



Dedicated to
Promoting Quality
Collision Repair of
Toyota, Lexus and
Scion Vehicles

Fall 2015



In Japanese "Mirai" Means Future Toyota's Extraordinary New Hydrogen Fuel Cell Vehicle

Alignment Equals Calibration

Cars That Have Had Their Alignment Adjusted Should Have Pre-Collision and Dynamic Radar Cruise Control Systems Calibrated.

Repair Planning the Toyota Way

Learn About How to Approach Repairs Using Toyota Methodology.

Introducing New CR&R Instructor Agustin Diaz

Meet Toyota's Newest Trainer.

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A Pioneering Perspective

Change is in the air, and it isn't just the excitement of the approaching holiday season and end-of-year festivities. There is a lot to talk about at Toyota, including new repair tips and an exciting new vehicle.

In this issue, we examine a variety of repair procedures to help you in the shop. In the article on the pre-collision system and dynamic radar cruise control, you can learn about crucial calibration steps for these devices and why it's important for customer safety. At NACE, we talked "Repair Planning the Toyota Way," and we review it in this issue.

I am also excited to introduce Toyota's new hydrogen fuel cell vehicle—Mirai. This vehicle is the result of years of testing, research and innovation. It is set to revolutionize how we view cars and redefine what it means to drive an environmentally conscious car. While drivers of the Mirai will be pioneers of this new vehicle on the road, you will be pioneers in learning the new way to repair this technology through our training classes and then applying the skills you learned in your shop.

Creating a vehicle that emits only water as a byproduct of its engine seems like the stuff of science fiction—but that is exactly what Mirai does. It is the spirit of innovation, the desire to try new things and to create better solutions and products that contributes to the ground-breaking perspective at Toyota. This extends across all areas and, of course, into the realm of collision repair. So, whether you are learning a new technique or figuring out how to make your shop more efficient, you are part of the pioneering spirit.

Kathy Capozza
Wholesale Marketing Administrator Sr.
Toyota Sales and Marketing | Toyota Motor Sales, U.S.A., Inc.
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It is the spirit of innovation, the desire to try new things and to create better solutions and products that contributes to the ground-breaking perspective at Toyota."

– Kathy Capozza



TELL US ABOUT YOUR PIONEERING IDEA—email us at info@collisionprosmagazine.com

Increase Your Knowledge

THE AUTOMOTIVE SERVICE ASSOCIATION OFFERS FREE COLLISION REPAIR-RELATED RESOURCES

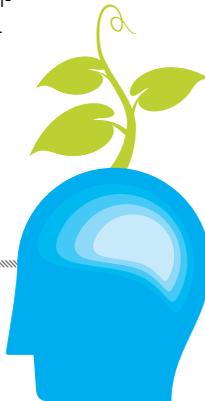
Looking for automotive industry information on collision repair and refinish-related topics? The Automotive Service Association (ASA) has many great resources available for free. Information includes suggestions on collision repair practices, industry white papers and tools to help educate your customers about automotive repair. This information can be found on ASA's website at www.asashop.org.

ASA is a not-for-profit trade association that is dedicated to serving the needs of automotive service businesses, including collision repair shops. They are one of many organizations that provide useful resources to the collision repair industry and other automotive service-related professionals. To find out more, visit www.asashop.org. 🌱



Organizations like the ASA provide useful resources that can help shops improve repair processes and improve relationships with customers and insurance companies. I highly recommend checking out the materials they offer for free."

– James Meyer
Senior Collision Training Administrator
Toyota Motor Sales, U.S.A., Inc.



Auto Repair Archive

The free resources available on the ASA website cover topics including:

ASA Documented Collision Repair Operations

This document is a tool to help collision repair professionals communicate with insurance representatives about refinish procedures.

Replacement Parts Reference Chart

This chart provides an at-a-glance view of general not-included operations that should be used when installing new replacement parts. It is designed to supplement procedure pages supplied by individual information providers.

