

Automobile Manufacturers Association

Consolidated Specification Questionnaire

For 1939 Models

Mechanical Details

Make of Car **BUICK** Model **1939 SERIES 90 - LIMITED**

Name of Maker **BUICK MOTOR DIVISION** Address **FLINT, MICHIGAN**

Date... **OCTOBER 14, 1938**

NOTE—Only standard equipment included in Factory Delivered price should be included in this questionnaire

ENGINE

No. of cylinders **8**

Valve arrangement **In Head**

Bore ... **3-7/16"** Stroke... **4-5/16"**

Engine—make and model **Own - Series 90**

Cylinder arrangement (angle of Vee in degrees) **In Line**

Cylinder head, cast iron or aluminum **Cast Iron**

Piston displacement **320.8 cu. in.**

Taxable horsepower **37.81**

Maximum brake horsepower at R.P.M. **141 at 3600**

Maximum torque (lbs.-ft.) at R.P.M. **269 at 2000**

Revolutions per mile with standard rear axle and tires. **3050 @ 50 MPH**

Compression Ratio—
 Standard ... **6.25 to 1** Optional ... **None**

Standard compression pressure—pounds—
 At what R.P.M. **130 at 1000**

At cranking speed **113.8**

PISTONS and RINGS

Piston
 Make **Own**

Material **Al. Alloy**

Features—*split skirt, invar strut, cool, tin-plated, aluminum oxide finish, auto-thermic, V-Bridge, etc.* *

Weight—ounces—without rings, pin or bushing. **17.3**

Length **4-7/16"**

Clearance—
 Top **Land .026"** **.033"**

Top of Skirt .0020" to **.0026"**

Bottom **.010"** to **.015"**

Piston ring groove depth—
 Oil **.175"** Compression **.162"**

No. of oil rings used per piston **2**

Width of oil rings **3/16"**

Width of oil ring gap **.010"** to **.015"**

No. of compression rings used per piston **2**

Width of compression rings **Upper 1/8"** **Lower 3/32"**

Width of compression ring gap **.010"** to **.015"**

Maximum wall thickness of oil rings **.150"**

Maximum wall thickness of compression rings **Upper .155"** **Lower .150"**

*Full skirt relieved at pin bosses, tri-slot, cam ground-anodized.

RODS and PINS

Wristple—
 Length **3-1/16"** Diameter **7/8"**

Locked in rod, piston or floating **In Rod**

Clearance **.0003"** to **.0004"**

Hole finish—reamed, diamond bored, broached or ground. **Diamond Bore**

Connecting rod—
 Length—center to center... **8-1/4"**

Material **H.R.S. 1045**

Weight—ounces **38-1/2**

Crankpin journal—
 Diameter **2-1/4"** Length **1.306"**

Lower bearing—
 Material **Babbitt**

Make **Own**

Clearance **.0008"** to **.0018"**

End play **.005"** to **.010"**

Shim—solid, laminated or none **Solid**

Spun or separate **Centrifugally Cast**

Rods end pistons removed from above or below. **Above**

CRANKSHAFT

Vibration damper used—yes or no. **Yes**

Type **Laminated steel flywheel supported on steel leaf springs**

Crankshaft counterweights used, number of **8**

Which main bearing takes thrust **Center**

Crankshaft end play **.004"** to **.008"**

Main bearing—
 Material **Steel Backed Babbitt**

Clearance **.0007"** to **.0022"**

Shim—solid, laminated or none **Solid**

Main bearing journal diameter x length—
 No. 1. **2-9/16" x 1-9/32"**

No. 2. **2-5/8" x 31/32"**

No. 3. **2-11/16" x 1-15/32"**

No. 4. **2-3/4" x 31/32"**

No. 5. **2-13/16" x 2-15/32"**

No. 6.

No. 7.

No. 8.

No. 9.

