Installation Guide, Part 1

Note:

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Part 1: Preparation

1. The seating position best for the child

The position that the parents/caregivers prefer to use must allow for a tight installation with either the lower attachments or a seat belt. And a tether anchor point must be available there.

If you find that no tether anchor point (a manufacturer designated place to install retrofit tether anchor hardware) is available there, consider moving the CR to a position that has one, because a tether is very helpful for injury prevention.

2. Hardware needed

You will need either:

A retrofit tether anchor to be used universally with a CR for a child under 40 pounds: A vehicle-specific kit or set of parts is usually available from the dealership, as discussed in this chapter. **In cases where a kit is not available**, a generic tether anchor kit can be obtained from Britax or Dorel. **Some retrofit kits allow use up to 48 pounds or say to follow the CR instructions (see vehicle manual and/or Appendix B).** Before installing a tether anchor, the family should consider whether the child is, or eventually will be, riding in a harness CR beyond the vehicle's anchor weight limit for this type of universal retrofit anchor. If so, installing a heavy-duty tether anchor instead would be a good idea (see below). This would be especially important if the child requires special positioning and support, if there is no shoulder belt available in the seating position, and/or if the parents prefer that their child continue riding with the harness to the higher weight limit of many of the CRs that are now available.

Tether anchor for a high-weight-harness CR: When the TA being installed is for a CR for a child weighing over 40 pounds, first check both vehicle and child restraint instructions. Some vehicles allow the use of regular tether anchors (which are generally easier to install). Also, several of the medical CRs now avoid the need for a heavy-duty TA by following the dual tether method or using the shoulder belt as a tether. (See Chapter 5 and Appendix A.)

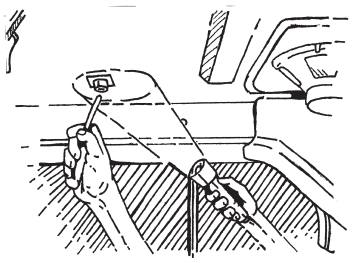
However, for conventional high-weight CRs, if tethering is preferred or required, many vehicle brands would require a tether anchor with a high weight capacity. If needed, a retrofit tether anchors with higher weight ratings are available from E-Z-ON Products, Safety Angel, and Snug Seat. (See Appendix A of the 2011 *LATCH Manual*.)

3. Locating tether anchor points

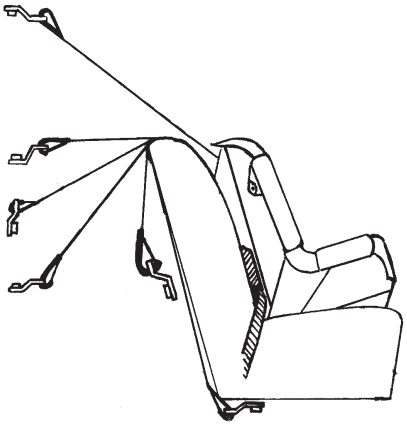
Types of anchor points for forward-facing CRs

Anchor points are the places in the vehicle designated as both strong enough and correctly placed for tethers. Designated anchor points take many forms. They may be:

- **Pre-drilled holes,** sometimes fitted with a temporary plug.
- **Drill dimples** (indentations), may be marked with the letter "T."
- **Holes with threaded weld nuts underneath,** usually covered by a fabric patch, other trim, or a plastic plug but visible from underneath (illustration, next page, top left).



Finding a tether anchor point in the trunk of a sedan: *View from inside the trunk, showing an anchor point with welded nut on the underside of the filler panel.*



Various tether anchor locations

From top:

- *Rear door frame top: station wagon, hatchback, SUV*
- *Filler panel (rear window ledge) in a sedan*
- *Back wall below back door of a hatchback, station wagon*
- *Floor of cargo area of a station wagon, SUV*
- *Back of seat in a van, station wagon (not suitable for retrofit)*
- *Underside of seat: van, SUV (not suitable for retrofit)*

Tether anchor differences by model year

In general, the older the vehicle, the more difficult installation may be. The oldest vehicles with TA points may not have pre-drilled holes and/or threaded weld nuts. Generally, vans, SUVs, and pickup trucks lagged behind passenger cars in providing TA points.

- **1985 and older** model year (MY) vehicles usually require the drilling of a hole for a tether anchor point. If hardware is not available from the vehicle manufacturer for older vehicles, use the generic tether anchor hardware available from some CR manufacturers (Britax, Dorel, EZ-On, Safety Angel, and Snug Seat).
- **1986–88 MY** vehicles may have holes pre-drilled and fitted with a plug or filler**.** A few vehicles may have threaded weld nuts. Find information and part numbers for retrofit anchor kits in the Notes section of specific model listings in Appendix B of the *LATCH Manual.*
- **1989–99 MY** vehicles usually have pre-drilled holes, many with threaded weld nuts, or dimpled drill locations designated for tether anchor use. A few have factory-installed anchors.
- **Most 2000 MY and newer vehicles** have user-ready tether anchors. SUVs, vans, and light trucks were not required to meet the standard until 2001, but many 2000 models already did comply prior to being required to.

