WHEELS AND TIRES

CAR TOOLS

Tools supplied with car consist of screwdriver, pliers, car jack and wheel wrench.

USE OF JACK

For Changing Wheels

1. Set hand brake and remove hub cap.
2. Place jack under rim flange with inner edge of jack base against tire. Jack up wheel, using longest side of stand base for correct height of tire to ground. See Fig. 10-1 for correct position.
3. With left hand, slide stand in back of center of wheel. In this position, handle should touch left side of jack. Pull stand toward wheel until guide strikes brake backing plate as shown in Fig. 10-2.
4. With slight pull on stand handle, lower jack until car is supported on stand. Remove jack and change wheel and tire.
5. Replace jack, raise car, remove stand, then lower jack.

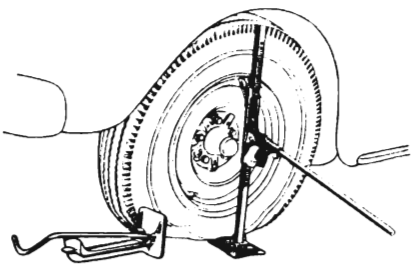

Fig. 10-1

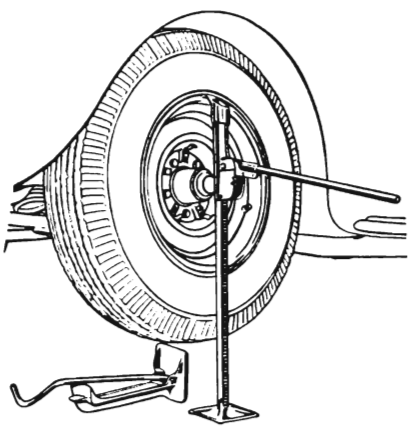

Fig. 10-2

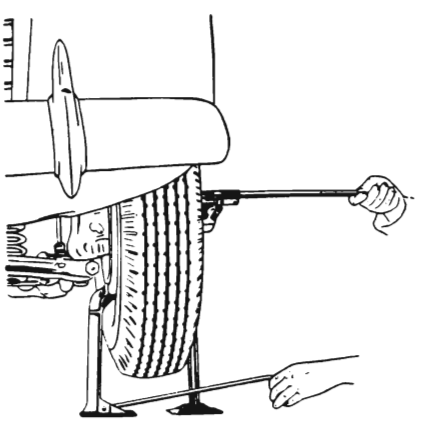

Fig. 10-3

WHEEL BEARINGS

Front Wheels

New Departure adjustable cup and cone bearing are used. See Fig. 10-5.

When inspecting or replacing front wheel bearings, it should be determined that inner race is free to revolve on steering knuckle.

Polishing steering knuckle and applying bearing lubricant will afford clearance and prevent rust forming between race and knuckle.

The bearing inner races are designed to creep on knuckles in order to afford a constantly changing load contact.