Crankshaft gear—
 Make **Own**

Material **C.D.S. 1112**

Make of Car **BUICK** Model **1939-SERIES 90** Date **OCTOBER 14, 1938**

CAMSHAFT

Camshaft gear—
 Make **OWN**
 Material **C.I. 12M**
 Timing chain—
 Make **Link Belt**
 Number of links **50**
 Width **1"**
 Pitch **.500**
 Adjustment—*none, automatic or manual* **None**

VALVES

INTAKE VALVE—

Make **Thompson or Rich**
 Overall length **5-1/4"**
 Head—
 Material **3140 or 1050**
 Actual overall diameter **1.25/32"**
 Angle of seat **45 Deg.**
 Stem—
 Diameter **.3720"**
 End style **Split Collar**
 Stem to guide clearance **.0015"** to **.0035"**
 Lift **.347**
 Spring pressure and length—
 Outer—
 With valve closed **20 1/2 to 31 1/2 Lbs. - 1-15/16"**
 With valve open **67 to 73 Lbs. - 1-19/32"**
 Out of engine **2-5/16"**
 Inner—
 With valve closed **15 1/2 to 20 1/2 Lbs. - 1-21/32"**
 With valve open **45 to 51 Lbs. - 1-19/32"**
 Out of engine **1-7/8"**

EXHAUST VALVE—

Make **Thompson or Rich**
 Overall length **5-1/4"**
 Head—
 Material **2112 for Rich & XB for Thompson**
 Actual overall diameter **1-7/16"**
 Angle of seat **45 Deg.**
 Is valve seat an insert **No**
 Stem—
 Diameter **.3715"**
 End style **Split Collar**
 Stem to guide clearance **.0021"** to **.0039"**
 Lift **.348"**
 Spring pressure and length—
 With valve closed **Same as for Intake Valves.**
 With valve open **Same as for Intake Valves.**
 Out of engine **Same as for Intake Valves.**

Operating tappet clearance (hot or cold)—*intake* **.015" Hot**
 Tappet clearance for valve timing—*intake* **.004" Valve off seat**
 Operating tappet clearance (hot or cold)—*exhaust* **.015" Hot**
 Tappet clearance for valve timing—*exhaust* **.004" Valve off seat**

VALVES (cont'd)

Hydraulic valve lifters—*yes or no* **No**
 Valve timing—
 Intake opens **14** degrees BUDC piston travel
 Intake closes **71** " AIDC " "
 Exhaust opens **56** " BUDC " "
 Exhaust closes **25** " AUDC " "

LUBRICATION

Lubricating system type—*pressure or splash* **Pressure**
 Oil pressure to—
 Main bearings—*yes or no* **Yes**
 Connecting rods—*yes or no* **Yes**
 Wristpins—*yes or no* **No**
 Camshaft bearings—*yes or no* **Yes**
 Rocker arm—*yes or no* **Yes**
 Timing gear or chain lubrication—*positive or splash* **Positive**
 Oil pump type **Gear (Floating Inlet Screen)**
 Oil grade recommended—*SAB viscosity and temperature range—*
 Not lower than **32°F.** **20-W or S.A.E. 20**
 As low as Plus **10°F.** **20-W**
 As low as Minus **10°F.** **10-W**
 Below Minus **10°F.** **10-W Plus 10% Kerosene**
 Normal oil pressure—*lbs. at M.P.H.* **45 at 35**
 Pressure at which relief valve opens **45**
 Capacity of oil reservoir—*quarts, dry* **9** *refill* **8**
 Oil pressure gauge make **A.C.**
 Oil reservoir level gauge type **Stick**
 External oil filter make **A.C.** (only with heavy duty equip.)
 Oil cooler make **None**
 Chassis lubrication—
 Type **High Pressure**
 Make **Lincoln**

FUEL

Gesoline tank—*capacity* **20 Gallons**
 Fuel feed—
 Type—*vacuum tank, electric pump, vacuum pump or camshaft pump* **Camshaft Pump**
 Make **A.C.** Model
 Carburetor—
 Make **Stromberg** Model **A-A-V-26**
 Size **1-1/4"**
 Type—
 Up or down draft **Down** Single or dual **Dual**
 Supercharger—
 Make **—** Type
 How driven
 Intake manifold heat control—*manual, automatic or none* **Automatic**
 Automatic choke, make **Stromberg**
 Air cleaner—*intake silencer make* **A.C.**
 Exhaust pipe diameter **2-1/4"**
 Muffler make **Walker**

