CHEVROLET COBALT
2005+

LSD INSTALLATION
50061016  CHEVROLET COBALT 2005
A Division of KW automotive North America, Inc
INSTALLATION INTRODUCTION

1. REMOVING THE FENDER AND DOORS FROM THE A-PILLAR AND DISCONNECTING THE WIRE HARNESS @ THE DOOR JAM

2. REMOVING THE EXISTING DOOR HINGES FROM THE DOORS; TOP AND BOTTOM.

3. MODIFYING THE INTERNAL FENDER AREAS FOR THE HINGE CLEARANCE.

4. MODIFYING THE ELECTRICAL HARNESS.

5. HANGING AND ALIGNING THE VEHICLE DOORS.

6. INSTALLING THE FENDER AND CHECKING FOR CLEARANCE.

7. REMOVE FENDER AND ROUTING THE WIRING.

8. RE-INSTALL FENDER AND CHECK FOR CLEARANCE.

9. JOB COMPLETE!
Installation Instructions  LamboStyleDoors
(The instructions are to be used as a reference only. Please repeat steps for both doors.)

Pre-installation check list:

• Battery disconnected  • Front bumper removal  • Front fender removal
• Vehicle must be accident free  • Vehicle must have inner fender cover

Preparations:
(Disassemble parts according to the vehicle manufacturers’ specifications)

• Disassemble the door stopper

• Disconnect the wire harness between the chassis and the door (remove the harness from the door interior when necessary)

• Disassemble the door. For this procedure, un-bolt the from the A-Pillar.

• Un-bolt the hinges located on the door.

• Extend the factory door wire harness with the enclosed wire harness extension kit. (See enclosed “wire harness extension, page ”)

• Modify the fender
  (See enclosed “modifying the fender”, page 14)

• Relocate the door lock vacuum case (when necessary). (e.g. from the passenger’s side inner fender to the engine compartment)

• Modify the windshield washer reservoir (when necessary).
LSD Doors must be installed according to the provided vehicle specific instructions from LSD Doors and installation should be performed by an authorized dealer.

Always follow the latest accident prevention regulations (not applicable for North America) for each step to prevent any serious bodily harm or injury.

Extending the factory wire harness must be completed according to the vehicle manufacturer’s guidelines for cable repairs. When working with Share-data bus systems please take special care to correctly rerouting the wires and not to damage the wire insulation/shielding, twisting of the cables or interruption of any other systems (check with the specifications of the vehicle manufacturer).

When modifying vehicles equipped with door side air bag systems, the functionality of the air bag system must be re-inspected through the vehicles authorized dealer.

During final door adjustments please make sure that the door closes and locks correctly as O.E.M. specifications (see original door close angles, lock and gapping positions etc.)

Please pay special attention while working in the operation area of the hinge system (especially when working directly with the pivot mechanism or in the overall door operation zone).

All vehicle doors must be securely closed before setting vehicle into motion. Operating a vehicle with the doors open is strictly prohibited.

Supplied vertical lifting door warning decals must be placed on the vehicles front side windows, clearly visible from both inside and outside. Not placing decals on your vehicle might void your vehicle operating license (not applicable for North America).

Do not install heavier speaker systems without first raising the pressure of the gas spring.

Please adjust the horizontal opening angle of the doors for maximum entrance space.

Please pay attention to your gas springs and make sure they open and maintain your door at the maximum opening angle under all operation vehicle conditions.

Make sure you empty the door pockets/storage compartments, so objects will not fall out once the door is raised and also not to offset the correct balance of the gas spring.

**WARNING:** The gas spring is under extreme pressure! Please make sure the snap rings are installed correctly and are snapped their respective guides.
Attention notice:

An additional inside support handle must be installed to solve the issue of possible difficulty of griping the door, when raising and lowering your door from your seated position.

If there are white lights on your door, these must be made ineffective, e.g. taking of the bulb and bulb holder according to fig. 5.22 ECE-law no. 48.