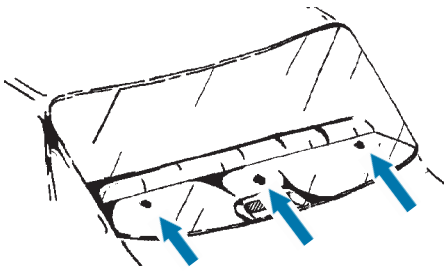
How to find the anchor point for a seating position

To determine where to install the child restraint and how easy installation will be, first find the tether anchor points. The following sources are ranked from the most accessible to the least.

1. **Appendix B** in *The LATCH Manual,* 2011 edition, will give you basic information on which seating positions have tether anchor points and the part numbers for vehicle-specific tether anchor kits.
2. **Vehicle owner's manuals** often include installation information. Look in the "child restraint" section under "top strap" or "tether strap." More recent manuals usually are more explicit about tethers than older versions.
3. **Other sources:**
   Look in the vehicle itself. Some anchor points are visible, covered by round plastic caps.

   Contact the local dealership parts or service department. Check service or parts bulletins, catalogs, and repair manuals, safety equipment diagrams, or parts department databases.

   Contact the manufacturer's national consumer relations office. (See contact numbers in Appendix B of the *LATCH Manual.*)
4. **If all else fails,** order the tether, which usually includes detailed directions. This will allow you to assess the complexity of the installation. Use the part number in Appendix B of the *LATCH Manual* to order the kit from a dealership or auto parts supplier.



Sedan filler panel with pre-drilled holes.

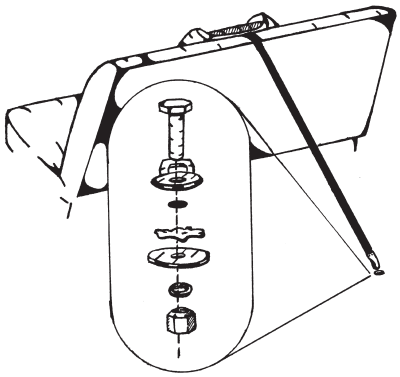
5. **See the box below, "Criteria For Choosing a Secure Anchor Point"** for detailed directions about finding a suitable anchor point in vehicles without manufacturer-designated points.

Typical locations of anchor points

Locations of manufacturer-specified tether anchor points depend on vehicle type and specific designs. Locations for tether anchors (illustrations, left) include:

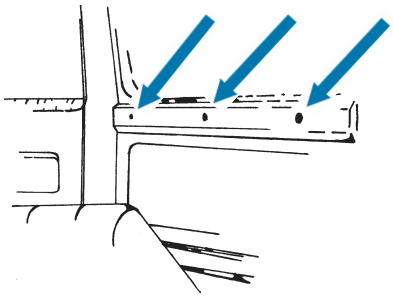
- Rear filler panel (window ledge) in passenger sedans.
- Cargo floor, ceiling, or frame around the rear door in station wagons, hatchbacks, vans, and SUVs.
- Back or underside of seat in station wagons, SUVs, and vans with reinforced seats.
- Back wall or side wall in pickups.

Details follow on the next pages.



Van, station wagon, or SUV: *Installation in cargo area*

Station wagon, hatchback: *tether anchored in the top of the rear door frame*



Pickup truck: *anchor points in rear wall behind the seatback*

Sedans: rear seat

Two or three anchor points are typically located on the rear filler panel or window ledge (illustration, top left). If not identifiable from above, look up at the underside of the rear filler panel from inside the trunk for threaded weld nuts, holes, or drill dimples. In a few cases, speakers may have to be temporarily moved to access the points.

Vans and SUVs: second or third rear seat
Station Wagons and Hatchbacks: rear seat

Two to three anchor points are most commonly found on the rear cargo floor or in the trim panel around the tailgate door. In some vehicles, there may be threaded weld nuts in the ceiling or in the upper door frame. Others have weld nuts on the back of vehicle seats (only if the seatback has been reinforced) or pre-drilled holes or brackets on the bottom of the seat frame (illustrations, left).

If the vehicle has three rows, the third-row seat belts may be listed in the vehicle manual as anchor points for restraints in the second row.

In a few cases, cargo tie-downs (often squared or triangular rings) are specified as tether anchors. Check the vehicle owner's manual before using them. Never use a cargo tie-down for a tether unless the vehicle manual indicates that it serves as a tether anchor.

Pickup Trucks

Pickups typically have anchor points located in the rear wall underneath the window. They can be seen only when the seat back is folded down (illustration, lower right). This location may make CR installation and tether adjustment difficult.

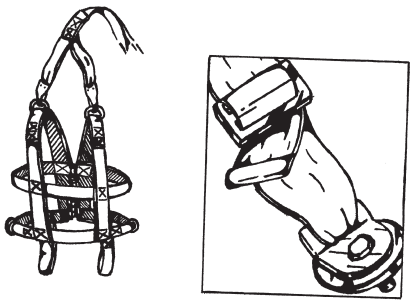
Selecting an anchor point

Use the anchor point located most directly behind and closest to the center point of the top of the child restraint.

