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# WHEEL AND TYRE

Click on the applicable bookmark to selected the required model year.

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# WHEEL AND TYRE

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**GENERAL INFORMATION**

31100010269

Both steel type and aluminium type wheels have been adopted. The type of wheel used depends on the vehicle model.

Items		Vehicles without wide fender	Vehicles with wide fender
Wheel	Type	Steel type	Aluminium type
	Size	15 x 6JJ	16 x 7JJ
	Amount of wheel offset	33	10 ± 1
	Pitch circle diameter (P.C.D.) mm	139.7	139.7
Tyre	Size	235/75 R15	245/70 R16

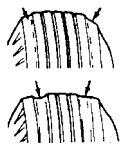
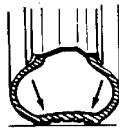
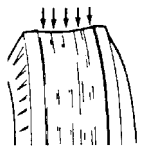
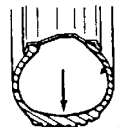

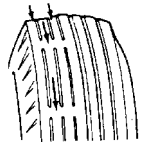
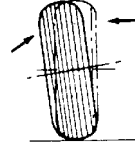
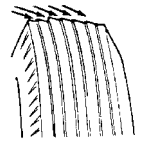
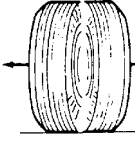
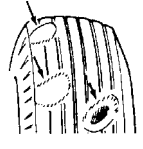
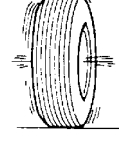
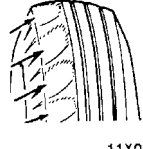
**SERVICE SPECIFICATIONS**

31100030036

Items		Limit
Tread depth of tyre mm		1.6
Wheel runout (Radial runout) mm	Steel wheel	1.2 or less
	Aluminium wheel	1.0 or less
Wheel runout (Lateral runout) mm	Steel wheel	1.2 or less
	Aluminium wheel	1.0 or less

## TROUBLESHOOTING

31100070083

Symptom		Probable cause		Remedy	Reference page
Rapid wear at shoulders	 11X0109	Under-inflation or lack of rotation	 11X0116	Adjust the tyre pressure.	31-4.
Rapid wear at centre	 11X0110	Over-inflation or lack of rotation	 11X0117		
Cracked treads	 11X0111	Under-inflation		Adjust the tyre pressure.	31-4.
Wear on one side	 11X0112	Excessive camber	 11X0118	Inspect the camber.	Refer to GROUP 33A – On-vehicle Service.
Feathered edge	 11X0113	Incorrect toe-in	 11X0119	Adjust the toe-in.	
Bald spots	 11X0114	Unbalanced wheel	 11X0120	Adjust the imbalanced wheels.	–
Scalloped wear	 11X0115	Lack of rotation of tyres or worn or out-of-alignment suspension		Rotate the tyres and check the front suspension alignment.	Refer to GROUP 33A – On-vehicle Service.

**ON-VEHICLE SERVICE**

31100090034

**TYRE INFLATION PRESSURE CHECK**

Check the inflation pressure of the tyres. If it is not within the standard value, make the necessary adjustment.

**TYRE WEAR CHECK**

31100100034

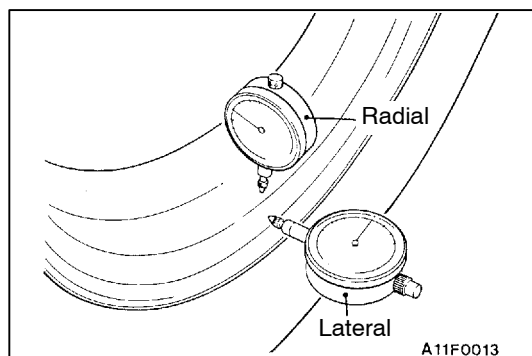
Measure the tread depth of tyres.

**Limit: 1.6 mm**

If the remaining tread depth is less than the limit, replace the tyre.

**NOTE**

When the tread depth of tyres is reduced to 1.6 mm or less, wear indicators will appear.

