

ACURA

2934 '11

NSX

Service Manual 1991

INTRODUCTION

How to Use This Manual

This manual is divided into 14 sections. The first page of each section is marked with a black tab that lines up with one of the thumb index tabs on this page and the back cover. You can quickly find the first page of each section without looking through a full table of contents. The symbols printed at the top corner of each page can also be used as a quick reference system.

Each section includes:

1. A table of contents, or an exploded view index showing:
 - Parts disassembly sequence.
 - Bolt torques and thread sizes.
 - Page references to descriptions in text.
2. Disassembly/assembly procedures and tools.
3. Inspection.
4. Testing/troubleshooting.
5. Repair.
6. Adjustments.

Special Information

⚠ WARNING Indicates a **strong** possibility of severe personal injury or loss of life if instructions are not followed.

CAUTION: Indicates a possibility of personal injury or equipment damage if instructions are not followed.

NOTE: Gives helpful information.

CAUTION: Detailed descriptions of standard *workshop* procedures, safety principles and service operations are not included. Please note that this manual does contain warnings and cautions against some specific service methods which could cause **PERSONAL INJURY**, or could damage a vehicle or make it unsafe. Please understand that these warnings cannot cover all conceivable ways in which service, whether or not recommended by HONDA, might be done, or of the possible hazardous consequences of each conceivable way, nor could HONDA investigate all such ways. Anyone using service procedures or tools, whether or not recommended by HONDA, *must satisfy himself thoroughly* that neither personal safety nor vehicle safety will be jeopardized.

All information contained in this manual is based on the latest product information available at the time of printing. We reserve the right to make changes at any time without notice. No part of this publication may be reproduced, stored in retrieval system, or transmitted, in any form by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher. This includes text, figures and tables.

First Edition 7/90 1450 pages

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Specifications Apply to U.S.A. and Canada

HONDA MOTOR CO., LTD.

Service Publication Office

* General Info
(Including **SRS**)



Special Tools



Specifications

specs

Maintenance



Engine



Cooling



Fuel and Emissions



* Transaxle



* Steering



Suspension



* Brakes
(Including **TCS**)



* Body



* Heater and
Air Conditioner



* Electrical
(Including **SRS**)





General Information

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SRS

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Chassis and Paint Codes

U.S. Model

Vehicle Identification Number

JH4NA1 15* MT00000 11

Manufacturer Code and Vehicle Type
 JH4: HONDA MOTOR CO., LTD., JAPAN.
 ACURA Passenger Car

Body Type
 NA1: ACURA NSX

Transmission Type
 15: 5-speed Manual
 26: 4-speed Automatic

Check Digit
 Model Year
 M: 1991
 Factory Code
 T: Tochigi Factory Japan
 Serial Number

Transmission Number

J4A4-1000001

Transmission Type
 J4A4: 5-speed Manual
 MR9A: 4-speed Automatic
 Serial Number

Paint Code

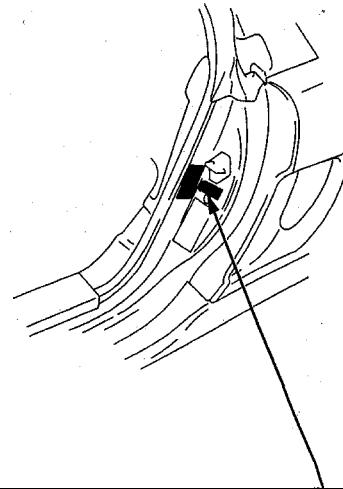
Paint Code	Color
R-77	Formula Red
NH-547	Berlina Black
NH-545M	Sebring Silver Metallic

Engine Number

C30A1-1300001

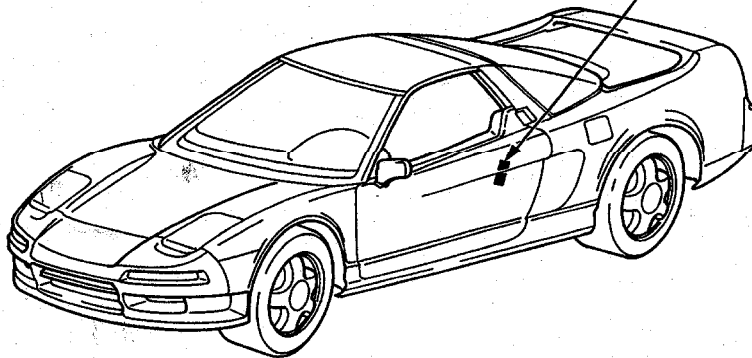
Engine Type
 Serial Number

Vehicle Identification Number and Federal Motor Vehicle Safety Standard Certification



Paint Code

COLOR
NH-547



SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

The NSX includes a driver's side airbag, located in the steering wheel hub, as part of a Supplemental Restraint System (SRS). Information necessary to safely service the SRS is included in this Service Manual. Items marked * in each section include, or are located near, SRS components. Servicing, disassembling or replacing these items will require special cautions and tools, and should therefore be done by an authorized Acura dealer.