Off-center anchors

Some vehicles have anchor points that are not centered behind the seating position. This occurs when:

- Other equipment, such as a brake light or speaker, is directly behind the seating position of the child.



E-Z-On Vest uses standard tether anchors for children up to 50 pounds. Over that weight, a tether strap can be permanently anchored to the floor of the vehicle with a heavy-duty, large-diameter bolt. For use up to 168 pounds, E-Z-ON Products also offers a heavy-duty tether anchor to which a tether strap can be hooked.

- A vehicle has three rear seating positions but only two anchor points, one of which is intended for either a center or side position (this is the case in only on a few models).
- The center rear seat belt is an anchor point for the side seating position in the row ahead.

An angle of less than 20 degrees off center is considered acceptable. (See diagram on the next page.) If the angle is greater, move the CR to a seating position more directly behind the anchor, if possible.

If you must use an anchor point that is not directly behind the CR, choose the anchor point **closer to the center of the vehicle**. This may provide more stability in a side-angle crash.

Tether anchor points for medical restraints

Tether anchor points and TA retrofit kits provided by the vehicle manufacturer for older vehicles are usually limited for use up to 40 pounds. If dual tether anchor use or the shoulder-belt-as-tether option is not feasible, it is necessary to use the heavy-duty TA hardware that comes with most special needs CRs (illustration, left). Consult the instructions of the CR manufacturer.

See Chapter 5 of the 2011 *LATCH Manual* for a perspective on use of factory-installed tether anchors for children above 40 or 48 pounds if it is impossible to install the heavy-duty anchor.

Finding an anchor point if none is designated

There are certain circumstances in which the consumer or service personnel may want or need to find a suitable, safe anchor point without the guidance of the vehicle manufacturer. A vehicle dealership is unlikely to be able to help in these situations.

- Installation in a pre-LATCH vehicle:
  - That has no specified anchor points.
  - Where an anchor is needed for a CR for a child over 40 pounds.
  - Where the bolt of a heavy-duty TA kit requires a larger hole than the predrilled anchor point or welded nut provides.
- Installation of a forward-facing CR in a three-row, post-2000 van or SUV for a seating position that does not have a factory-installed TA. The vehicle manufacturer will not offer guidance on locating additional places to install an extra anchor.

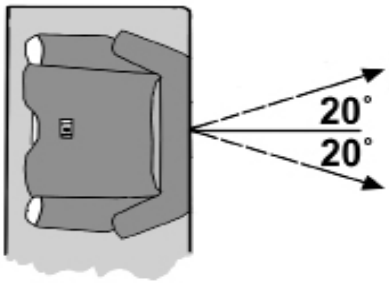
Note:
This information supplements the 2011 *LATCH Manual*.

Why do some older vehicles have no anchor points?

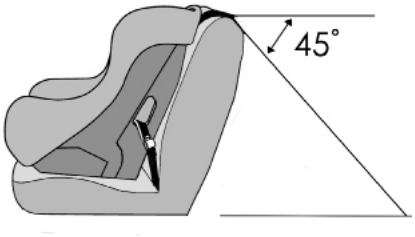
Many vehicles made before 1989 and some vans, trucks, and SUVs before MY 2000–02 did not have tether anchor points. Canada's 1989 TA rule covered only passenger cars, not SUVs, pickups, and minivans. Some vehicles had no anchor points because the location of the fuel tank or other parts made it impossible to install an anchor. In the case of pickups, there often was too little space behind the vehicle seat to accommodate the minimum length needed for the tether strap. In some convertibles, it was difficult to find a suitable place to install a TA in a place that was accessible, while allowing the top to be lowered. Convertibles are exempt from the TA standard, although some now do have tether anchors.

It may be possible to install a tether in some of these vehicles if the installer is able to identify an anchor position (see the box on the next

Appropriate areas (below) to locate a tether anchor *behind a CR for vehicles without manufacturer-specified anchor points*



Bird's-eye view showing tether anchor location area behind CR



Side view showing suitable tether anchor location area for optimum effectiveness if no anchor point is designated

Criteria for choosing a secure anchor point:

- **A flat piece of solid metal,** never in a folding seatback panel, plastic filler panel, spare tire or luggage cover, or screw-on panel.
- **At least 8 inches from the fuel tank**, and clear of exhaust system and brake, fuel, and electrical lines. Check underneath the vehicle where you want to drill the hole.
- **At least 1¼ inches away from any edge or large hole** in the metal, such as speaker or defroster vent holes, in order to avoid weakening the metal.
- **Directly behind the child restraint if possible**. Do not exceed more than 20 degrees to either side of the centerline of the restraint (illustration, top left). If the anchor point cannot be located straight back, mount it toward the center of the vehicle. However, do not put it so close to the back of the child restraint that the tether strap cannot be tightened completely. This may mean placing the anchor at least 10 inches away. It is best to check the minimum length of the tether strap on the CR to be used in that position.
- **As nearly horizontal as possible behind the child restraint.** Keep it in the shaded area (illustration, bottom left) so the angle made by the tether strap and the anchor point does not exceed 45 degrees from horizontal when tight. (Do not attempt to put a tether in the ceiling or door frame of the vehicle if not specified by the manufacturer.)