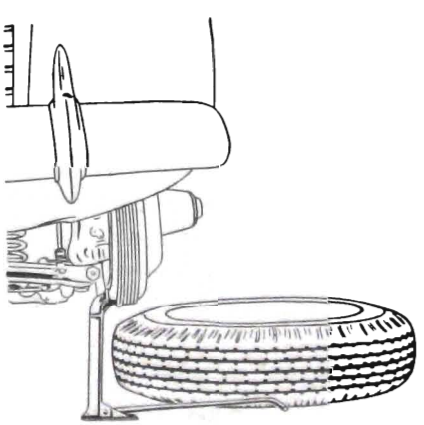

Fig. 10-4

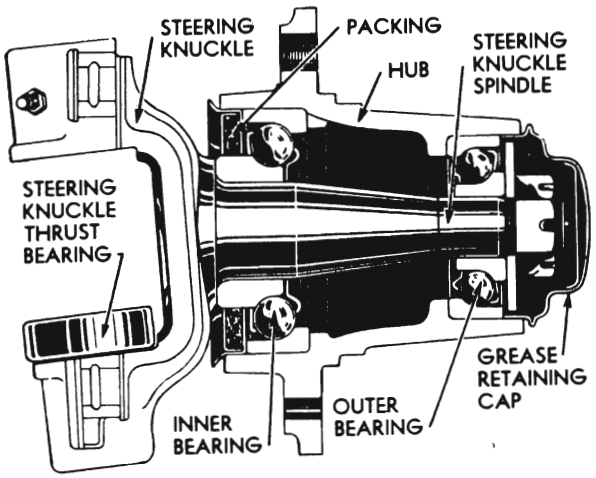

Fig. 10-5. Front Wheel Spindle Showing Bearings

Adjustment

Take up on spindle nut until all looseness in bearings is removed. **Do not mistake loose king bolt bushings for wheel bearing looseness.** Back off nut until a very slight shake can be felt, then tighten up the nut to the nearest cotter pin hole.

Bearings will have longer life with tight adjustment up to one-sixth of a turn tight than with any looseness. A check of this adjustment should be made each 5000 miles.

Rear Wheels

Hyatt heavy duty type roller bearings are used on all models.

DROP CENTER RIMS

The drop center rims are designed for the tire size used as standard equipment.

A taper tire bead seat allows the tire beads to wedge tight in place when inflated and a wide rim gives ample support for standard equipment tires.

TIRES

The tires on all models are low pressure balloon type, straight side, cord tires.

Spare wheels and tires are carried in trunk. All four-door sedan models have spare mounted upright on right side of compartment. All coupes and convertibles have spare mounted flat. Spare wheels will have hub cap to protect baggage carried in trunk.

IMPORTANT

All tires and tubes used as original factory equipment have been worked out with the tire manufacturer for stability. *This does not imply that other makes and types of tires and tubes are not suitable for Buick cars, but owing to the large number of tire and tube makes and designs it is impossible for ride and handling calibrations to be worked out for each one.*

Tires other than those used as standard equipment may cause wander. Larger tires will reduce clearance at fenders and be difficult to mount in spare carriers. Tires with more plys may cause hard riding. Some types of "puncture proof" tubes are difficult to balance and may cause "tramp."

Tire Pressures

Correct tire pressure is important. For best results in handling, riding and tire life, tires should be checked at least once a week.

Recommended Pressures

When car has been standing and tires are *cold:*

	Front	Rear	
All series	25 lbs.	25 lbs.	●

After driving, and tires are *warm:*

	Front	Rear	
All series	28 lbs.	28 lbs.	●

Smooth Tires

Tires which are worn smooth are more likely to skid on wet surfaces than tires with a normal anti-skid design. Water is a lubricant to rubber and there are no sharp edges and gutters in a smooth tire to scrape the water off and allow the tire to make a dry path in which to run.

In addition, smooth tires naturally are not as thick as new tires and therefore puncture more easily.

It is good practice to replace smooth tires with new tires as insurance against tire accidents.

Tread Wear

The life of a tire depends largely upon what it is called upon to do. A careful operator may obtain much more mileage from a set of tires than would be obtained by a severe driver.

Tires wear at a much faster rate in some localities than others. The amount of tread wear is dependent upon the type of driving and type of roads because some roads are much more abrasive than others. Wear is also dependent upon the number of hills and mountains which the car must go up and down, upon prevailing temperatures, the number and severity of the curves, the amount of rain and snow and upon the rate of acceleration, deceleration, speed at which the car is driven, and number of starts and stops. *Tire wear increases rapidly with both speed and temperature.* Tires used at low speeds or in cool climates will wear much longer than tires used for high speed in warm climates.

Uneven Wear

There are several reasons why tires wear more rapidly on one side of the tread than on the other or have uneven wear:

1. Excessive wheel camber causes the tires to run at too great an angle from the perpendicular resulting in side wear.
2. Side thrust when rounding turns causes wear on the sides of the treads. In making a turn to the left, especially at high speeds, the outside shoulder of the right tire and the inside shoulder of the left tire take most of the wear. When making a right-hand turn, the opposite shoulders of the tires are worn.
3. High cambered roads cause an increased wear on the side of the right front tire.
4. Under no circumstances should the pressure be allowed to drop below the minimum pressure recommended for the series car in question. Under inflation causes the tire wear to be excessive on each side of the tread center leaving the tread center high.