10 Steps of Professional Diagnostics

Effective communication with your customers is important. This pamphlet educates your customers about the time, training and resources needed to deliver high-quality collision repairs.

Market Versus Need for Repairers

This piece is a discussion of the market versus need dilemma that often faces members of the collision repair industry as they navigate between what is needed to completely repair a vehicle and limitations from insurers based on current market practices.

ALIGNMENT

Equals Calibration

CARS THAT HAVE HAD THEIR ALIGNMENT ADJUSTED SHOULD HAVE PRE-COLLISION AND DYNAMIC RADAR CRUISE CONTROL SYSTEMS CALIBRATED. This is an important step in the vehicle repair process that every technician and estimator should be aware of. If a vehicle has had to be realigned or had work done to the chassis or grille, the pre-crash system and millimeter cruise radar system need to be checked and recalibrated.

SENSOR SENSE

Pre-Collision System (PCS)—The pre-collision system alerts drivers when it detects certain objects in front of the vehicle and determines that the vehicle might not be able to stop in time. The system retracts seatbelts and optimizes the brakes to help minimize collisions. Select vehicle models beginning with model year 2016 offer PCS, which incorporates a camera designed to detect certain objects in the car's path.

Dynamic Radar Cruise Control—This system allows the driver to set the cruise control to help maintain a pre-set following distance from the vehicle traveling directly ahead of it. It will slow down if the car ahead brakes and then resume the set speed when the traffic speeds up.

NEED TO KNOW

For most vehicles, the sensors for the pre-collision system and dynamic radar cruise control system are located behind the grille. In 2016 models, the sensors are actually attached to the grille. The mounting place for these sensors is important. If the sensor isn't in

the exact place it thinks it should be, it won't function properly. That is why techs replacing sensors or sensor parts should ensure the sensors are positioned properly on the vehicle.

Similarly, the sensor is designed to point down the center line of where the vehicle is traveling. If the vehicle's wheel alignment is off or the chassis is not properly aligned, the sensor will not point to the correct position. When dealing with vehicles that have the pre-collision system and dynamic radar cruise control system, ensuring the vehicle is in proper alignment is crucial to the overall functioning of the car.

Once the vehicle has been repaired and the alignment checked, the sensors for these systems can be calibrated by sending the vehicle to a Toyota dealership. Knowing ahead of time that the car will need to visit the dealership for calibration means that this step can be added to the estimate at the very beginning of the repair process. This can help collision centers return the car to the customer more quickly and save shops from having to go back to the customer and tell them their car will not be ready on time. 📍



When a car is realigned, sensors should be recalibrated. If the sensors for these systems are out of alignment in any way, this can cause them to work improperly or not at all. And, it can cause customers to be unhappy with how their vehicle is functioning.”

– Bill Zlaket
Lexus Technical and CR&R Training Manager
University of Toyota
Toyota Motor Sales, U.S.A., Inc.



Photo Finish

Another important system that relies on sensors and cameras is the Lane Keep Assist system. This system uses a camera designed to recognize lane markings on roads and alerts the driver when the vehicle may be departing from the lane it is in. The system can also apply slight steering wheel torque to help the driver maintain the vehicle’s position in the lane.

Technicians should know:

- The sensors for this system are located in the vehicle’s windshield.
- Aftermarket windshields can affect the performance of these sensors, so Genuine Toyota Parts are recommended.
- The sensors for this system must also be sent to the dealer for recalibration.

THE CAR OF THE FUTURE IS HERE, AND IT'S NOT THE FLYING CAR PORTRAYED IN *THE JETSONS* OR THE TIME TRAVELING DELOREAN OF *BACK TO THE FUTURE*—IT'S THE 2016 TOYOTA MIRAI, A VEHICLE THAT IS IN SOME WAYS EVEN MORE FANTASTICAL. THE MIRAI IS ONE OF THE WORLD'S FIRST MASS-PRODUCED HYDROGEN FUEL CELL VEHICLES. IT HAS AN EPA ESTIMATED DRIVING RANGE OF 312 MILES AND CAN BE REFUELED IN APPROXIMATELY FIVE MINUTES. AND THE BYPRODUCT OF ITS FUEL CELL ENGINE? WATER.