**WHEEL RUNOUT CHECK**

31100110143

Jack up the vehicle so that the wheels are clear of the floor. While slowly turning the wheel, measure wheel runout with a dial indicator.

**Limit:**

Item	Steel wheel	Aluminium wheel
Radial runout mm	1.2	1.0
Lateral runout mm	1.2	1.0

If wheel runout exceeds the limit, replace the wheel.

**WHEEL AND TYRE**

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**INSTALLATION SERVICE POINT**

Tighten the wheel nut to the specified torque.

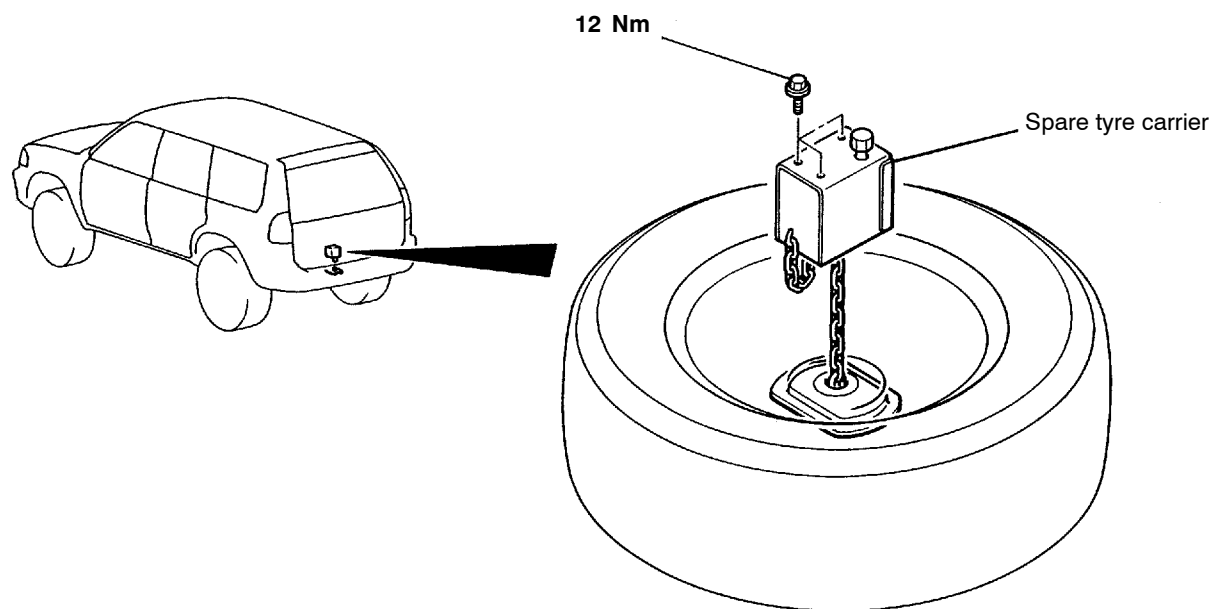
**Tightening torque:**

**Steel wheel 118 – 137 Nm**

**Aluminium wheel 98 – 118 Nm**

**UNDERFLOOR SPARE TYRE CARRIER**

31100180014

**REMOVAL AND INSTALLATION**

AT0028AA

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## NOTES

## GROUP 31

# WHEEL AND TYRE

### GENERAL

#### OUTLINE OF CHANGE

The specifications of the wheels and tyres have been revised. <Vehicles with wide fender>

Items		Vehicles with wide fender
Wheel	Type	Aluminium type
	Size	16 × 7JJ
	Amount of wheel offset	10 ± 1
	Pitch circle diameter (P.C.D.) mm	139.7
Tyre	Size	245/70 R16, 255/70 R16 111T*

#### NOTE

\*: Optional items



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# Service Bulletins


Click on the applicable bookmark to select the Service Bulletin.

