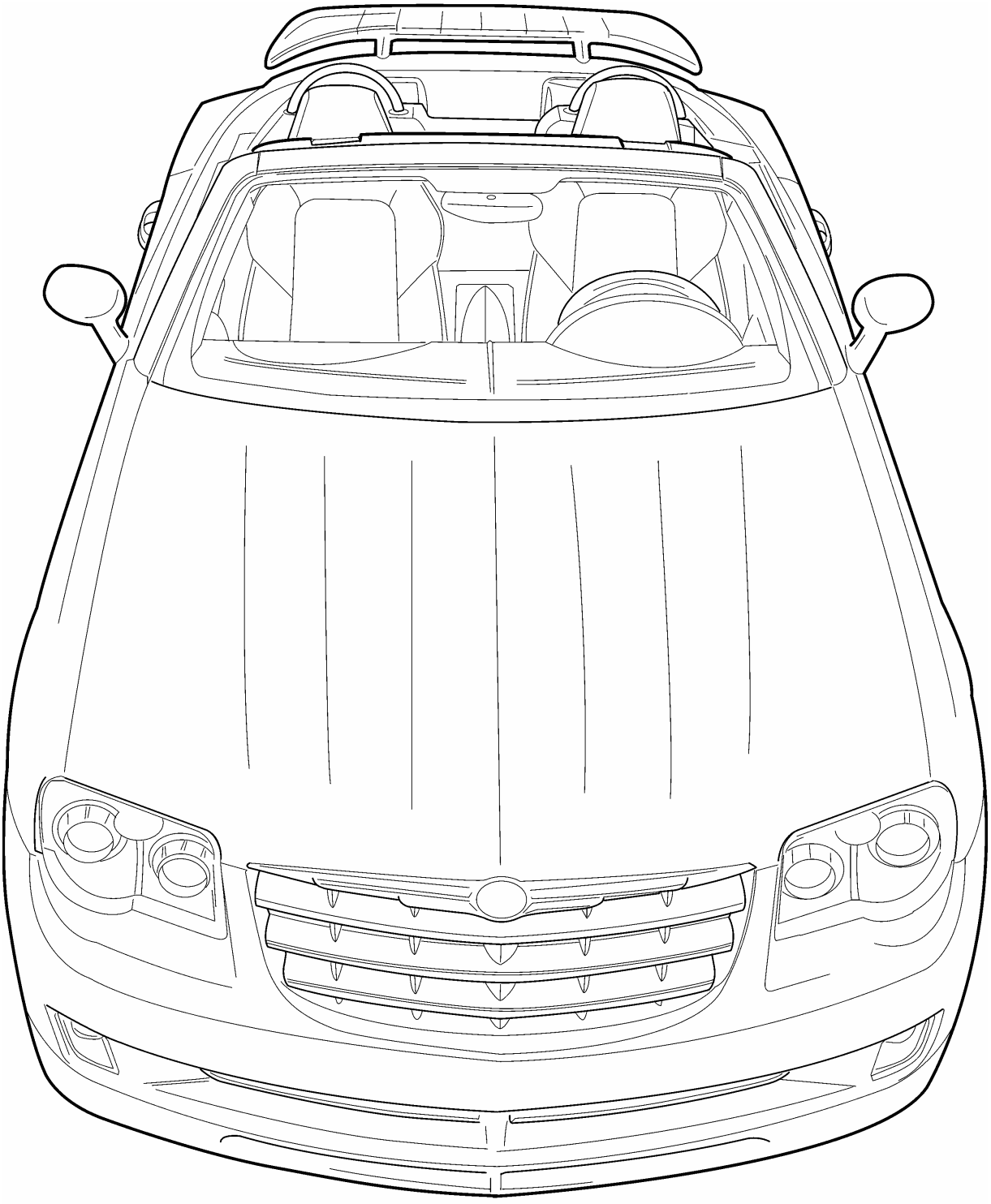
Chrysler Crossfire Convertible and Supercharger Engine Update



CROSSFIRE

Chrysler Crossfire Convertible and Supercharger Engine Update

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INTRODUCTION

This self-study course is designed for a Chrysler dealership Crossfire technician as an update to the unique features, systems and components of the 2005 Chrysler Crossfire coupe (ZH29), Roadster (ZH27) and high performance SRT6.

Note: The term "roadster" describes a two seat vehicle with an articulating top. The term "convertible" refers to the top itself.

Note: Items not specifically mentioned in this training are to be considered carryover from the 2004 model.

This self study training course can be completed at your own pace. The course consists of two components: a self-study book and an interactive Compact Disk-Read Only Memory (CD-ROM). These components were designed to be used together to enhance your understanding of the course objectives.

Begin the course by using the self-study book. When you reach a topic that includes visual reinforcement on the CD-ROM, you will be prompted to access the topic on the CD-ROM. Insert the CD-ROM into your computer and enter your login information. After you enter your information, you may access the appropriate topic from the Main Menu of the CD-ROM and view the information on the disc. At the end of each topic on the CD-ROM, you will be prompted to return to the self-study book and continue the course where you left off.

After you have reviewed the entire self-study book and have completed all topics on the CD-ROM, the Post-Test button will be available on the Main Menu of the CD-ROM. This test must be successfully completed to receive credit for the course. A completion code will be displayed when a score of 85% of greater is achieved. Follow the directions on the CD-ROM to report your completion information and receive course credit.

A file containing updates to the student workbook for the Crossfire Specialist Introduction instructor led course is available on the CD-ROM and can be printed to replace pages in your student reference book.

The Crossfire Specialist Introduction was updated February 2004. Revisions are shown in bold, black, italic type (blue type in PDF version). TSB 08-018 (June 13, 2003) has been added as Appendix A. A Rapid Response Transmittal (July 30, 2003) has been added as Appendix B. Appendix C contains all revised pages.

Chrysler Crossfire Convertible and Supercharger Engine Update

Systems covered in detail in this self-study course include:

- 3.2-Liter Supercharged SOHC V-6 Engine
- SRT6 Performance Option Features
- Convertible Top Operation and Diagnosis

2005 MODEL AVAILABILITY

	Engine Availability		Transmission Availability		
Model	Std. 3.2 Liter (L) V-6	Supercharged 3.2L V-6	Manual	Std. 5-Speed Auto	SRT 5-Speed Auto
Coupe ZH29	A	N/A	A	A	N/A
Roadster ZH27	A	N/A	A	A	N/A
SRT Coupe ZH29	N/A	A	N/A	N/A	A
SRT Roadster ZH27	N/A	A	N/A	N/A	A

A = Available

N/A = Not Available

Chrysler Crossfire Convertible and Supercharger Engine Update

STUDENT LEARNING OBJECTIVES

Given a student reference book and CD-ROM, the student will be able to:

- Identify component functions for the air induction system on the 3.2L supercharged engine.
- Identify component locations for the air induction system on the 3.2L supercharged engine.
- Identify differences between 3.2L naturally aspirated and 3.2L supercharged engines.
- Identify differences associated with the SRT6 package.
- Identify component locations for the convertible top.
- Identify component functions for the convertible top.
- Identify service adjustments available for convertible top components.
- Identify convertible top system fluid fill and bleed procedures.
- Locate convertible top system fluid specifications in Service Information.
- Identify convertible top electro-hydraulic operation in various open/close stages.
- Diagnose concerns in the convertible top system using switch Light Emitting Diode (LED), Diagnostic Readout Box – Generation Three (DRBIII) and the Service Information.
- Identify body changes on convertible top vehicles.
- Identify differences between the Teves Mark 25 Antilock Brake System (2005 Crossfire) and Teves Mark 20e Antilock Brake System (2004 Crossfire).

Notes:

ACRONYMS

The acronyms listed here are used in this self-study.

Acronyms	Definitions
bhp	Brake Horse Power
°C	Degrees Celsius
CAN	Controller Area Network
CD-ROM	Compact Disk-Read Only Memory
DLC	Data Link Connector
DRBIII	Diagnostic Readout Box – Generation Three
DTC	Diagnostic Trouble Code
EGR	Exhaust Gas Recirculation
°F	Degrees Fahrenheit
HCU	Hydraulic Control Unit
IAT	Intake Air Temperature
in.	Inches
in^3	Cubic Inches
Km/h	Kilometers-Per-Hour
kW	Kilowatt
L	Liter
Lb.-ft.	Pound-Feet
LED	Light Emitting Diode
MAF	Mass Air Flow
MAP	Manifold Absolute Pressure

mm	Millimeter
mph	Miles-Per-Hour
N	Newtons
NOx	Oxides of Nitrogen
N•m	Newton Meter
PCM	Powertrain Control Module
psi	Pounds-Per-Square Inch
PTCM	Power Top Control Module
qts.	Quarts
rpm	Revolutions-Per-Minute
SOHC	Single Over Head Cam
SRT6	Street Racing Technology 6 Cylinder

LESSON 1 POWERTRAIN

3.2-LITER SUPERCHARGED SOHC V-6 ENGINE

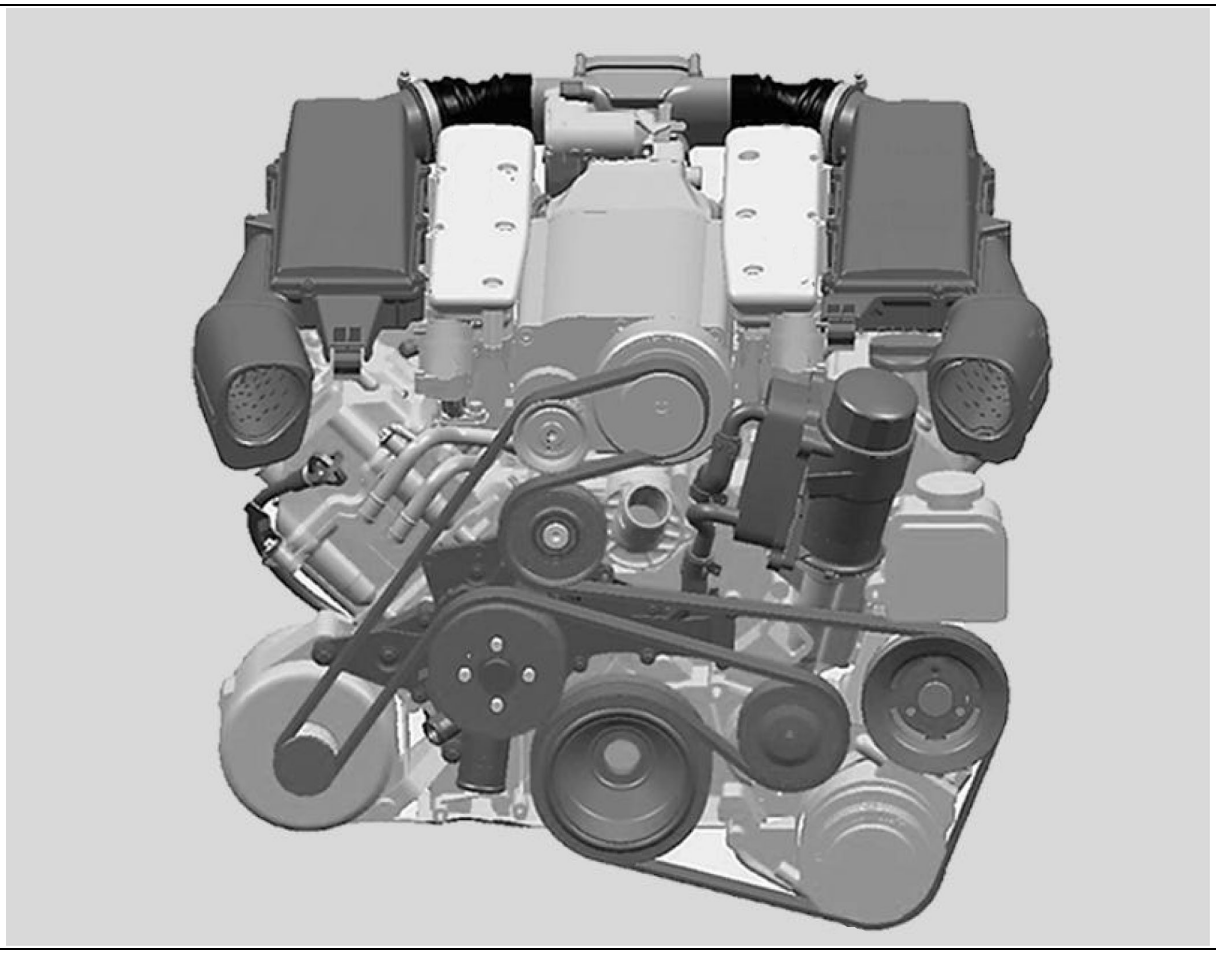


Figure 1 Supercharged 3.2-Liter SOHC V-6 Engine

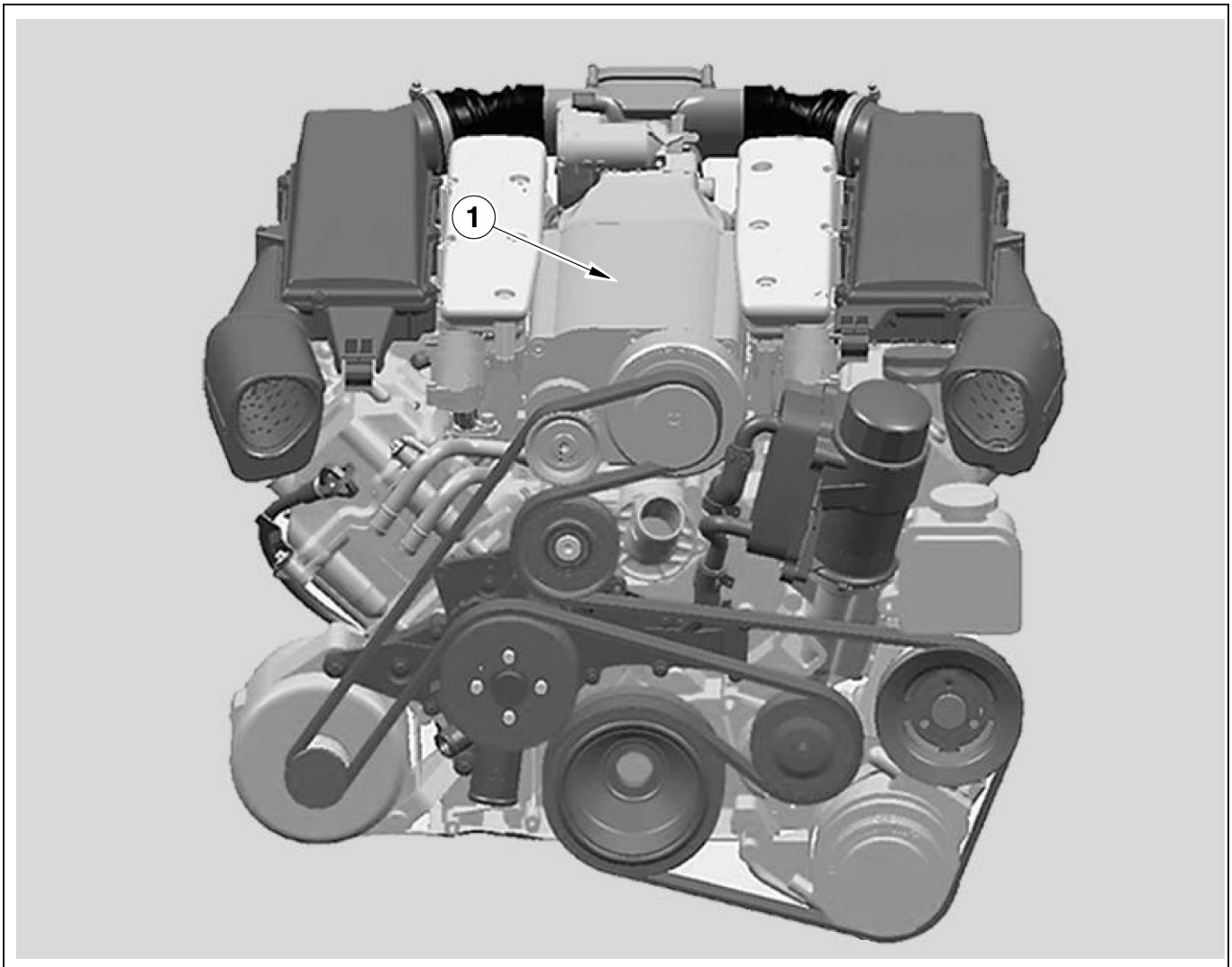
An optional supercharged 3.2-liter Single Over Head Cam (SOHC) 18-valve 90-degree V-6 engine is available on the 2005 Chrysler Crossfire SRT6. It shares a common long block assembly with the naturally aspirated engine.

Power Ratings

This engine produces 246 kilowatts (kW) or 330 brake horse power (bhp) @ 6100 rpm, and 420 N•m (310 pound-feet (lb.-ft.) of torque @ 3500 rpm. Its maximum operating speed is electronically limited to 6000 RPM by interrupting the fuel supply. The engine is tuned to provide high torque over a broad range of engine speeds for optimum driveability. 90% of max torque is available from about 2600-5300 rpm, 98% of max torque is available from 3000-4500 rpm.

ENGINE STRUCTURE

Supercharger



1	Supercharger

Figure 2 Supercharger

DaimlerChrysler has developed a special Lysholm (helical) supercharger for its SRT6 3.2-liter V6 engine. The Lysholm supercharger is based on a two rotor helical design intermeshing an aluminum rotor and Teflon-coated alloy rotor. The screw design and its close tolerances (less than 0.1 inches (in.) between rotors) allow this supercharger to produce 30% more boost pressure than other supercharger designs.

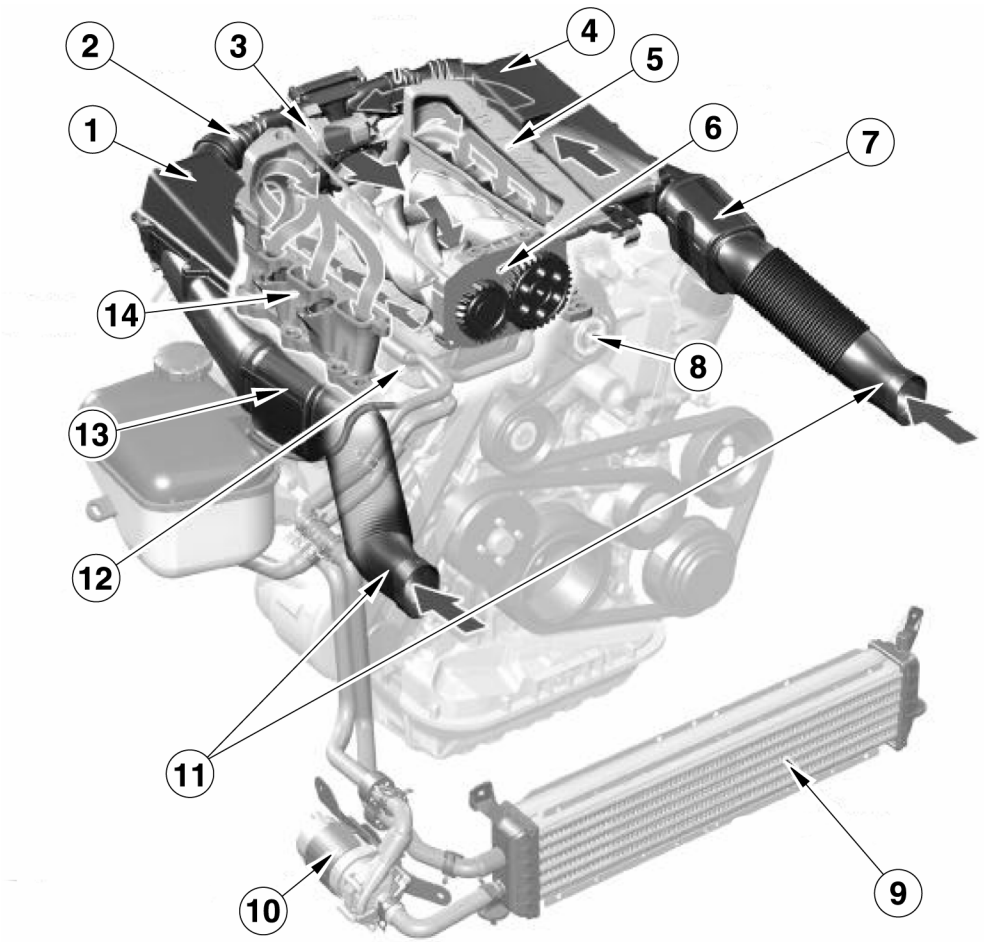
The supercharger is driven by an electromechanical clutch which engages automatically as power is needed. The supercharger operates at a maximum boost of 0.883 bar (12.8 psi) and turns over 12,500 rpm. This boost enables the SRT6 3.2-liter V6 engine to deliver a specific output of over 100 bhp per liter. Intake air is cooled through an integral air charge cooler (air-to-water heat exchanger) that is mounted beneath the supercharger in the engine's valley. The water in the air charge cooler is circulated to a radiator (water-to-air heat exchanger) by an auxiliary coolant pump.

The Function of Supercharging

Supercharging of internal combustion engines has been used for many years as a method to improve engine performance and efficiency. The purpose of supercharging an engine is to raise the density of the air charge before it's delivered to the cylinders. Thus, the increased mass of air trapped and then compressed in each cylinder during each induction and compression stroke makes more oxygen available for combustion than the conventional method of drawing the fresh air charge into the cylinder (naturally aspirated). Consequently, more air and fuel per cycle will be forced into the cylinder, and this can be efficiently burnt during the combustion process to raise the engine power output to higher than would otherwise be possible.

The twin-screw charger does not have the usual drawbacks of earlier mechanical superchargers (roots-type), such as poor efficiency (especially at high-pressure ratios), high rpm and high noise level, as well as high cost.

Supercharger Air Flow



1	Right Air Cleaner Assembly	8	Electromagnetic Clutch
2	Intake Line	9	Water-To-Air Heat Exchanger
3	Throttle Body	10	Auxiliary Coolant Pump
4	Left Air Cleaner Assembly	11	Corrugated Hoses
5	Left Plenum	12	Air-To-Water Heat Exchanger
6	Supercharger	13	Right Intake Air Scoop
7	Left Intake Air Scoop	14	Right Plenum

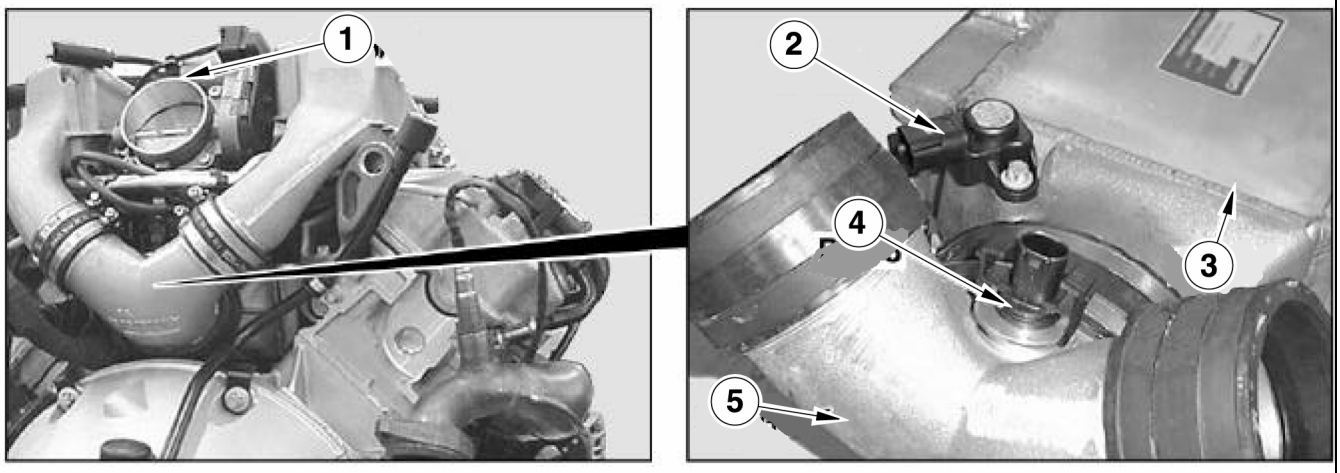
Figure 3 Supercharger Air Flow

Inlet Side

Fresh air flows through the corrugated hoses (11), intake air scoops (7/13), as well as the air cleaner assemblies (1/4), and the intake line (2) to the throttle body (3). The fresh air now flows along the inlet side into the working chamber of the supercharger (6). The screw rotors compress the air by reducing the size of the working chamber and transport it to the outlet side.

Outlet Side

The maximum charge pressure is 0.883 bar (12.8 psi). The charge air now flows into the air-to-water heat exchanger (12). The charge air is cooled down at this point in order to improve the charge efficiency. A Manifold Absolute Pressure (MAP) sensor detects the current charge pressure; the Intake Air Temperature (IAT) sensor senses the current charge air temperature. The highly compressed air now flows from the charge air cooler through the plenums (5/14) to the cylinders.



1	Throttle Body	4	IAT Sensor
2	MAP Sensor	5	Air Distribution Pipe
3	Air-To-Water Heat Exchanger		

Figure 4 MAP/IAT Location

The MAP sensor senses engine load based on manifold pressure. When the manifold pressure becomes positive (supercharger producing boost), the MAP serves as a boost sensor.

The IAT sensor is used during the fuel delivery calculation. As incoming air gets hotter, the number of oxygen molecules for a given volume drops as the air expands. With less oxygen available less fuel is required.

Note: The MAP and IAT sensors are located at the rear of the engine in the aluminum ductwork that connects the air-to-water heat exchanger to the plenums.

No charge pressure control is required as the screw-type compressor and the engine are designed for maximum power output. It has therefore been possible to do without a recirculated air flap actuator.

When additional engine output is not required, the electromagnetic clutch (8) is not actuated, and the supercharger rotors freewheel. This freewheeling action is caused by air flow through the induction system.

Animation Support:

Select the "Engine Air Flow" button on the course CD-ROM main menu to view an animated description of these operations.

Supercharger Electronic Control System

The supercharger is switched on and off by the actuation of an electromagnetic clutch. The following information is used by the PCM for controlling the supercharger:

- Engine speed
- Engine load
- Charge pressure

Up to an engine speed of about 2900 rpm, the supercharger is actuated when engine load is more than 44 %.