  In a station wagon or hatchback, the anchor usually can be placed so the strap reaches diagonally back to the floor of the cargo area.
- **Not on the back of the seat.** Never install a retrofit anchor yourself to the back of the vehicle seat or immediately below it, despite the fact that many factory-installed tether anchors are on the seatback. Without reinforcement, vehicle seatbacks may not be strong enough to withstand the stress the tether would cause in a crash. This location also may not allow the tether to restrain as effectively as when the anchor is farther back.
- **Location should be at least six to ten inches behind the top of the child restraint, depending on the specific restraint and tether components. Check the tether** in place when shortened to make sure you allow enough space for the user to tighten it properly. The ideal distance is far enough back to tighten the tether strap but near enough to minimize side-to-side movement of the CR.

Once you have identified a suitable location, follow the guidelines in Part II of this guide to drill a tether anchor point hole and install the anchor hardware.

Note:

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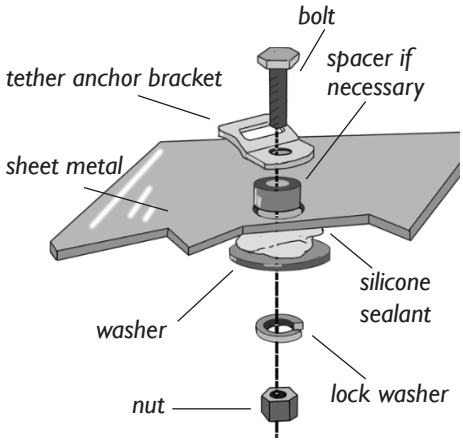
page) and has the tools and sufficient expertise. Follow the guidelines on the following pages to find a suitable location and install the anchor.

Choosing a suitable anchor point if none is specified

See the next page for the criteria needed to locate an anchor point that will be strong enough to support crash forces on the tether.



Assembly of typical tether anchor hardware, where there is no pre-installed nut.

Pre-assembled tether anchor for installation into a weld nut. Anchor hardware is made up of the bolt, bracket, and spacer.

4. Obtaining the tether anchor kit

Vehicle-specific and generic kits/parts

A vehicle-specific anchor kit should be used whenever possible. While most vehicle TA parts come together as a kit with its own instructions, some manufacturers, such as Audi and Volkswagen, provide a list of separate parts. Some manufacturers have one kit for all their vehicles.

A vehicle manufacturer-supplied kit includes a bolt of the correct size for the hole or weld nut usually provided in the particular model. The kit also provides spacers needed for a good fit with the vehicle interior and a washer to strengthen the area underneath (illustration, left).

Some vehicle kits come pre-assembled (illustration, bottom left). These are made to fit into a nut welded below the sheet metal where the hole for the TA point is drilled. The nut often has been pre-installed because access to it would be difficult from below. Almost all vehicle kits include the anchor bracket itself. If this is not the case, a bracket can be obtained as part of a generic TA kit.

Generic kits are available from Britax, Dorel, E-Z-ON Products, Safety Angel, and Snug Seat, if no vehicle-specific kit is available. (See Appendix A of the 2011 *LATCH Manual* for details.)

Correct bolt size for a weld-nut

It is very important to have the correct size bolt for a tether anchor point with a pre-drilled hole and weld nut. Threading the wrong size bolt into a weld nut can ruin the tether anchor point! Bolt and nut sizes are typically either 8 mm or 5/16 inch. Bolts in many generic kits are 5/16 inch while nearly all weld nuts in vehicles are 8 mm. A bolt marked "8.8" is compatible with an 8-mm nut. The vehicle manufacturer's kit should provide the correct size bolt for a given vehicle.

Use part numbers to order a vehicle-specific kit

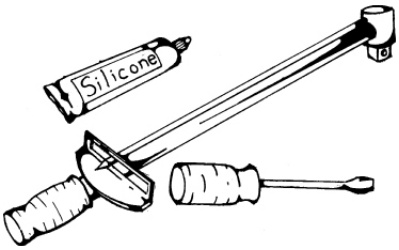
Get the correct kit or parts. Use the vehicle-specific part numbers when ordering the needed part and instructions. (See Appendix B of the 2011 *LATCH Manual*.) This will simplify the process, since many manufacturers use different names to refer to what CPS technicians call "tether anchor kits." Dealerships may not keep tether hardware in stock, so allow at least a few days to receive the parts. Kit prices may vary from one dealership to another. Other sources include commercial parts distributors, such as websites. (Search for company name and parts, i.e., Honda parts.)