After mounting the LSD hinge system you must reinstall your OEM inner fender covers to keep your LSD hinges free from debris and corrosion.

You must have an authorized workshop check that the central locking system (if equipped) is working properly.

You must have an authorized workshop check the functionality of all systems, switches and components (including: loudspeakers, alarm system, CAN data bus systems, window lifts, crash-sensor, memory seat adjustment, mirror adjustment and heating, etc. if equipped).

While adjusting the door please take special care to position it in the matching door frame as not to cause any damages to paint etc.

In case any chassis modifications were performed, please use the supplied chassis glue (if required for specific application) to seal any openings on the A-pillar or doors (make sure panels are free from grease and dust before applying chassis glue for a superior water tight seal).

NOTE: please be aware your car might have different factory installed equipment from our tested R&D vehicle, in this case please contact your LSD dealer to order higher or lower power gas damper units (an additional cost may apply).

Please note that the power of the gas dampers may fluctuate due to ambient temperature variations, the opening and closing forces may also differ according to damper manufacturers specifications (warranty claims will only be honored if there's an internal defect or an error in production).

All LSD hinges come with a protective oil coating, please remove coating and then apply the included PSK spray for superior sealing of the finish.

If any body work is performed use Corrosion prevention methods according to the vehicle manufactures specifications.

Updated installation instructions can be found on www.lsd-doors.com (guide notes subject to change without notice).

General installation instructions:

A second person makes the work much easier. Please instruct the second person before start working.

It is recommended to keep your LSD door hinges maintained on a regular basis for a lifetime of trouble free operation.
**General Lubrication Information**

In order for the LSD Door System to function properly, adequate lubrication is essential at all pivot points on the system. Periodic lubricating of all pivot points is highly recommended on a consistent basis. This helps in the life of all bearings involved and provides for a smooth operating LSD Door System.

Listed below are helpful hints of when to lubricate:

- After washing the vehicle, open the doors and check to see that all pivot points are properly greased

- Every three months, open doors and check to see that all pivot points are properly greased

- If the vehicle is subject to a harsh environment, such as salt or sand, it is critical that all pivot points stay lubricated, especially if the doors are being used frequently. Open the doors and check to see that all pivot points are greased properly
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1. **MODIFYING THE A-PILLAR**

   Once the fender has been removed, the A-Pillar inner fender-well, needs modification done to it. This is needed for clearance of the roller bearing on the new LSD Door Kit.

1a. Locate the area that needs modification (Photo 1).

1b. Using a hammer, gently tap/bend the fender retainer backwards towards the front of the vehicle until it is flat against the A-Pillar. (Photo 2).
STEP 2  DIS-ASSEMBLING THE SWING ARM FROM THE GROUND PLATE

2a. Your new LSD Door Hinges have come assembled.

2b. As identified in (Photo 4), disassemble the swing arm from the ground plate. Un-bolt all four mounting bolts or allen-heads and remove completely, detaching the swing arm from the ground plate.

2c. Place the four mounting bolts in an area where they will not be lost.

PHOTO 4
PHOTO FOR REFERENCE ONLY

MOUNTING BOLTS
GROUND PLATE
SWING ARM
STEP 3  MODIFYING THE CHASSIS WIRING HARNESS

IMPORTANT NOTE: Prior to beginning extending the wiring harness from the A-pillar, each individual wire needs to be cut one at a time. Each wire that is cut, has to be staggered (See 3g) from the previous cut wire. By doing this, you will eliminate, when wrapping all the wires, one large taped ball.

3a. If the wiring harness comes equipped with an insulation cover, this will need to be removed. See photos below.

STEPS 3b thru 3f are for REFERENCE ONLY (using the white wire as reference)

3b. Isolate a single wire (Photo 5). Start the first cut on the white wire approximately 3” from the door frame.

3c. Cut the wire sheath (coming from door frame) back approximately 1/4” (Photo 6). Twist the end tight.