未来

IN JAPANESE “MIRAI” MEANS FUTURE

With the purchase of the all-new 2016 Mirai, owners will be provided with state-of-the-art technology and a premium ownership experience. The vehicle is precision crafted with the utmost attention given to the smallest details. This four-door sedan may be powered by electricity, but it packs a big punch with performance matching that of traditional mid-size combustion engine sedans in its class. And, ownership includes three years' or a maximum of \$15,000 worth of complimentary fuel, whichever comes first, plus Safety Connect and Entune, with a hydrogen station finder app.

WHAT COLLISION REPAIR EXPERTS NEED TO KNOW

What makes the Mirai unique from a collision repair standpoint is its hydrogen and fuel cell components. Once the hydrogen in the tanks has been manually isolated, the body of the vehicle is similar to any other new-model Toyota, and most collision repairs can be performed with current repair techniques. Vehicles will, however, need to be sent to an approved Mirai dealership to have the

hydrogen system inspected for damage and manually isolated before collision repair work can begin.

One thing that does make Mirai very different is the vehicle's two cooling systems. One cooling system is dedicated to the hybrid system and is similar to other high-voltage cooling systems used on Toyota hybrid vehicles. The second cooling system is strictly for the fuel cell system and requires a special coolant that is clear and resembles water. It is extremely important to note the fuel cell system coolant must not be contaminated and is available only through Toyota. For reference, the part number for this new coolant is 08889-08350.

Technicians working on this vehicle should also be aware that the hydrogen pipes have very high pressure gas in them—the pressure in the tubes is 10,150 psi. These pipes are marked with red insulation to indicate their contents. Do not try to disconnect this system. Instead, the vehicle should be sent to an approved dealer so that the pressurized contents of the pipes can be safely discharged.





Toyota realized in the early '90s that electrification was key to the future of the automobile. Just as the Prius introduced hybrid-electric vehicles to millions of customers nearly 20 years ago, the Mirai is now poised to usher in a new era of efficient, hydrogen transportation."

– Jim Lentz, Toyota's North American CEO



CURRENTLY APPROVED MIRAI DEALERS ARE:

NORTHERN CALIFORNIA SOUTHERN CALIFORNIA

- | | |
|---|--|
| <ul style="list-style-type: none"> • San Francisco Toyota • Roseville Toyota • Stevens Creek Toyota • Toyota of Sunnyvale | <ul style="list-style-type: none"> • Longo Toyota • Toyota Santa Monica • Toyota of Orange • Tustin Toyota |
|---|--|

MORE ON MIRAI

FUEL CELL TECHNOLOGY

Mirai fuel cell technology relies on the chemical reaction between hydrogen and oxygen to generate the electricity that powers the vehicle. When a hydrogen molecule is supplied to the negative electrode of the fuel cell, it is activated by the catalyst causing electrons and hydrogen ions to separate. The flow of electrons released from the reaction becomes the electricity that powers the vehicle.

The fuel cell stack is composed of 370 individual fuel cells. A single fuel cell provides only a limited amount of voltage and must be stacked in series to provide enough voltage to power the vehicle. All moving parts, such as the air compressor, hydrogen pump and hydrogen injectors, are external to the fuel cell stack.

The sedan has two carbon-fiber fuel tanks that store the hydrogen that helps power the vehicle. The oxygen component is supplied by air entering through the vehicle's front intake grilles.

Extensive engineering and rigorous testing

help provide for the high level of safety in the Mirai. On-board sensors detect and stop hydrogen leakage by immediately shutting the tank valves. During a vehicle fire, the hydrogen gas in the tanks is discharged from the fusible plug valve.

