

ITEM T81/04

SUBJECT: SYSTEMATIC PROCEDURE - WHEEL BALANCE

MODELS: ALL

INTRODUCTION

One of the most common customer complaints on any vehicle on the road, whether it be domestic or imported, is wheel balance problems which cause steering shake and an uncomfortable ride for the customer. For your information, we are providing in this bulletin a systematic approach to ensure that wheel balancing on all JRT products is completed properly and with a minimum of wasted time so that the net result is customer satisfaction.

IF NORMAL WHEEL BALANCING PROCEDURE FAILS TO CURE THE PROBLEM, THE FOLLOWING SPECIAL PROCEDURE SHOULD BE ADOPTED: ENSURE THAT THE PROCEDURE BELOW IS FOLLOWED, STEP AT A TIME.

PROCEDURE

Preparation

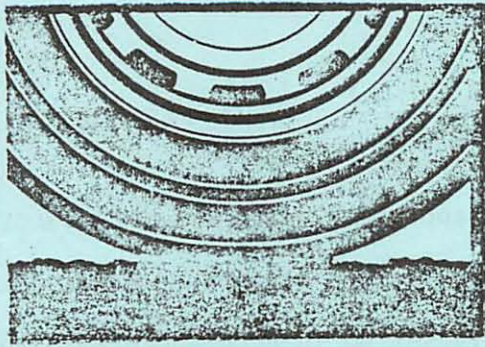
When a customer complains of a vibration problem, the vehicle should first be inspected prior to road test. All tire pressures should be checked to ensure they are within manufacturer's specifications. The outside surfaces of all four tires should be checked to ensure there are no bulges, distortion, or cuts due to road hazards, etc. A preliminary check should also be made to ensure that the front wheel bearings are correctly adjusted. Once this static check has been completed, the car should be driven for approximately 5-10 miles in order to bring the tires up to normal running temperature. On a good flat road surface, the car should then be checked for vibration at the problem speed indicated by the owner. Once the vibration is picked up, the vehicle should be put into neutral and allowed to coast at the critical speed. If the vibration disappears when coasting in neutral, there is a good indication that the vibration lies with mechanical components such as driveshafts, etc., when an out of balance shaft condition may be the cause. If the vibration is apparent when driving and when coasting, it is most likely that a wheel or tire problem exists.

Rectification

The car should be brought into the shop and immediately put on a hoist to lift all wheels off the ground. Using a stand and dial gauge arrangement, each wheel and tire assembly should be measured on the car and a check made for run-out of the wheel/tire assembly. Check to ensure that the tire fitting line is concentric with the wheel rim on both sides of the tire, thereby ensuring that the tire is properly seated on the rim (see Diagram A). Listed in Diagram B is a table showing acceptable wheel/tire run-outs. At this stage, with the tires still mounted on the wheels, it will only be possible to check dimensions "a" and "b". If this check indicates true running, it is then possible to immediately proceed with the re-balancing procedure. However, if there is run-out in excess of the figures listed in the table, then the wheel and tire assembly must be removed from the car. Prior to removing the wheel and tire assembly the tire high point should be chalk marked on the tire sidewall. The tire should then be disassembled from the wheel and the wheel put back on the vehicle hub and re-checked for run-out as indicated in the table. As this point, dimensions "c" and "d" can be checked. If the wheel exceeds run-out specifications, either radially or laterally, the wheel should be replaced. When fitting a new wheel, it should be checked for run-out and the low spot on the wheel rim marked. When the tire is re-mounted to the wheel, the low spot on the wheel should be located coincident with the high spot already marked on the tire. If when the new assembly is mounted and again checked for run-out and the run-out exceeds the figures listed in the table, then it will be necessary to put the wheel and tire assembly on a truing machine. If the assembly is within specification then proceed immediately with normal wheel balancing.

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DIAGRAM A



Be sure that the tire fitting lines are parallel (concentric) to the outer wheel rim as shown in diagram. Check both sides of tire.

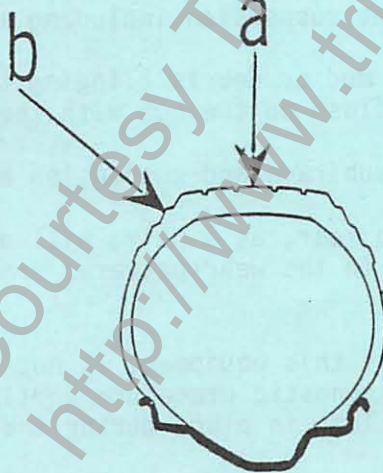
DIAGRAM B

An accurate wheel touch gauge dial indicator should be used to check the radial and lateral run out of both tire and rim.

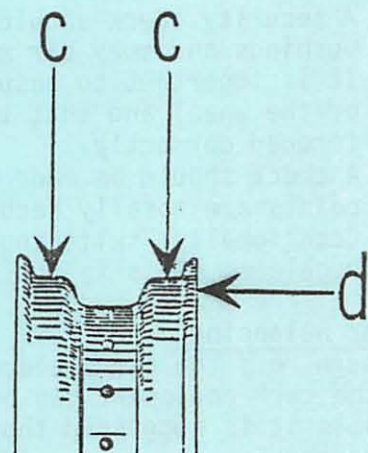
Maximum run out figures (see illustration)

- Tire at A .040" - radial run out
- Tire at B .060" - lateral run out
- Wheel at C .035" - radial run out (bead seat)
- Wheel at D .060" - lateral run out

WHEEL/TIRE ASSEMBLY



WHEEL



Balancing

The following points should be noted when using an approved "off the car" balancer.

1. Ensure the wheel/tire assembly is properly seated on the center hub cones of the balancer to ensure true running.
2. Make sure that the balancing machine is properly set up in accordance with the manufacturer's recommendations for rim size, rim diameter and rim width.
3. Balance in accordance with the manufacturer's instructions applying suitable weights to both sides of the wheel to ensure that a perfect balance condition is achieved.

After balancing, refit the assembly to the car and proceed in the same manner to balance remaining wheel/tires.

Truing

As described above, when a new wheel is fitted with the existing tire, matching the high tire to low wheel markings, and the run-out exceeds acceptable limits, tire truing is necessary. This method is an industry accepted procedure. Minimal cutting of the tire will not shorten tire life, since the true wheel and tire assembly will wear at a slower rate than one with run-out. Equipment manufacturer's guidelines should be used to carry out this exercise.

General Note

The above procedure should assist in ensuring correct wheel and tire balance. However, there are other items which may contribute to an out of balance condition even when the wheels and tires are properly balanced.

- (a) If the front hub bearings are set with excessive end float, this may cause balance problems.
- (b) A security check should be made on the front suspension including all rubber bushings and sway bar mounts.
- (c) It is important to ensure that there is no mud or debris clinging to the inside of the wheel and that the wheel is fitted flush on the hub with the wheel nuts torqued correctly.
- (d) A check should be made to ensure that the subframe and suspension attachment points are totally secure.
- (e) Occasionally, switching tires from front to rear, as a pair, will overcome balance problems. This is due to small variations in the wear pattern, front to rear.

On Car Balancing

Although "off the car" balancing is preferred, if this equipment is not available, "on the car" equipment can be used. The same diagnostic procedure applies. Wherever possible it is suggested that the wheel trim be left in place during the balancing procedure.