3d. Cut the wire sheath (from kit supplied white wire) back approximately 1/4”. Twist the end tight.

3e. Using the kit supplied heat shrink connector ends, insert the wire ends into the connector, one from each end (Photo 7), review page 14 for more details.

PHOTO 5
Prior to assembly, run wires through swing arm as shown in Photo 7.

PHOTO 6

PHOTO 7
STEP 3 MODIFYING THE CHASSIS WIRING HARNESS –cont’d-

3f. Using the heat gun, shrink wrap the connector ends to securely mate with the wire ends (Photo 8).

3g. Remember to stagger the cuts for each individual wire. This will eliminate having a large wrap and will allow for minimal size and maximum flexibility.

3h. In the photo below an (INCORRECT) version is shown. By cutting it this way, wrapping the wire at the end, will create a large ball in the middle of the newly extended wire harness.

3j. By staggering the cuts, (CORRECT), you eliminate creating a large taped ball, thus making it easier to install back in the chassis.

PHOTO 8
STEP 4  MODIFYING THE FENDER

4a. Mark the areas on the fender that are going to be modified (Photo 9). For detailed dimensions, see Page 16.

4b. Using a pneumatic air saw, cut the areas that you have designated to remove.

4c. (Photo 10) shows what the final cut should look like.
STEP 4 MODIFYING THE FENDER –cont’d–

4d. In (Photo 11), the area has been marked for removal. Using a cutting tool cut along the marked area, using the dimensions, as shown below.

4e. In (Photo 12), it’s important to keep both lips attached to the fender, as shown.
STEP 5  MOUNTING THE LSD GROUND PLATE

5a. Using the existing O.E.M. tapped mounting holes, mount the LSD ground plate matching up each respective mount hole. Two mount holes at the top and two at the bottom (Photo 13).

Locate the mounting bolts at the center of their respective slotted mount holes.

5b. Using the original O.E.M. mounting bolts, insert the bolts and finger tight only.

5c. Using a wrench, torque the bolts to 20ft-lb.
STEP 6  MOUNTING THE LSD SWING ARM

6a. Using the existing O.E.M. tapped mounting holes, mount the LSD swing arm, matching up each respective mount hole. Locate the mounting bolts at the center of their respective slotted mount holes.

6b. Using the O.E.M. mounting bolts, insert the bolts and finger tight only.

6c. Using a wrench, torque the bolts to 20ft-lb.
STEP 7  MOUNTING THE DOOR TO THE A-FRAME

7a. Install the MAGICSTIK into position (Photo 14) Initially, this is done for mounting purposes only, using the MAGICSTIK as a guide.

7b. Lifting the door into position, guide the MAGICSTIK into its mating block (Photo 15), manually holding the door there, as close to the closed position as possible.

7c. Attach the swing arm to the ground plate with the four (4) kit supplied bolts and adjust the door via moving the swing arm adjustable plate connection mount with the horizontal door gap adjuster in the right or left direction until the gap measurement is like the original (Photo 16).

ADJUSTING THE DOOR HEIGHT

7d. Adjustment height of the door is by moving the ground plate vertically. Make sure the mounting hardware is loosened to perform this function.

7e. Adjustment depth of the door is by moving the door horizontal. Make sure the mounting hardware is loosened to perform this function.

IMPORTANT NOTE: Torque mounting bolt to 10ft-lb.
ADJUSTING THE DOOR HEIGHT – cont’d

7f. Use the adjustment screw (Photo 18) as a point to guide the front door into the correct position.

7g. Attach the swing arm to the ground plate with the (Photo 19) four(4) O.E.M. and adjust the door by moving the swing arm to the ground plate adjustable connection mount with the horizontal door gap adjuster (2) in the left or right direction until the gap dimension is the same O.E.M dimension (prior to disassembling the door).

7h. Adjust the height of the door by moving the ground plate vertically (up or down) (Photo 20).