From an engine speed of about 2900 rpm, the supercharger rotates constantly with no regard to the position of the throttle valve and the engine load. Engaging the supercharger at a speed higher than this might result in damage to the electromagnetic clutch.

The supercharger likewise remains engaged during deceleration. This avoids any response lag of the engine during the transition from deceleration to acceleration.

The electromagnetic clutch is supplied with voltage by the relay module, and actuated by a ground signal switched by the PCM. When the electromagnetic clutch

is opened, a factory-set air gap of 0.3 to 0.5 millimeters (mm) (0.012-0.020 in.) exists between rotor and armature. This air gap increases as a result of the wear and tear to the friction linings. It cannot be adjusted.

The supercharger is not operated when the vehicle is stationary.

If the battery voltage drops below 9-volts or if a fault in the charge air cooling system is detected by the charge air temperature sensor, the supercharger is disabled.

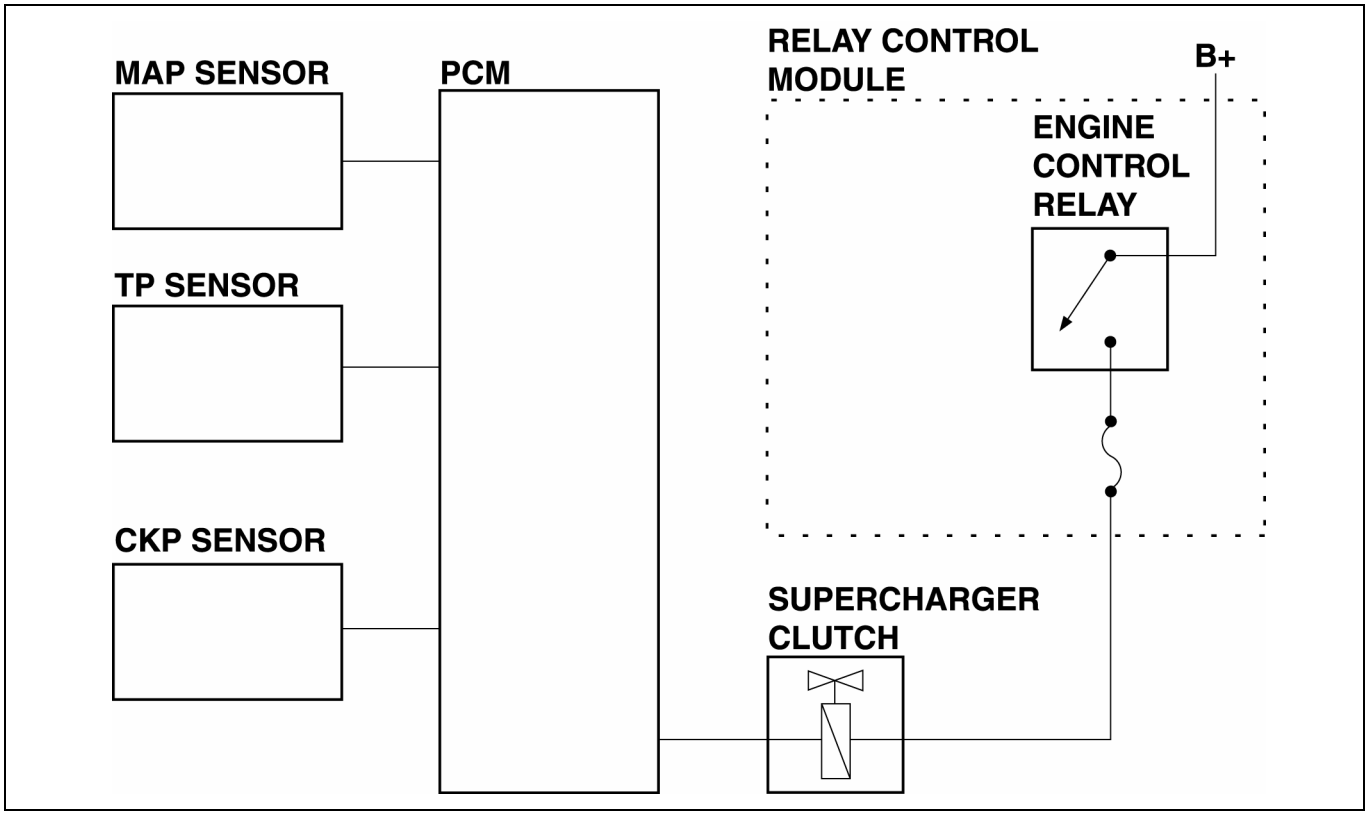


Figure 5 Supercharger Clutch Electrical Diagram

Fuel And Ignition Control

The supercharged SRT6 engine features a speed density fuel injection system.

The engine management software, as well as certain hardware components, has been adapted to the specific needs of the supercharged engine.

The Mass Air Flow (MAF) engine management system has been replaced by a speed-density control system. The air mass is calculated on the basis of the signal supplied by the MAP and IAT sensors.

The principal functions in respect of diagnosis have been adopted from previous speed density fuel systems.

For more information on operation, diagnosis and servicing a speed density fuel system refer to currently available training.

Note: Refer to the Technical Training Skill Core Curriculum Chart or catalog.

The design and operation of the entire ignition system of the supercharged engine is identical to that of the naturally-aspirated engine.

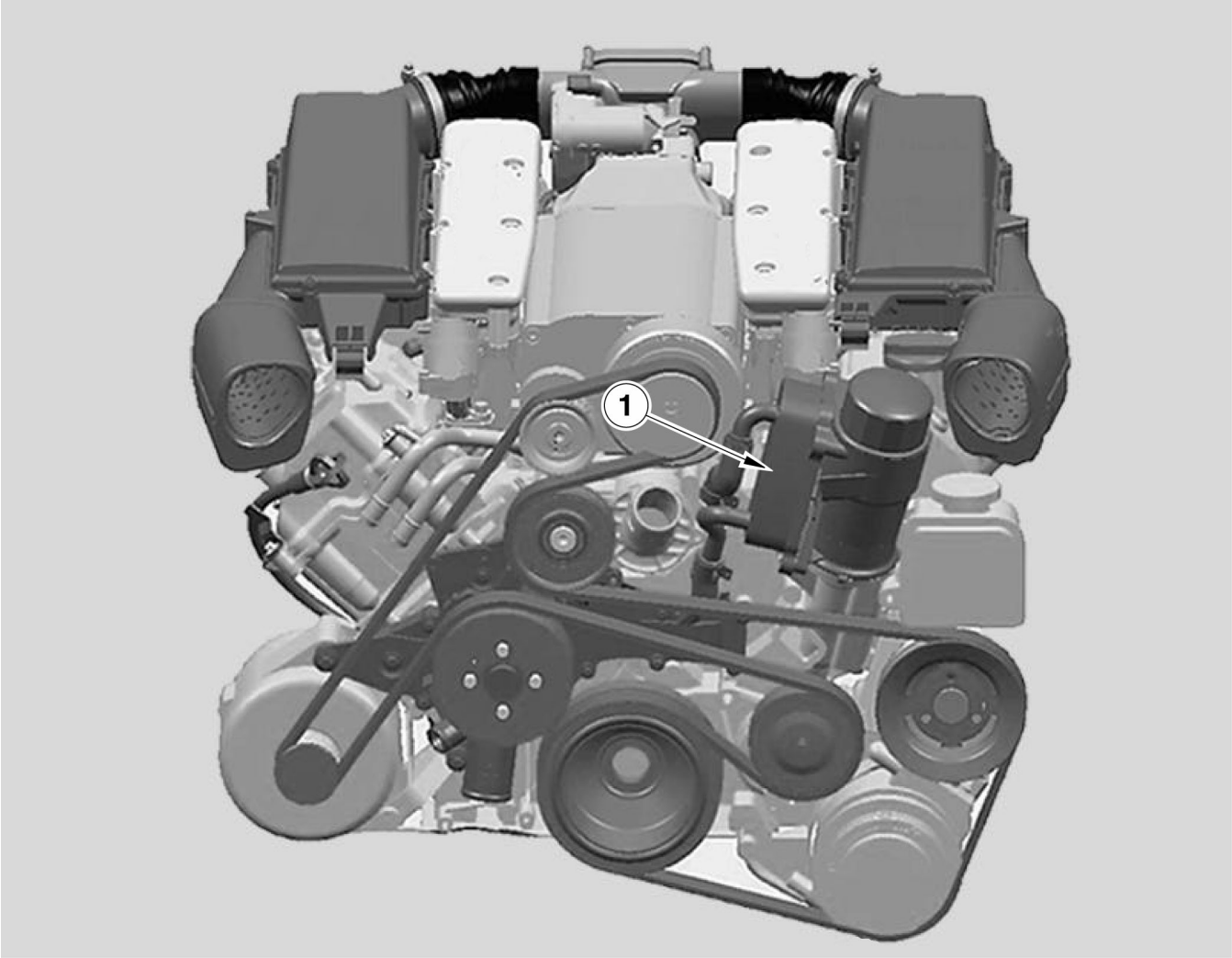
On SRT6 vehicles, high voltage ignition cables with a temperature-resistant Teflon coating are used at both rear cylinders (cylinders 3 and 6), due to the higher temperatures.

These high voltage ignition cables of both circuits are identified by the white colored marking on the protective sleeve.

EGR Valve Deletion

The SRT6 3.2-Liter engine does not use an Exhaust Gas Recirculation (EGR) valve to reduce Oxides of Nitrogen (NOx). The addition of the charge air cooler sufficiently lowers the incoming air temperature to accomplish this.

SRT6 Engine Oil Cooler



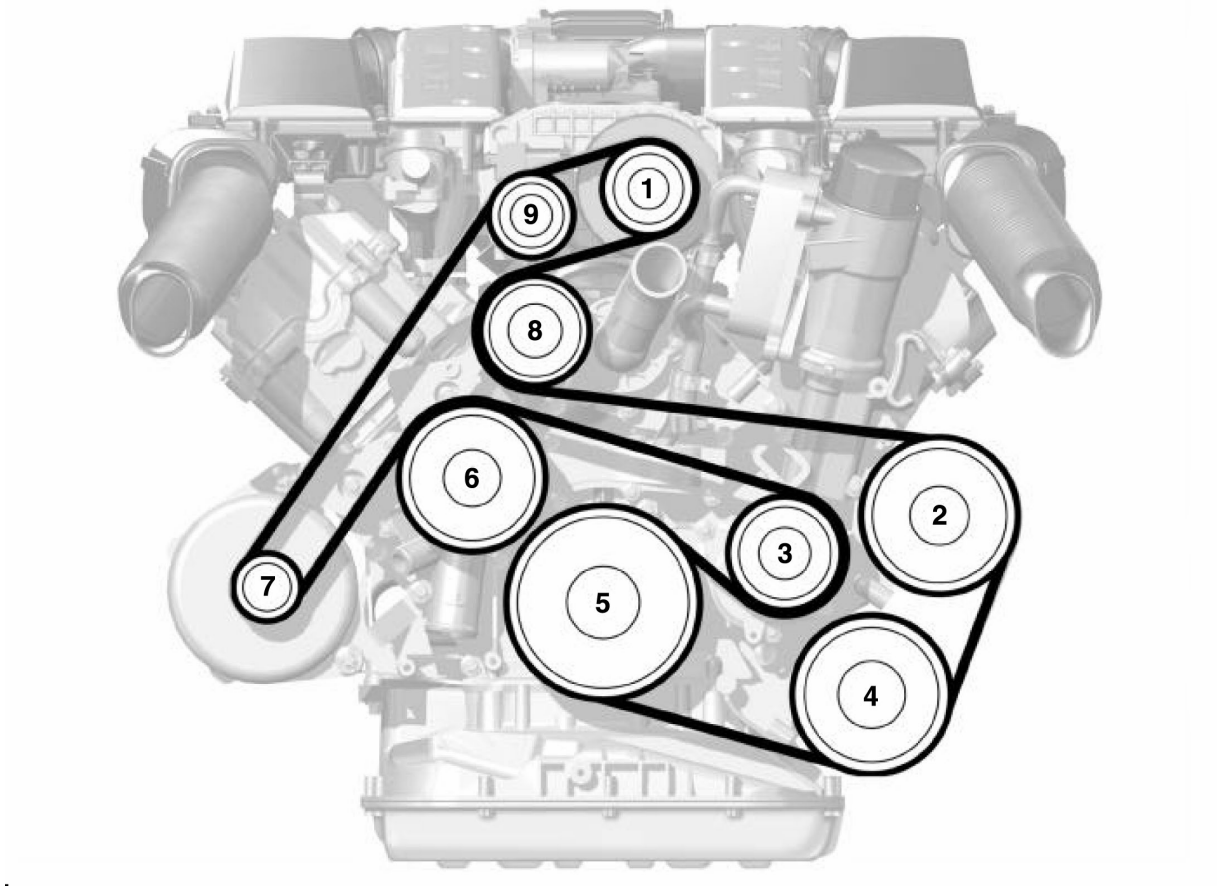
1	Engine Oil Cooler

Figure 6 SRT6 Engine Oil Cooler

A compact oil cooler mounted with the filter on the engine uses coolant from the radiator to control engine oil temperature. This type of cooler is simpler and easier to package than an oil-to-air cooler and requires no airflow ducting.

EXTERNAL SYSTEMS

SRT6 Accessory Drive

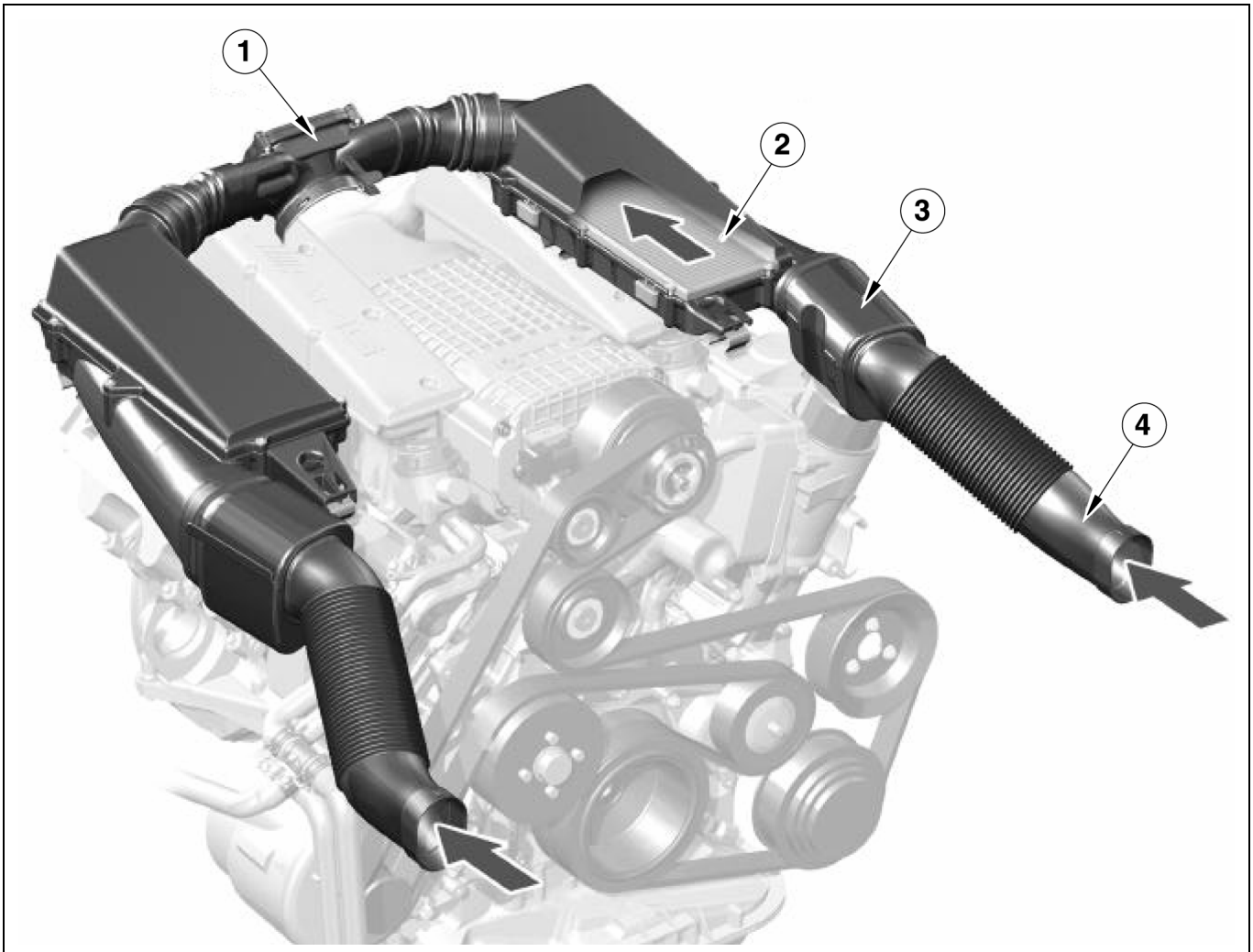


1	Supercharger Pulley	6	Water Pump Pulley
2	Power Steering Pump Pulley	7	Generator Pulley
3	Automatic Tensioner Pulley	8	Idler Pulley
4	Air Conditioner Compressor Pulley	9	Supercharger Idler Pulley
5	Crankshaft Pulley		

Figure 7 SRT6 Accessory Drive

The accessory drive belt provides the link between the engine crankshaft and the engine accessories. Tension on the accessory drive belt is maintained by an automatic belt tensioner.

Air Induction System



1	Intake Line	3	Intake Air Scoop
2	Air Filter Element	4	Corrugated Hose

Figure 8 Air Induction System

Ambient air enters the induction system through dual corrugated tubes. Intake air scoops are used to deaden the noise level created by air entering the system. Incoming air is filtered before entering the intake line. The intake line is secured to the throttle body by a plastic clamp.

Air Ducts

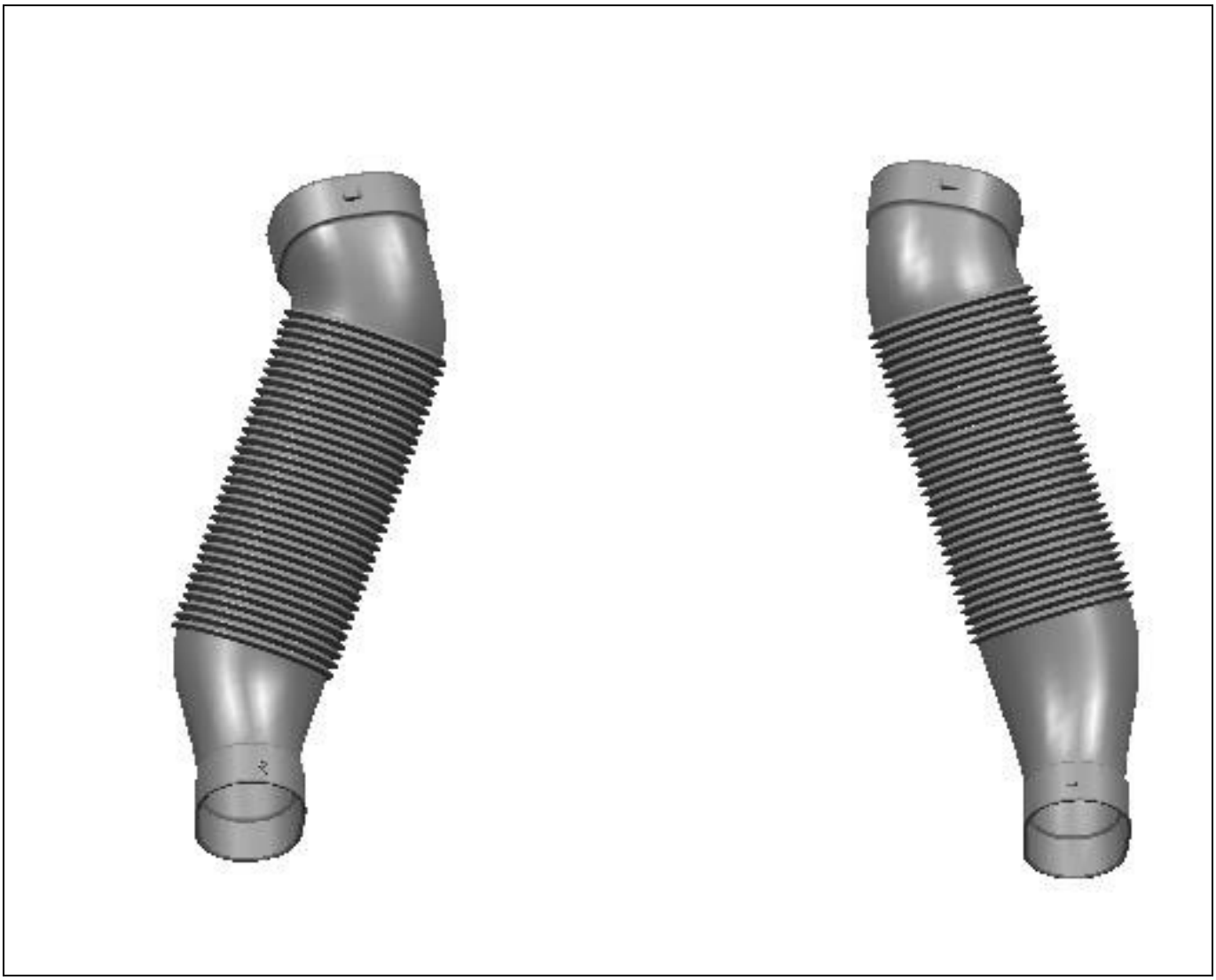


Figure 9 Corrugated Hoses

Two corrugated hoses or semi-flexible ducts route incoming air from inlets beside the radiator into each side of the induction system.

Air Filters/Housings

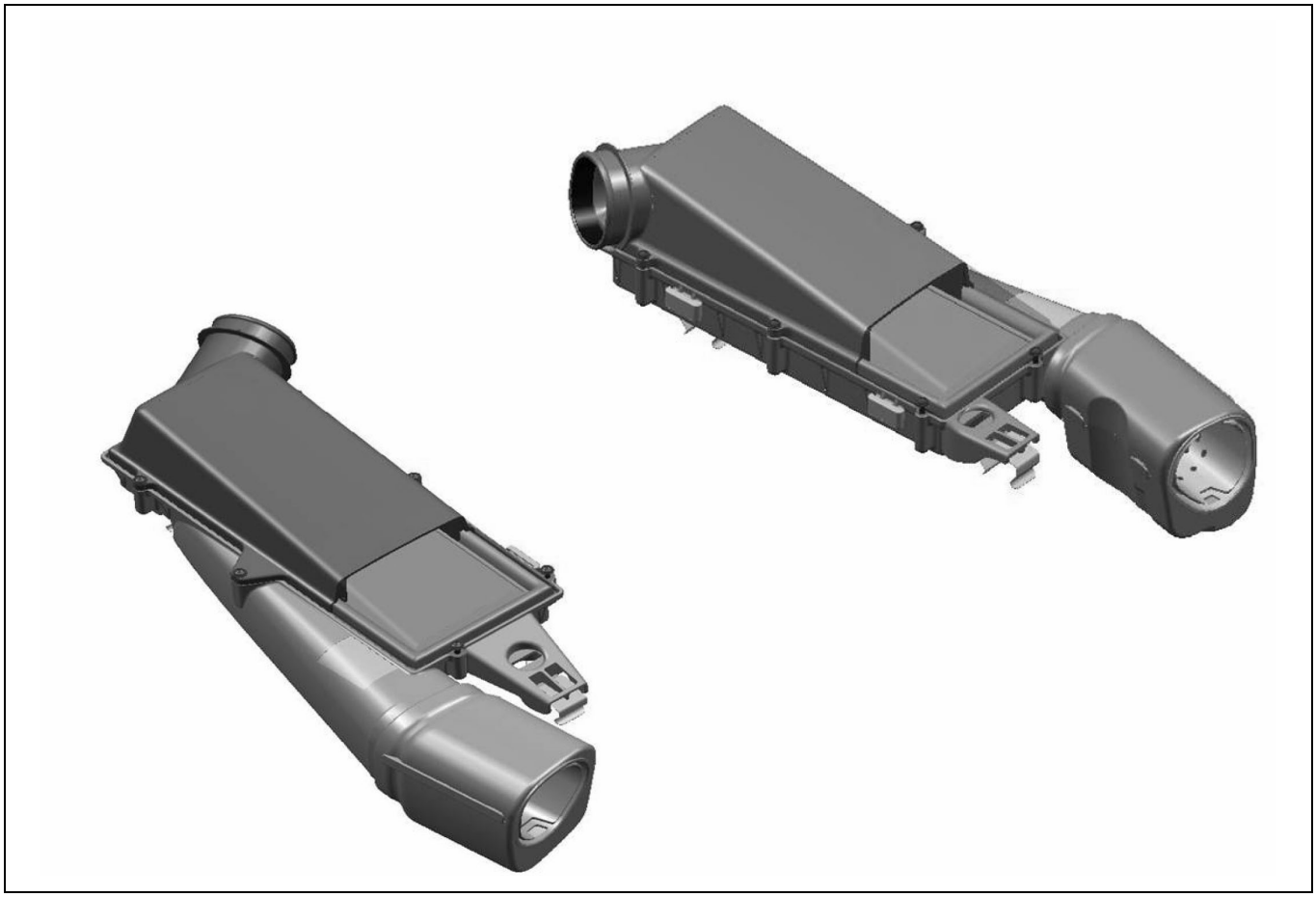


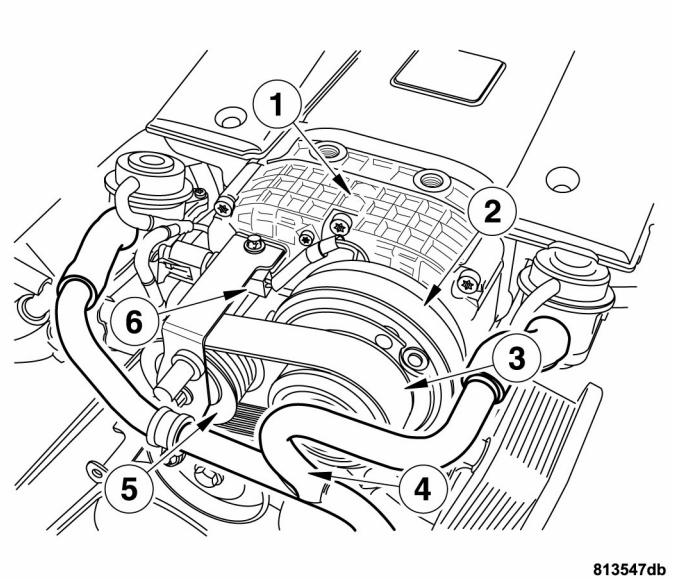
Figure 10 Air Filters/Housings

Two rectangular filters ensure that the air reaching the supercharger is clean and free from debris. The filters are serviced by removing their respective covers. Consult the Service Information for the appropriate air filter part number and change interval.