Toe-In or Toe-Out Misalignment Wear

When there is excessive toe-in or toe-out, tires will revolve with a side motion and scrape the tread rubber off. If the misalignment is severe, the rubber on both tires will be scraped off, but if the misalignment is slight or caused by a bent steering arm, the rubber on only one tire will be scuffed off.

The scraping action against the face of the tire causes a small feather edge of rubber to appear on one side of the tread design. This feather edge is the evidence of need for toe adjustment.

Interchanging of Tires

Uneven tire wear is frequently the cause of tire noises which are attributed to rear axle gears, bearing, etc., and many times work is done on rear axle assemblies in an endeavor to correct this noise. (See "Diagnosis of Rear Axle Noise" in Rear Axle section.)

To minimize the possibility of tire noise, it is recommended that tires and wheels be interchanged from right rear to left front, left rear to right front, right front to right rear and left front to left rear (see Fig. 10-6) **at regular**

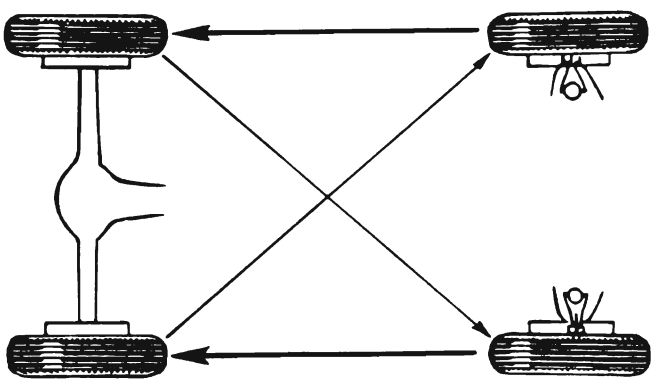

Fig. 10-6

intervals of approximately 5000 miles except in cases where special treads are used for front and rear tires. In cases of this kind change right front with left front and right rear with left rear. This will effectively even up wear which is caused by the different conditions under which front and rear tires operate.

Correction of Irregular Tire Wear

Irregular tire wear is usually due to incorrect pressure, improper front wheel toe or front suspension alignment, or to the different conditions under which front and rear tires operate as outlined under "Heel and Toe Wear." The remedy is naturally to correct the condition causing the wear. However, after the adjustments have been made, it is wise to interchange the tires and allow the future mileage to equalize the tire wear.

Heel and Toe Wear

Heel and toe wear is a saw-tooth effect with one end of each tread block worn more than the other. The end which wears is that which first grips the road when the brakes are applied. High speed driving and excessive use of the brakes will cause this type of irregular tire wear. This type of wear will occur on any type of block tread design.

Heel and toe wear is not so prevalent on the rear tires because of the propelling action which creates a counteracting force which wears the opposite end of the tread block. These two stresses on the rear tires wear the tread blocks in opposite directions and make for more even wear, while on the front tires the braking stress is the only one which is effective. This may be counteracted by changing the tires and wheels as outlined above.

Tire Chains

Tire non-skid chains can be used on the rear tires only. **They should never be used on the front tires because of interference.**

Chain tighteners should always be used to prevent chains striking wheel housing.

Wheel and Tire Balance

Wheel unbalance is the principal cause of tramp and general car shake and roughness and contributes somewhat to steering troubles.

All wheel and tire assemblies are balanced when assembled at the factory by installing wheel balance weights.

Tire casings and tubes are assembled with the valve stem located in line with a red mark on the sidewall of the casing. Unequal road wear or any change in the tube, casing and wheel assembly may produce an unbalance causing difficulty, particularly at high speed. The tubes and casings are matched for balance at the factory. When new tubes are installed it is desirable to replace with tubes of the same make in order to keep balance variation at a minimum.