Loosen the four mount bolts prior to adjusting, but not removing them completely. The use of a rubber mallet would be useful in moving the ground plate.
**IF REQUIRED**

7j. If the Magic Stick ([Photo 21](#)) (lower adjustment screw)(1) is not in the correct position when the door is closed, a spacer ([Photo 22](#)) (D) has to be installed under the M.A.R.A (2) as shown in the pictures below.

![PHOTO 21](#)

![PHOTO 22](#)
STEP 7  ADJUSTING THE DOOR OPENING –cont’d

7k.  This has been done with the fender off.  Slowly open the door.  Using a measuring tape, measure from the outside top corner of the door to the frame of the chassis (Photo AA).  This dimension has been pre-determined to be 670MM(26.38”).  Two (2) door model only.

IMPORTANT NOTE:
IT IS VERY IMPORTANT TO INSTALL ONTO THE ADJUSTMENT SCREW, LOC-TITE™.  THIS WILL PREVENT THE ADJUSTMENT SCREW FROM BECOMING LOOSE THROUGH VEHICLE VIBRATION OR OVER A PERIOD OF TIME.
STEP 7  ADJUSTING THE DOOR OPENING –cont’d

7l.  Once this width of opening has been established, tighten the ADJUSTMENT SCREW on the M.A.R.A. system (Photo BB).

7m.  Once you have tighten the ADJUSTMENT SCREW (with the use of Loctite™), you can now slowly lift the door to the upward position, checking for any interference.

7n.  Locate the door back to the closed position.

7o.  Re-install the fender (if removed) back on the vehicle. Open the door slowly and place it in the upward position, checking for any interference with the fender as it is being lifted upward.

![Diagram showing ADJUSTMENT SCREW and M.A.R.A. SYSTEM with PHOTO - BB]
STEP 8  MOUNTING THE GAS DAMPER (after correct gap distance has been established)

IMPORTANT NOTE:

• PRIOR TO MOUNTING THE GAS DAMPER AT ITS RESPECTIVE MOUNTING POINTS, WE HIGHLY RECOMMEND USING AN ANTI-RUST LUBRICANT, WIPING DOWN THE MOUNT POINTS TO PREVENT RUSTING.

• KEEPING THE MOUNTING POINTS LUBRICATED, ENHANCES THE LONGEVITY OF THE LSD DOOR SYSTEM TO WORKING PROPERLY
STEP 9  MOUNTING THE GAS DAMPER

9a. Hang (mount) the gas damper(M) on the mount point of the swing arm (Photo 23). Secure it with the kit supplied security ring, by using needle-nose pliers.

9b. NOTE: Use care when installing the security ring.

9c. Carefully pivot the door up and hang in the gas damper at the fitting point of the ground plate. Secure it with the kit supplied security ring (Photo 24).

PHOTO 23

PHOTO 24

DANGER: The gas damper is under extreme pressure! Please make sure the security rings are installed correctly and are snapped their respective guides.
STEP 10  ROLLER ADJUSTMENT

IMPORTANT NOTE: The door needs to be in the closed position for this adjustment to be properly done.

NOTE: This adjustment also needs to be done with the gas damper installed.

10a. Install the kit supplied slide roller (as shown in the picture).

10b. Adjust the slide roller (4) so the LSD swing arm has the initial contact and pre-load while opening and closing of the door. (Photo 25).

10c. Periodically lubricate the slide roller to insure a constant smooth open/close sequence.
10. **SUPPORTING THE CHASSIS PLATE (IF REQUIRED)**

**TRANSFERRING THE MOUNTING HOLES**

10d. Placing the long mount bolt through the mount slot of the ground plate, and keeping it level (Photo 26), mark the area where the end of the bolt comes into contact with the frame. Make sure to locate the bolt at the center of the mount slots.

**OPTIONAL:**
To remove the hinge assembly to drill the mount holes

10e. Using a long drill bit, drill a pilot hole initially, then using the 8mm drill bit, drill the mount holes. Do this for both mount holes (Photo 26)

10f. Using a measuring scale (Photo 26), get the length of spacer(s) needed for both top and bottom.