Dual air cleaner housings are ducted to the engine throttle body by temperature resistant rubber duct work.

The MAF sensor from the naturally aspirated engine has been replaced by black, rigid duct work.

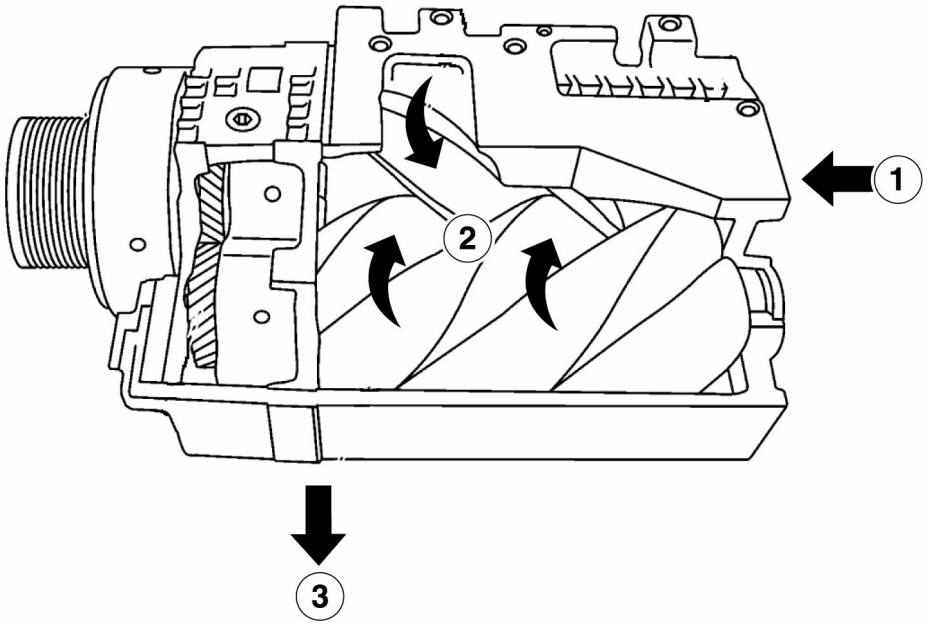
Supercharger Drive System



1	Supercharger	4	Secondary Air Tube
2	Supercharger Clutch	5	Supercharger Idler Pulley
3	Serpentine Belt	6	Supercharger Clutch Connector

Figure 11 Supercharger Drive System

Supercharger Air Flow

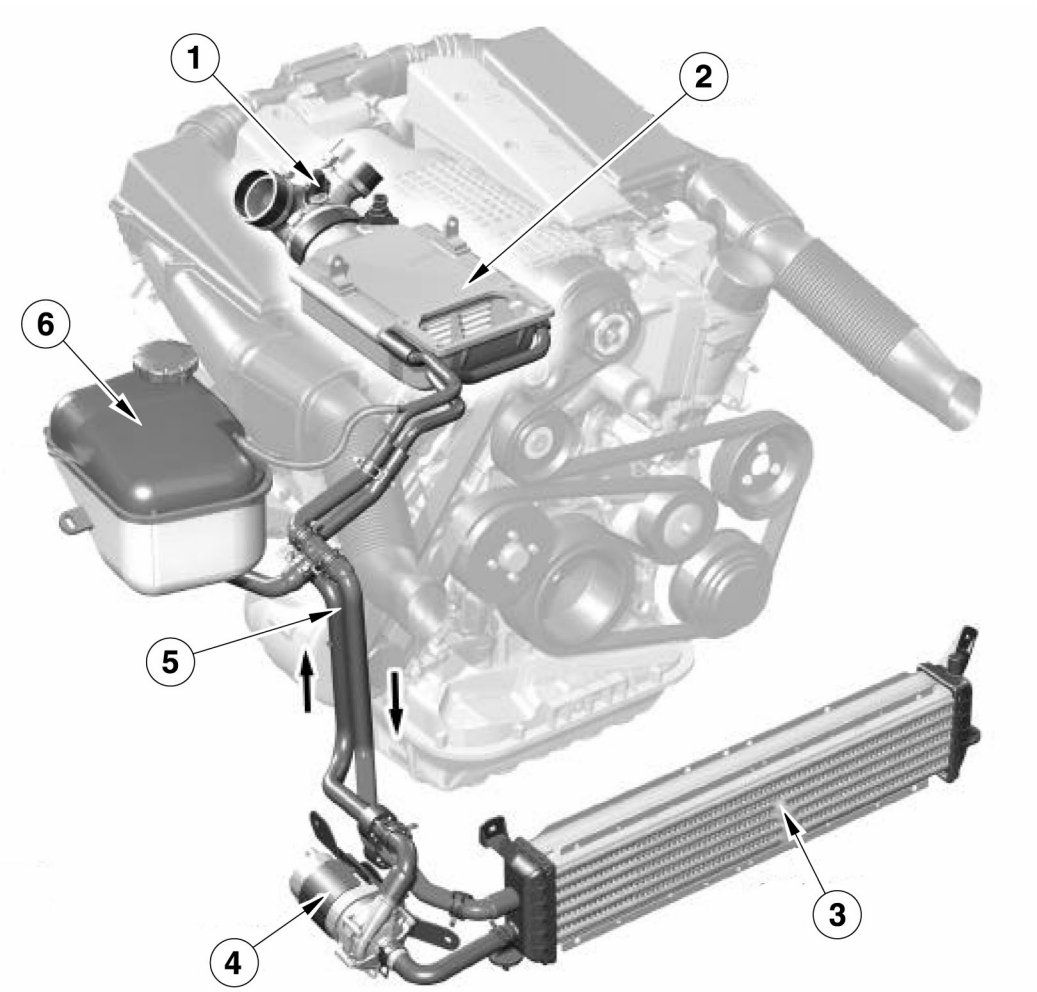


1	Atmospheric Air Inlet	3	Pressurized Air Outlet
2	Rotors		

Figure 12 Supercharger Air Flow

Atmospheric air enters the rear of the supercharger through the throttle body. If the supercharger clutch is not energized, the rotors will freewheel. This allows atmospheric air to enter each cylinder. When the supercharger clutch is energized, the rotors turn faster than crankshaft speed, causing the incoming atmospheric air to be pressurized. The two rotors within the supercharger resemble twin screws with an air chamber that reduces in size as the incoming atmospheric air is pushed to the front of the supercharger. The pressurized air exits the supercharger into the charge air cooler air-to-water heat exchanger from the bottom of the supercharger.

Charge Air Cooler



1	Charge Air Distributor Pipe	4	Auxiliary Water Pump
2	Air-Water Heat Exchanger	5	Feed And Return Lines
3	Water-Air Heat Exchanger	6	Coolant Reservoir

Figure 13 Charge Air Cooler

On vehicles equipped with a supercharger, there is an additional cooling system. This additional system is known as the charge air cooling system. It is made up of the following components: air-to-water heat exchanger, auxiliary water pump, water-to-air heat exchanger and all related hoses. Both heat exchangers operate similarly to a radiator. The air-to-water heat exchanger, which is mounted under the supercharger, absorbs heat from the pressurized air charge exiting the supercharger. The water-to-air heat exchanger is similar to a conventional cross-flow aluminum core radiator.

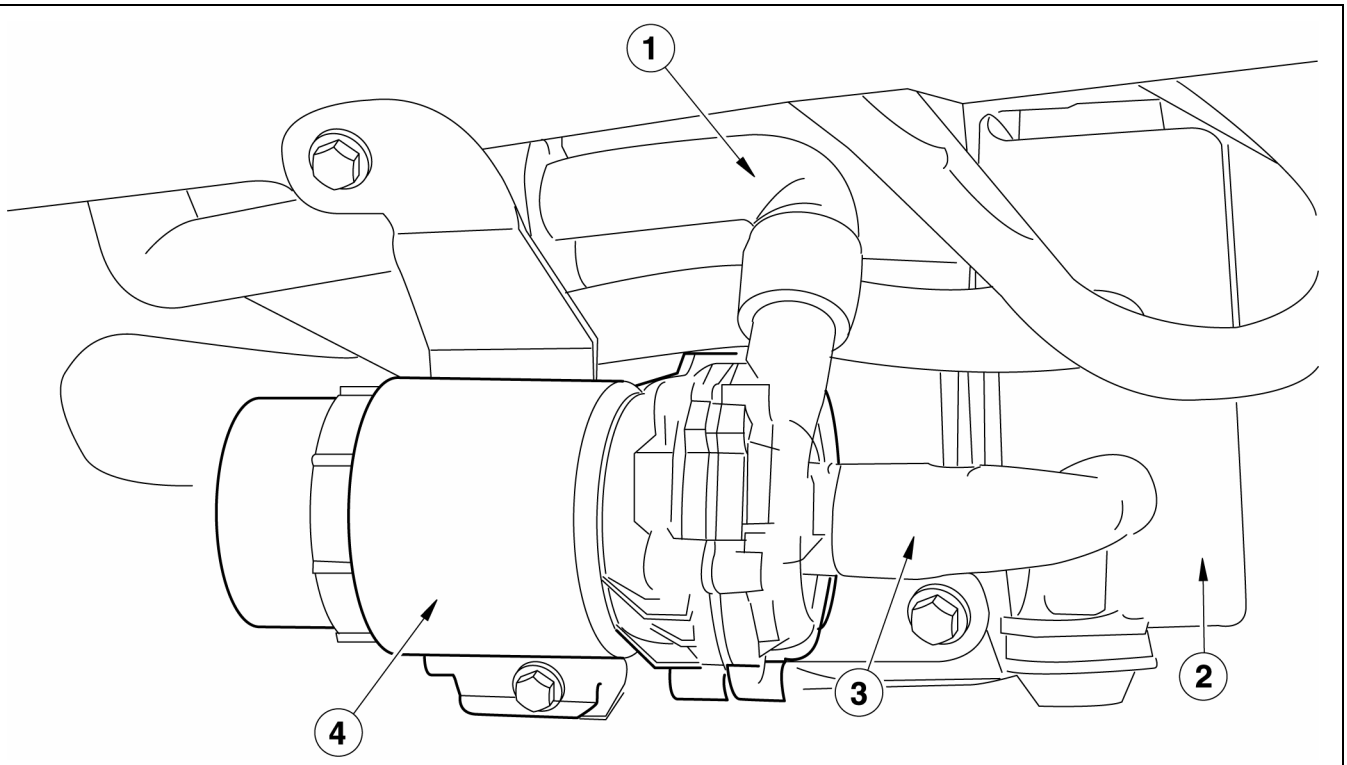
The water-to-air heat exchanger mounts in front of the A/C condenser, and behind the front fascia. Its purpose is to allow the heat in the coolant to be expelled to the ambient air. The charge air cooler auxiliary water pump is mounted to the side of the water-to-air heat exchanger. The pump is used to circulate coolant between the two heat exchangers. It operates independently of the engine cooling system. The only common link is the coolant recovery reservoir. Both systems use the coolant recovery reservoir as their source of coolant. For charge air cooler system service procedures, refer to the Service Information.

CAUTION: The cooling system is designed to function with a 50/50 mixture of Mopar® Antifreeze/Coolant, 5 Year/160,000 Km (100,000 Mile) Formula (MS-9769) or equivalent, and distilled water. Higher concentrations may result in poor cooling performance and premature water pump seal failure. This antifreeze/coolant may not be mixed or substituted with any other type.

Animation Support:

Select the "Charge Air Cooling System" button on the course CD-ROM main menu to view an animated description of these operations.

Auxiliary Water Pump



1	Outlet Hose	3	Inlet Hose
2	Charge Air Cooler Radiator	4	Auxiliary Water Pump

Figure 14 Auxiliary Water Pump

The charge air cooler is connected to a separate coolant circuit with a low temperature water cooler and charge air cooling auxiliary water pump.

The air, which is heated during the supercharging process, dissipates its heat to the coolant which flows through the charge air cooler. This in turn improves the cylinder charge efficiency.

The charge air temperature sensor monitors the operation of the charge air cooling system.

The charge air cooling auxiliary water pump controls the circulation of the coolant in the charge air cooler/low temperature water cooler circuit. The auxiliary water pump is operated by the PCM through a relay. The charge air cooling auxiliary water pump operates constantly when the ignition is switched on, regardless of the charge air temperature.

Charge Air Cooler Radiator

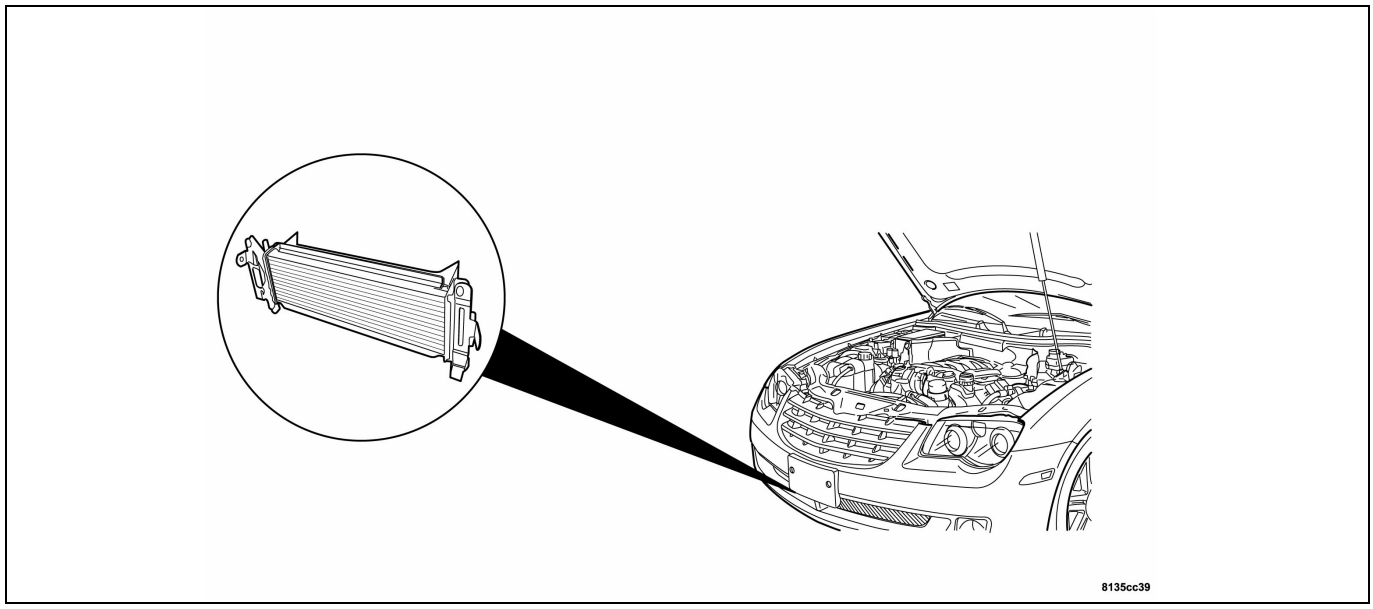
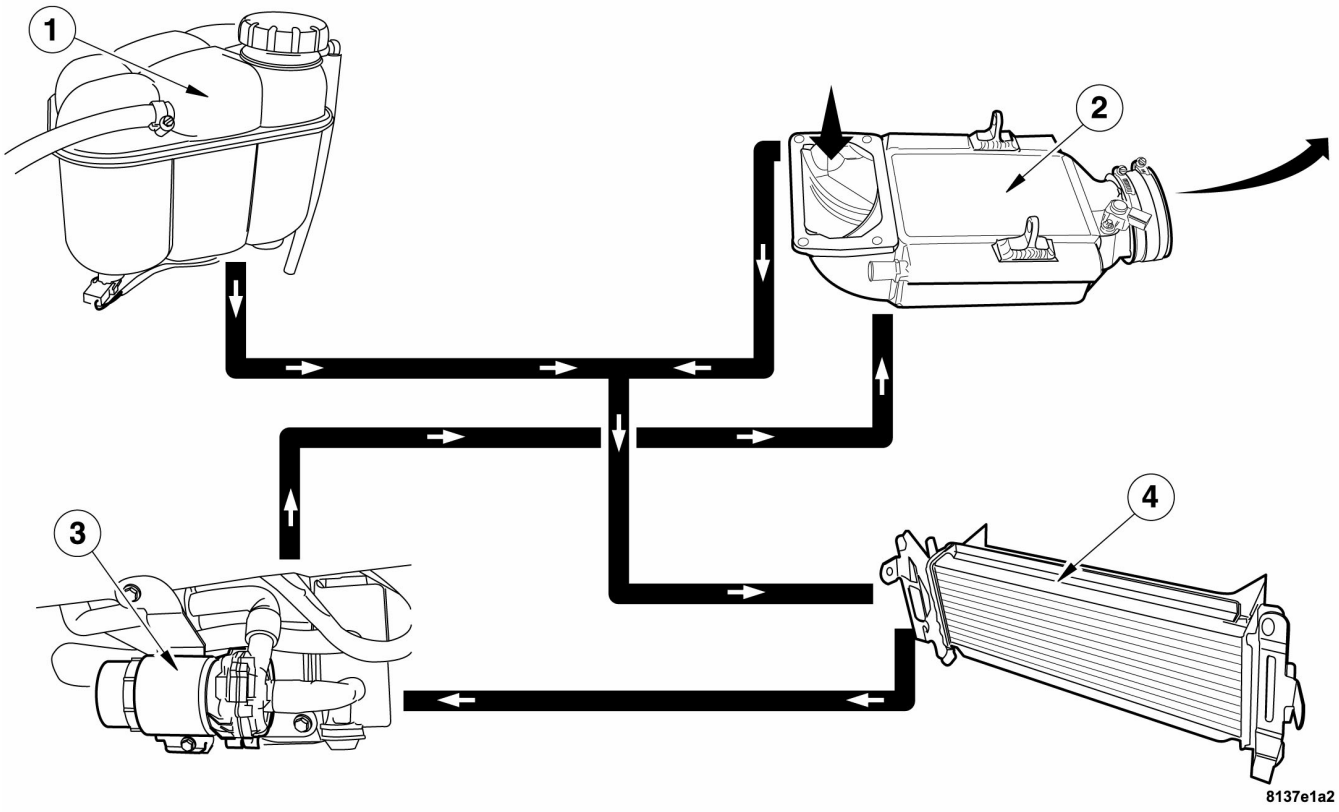


Figure 15 Charge Air Cooler Radiator Location

The charge air cooler is located directly behind the front fascia. It is positioned (on SRT6) so that cool ambient air is directed across it. Service to the charge air cooler is performed after removal of the front fascia. Refer to the Service Information for the proper service procedures.



1	Coolant Reservoir	3	Auxiliary Water Pump
2	Air-To-Water Heat Exchanger	4	Water-To-Air Heat Exchanger

Figure 16 Charge Air Cooler Radiator Flow

The charge air cooler radiator operates similarly to the engine radiator. Hot coolant flows from the air-to-water heat exchanger to the water-to-air heat exchanger, where it is cooled. The coolant leaves the water-to-air heat exchanger, and is then pumped back to the charge air cooler via an auxiliary water pump.

This system shares coolant with the engine's cooling system. The connection between the two systems is located near the coolant reservoir.

The addition of the supercharger with its charge air cooler increases the coolant capacity from 11.2L (11.8 qts)(non-SRT6 models) to 14.5L (15.3 qts)(SRT6 models).

Additional Supercharger Specific Engine Components

Engine Cover

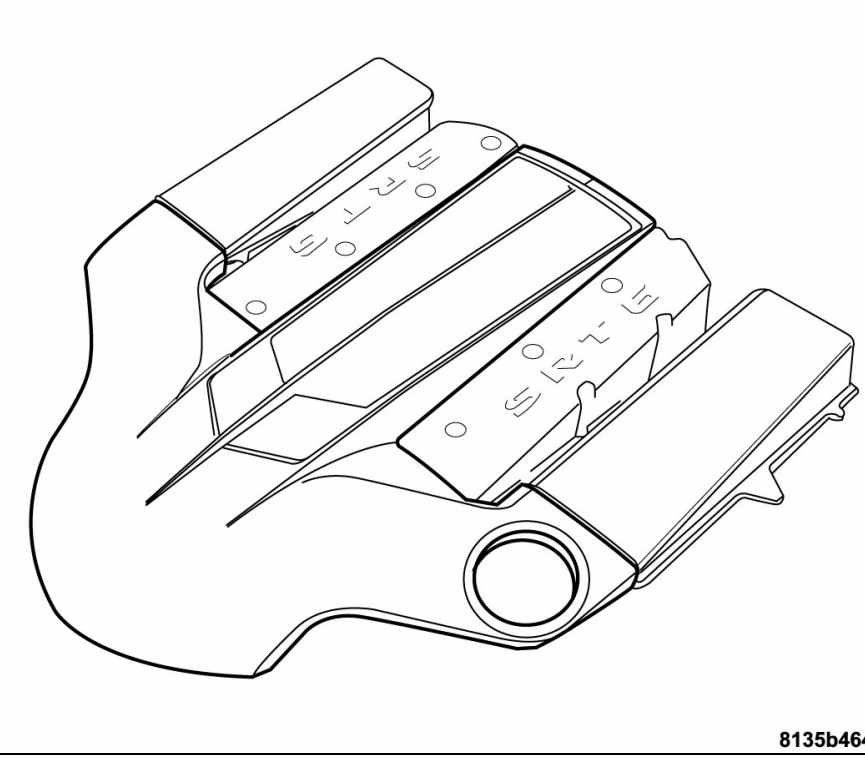


Figure 17 Engine Cover

The supercharged engine has its own specific engine cover. To properly remove and install this cover, perform the following procedure:

Removal

1. Remove the corrugated hoses.
2. Lift the engine cover from the rear first, then from the front, and remove it.

Installation

1. Position the engine cover on the mounting tabs and push down.
2. Install the corrugated hoses.

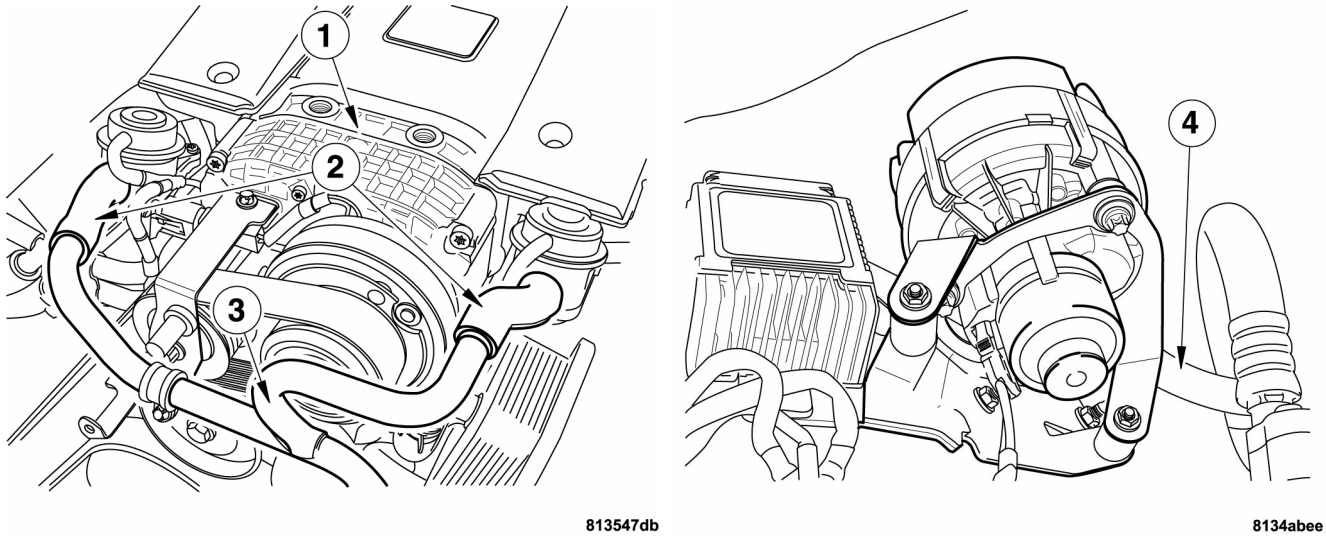
Note: The engine cover can be damaged if removed improperly.

Secondary Air Pump

Figure 18 Secondary Air Pump

The addition of the supercharger to the SRT6 3.2-Liter engine necessitated the relocation of the secondary air pump. The pump is now located on the left inner fender, next to the fan control module. Other than its new location, the secondary air system functions and is diagnosed the same as in the 2004 model.

