MID WHEELS RAYS

MARUKA WHEEL INSTRUCTION MANUAL

For the Proper and Safe Use of Aluminum Wheels

Confirm The Contents Of The Package

Before mounting tires, please first examine the products to ensure they match the vehicle.
Also make sure that the products' size, color and P.C.D. are correct before the air valves, tires and balancing weights are fitted.
If there is any clear damage or missing items, please contact us immediately.
Please be aware that we cannot accept any returns on products which have been scratched and/or damaged after attempt of wheel installation.

To Dealers

Please explain the contents of this manual to the customer and be sure to hand it over to them.

To Customers

For your safety, please read this manual carefully before use.
Please keep it in a place where it can be easily accessed when needed, such as in the glove box or trunk.

The Symbols Used In This Manual Have The Following Meanings

CHECK Failure to follow the instruction or confirm the item may result in personal injury and/or property damage.

CAUTION Incorrect handling may result in personal injury or property damage.

WARNING Incorrect handling may result in death or serious injury.

DANGER Incorrect handling is highly likely to result in death or serious injury.

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BEFORE INSTALLING TIRES

1 WHEEL SELECTION

Confirm that the wheel size, inset, number of bolt holes, P.C.D., mounting seat shape, hub bore shape, and other specifications are suitable for the vehicle.
Wheels and tires must not be installed if their load capacity is insufficient for the vehicle. Failure to comply with these requirements may compromise safe vehicle operation. If you have any questions, please consult your authorized RAYS dealer.

WARNING **Install wheels of the same size and type on each axle.**
Using different wheels may impair handling and stability.

2 TIRE SELECTION

When changing from the standard tire size to a different diameter or aspect ratio, such as increasing wheel size, ensure the load index is not lower than that of the standard tire.
Installing tires with a load index lower than the original equipment specification may lead to tire failure during operation and could result in a serious safety risk. If you have any questions, please consult your authorized dealer.

WARNING **Check the load index and air pressure of the tires to be installed.**
If they are lower than those of the standard tires, tire damage may occur.

3 TIRE WIDTH SELECTION

Select a tire width suitable for the rim width. If the rim is excessively wide for the tire width, bead unseating may occur, which is extremely dangerous.
Installing wheels on vehicles with excessive negative camber or in a manner that concentrates excessive loads on the inner rim flange may place abnormal stress on the wheel, which could result in wheel damage or failure. If you have any questions, please consult your authorized dealer.

CHECK **For example: For tire size 215/45-17, applicable rim widths are 7J, 7.5J, and 8J.**

4 TIRE AIR PRESSURE

After tire installation, have the air pressure checked with an air gauge at the dealer and adjust it while cold, to the pressure specified by the vehicle and tire manufacturers.
Tire inflation pressure naturally decreases over time. Underinflated tires have a reduced load-carrying capacity and increased sidewall flexing, which can generate excessive heat. This may cause deterioration of the tire cord and rubber, irregular wear, tread separation, or cord failure, potentially leading to an accident.

WARNING **Insufficient air pressure can reduce tire load capacity and cause abnormal heat generation, uneven wear, separation, cord breakage, and may lead to an accident.**

INSTALLING AIR VALVE

AIR VALVE INSTALLATION

Use only the dedicated air valve supplied with the wheel. Using any other air valve may cause air leakage due to incorrect dimensions or shape.
When replacing tires, always replace the air valves with new air valves specified for the wheel. Reusing old air valves may cause air leakage due to deterioration of the valve grommet (rubber sealing gasket). Use a short-type valve core (JIS Type B, No. 9000).

WARNING **When replacing tires, replace the air valve with a new dedicated air valve.**

TIRE MOUNTING

TIRE MOUNTING

- Aluminum wheels may be designed for tire mounting from either the front rim side or the rear rim side.
  Mount the tire according to the rim shape. If you have any questions, please contact your authorized dealer or the wheel manufacturer.
- When mounting tires, always use an appropriate tire mounting lubricant.
  Inflate the tire to the specified inflation pressure only after confirming that the tire bead is properly and evenly seated on the rim bead seat around the entire circumference.

DANGER When inflating a tire during mounting, take appropriate safety precautions to prevent injury in the event of tire or wheel failure, such as using a tire safety cage. The maximum bead seating pressure (maximum inflation pressure during mounting) is 300 kPa (3.0 kgf/cm^2).