Kits are available for most, but not all, older vehicles. Vans, SUVs, and pickup trucks are less likely to have them. If unavailable from the vehicle manufacturer, generic tether anchor hardware available from some child restraint manufacturers may be used. Keep in mind:

Installation Guide, Part 2

Installation Steps

1. Find the anchor point, which may be hidden.
2. Drill a hole if necessary.
3. Attach the anchor with a bolt of the correct size.
4. Tighten it properly.



Useful items for installation: silicone sealant, torque wrench, screwdriver

Tools you may need:

eye protection
awl or ice pick
drill, correct drill bit
pliers
screwdriver
wrench/torque wrench
wood block
utility knife
silicon sealant
tape measure
ramps/lift
flashlight/utility light

- General Motors part numbers are not listed in Appendix B of the 2011 *LATCH Manual* because they change frequently. GM uses the part name, "Child Restraint Top Tether Hardware Package," which dealerships or parts sources should be able to use to find the current part number.
- Canadian part numbers given in Appendix B of the 2011 *LATCH Manual* are the same as U.S. numbers unless specifically noted.
- Always confirm that the part description matches its number when ordering, as numbers may change or kits may become obsolete or be discontinued. The listings in the *LATCH Manual* are reconfirmed for each edition.
- Since both tethers and seat belts are fastened to the vehicle with "anchors," make certain that the anchor location and parts you get are intended for installing a CR tether, **not** a seat belt.

Part 2: Anchor Installation Steps

Some installations are very easy. Others are complex. The information in this chapter is intended for general instruction and as a supplement to the manufacturer's instructions. It also can be used when manufacturer's instructions do not exist.

Installation methods vary, so always check the tether installation instructions for the specific vehicle. These instructions are usually found either in the vehicle owner's manual or in the kit.

Assemble tools and supplies

If the hole is pre-drilled and there is a weld nut underneath, you will need only a wrench or torque wrench and, possibly, a utility knife and ice pick. For more complex installations, see the list of tools at the left.

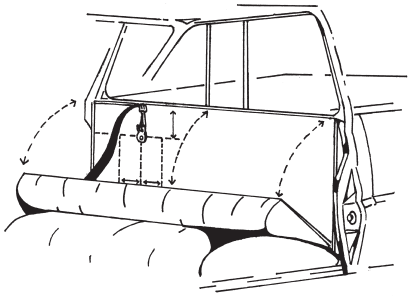
1. Exposing Anchor Points

Locate the anchor point. In most cases, the anchor point is not immediately visible. It will probably be under the interior trim or a plastic cover.

Guidelines for accessing an anchor point

For all vehicles (most common methods listed first)**:**

- Look for an anchor hole cover, such as fabric attached with Velcro®, slits cut in carpeting, plastic covers, or plugs in the filler panel behind the sedan seat. It may be necessary to look up from underneath (see lower illustration, next page).
- Use the manufacturer's template or measurements, if provided. Anchor point holes can often be located beneath fabric by feeling with fingertips for indentations across the top of the rear filler panel or cargo area.
- Look for small drill dimples (indentations) in the exposed sheet metal. These may be marked with an embossed "T."
- Look for threaded weld nuts or holes on the back of or underneath the vehicle seat. These seats have been reinforced for tether use. This is unusual in pre-2000 vehicles.



Pickup truck: *seat folded forward, showing tether hooked to anchor point in rear wall*

For SUVs and vans:

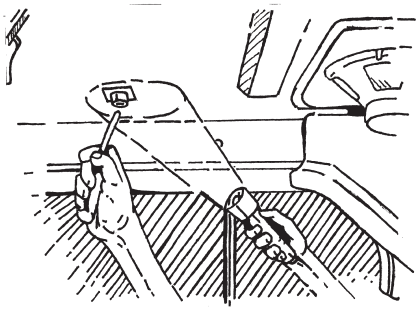
- Remove the back tailgate trim panel to look behind it.
- Roll back the carpet or floor covering on the rear cargo floor to uncover the anchor points. This may require removing the vehicle seats and floor scuff plates.
- Remove the spare tire.
- Put the vehicle on a lift to look at the floor from underneath.

For pickup trucks:

- Pull the seatback forward and look at the rear wall (illustration, top left). Remove the back cab trim panel and/or any attached carpet if necessary.
- Anchor points may be in the form of small drill dimples, threaded weld nuts, or pre-drilled holes. In some cases, they are slots in the rear wall metal framework where a welded-nut bracket and tether hardware would be attached.

Removing material covering an anchor point

- To poke a hole in trim fabric, use an awl or ice pick. In a sedan, poke up from below to make a hole in the filler panel cover material (illustration, lower left).
- If the hole is covered with carpet, use a utility knife to cut a hole or "X". Place masking tape on the carpet before cutting to help prevent unraveling. Watch out for electrical wires underneath.
- Remove a plastic plug with a screwdriver.
- Pry out a silicone seal carefully with a screwdriver.
- Remove Velcro® material by hand.
- Unscrew or snap off trim molding to remove it temporarily.
- Some vehicle instructions include a template or measurements for drilling a hole in the molding to correspond with the anchor hole.