Secondary Air Hoses/Pipes



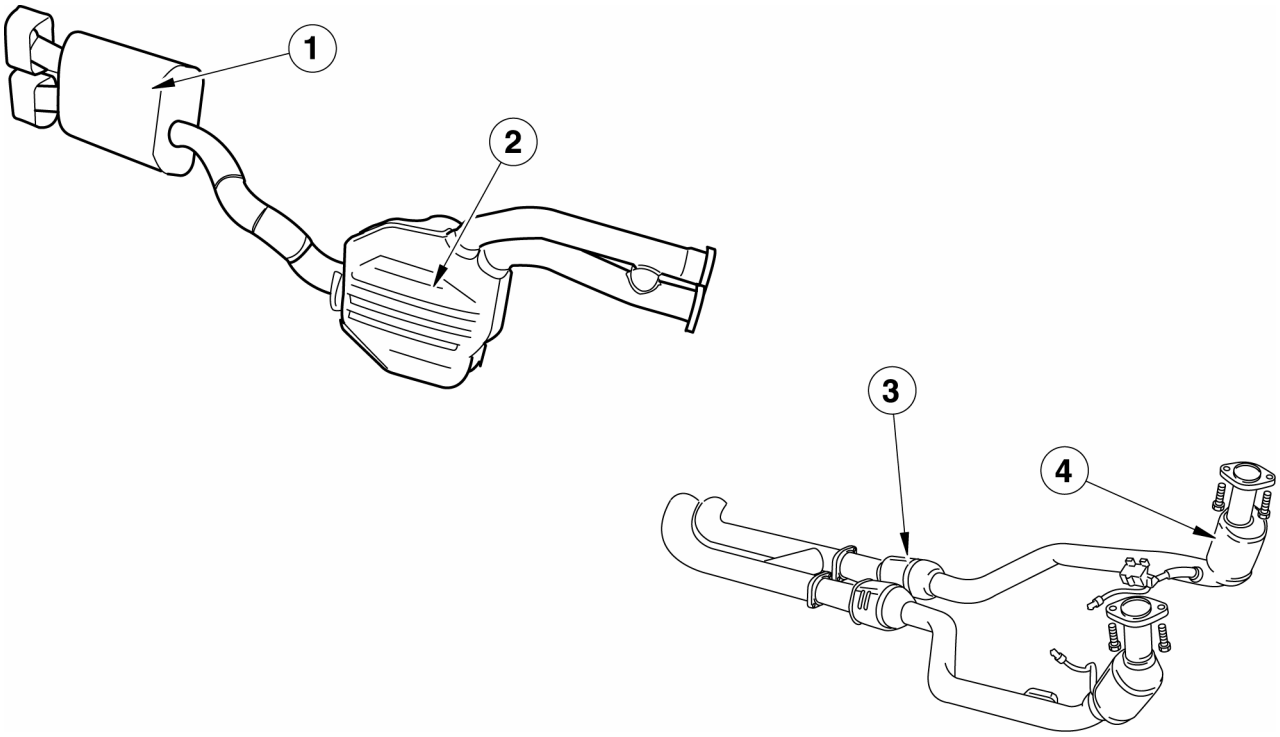
1	Supercharger	3	Tube
2	Rubber Hose	4	AIR Pump Outlet Tube

Figure 19 Secondary Air Hoses/Pipes

As mentioned on the previous page, the addition of the supercharger to the 3.2-Liter engine necessitated the relocation of the secondary air pump. This necessitated the replumbing of the secondary air lines. The primary line is constructed of aluminum and is connected to its associated valves and pump with rubber hoses. The secondary air system and its plumbing functions and is diagnosed the same as in the 2004 model.

Notes:

Exhaust System

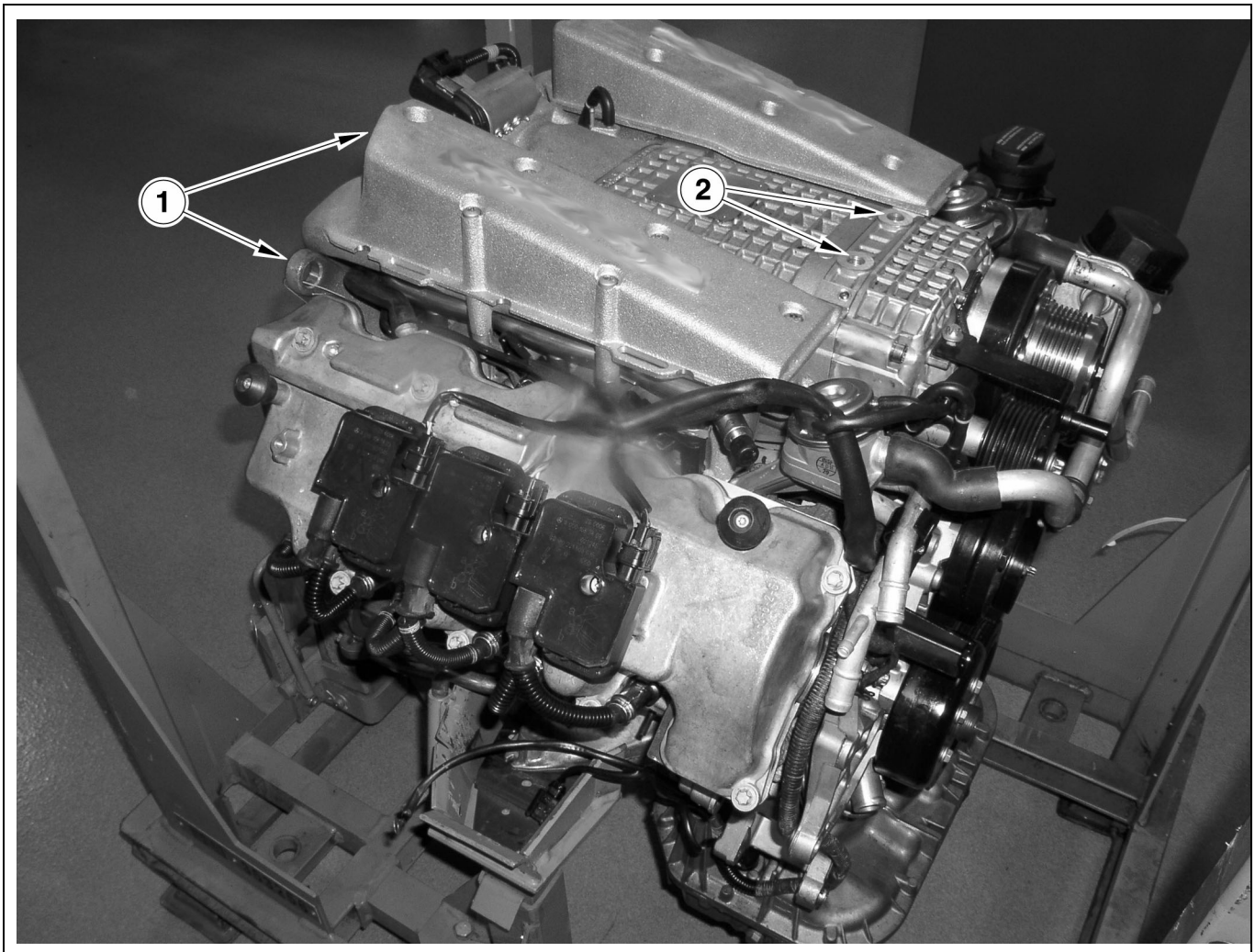


1	Muffler	3	Downstream Catalytic Converters
2	Resonator	4	Upstream Catalytic Converters

Figure 20 Exhaust System

A thin-wall air-gap insulated exhaust pipe leads to the three-way catalytic converter, which has an air-gap insulated housing. The air-gap insulation, whereby a steel shell is wrapped around the component, limits heat loss to hasten the catalytic converter action. The insulation also minimizes the need for insulation to protect the passenger compartment from excessive temperatures. A large - 13.3L (812 cubic inches (in^3) - muffler is tuned to produce a sporty tone that meets pass-by noise levels. The rear-mounted muffler terminates in dual bright exhaust tips.

Supercharged Engine Removal/Installation



1	Rear Lifting Points (2)	2	Front Lifting Points (2)

Figure 21 Engine Lifting Points

If engine removal is required, Special tool #9109 is bolted to the supercharger using the two threaded holes (see #2 above). A chain or engine leveler can then be secured between it and the two lifting hooks (see #1 above).

The engine can then be lifted from the top of the engine compartment.

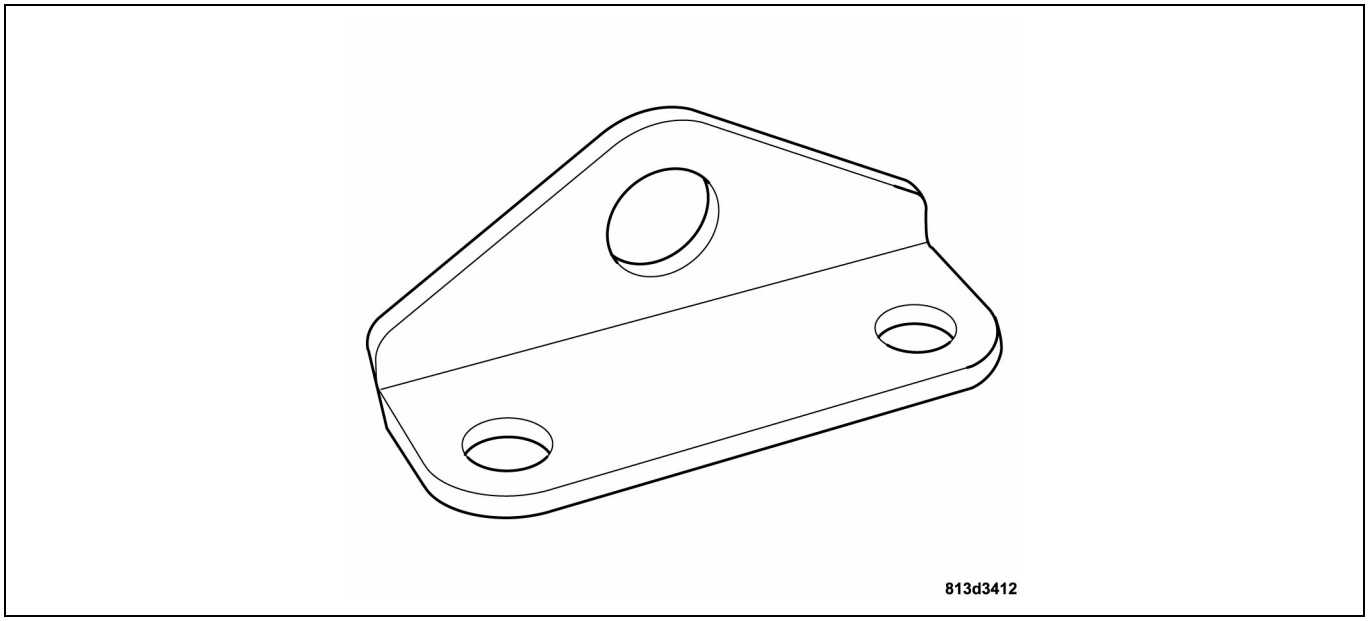


Figure 22 Engine Lifting Tool (#9109)

FIVE-SPEED AUTOMATIC TRANSMISSION

Functional Features

Crossfire SRT6 models are only available with a modified version of the five-speed automatic transmission found in the standard model (no manual transmission option). Improvements include: upgraded friction disc material, higher strength geartrain components and revised gear ratios.

The transmission fluid is engineered to last the entire service life of the car under normal operating conditions. Only under exceptional circumstances, for example, in the case of extremely high continuous loads and after a very high mileage, would a fluid change be required.

Transmission ratios are as follows:

1	2	3	4	5	R1	R2
3.59	2.19	1.41	1	.83	3.16	1.93

The lock-up torque converter has a 1.8:1 starting torque conversion factor for brisk launch performance. Lock up is available in the highest three gears only and is never complete to eliminate driveline torsional vibrations. The amount of slip varies from 10 to 80 rpm based on vehicle speed, load and accelerator usage profile.

LESSON 2 CHASSIS

ANTILOCK BRAKE SYSTEM (ABS)

Teves Mark 25 Replaces Mark 20e

The Teves Mk25 control module replaces the Mk20e from last year's model. This control unit is virtually identical in appearance and function to previous models. Internal programming of the Mk25 allows for more accurate self diagnostics and operation. Refer to the Service Information for complete diagnostic and repair procedures.

SRT6 SPECIFIC CHASSIS CHANGES

Wheels

Satin-silver painted aluminum alloy wheels are standard. Front rims are 18 x 7.5 in.; rears are 19 x 9 in. Each wheel includes a snap-in center cap that conceals the lug nuts. The unique SRT6 wheels have a 15-spoke appearance highlighted with a similar snap-in center cap. Adhesive wheel balance weights attach to the rim behind the spokes, rather than clipping onto the outside, for a clean appearance.

Rear wheels the same size as the fronts must be used to mount 225/40VR18 winter tires if used.

Tires

Low profile performance tires (second generation Michelin Pilot Sports on the base coupe and SRT6 models and Continental SportContacts on the base roadster) are staggered in size front-to-rear (225/40ZR18 in front, and 255/35ZR19 in the rear) to help deliver more power to the road surface. Their "Y" speed rating allows operation at speeds up to 300 kilometers-per-hour (km/h) (186 miles-per-hour (mph)). The Y-rated tires are optimized for performance. Continental Touring Contact allseason performance tires in the same sizes as above are available as an option on all models (and standard in Canada) for customers who may want to use their vehicles in winter climates. These tires provide a substantial improvement in snow traction, while offering slightly degraded dry performance versus the standard tires. Their "W" speed rating still allows operation at speeds up to 270 km/h (168 mph). 225/40VR18 winter tires are specified for use as necessary to provide clearance for tire chains in the rear as required by law. These tires, which are available only in the aftermarket, have a "V" speed rating for safe operation up to 240 km/h (149 mph). Purchase of winter tires also requires the purchase of two additional 18 x 7.5 wheels for use with the rear tires.

Suspension

The rear sway bar diameter has been increased from 18mm (0.71 in) to 19mm (0.75 in).

Brakes

Front Disc Brakes

SRT6 models are equipped with 330 x 32mm (13.0 x 1.25 in.) ventilated discs.

Rear Disc Brakes

SRT6 models are equipped with 300 x 22mm (11.8 x 0.87 in.) ventilated discs.

LESSON 3 BODY

BODY FEATURES

The Chrysler Crossfire coupe is largely based on the show car of the same name, and its overall dimensions are essentially the same. Major changes in the exterior include a shorter wheelbase and longer overhang than the original, because the short overhangs were not feasible in production.

One of the dominant features on the Crossfire is the continuation of the original boat tail design theme with massive, sculptured rear fenders. The boat tail has been widened slightly to provide a liftgate/decklid for access to the cargo area, but the lines continue to converge over the rear fascia, terminating in the rectangular dual exhaust outlets. The rear fenders conceal tires on 19 in. wheels.

Figure 23 Coupe ¾ Front

Another continuing feature of the show car is a central spine. It appears in the front fascia, grille, hood, roof (coupe), liftgate/decklid and rear fascia.

The grille expresses the “new face of Chrysler.” A chrome Chrysler winged brandmark forms the leading edge of the hood. Leading edges of the grille bars are satin chrome over a satin gray texture.

Headlamp modules are sculpted into the fascia and house quad headlamps with projector lenses. Their trim has a satin-silver finish that is another characteristic of the design. They appear to float against a satin gray background. Longitudinal grooves in the hood symbolize the Chrysler brand by decorating the hood while providing a measure of increased panel stiffness. These grooves align with the vertical ribs in the grille.

Another feature of the design is attention to detail in the sculptured edges, giving them closure, flowing around features and from panel to panel, but rarely disappearing. Unlike many current designs that combine planes and edges to create boxy shapes, organically curved panels in conjunction with subtle edges make the Chrysler Crossfire stand out. Subtle horizontal edges on the satin-silver door handles and on the rearview mirror housings precisely separate light from shadow. Simulated air outlet louvers found behind the front wheel arches suggest a powerful engine. The horizontal ribs are satin-silver.

On Crossfire coupe, the rear pillar graphically gives a cantilever effect that supports the roof starting at the rear and moving forward where it meets the satin-silver 'A' pillar and windshield surround. The quarter panel is a large single panel that requires no welded seam. The roof panel is recessed slightly for water management where it joins the roof rails. A body color roof molding strip conceals the joint.

A unique feature of the bodyside is the crossover lines that gave rise to the vehicle's name - Crossfire.

Figure 24 Coupe ¾ Rear

The feature lines start in the front fender as a negative formation and cross over in the door to a positive formation, delineating both the boat tail and the large rear fenders. Crossfire's deep body and shallow side glass are proportions appropriate for a sports car. But sculptured edges and curvature in the bodyside and the recessed area aft of the front wheels with its horizontal ribs combine to create highlights and shadows that break up this tall bodyside appearance. The longitudinal crease in the full-length sill cladding that aligns with the bottom of the door also extends into the front and rear fascias.

Transparent taillamp lenses that reveal individual circular lamps are housed in ribbed nacelles like those found on the headlamps.

The cast aluminum wheels have the same satin-silver finish as other exterior bright work. They feature radial, mechanical-looking spokes with parallel sides that intersect with the rims at the outside diameter, increasing the perception of size. Adhesive wheel balance weights that attach to the rim behind the spokes, rather than clipping onto the outside, make the extended spokes possible. Center caps that conceal the lug nuts also feature a silver version of the seal portion of the Chrysler brandmark.

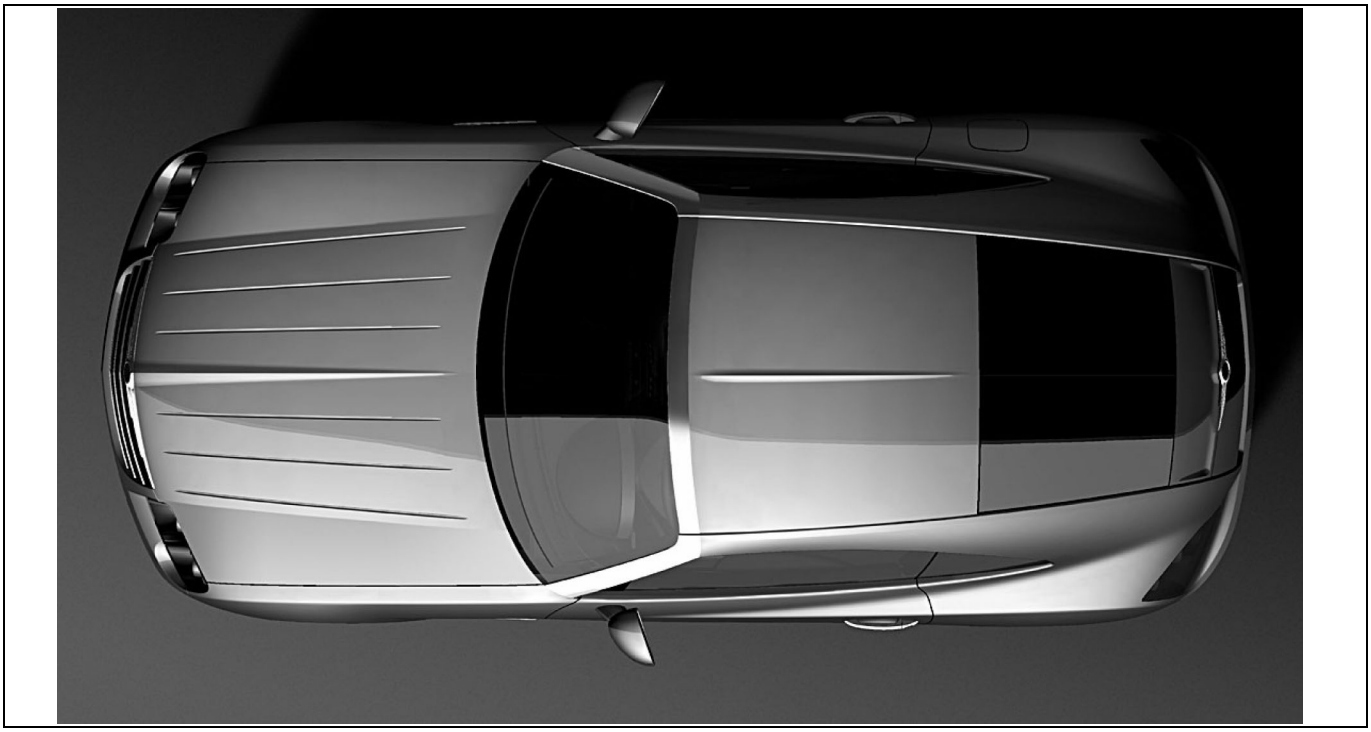


Figure 25 Coupe Top

Chrysler Crossfire Convertible and Supercharger Engine Update

The Crossfire SRT6 performance model carries the sporty design one step further with the addition of a more powerful engine, modified drivetrain, recalibrated suspension, aggressive fixed aerodynamic devices, bold new wheels and distinctive "SRT6" badging.

Figure 26 SRT6 Roadster

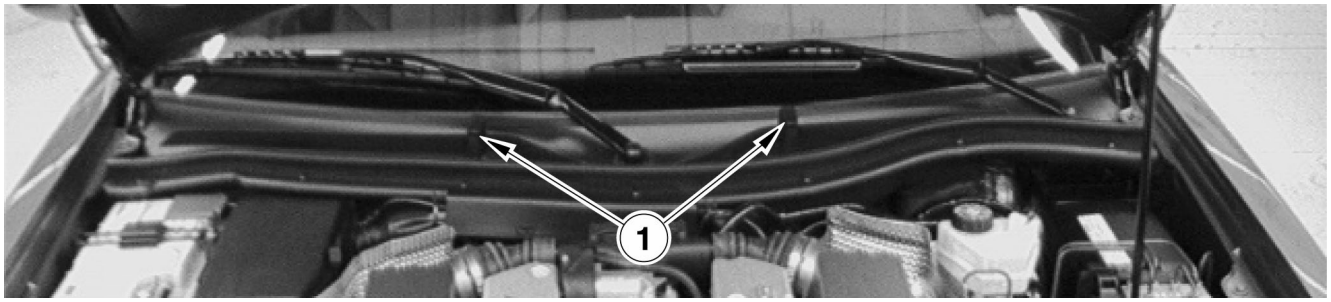
Aerodynamics

Figure 27 Front Fascia/Rear Spoiler

The Crossfire roadster body provides optimal aerodynamic balance at all speeds. This has been done by tuning the shape of the front fascia, rear spoiler (either active or fixed) and rear underbody diffuser.

The non-SRT6 models are equipped with a deployable rear spoiler that enhances vehicle stability. Powered by an electric motor, it deploys when the vehicle reaches a speed tentatively set at approximately 90 km/h (56 mph). It provides 356 N (40 lbs) of aerodynamic pressure to the rear of the vehicle at approximately 129 km/h (80 mph). When retracted, the spoiler fits between the quarter panels and aft of (below) the liftgate window. A raised formation along the sides and rear of the spoiler enhances downforce. The rear spoiler works effectively in conjunction with the lower venturi where air exits either side of the dual exhausts.

Heated Washer Nozzles



1	Heated Washer Nozzles

Figure 28 Heated Washer Nozzles

All Crossfire models receive heated washer nozzles to prevent the possibility of washer solvent freeze-up in cold climates. The heated washer nozzles are controlled by a thermoswitch that is attached to the underside of the windshield cowl grill. The thermoswitch turns on the heated washer nozzles at an outdoor temperature of 5°C (41°F) or lower, and turns them off at an outdoor temperature of 15°C (59°F) or higher.

SRT6 SPECIFIC BODY CHANGES

Vehicle Exterior

Front Fascia

Figure 29 Front Fascia

A larger lower fascia opening is provided to direct additional air through the auxiliary radiator used for the charge air cooling system.

Rear Spoiler

Figure 30 Rear Spoiler

SRT6 models (both coupe and roadster) are equipped with a fixed rear spoiler to enhance vehicle stability. The choice to go to a fixed wing (versus a deployable wing) was more of a visual preference than a functional one.

Badging

Figure 31 Badging

A single “SRT6” emblem is located on the right side of the decklid.

Vehicle Interior

Figure 32 Vehicle Interior

The Crossfire SRT6 interior includes seats that are leather trimmed with a unique two-tone appearance. The central area features a unique embossed “Crossfire” pattern and the headrests have embossed Chrysler logos.

Gauge Face

Figure 33 SRT6 Gauge Face

The instrument cluster includes four analog gauges: speedometer, tachometer, fuel level and coolant temperature. The SRT6 receives a 200-mph speedometer. It is also equipped with metric units on a secondary scale. An “SRT6” logo is included on the 7000-rpm tachometer and has a 6000 rpm redline to indicate excessive engine speed.

BODY CHANGES TO ROADSTER VEHICLES

Vehicle Exterior

Figure 34 Roadster ¾ Front View

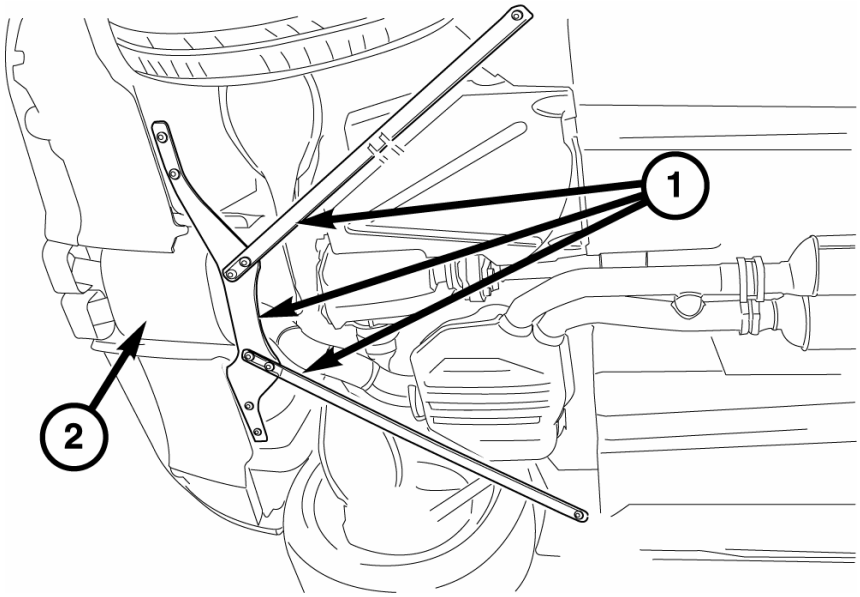
Joining the Crossfire coupe for 2005 is a roadster which shares most of the aesthetic features of the coupe. Crossfire roadster's top can be raised and lowered by the use of a single switch and requires only minimal driver assistance.

Figure 35 Roadster ¾ Rear View

Satin silver painted sport bars add a race car-inspired look to the vehicle when the top is stowed.

Figure 36 Roadster Top View

The top is stored under a body colored tonneau cover that hides the lowered top completely out of sight.



1	"X" Brace	2	Muffler

Figure 37 "X" Brace Location

Frame

On roadster models, the frame has been stiffened by using an "X" brace. This brace is fastened fore and aft of the rear axle to improve torsional rigidity.

LESSON 4 CONVERTIBLE TOP

APPEARANCE

The convertible top assembly fits flush with the front header on top of the windshield, between the A-pillars. This produces a clean appearance and helps to reduce wind noise. A one-piece header seal is used to control water leaks and wind noise. The back glass is 4 mm thick and has an electrical defroster element attached.