Tire manufacturers supplying tires for production, divide tires and tubes into groups. Each group has a different and definite amount of out-of-balance.

Tires in one balance group are equipped with tubes with the same degree of off-balance so that they can counter-balance each other. The heavy side of the tube is matched with the light side of the tire.

Tires are usually about ten times the weight of the tubes and usually run more out-of-balance than the tubes. Therefore, it becomes necessary to add various weights of rubber to standard tubes in the form of extra layers to make the tubes enough off-balance so that they can be put into the off-balance groups into which the casings are naturally classified. Tire balance weights are then used to balance the tire and wheel assembly as a unit.

The original balance of the tire and tube assembly may change as the tire wears. Severe acceleration, severe brake application, fast cornering and side slip wear the tires out in spots and often upset the original balance condition and make it desirable to rebalance the tire, tube and wheel as an assembly. Tire and wheel assemblies should be rebalanced after punctures are repaired.

If rebalancing becomes necessary, remove any balance weights which may be found on the rim flange and balance the assembly, using as few weights as possible.

If satisfactory operation is not obtained after statically balancing tires and wheels as outlined above, it will be necessary to dynamically balance same on special equipment available for this purpose.

To balance wheels and tires, the wheel, hub, drum and tire as an assembly, should be mounted on a wheel balance stand. It is equally important to balance rear as well as front wheels and wheel balance stands should be equipped to accommodate both.

If such equipment is not available, the front wheels can be balanced by mounting a steering knuckle spindle on a bench in such a way that hub and wheel may be assembled to rotate freely. The felt should be removed and the bearings washed free from lubricant. Bearing adjustment should be so that a very slight looseness may be felt.

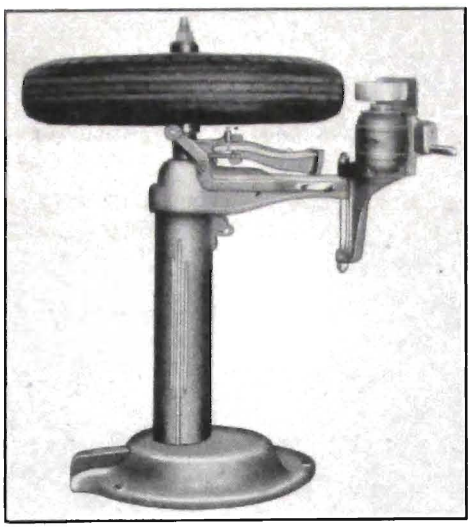

Fig. 10-7. Wheel Balancer

When a wheel and tire assembly is mounted on this fixture the heavy side will go to the bottom. A piece of clay may be stuck to the side wall of the tire at the rim, opposite, or at the top side, and reduced or increased until the wheel will remain stationary at any position. The clay may then be weighed on a small scale and the balance weight made to equal the weight of the clay. In case the balance weight is too light, an additional weight may be added.

The balance weights as furnished are detachable.

An alternate method is to install two weights which are slightly heavier than required at the light point on the rim, then mark the center between weights and move both weights apart an equal distance in several steps until a balance is obtained.

When a correct position is found and a satisfactory balance obtained the weights should be secured in position.

If manufacture of tires other than supplied in production is not held to close enough limits in flex of side wall structure or in uniformity of rubber thickness in various tire sections, an out-of-balance condition will result which cannot be corrected by static balance. Trouble of this nature should be corrected by dynamically balancing wheel and tire on a dynamic wheel balancer which indicates out of balance while tire and wheel are revolved.

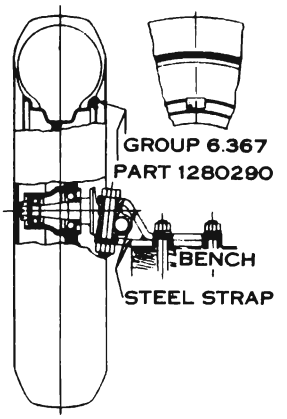

Fig. 10-8. Balancing Wheel and Tire

It is recommended that wheel and tire assemblies be checked for balance every 5000 miles.