Sedan: *view from inside the trunk, showing anchor point with welded nut on the underside of filler panel*

2. Drilling a hole for an anchor

If the selected anchor point is not pre-drilled, a hole must be made. Select the location based on criteria described in Part I of this guide, if the location is not designated by the manufacturer.

For vehicles with designated anchor points that must be drilled, follow the manufacturer's instructions. The following drilling guidelines can supplement those instructions or provide guidance when no instructions are included.

1. Remove or cut away material covering the drilling location.

Use a utility knife to cut a hole in carpeting. Reduce unraveling by putting masking tape on the carpet before cutting and drilling. Trim molding may need to be removed temporarily. A template or measurements may be provided to use for drilling a corresponding hole in the molding.

If necessary, remove items such as speakers and spare tires to access the selected drill location.

Note:
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2. **Decide whether to drill from inside or outside the vehicle.**

   Sedans - Rear filler panel: In most cases, the hole must be drilled up from inside the trunk. If a drill dimple or a template is supplied, it may be possible to drill the hole from above.

   Vans, Station Wagons, SUVs, Hatchbacks – Floor or cargo area: If a drill dimple, template, or exact measurement is supplied, the hole can be drilled from above. **Always double check** underneath the vehicle carefully to make sure no electrical wires, fuel lines, etc., are in the way. It may be easier and safer to drill from underneath by putting the vehicle on a lift.

   Tip: Carpet and vehicle seats must be removed in some cases if drilling is done from the inside. Raising the vehicle on a lift and drilling from underneath can save time and effort.

   Tip: If drilling is done from underneath, it may be necessary to locate a starting landmark visible both from inside the vehicle and from the outside drilling point, such as a speaker mount or seat belt bolt. Use this to measure the desired hole location. Mark the desired top and bottom hole locations before drilling.

   Pickup Trucks: Due to space limitations, a hole in the back wall of the cab must be drilled from the interior.

3. **Mark the drilling location.**
   Use masking tape or a marker.

4. **Check the back side of the drilling location carefully.**

   Look to make sure no electrical wires, fuel lines, etc., are in the way. **If no anchor point was specified**, double check to make sure the anchor hole location you have selected meets the criteria described in Part I of this guide.

5. **Drill a small, 1/8-inch pilot hole at the selected point.**

   Even if a template is supplied, it is a good idea to drill a pilot hole first. Check placement after drilling. If an error was made, seal the hole with silicon sealant and find another location. Always use eye protection while drilling.

6. **Drill a hole the size of the bolt at the pilot hole location.**

   Sedans:
   - Drill the 1/8-inch pilot hole and larger bolt hole from inside the trunk up through the rear filler panel.
   - Have a second person hold a block of wood on top of the interior drill hole location to avoid accidental drilling into the rear window.

   Vans, Station Wagons, Hatchbacks, or SUVs:
   - If drilling is to be done in the floor pan from underneath, raise the vehicle on a lift. If the hole is to be drilled in the rear liftgate trim panel, remove trim first.

   Pickup Trucks:
   - For a standard cab, move the vehicle seat forward or fold it down. For an extended cab, fold the rear seats down.

- For holes through the outer back wall, have one person hold a wood board between the truck cab and the bed at the drilling location to prevent drilling into the bed.
- Drill the pilot and larger holes from the interior of the back wall to the outside.

7. Make or enlarge a hole in the trim material and/or carpet to accommodate the spacer and bracket.

There should be no material between the sheet metal and the anchor hardware that could interfere with proper tightening. It may be necessary to measure the location of the sheet metal hole in order to properly realign the trim.

WARNING:

If the tether anchor is ever removed, the hole must be sealed with the bolt or a rubber insert and with sealant.

Drilling a hole for a heavy-duty anchor

A heavy-duty anchor may need to be installed for a seating position that has an existing factory installed anchor. Do not take out the existing anchor unless you are authorized to do so (such as a NMEDA dealer/installer).

The heavy-duty anchor needed for a special needs CR may have a larger bolt than that in a typical tether anchor kit. This means a larger hole must be drilled than that provided for a standard tether anchor. If the hole is predrilled but there is no weld nut below it, the hole can be enlarged. Before doing this, however, make sure the reinforcing washer with the tether anchor kit will fit the space and contour of the sheet metal beneath the hole. Some areas where anchor points are located are ridged, so a typical round washer would not lie flat.

If a weld nut is installed, a separate hole must be drilled far enough away from the existing nut so the reinforcing washer will fit snugly against the sheet metal.

3. Installing Tether Anchor Hardware

Typical parts of a retrofit tether anchor kit are shown in the illustration (next page). The kit for a vehicle with a predrilled hole and welded nut would include **only** the parts that go above the sheet metal (inside the passenger compartment). In some cases, the anchor bracket, spacer, and bolt to use with the weld nut are preassembed.