Make of Car **BUICK** Model **1939 SERIES 90** Date **OCTOBER 14, 1938**

COOLING

Water pump—
 Type **Centrifugal (Ball Brg. Sprg. Loaded Seal)**
 Drive **Belt**
 Is pump equipped with packing nut. **NO**
 Water circulation thermostat make **Harrison**
 By-pass for recirculation—yes or no **Yes**
 Radiator shutter—
 Make **None**
 Control—*manual or automatic*
 Radiator core—
 Type **Vee-Cellular**
 Make **Harrison**
 Cooling system—capacity, quarts **17**
 Water jackets full length of cylinder—yes or no **No**
 Lower radiator hose—
 Inside diameter **1-9/16"** Length **Elbow Type**
 Upper radiator hose—**1-9/16"** **Elbow Type**
 Inside diameter Length
 Fan belt—
 Make **Various**
 Number used **1**
 Angle of vee
 Length, outside Width, maximum
 Fan—
 Make **Hayes Industries**

IGNITION

Ignition unit—
 Make **Delco-Remy** Model **1110805**
 Manual or octone selector, degrees advance *retard*
 Maximum automatic advance, degrees **22 to 26 at Flywheel**
 Vacuum advance, degrees **10 to 12 At Flywheel**
 Breaker gap **.015"**
 Cam angle **31 Deg.**
 Timing—Breaker points open **3** degrees camshaft travel
 (before) top center
 Timing marks on flywheel, vibration dampener or none **Flywheel**
 Firing order **1-6-2-5-8-3-7-4**
 Ignition coil make **Delco-Remy**
 Amperage draw of coil—
 With engine stopped **4-1/2**
 With engine idling **2-1/2**
 Ignition lock make **Briggs & Stratton**
 Spark plug—
 Thread—10 m.m., 14 m.m. or 18 m.m. **14-MM**
 Make **A.C.** Model **45**
 Gap **.025"**
 Ignition cable make **Packard**

BATTERY

Make **Delco-Remy**
 Capacity—amperes hours **115** @ 20 hour rate

BATTERY (Cont'd)

Number of plates per cell **17**
 Bench charging rate—
 Start **7. or higher** Finish **more than ?**
 Which battery terminal is grounded **Negative**
 Location of battery **Under Hood**

STARTING MOTOR

Make **Delco Remy** Model **1107908**
 Normal engine cranking speed
 Lock test—
 Amperage draw **600**
 Volts **8**
 Torque in pounds feet **16**
 No load test—
 Amperage draw **85 Approx.**
 Volts **8 Approx.** R.P.M. **3600 Approx.**
 Type of drive— *sliding gear with overrunning clutch* **Yes**
 Starter operation—check items required to start engine
 1. Turn on Ignition **Yes**
 2. Depress starter pedal
 3. Depress accelerator pedal **Yes**
 4. Depress clutch pedal
 5. Operate button on dash
 6. Pull out throttle **Either 3 or 6 (Not both)**
 Starting motor pinion meshes front or rear **Front**
 No. of teeth in flywheel **156**
 Face width of flywheel teeth **43/64"**
 Flywheel teeth integral or steel ring **Steel Ring**
 Gear ratio between starter armature and flywheel **17.33 to 1**

GENERATOR

Make **Delco-Remy** Model **1101055**
 Driven by **Belt**
 Field fuse capacity **None**
 Type—*skid brush, shunt, etc.* **Compensated Third Brush**
 Current regulator, voltage regulator or current and
 voltage control unit **Voltage Regulator**
 Cutout relay—
 Voltage at closing **6.3 to 6.9**
 Armature speed at closing **800 R.P.M. Hot**
 Car speed at closing **8 Approx.**
 Amperes to open **0 to discharge 3.5**
 Maximum charging rate cold—
 Temperature
 Amperes **27 to 31**
 Voltage **6**
 R.P.M. **4000**
 Maximum charging rate hot—
 Temperature
 Amperes **25 to 28**
 Voltage **6**
 R.P.M. **4200**
 Car speed for maximum charging rate **45 Approx.**
 charge indicator make **A.C.**

