Montana 500 Tear-down Manual

October 5th 2014

Changes from previous teardown manual are in italics.

The purpose of the post-run tear-down is to ascertain that the top T's have complied with the rules. If there is non-compliance, the inspectors must then decide (usually by a vote of the inspectors) if the issue of non-compliance rises to the level that would call for a penalty. Generally if the inspectors feel that an issue of non-compliance causes a significant or unfair speed or endurance advantage, it should be put to a vote of the drivers. The drivers may vote to enforce a penalty, up to and including disqualification of the car and driver (unless another penalty is stated in the rules) or, allow the item of contention to stand with stipulation (such as
"don't bring it back next year"), or allow the item without qualification. Drivers are not required to vote, but the inspectors are. The inspectors should pick a "lead inspector" to be the group's spokesman and help direct the inspectors. Any driver may refuse a post-run inspection or to be an inspector. This would be cause for automatic disqualification.
The run begins with a "courtesy" inspection of the cars. This inspection is designed to find issues of non-compliance so that the drivers may make changes to become in compliance. However, even if something was deemed in compliance at the start, it does not mean that it cannot be declared out of compliance at the end, although it might mitigate the situation.
The following list is broken into three levels. Each level increases the severity of the invasion of the car. Level One tests should be performed before Level Two, and Level Two tests before Level Three. The top car may be subject to closer scrutiny than the second or third car, at the discretion of the inspectors. The inspectors may choose to forgo higher level operations, although they are free to perform all allowed operations. *The top car will be torn down. If it is disqualified, the next car will be torn down until a qualified car is found.* At this time, removal of any piston is not allowed, although the rod cap may be removed, and the piston may be slid in the bore, so long as no rings leave the bore. As per rule E9, the inspectors will ask the the drivers present at the tear down if there is anything the drivers would like reviewed on any of the top three cars. The drivers present will then decide by majority vote on any additional items for the inspection team to look at.

Level One:

1. Ascertain that the fenders are metal and the correct year for the body.
2. Gas tank must be in original location.
3. Check lead seals to make sure that they have not been broken nor tampered with.
4. Check to see that windshield is sealed and in compliance.
5. Check for substantial pickup box or turtle deck.
6. Fuel line size must not exceed 3/8"
7. Check tailpipe for at least 36" of 1-1/2" pipe.
8. Check timer for correct type.
9. Remove and check carburetor. Use venturi gauge and throat gauge.
   (see picture 2.)
10. Check rear end ratio. Using the valve stem or some other mark on the tire, crank the engine with the hand-crank, with the car in high gear. Note how many turns of the crank are required to turn the tire exactly one revolution. The correct number is 3-7/11 (3.63) turns of the starting crank. Incorrect numbers could be exactly 4 turns, or exactly 3 turns.
11. Check coils for allowed type. Must be non-electronic with magnetic contact points.
12. Check ignition switch. Must be original type.
13. Check for any other visibly out-of-specification parts.
14. Remove transmission cover. With a mirror, check for shaved flywheel or missing magnets.
15. Check rear end for non-original type bearings. The outer zerks or grease cups can be removed and a pick placed into the hole. You should be able to see the rollers. A bore scope can be threaded into the oil filler hole and up over the axle to see if the pinion bearing is of the proper kind.
16. Check to see if Ruckstell is locked into high, if so equipped.
17. Check for absence of auxiliary brakes.
18. Check for proper front and rear spring complement. There must be seven leaves, all different sizes from long on the bottom to short on top.
19. Check for absence of accessory pan arms.
20. Check for absence of steering dampener.
21. Check to see that the battery used for ignition does not exceed six volts.
22. Check that spray needle exceeds .110" with no go gauge.

Level Two:

1. Remove and CC cylinder head. One combustion chamber must be untampered with. The other three may be ground out to match the standard chamber. Remove a spark plug. Invert the head and place it on the stand. Fill spark plug hole level full of modeling clay. Place a thin layer of grease around combustion chamber and place Plexiglas cover onto this. Fill the bottle with water. The bottle holds 265 CC's when filled to the brim. Pour this water carefully into the combustion chamber through the hole in the Plexiglas cover. The combustion chamber must hold 265 CC's of water, plus five more (from a syringe), for a total of 270 CC's.
2. Check cylinder bore with no-go gauge.
3. Remove manifolds and check manifold ports. Use no-go side of port gauge. (see picture 1.) Either the gland ring or manifold port must not pass the gauge.
4. Look for grinding or polishing of the ports.
5. Remove lower oil pan and check for modifications to the inside oiling system.
6. Check to make sure at least one rod and piston assembly is unmodified.
7. Check for notches in the cam bearing bores that would allow oversized lobes.
8. Check the sweep of the piston. Should not exceed 4.030" Use 4″ standard supplied by club and dial indicator. (see ill.)
9. Piston should not protrude more than .400" above head gasket surface. Use depth gauge.
10. Check for non-counterweighted crankshaft.
11. Check valve head diameter. Must not exceed 1.500"

Level Three:

1. Remove rod cap and check size of crank. Must be between 1.208" and 1.250"
2. Remove a valve. Check stem size. Must be larger than 5/16" Check to see that seat bore is not relieved. Use seat bore no-go gauge
3. Tappet foot must not exceed 1.00"
4. Carefully push up piston of rod with removed cap. Do not allow top ring to come out of bore! Distance from top of top ring to top of piston is XXX A value higher than this would indicate pistons with an increased compression distance (Egge pistons, e.g.)
5. Check to make sure rod center to center distance is less than 7.030" (see rod length addendum).