Some kits are intended for anchor points in several seating positions or vehicle models. These may come with several spacers of different thicknesses to fit the various locations and types of trim in the area of the anchor point. Choose the spacer that raises the anchor bracket enough to be level with the interior trim surface.

The generic anchor hardware provided with some CR tether strap kits may or may not fit a designated installation point. This is only one of the reasons to use the vehicle-specific kit.

Pre-assembled tether anchor for installation into a weld nut. This is screwed in to the stated tightness. Make sure not to force it into a welded nut.

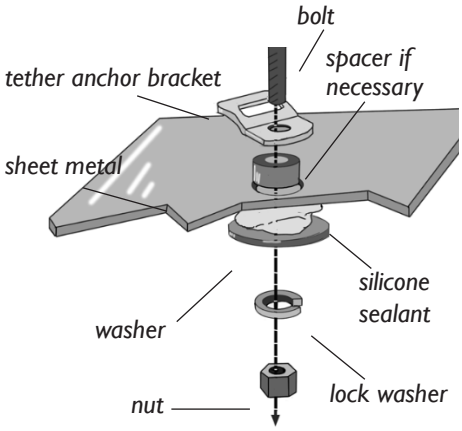
Installation into a threaded weld nut:

1. **If the kit comes assembled** (illustration, left), simply insert the bolt into the hole and tighten it according to instructions.
2. **If it is not assembled,** put the tether anchor bolt through the anchor bracket, add a washer, and put the bolt into the hole.

3. **Check to be sure the spacer or washer rests directly on the metal surface,** with no carpet or material caught in between. If necessary, enlarge the hole in the trim material to accommodate the anchor hardware.
4. **Add one or more spacers** under the anchor bracket if needed to raise the bracket to the level of the surrounding trim.
5. **Check the position of the hole** in the anchor bracket. It must be toward the tether strap hook (illustration, left).
6. **Tighten the anchor assembly** according to manufacturer's instructions. Some instructions specify a torque setting. If a torque wrench is not available, a consumer doing his or her own installation could use a regular wrench, while understanding that the torque wrench is preferred. The bolt should be tight. Do not use excessive force, which could make the bolt break off.

   NEVER force a bolt into a welded nut unless the instructions state that the nut is a torque-prevailing type intended to prevent loosening. If the bolt is the wrong size, forcing it in would ruin the nut! If you have the correct anchor hardware for the vehicle, model year, and seating position, the bolt should fit properly.
7. **Re-attach any items** (trim, speakers, etc.) previously removed.
8. **Check tightness of the anchor bolt periodically** to make sure it is secure.

Note: All instructions and templates packaged with the tether anchor kit should be kept with the vehicle owner's manual. An installer should give this material to the owner.



Assembly of typical tether anchor hardware, where there is no pre-installed nut.

Installation into a drilled anchor point:

1. **Insert the tether anchor bolt** through the anchor bracket.
2. **Put a spacer or washer on the bolt** under the bracket. In some kits, a washer is supplied to add under the anchor bracket. Some vehicles require a thick spacer here to raise the anchor bracket above interior trim.
3. **Use a generous amount of silicone sealant for holes that open to the outside of the vehicle**. This is **essential** to prevent fumes from entering the passenger area through the hole. Check vehicle manufacturer's instructions about whether to put the sealant on the washer on the outside or inside the sheet metal. If sealant is not mentioned, put it **outside**, between the sheet metal and the large washer.
4. **Insert the assembled bolt and hardware into the hole**. The assembly should rest directly on the metal surface. No carpet or other material should be caught in between. If necessary, enlarge the hole in the trim material to accommodate the washer or spacer.
5. **From the other side, put a second large washer and lock washer on the bolt** and secure it with the nut. This is typically done from inside the trunk in a sedan, underneath a van, or in the space between the cab and the bed in a pickup. The lower (outside) washer also must contact the vehicle's sheet metal surface.

Some large washers and nuts are combined into one piece.

Some lower washers are not round, but instead are made to fit the contour of the sheet metal, which may have ridges. Whatever the shape, the washer is intended to spread crash forces over a large surface area.

Tip: Some kits have slightly different combinations of washers, lock washers, etc. A few even include a tube of "thread lock." The large washer should always be on the outside of the vehicle unless there is a weld nut.

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6. **Turn the anchor bracket** to make sure it faces the correct direction (illustration, prior page). Check the tether anchor instructions first. In most cases, the anchor bracket should be installed so its hole faces the front of the vehicle. Brackets in the back wall of a pickup truck or station wagon typically face upward and toward the front. Anchor brackets attached to the bottom of a vehicle seat face toward the rear.

   When attaching the tether strap, the retainer spring (opening) in the hook usually should be toward the floor. A half-twist (180 degrees) in the tether strap is acceptable if necessary. This does not reduce the strength of the strap.

7. **Tighten the anchor assembly** according to manufacturer's directions. Two people are needed to tighten the bolt—one to hold the nut in place, the other to tighten the bolt from the inside.