CAUTION After mounting the tire, check for air leaks using a water tank or a soap-and-water solution. Inspect the bead seat area between the tire and rim, the air valve, and all sealing surfaces to ensure there are no leaks. When checking the air valve, inspect both the interface between the valve and the wheel, as well as the valve opening (valve core).

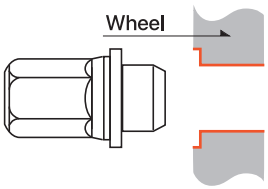
CAUTION Always perform wheel balancing on all wheels. Installing wheels without proper balancing may cause excessive vibration or resonance and may adversely affect vehicle handling and stability.

INSTALLING THE WHEEL ON THE VEHICLE

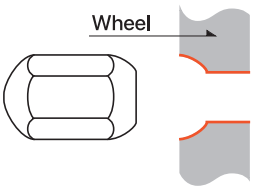
1 WHEEL NUT SEATS

Wheel nut seats include 60-degree taper seats, spherical seats, and flat seats. Confirm the thread diameter and pitch on the vehicle side and use nuts or bolts that match the seat shape.
When installing the wheel, ensure that the lug nuts engage the wheel studs by a minimum of 10 mm of thread. Also confirm that the wheel studs provide adequatethread engagement. If you have any questions, please consult your authorized dealer.

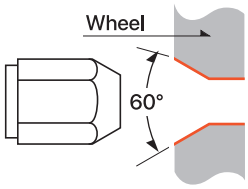
FLAT SEAT



ROUND SEAT



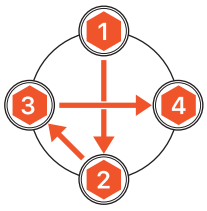
60° TAPERED SEAT



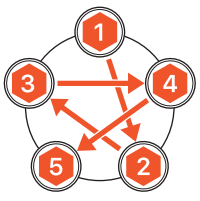
DANGER Nuts or bolts with incorrect shape, thread diameter, or pitch cannot be tightened properly.

2 TIGHTENING NUTS AND BOLTS

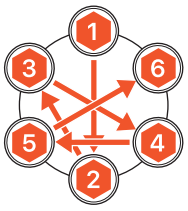
Temporarily tighten the nuts or bolts in the order shown in the diagram, then tighten them evenly to the recommended torque.
Recommended Torque:
• M10=50-70N·m (5-7kgf·m) • M12=90-120N·m (9-12kgf·m) • M14=160-180N-m (16-18kgf·m)



4 HOLE



5 HOLE



6 HOLE

CAUTION Overtightening or undertightening the lug nuts (or bolts) may cause deforma-tion of the wheel, hub studs, or fasteners, or allow the wheel to loosen, potentially resulting in an accident.
Always use a calibrated torque wrench and tighten the lug nuts (or bolts) to the manufacturer's specified torque.

DANGER Use the proper tightening tool, such as a torque wrench, to tighten the lug nuts (or bolts) to the recommended torque specification.
After installing the wheels yourself, have the tightening torque checked by your authorized dealer. If your vehicle owner's manual specifies a tightening torque for the lug nuts (or bolts), always follow that specification. If you are unsure of the correct torque, please contact your autho-rized dealer or the customer service department.

CAUTION Do not use an impact wrench for the fi-nal tightening of the lug nuts (or bolts).
Overtightening may damage or deform the wheel, studs, or lug nuts, while insufficient tightening torque may allow the lug nuts (or bolts) to loosen during driving, potentially resulting in an accident.
Always use a calibrated torque wrench for the final tight-ening and tighten the lug nuts (or bolts) to the manufac-turer's specified torque.

❸ USE OF SPACERS

If spacers must be used, confirm that there is sufficient nut engagement length before use.

WARNING **Wide tread spacers may interfere with proper wheel installation or function. Consult the dealer carefully before use.**

❹ VEHICLE-SPECIFIC INSTALLATION PRECAUTIONS

Depending on the vehicle model, the brake drum and wheel mounting surface may have protrusions such as balance weights, assembly bolt heads, locating pins, or washers at the base of the mounting bolts. Before installation, carefully verify that these protruding components do not come into contact with any part of the wheel.

CAUTION **When installing the wheel onto the vehicle, strictly observe the following precautions:****
*** Ensure that the vehicle's wheel mounting surface and hub bolts are free of rust, dirt, and deformation.**
*** Verify that there is no interference between the wheel and the vehicle's mounting components, including locating pins, bolt heads, center hub, washers, or any other protrusions on the mounting surface.**

❺ CHECKS AFTER INSTALLATION

After installation, turn the steering wheel fully left and right to confirm that the tires and wheels do not contact any part of the vehicle body.