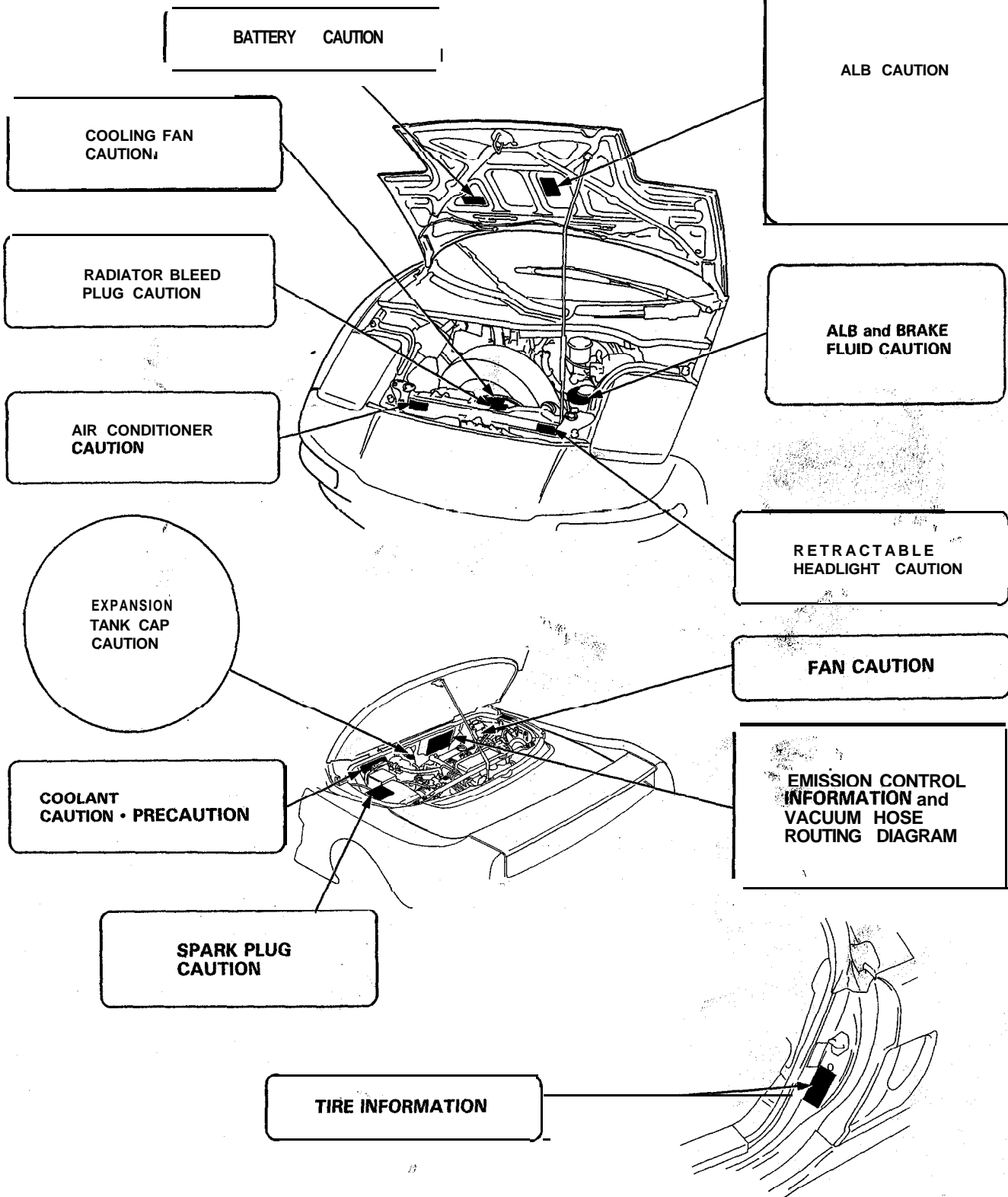
⚠ WARNING

- To avoid rendering the SRS inoperative, which can lead to personal injury or death in the event of a severe frontal collision, all maintenance must be performed by an authorized Acura dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the **airbag**.
- All SRS electrical wiring harnesses are covered with yellow outer insulation and related components are located in the steering column, center console, dash, and dashboard lower panel. Do not use electrical test equipment on these circuits.

Label Locations



SRS CAUTION LABELS: Refer to page 1-14.



Lift and Support Points

- Lift

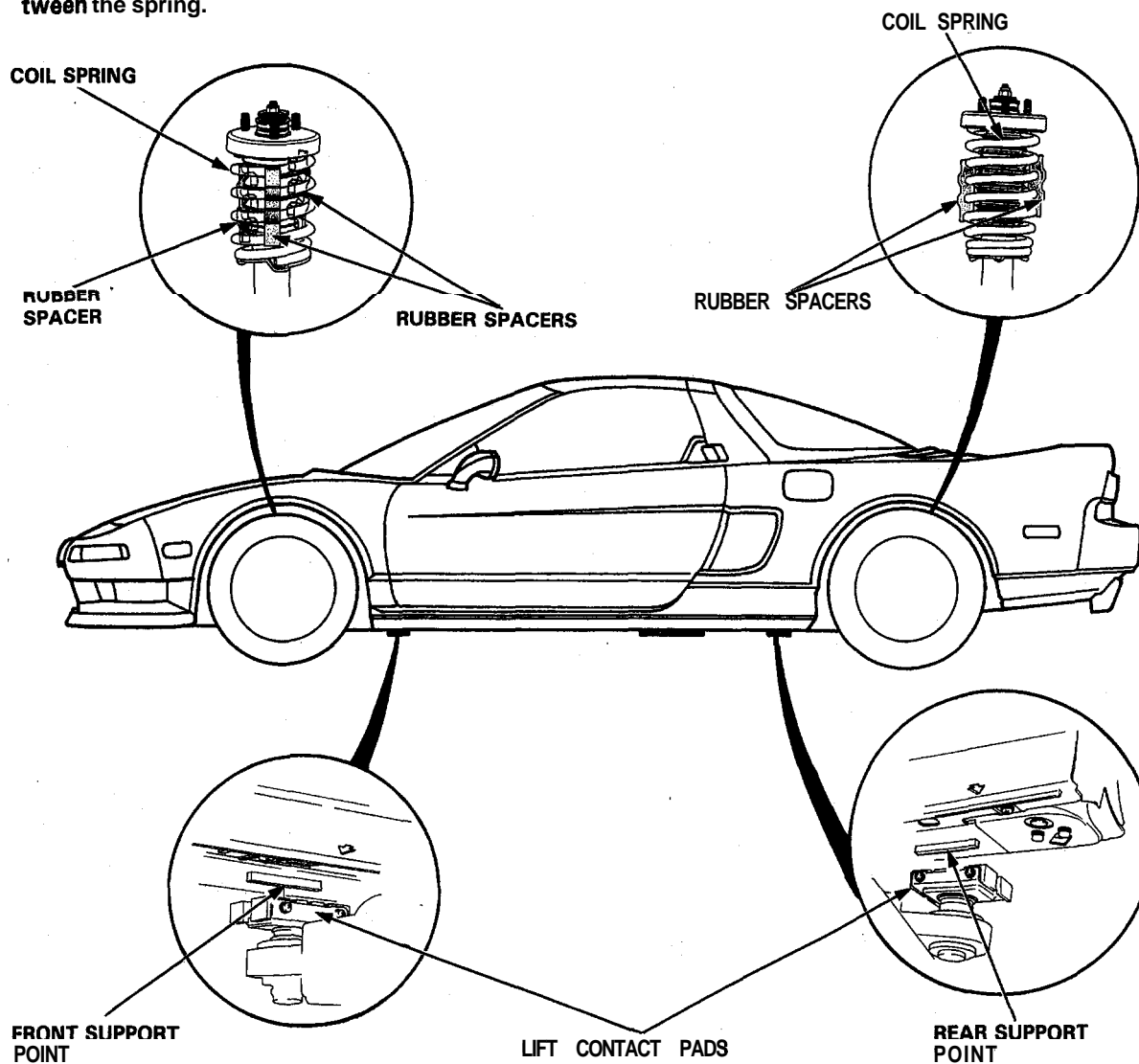
CAUTION:

- If ground clearance is inadequate to clear the shop lift, either:
 - install rubber spacers on the coil springs to raise the car. Use the floor jack procedures to raise the car (see page I-7).
 - or
 - Remove the chin spoiler.
 - or
 - If you need even more clearance, install the rubber spacers and remove the chin spoiler.
- Follow the lift manufacturer's instructions.
- Use rubber pad adapters on the lift to avoid damaging the car.

Spacer Installation

1. Place the rubber contact pads as shown.
2. Raise the lift a few inches and rock the car to be sure it is firmly supported.
3. Raise the lift to full height and inspect lift points for solid support.
4. Install rubber spacers on the coil springs.

CAUTION: Remove the rubber spacers after lowering the car. Do not drive the car with rubber spacers installed between the spring.





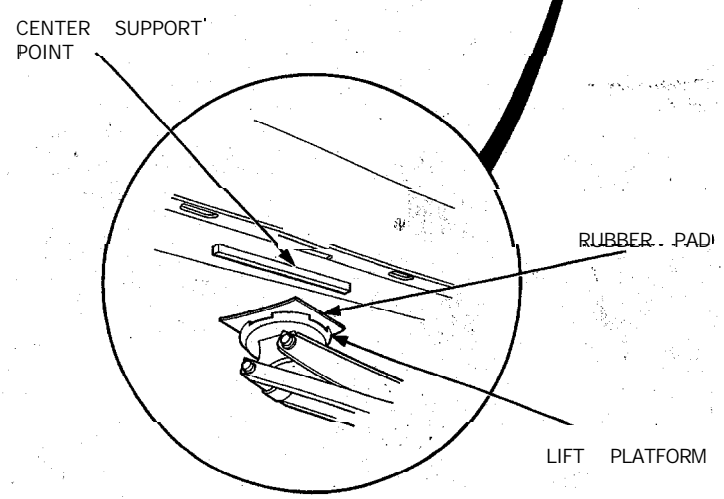
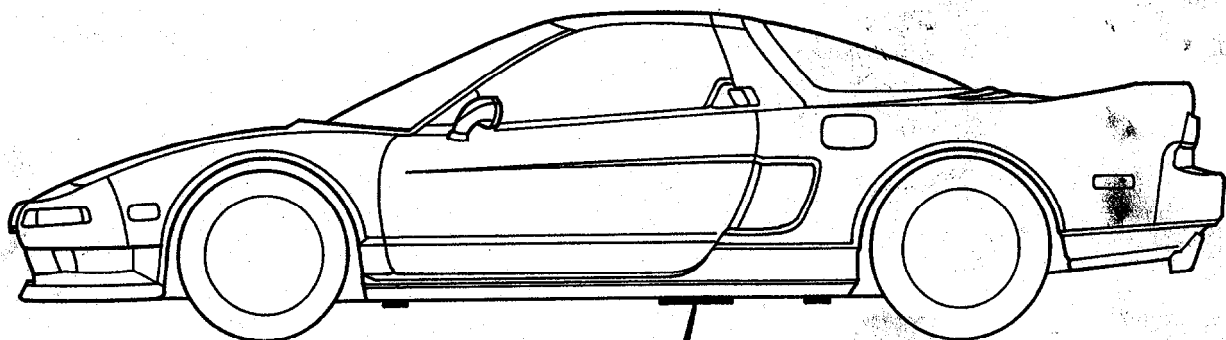
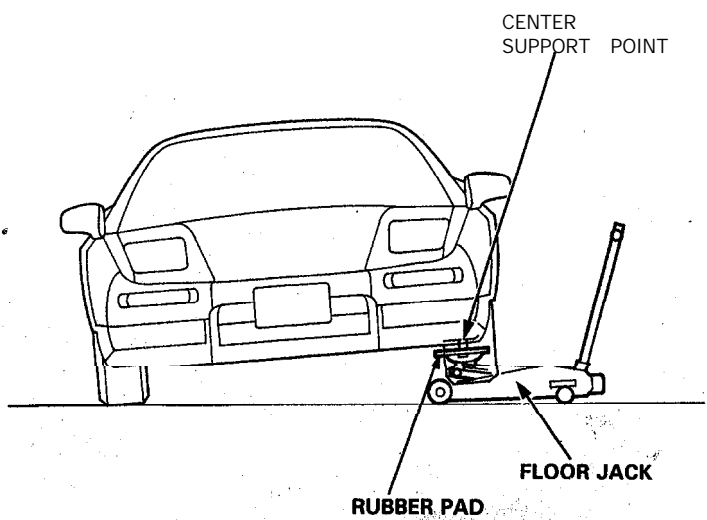
Floor Jack

CAUTION: Place a rubber pad between the lift platform and the center support point to avoid damaging the car. The lift platform must contact the support point only: it must not come in contact with any other part of the car.

1. Set the parking brake and block the wheels that are not being lifted.
2. When lifting the rear of the car, put the gearshift lever in reverse (Automatic in PARK).
3. Raise the car high enough to insert the safety stands.
4. Adjust and place the safety stands as shown on page I-8 so the car will be approximately level, then lower the car onto them.

⚠ WARNING

- Always use safety stands when working on or under any vehicle that is supported by only a jack.
- Never attempt to use a bumper jack for lifting or supporting the car.

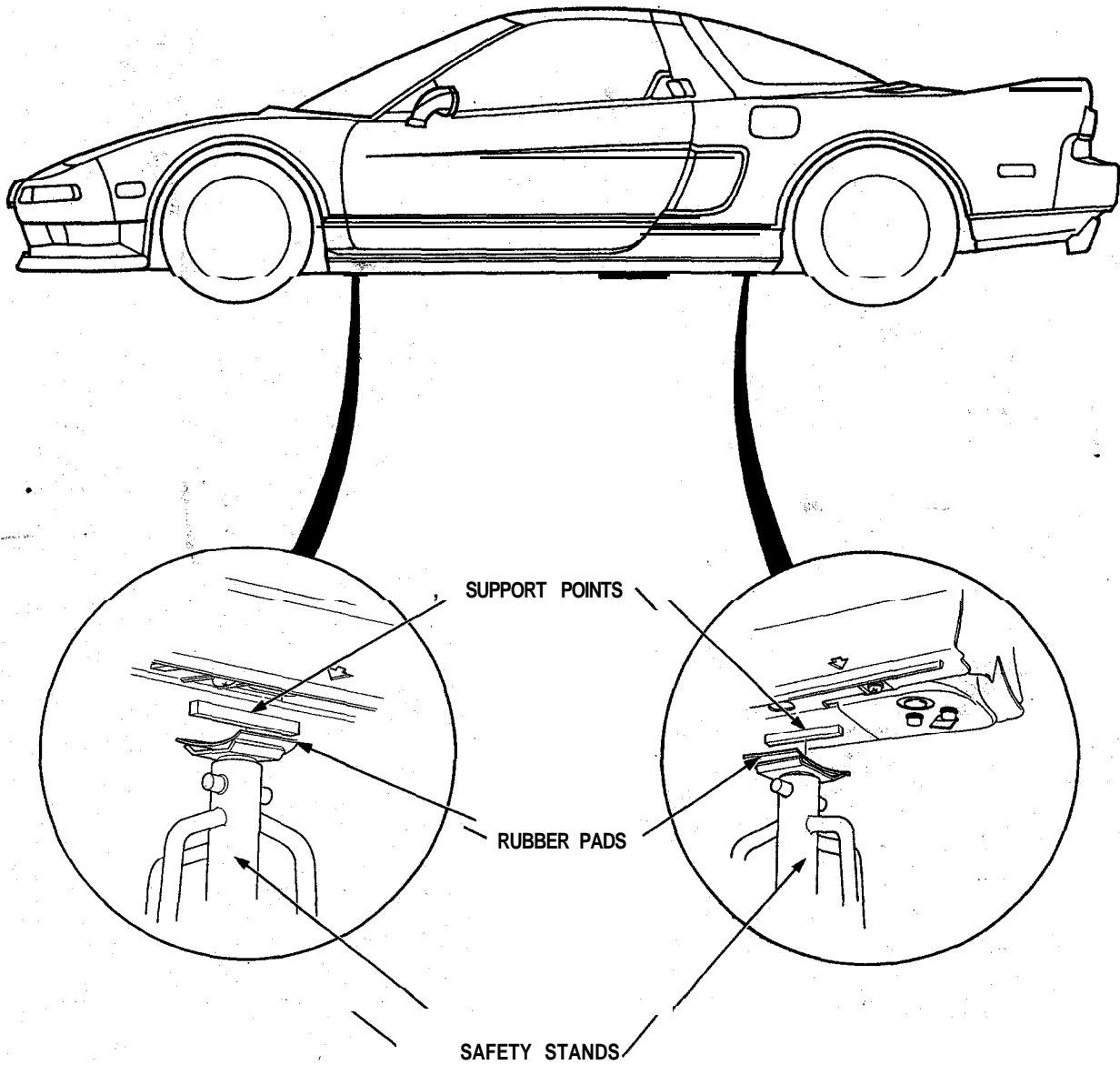


(cont'd)

Lift and Support Points (cont'd)

Safety Stands

CAUTION: Place a rubber pad between the safety stand platforms and the car's front and rear support points to avoid damaging the car. The safety stand platforms must contact the car's support points only; they must not come in contact with any other part of the car.



Towing



If the car needs to be towed, call a professional towing service. Never tow the car behind another car with just a rope or chain. It is very dangerous.