   Some instructions specify tightening the bolt to a specific torque setting. It is important to use this tool. If a torque wrench is not available, a consumer doing his or her own installation could use a regular wrench, while understanding that the torque wrench is preferred. The bolt should be tight; however, do not use excessive force that could cause the bolt to break off.

   Tip: In a pickup, one person holds the nut (located between the bed and outside cab wall) in place, while a second person tightens the bolt from inside. An extra-long crescent wrench, adjustable wrench, vise grips, or pliers may be needed to hold the nut. One creative idea is to make a hole the size of the nut in the end of a thin wooden stick and use it as a handle.

8. **Attach any trim molding,** material, or speakers previously removed.

9. **Check tightness of the anchor bolt periodically** to make sure it is secure.

FAQs

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Questions About Tether Anchor Installation

Can a vehicle manufacturer's anchor hardware kit be used on a different vehicle?

No. The kits are designed specifically for that vehicle (or series of vehicles). The various parts (bolt size and length, spacer requirements, sometimes even the shape of the large washer) differ among vehicles.

Some manufacturers, such as Acura and Toyota, provide a single kit that works for all its vehicles. This kit may have several parts to choose from, such as spacers of different thicknesses, based on the specific model or installation location. The installer would select the proper spacer depending on the thickness of the trim in the installation area.

When should the generic anchor hardware available from some child restraint manufacturers be used?

Generic hardware is needed for installation in vehicles that do not have specific anchor hardware available, such as many pre-1986 vehicles and some MY 1987–99 trucks, SUVs, and vans. Now that new vehicles come with tether anchors installed, most CR manufacturers do not supply TA hardware routinely. As of January 2011, Britax, Dorel, E-Z-ON Products, Safety Angel, and Snug Seat indicate that they have TA kits available. The Britax and Dorel kits have a maximum child weight limit of 40 pounds. The others are heavy-duty kits that can be used to higher child weights: E-Z-ON's up to 168 pounds, Safety Angel's up to 160 pounds, and Snug Seat's up to 105 pounds.

All CR manufacturers' instructions stress using the vehicle manufacturer's anchor kit whenever possible. Most manufacturers of special needs restraints recommend following vehicle manufacturers' suggested weight limits, but all have specific instructions for use above that weight. Each has its own heavy-duty TA configuration.

Is a professional mechanic always needed for a TA installation?

In some cases, it is easy for a consumer to install the tether anchor kit himself or herself. Some kits come with all the parts assembled. In many vehicles, especially sedans, the tether anchor holes are likely to be predrilled and have a nut welded underneath. That means you only have to find the hole, remove the plastic cap or cut away the upholstery trim covering it, and screw the assembled parts into the hole. The bolt must be tight, but not too tight, so a torque wrench may be needed.

Kits that are easy to install often come with instructions or the instructions are in the owner's manual.

If I am using a generic tether kit, where can I get spacers?

Hardware stores carry thick washers. You may need to stack several together on the bolt to get the height you need for the anchor bracket to fit flush with the trim.

FAQs (continued)

Note:

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Which bolt should be used if the vehicle has a welded nut?

The bolt **must** be the same size as the nut. It is extremely important not to thread the wrong size bolt into a weld nut, so use the anchor kit from the vehicle manufacturer. The owner's manual or the tether kit directions should include this information. Most, but not all, weld nuts are 8 mm.

NEVER force a bolt into a welded nut. A 5/16-inch coarse thread bolt "almost" fits into a 8 mm nut, but using it would ruin the anchor point. Avoid this problem by using the vehicle-specific tether kit. Some vehicle kits have torque-prevailing bolts to prevent loosening. These require considerable force to tighten.

Do not replace a tether anchor bolt with an inexpensive hardware-store bolt. Tether anchor bolts are made of hardened steel.

What is the difference between metric and "English" bolts?

It is not possible to tell the thread size simply by looking at the bolt. The difference is in both the diameter and pitch (angle) of the threads. Bolts that have the numbers 5.8, 8.8, or 9.8 on the top have a metric thread. These numbers indicate the grade or strength of the bolt. A bolt marked 5.8 is good quality, 8.8 is high grade, and 9.8 is very high grade. A triangle and/or some straight lines on the top denote an "English" bolt measured in inches, however, not all bolts are marked.

Most tether anchor kits currently supplied by vehicle manufacturers have metric bolts, but many anchor kits provided by child restraint manufacturers have English bolts. A 5/8-inch bolt may appear to fit an 8-mm nut, but, if it does not screw in easily, it probably is NOT the same size.

What if there is no place to mount the tether anchor farther than 6 to 8 inches behind the CR?

While a slightly loose tether strap may provide at least some benefit compared to no tether, it is always best to have a snug tether. A certain amount of space (usually, 6–8 inches) is necessary to have enough room to tighten most tether straps. If there is less space, it might help to tighten the strap before the base of the CR is installed with the seat belt. This may take a few tries.

Some vehicles, for example, older small pickups with the rear wall directly behind the seat, simply do not have enough space to be able to tighten most tether straps.