CAUTION **Confirm that the tires, wheels, caps, and related parts do not protrude beyond the vehicle body or fenders.**

● DRIVING AFTER WHEEL INSTALLATION

❶ RETIGHTEN NUTS OR BOLTS

After installation or tire rotation, retighten the mounting nuts or bolts to the recommended torque after driving approximately 100 km.

DANGER **If the vehicle becomes unstable or you notice abnormal vibration or noise while driving, stop immediately in a safe place. If any abnormality is found, do not drive the vehicle until proper replacement or repair has been completed.**

❷ DAILY INSPECTION

During daily inspection, always check that the mounting nuts or bolts are not loose.
Also check and adjust tire air pressure.

WARNING **Loose mounting nuts and tire air pressure are the minimum inspection items required for safe driving.**

❸ DRIVING OVER OBSTACLES

Driving over sidewalks, curbs, uneven roads, or any impact-inducing obstacles may cause wheel deformation or cracks.

DANGER **Sudden acceleration, hard braking, sharp turning, and drifting may damage the tires and wheels and can also cause serious accidents. Never perform such driving.**

● MAINTENANCE INSPECTION

❶ CARE AND CLEANING

To prevent corrosion, fading, and rust on wheels and caps, rinse thoroughly with water after driving near the sea, on snowy roads, or on muddy roads, and wipe off all moisture with a soft cloth.
When using a commercially available wheel cleaner or aluminum wheel cleaner, carefully read and follow the manufacturer's instructions before use. Some cleaning agents contain chemicals that may damage the surface finish of the wheel, center cap, or other components.
Do not use an automatic car wash, as it may scratch or damage the surface finish of the wheels and center caps. To maintain their appearance, clean the wheels by hand.

❷ STORAGE

Before storing tires and wheels, clean them thoroughly and allow them to dry completely. Store them in a cool, dry place away from direct sunlight, rain, moisture, oil, and excessive heat or humidity.
For storage, reduce the tire inflation pressure to approximately one-half of the normal operating pressure. Before reinstalling the tires and wheels, restore the tire pressure to the specified value, inspect the tires and wheels for any signs of damage or abnormality, and have the wheel balance checked and adjusted if necessary.

DANGER When storing, reduce tire air pressure to approximately half of the normal operating pressure.

● OTHER IMPORTANT POINTS

❶ REPAIRS

Never repair or modify wheels that are deformed or cracked, whether by a repair shop or by the customer.

DANGER Improper repair or modification may cause strength reduction that is not visible, making it extremely dangerous. Please consult the dealer regarding repairs.

❷ HANDLING MULTI-PIECE WHEELS

The assembly bolts of 2-piece and 3-piece wheels are tightened to the specified torque during manufacturing.

DANGER Never disassemble the rim or disk and never loosen or retighten the assembly bolts.

● TECHNICAL STANDARDS

❶ TECHNICAL STANDARDS

This aluminum wheel complies with the Safety Standards for Light Alloy Disc Wheels (JWL or JWL-T) and has passed the strength tests conducted by the Japan Light Alloy Automotive Wheel Testing Council (VIA).

CHECK To maintain safety and performance, use the product in accordance with this manual.
If you have any questions, please consult the dealer from whom you purchased the product.

❷ WHEEL QUALITY STANDARD CERTIFICATION MARKS

The assembly bolts of 2-piece and 3-piece wheels are tightened to the specified torque during manufacturing.

JWL ◀ JWL Certification Mark

The JWL standard is a safety standard for light alloy wheels intended for passenger vehicles (excluding vehicles with a seating capacity of 11 or more persons, motorcycles, and motorcycles with sidecars).
Manufacturers are responsible for performing the tests specified under this technical standard. Wheels that have successfully passed these tests are identified by the JWL mark.

