



Race-1 602 Tear Down Procedure

This is an inspection of the engine as from GM.

1. Remove seal for each component only as the component is ready for removal.
2. Remove valve covers and inspect breather boxes.
3. Remove a pair of rocker arms and inspect.
4. Remove two push rods and inspect.
5. Remove intake seals and then intake manifold.
6. Inspect gasket should be GM 602 plastic unless otherwise noted in repair notes.
7. Inspect intake manifold for any port work. GM does do some deburring and radiusing of edges and flanges.
8. Remove 2 lifters and disassemble.
9. Remove cylinder head seal and remove head.
10. Inspect bolts and gasket to be GM 602.
11. Clean head surface and check cylinder volume to be no less than 60CC. If the first cylinder checked is below 60CC the remainder of cylinders must be checked, and an average be taken to determine legality.
12. Check the intake runner volume to be no more than 172CC. If the first runner checked is over 172CC the remainder of runners must be checked and an average taken to determine legality.
13. Inspect all chambers and runners for performance porting or enhancements.
NOTE, there is no spec volume for the exhaust runner. Visual inspection is the only tech.
14. Remove valve springs and test per track, series and/or GM spec pertaining to the application.
15. Check that keepers and retainers also match track, series and/or GM spec pertaining to the application.
16. Check Installed height and that it matches track, series and/or GM spec of 1.700.
NOTE, if no shims are present and all components are deemed legal the installed height can in many instances be short and that is from factory.
17. Remove intake valve and inspect that it 1.940 and GM 602.
18. Inspect intake valve seats and bowl area to be GM 602.
19. Remove exhaust valve and inspect that it is 1.500 and GM 602.
20. Inspect valve seats and bowl area to be GM 602.
21. Inspect harmonic balancer to be GM 602 (there are 2 available).
22. Install degree wheel.

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23. Check intake duration to be 212* at .050 +or- 5*.
24. Check intake lift to be .290 lobe +or- .010.
25. Check intake opening to be .035 to .045 at TDC (new style).
26. Check intake opening to be .025 to .035 at TDC (old style).
27. Check exhaust duration to be 222 at .050 +or- 5*.
28. Check exhaust lift to be .307 lobe +or- .010.
29. Check exhaust closing to be .035 to .045 at TDC.
30. Remove oil pan seal.
31. Remove oil pan.
32. Inspect pan for legality per track, series and/or GM rules. Inspect oil pump to be M155 with stock spring and standard gears.
33. Check piston in the hole dimension to be no less than .025" in the hole as an average between front and rear of the piston at TDC. If the average dimension is less than .025 complete disassembly will be required to check average deck height at a minimum of 9.019 from crankshaft centerline to deck surface per the GM rule book.
34. Check bore size to be a maximum of 4.008.
35. Check stroke to be at a maximum 3.485.
36. If bearings are oversized .010 is all that is permitted and if the crank has been ground the maximum stroke permitted is 3.480.
37. Main caps are to be stock GM602 along with bolts.
38. There are two versions of connecting rods, and both are acceptable—but must have stock bolts and have NO grinding for balance or loss of weight.
39. There are many versions of the 602 crankshaft but none of them will have an aftermarket insignia or any type of welding or weight added. Refer to engine builder library if you have any suspicions.
40. Remove timing cover seal and then timing cover. This should be a chrome GM cover.
41. There are two versions of the 602 timing gear sets. Refer to examples from GM to determine legality. Inspect dowel pins and key ways for modification.
42. Remove camshaft and check the base circle dimension at .633 intake and .616 exhaust +or- .010.
43. The GM "yellow" manual will be referred to during the tear down inspection and there will be examples of known legal components on hand such as connecting rods, pistons, piston rings, gaskets, harmonic balancers, lifters, and valves to make comparison.