There are three widely used methods of towing a car:

Flat-bed Equipment — The operator loads the car on the back of a truck. This is the only recommended way of towing the NSX.

Wheel Lift Equipment — The tow truck driver uses two pivoting arms which go under the tires (front or rear) and lift them off the ground. The other two wheels remain on the ground. This towing method is not recommended. Because of the NSX's low ground clearance, the body can be damaged going over large bumps or up inclines.

Bling-type Equipment — The tow truck uses metal chains with hooks on the ends. These hooks go around parts of the frame or suspension and the cables lift that end of the car off the ground. Damage to the car's suspension and body is almost certain if this method of towing is attempted.

If the NSX cannot be towed by flat-bed, it should be towed with the rear wheels off the ground. If, due to damage, the car must be towed with the rear wheels on the ground, do the following:

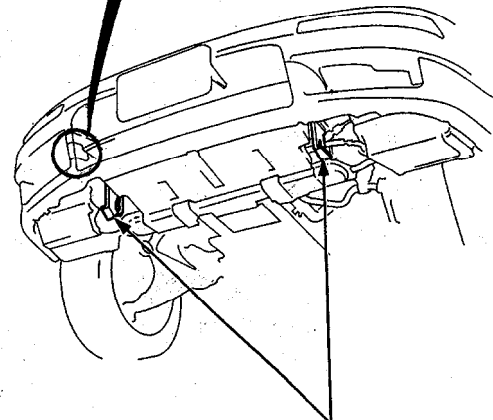
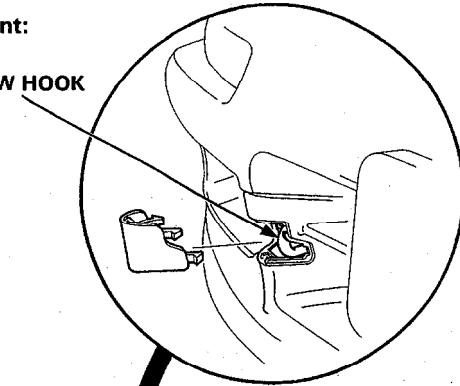
- Release the parking brake.
- Shift the 5-speed transmission to Neutral.
- If the car has an automatic transmission, start the engine. Shift the transmission to Drive, then into Neutral, then shut off the engine.
- It is best to tow the car no farther than 50 miles, and keep the speed below 35 mph.

NOTICE:

- Improper towing preparation will damage the transmission. Follow the above procedure exactly. The car must be towed on a flat bed if the engine will not start or the transmission will not shift.
- Trying to lift or tow the car by the bumpers will cause serious damage. The bumpers are not designed to support the car's weight.

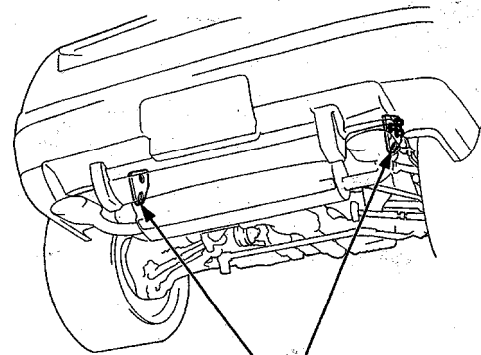
Front:

TOW HOOK



TIE DOWN BRACKETS

Rear:



TIE DOWN BRACKETS

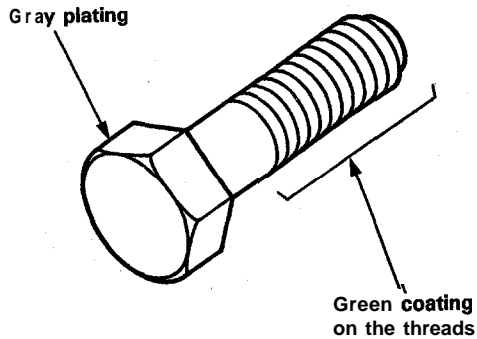
Service Precautions

Handling of Special Nuts and Bolts

Because many sections on this car are constructed with aluminum alloys, use only the special "Dacro" type nuts and bolts recommended by Acura.

NOTE:

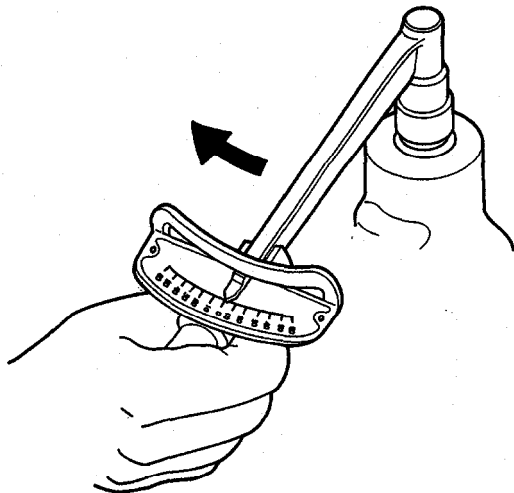
- Dacro finish can be identified by gray plating.
- Some Dacro finish bolts have a green coating on the thread section of the bolt for easier application. This type of bolt is called a "Torquer" bolt.
- Use of other types of nuts and bolts may cause electrolysis and corrosion, which in turn could cause the bolt to loosen.



Gray plating: "Dacro" type

Gray plating + Green coating on the threads:
"Torquer" type

1. When replacing nuts and bolts, use only the same type.
2. Tighten the nuts and bolts with a torque wrench to the specifications provided in this manual.
3. Clean all thread ridges with a non wire type bristle brush. Foreign matter in the threads may cause the bolt to loosen.
4. Sections on this car requiring the use Dacro nuts and bolts will be indicated by a (☆) in this manual.



Handling of tires

- The tires on NSX should not be rotated. The front wheels are 15" in diameter and the rear wheels are 16" in. so they cannot be rotated front-to-rear. The original-equipment tires on NSX have a unidirectional tread pattern, so they cannot be rotated side-to-side.
- The folding spare tire can not be repaired or removed from the rim.

General Information — SRS

Component Locations	I- 12
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Wiring Locations	1-16
Precautions/Procedures	I- 17

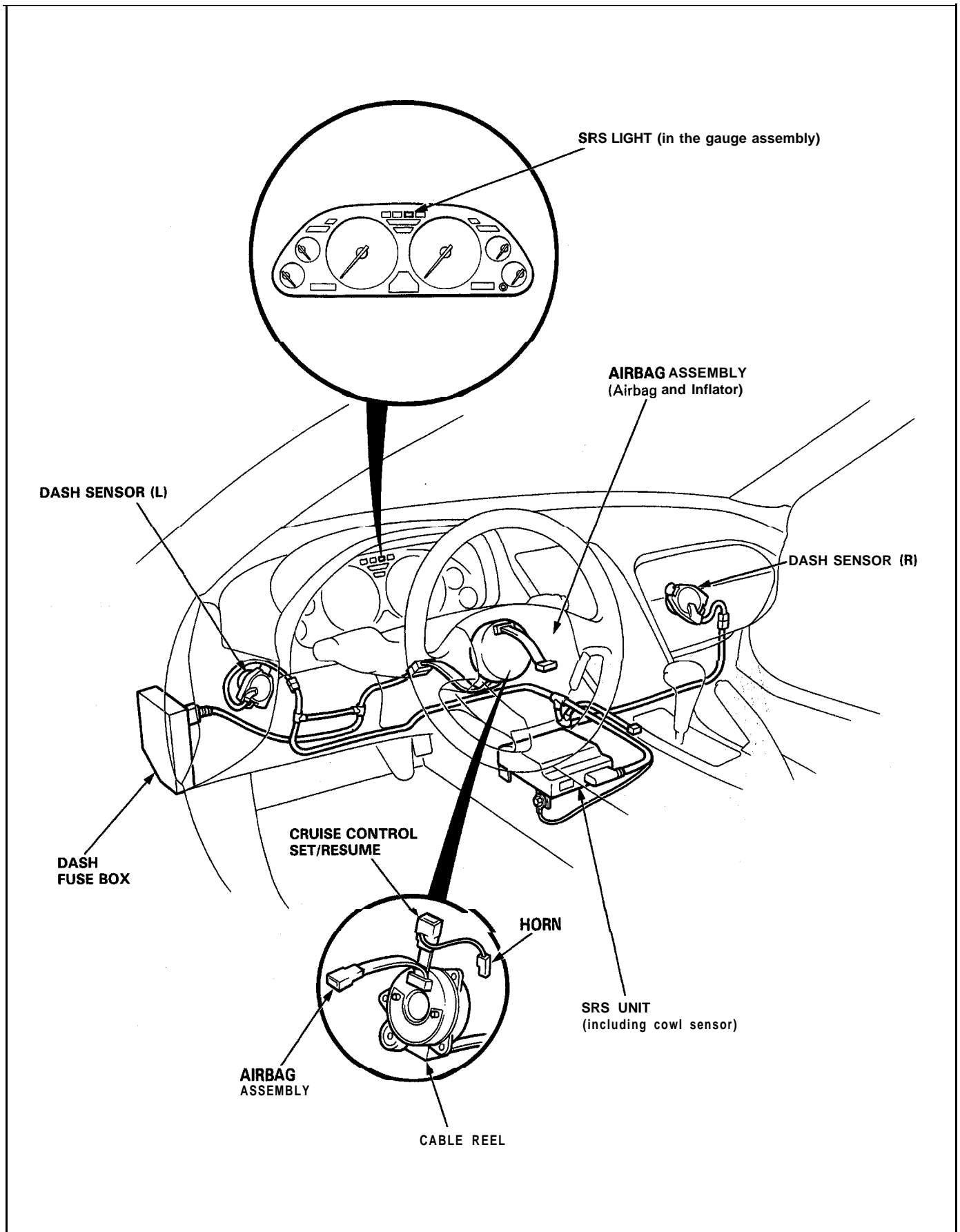
SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

The NSX includes a driver's side airbag, located in the steering wheel hub, as part of a Supplemental Restraint System (SRS). Information necessary to safely service the SRS is included in this Service Manual. Items marked * in each section include, or are located near, SRS components. Servicing, disassembling or replacing these items will require special cautions and tools, and should therefore be done by an authorized Acura dealer.

▲ WARNING

- To avoid rendering the SRS inoperative, which can lead to personal injury or death in the event of a severe frontal collision, all maintenance must be performed by an authorized Acura dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of a airbag.
- All SRS electrical wiring harnesses are covered with yellow outer insulation and related components are located in the steering column, center console, dash, and dashboard lower panel. Do not use electrical test equipment on these circuits.

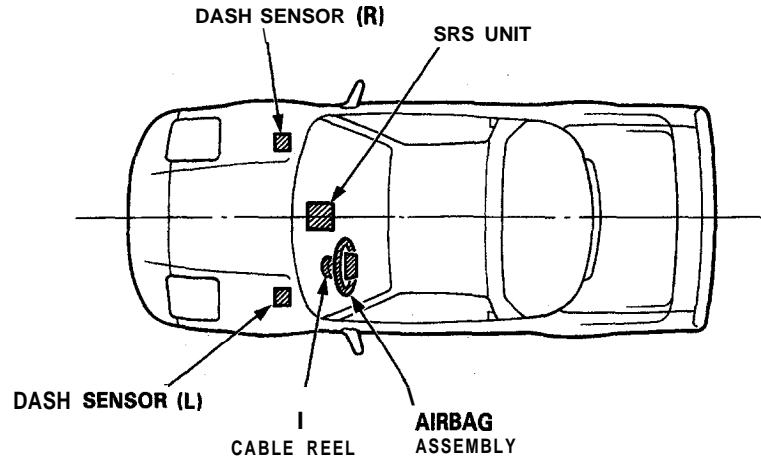
Component Locations



Description



The SRS is a safety device which, when used in conjunction with the seat belt, is designed to protect the driver by operating only when the car receives a frontal impact exceeding a certain set limit. The system is composed of left and right dash sensors, the SRS control unit (including the cowl sensor), the cable reel and airbag assembly.



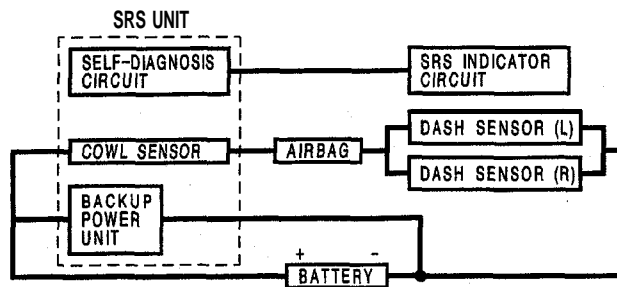
OPERATION:

As shown in the diagram below, the left and right dash sensors are connected in parallel. The parallel set of sensors are connected in series by the airbag inflator circuit and the car battery. In addition, a backup power unit is connected in parallel with the car battery. The backup power unit and the cowl sensor are located inside the SRS control unit.

The SRS operational sequence is as follows:

- (1) The cowl sensor activates, and one or both dash sensors activate.
- (2) Electrical energy is supplied to the airbag inflator by the battery, or the backup power unit if the battery voltage is too low.
- (3) Airbag deployment.

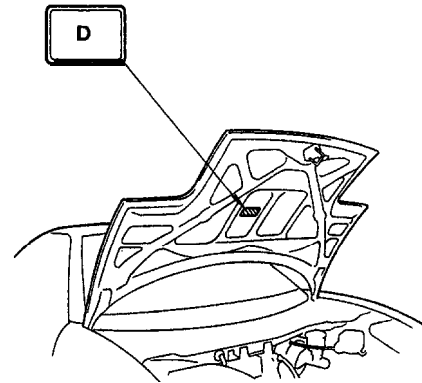
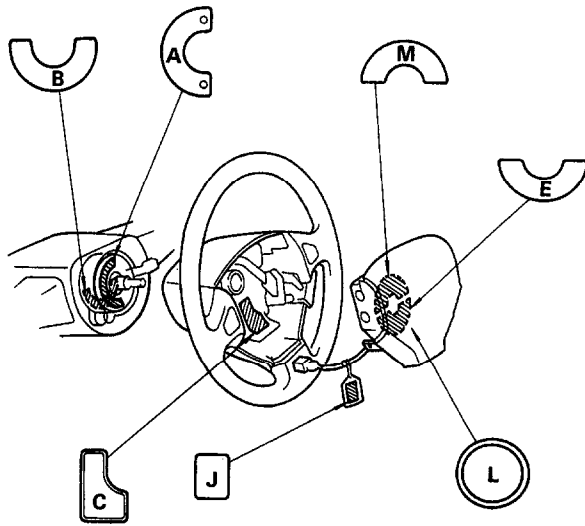
At least the cowl and one dash sensor must be activated simultaneously for at least 0.002 seconds in order for the airbag to be deployed.



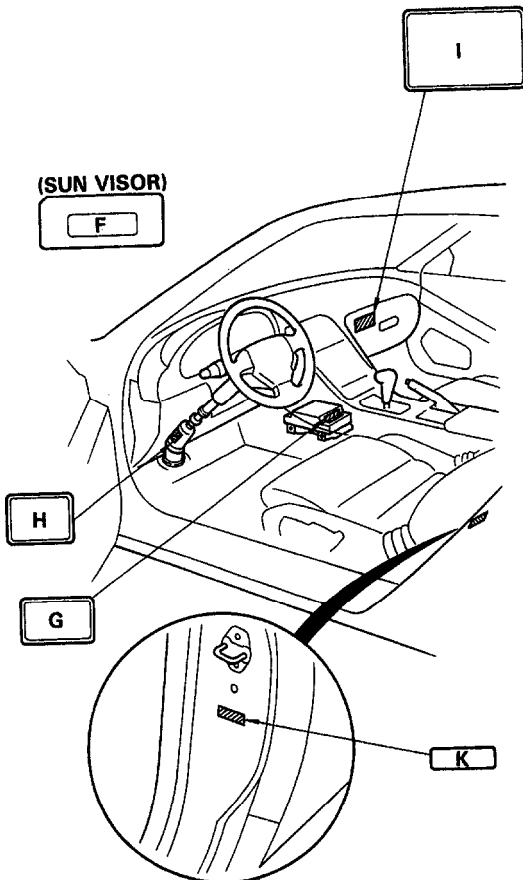
Self-diagnosis system

A self-diagnosis circuit is built into the SRS control unit; when the ignition switch is turned ON, the SRS light comes on and goes out after about 6 seconds if the system is operating normally. If the light does not come on, or does not go out after 6 seconds, or if it comes on while driving, this indicates an abnormality in the system. It must be inspected and repaired as soon as possible.

Warning/Caution Labels



(SUN VISOR)
F



A: CABLE REEL CAUTION A

CAUTION: **SRS**
BEFORE INSTALLING CABLE REEL

- CENTER THE FRONT WHEELS.
- ALIGN THE MARKS.
- READ SERVICE MANUAL.

B: CABLE REEL CAUTION B

CAUTION: **SRS**
NO SERVICEABLE PARTS INSIDE; DO NOT DISASSEMBLE OR TAMPER.

C: STEERING WHEEL WARNING

WARNING **SRS**
BEFORE INSTALLING STEERING WHEEL:

- CENTER THE FRONT WHEELS.
- ALIGN THE MARKS. (CABLE REEL)
- READ SERVICE MANUAL.

D: BULKHEAD WARNING

WARNING **SRS**
THIS VEHICLE IS EQUIPPED WITH A DRIVER AIRBAG AS A SUPPLEMENTAL RESTRAINT SYSTEM. (SRS)
ALL SRS ELECTRICAL WIRING AND CONNECTORS ARE COLORED YELLOW.
DO NOT USE ELECTRICAL TEST EQUIPMENT ON THESE CIRCUITS. TAMPERING WITH OR DISCONNECTING THE SRS WIRING COULD RESULT IN ACCIDENTAL FIRING OF THE INFLATOR OR MAKE THE SYSTEM INOPERATIVE, WHICH MAY RESULT IN SERIOUS INJURY.

E: MODULE WARNING

WARNING **SRS**
TO PREVENT ACCIDENTAL DEPLOYMENT AND POSSIBLE INJURY:
ALWAYS INSTALL THE PROTECTIVE SHORT CONNECTOR ON THE INFLATOR CONNECTOR WHEN THE HARNESS IS DISCONNECTED.
UNDER NO CIRCUMSTANCES SHOULD DIAGNOSIS BE PERFORMED USING ELECTRICAL TEST EQUIPMENT OR PROBING DEVICES.
NO SERVICEABLE PARTS INSIDE. DO NOT DISASSEMBLE OR TAMPER.
STORE THE REMOVED AIRBAG ASSEMBLY WITH THE PAD SURFACE UP.
FOR SPECIAL HANDLING OR STORAGE REFER TO THE ACURA SERVICE MANUAL.
DISPOSE OF THE ENTIRE UNIT AS DIRECTED.

F: DRIVER INFORMATION

SRS ALWAYS WEAR YOUR SEAT BELT

- THIS CAR IS EQUIPPED WITH A DRIVER AIRBAG AS A SUPPLEMENTAL RESTRAINT SYSTEM (SRS)
- IT IS DESIGNED TO SUPPLEMENT THE SEAT BELT.
- BEFORE DRIVING READ LABEL INSIDE THE GLOVE BOX.

G: SRS UNIT CAUTION

CAUTION **SRS**

- NO SERVICEABLE PARTS INSIDE.
- DO NOT DISASSEMBLE OR TAMPER.
- DO NOT DROP.
- STORE IN A CLEAN, DRY AREA.

H: STEERING COLUMN CAUTION

CAUTION **SRS**
TO AVOID DAMAGING THE SRS CABLE OR REEL, WHICH COULD MAKE THE SYSTEM INOPERATIVE, REMOVE THE STEERING WHEEL BEFORE REMOVING THE STEERING SHAFT CONNECTOR BOLT.

I: POCKET INFORMATION

DRIVER'S AIRBAG INFORMATION **SRS**

- SUPPLEMENTAL RESTRAINT SYSTEM (SRS) CAN PROVIDE ADDITIONAL PROTECTION FOR THE DRIVER IN A FRONTAL COLLISION. A FUNCTIONAL DESCRIPTION OF THE SRS IS IN YOUR OWNER'S MANUAL.
- THE SYSTEM MUST BE INSPECTED TEN YEARS AFTER DATE OF MANUFACTURE, AS NOTED ON THE CERTIFICATION PLATE.
- ANY REPAIR, INSPECTION OR NEARBY ACCESSORY INSTALLATION SHOULD BE DONE BY AN ACURA DEALER.
- IF YOUR SRS INDICATOR:
LIGHTS WHILE DRIVING OR FLASHES;
FAILS TO LIGHT OR STAYS ON AFTER THE IGNITION IS FIRST TURNED ON:
SEE YOUR AUTHORIZED ACURA DEALER.

J: STEERING WHEEL WARNING

WARNING **SRS**
TO PREVENT ACCIDENTAL DEPLOYMENT AND POSSIBLE INJURY:
ALWAYS INSTALL THE PROTECTIVE SHORT CONNECTOR ON THE INFLATOR CONNECTOR WHEN THE HARNESS IS DISCONNECTED.

K: LABEL **AIRBAG****L: INFLATOR LABEL**

DANGER CONTAINS SODIUM AZIDE AND POTASSIUM NITRATE.
CONTENTS ARE EXTREMELY FLAMMABLE.
DO NOT DISMANTLE OR INCINERATE.
DO NOT PROBE WITH ELECTRICAL DEVICES.