CAR ROUGHNESS ANALYSIS

The following procedure should be used to diagnose cases of vibration or roughness in car operation at various speeds due to any or all of the following items: wheels, brake drums, propeller shaft or engine, being out of balance.

Jack up rear wheels of car, having jack support rear end of car at center of differential housing.

The items mentioned above may then be checked for balance as follows:

1. Check run-out of front and rear wheels. See "Rear Tires."
2. Run rear wheels at various car speeds with rear wheels and tires in place.
3. Run with wheels and tires removed. If roughness is gone, the roughness is due to out-of-balance rear wheels and tires.
4. If roughness still exists, remove both rear brake drums and run again. If roughness disappears the brake drums are out of balance. If this is the case, rear brake drums should be balanced. See "Brake Drum Balance."
5. If roughness exists with the brake drums removed it indicates roughness is caused by propeller shaft or engine.

   The propeller shaft can be eliminated by shifting transmission to neutral and running engine alone.

When trying engines for roughness, the clutch must be engaged. An engine operated at high speed with clutch disengaged may cause roughness due to component parts of pressure plate assembly not centering. **Roughness due to a disengaged clutch is not normal operation and no attempt should be made to correct the same.**

6. If engine is rough when operated in neutral and clutch engaged, it should be corrected. See "Engine Roughness" in Engine Section.
7. After engine is properly balanced, run again with transmission in high. If roughness is still present it indicates propeller shaft is also rough. In all cases when propeller shaft is removed from pinion and reinstalled, the pinion and propeller shaft assembly must be checked for straightness. This is true, regardless of whether or not new pinion or propeller shaft has been assembled. See "Propeller Shaft Straightening" in Rear Axle Section.
8. Out-of-balance front wheels and tires can be checked by installing front wheels and tires on rear wheels and driving through various speeds with engine or checked on any standard balancing machine. Equipment is also available for checking front wheels and tires while installed on car.
9. Out-of-balance front drums can be checked for balance on any standard balancing machine and corrected as outlined above.

BRAKE DRUM BALANCE

In some cases wheel and tire balance does not always overcome wheel balance complaints because the brake drums themselves are out of balance. Balancing drums with wheels and tires as an assembly is not always satisfactory because the balance is destroyed when wheels and tires are removed or interchanged.

On cars where trouble is experienced in maintaining proper wheel balance, it is suggested that all drums be statically balanced by attaching weight as shown in Fig. 10-9.

Three different size weights are available and should be attached at approximate distance from drum centers as shown.

All the necessary balancing parts are supplied under the following numbers:

	Series	Group	Part No.	Source
Brake Drum Balance				
(Weight 5/8 oz.)....	All	5.810	1312068	Factory
(Weight 1 1/4 oz.)....	All	5.810	1312069	Factory
(Weight 1 7/8 oz.)....	All	5.810	1312070	Factory
Hex. Head Bolt				
(1/4"-20x5/8")	40-60	8.900	120854	Zone
(1/4"-20x3/4")	80-90	8.900	121887	Zone
Hex. Nut (1/4"-20).....	All	8.916	124818	Zone
Lockwasher (1/4")	All	8.932	138167	Zone

Front drums may be statically balanced on almost any fixture used for front wheels.

Rear drums may be statically balanced on Bean balancing machines by use of adapter tool #HMO-152A-PL. Some other balancing machine manufacturers also supply equipment for balancing rear drums.

Rear drum balance is equally as important as front drum balance.

