.01 10.86 11.53 12.49
In Reverse	14.61 12.56 13.5	11.72 12.71 13.5 14.61	11.72 12.71 13.5 14.61
Back Lash Between Gears Not Always in Mesh—Minimum	Four Thousandths of an Inch.—All Models		
UNIVERSAL JOINT			
Assembling Universal Joints	Arrows on Shaft and Universal Joint Sleeve Must be in Line.—All Models		