The roof bows and side rails are made of aluminum to reduce weight and to provide easier control during raising or lowering. This vehicle is not equipped with a headliner. If the rear window or rear defogger grid requires replacement, the convertible top material and window assembly will need to be replaced.

TOP OPERATION

WARNING: THE CONVERTIBLE TOP DOES NOT PROVIDE THE STRUCTURAL PROTECTION THAT A REINFORCED METAL ROOF DOES, AND THE FABRIC TOP CANNOT BE EXPECTED TO PREVENT THE EJECTION OF THE OCCUPANTS OF A VEHICLE IN A COLLISION. THEREFORE IT IS IMPORTANT THAT ALL OCCUPANTS WEAR THEIR SEAT BELTS AT ALL TIMES WHEN RIDING IN A CONVERTIBLE. STUDIES HAVE SHOWN THAT IT IS GENERALLY SAFER TO REMAIN INSIDE A VEHICLE DURING A COLLISION, THAN TO BE EJECTED FROM THE VEHICLE.

For safety reasons, the convertible top should only be opened and closed when the vehicle is standing still. Top operation is allowed up to 15 km/h (9 mph). Above this speed, top operation will cease and an audible warning will sound.

WARNING: BEFORE OPERATING THE SWITCH FOR THE CONVERTIBLE TOP, MAKE SURE THAT NO PERSONS CAN BE INJURED BY THE MOVING PARTS (CONVERTIBLE TOP FRAME AND CONVERTIBLE TOP COMPARTMENT COVER).

WARNING: HANDS MUST NEVER BE PLACED NEAR THE SPORT BAR, CONVERTIBLE TOP FRAME, UPPER WINDSHIELD AREA, SHELF BEHIND SPORT BAR, OR CONVERTIBLE TOP STORAGE COMPARTMENT WHILE THE CONVERTIBLE TOP IS BEING RAISED OR LOWERED. SERIOUS PERSONAL INJURY MAY OCCUR.

WARNING: IF POTENTIAL DANGER EXISTS, RELEASE THE CONVERTIBLE TOP SWITCH. THIS IMMEDIATELY INTERRUPTS THE RAISING OR LOWERING PROCEDURE. YOU THEN CAN OPERATE THE CONVERTIBLE TOP SWITCH TO RAISE OR LOWER THE CONVERTIBLE TOP AWAY FROM THE DANGER ZONE.

CAUTION: When opening and closing the convertible top, make sure that: There is sufficient clearance for the convertible top to move up, nothing is placed on the convertible top compartment cover, the outside temperature is above -15° C (5° F). Otherwise the convertible top and other parts of the vehicle could be damaged.

To Lower The Top:

CAUTION: To avoid damage to either the top or the rear window, check the convertible top compartment cover area at the rear of the vehicle interior to be sure that it is clear of debris or other items. Do not use the convertible top compartment cover area for other storage purposes.

CAUTION: To fully insure that no damage occurs, be sure that the vehicle is at a complete stop before attempting to lower or raise the top.

1. Make sure the rear cargo compartment divider is unfolded and secured in the vertical position.
2. Make sure the trunk lid is closed.
3. Turn the ignition key to the ON/RUN position.
4. Unlock the top from the windshield header by pushing the latch handle release button, pulling the latch handle down and turning it clockwise one quarter turn.
5. Push up on the convertible top latch handle to create a gap between the header and top of approximately 200 mm (8 in). The detent springs (on the right and left side of the convertible top assembly) will assist in the initial raising of the front bow. As soon as the top is free, rotate the latch handle counterclockwise just over one quarter turn and push it up into the stored position. As the handle is rotated, the windows will go down.

NOTE: Failure to perform any of these steps will prevent the top from operating with the convertible top switch and will cause an audible information signal to sound.

6. Push down on the rear of the convertible top switch to begin top operation. The rear of the top will unlatch, and the top compartment cover will open before the top begins to fold. Hold the switch down until the convertible top is completely lowered into its storage compartment and the top compartment cover is closed and latched. A single audible signal will sound to indicate completion of the top opening operation.

7. If you continue to push on the convertible top switch, the windows will close. However, the windows can also be closed/opened later using the power window switches.

Caution: To prevent mildew, the convertible top must be dry before lowering it into the storage compartment. Do not lower a frozen convertible top until thawed and dry. Doing so may result in damage not covered by the DaimlerChrysler Limited Warranty.

Caution: Do not place anything on the convertible top compartment cover. The convertible top compartment cover must never be used as a seating area.

To Raise The Top:

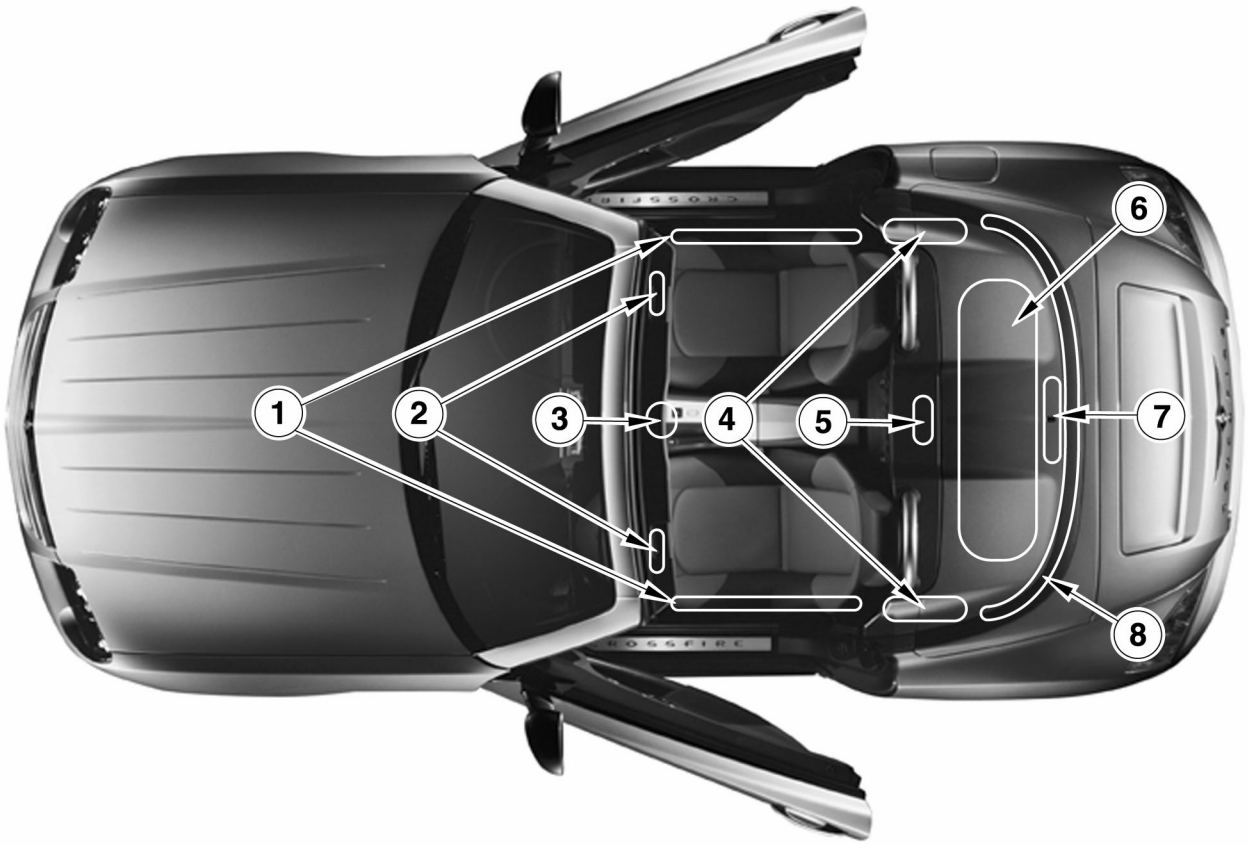
1. Make sure the trunk lid is closed.
2. Turn the ignition key to the ON/RUN position and press down on the front of the convertible top switch.
3. If the windows are raised, they will lower as the top compartment cover opens. The top will then close until it reaches approximately 200 mm (8 in) from the header. The top compartment cover will then close, and the rear of the top will close and latch. At the completion of this cycle, a single audible signal will sound.
4. Push the latch handle release button, pull the latch handle down from the storage position and turn it clockwise one quarter turn.
5. Pull the latch handle and convertible top down to engage the top with the header.
6. When the top engages the header, turn the latch handle counterclockwise just over one quarter turn to the lock position and push the latch handle up to the stored position. The top is now secured in the closed position.

WARNING: TO PREVENT POSSIBLE ACCIDENTS, DRIVE THE VEHICLE ONLY WITH THE CONVERTIBLE TOP EITHER COMPLETELY CLOSED AND LOCKED, OR FULLY LOWERED INTO ITS STORAGE COMPARTMENT.

Caution: Top operation can be suspended for a maximum of 10 minutes. 30 seconds before the end of this period, an audible warning will begin to sound continuously. At the end of this period, hydraulic pressure will be released, and the top and top compartment cover will slowly collapse. In order to reinitialize the top cycle, the top compartment cover must be raised to its full open position manually as the top switch is operated. Hands should be kept away from moving parts of the top compartment mechanism to avoid injury as hydraulic pressure is reestablished.

MECHANICAL SYSTEM

The power convertible top mechanical system consists of the following components:

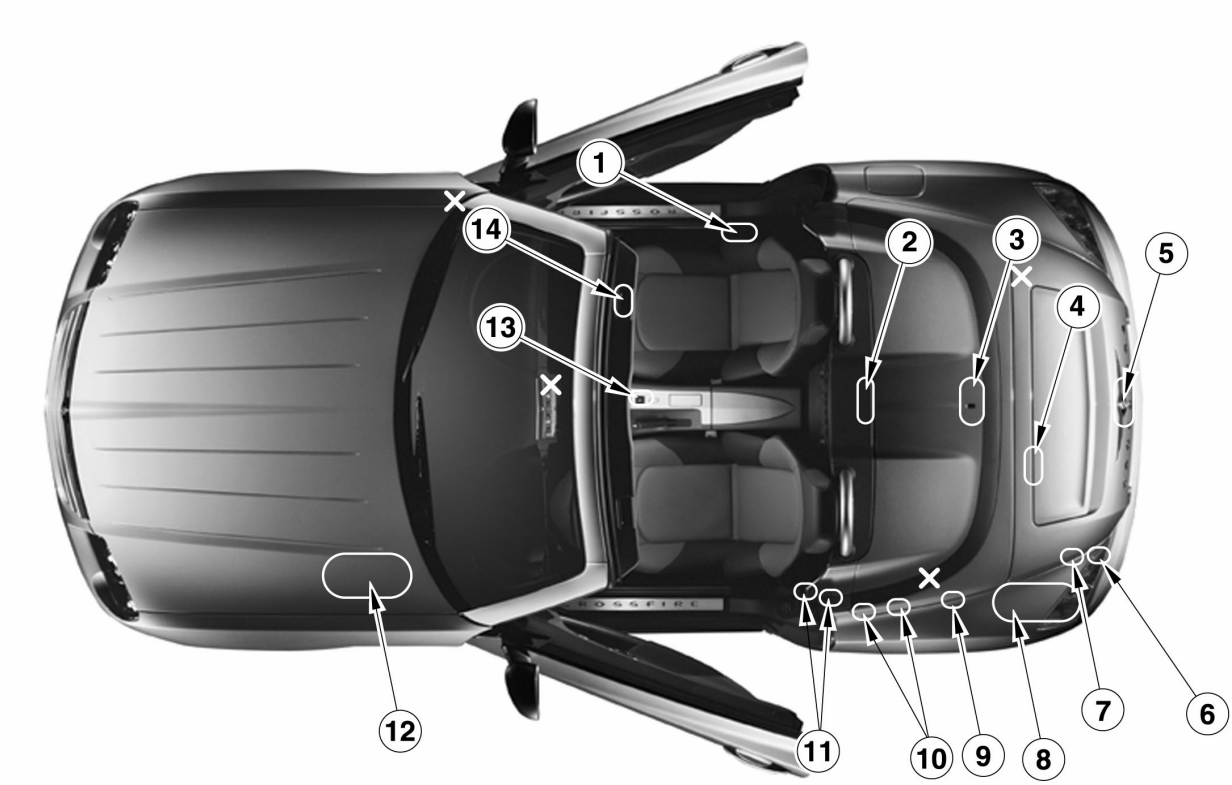


1	Detent Spring	5	Tonneau Cover Latch
2	Top Catch	6	Rear Window
3	“D” Handle	7	Rear Bow Latch
4	Hinges	8	Rear Bow

Figure 38 Component Location

ELECTRICAL SYSTEM

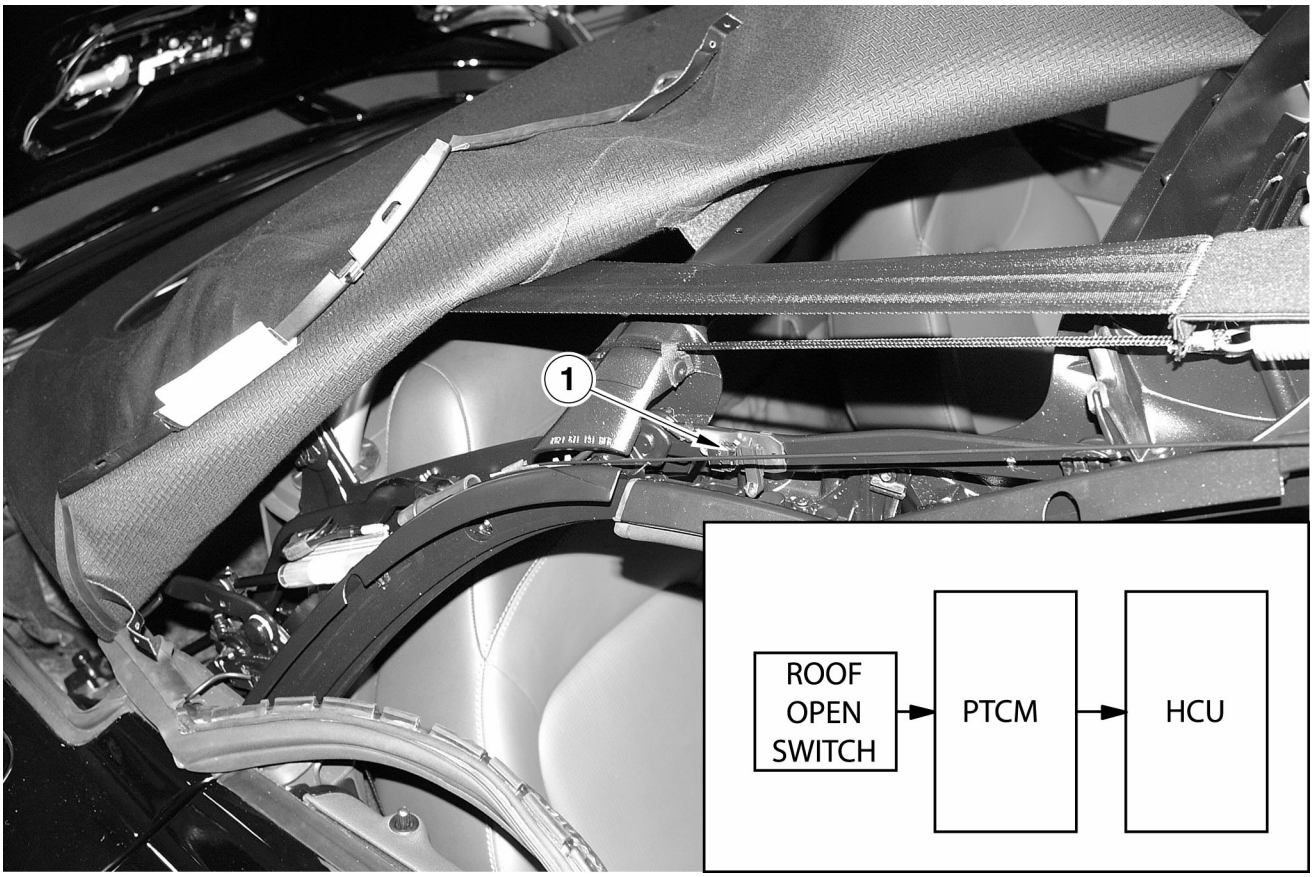
The power convertible top electrical system consists of the following components:



1	Roof Open Switch	9	Tonneau Cover Travel Sensor
2	Tonneau Cover Latch Switch	10	Main Travel Sensors
3	Rear Bow Latch Switch	11	Rear Bow Travel Sensors
4	Cargo Compartment Divider Switch	12	Circuit Protection
5	Decklid Latch Switch	13	Power Top Switch
6	Left Rotation Relay	14	Handle Switch
7	Right Rotation Relay	✕	Ground Location
8	HCU/PTCM Assembly		

Figure 39 Component Location

Roof Open Switch

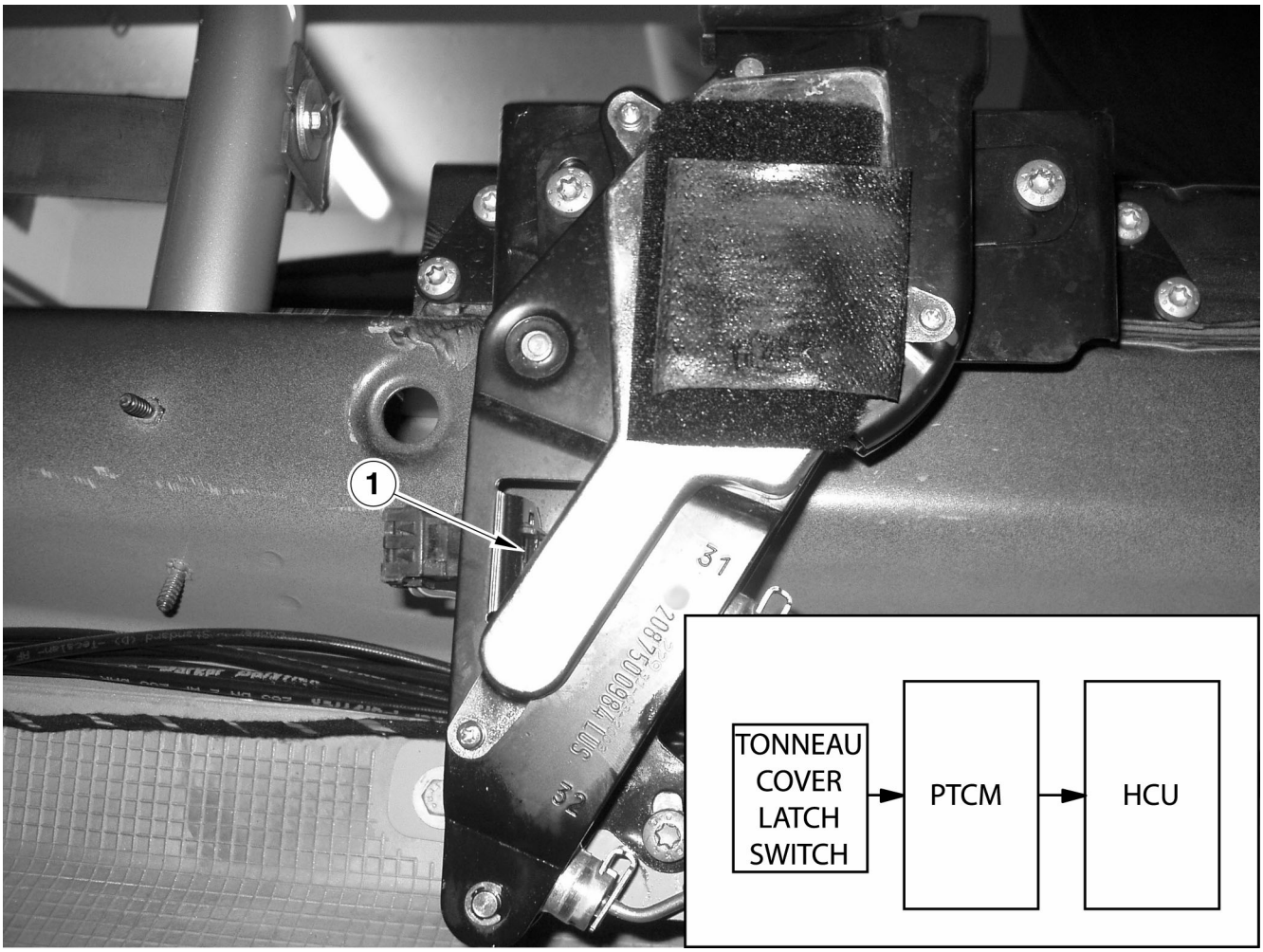


1	Roof Open Switch

Figure 40 Roof Open Switch (Shown with top material removed)

The roof open switch is located in the right side of the convertible top frame. The switch is a normally open micro switch that grounds the roof open switch sense circuit at the PTCM. The position of the roof open switch is a critical input to the PTCM. Based on this input, the PTCM can determine the operation logic of the convertible top.

Tonneau Cover Latch Switch

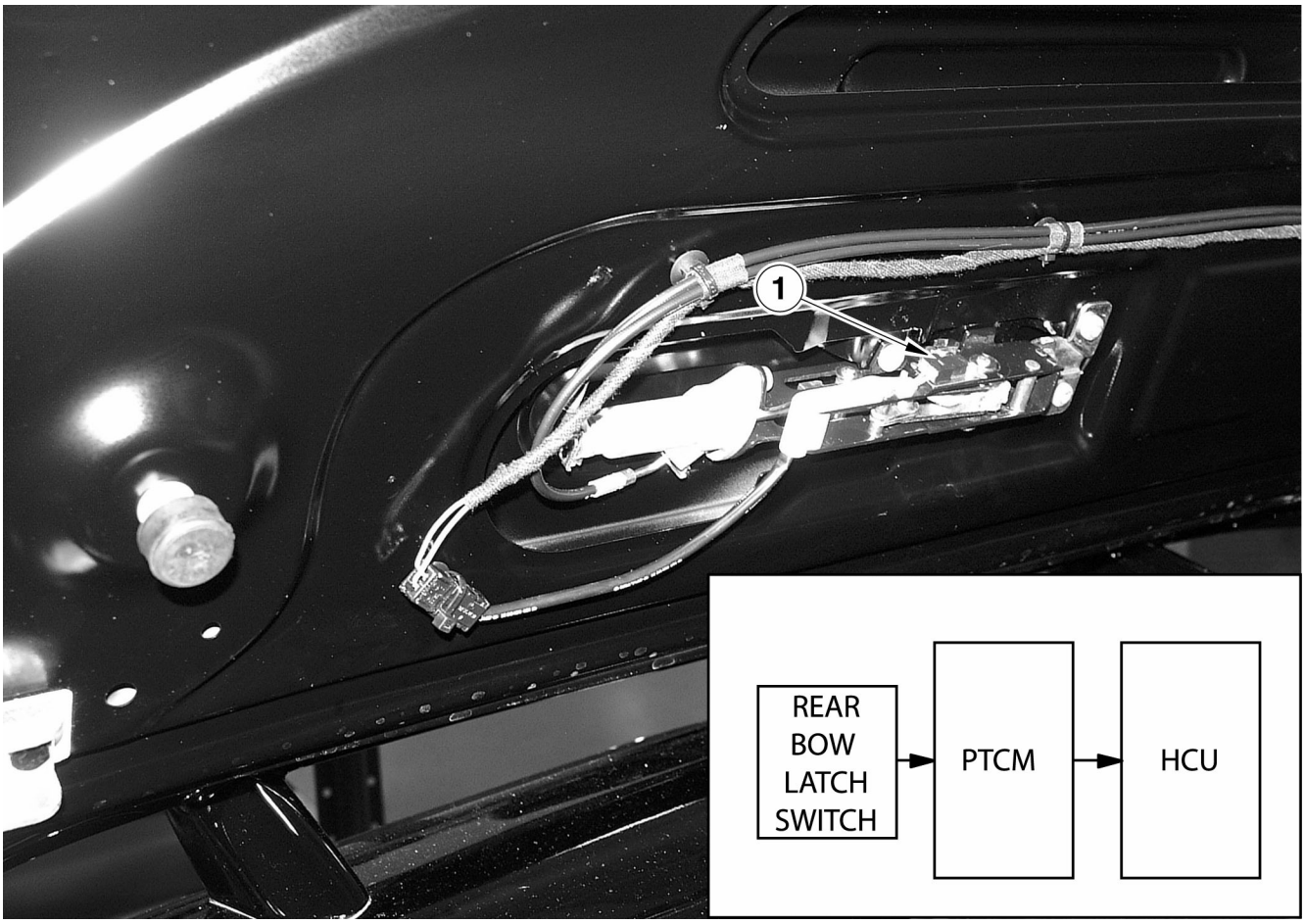


1	Tonneau Cover Latch Switch

Figure 41 Tonneau Cover Latch Switch

The tonneau cover latch switch is located in the tonneau cover latch assembly on the rear bulkhead. The switch is a normally open micro switch that grounds the tonneau cover switch sense circuit at the PTCM. The position of the handle switch is a critical input to the PTCM. Based on this input, the PTCM can determine the operation logic of the convertible top.