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# SERVICE BULLETIN

QUALITY INFORMATION ANALYSIS  
OVERSEAS SERVICE DEPT. MITSUBISHI MOTORS CORPORATION

<b>SERVICE BULLETIN</b>		No.: MSB-00E31-001	
		Date: 2000-07-15	<Model>
Subject: WHEEL BALANCE ADJUSTMENT PROCEDURE		ALL MODELS	<M/Y> 00-00
Group: WHEEL & TIRES	Draft No.: 99AL121708		
INFORMATION/ CORRECTION	INTERNATIONAL CAR ADMINISTRATIO OFFICE	 T.NITTA - PROJECT LEADER AFTER SALES SERVICE & CS PROMOTION	

## 1. Description:

There have been cases where the troubles failed to be removed completely because of incorrect balancer machine handling or use of an inaccurately calibrated balancer machine. This Service Bulletin informs you of the cautions to be taken when handling a balancer machine and the balance check procedures to prevent such a case from recurring in a dealer.

## 2. Details:

To solve the problems caused by steering or body vibrations, it is essential to balance the wheels and tires accurately. For this, the wheel and tire must be accurately centered with respect to the balancer shaft, and the balancer must also be calibrated accurately.

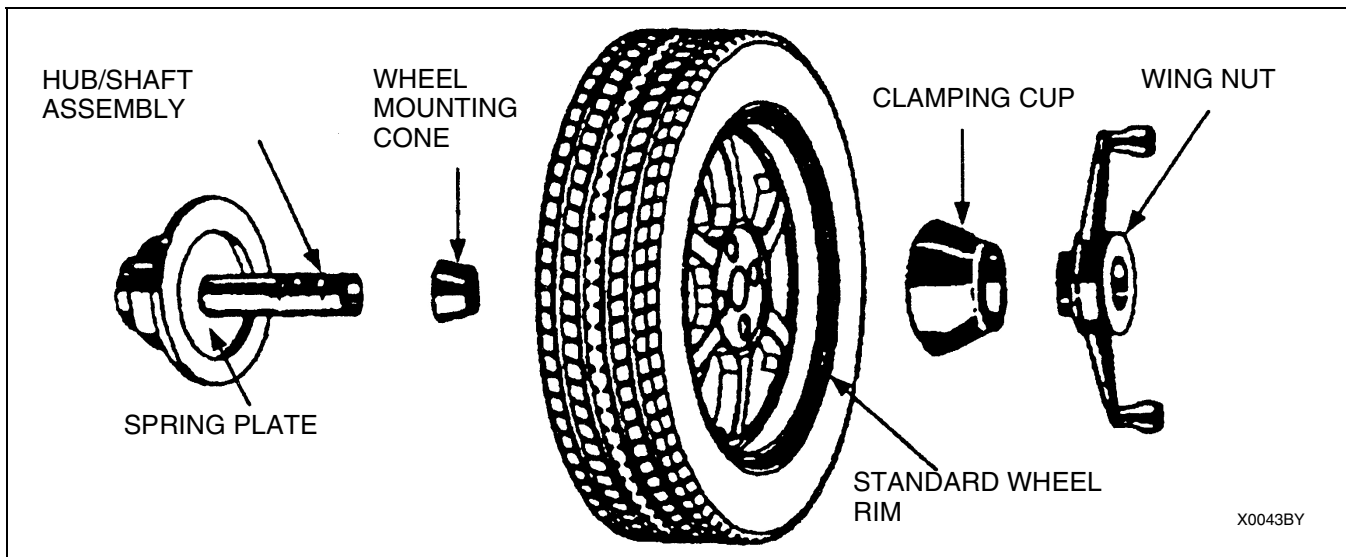
## Procedures

1. Check to ensure that the balancer cone and the cone-contacting portion of the wheel are free from any dirt, corrosion and damage.
2. Remove all balance weights attached, stones caught in the tire grooves and mud adhered from the wheel and tire.
3. Install the wheel and tire to the balancer in the following procedure:

**Caution:**

- The socket diameter of a Mitsubishi genuine wheel is  $\phi$  67.0 mm (2.64 in) for passenger cars and  $\phi$  107.5 mm (4.23 in) for the other types of vehicle. Be sure to use the balancer cone matching the socket diameter.
  - Use the black-mounted cone to secure the wheel to the balancer if possible. If installable in this method, go to Step 4.
  - If the socket diameter of the wheel is too large to secure it with the back-mounted cone, secure the wheel to the balancer with the front mounting cone. If the wheel is to be secured in this way, go to Step 6.
  - Do not use the log nut hole mounting method because it does not allow the accurate centering of the wheel.
4. When securing with back-mounted cone:  
Operate the balancer to measure the imbalance, then attach weight in accordance with the measurements.