M: INFLATOR COVER LABEL

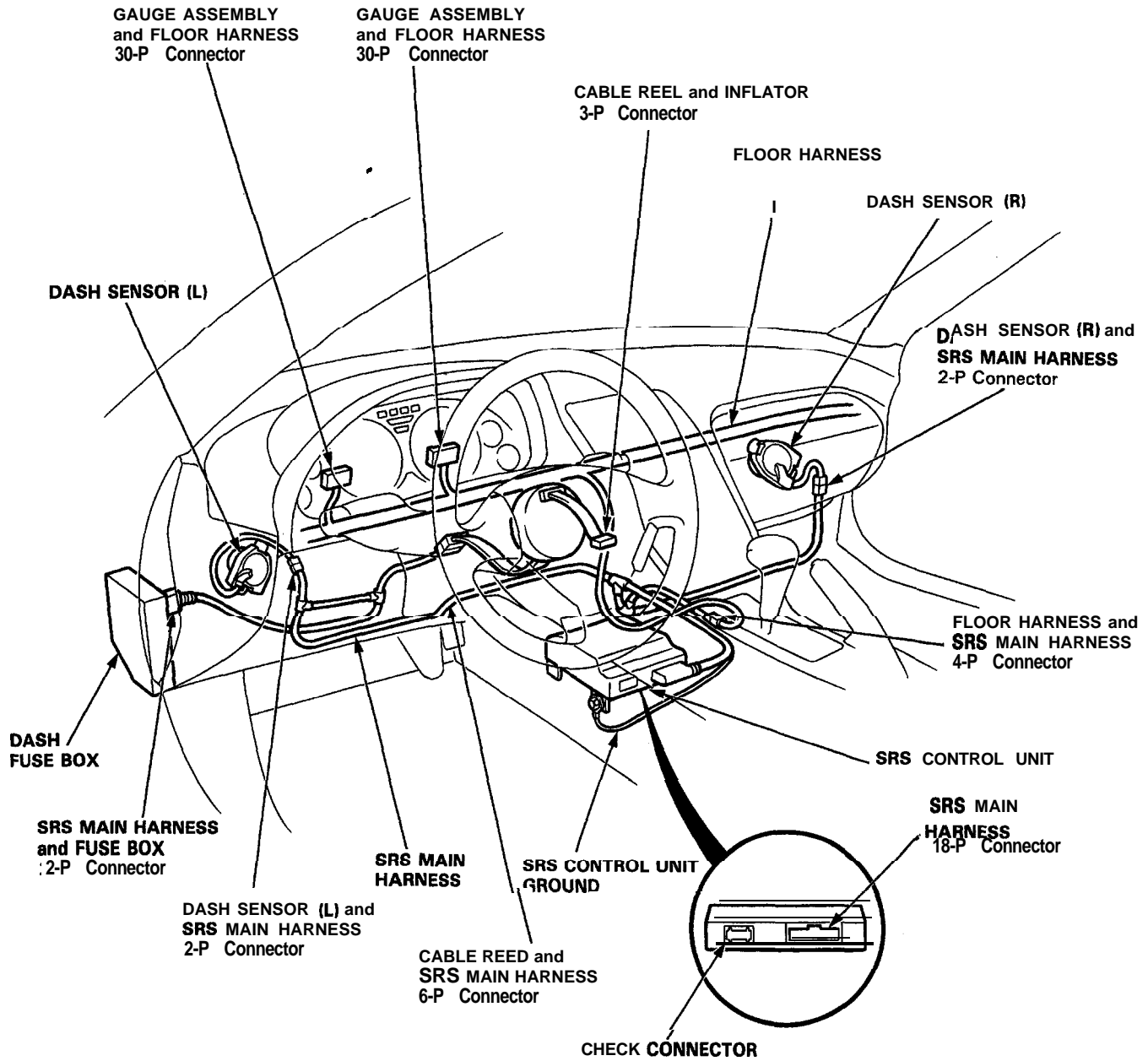
DANGER
EXPLOSIVE/FLAMMABLE SRS
CONTACT WITH ACID, WATER, OR HEAVY METALS SUCH AS COPPER, LEAD, OR MERCURY, MAY PRODUCE HARMFUL AND IRRITATING GASES OR EXPLOSIVE COMPOUNDS. STORAGE TEMPERATURES MUST NOT EXCEED 200°F. FOR PROPER HANDLING, STORAGE, AND DISPOSAL PROCEDURES REFER TO THE ACURA SERVICE MANUAL, SRS SUPPLEMENT.
POISON
CONTAINS POISONOUS SODIUM AZIDE AND POTASSIUM NITRATE.
FIRST AID:
IF CONTENTS ARE SWALLOWED, INDUCE VOMITING. FOR EYE CONTACT, FLUSH EYES WITH WATER FOR 15 MINUTES. IF GASES (FROM ACID OR WATER CONTACT) AIR INHALED, SEEK FRESH AIR. IN EVERY CASE, GET PROMPT MEDICAL ATTENTION.
KEEP OUT OF REACH OF CHILDREN.

Wiring Locations

CAUTION: Make sure all SRS ground locations are clean and grounds are securely attached.

NOTE:

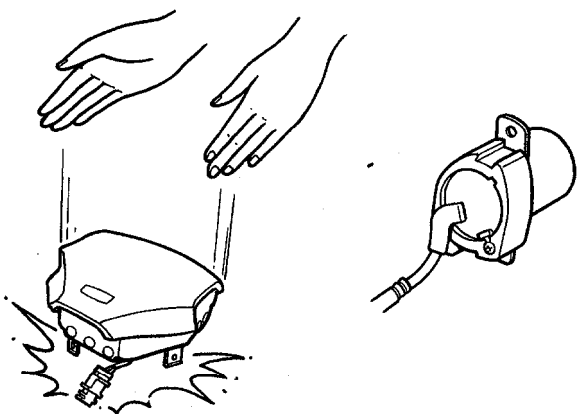
- All SRS electrical wiring harnesses are covered with yellow outer insulation.
- Replace the entire affected SRS harness assembly if there is an open circuit or damage to the wiring.



General Precautions

1. Carefully inspect any SRS part before installing. Do not install any part that shows signs of being dropped or improperly handled, such as dents, cracks or deformation:

- Airbag assy.
- Dash sensors.
- Cable reel.
- SRS unit.

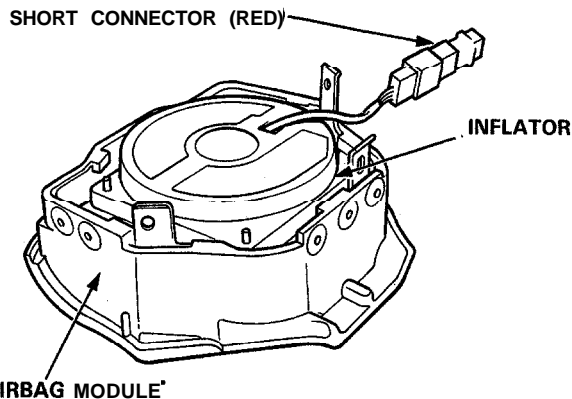


2. Use only the digital multimeter (KS-AHM-32-003) to check the system. If using an analog circuit tester, it may cause an accidental deployment and possible injury.
3. Do not install used SRS parts from another car. When repairing, use only new SRS parts.
4. Except when performing electrical inspections, always disconnect both the negative cable and positive cable at the battery before beginning work.
5. Replacement of the lighting and wiper combination switches and cruise control switch can be done without removing the steering wheel:

- Lighting and wiper combination switch replacement, see section 23.
- Cruise control switch replacement, see section 23.

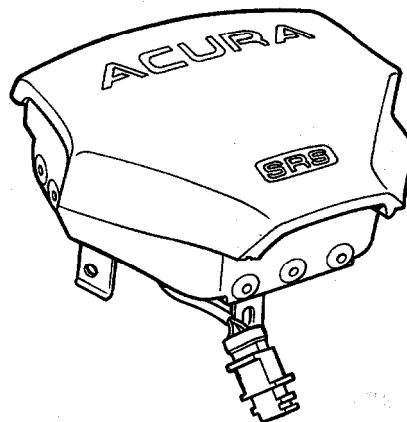
Airbag Assembly

Do not try to disassemble the airbag assembly. There are not separately serviceable parts. Once an airbag has been operated (deployed), it cannot be repaired or reused.



For temporary storage of the airbag assembly during service, please observe the following precautions:

1. Store the removed airbag assembly with the pad surface up.



WARNING If the airbag is improperly stored face down, accidental deployment could propel the unit with enough force to cause serious injury.

2. Store the removed airbag assembly on a secure flat surface away from any high heat source (exceeding 100°C/212°F) and free of any oil, grease, detergent or water.

CAUTION: Improper handling or storage can internally damage the airbag assembly, making it inoperative.

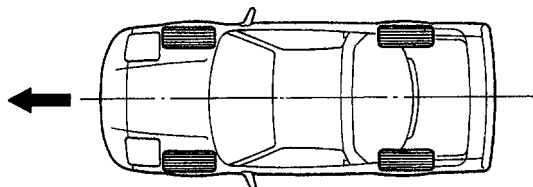
If you suspect the airbag assembly has been damaged, install a new unit and refer to the Deployment/Disposal Procedures for scrapping of the damaged airbag.

Precautions/Procedures

• Steering

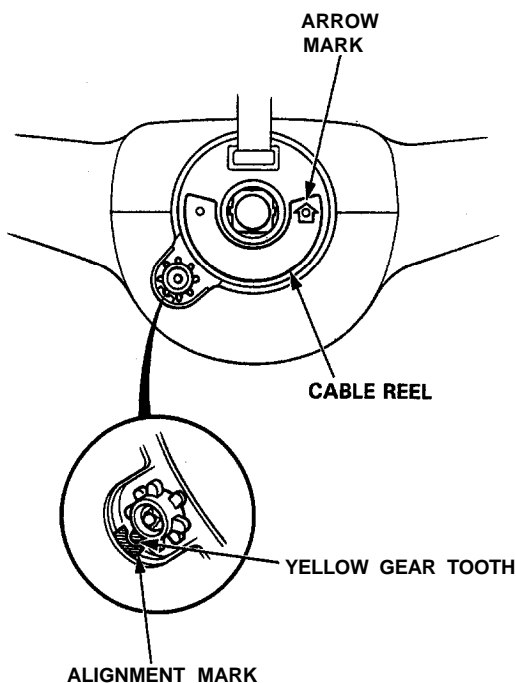
1. Steering Wheel and Cable Reel Alignment:

NOTE: To avoid misalignment of the steering wheel or airbag on reassembly, make sure the wheels are turned straight ahead before removing the steering wheel.



Rotate the cable reel clockwise until it stops. Then rotate it counterclockwise (approximately two turns) until:

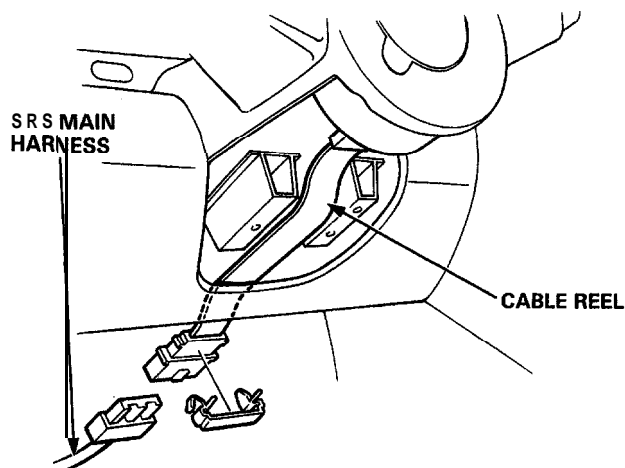
- The yellow gear tooth lines up with the mark on the cover.
- The arrow on the cable reel label points straight up.



2. Steering Column Removal:

CAUTION:

- Before removing the steering column, first disconnect the connector between the cable reel and the main SRS harness.
- If the steering column is going to be removed without dismantling the steering wheel, lock the steering by turning the ignition key to O-LOCK position or remove the key from the ignition so that the steering wheel will not turn round.



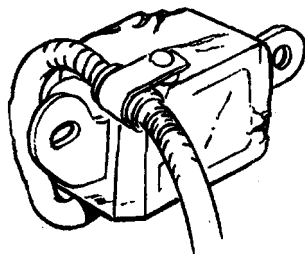
3. Steering wheel:

Do not replace the original steering wheel with any other design, since it will make it impossible to properly install the airbag (Only use genuine HONDA replacement parts).

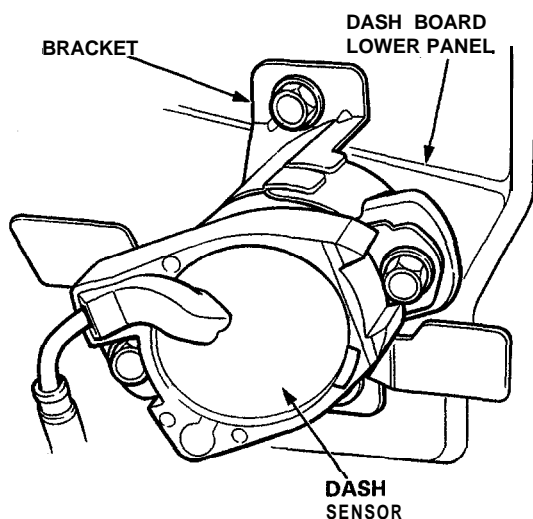
4. After reassembly confirm that the wheels are still straight ahead and that steering wheel spoke angle is correct. If minor spoke angle adjustment is necessary, do so only by adjustment of the tie rods, not by removing and repositioning the steering wheel.

Sensor inspection

1. After any degree of frontal body damage, inspect both dash sensors.
Replace a sensor if there are any signs of dents, cracks or deformation.



2. Be sure the sensors are installed securely.



CAUTION: Take extra care when painting or doing body work on any part of the dashboard lower panel. Avoid direct exposure of the sensors or wiring to heat guns, welding or spraying equipment.

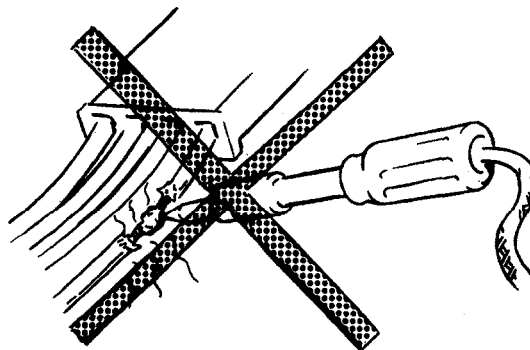
⚠ WARNING

- Disconnect both the negative and positive battery cables.
- Install the short connector before performing work on the dashboard lower panel or the SRS sensors.

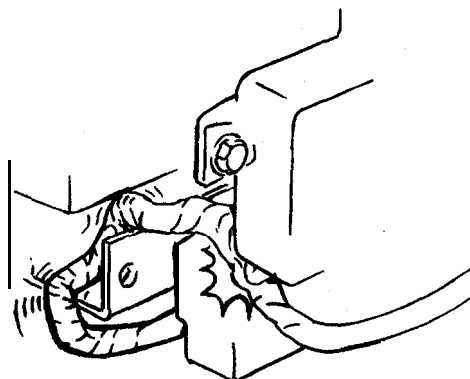
Wiring

1. Never attempt to modify, splice or repair SRS wiring.

NOTE: SRS wiring can be identified by special yellow outer protective covering.



2. Be sure to install the harness wires so that they are not pinched or interfering with other car parts.



3. Make sure all SRS ground locations are clean and grounds are securely fastened for optimum metal-to-metal contact. Poor grounding can cause intermittent problems that are difficult to diagnose.

(cont'd)