Rear Bow Latch Switch

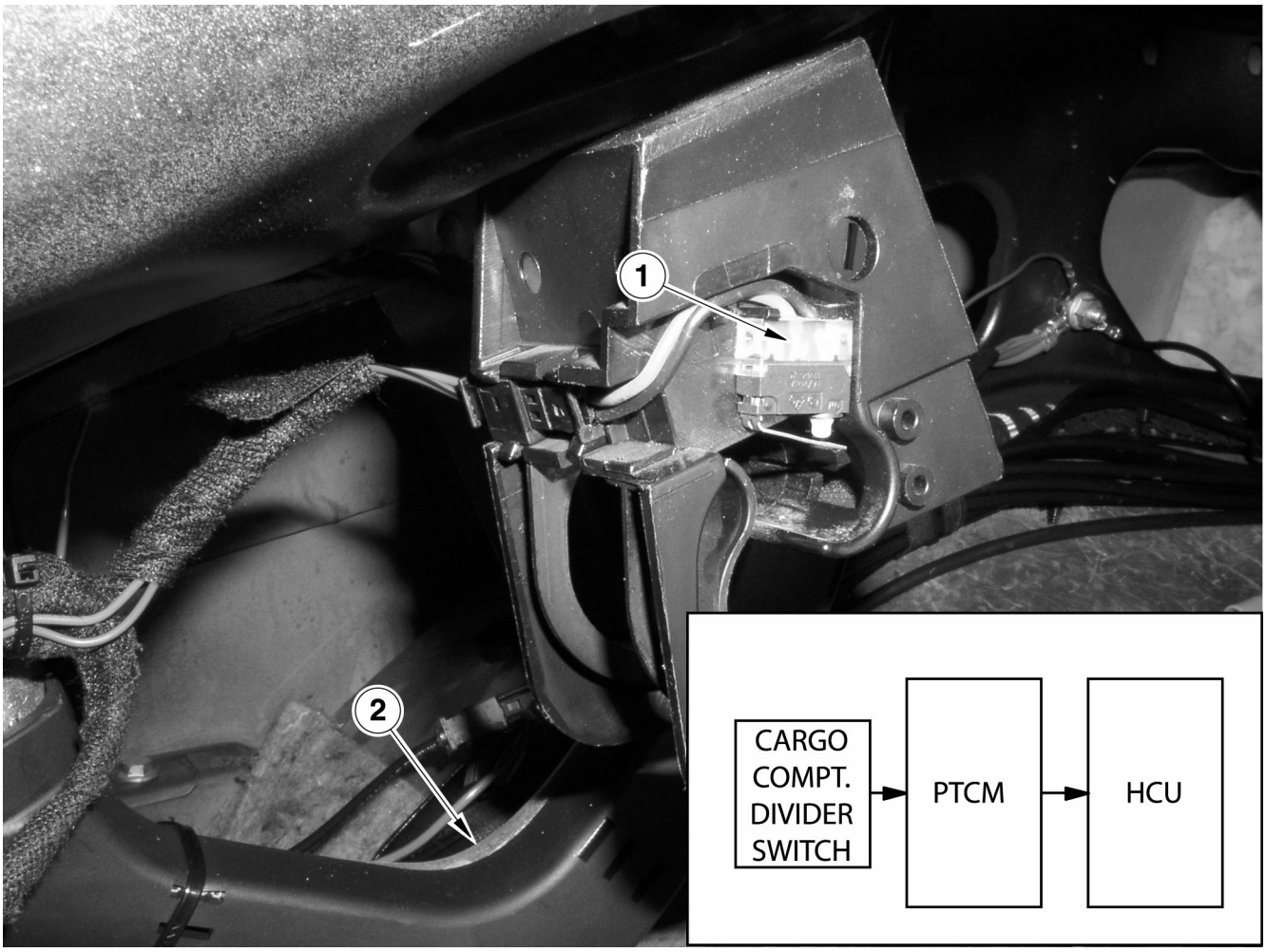


1	Rear Bow Latch Switch

Figure 42 Rear Bow Latch Switch

The rear bow latch switch is located in the rear bow latch assembly on the tonneau cover. The switch is a normally open micro switch that grounds the rear bow latch switch sense circuit at the PTCM. The position of the rear bow latch switch is a critical input to the PTCM. Based on this input, the PTCM can determine the operation logic of the convertible top.

Cargo Compartment Divider Switch



1	Cargo Compartment Divider Switch	2	Left Rear Inner Wheel Well

Figure 43 Cargo Compartment Divider Switch

The cargo compartment divider switch is located in the cargo area near the left inner wheel well. The switch is a normally open micro switch that grounds the cargo compartment divider switch sense circuit at the PTCM. The position of the cargo compartment divider switch is a critical input to the PTCM. Based on this input, the PTCM can determine the operation logic of the convertible top.

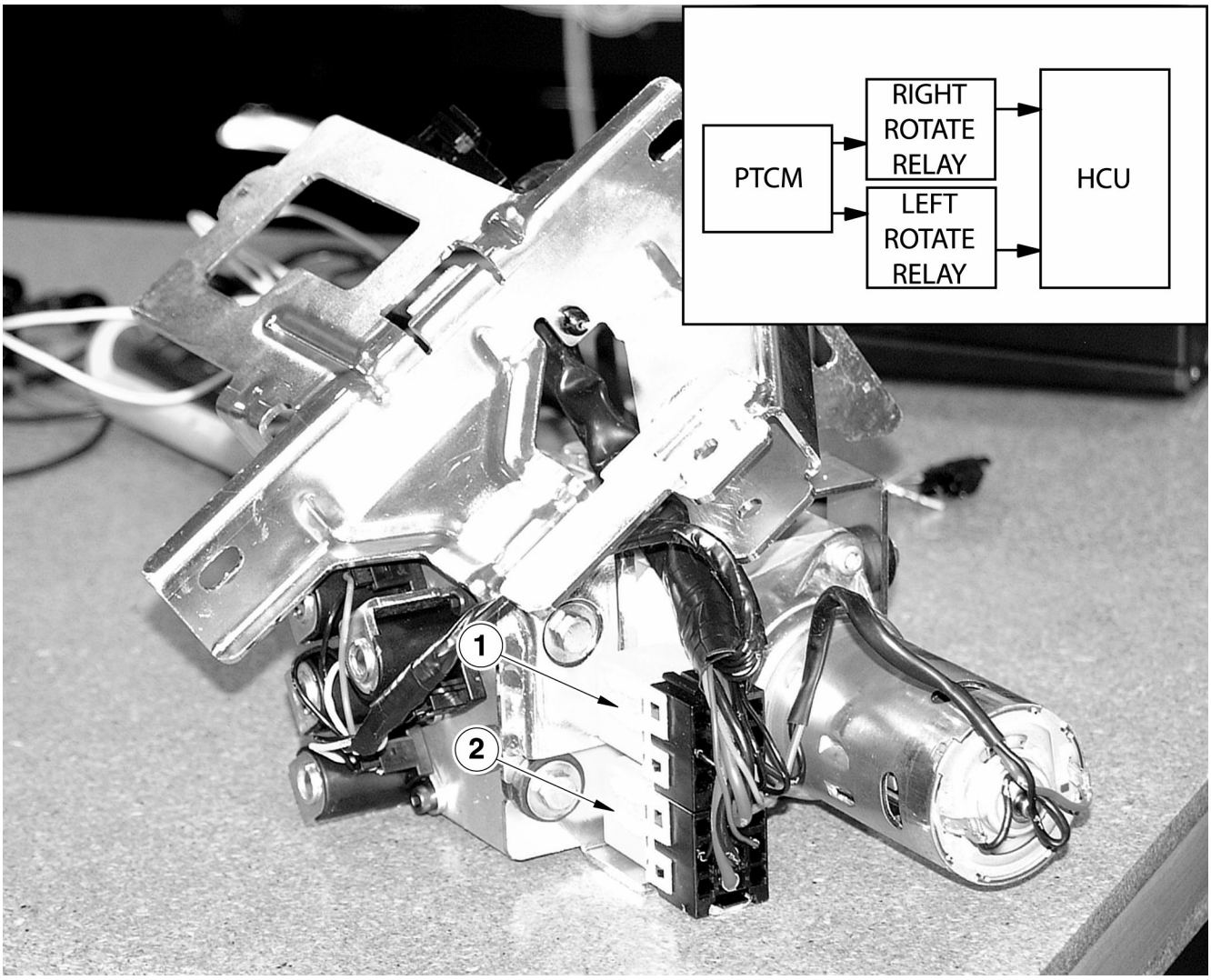
Grounds

Ground numbers and locations are listed in table 1 below.

Table 1 Grounds

Component	Ground Number	Location
PTCM	G302	Front of decklid
HCU		
Rear Bow Latch Switch		
Cargo Compartment Divider Switch		
Tonneau Cover Latch Switch		
Power Top Switch	G203	Center console forward of the transmission gear selector
Handle Switch	G204	Right kick panel
Decklid Latch Switch	G301	Right inner quarter panel on wheel well

Left and Right Rotation Relays

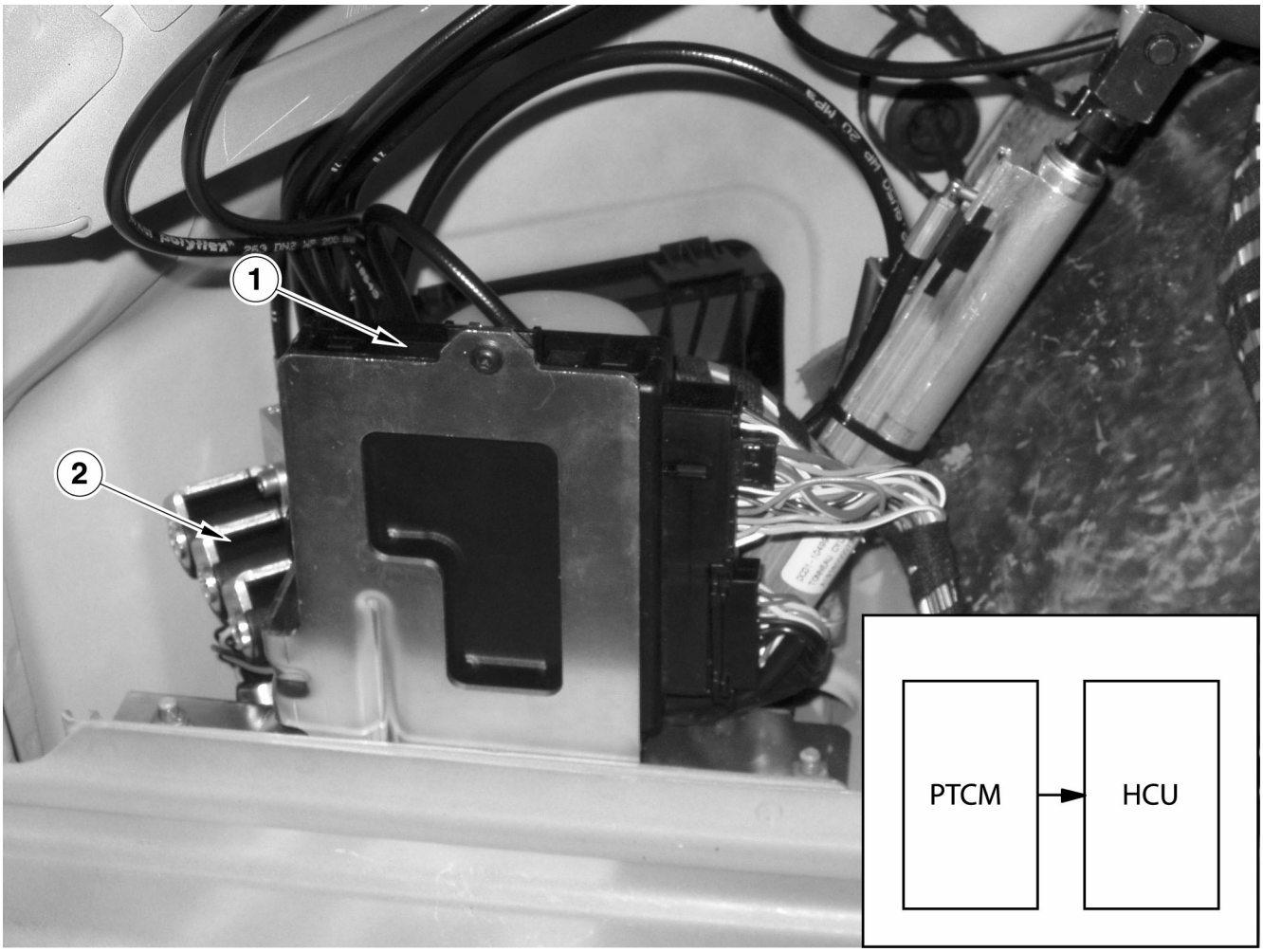


1	Left Rotation Relay	2	Right Rotation Relay

Figure 44 Left Rotation Relay (Shown removed from vehicle)

The right rotation relay and left rotation relay control the direction of the pump motor. The default positioning of the relays grounds each of the two circuits of the pump motor. The PTCM controls the battery voltage to energize one of the relays to feed battery voltage to one side of the pump and the other relay controls the ground of the pump.

HCU/PTCM Assembly



1	PTCM	2	HCU

Figure 45 HCU/PTCM Assembly

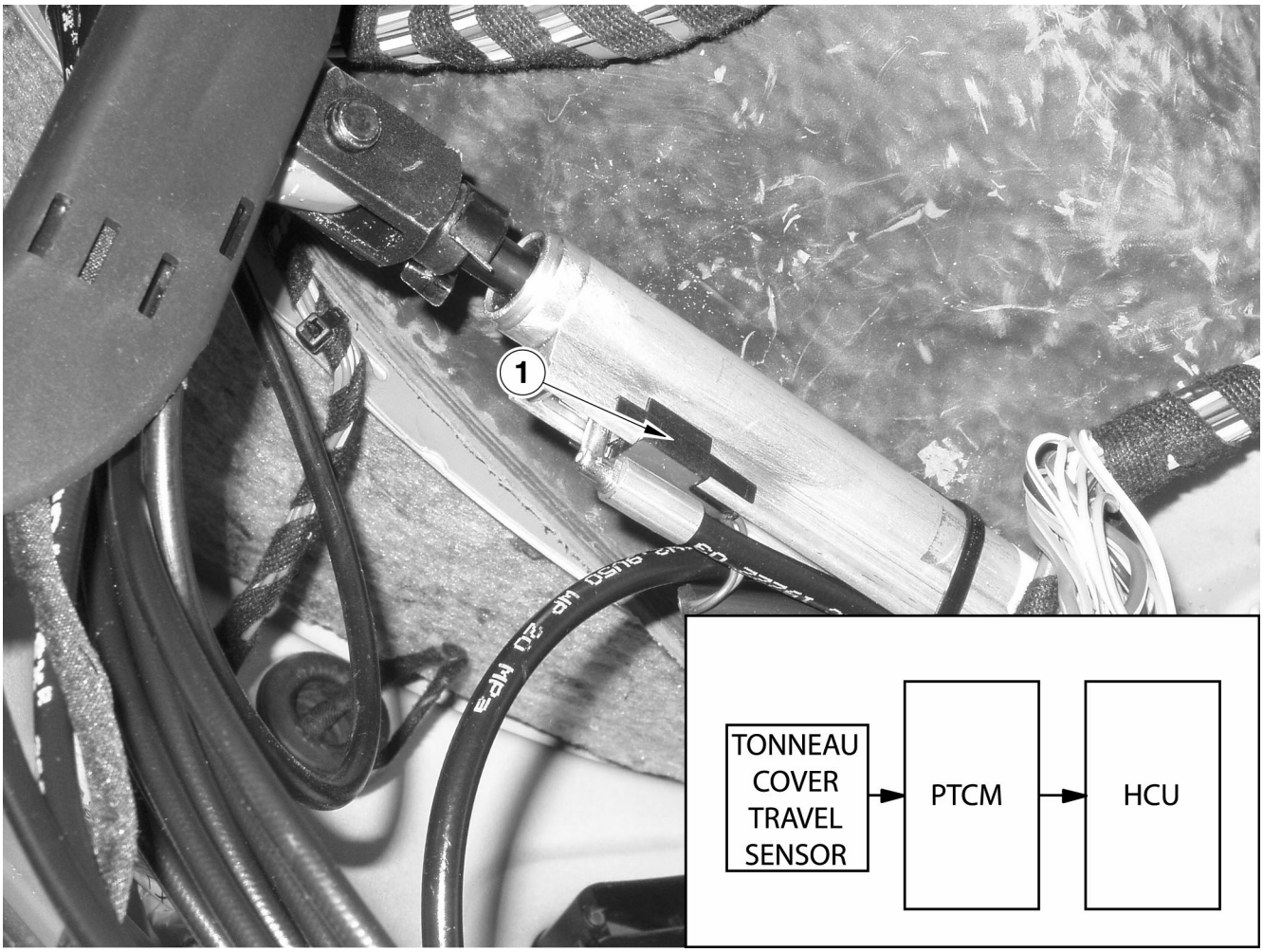
The convertible top is equipped with a stand alone hydraulic pump assembly. The electrohydraulic pump consists of a 12 volt DC reversible permanent-magnet motor, reservoir, gear pump, solenoids, and rotational relays.

The hydraulic pump is driven by a reversible permanent-magnet motor that makes use of the magnetic field of the magnets to convert electrical energy to mechanical energy. The pump motor is capable of delivering over 150 bar (2200 psi) of pressure to move the hydraulic cylinders. The pump motor is controlled by the power top control module (PTCM) which is mounted to the power top hydraulic assembly mounting bracket. Battery voltage is supplied to the pump motor from fuse 6 (40A)

located in the underhood accessory fuse block to both Left and Right Rotation Relays. The PTCM monitors the power top switch signal, when it senses a signal from the switch; the PTCM controls the battery feed and ground to the pump motor through the rotation relays. The pump motor has two pressure relief valves (one for each direction) located in the pump housing that dumps the fluid back into the reservoir if the hydraulic pressure rises to a dangerous level. The right rotation pressure relief valve is set at 115 bar +/- 10 bar (1668 psi +/- 145 psi). The left rotation pressure relief valve is set at 140 bar +/- 10 bar (2030 psi +/- 145 psi).

The hydraulic solenoids are used to move a valve linearly to control the flow of the hydraulic fluid. The PTCM energizes each hydraulic solenoid by controlling the battery voltage and ground. Hydraulic solenoid S1 controls the fluid to unlock the tonneau cover latch and to raise the tonneau cover. Hydraulic solenoid S2 controls the fluid to lower the main cylinders (convertible top) into the cargo compartment and to feed hydraulic fluid to hydraulic solenoid S1. Hydraulic solenoid S3 controls the fluid to raise the main cylinders (convertible top) out of the cargo compartment and unlocks the rear bow latch. Hydraulic solenoid S4 controls the fluid to lower the rear bow and locks the rear bow latch.

Tonneau Cover Travel Sensors

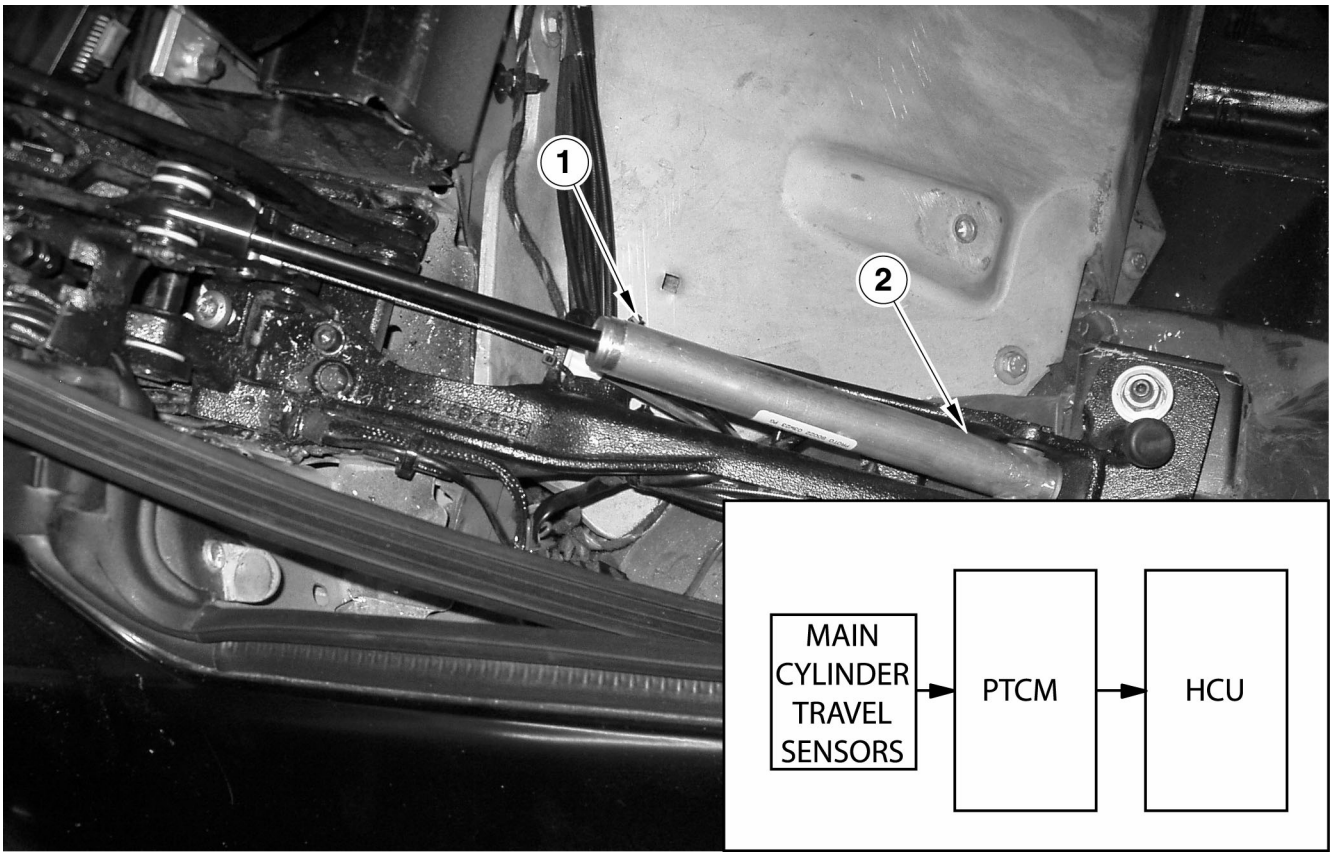


1	Tonneau Cover Travel Sensor

Figure 46 Tonneau Cover Travel Sensor

The tonneau cover cylinder is equipped with a hall-effect style switch, referred to as the tonneau cover travel sensor. The travel sensor is used to detect the position of the rod inside the hydraulic cylinder. The position of the rod is a critical input to the PTCM. Based on this input, the PTCM can determine the positioning sequence of the tonneau cover. There is one sensor located on the tonneau cover hydraulic cylinder. This sensor is positioned on the rod side. This sensor is not serviced separately. The tonneau cover travel sensor is serviced with the hydraulic pump assembly.

Main Travel Sensors

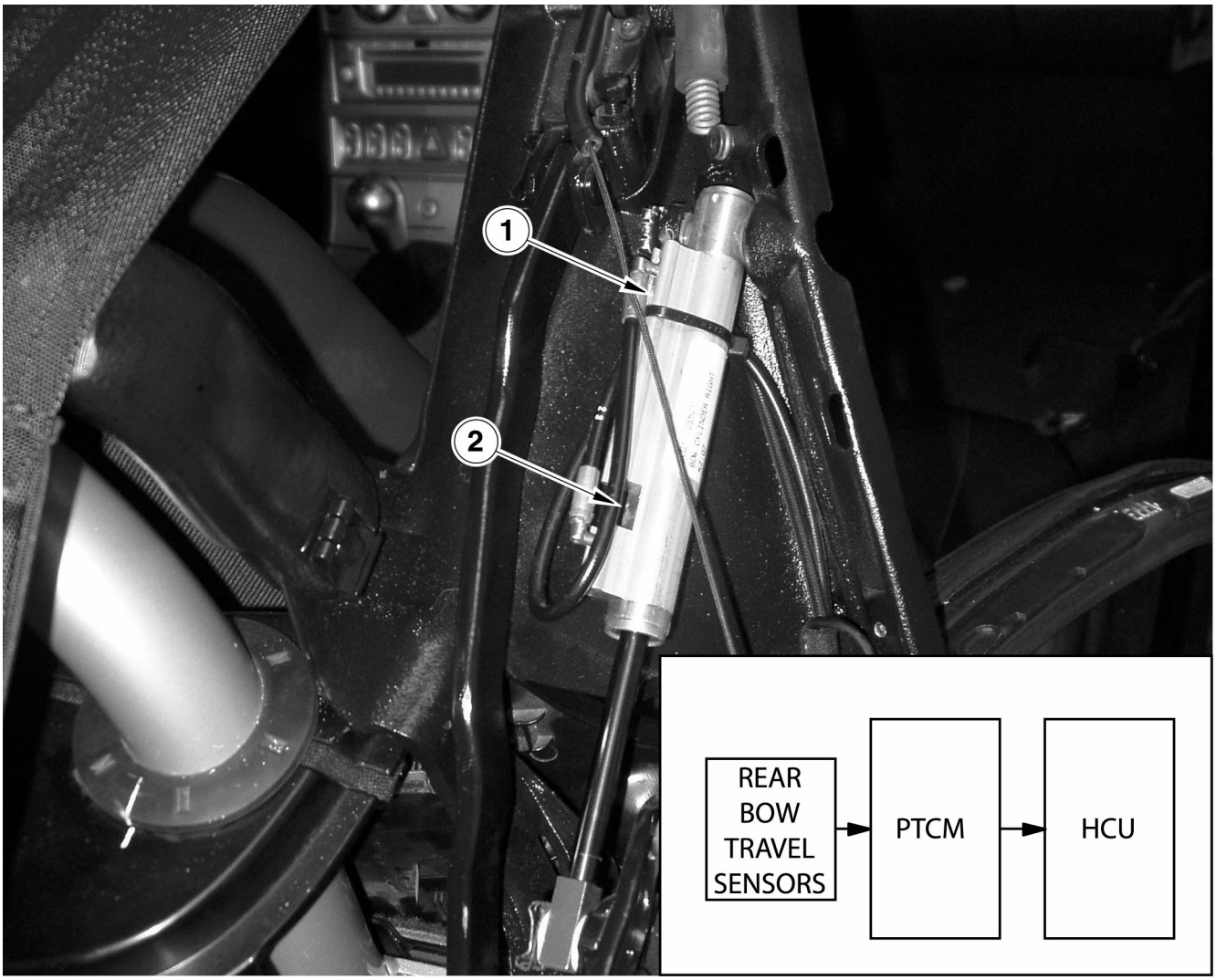


1	Main Cylinder Travel Sensor (Rod Side)	2	Main Cylinder Travel Sensor (Base Side)

Figure 47 Main Travel Sensors (Shown with top material removed)

The main cylinders are each equipped with two hall-effect style switches, referred to as main cylinder travel sensors. These travel sensors are used to detect the position of the rod inside each of the main hydraulic cylinders. The position of the rod is a critical input to the PTCM. Based on this input, the PTCM can determine the positioning sequence of the convertible top. The sensors are defined as the base side and the rod side. The travel sensors for the main cylinder and the bow cylinder are serviced together.

