# GS400 STAGE 1 AND STAGE 2

## STAGE 1

### A Factory-Installed Performance Option!

This GS 400 option will be identified with a Stage 1 nameplate located on the hood. A high-speed valve train will improve performance! It provides valve train dynamics necessary for higher-speed operation:

- A high lift camshaft that lifts the valves higher, providing a greater flow of air on intake stroke and reduces valve restrictions on exhaust stroke
- A heavy-duty valve spring to prevent valve float at higher rpm
- Tubular push rods and a 60 psi oil pump regulation spring to provide higher-speed lubrication

The TH 400 is modified for higher shift speeds and firmer shift engagement. The transmission is equipped with a 5200 rpm governor.

Stage 1 exhaust system includes Wildcat mufflers and 2¼ inch tail pipes. A heavy-duty cooling system is included.

Stage 1 option includes a positive traction rear axle with a 3.64 to 1 ratio to deliver the performance to the road.

## STAGE 2

### A Performance Package Available From Buick Parts Department

Note: GS 400's equipped with Stage 2 are not recommended for street use or when an engine is equipped with mufflers. This is an off-the-road package only!

#### I. Valve Train Package

| Part Name | Group | Part No. |
|---|---|---|
| Camshaft—Stage 2 | 0.519 | 1385557 |
| Push Rod | 0.426 | 1383852 |
| Valve Spring and Damper Assembly | 0.303 | 1383851 |
| Spring—Oil Pump | 1.609 | 1383854 |

#### II. Piston and Pin Assemblies

These pistons are 11.0:1 compression ratio forged aluminum and are fitted with special chrome pins. Engines equipped with these pistons will require super premium fuel. Part numbers are as follows:

| Part Name | Group | Part No. |
|---|---|---|
| Piston and Pin Assembly 400 Cubic Inch | 0.629 | 1394179 |
| Piston and Pin Assembly 430 Cubic Inch | 0.629 | 1394180 |

Recommended running clearance of these pistons should be .006 to .010. If extended wide open throttle is contemplated, the clearance should be increased to .008 to .012. Piston noise will be evident.

NOTE: *When assembling piston to the rods, do not cold press special chrome pins in rods. Install by heating the small end of the rod to approximately 450 degrees.*

#### III. Intake Manifold Gasket-Group 3.270, Part No. 1383831

This gasket provides blocked heat holes resulting in cooler fuel air mixtures in the intake manifold.

#### IV. Connecting Rod Bearings

These special bearings are designed for high rpm operation. .001 *oversize* bearings are available to increase rod bearing clearance to recommend limits without the necessity of regrinding crankshafts.

NOTE: Do not confuse these with normal undersize bearings which reduce rod bearing clearance.

Recommended running clearance for connecting rod bearings is .002 to .0025. These bearings can cause clatter noise during cold starting.

| Part Name | Group | Part No. |
|---|---|---|
| Connecting Rod Bearings, Standard | 0.616 | 5468714 |
| Connecting Rod Bearings, .001 *oversize* | 0.616 | 5468713 |

#### V. Main Bearings

Recommended running clearance for main bearings is .0011 to .0015 *MAXIMUM*. A minimum of 60 psi oil pressure is required at high rpm. Full groove main bearings for extreme high rpm are as follows. Use in No. 2, 3 thrust and 4 lower locations only. Use undersize main bearings as necessary. These bearings are specific for high rpm operation and are not recommended for use with 10W or 10W 30 oil at high engine temperatures. Increase oil viscosity as necessary to maintain oil pressure under engine operating conditions.

| Part Name | Group | Part No. |
|---|---|---|
| No. 2, 4 Main Std. | 0.096 | 5469067 |
| No. 2, 4 Main .001 U.S. | 0.096 | 5469066 |
| No. 2, 4 Main .002 U.S. | 0.096 | 5469065 |
| No. 3 Thrust Std. | 0.101 | 5469064 |
| No. 3 Thrust .001 U.S. | 0.101 | 5469063 |
| No. 3 Thrust .002 U.S. | 0.101 | 5469062 |

#### VI. Metering Rods (Secondary), Group 3.802, Part No. 7034822

These metering rods provide six percent richer mixture at full throttle.

#### VII. Piston Rings

These rings are low tension—low friction rings and are usable with the standard production or optional forged piston. Part numbers for piston ring sets are as follows:

| Part Name | Group | Part No. |
|---|---|---|
| Piston Rings, 400 Cubic Inch Engine | 0.643 | 1394202 |
| Piston Rings, 430 Cubic Inch Engine | 0.643 | 1394203 |

#### VIII. General Information

**Spark Plugs**—40 TS or 42 TS heat range is recommended for extensive full throttle operation.

NOTE: These plugs are available through AC Spark Plug or United Motor Service Outlet.

**Oil Level**—The oil level in the crankcase should be lowered to the "1 quart low" level to prevent oil foaming at high engine rpm.

**Use of Exhaust Headers**—Recommended 2¼" diameter individual pipes with length range of 36 to 40 inches where applicable.

**Fuel Pressure**—Maintain a minimum of 4½ psi at the carburetor.

**Transmission**—To obtain shift points of approximately 5,500 rpm, the transmission secondary governor weights may be modified by removing .150 from the weights.