**Caution:** Be sure to drive the weight straight in the wheel.



5. Loosen the wing nut, rotate the wheel half a turn ( $180^\circ$ ) and tighten the nut again. Then, perform the measurement again to confirm that the wheel is in balance. If not in balance, check if the balancer is correctly calibrated. Go to Step 11.

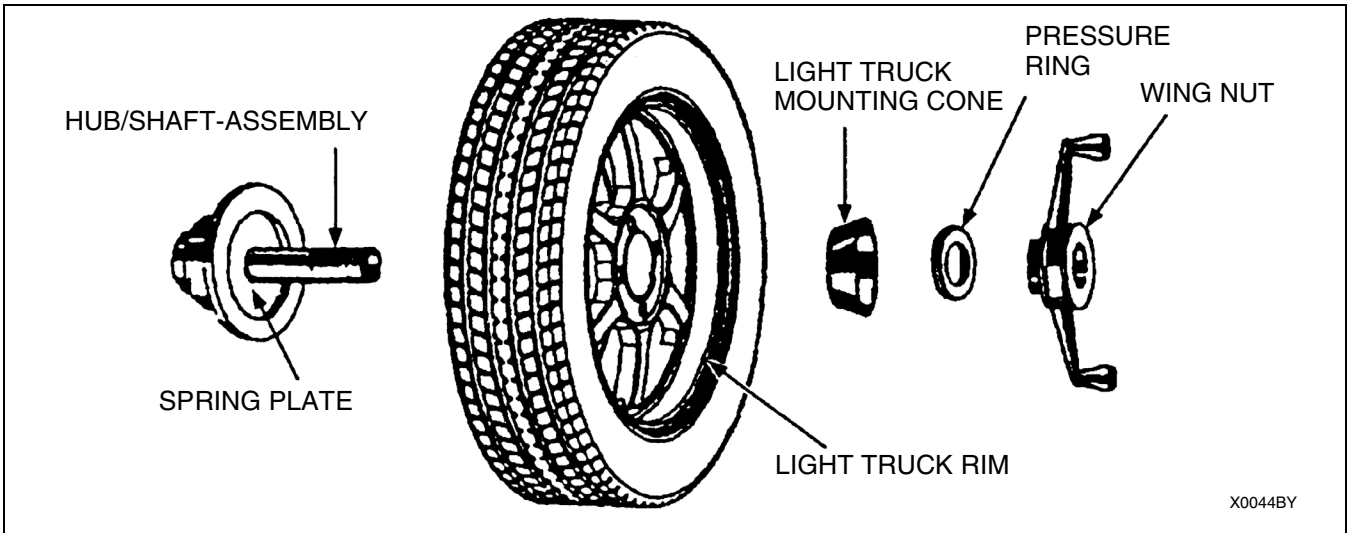
6. When securing with front-mounted cone:

**Caution:**

- When pressing in the cone by tightening the wing nut slowly, hold the tire by hand such that the wheel may contact the spring plate of the balancer evenly.
- If this work is not performed with care, the wheel would fail to be centered correctly. Furthermore, the cone-contacting area of the wheel would deform, preventing subsequent wheel balancing from being performed accurately.

Operate the balancer to measure the imbalance. Mark the point attributable to the imbalance with a piece of chalk.

(Do not attach any balance weight.)