JWL-T ◀ JWL-T Certification Mark

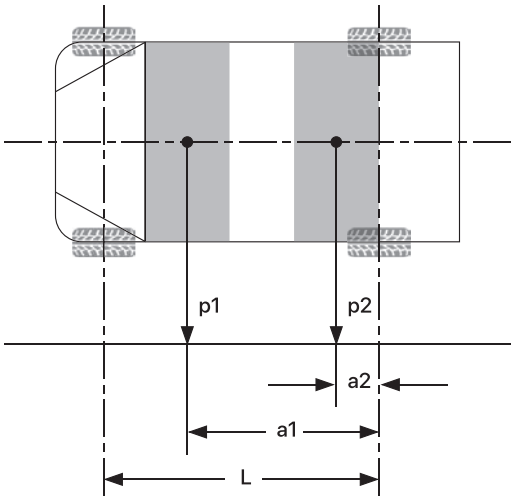
The JWL-T standard is a safety standard for light alloy wheels intended for trucks and buses. Manufacturers are responsible for performing the tests specified under this technical standard.
Wheels that have successfully passed these tests are identified by the JWL-T mark.

VIA ◀ VIA Quality Inspection Mark

The VIA mark certifies that the Wheel Light Alloy Testing Council, an independent third-party organization, has verified the wheel's compliance with the JWL or JWL-T standards.
Products bearing the VIA mark have successfully passed stringent quality and strength verification testsconducted in accordance with the JWL or JWL-T standards.

WHEEL LOAD FORMULA

Wheel Load = Wf/2 or WR/2 Determine using the larger of the following two load values:



W: Gross Vehicle Weight (GVW)

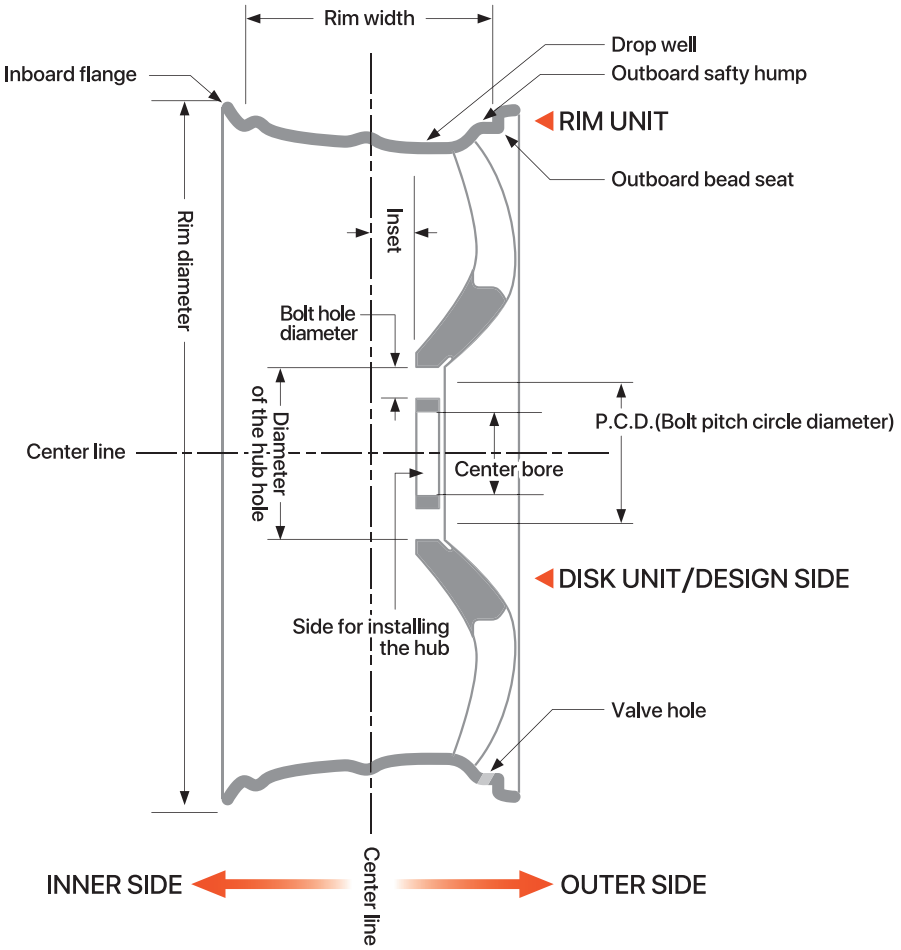
Wf: Front axle load with all seating positions occupied

Wr: Rear axle load with all seating positions occupied

wf: Front axle load as listed on the vehicle inspection certificate (vehicle registration)

L: Wheelbase (horizontal distance between the front and rear axle centerlines)

a_1, a_2: Horizontal distance from the load application point (located 200mm behind the front edge of the seat cushion) to the rear axle

p_1, p_2: Occupant load (assume 55 kg per person)

THE NAME OF EACH WHEEL PART