Make of Car **BUICK** Model **1939 SERIES 90** Date **OCTOBER 14, 1938**

SPRINGS

FRONT SPRING—

Independent or conventional suspension **Independent**
 Type—*coil, semi-elliptic or transverse* **Coil**
 Make **Own**
 Material **Steel 9260**
 If conventional, are radius rods used on axle.....
 Sway eliminators—*torsional, lateral, none* **Torsional**
 If leaf—
 Length Width
 Number of leaves—**5-passenger, 4-door sedan**
 If coil—
 Free length **14-3/4"**
 Length ~~under normal load~~ **10-1/16" at normal load**
 Rate for above **127 at wheel** pounds per inch
 Shackled front or rear
 Anti-shock shackle location

REAR SPRING—

Independent or conventional suspension **Coil Spring Suspension**
 Type—*coil, semi-elliptic or transverse* **Coil**
 Make **Own**
 Material **9260 Steel**
 Sway eliminators—*torsional, lateral, none* **None**
 If leaf—
 Length Width
 Number of leaves—**5-passenger, 4-door sedan**
 If coil—
 Free length **19-7/8"**
 Length ~~under normal load~~ **10-7/8" at normal load**
 Rate for above **158 at wheel** pounds per inch
 Spring leaves lubricated with
 Spring cover make
 Spring shackles—
 Front—Type Make
 Rear—Type Make
 Spring bolts—
 Type
 Shock absorbers—
 Make **Delco**
 Type—*one way, two way* **2-WAY**
 Fluid capacity

STEERING

Steering gear—
 Type **Worm and Double Roller**
 Make **Saginaw** Model **Series 90**
 Ratio **22 to 1**
 Drag link longitudinal or transverse **Longitudinal**
 Tie rod—*one or two* **2**
 Is intermediate steering arm used **Yes**
 Number of turns of steering wheel for full left
 to right swing of wheels **5-1/4**
 Car turning radius—*feet—right, left or both*
 Caster—*degrees* **7/8 ± 3/8 Rev. to**
 Camber—*degrees or 1/4 Rev. to* **Co. 1 Rev. to**

STEERING (Cont'd)

Toe-in—*inches* **0** to **1/16**
 Crosswise inclination of kingpin—*degrees* **4 to 5**
 Front axle—
 Make Model
 Section type—*L-beams, tubular or none*
 End type—*Elliot or reverse Elliot*
 Minimum road clearance—*tires inflated*

BRAKES

Foot brake—
 Make **Own**
 Type of mechanism, *hydraulic or mechanical* **Hydraulic**
 If vacuum booster is standard, state make
 Brake lining moulded, semi-moulded or woven **Woven on primary**
 Drum—**Moulded on secondary**
 Material **Cast Iron** Diameter **14"**
 Lining—
 Length per wheel **26-13/16"**
 Width **2"** Thickness **1/4"**
 Clearance—*for* **0.10"** *foot* **0.10"**
 Total foot braking area **214.6 Sq. In.**
 Percent braking power on rear wheels **47.4**
 Hand brake location **Under Instrument Panel (Left Side)**
 Hand lever operates on—*transmission, separate*
rear brakes, rear service brakes or all
four service brakes **Rear Service**
 Hand brake—
 Internal or external **Internal**
 Drum diameter **12"**
 Lining—
 Length per drum **Same as Rear Service**
 Width **Same as Rear Service**
 Thickness **Same as Rear Service**
 Clearance **Same as Rear Service**

FRAME

Frame—
 Make **A.O. Smith**
 Type **Double Drop**
 Depth—*maximum* **9"**
 Thickness—*maximum* **1/8"**
 Flange width—*maximum* **2-1/4"**
 Wheelbase **140"**
 Tread—
 Front **59-7/16"**
 Rear **62-1/2"**
 Weight of standard **5-passenger, 4-door sedan**—
 Shipping **4575 Lbs.**
 Per cent on front axle **51**
 Curb **4725 Lbs.**
 Price of standard **5-passenger, 4-door sedan** **\$2074.00**
 First serial number, this series **Flint 13588547**
 Serial number location **Right side on top of frame—**
 by-dash
 Overall length of car—
 With bumpers and bumper guards **225-3/32"**

Make of Car **BUICK** Model... **1939 SERIES 90** Date .. **OCTOBER 14, 1939**

NOTE—In giving bearing dimensions, kindly use the following order: inside diameter, outside diameter and width. Where cup and cone bearings are used, give both cup and cone numbers.

BEARINGS

Water Pump & Fan Bearing

Make or type **New Departure**
 Size or number **954208**

Fan bearing—

Make or type
 Size or number

Starting motor commutator end bearing—

Make or type **Cast Iron**
 Size or number **.5630" x 15/16"**

Starting motor drive end bearing—

Make or type **Oillasa Bushing**
 Size or number **.5630" x .6250" x 3/4"**

Starting motor middle bearing—

Make or type **Oillasa Bushing**
 Size or number **.7575" x .8120" x 23/32"**

Generator commutator end bearing—

Make or type **Bushing**
 Size or number **.5625" x .7835" x 51/64"**

Generator drive end bearing—

Make or type **New Departure**
 Size or number **903203**

Super-charger—

Make or type
 Size or number

Clutch throwout bearing—

Make or type **N.D. (Angular Contact)**
 Size or number **954231**

Clutch pilot bearing—

Make or type **Hyatt**
 Size or number **142655**

Transmission pocket or spigot bearing—

Make or type **Roller-14 reamed**
 Size or number **1294760**

Transmission reverse idler bearing—

Make or type **Bushing**
 Size or number **553119 (.647" x .987" x 1")**

Transmission main shaft front bearing—

Make or type **New Departure**
 Size or number **954144**

Transmission main shaft rear bearing—

Make or type **New Departure**
 Size or number **954120**

Transmission countershaft front bearing—

Make or type **Roller-26 Required**
 Size or number **1298445**

Transmission countershaft rear bearing—

Make or type **Roller-26 Required**
 Size or number **1298446**

Overdrive shaft rear bearing—

Make or type
 Size or number

Overdrive shaft front bearing—

Make or type
 Size or number

Main shaft extension bearing—

Make or type
 Size or number

Rear axle pinion shaft front bearing—

Make or type **New Departure**
 Size or number **905307**

Rear axle pinion shaft rear bearing—

Make or type **Hyatt**
 Size or number **126047**

Differential right bearing—

Make or type **Hyatt**
 Size or number **149323**

Differential left bearing—

Make or type **Hyatt**
 Size or number **149323**

Rear wheel bearing—

Make or type **Hyatt**
 Size or number **125686**

Rear wheel outer bearing—

Make or type
 Size or number

Front wheel inner bearing—

Make or type **New Departure**
 Size or number **909028 (Cup 909028; Cone 909528)**

Front wheel outer bearing—

Make or type **New Departure**
 Size or number **909027 (Cup 909527; Cone 909527)**

Kingpin upper bearing—

Make or type **Split Bushing**
 Size or number **1289176 (1.0635" x 1.1610" x 1-1/2")**

Kingpin lower bearing—

Make or type **Split Bushing**
 Size or number **1289176 (1.10635" x 1.1610" x 1-1/2")**

Kingpin thrust bearing—

Make or type **Nico**
 Size or number **1289123**

Front spring—

Bolt—
 Bushing size
 Bushing type

Shackles—
 Upper end
 Lower end

Rear spring—

Bolt—
 Bushing size
 Bushing type

Shackles—
 Upper end
 Lower end