Rear Bow Travel Sensors

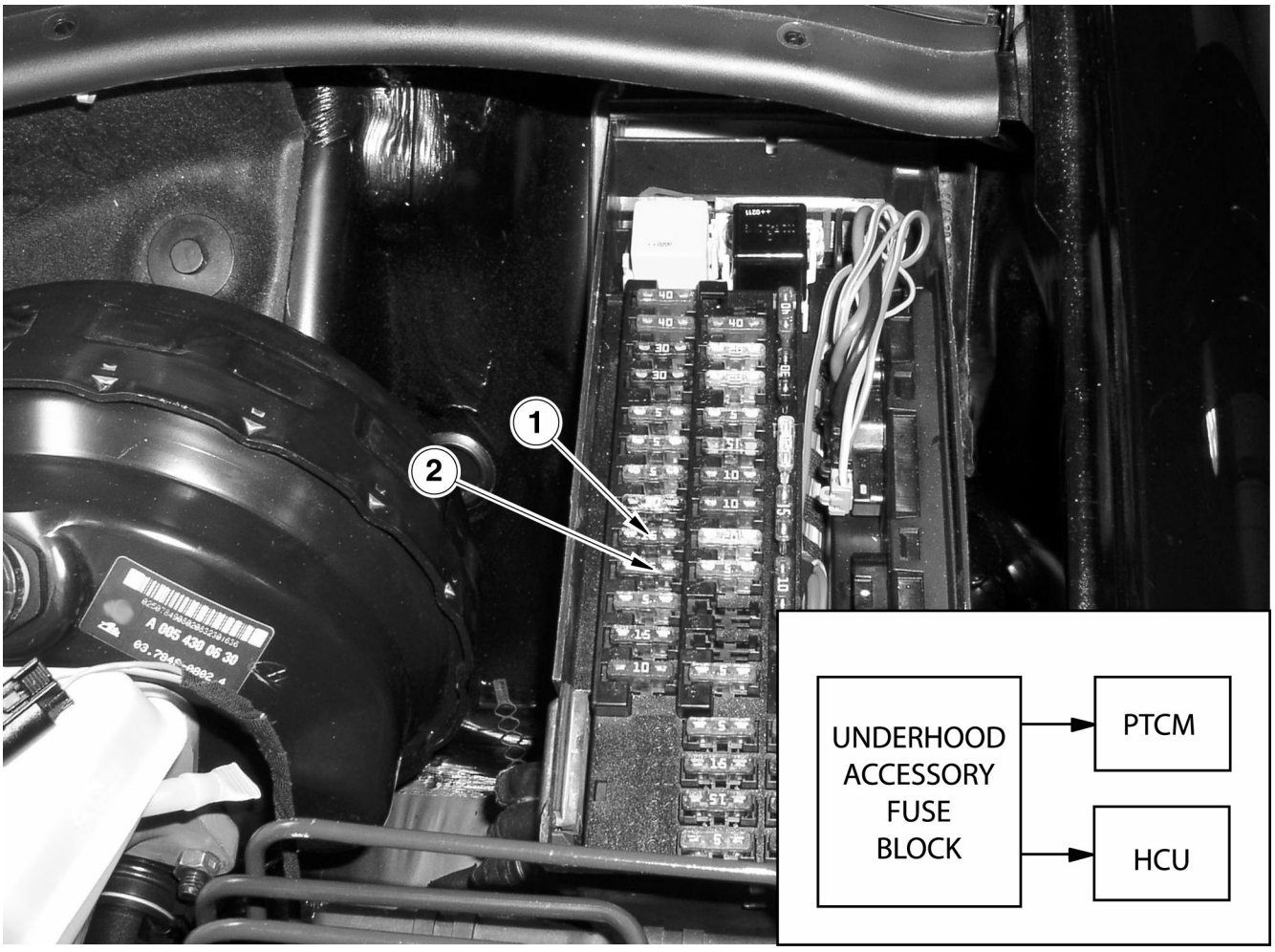


1	Rear Bow Travel Sensor (Base Side)	2	Rear Bow Travel Sensor (Rod Side)

Figure 48 Rear Bow Travel Sensors (Shown with top material removed)

The rear bow cylinders are each equipped with two hall-effect style switches, referred to as rear bow travel sensors. These travel sensors are used to detect the position of the rod inside the rear bow cylinders. The position of the rod is a critical input to the PTCM. Based on this input, the PTCM can determine the positioning sequence of the convertible top. The sensors are defined as either the base side or the rod side. The travel sensors for the main cylinder and the bow cylinder are serviced together.

Circuit Protection

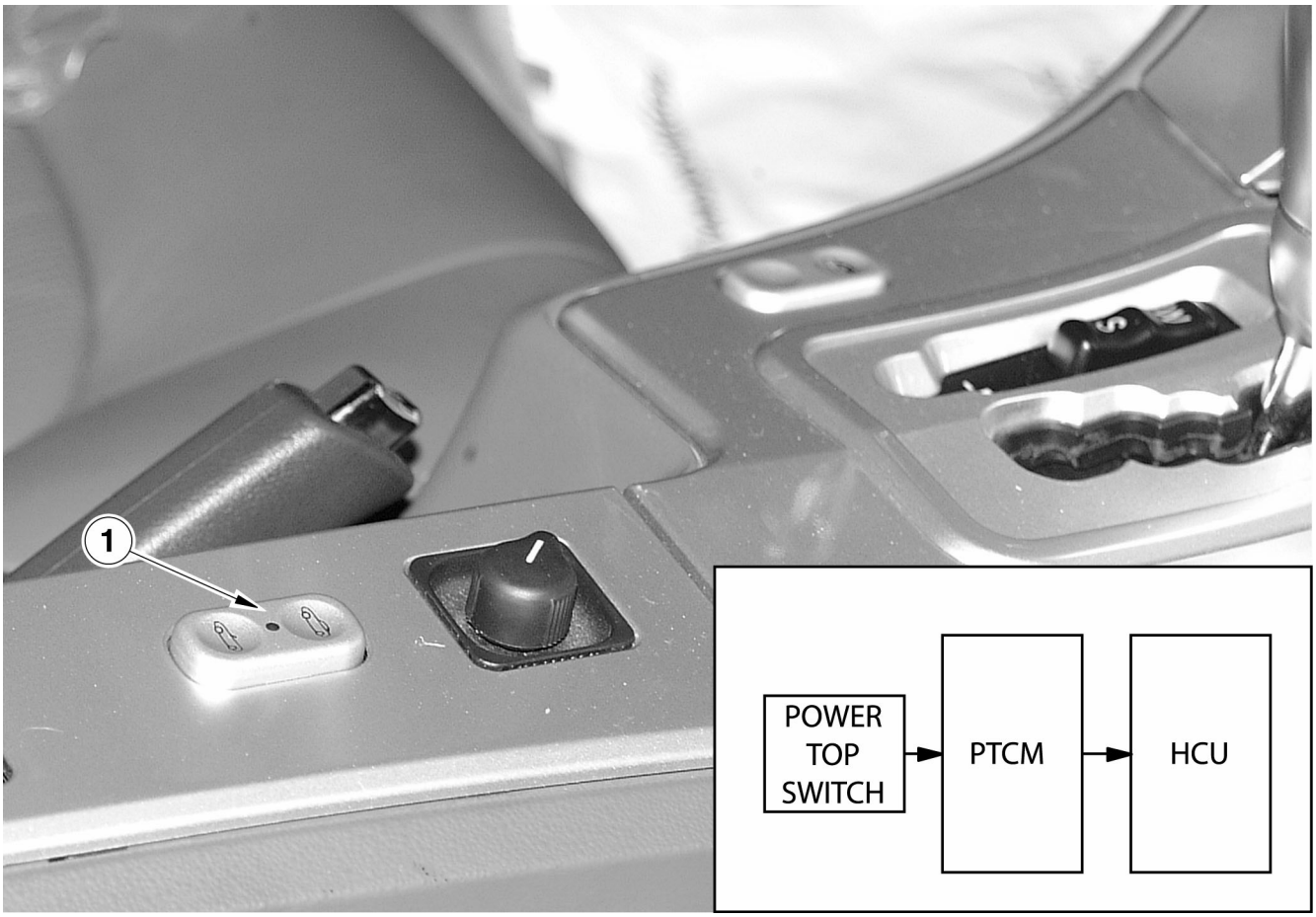


1	Fuse 5 (20A)	2	Fuse 6 (40A)

Figure 49 Circuit Protection

Circuit protection is provided by fuses located in the underhood accessory fuse block. Fuse 5 (20A) protects the feed circuit for the PTCM and fuse 6 (40A) protects the feed circuit for the HCU.

Power Top Switch

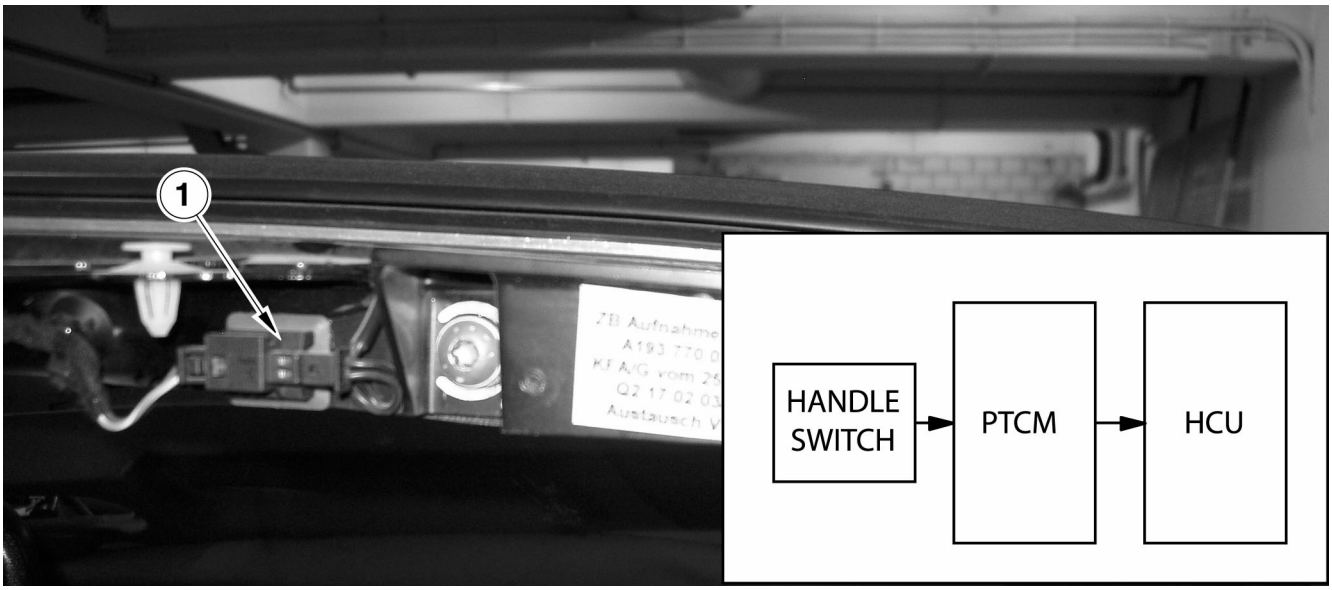


1	Power Top Switch

Figure 50 Power Top Switch

The power top switch is located in the center console to the rear of the transmission gear selector. The switch is a multiplex rocker style switch that alters the resistance to ground based on operator input. The position of the power top switch is a critical input to the PTCM. Based on this input, the PTCM can determine the operation logic of the convertible top.

Handle Switch



1	Handle Switch

Figure 51 Handle Switch

The handle switch is located in the right latch assembly on the windshield header. The switch is a normally open micro switch that grounds the handle switch sense circuit at the PTCM. The position of the handle switch is a critical input to the PTCM. Based on this input, the PTCM can determine the operation logic of the convertible top.

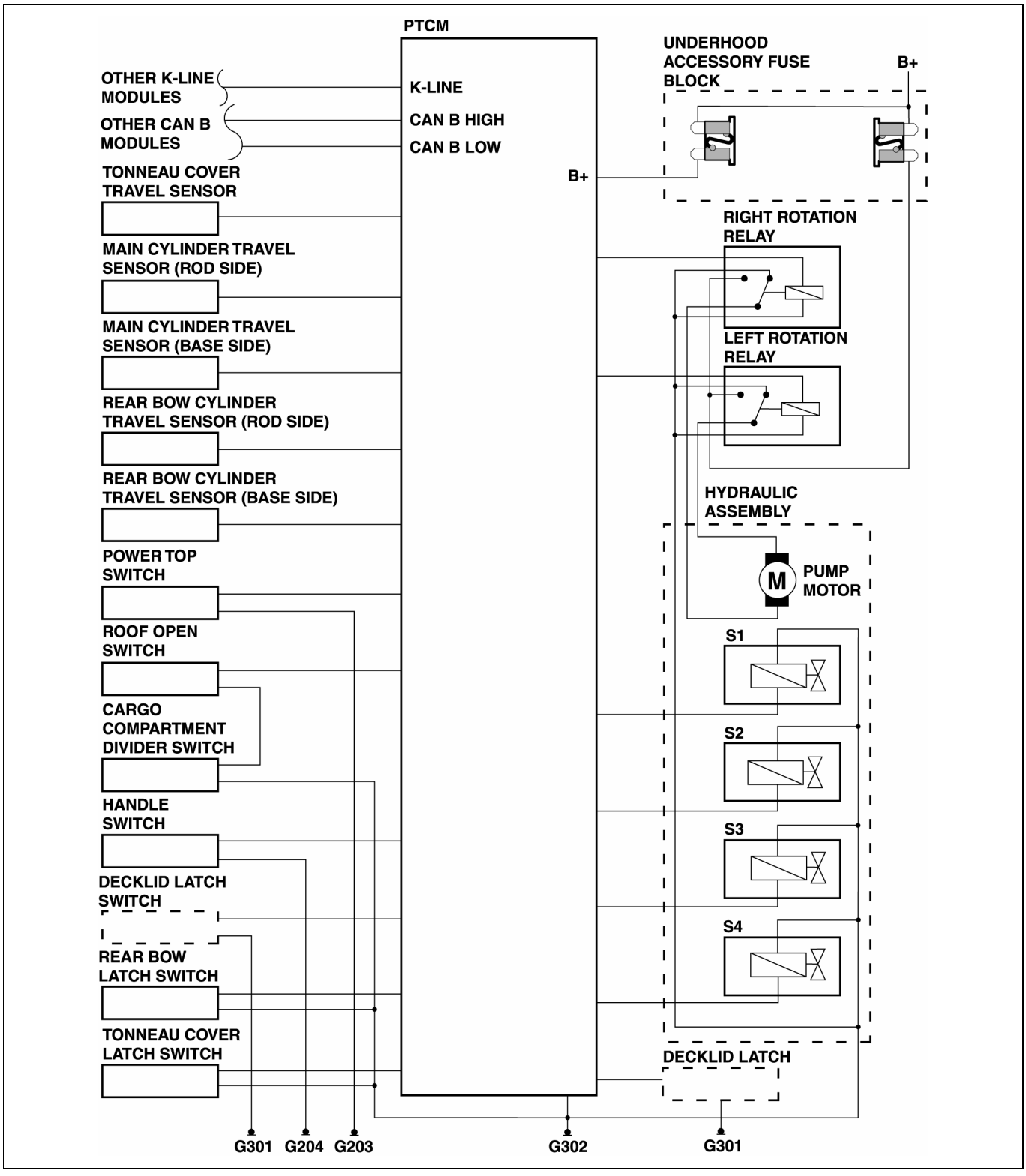


Figure 52 Convertible Top Electrical Schematic

ELECTRICAL OPERATION

Power and Ground

Both the PTCM and the HCU are provided a B+ feed that is circuit protected by fuses. These fuses are located in the underhood accessory fuse block.

Communication

The PTCM utilizes the K-line and CAN B communication protocol to communicate to the Data Link Connector (DLC) and other vehicle modules.

Body Control Module (BCM) Functionality

Windows

When the PTCM receives a command to lower the convertible top, a signal is sent (via the Controller Area Network (CAN) bus to the BCM to completely lower the windows. If the windows are already completely down, this signal is ignored by the BCM. This is done so that the side windows do not interfere with the opening of the convertible top.

Cargo Divider Switch

The Crossfire roadster is equipped with a cargo divider located in the cargo area. This feature enables the operator to utilize the extra cargo area that would normally be taken up by the convertible top. This extra cargo space is only available when the convertible top is in the up position. The divider uses a switch to provide position information to the PTCM.

If the cargo divider is in the horizontal position (verses vertical), the cargo compartment divider switch will close. In this situation the PTCM assumes that there are items in the cargo area and convertible top operation will be inhibited. If the convertible top is inoperative, the positioning of the divider should be checked.

Lowering The Top

The PTCM enables the lowering operation by first verifying the following criteria have been met:

- The normally open handle switch must be closed (by operating the “D” handle).
- The normally open cargo compartment divider switch must be closed (divider in the vertical position).
- Vehicle speed < 15 km/h (9 mph).

When lowering the convertible top, the following operations occur:

1. Power top switch is closed by operator.
2. The PTCM sends a signal (over CAN B) to the BCM to lower the side windows.
3. The PTCM disables/locks the decklid latch (via the decklid latch assembly).
4. The PTCM monitors the decklid latch switch to verify it is disabled/locked.

Note: If the PTCM does not sense that the decklid latch is disabled/locked, hydraulic activation will stop immediately and sets a PTCM DTC.

5. The PTCM energizes the right rotation relay and solenoid S3.
6. The rear bow latch releases.
7. The PTCM monitors the rear bow latch switch to verify that the rear bow unlatched.

Note: If the PTCM does not sense that the rear bow latch has unlatched, hydraulic activation will stop immediately and sets a PTCM DTC.

8. The PTCM energizes the right rotation relay and solenoids S2 and S3.
9. The main cylinders are stabilized and the rear bow raises.
10. The PTCM monitors the rear bow travel sensor (base side) to verify that the rear bow is fully lifted.

Note: If the PTCM does not sense that the rear bow has fully lifted, hydraulic activation will stop after approximately 30-60 seconds and sets a PTCM DTC.

11. The PTCM energizes the right rotation relay and solenoids S1, S2 and S3.
12. The tonneau cover is unlatched and opened.
13. The PTCM monitors the tonneau cover latch switch to verify that the tonneau cover unlatched.

Note: If the PTCM does not sense that the tonneau cover has unlatched, hydraulic activation will stop immediately and sets a PTCM DTC.

14. The PTCM monitors the tonneau cover travel sensor (rod side) to verify that the tonneau cover has fully opened.

Note: If the PTCM does not sense that the tonneau cover has fully opened, hydraulic activation will stop after approximately 30-60 seconds and sets a PTCM DTC.

15. The PTCM energizes the right rotation relay and solenoids S3 and S4.
16. The rear bow lowers.
17. The PTCM monitors the rear bow travel sensor (rod side) to verify that the rear bow has fully closed.

Note: If the PTCM does not sense that the rear bow has fully closed, hydraulic activation will stop after approximately 30-60 seconds and sets a PTCM DTC.

18. The PTCM energizes the right rotation relay and solenoids S1 and S2.
19. The convertible top retracts.
20. The PTCM monitors the main cylinder travel sensor (base side) to verify that the convertible top has fully retracted.

Note: If the PTCM does not sense that the convertible top has fully retracted, hydraulic activation will stop after approximately 30-60 seconds and sets a PTCM DTC.

21. The PTCM de-energizes the right rotation relay.
22. The PTCM energizes the left rotation relay and solenoids S2 and S3.
23. The tonneau cover closes.
24. The PTCM monitors the tonneau cover latch switch to verify that the tonneau cover has fully closed.

Note: If the PTCM does not sense that the tonneau cover has fully closed, hydraulic activation will stop immediately and sets a PTCM DTC.

25. When the PTCM senses that the tonneau cover is latched, hydraulic activation stops.
26. The decklid handle is enabled.

Raising the Top

The PTCM enables the raising operation by first verifying the following criteria have been met:

- Vehicle speed < 15 km/h (9 mph).

When raising the convertible top, the following operations occur:

1. The PTCM verifies the windows are down (via the BCM).

Note: If the BCM indicates that the windows are in the up position, the PTCM sends a signal (over CAN B) to the BCM to lower the side windows.

2. The PTCM disables/locks the decklid latch (via the decklid latch assembly).
3. The PTCM monitors the decklid latch switch to verify it is disabled/locked.

Note: If the PTCM does not sense that the decklid latch switch is disabled/locked, hydraulic activation will stop immediately and sets a PTCM DTC.

4. The PTCM energizes the right rotation relay and solenoids S1, S2 and S3.
5. The tonneau cover is unlatched and opened.
6. The PTCM monitors the tonneau cover latch switch to verify that the tonneau cover unlatched.

Note: If the PTCM does not sense that the tonneau cover has unlatched, hydraulic activation will stop immediately and sets a PTCM DTC.

7. The PTCM monitors the tonneau cover travel sensor (rod side) to verify that the tonneau cover has fully opened.

Note: If the PTCM does not sense that the tonneau cover has fully opened, hydraulic activation will stop after approximately 30-60 seconds and sets a PTCM DTC.

8. The PTCM energizes the right rotation relay and solenoids S1 and S3.
9. The convertible top extends.
10. The PTCM monitors the main cylinder travel sensor (rod side) to verify that the convertible top has extended fully.

Note: If the PTCM does not sense that the convertible top has extended fully, hydraulic activation will stop after approximately 30-60 seconds and sets a PTCM DTC.

11. The PTCM energizes the right rotation relay and solenoids S1, S2 and S3.
12. The main cylinders are stabilized and the rear bow raises.
13. The PTCM monitors the rear bow travel sensor (base side) to verify that the rear bow is fully raised.

Note: If the PTCM does not sense that the rear bow is fully raised, hydraulic activation will stop after approximately 30-60 seconds and sets a PTCM DTC.

14. The PTCM de-energizes the right rotation relay.
15. The PTCM energizes the left rotation relay and solenoids S2 and S3.
16. The tonneau cover closes.
17. The PTCM monitors the tonneau cover latch switch to verify that the tonneau cover is fully closed.

Note: If the PTCM does not sense that the tonneau cover has fully closed, hydraulic activation will stop immediately and sets a PTCM DTC.

18. The PTCM de-energizes the left rotation relay.
19. The PTCM energizes the right rotation relay and solenoid S4.
20. The rear bow lowers and is latched.
21. The PTCM monitors the rear bow travel sensor (rod side) to verify that the rear bow is fully closed.

Note: If the PTCM does not sense that the rear bow is fully closed, hydraulic activation will stop after approximately 30-60 seconds and sets a PTCM DTC.

22. The PTCM monitors the rear bow latch switch to verify that the rear bow is latched.

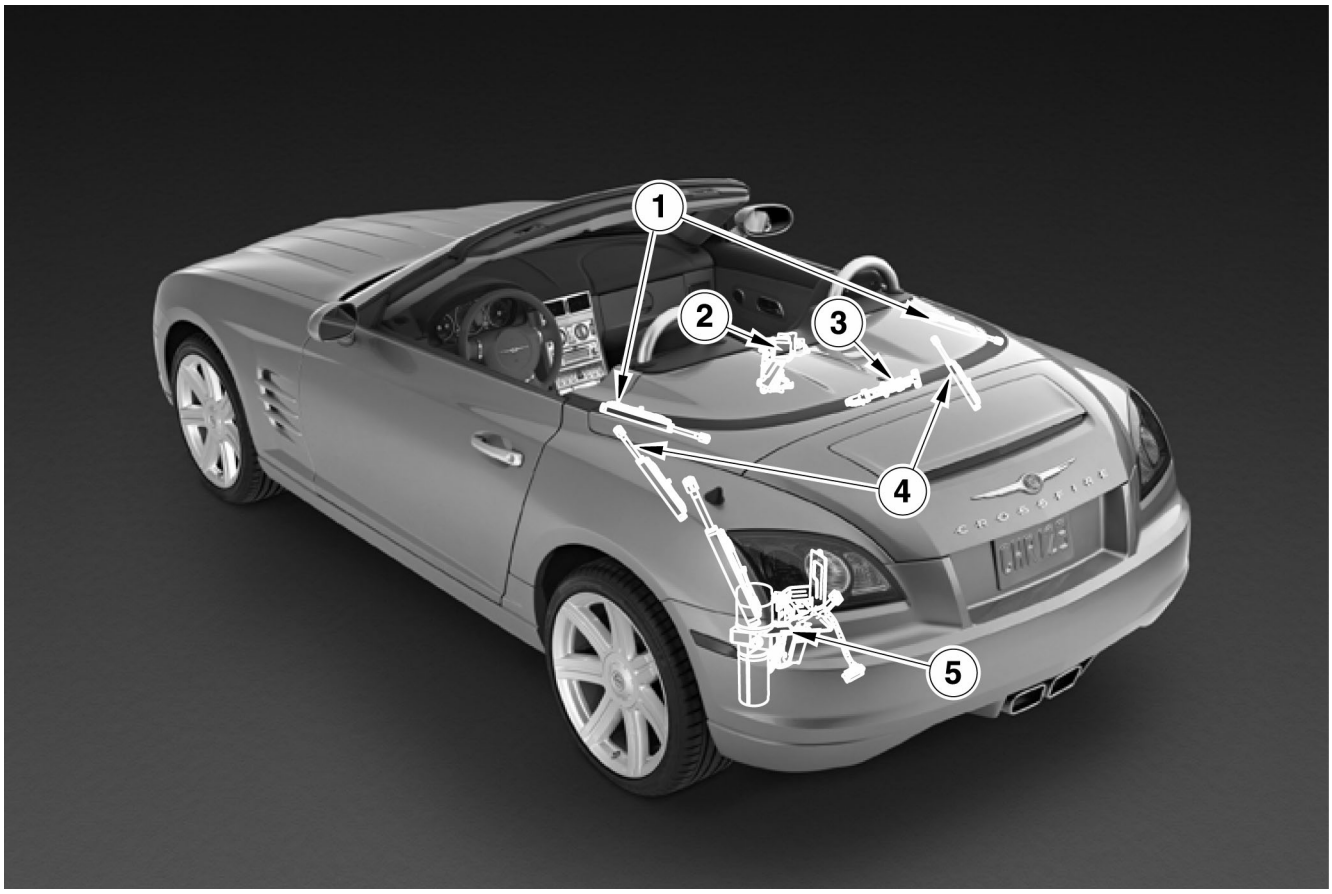
Note: If the PTCM does not sense that the rear bow is latched, hydraulic activation will stop immediately and sets a PTCM DTC.