10g. Once the holes have been drilled insert the kit supplied hardware bolt, flat washer, distance bushing (E) at their respective locations (Photo 27).

10h. Torque to specs.
STEP 11  ROUTING THE WIRE HARNESS

11a.  Pivot the door carefully up and make sure there is sufficient clearance on the fender, A-pillar and hood. If necessary, adjust the LSD ground plate or the LSD swing arm again.

11b.  Lay the wire harness on and attach it to the marked points shown (Photo 28). Secure the wire harness with the kit supplied cable ties. The wire harness is located on the backside of the LSD ground plate.
STEP 12 MOUNTING THE FENDER BRACKETS

12a. Fender brackets are used to stabilize the fender to the ground plate. There is one located at the bottom of the fender.

12b. Mount the fender bracket to the pre-drilled tapped hole at the bottom of the ground plate (Photo 29). Once mounted, install the fender back to its original position. While in this position, attach the mount holes from the fender bracket to the fender mount hole.

PHOTO 29
COMMON TROUBLESHOOTING QUESTIONS and ANSWERS

Q1: WHY DOES THE BOTTOM OF THE DOOR NOT SIT FLUSH, AT THE FRONT OR REAR?:

A1: LSD door hinges are engineered and designed to compensate for this issue. They are designed to be installed in the center location of all mounting slots. Some vehicles are different however; adjusting the location of the swing arm mounts on the door will fix this problem. Mounting the swing arm towards the interior of the door, top or bottom will move the door out; mounting the swing arm towards the exterior of the door will move the door in. In some cases, the mounting will be slightly different between top and bottom mounts.

Q2: WHY DO THE DOORS “SPRING” A-JAR WHEN OPENING THE DOOR?:

A2: LSD door hinges are engineered and designed to compensate for this issue. It is common on vehicles that the left and the right sides are not quite the same. When a door “springs” open there is a misalignment between the swing arm and the ground plate. This can be remedied by increasing the distance of the “third” point on the ground plate. The “third” point is usually located towards the front of the vehicle. Increasing the distance and angle of the ground plate to the vehicle will release any pressure and/or contact between the swing arm and the ground plate.

Q3: WHY DOES THE DOOR HITS/RUBS AGAINST THE FENDER WHEN OPENING?:

A3: LSD door hinges are engineered and designed to compensate for this issue. Attaching the LSD hinge in the center location of the slots and adjusting the magic stick such that the tuff lock is centered is the optimum desired installation. Making minor adjustments to the “MARA”/“C” profile, the “third” point, and/or the “Magic stick” should alleviate this problem.

Q4: WHY IS THE WIRING HARNESS TOO LARGE FOR THE ROUTE SHOWN IN THE INSTRUCTIONS?:

A4: LSD door hinges are engineered and designed to compensate for this issue. LSD wiring kits are designed for the MAXIMUM wires installed on vehicles. If additional wires are added or modified that are larger than original, wiring routing might have to be modified. Vehicle owners are responsible for this modified routing.

Q5: WHY DOESN'T THE GAS SPRING HOLD THE DOOR UP?:

A5: LSD door hinges are engineered and designed to compensate for original door weight, i.e. speakers and electronics. NOTE: As temperature fluctuates, the gas pressure in each shock increases or decreases. Example: in the heat, the gas pressure will expand, in the cold; it has a tendency to contract. Any modifications to the speakers or electronics may require a larger gas spring. Vehicle owners are required to purchase these larger gas springs from their local dealer. If you have not modified your door, your gas spring may be faulty. Vehicle owners are required to contact their local dealer for replacement(s).
LSD Door opening chart for 24 and 30 degree bearing assemblies.

NOTE: Depending on how the angle adjustment screw is set on the bearing assembly dimensions can vary up to 3 inches.

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Installation Notes: