

Automobile Manufacturers Association

Consolidated Specification Questionnaire

For 1939 Models

Mechanical Details

Make of Car **BUICK** Model **1939 SERIES 40 - SPECIAL**

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 **3-5/32"** Stroke **4-1/8"**

Engine—make and model **Own - Series 40**

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

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

Piston displacement **249 cu. in.**

Taxable horsepower **30.65**

Maximum brake horsepower at R.P.M. **107 @ 3400**

Maximum torque (lbs.-ft.) at R.P.M. **203 @ 2000**

Revolutions per mile with standard rear axle and tires. **3200 @ 50 MPH**

Compression Ratio—
Standard **6.1 to 1** Optional **None**

Standard compression pressure—pounds—
At what R.P.M. **126 @ 1000**

At cranking speed **112**

PISTONS and RINGS

Piston
Make **Own**

Material **Al. Alloy**

Features—split skirt, inner strut, oval, tin-plated, aluminum oxide finish, auto-thermic, V-Bridges, etc. *

Weight—ounces—without rings, pin or bushing. **14-1/4**

Length **4-9/32"**

Clearance—
Top **Lead .023"** to **.030"**

Bottom **Top of Skirt** **.0018" to .0024"**

Piston ring groove depth—
Oil **.164"** Compression **.148"**

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 **.140"**

Maximum wall thickness of compression rings **.140"**

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

RODS and PINS

Wristpin—
Length **2-11/16"** Diameter **.8127"**

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 **7-5/8"**

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

Weight—ounces **30-3/4**

Crankpin journal—
Diameter **2"** Length **1.212"**

Lower bearing—
Material **Babbitt**

Make **Own**

Clearance **.0008"** to **.0016"**

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

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

Spun or separate **Centrifugally Cast**

Rods and pistons removed from above or below **Above**

CRANKSHAFT

Vibration dampener used—yes or no **Yes**

Type **Laminated steel flywheel supported on steel rear 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 **2-5/16" x 1-17/64"**

No. 2 **2-3/8" x 15/16"**

No. 3 **2-7/16" x 1-5/8"**

No. 4 **2-1/2" x 15/16"**

No. 5 **2-9/16" x 1-25/32"**

No. 6

No. 7

No. 8

No. 9

Crankshaft gear—
Make **Own**

Material **C.D.S. 112**

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CAMSHAFT

Camshaft gear—
 Make **Ova**
 Material **C.I. -13-M**
 Timing chain—
 Make **Link Belt**
 Number of links **49**
 Width **1"**
 Pitch **.500**
 Adjustment—**none, automatic or manual** **None**

VALVES

INTAKE VALVE—

Make **Thompson or Rich**
 Overall length **5.1"**
 Head—
 Material **3140 or 1050**
 Actual overall diameter **1-17/32"**
 Angle of seat **45 Degrees**
 Stem—
 Diameter **.3720"**
 End style **Split Collar**
 Stem to guide clearance **.0015"** to **.0035"**
 Lift **.349"**
 Spring pressure and length—
 Outer—
 With valve closed **28-1/2 to 31-1/2 Lbs. 1-15**
 With valve open **67 to 73 Lbs. - 1-19/32"**
 Out of engine **2-5/16"**
 Inner—
 With valve closed **18-1/8 to 20-1/2# 1-21/32"**
 With valve open **45 to 51 Lbs. - 1-5/16"**
 Out of engine **1-7/8"**

EXHAUST VALVE—

Make **Thompson or Rich**
 Overall length **5.1"**
 Head—
 Material **2112 for Rich & IB for Thompson**
 Actual overall diameter **1-11/32"**
 Angle of seat **45 Degrees**
 Is valve seat an insert **NO**
 Stem—
 Diameter **.3715"**
 End style **Split Collar**
 Stem to guide clearance **.0021"** to **.0039"**
 Lift **.342"**
 Spring pressure and length—
 With valve closed **Same as for Intake**
 With valve open **Same as for Intake**
 Out of engine **Same as for Intake**
 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 **13** **degrees BUDC piston travel**
 Intake closes **68** " **ALDC** " "
 Exhaust opens **55** " **BLDC** " "
 Exhaust closes **22** " **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 Screen Inlet)**
 Oil grade recommended—**SAE viscosity and temperature range**—
 Not Lower Than **32°F. 20W. or SAE-20**
 As Low as Plus **10°F. 20-W**
 As Low as Minus **10°F. 10-W**
 Below Minus **10°F. 10W Plus 10% Kerosene**
 Normal oil pressure—**lbs. at N.P.H.** **45 at 35**
 Pressure at which relief valve opens **45**
 Capacity of oil reservoir—**quarts, dry** **7** **refill 6**
 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

Gasoline tank—**capacity** **16 Gallons**
 Fuel feed—
 Type—**vacuum tank, electric pump, vacuum pump or camshaft pump** **Camshaft Pump**
 Make **A.C.** Model
 Carburetor—
 Make **Carter** Model **W.D.C.**
 Size **1"**
 Type—
 Up or down draft **Down** Single or dual **Dual**
 Supercharger—
 Make **None** Type
 How driven
 Intake manifold heat control—**manual, automatic or none** **Automatic**
 Automatic choke make **Carter**
 Air cleaner—intake silencer make **A.C.**
 Exhaust pipe diameter **2"**
 Muffler make **Walker**

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LAMPS

Lighting switch make **Delco-Remy**
 Are tail and dash lights in series **No**
 Headlight—
 Make **Guide**
 Parking ~~lights~~ light make **In Headlamp**
 Tell and stop light make **Guide**
 Horn—
 Type—vibrator or motor **Vibrator**
 Make **Delco-Remy**
 No. used **2**
 Ampere draw of each **High 15 to 17, Low 16 to 18**

CLUTCH

Make **Own (Make of Disc-Borg and Beck)**
 Semi-centrifugal **No**
 Power operated unit—make **None**
 Vibration insulation or neutralizer—
fabric, rubber blocks or springs **Springs**
 No. of clutch driving discs **One and Flywheel**
 No. of clutch driven discs **1**
 Clutch facing—
 Material—woven or moulded asbestos, cork **Woven**
 Inside diameter **9"**
 Outside diameter **10"**
 Thickness **1/8"**
 No. required **2**

TRANSMISSION

Transmission—
 Make **Own** Model **Series 40**
 No. of forward speeds **3**
 Shift lever location—dash, steering column, floor **Steer. Column**
 Automatic or auxiliary shifting mechanism—
 Make **None**
 Type—centrifugal, vacuum, electric or hydraulic
 Automatic overdrive—
 Make **None**
 Oil capacity—pints
 Oil grade recommended—S.A.E. viscosity
 Summer Winter
 Gear ratio in high—standard 5-passenger
 4-door sedan **4.444 to 1 or 3.900 to 1**
 Transmission ratio—
 In overdrive
 In low **2.67 to 1** In second **1.66 to 1**
 In reverse **3.02 to 1**
 Constant mesh gears on second **Yes**
 Spur or helical gears—
 For second speed **Helical**
 For first speed **Helical**
 For reverse speed **Helical**
 Synchronous meshing second and third gears **Yes**

TRANSMISSION (Cont'd)

Transmission oil—
 Capacity—pints **1-3/4**
 Grade recommended—S.A.E. viscosity
 Summer **90 E.P.** Winter **90 E.P.**
 Universal joints—
 Make **Mechanics Universal Joint Company**
 Number used **1**
 Type—fabric, rubber, metal with anti-friction
 bearing or metal with plain bearing **Metal with anti-**
 Lubricated with **Lubricated Metal with anti-**
for life **for life Friction Eng.**
 Type of propeller shaft **Tubular**
 Drive taken through springs, torque arm, torque tube or
 radius rods **Torque Tube**
 Torque taken through springs, torque arm, torque
 tube or radius rods **Torque Tube**

REAR AXLE

Rear axle—
 Make **Own** Model **Series 40**
 Type—semi, full or three-quarter floating **Semi-Floating**
 Minimum road clearance under center of rear
 axle—tires inflated **7-11/16"**
 Rear axle oil—
 Capacity—pints **3**
 Grade and type recommended—S.A.E. viscosity
 Summer **90 Hypoid E.P.** Winter **90 Hypoid E.P.**
 Type of gearing—spiral bevel, worm, hypoid **Hypoid**
 Gear ratio—standard 5-passenger 4-door sedan **4.444 to 1**
 Optional gear ratios **3.900 to 1**
 Number of teeth—
 In ring gear **Reg. 40; Opt. 39** in pinion **Reg. 9; Opt. 10**
 How is pinion adjusted—screw or shims **Shims**
 How is pinion bearing adjusted—screw or shims **None**
 Are pinion bearings in sleeve **No**
 Backlash between pinion and ring gear **.008" to .010"**
 Are pinion bearings preloaded **Yes**
 How is pinion bearing preload obtained **At Manufacturing**
 Are differential bearings preloaded **Yes**
 How is differential bearing preload obtained **Screw**

TIRES and WHEELS

Tires—
 Make **U.S. Firestone and Goodyear**
 Size **16"x6.50"** No. of plies **4**
 Inflation pressure—Front **33# Cold** Rear **33# Cold**
25# Hot **25# Hot**
 Rim—Diameter **16** Width **5.00"**
 Axle clearance for jack—tires inflated
 Front Rear
 Wheels—
 Type **Demountable Steel Disc**
 Make **Motor Wheel**

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SPRINGS

FRONT SPRING—

Independent or conventional suspension **Independent Coil**
 Type—coil, semi-elliptic or transverse
 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 **14-5/8"**
 Length ~~under load~~ **9-1/2" at Normal Load**
 Rate for above **96 at Wheel** pounds per inch

Shackled front or rear
 Anti-shock shackle location

REAR SPRING—

Independent or conventional suspension **Coil Sprg. Susp.**
 Type—coil, semi-elliptic or transverse **Coil**
 Make **Own**
 Material **Steel 9260**
 Sway eliminators—torsional, lateral, none **None**

If leaf—

Length Width
 Number of leaves—5-passenger, 4-door sedan

If coil—

Free length **20-1/8"**
 Length ~~under load~~ **11-1/8" at Normal Load**
 Rate for above **129 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* **Two Way**
 Fluid capacity

STEERING

Steering gear—

Type **Worm and Double Roller**
 Make **Saginaw** Model **Series 40.**
 Ratio **19 to 1**

Drag link longitudinal or transverse **None**

Tie rod—one or two **2**

Is intermediate steering arm used **No**

Number of turns of steering wheel for full left to right swing of wheels. **4-1/2**

Car turning radius—*feet—right, left or both*

Caster—degrees **7/8 & 3/8 Reverse**

Camber—degrees **1/4 Reverse** to 1 Pos.

STEERING (Cont'd)

Toe-in—Inches **0** to **1/16**
 Crosswise inclination of kingpin—degrees **3-1/2 to 4-1/2**

Front axle—

Make Model
 Section type—*I-beams, tubular or none*
 End type—*Elliott or reverse Elliott*

Minimum road clearance—*tires inflated*

BRAKES

Foot brakes—

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 Moulded on Secondary**

Drum—
 Material **Centrifuse** Diameter **12"**

Lining—

Length per wheel **22-11/16"**
 Width **1-3/4"** Thickness **3/16"**

Clearance—*toe* **.010"** *heel* **.010"**

Total foot braking area **159.7 Sq. In.**

Percent braking power on rear wheels **47**

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 Thickness

Clearance **Same as Rear Service**

FRAME

Frame—

Make **Midland**
 Type **Double Drop**
 Depth—*maximum* **6"**

Thickness—*maximum* **7/8"**

Flange width—*maximum* **2-1/4"**

Wheelbase **120"**

Tread—

Front **58-7/32"**

Rear **52-5/32"**

Weight of standard 5-passenger, four-door sedan—

Shipping **3482 Lbs.**

Per cent on front axle **54**

Curb **3524 Lbs.**

Price of standard 5-passenger, 4-door sedan **\$294.00**

* First serial number, this series **Flint 13388547**

Serial number location **Right Side on Top of Frame By Dash.**

Overall length of car— **203-5/32"**

With bumpers and bumper guards
 *California - 23395088
 Linden - 33405088

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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 31/32"**

Starting motor drive end bearing—

Make or type **Oiless Bushing**
Size or number **5000" x .5620" x .25/32"**

Starting motor outboard bearing—

Make or type
Size or number

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 **954222**

Clutch pilot bearing—

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

Transmission pocket or splgt bearing—

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

Transmission reverse idler bearing—

Make or type **Split Bushing**
Size or number **1307898 (.850" x .987" x 3/4")**

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 **903206**

Transmission countershaft front bearing—

Make or type **Split Bushing**
Size or number **1307794 (.8675" x 1.000" x 1-1/4")**

Transmission countershaft rear bearing—

Make or type **Split Bushing**
Size or number **1307794 (.8675" x 1.000" x 1-1/4")**

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 **905606**

Rear axle pinion shaft rear bearing—

Make or type **Hyatt**
Size or number **125630**

Differential right bearing—

Make or type **Hyatt**
Size or number **149520**

Differential left bearing—

Make or type **Hyatt**
Size or number **149520**

Rear wheel bearing—

Make or type **Hyatt**
Size or number **111121**

Rear wheel outer bearing—

Make or type
Size or number

Front wheel inner bearing—

Make or type **New Departure**
Size or number **909042 (Cup-909602; Cone-909542)**

Front wheel outer bearing—

Make or type **New Departure**
Size or number **909001 (Cup-909601; Cone-909501)**

Kingpin upper bearing—

Make or type **Split Bushing**
Size or number **1266949 (.863" x .987" x 1-1/4")**

Kingpin lower bearing—

Make or type **Split Bushing**
Size or number **1266949 (.863" x .987" x 1-1/4")**

Kingpin thrust bearing—

Make or type **Nice or Hoover**
Size or number **134630 or 148393**

Front spring—

Bolt—
Bushing size

Bushing type

Shackles—
Upper end

Lower end

Rear spring—

Bolt—
Bushing size

Bushing type

Shackles—
Upper end

Lower end