Mirai's hydrogen tanks are constructed of layers of specialized material to help protect against leaking and damage. The layers consist of:

- A plastic liner that forms a tight seal designed to protect against leakage of the hydrogen gas
- A layer of carbon-fiber reinforced plastic (CFRP) that helps provide strength to the tanks
- A layer of glass-fiber reinforced plastic (GFRP) that helps protect the exterior surface of the tanks

Each tank is designed to withstand changes in shape due to expansion or contraction after refueling the high-pressure hydrogen gas. The hydrogen tanks are mounted near the rear wheels of the vehicle and away from any ignition source.

INTERIOR FEATURES

The Mirai has many premium features designed to provide drivers with a first-class experience behind the wheel. Features include:

- Electronic push-button start system with Smart Key
- Acoustic glass used in the windshield and passenger doors for noise reduction
- 8-way power-heated SofTex® seats with power lumbar
- Heated power tilt and telescoping steering wheel with multifunction controls
- Premium audio system with Navigation, JBL and Entune App Suite
- Intelligent touch controls for climate and radio

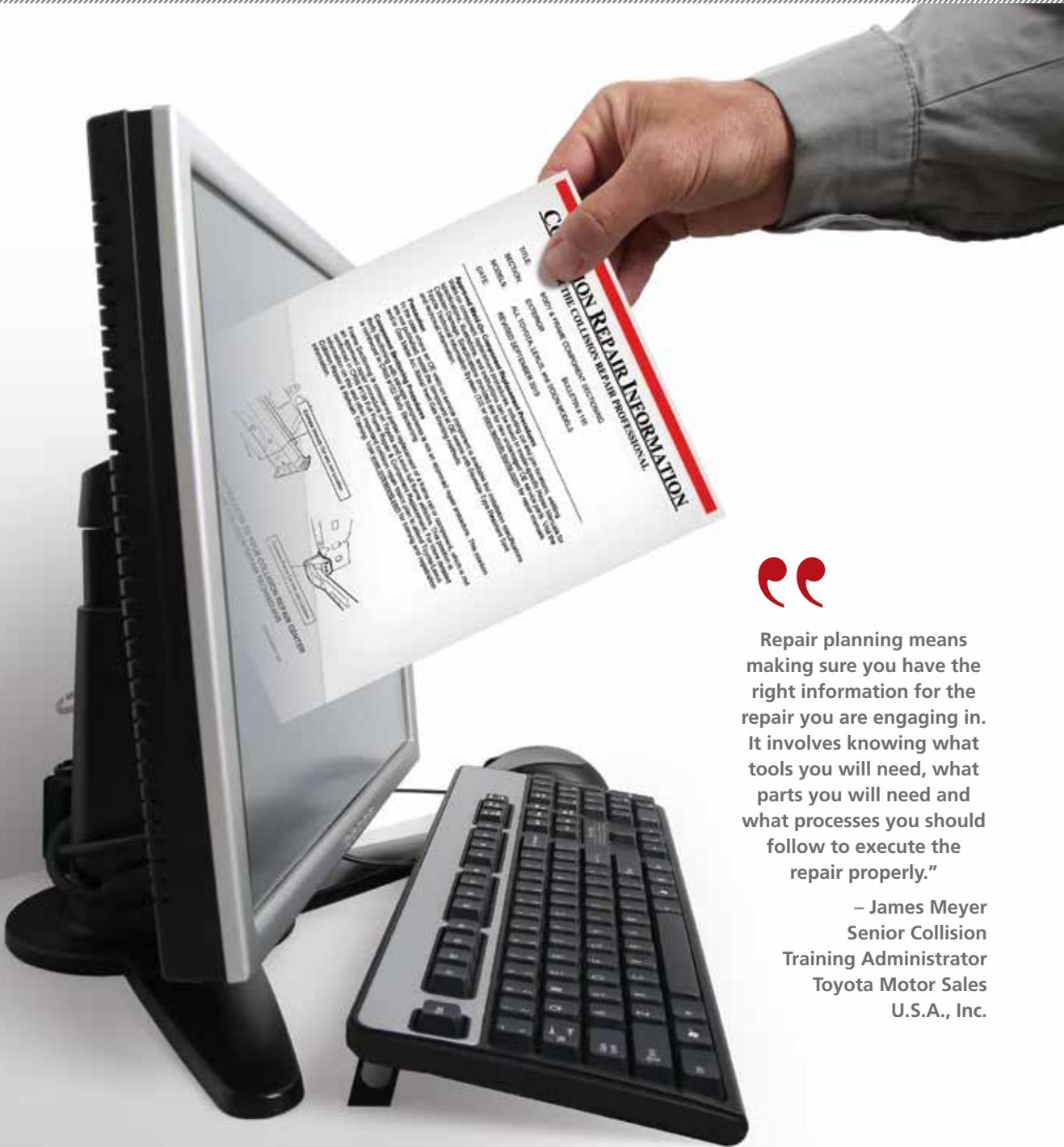
SUSPENSION

- Front: MacPherson strut
- Rear: Torsion beam

For general information about the Mirai, visit www.Toyota.com/Mirai. For information specific to collision repair, consult the Technical Information System (TIS) at <http://techinfo.toyota.com>. 📄

Repair Planning

the Toyota Way



Repair planning means making sure you have the right information for the repair you are engaging in. It involves knowing what tools you will need, what parts you will need and what processes you should follow to execute the repair properly."

– James Meyer
Senior Collision
Training Administrator
Toyota Motor Sales
U.S.A., Inc.

STARTING A REPAIR WITHOUT A PLAN IS LIKE BUILDING A HOUSE WITHOUT BLUEPRINTS OR TRAVELING THROUGH A NEW CITY WITHOUT NAVIGATIONAL TOOLS. Without repair planning, you might not know exactly where you're going and you might not have all the tools, resources and knowledge you need to get to the desired endpoint.

"Repair planning means making sure you have the right information for the repair you are engaging in," says James Meyer, Senior Collision Training Administrator, Toyota Motor Sales, U.S.A., Inc. "It involves knowing what tools you will need, what parts you will need and what processes you should follow to execute the repair properly. Repair planning involves knowing where to find the information you need. Researching and understanding which information is applicable to the repair you are completing is a very important part of repair planning."



