

Shop Technician Informational Meeting



THE PRIMARY PURPOSE OF THIS MEETING IS TO HELP YOU IDENTIFY WHAT TYPE OF OCS SYSTEMS YOU ARE WORKING WITH.

HELPING YOU UNDERSTAND HOW TO PROPERLY HANDLE THOSE SYSTEMS.

We will cover the following topics in the next hour



- FMVSS 208
- What is OCS?
- Weight classification breakdown
- What are the most common systems in use today
- Basic handling procedures
- Upholstery procedures
- Calibration and Re-Zeroing
- Add-ons, such as seat heaters and vibrators
- Documentation
- What the dealers expect from us

What is FMVSS 208?



This is the Federal Motor Vehicle Safety Standard 208. In short, it is the industry standard set forth by NHTSA for front passenger active and passive restraints and performance requirements for occupant crash protection. The National Highway Transportation and Safety Administration or *NHTSA*, has mandated that all passenger vehicles must have some form of OCS by model year 2006. Early versions of these systems were being installed on some vehicles as far back as 2003.

FMVSS 208 continued



Simply put, if a 12 month old, 3 year old, and or a 6 year old child is in the front passenger seat, then the front passenger airbags will be shut off in the event of a collision. For the 5th percentile passenger the airbags will be deployed in a low impact force in the event of a collision. What is a 1/5th percentile occupant? This is a person under 100 lbs. and Is approximately 4 foot 7 to 4 foot 11 inches.

What is OCS?



OCS is an acronym for ***Occupant Classification System***. Some of you may have heard ***OCS***, ***ODS*** (*occupant detection system*), ***PODS*** (*passive occupant detection system*), ***OPRS*** (*occupant position recognition system*), etc... These are all acronyms for some form of OCS system. But for ease of our discussion, I will refer to all of these systems as OCS. The OCS is a group of components that are part of a larger system known as the ***Advanced Airbag System, or Supplemental Restraint System (SRS)***.

OCS? continued



How do you know that you have an OCS system in your car? Start with the window sticker, then the passenger visor or glove box hanger. If it states “Advanced Airbag System” then you can count on it having an OCS.

OCS? continued



The OCS works together with the ECU, (Electronic Control Unit) and in some cases a seat belt switch, a seatbelt pre-tensioner, seat position sensor, and a belt tension sensor to determine if and at what level of power the passenger front airbag should deploy with the dual depth or dual stage system. This system is part of a total integrated safety system that includes: the OCS, seat belt pre-tensioners, the front passenger airbag, the side impact airbags, side curtain airbags, and the ECU.

OCS? continued



Many of the OCS systems out there today do this by using advanced algorithms to determine the weight of the occupant and thereby classifying that passenger seat. You're probably asking yourself, what's an Algorithm? Good question. It is a logical step by step sequence of mathematical equations designed to determine if there is an occupant in the seat, what that occupant weighs, and where that occupant is positioned on the seat, as well as where the seat is on the track.

OCS Weight Classification Breakdown



- **Class 0)** is an empty seat
- **Class 1)** is a 12 mo. old child in a baby seat, 3 years, or up to 6 years
- **Class 2)** is the 5th % female or under 100 lbs. and under 5ft. in height
- **Class 3)** is 50% male group (Average size male)
- **Class 4)** is the 95% male group (Above average size male)

What are the most common OCS systems used today?



The Delphi PODS-B (Passive Occupant Detection System) most of you are familiar with this system by now. It consists of a pressure sensor, a bladder assembly, belt pre-tensioner, belt switch sensor, and an ECU. This system's most visible feature that will affect you is the **Bladder** located under the surface of the foam seat bun. (These are found on numerous Ford and Chevy vehicles)

Most common OCS systems continued



Calsonic Kansei This is a name you will see under some seats. But I can tell you this, Calsonic is owned by Nissan and they share components to make up a whole system, Mostly seen on Nissan vehicles.

The Siemens VDO AWSII (Advanced Weight Sensor) Strain Gauge Technology consisting of four sensors embedded within the seat track and, an ECU, as well as a seat position sensor. This system is located within the seat tracks.

Most common OCS systems continued



Takata This a name more commonly seen on Toyota vehicles. It is a strain gauge system that is embedded in the seat track.

The IEE Automotive USA System They make a Force Sensing Resistor Matrix Sheet used in conjunction with an ECU. This is a thin flexible sensor tape system.

Most common OCS systems continued



The TRW Automotive Systems uses strain gauge technology for its system as well as an ECU. (Found on some Ford Vehicles) This system is located within the seat tracks and is more installer friendly as well.

IMS Applied Intelligence uses an Occupant Weight Sensor (OWS) strain gauge technology with a Restraint Control Module (RCM), Belt Tension Sensor, and intelligent algorithms to classify the occupant. This system is located within the seat tracks and is more installer friendly.

Most common OCS systems continued



Texas Instruments uses a piezo-resistive strain gauge technology at the four corners of a passenger seat along with an ECU to detect presence and weight.

The OEs do not necessarily use just one style or one manufacturer of OCS systems. They might employ multiple methods of occupant classification across multiple platforms.

Handling Procedures for Current Systems OCS Systems



Handling differs for each system, but as a general rule of thumb we recommend do the following:

1. Disconnect the negative terminal of the battery and wait the manufacturers recommended amount of time (Approximately 3-20 minutes) before you disconnect the seat.

Note: (ONCE YOUV'E DISCONNECTED THE BATTERY TERMINAL YOU MUST NOT START OR MOVE THE VEHICLE UNTIL THE FRONT SEATS HAVE BEEN BOLTED BACK IN THE CAR AND THE ELECTRICAL CONNECTORS PLUGGED IN AGAIN. IF YOU ARE REMOVING THE SEATS AT THE DEALERSHIP, MAKE ARRAINGMENTS TO HAVE A SAFE PLACE TO PARK THE VEHICLE. IF YOU ARE REMOVING THE SEATS AT YOUR SHOP THAN FIND A SAFE LOCATION FOR THE VEHICLE)

- 2. Remove seat bolt anchor screws from the front and rear of seat base.**
- 3. Lean the seat back and then disconnect the airbag and OCS system connectors.**
- 4. Remove the seat for upholstery work to be performed.**

5. NEVER MIX-UP SEATING COMPONENTS.

IF YOU HAVE TWO OR MORE OF THE SAME INTERIORS IN THE SHOP AT ONE TIME, YOU CANNOT USE A SEAT FROM ONE CAR AND PUT IT INTO ANOTHER. EACH PASSENGER FRONT SEAT IS CALIBRATED TO WORK AS PART OF A COMPLETE SYSTEM, AND ONLY WITH THE VEHICLE IT CAME OUT OF.

(Once the seat has been **carefully removed** from the vehicle it can then be transported to the work bench or standby area. ***NEVER DRAG THE SEAT ACROSS THE SHOP FLOOR, OR DROP THE SEAT ON THE FLOOR OR BENCH.*** Doing this, could cause the seat sensors to break and you don't want to pay for the replacements. When you break the sensors you may have to replace the entire system because it is calibrated together as a whole unit.)

Note: NEVER USE AN IMPACT DRIVER WRENCH WHEN YOU ARE REMOVING, OR RE-INSTALLING THE FRONT SEATS FROM A VEHICLE. DOING THIS COULD POSSIBLY DAMAGE THE SENSORS.

6. Upholster seats and then reinstall the seats into the vehicle in reverse order of removal.

7. Use a medium bond thread lock compound on the seat bolts and then torque the bolts to manufacturer specs with a torque wrench. These specs are available through the service department at your dealerships.

Upholstery Procedures



FROM THIS POINT IN TIME ON, NEVER CUT THE OE FABRICS FROM THE FRONT SEATS.

REMOVE THE COVER FROM THE CLIPS UPWARD, AND THEN REMOVE THE HOGRINGS OR VELCRO FASTENERS

I know that some of the shop owners aren't going to be too happy with me saying this but take a little more time handling and upholstering the front seats. You'll wind up saving money in the long run, because you're not going to be replacing OCS systems all the time. That being said; keep track of all of the seat bolts, trim, and other components. I like to keep a magnetic tray at my workstation for the bolts. I also like to keep a plastic bin for the seat trim pieces. Scratched trim pieces get expensive to replace as well.

Calibration or Re-Zeroing



Calibration is usually performed at the manufacturer level and not at the dealership. Seat manufacturers will however recommend that the seat be re-zeroed. Re-zeroing the seat in effect does the same thing you might do on a home scale, which is taking whatever the current weight is and making that the zero point in pounds.

When should I re-zero a seat?



Ok, I've done the installation how will I know when I need to re-zero? The answer is..... When that funny little SRS airbag warning light comes on and stays on, or the OCS light is not functioning properly. At that point take the vehicle to the dealer and have them re-zero the seat.

Peripheral Add-ons



Is it alright to install heating pads or seat vibration systems on a 2006 and above or on a vehicle equipped with OCS ? Katzkin does not recommend installing seat heaters or vibrating units on the seats that contain a seat surface Flexible Sensor Mat OCS system.

New Technology Coming



There are a number of new systems coming out regularly, and don't forget that the OEs are working on vehicles 3-5 years out.

- **TRW** is currently testing a new 3-D video camera system to locate and classify the passenger occupant.
- **Delphi** is currently working on their “*Occupant Position Recognition System*” which is also an optics based system.
- **Autoliv** is in the process of testing an ultrasonic sensor system to detect and locate passengers in order to classify them.

Freesc***ale*** is in the process of developing an *E-Field* technology (Electronic Field Detection) imaging system. Their “*Seat Sentry*” system generates a low level e-field from multiple antennas mounted in the seat back cushion. If a conductive body enters the e-field the system detects a drop in AC voltage. By multiplexing the output of up to nine sensors, the system can detect the height of a passenger as well as their proximity to the front airbag.

Documentation



- **Don't just wait for the shop foreman to tell you what to do when a job comes in. Make sure that the seats and the paperwork that you are working on have the vehicle identification number written on them. It is very important to be able to track each and every vehicle from the time it enters your shop till the vehicle odometer reads 36,000 miles or three years of ownership. The work order should also contain the mileage of the vehicle at the time of installation, and the date of installation. If they don't have this info, then get it from the driver / tech or someone at the dealership. Make sure that you put the installers name on the work order for future reference.**

What Do The Dealers Expect From Us?



A whole bunch. Well it seems like that anyways. But if we just follow consistent procedures or “Standard Operating Procedures”, then we will be satisfying not only the needs of the dealer but also that of the OEs. The OEs don’t do anything without an S.O.P. So if we can operate like them, then the whole relationship will work easier.

An S.O.P is a way in which a task is performed. That is to say by repetition, a standard way of performing the task. When you work by S.O.P. the quality of the work improves and the amount of time to perform that task decreases. Both of these save the company time and money and make your day easier.

A promise is a promise.



When your company makes a promise to deliver a car or an interior at a certain time, then that's exactly what the dealer is expecting. In some cases it's a sold unit you are working on, and the dealer has made a promise to the customer. Here's how I like to look at it. You've just bought a new car and you're having leather, or roof, or a video system put into it. The dealer told you it would be done on Wednesday cause the restyler told him it would be done by then, but you just got a call from the dealer who tells you it won't be done until Friday or even Monday of next week. You're pissed right about now, and if you wanted to, you could make enough noise to back out of the purchase of that shiny new car.

Get it? I thought you would. There's always a real person at the other end of that interior you're working on, just remember that.

OEM Tech Website Access

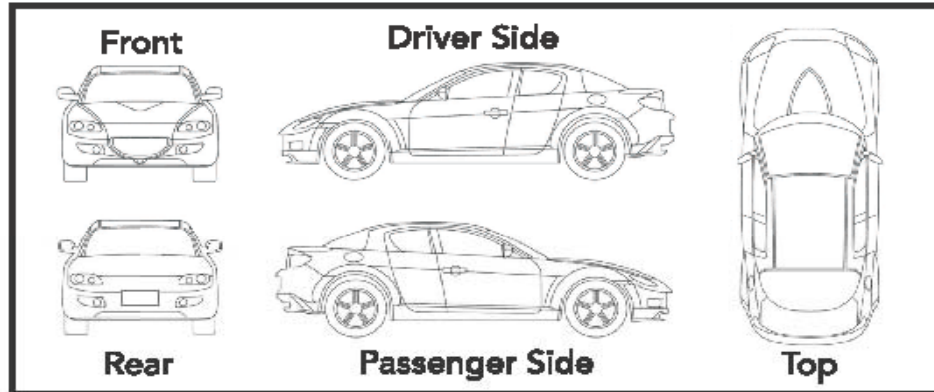
- Acura – www.ServiceExpress.Honda.com
- Audi – <http://www.ebahn.com/audi>
- BMW - <http://www.bmwtechinfo.com>
- Chrysler/Dodge/Eagle/Jeep/Plymouth – www.techauthority.com
- Ford/Lincoln/Mercury – www.motorcraft.com
- General Motors – Buick/Cadillac/Chevrolet/Geo/GMC/Hummer/Oldsmobile/Pontiac/Saturn – www.gmtechinfo.com
- Honda – www.ServiceExpress.Honda.com
- Hyundai – www.hmaservice.com
- Infiniti – www.infinititechinfo.com
- Isuzu – www.isuzutechinfo.com
- Jaguar – www.jaguartechinfo.com
- Kia – www.kiatechinfo.com
- Land Rover – www.landrovertechinfo.com
- Lexus – <http://techinfo.lexus.com>
- Mazda – www.mazdatechinfo.com
- Mercedes Benz – www.startekinfo.com
- Mitsubishi – www.mitsubishitechinfo.com
- Nissan – www.nissantechinfo.com
- Porsche – <http://techinfo.porsche.com>
- Saab – www.saabtechinfo.com
- Subaru – www.subaru.com, click on “home” and then “technical information”
- Suzuki – www.suzukitechinfo.com
- Toyota – <http://techinfo.toyota.com>
- Volkswagen – www.ebahn.com/vw
- Volvo – www.volvotechinfo.com
- Free wiring site for MOPAR: http://dto.vftis.com/mopar/platform_select.asp

VEHICLE INSPECTION SHEET

DATE _____ DEALERSHIP _____
 NAME _____ DEPARTMENT _____ PHONE _____

Last 9 VIN _____ Stock# _____ Year _____ Make _____ Model _____ Mileage Out/in _____ / _____

Condition of Exterior _____ at Pick-Up _____ at Delivery _____
 Mark any Exterior Damage "A" "B"



1) Notes: At Pick-Up (A); _____
 At Delivery (B); _____

INTERIOR CONDITION AND OPERATION OF ACCESSORIES:	At Pick-Up <input type="checkbox"/>	At Delivery <input type="checkbox"/>
1. Air-conditioner and heating system functioning properly.....	() Yes () No	() Yes () No
2. Dash gauges working.....	() Yes () No	() Yes () No
3. Are any dash warning lights on.....	() Yes () No	() Yes () No
If yes, List: _____		
4. Do all Power door locks and windows work.....	() Yes () No	() Yes () No
5. Turn signals, brake lights, parking lights and headlights working.....	() Yes () No	() Yes () No
6. Factory seat heaters / lumbar function.....	() Yes () No	() Yes () No
7. Do all power options work.....	() Yes () No	() Yes () No
8. Seat belts functioning properly.....	() Yes () No	() Yes () No
9. Trunk/Rear hatch opens.....	() Yes () No	() Yes () No
10. Door sills and jams free of damage.....	() Yes () No	() Yes () No

Notes: At Pick-Up (A); _____
 At Delivery (B); _____

Received in good saleable order and condition by: _____ / _____ / _____
Signature Print Name Date

Pick-Up Driver Name: _____ / _____ am/pm | Delivery Driver Name: _____ / _____ am/pm

F-VIS10 Auto Detailing