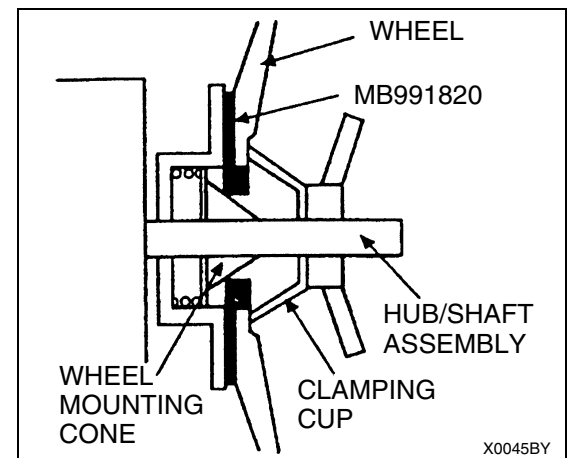
7. Loosen the wing nut, rotate the wheel half a turn (180°) and tighten the wing nut carefully again. Then, perform the measurement again.
8. Repeat the measurement three times in the same manner, and take either of the following measures according to the measurement again.

**Caution: Be sure to drive the weight straight in the wheel.**

- a. If the results are the same in all measurements, attach a weight according to the indication on the machine.
- b. If the weight difference among the three measurements is less than 0.5 oz and the three indicated points are all within a range of less than 8 inch (30°), attach a weight having the average weight at the mean position.
- c. If the weight difference among the three measurements is 0.5 oz or more or if the indicated positions are not within a range of less than 8 inch (30°), check if the balancer is correctly calibrated. Go to step 11.

9. Reinstall the tire to the vehicle, and perform a driving test. If the tire still generates vibration, perform the Step 10.
10. Attach the adapter (MB991820) on the back side of the wheel, and install the wheel onto the machine using the back-mounted cone. Then, perform the balance adjustment again. For the procedure, refer to Steps 4 and 5

**Caution** Check to ensure that the contact portions of the adapter, wheel and balancer are free from any dirt, corrosion and damage.



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## 11. Checking for calibration.

Check your balancer's calibration approximately every 100 balances. Your wheel balancer's instruction manual should include calibration procedures. If the calibration procedures specifically for your balancer are missing, use following steps for zero calibration, static balance, and dynamic balance checks. The wheel balancer calibration checks are also described in the flowchart on next page.

- a. Mount an undamaged original-equipment alloy rim and tire assembly (wheel) onto your off-the-car wheel balancer. Balance the wheel.
- b. **Zero Calibration Check.** Loosen the balancer wing nut, rotate the wheel a half-turn (180°), and retighten the nut. Recheck the balance.
  - i) If the imbalance is 5 grams or less, the zero calibration is OK. Rebalance the wheel, then go to Step d to check the static balance.
  - ii) If the imbalance is more than 5 grams, go to Step c.
- c. Loosen the balancer wing nut, rotate the wheel ¼ turn (90°), and retighten the nut. Recheck the wheel balance.
  - i) If the imbalance is 5 grams or less, the wheel may not be centered on the balancer, or the balancing cones, the cup, and/or wing nut are damaged, dirty, or inappropriate for the wheel. You may need to refer to the balancer manufacturer's instructions to verify the correct attachments. After making the necessary correction, recheck the wheel balance. If OK, then go to Step d.
  - ii) If the imbalance is more than 5 grams, the balancer requires calibration. Contact the balancer manufacturer for calibration by their repair representative.
- d. **Static Balance Check.** Attach a 5-gram weight to the outer rim. Recheck the balancer. The balancer should detect 5±2 grams of imbalance 170° to 190° away from the 5-gram weight.
  - i) If the imbalance is within specification, the static balance calibration is correct. Go to Step e to check the dynamic balance.
  - ii) If the imbalance is out of specification, the balancer requires calibration. Contact the balancer manufacturer for calibration by their repair representative.
- e. **Dynamic Balance Check.** Attach a 5-gram weight to the inner rim at 180° opposite the 5-gram weight that was added in Step d. Recheck the balance. The balancer should detect 5±2 grams of imbalance 170° to 190° away from both the inner and outer 5-gram weights.
  - i) If the imbalance is within specification, the dynamic balance calibration is correct. The balancer calibration checks are complete.
  - ii) If the imbalance is out of specification, the balancer requires calibration. Contact the balancer manufacturer for calibration by their repair representative.

## WHEEL BALANCER CALIBRATION CHECKS