MAKE A PLAN

Repair planning isn't an extra step in the repair process, it's actually a valuable tool that can make the repair process easier and more efficient. Making a repair plan has many advantages that can help the job you are working on get done right. It helps you do things right the first time because you know all of the tools, parts and information needed. And, instead of applying general information or information from another manufacturer, by making a repair plan using Toyota references and materials, you are using OEM information specific to the vehicle you are repairing.

A repair plan helps you make the right decisions and execute the right repairs, which in turn reduces cycle time, increases profitability, and helps increase the quality of the repair and safety of the vehicle. A repair plan also helps to prevent or limit mistakes by making sure that everyone who is working on the job has the tools, parts and information they need to be successful. And the result—reduced cycle time and happier customers.

Additionally, repair planning gives you the tools to talk to all of the different stakeholders involved in a repair, from your customers to insurance companies. It allows you to clearly explain what is needed to complete a proper repair and why.



FOR EXAMPLE

There is no template for how to create a repair plan, so how does repair planning come into play for different types of repairs? Let's look at a few examples of different types of repairs and the type of information that applies to each one.

Front side member repair. For a front side member repair there are a number of questions you should consider to put together your repair plan. These include:

- What type of steel is used for the damaged structural component?
- What's Toyota's policy on repairing a unibody side member?
- Are there limits that apply to straightening Toyota structural components?
- What corrosion prevention materials does Toyota recommend for the repaired area?

Front side member partial replacement. When considering a front side member partial replacement, lots of welding and measuring are involved. Questions you should ask when putting together the repair plan include:

- What type of and strength steel is used at the cut-and-join location?
- What are the cut-and-join location specifications?
- What are the welding options for installing welded components such as this?
- Are there any precautions that apply to this repair procedure?
- What are Toyota's recommendations for corrosion prevention?