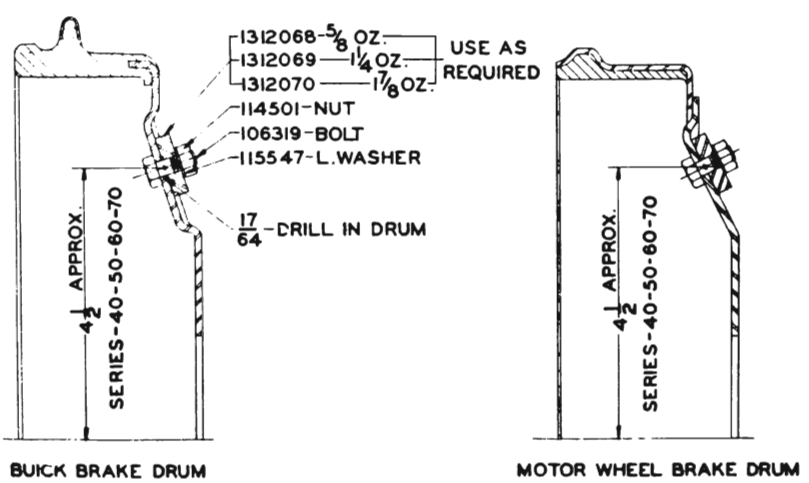

Fig. 10-9. Brake Drum Balance Weights—Series 40-50-60-70

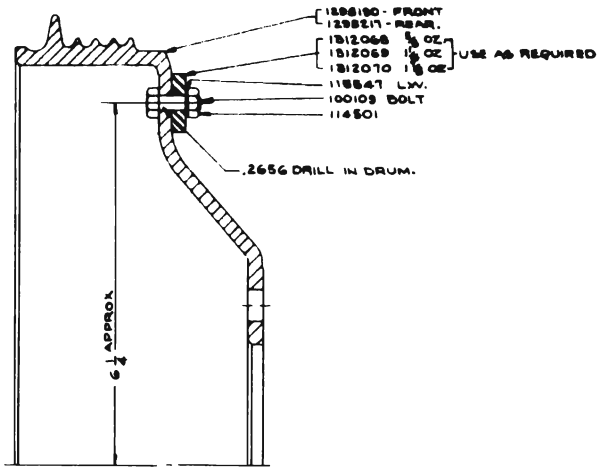

Fig. 10-10. Brake Drum Balance Weights—Series 90

SPECIFICATIONS—WHEELS AND TIRES

ITEMS	SERIES 40-A		SERIES 40-B		SERIES 50		SERIES 60		SERIES 70		SERIES 90	
WHEELS AND TIRES												
Wheel—Type	←— Demountable Steel Disc —→				←— Demountable Steel Disc —→				←— Demountable Steel Disc —→			
Thickness of Disc	.125"-.135"		.127"-.137"		.127"-.137"		.130"-.140"		.130"-.140"		.157"-.167"	
Rims—Type	Drop Center		Drop Center		Drop Center		Drop Center		Drop Center		Drop Center	
Rim Diameter and Width	15" x 6.00"		16" x 6.00"		16" x 6.00"		15" x 6.50"		15" x 6.50"		16" x 6.50"	
Thickness of Rims	.116"-.124"		.116"-.124"		.116"-.124"		.125"-.135"		.125"-.135"		.135"-.145"	
Tires—Make	U. S. Royal DeLuxe—Firestone DeLuxe Champion—Goodrich DeLuxe Silvertown.											
Tire Size	15" x 6.50"		16" x 6.50"		16" x 6.50"		15" x 7.00"		15" x 7.00"		16" x 7.50"	
Number of Plies	4		4		4		4		4		6	
Tire Pressure (lbs.)	Front	Rear	Front	Rear	Front	Rear	Front	Rear	Front	Rear	Front	Rear
Cold	25	25	25	25	25	25	25	25	25	25	25	25
Warm	28	28	28	28	28	28	28	28	28	28	28	28
Tire Revs. Per Mile at 50 M.P.H.	745.7		722.7		724.9		717.4		717.4		677.8	
Rolling Circumference at 50 M.P.H.	7.080		7.306		7.284		7.360		7.360		7.790	
Optional Tire Size	None		None		None		None		None		None	
Specified Valve in Tube	Rubber Stem		Rubber Stem		Rubber Stem		Rubber Stem		Rubber Stem		Rubber Stem	

Reversible type black & white sidewall tires are standard equipment on all Convertible Models & on all Series 90 cars (exc. Model 44-C)