GET TRAINED

The best way to implement repair planning into your shop's routine is to make sure everyone in your shop is trained. This includes estimators and managers, as well as technicians. Estimators are the front line; they interact with customers and write the estimate, so all of the information they have in advance becomes part of the estimate and the repair plan. Getting managers and estimators trained is a great way to have everyone in the shop on the same page.

"If you are doing collision repair as a living, then you have to continually hone your skills, and a lot of the skills are cognitive," says Meyer. "We are in the modern age of automobile repair, and training is imperative for everyone in the industry." 📖

Find out more about Toyota Collision Repair & Refinish training at www.crrtraining.com.



RECENTLY, TOYOTA'S COLLISION REPAIR & REFINISH TRAINING PROGRAM welcomed a new instructor to its ranks. Agustin Diaz is the new Collision Training Administrator at Toyota's Torrance, California, campus. Diaz brings his unique training philosophy and breadth of experience to the training experience.

INTRODUCING NEW CR&R TRAINER

COLLISION REPAIR PEDIGREE

Diaz comes to the training program with over 35 years of experience as a body tech working in various shops. His specialty is heavy collision work.

"At many of the places I used to work, people would see a big job and shy away from it because they felt like it was too much work," Diaz recalls. "But if I saw a big job, I couldn't wait to get my hands on it. I love the challenge."

Diaz also taught automotive technology at Contra Costa College and taught I-CAR training for three years. In addition, he worked for VeriFacts, visiting and inspecting their facilities and repairs and then making recommendations.

All of this experience makes Diaz a valuable instructor. He understands the automotive repair industry from the viewpoint of a technician, a trainer and the insurance industry.

With a teaching credential from the University of California, Berkeley, Diaz is at home in the classroom. He knows that there are many different types of learners, and he shapes his lessons so that they have elements that reach the visual, kinetic, auditory and hands-on learners. One huge advantage of Toyota training is that half of the day is spent in a classroom setting and half of the day is spent practicing collision repair and refinish techniques in a hands-on environment.

Agustin Diaz

BODY SHOP BEGINNINGS

Diaz says that his family has been in the auto repair business for a long time. He got interested in collision repair when working in family-owned shops.

"One of my uncles owned a repair shop in Mexico when I was a little kid," explains Diaz. "My mother told him to just keep me busy in the shop and not pay me. Well, my uncle paid me for my work, and I got hooked! It's in my blood."

In his free time, Diaz is always trying to learn something new. He loves reading, and his interests range from biographies to the novels of Gabriel García Márquez. His favorite book is *The Godfather* by Mario Puzo.

There are many things that Diaz says he enjoys about being in the collision repair business, but nothing beats surprising a customer with a high-quality repair.

"It's a very powerful experience when you take a car that has damage and restore it back to a condition that is like the original," says Diaz. "When you see the smile on the customer's face and they have a sense of 'oh my baby!' it feels great." 🐾



Professional Background

- Teaching credential from UC Berkeley
- Taught automotive technology at Contra Costa College
- ASE master technician
- Worked for VeriFacts for three years
- Taught I-CAR for three years



Gaining knowledge is a journey, not a place where you arrive; professional improvement is a journey. In this industry, you are never finished learning and there is always room for improvement.”

– Agustin Diaz, Collision Training Administrator
Toyota Motor Sales, U.S.A., Inc.



THE TRAINING CALENDAR



WWW.CRRTRAINING.COM

WEST CALDWELL, NJ

- 01/12 300 Welding Techniques for Collision Repair
- 01/13 601 Hybrid Collision Repair
- 01/20 503 Steering & Suspension Analysis & Repair
- 01/21 602 Advanced Hybrid Collision Repair
- 02/09 200/201 Color Matching for Painters
- 02/11 250 Advanced Painting Techniques
- 02/23 301 Non-Structural Body Repair Techniques
- 02/25 460 Structural Body Repair Techniques
- 03/08 300 Welding Techniques For Collision Repair
- 03/09 601 Hybrid Collision Repair
- 03/10 602 Advanced Hybrid Collision Repair
- 03/22 250 Advanced Painting Techniques
- 04/05 300 Welding Techniques For Collision Repair
- 04/06 601 Hybrid Collision Repair
- 04/19 503 Steering & Suspension Analysis & Repair
- 04/20 602 Advanced Hybrid Collision Repair

JACKSONVILLE, FL

- 01/12 301 Non-Structural Body Repair Techniques
- 01/14 601 Hybrid Collision Repair
- 01/19 602 Advanced Hybrid Collision Repair
- 01/20 503 Steering & Suspension Analysis & Repair
- 01/21 460 Structural Body Repair Techniques
- 02/08 200/201 Color Matching for Painters
- 02/10 250 Advanced Painting Techniques
- 02/16 601 Hybrid Collision Repair
- 02/17 300 Welding Techniques For Collision Repair
- 02/23 602 Advanced Hybrid Collision Repair
- 02/24 503 Steering Suspension Analysis & Repair
- 03/07 601 Hybrid Collision Repair
- 03/08 300 Welding Techniques for Collision Repair
- 03/09 301 Non-Structural Body Repair Techniques
- 03/15 602 Advanced Hybrid Collision Repair
- 03/16 503 Steering & Suspension Analysis & Repair

NEW JERSEY



FLORIDA



CALIFORNIA



CHECK US OUT ON FACEBOOK AND TWITTER!

Get the latest information on tools, training and repair procedures on our social media sites.



- 03/17 460 Structural Body Repair Techniques
- 04/11 200/201 Color Matching For Painters
- 04/13 250 Advanced Painting Techniques
- 04/18 601 Hybrid Collision Repair
- 04/19 300 Welding Techniques For Collision Repair
- 04/20 301 Non-Structural Body Repair Techniques

TORRANCE, CA

- 01/19 460 Structural Body Repair Techniques
- 01/21 503 Steering & Suspension Analysis & Repair
- 01/26 300 Welding Techniques for Collision Repair
- 01/27 301 Non-Structural Body Repair Techniques
- 02/09 300 Welding Techniques for Collision Repair
- 02/10 601 Hybrid Collision Repair
- 02/11 602 Advanced Hybrid Collision Repair
- 02/23 101 Paint Finish Repair
- 02/24 200/201 Color Matching for Painters
- 03/08 503 Steering & Suspension Analysis & Repair
- 03/09 602 Advanced Hybrid Collision Repair
- 03/15 250 Advanced Painting Techniques
- 03/17 908 Lexus IS C for Collision Repair
- 03/21 601 Hybrid Collision Repair
- 03/22 300 Welding Techniques for Collision Repair
- 03/23 301 Non-Structural Body Repair Techniques
- 03/29 300 Welding Techniques for Collision Repair
- 03/30 601 Hybrid Collision Repair
- 04/12 460 Structural Body Repair Techniques
- 04/14 602 Advanced Hybrid Collision Repair
- 04/19 300 Welding Techniques for Collision Repair
- 04/20 601 Hybrid Collision Repair
- 04/26 300 Welding Techniques for Collision Repair
- 04/27 601 Hybrid Collision Repair

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More courses can be found at www.crrtraining.com

For a complete training schedule and the latest information on Toyota's Collision Repair & Refinish Training, visit www.crrtraining.com.

TECHNICAL WEBSITES



YOU NEED TO KNOW

www.crrtraining.com

Get Toyota, Lexus and Scion Collision Repair & Refinish Training information

autopartsbridge.com

Order all Toyota and Scion parts and components—clips, fasteners and decals—needed for a repair

techinfo.toyota.com

Get vital information you'll need to effectively service most Toyota, Lexus and Scion vehicles

toyotapartsandservice.com

Search and order Genuine Toyota Parts right from your computer

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