23. When the rear bow latch switch closes, hydraulic actuation stops.
24. The decklid handle is enabled.

Notes:

HYDRAULIC SYSTEM

The power convertible top hydraulic system consists of the components shown in Figure 53.



1	Rear Bow Cylinders	4	Main Cylinders
2	Tonneau Cover Latch Cylinder	5	Hydraulic Control Unit
3	Rear Bow Latch Cylinder		

Figure 53 Component Location

HYDRAULIC OPERATION

The PTCM is responsible for monitoring and controlling the hydraulic control assembly. It is through this assembly that the PTCM is able to control the hydraulic latches and cylinders that raise and lower the convertible top.

Lowering The Top

Unlatch Rear Bow

The Power Top Control Module (PTCM) receives battery feed through the fused ignition switch output circuit when the ignition switch is in the ON position. The power top switch is hard wired to the PTCM. The PTCM monitors the power top switch circuit and when the switch is pressed to open the Convertible Top, the PTCM monitors all travel sensors and switches to verify the location and state of the top. When the PTCM senses that the handle switch is closed, the PTCM will activate the hydraulic pump (right) and Hydraulic Solenoid S3. The Power Top Hydraulic Assembly delivers hydraulic fluid to the following areas:

- Through Solenoid S3 to the base side of both Main Cylinders to stabilize the top while the Rear Bow Latch is unlatched.
- Through Solenoid S3 to the Rear Bow Latch Cylinder to unlatch the Rear Bow.

Animation Support:

Select the "Convertible Top Hydraulic Operation" button on the course CD-ROM main menu to view an animated description of this operation.

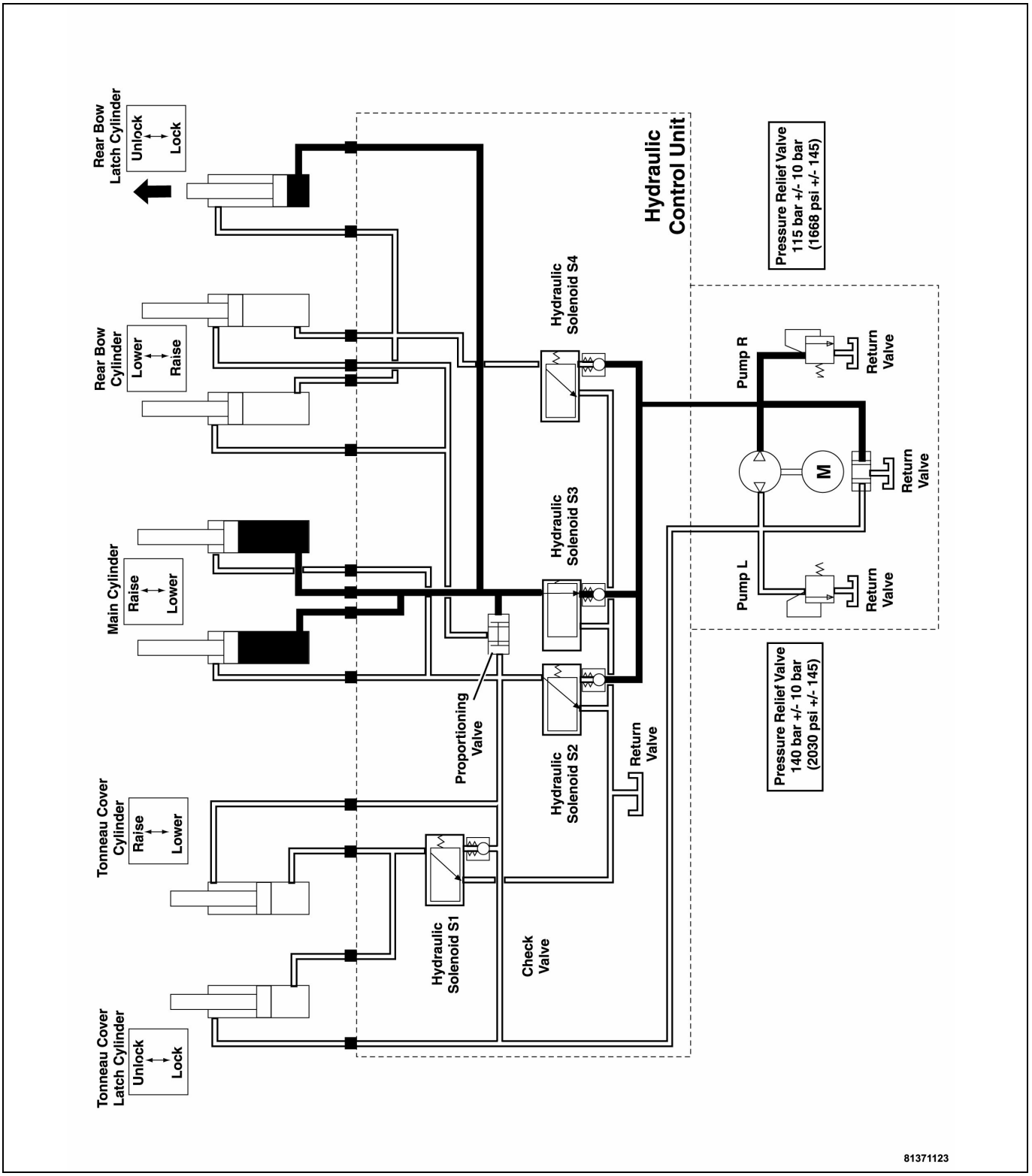


Figure 54 Unlatch Rear Bow

Lift Rear Bow

When the PTCM senses that the Rear Bow Latch is unlatched by the Rear Bow Switch, the PTCM activates the hydraulic pump (right), and Hydraulic Solenoids S2, and S3. The Power Top Hydraulic Assembly delivers hydraulic fluid to the following areas:

- Through Solenoids S3 to the Rear Bow Latch Cylinder (Base Side) to keep the Rear Bow unlatched.
- Through Solenoid S2 and S3 to both sides of the Main Cylinders to stabilize the top while the Rear Bow Cylinders raise the Rear Bow.
- Through Solenoid S2 to the rod side of the Tonneau Cover Cylinder to stabilize the cover while the Rear Bow Cylinders raise the Rear Bow.
- Through Solenoids S3 and S2 which equalizes the pressure on the proportioning valve and allows hydraulic fluid to travel to the rod side of both Rear Bow Cylinders to lift the Rear Bow.

Animation Support:

Select the "Convertible Top Hydraulic Operation" button on the course CD-ROM main menu to view an animated description of this operation.

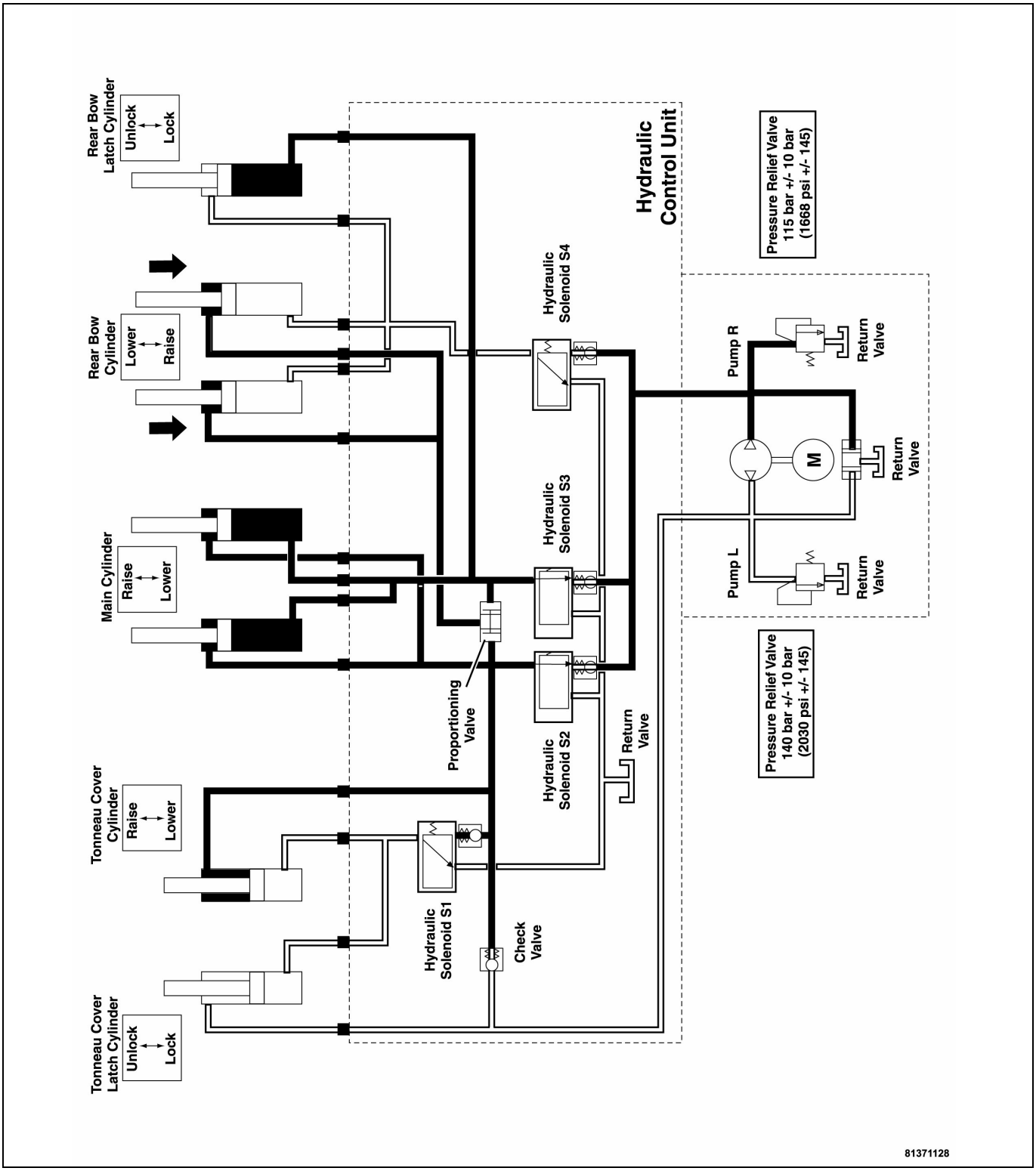


Figure 55 Lift Rear Bow

Open Tonneau Cover

When the PTCM senses that the Rear Bow is up all the way by the Rear Bow Travel Sensor (Base Side), the PTCM activates the hydraulic pump (right) and Hydraulic Solenoids S1, S2 and S3. The Power Top Hydraulic Assembly delivers hydraulic fluid to the following areas:

- Through Solenoid S3 to the Rear Bow Latch Cylinder to keep the latch unlatched.
- Through Solenoids S2 and S3 to both sides of the proportioning valve. When equal pressure is applied to both sides of the proportioning valve, hydraulic fluid is allowed to travel to the rod side of both Rear Bow Cylinders to stabilize the Rear Bow while the Tonneau Cover opens.
- Through Solenoids S2 and S3 to both sides of the Main Cylinders to stabilize the top while the Tonneau Cover opens.
- Through Solenoids S2 and S1 to the Tonneau Cover Latch Cylinder (Base Side) to unlatch the Tonneau cover.
- Through Solenoid S2 and S1 to both sides of the Tonneau Cover Cylinder to raise the Tonneau Cover. Even though there is hydraulic pressure on both sides of the Tonneau Cover Cylinder, the cylinder slowly moves to open the Tonneau Cover because there is a greater surface area on the base side of the cylinder than the rod side.

Animation Support:

Select the "Convertible Top Hydraulic Operation" button on the course CD-ROM main menu to view an animated description of this operation.

Note: Base side refers to the bottom side of the cylinder (below the piston). Rod side refers to the top side of the cylinder (above the piston).

Note: During the description of pump operation, the text will refer to "right" and "left" rotation. This was done to reflect terminology used in the Service Information. Right rotation refers to a clockwise rotation of the pump and left rotation refers to a counterclockwise rotation.

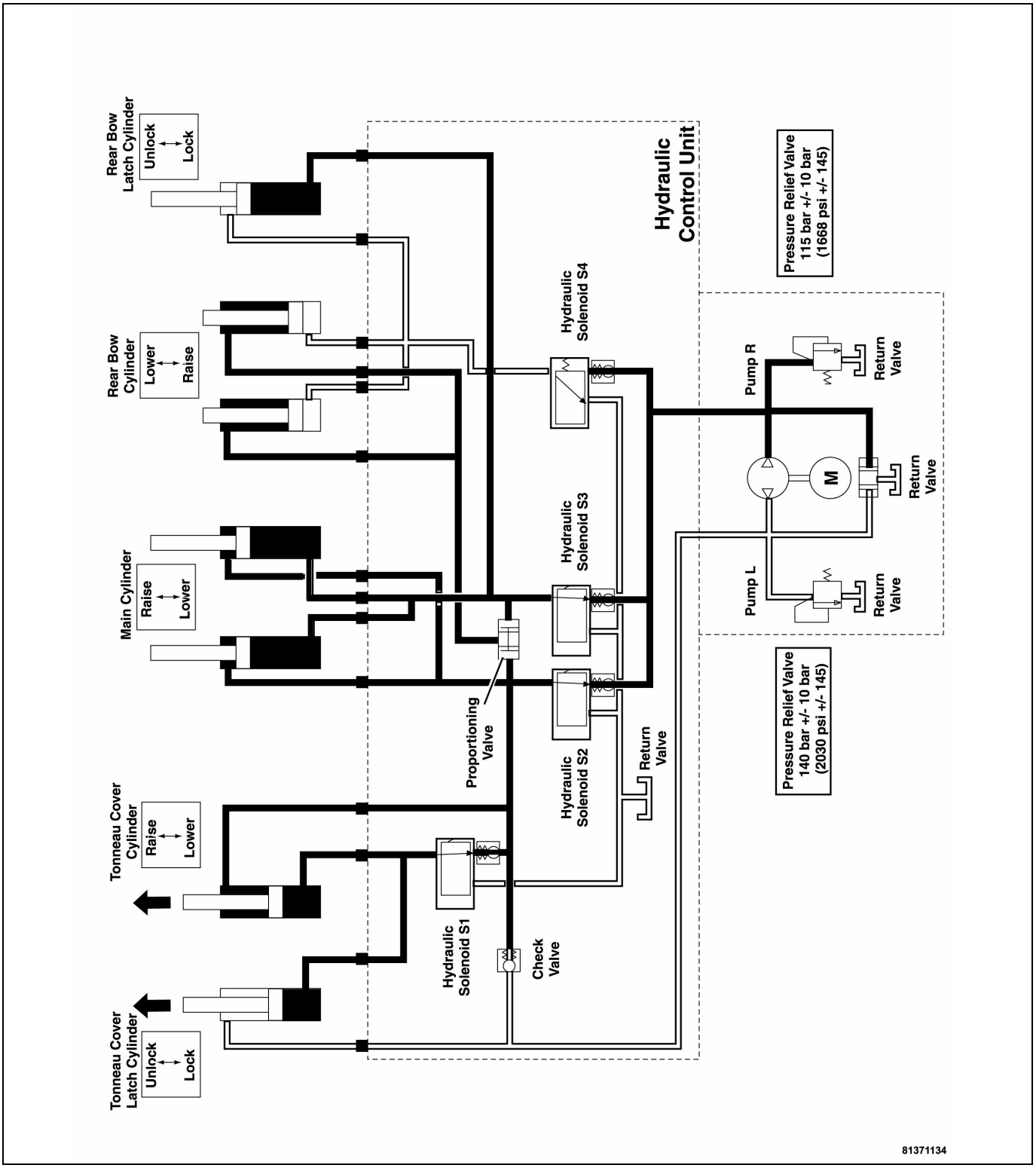


Figure 56 Open Tonneau Cover

Lower Rear Bow

When the PTCM senses that the Tonneau Cover is up all the way by the Tonneau Cover Travel Sensor (Rod Side), the PTCM activates the hydraulic pump (right) and Hydraulic Solenoids S1, S3 and S4. The Power Top Hydraulic Assembly delivers hydraulic fluid to the following areas:

- Through Solenoids S3 and S4 to both sides of the Rear Bow Latch Cylinder to keep the latch unlatched.
- Through Solenoid S3 to the base side of the Main Cylinders to stabilize the top while the Rear Bow moves into the storage compartment.
- Solenoid S1 is activated and holds the hydraulic fluid into both Tonneau Cover and Latch Cylinders (Base Side) to stabilize the Tonneau Cover while the Rear Bow is being lowered into the storage compartment.
- Through Solenoid S4 to the base side of the Rear Bow Cylinder to lower the Rear Bow into the storage compartment.

Animation Support:

Select the "Convertible Top Hydraulic Operation" button on the course CD-ROM main menu to view an animated description of this operation.

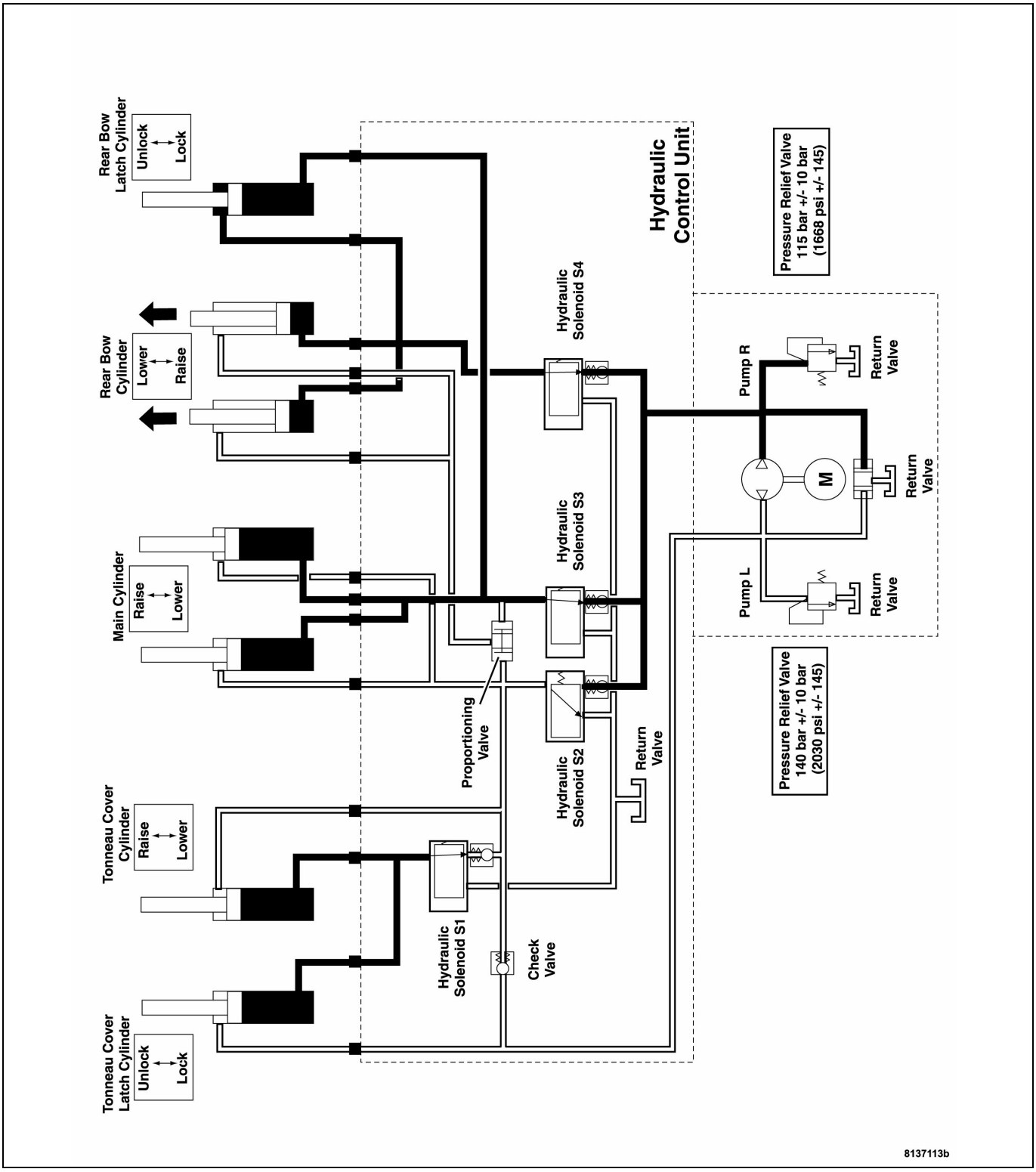


Figure 57 Lower Rear Bow

Open Convertible Top

When the PTCM senses that the Rear Bow has been lowered into the storage compartment by the Rear Bow Travel Sensor (Rod Side), the PTCM activates the hydraulic pump (right) and Hydraulic Solenoids S1 and S2. The Power Top Hydraulic Assembly delivers hydraulic fluid to the following areas:

- Through Solenoid S2 and then S1 to both sides of the Tonneau Cover Cylinder and the base side of the Tonneau Cover Latch Cylinder to stabilize the Tonneau Cover and Latch while the Main Cylinders lower the Top into the storage compartment.
- Through Solenoid S2 to the rod side of both Main Cylinders to lower the top into the storage compartment.

Animation Support:

Select the "Convertible Top Hydraulic Operation" button on the course CD-ROM main menu to view an animated description of this operation.

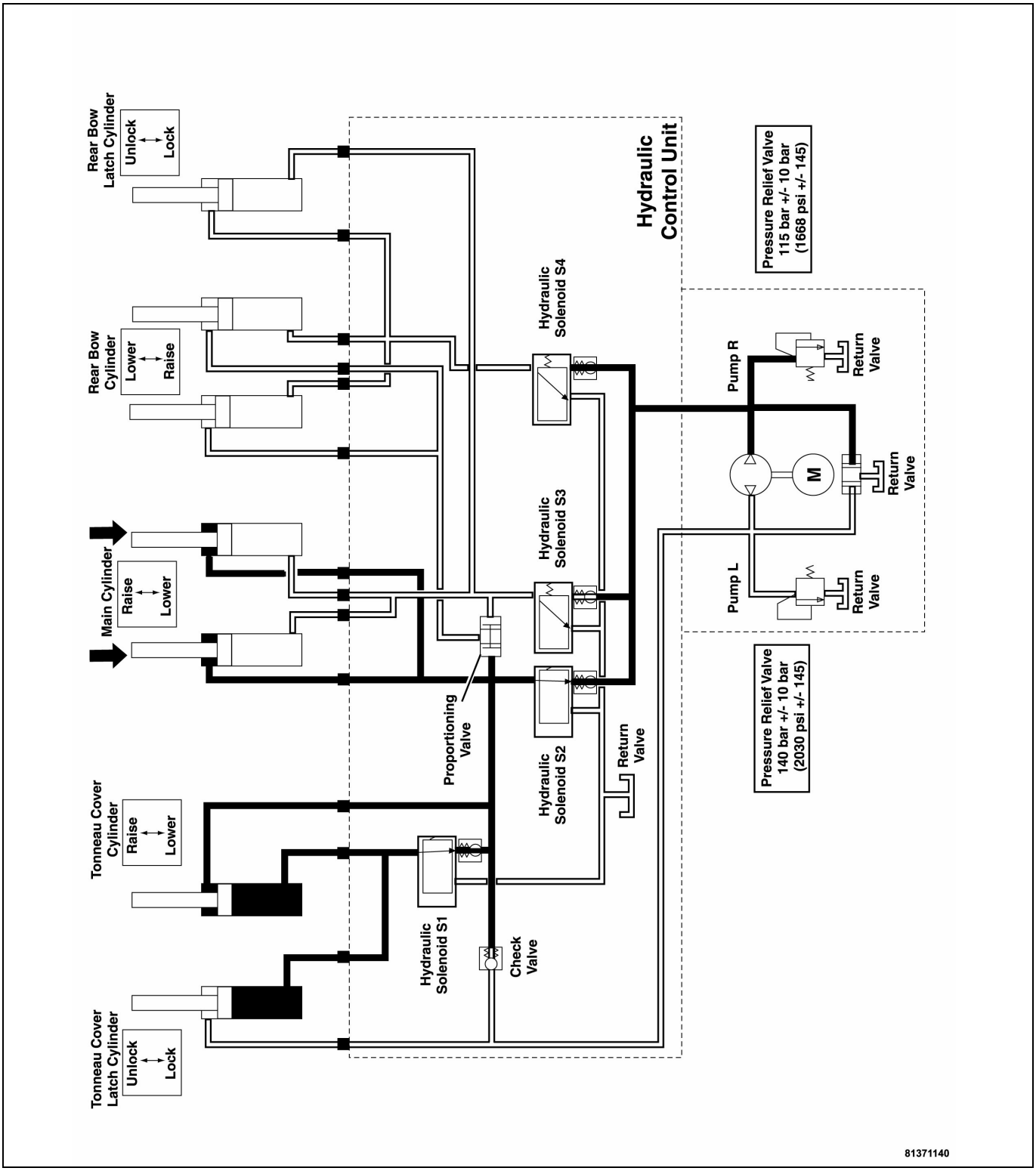


Figure 58 Open Convertible Top

Close Tonneau Cover

When the PTCM senses that the Top has been lowered into the storage compartment by the Main Cylinder Travel Sensor (Base Side), the PTCM activates the hydraulic pump (left) and Solenoid S2 to block hydraulic fluid. The Power Top Hydraulic Assembly delivers hydraulic fluid to the following areas:

- Hydraulic fluid is delivered to the rod side of both Main Cylinders to stabilize the top in the storage compartment as the Tonneau Cover is lowered and locked.
- Hydraulic fluid is delivered to the rod side of the Tonneau Cover Cylinder and the Tonneau Cover Latch Cylinder to lower and lock down the Tonneau Cover.

Animation Support:

Select the "Convertible Top Hydraulic Operation" button on the course CD-ROM main menu to view an animated description of this operation.

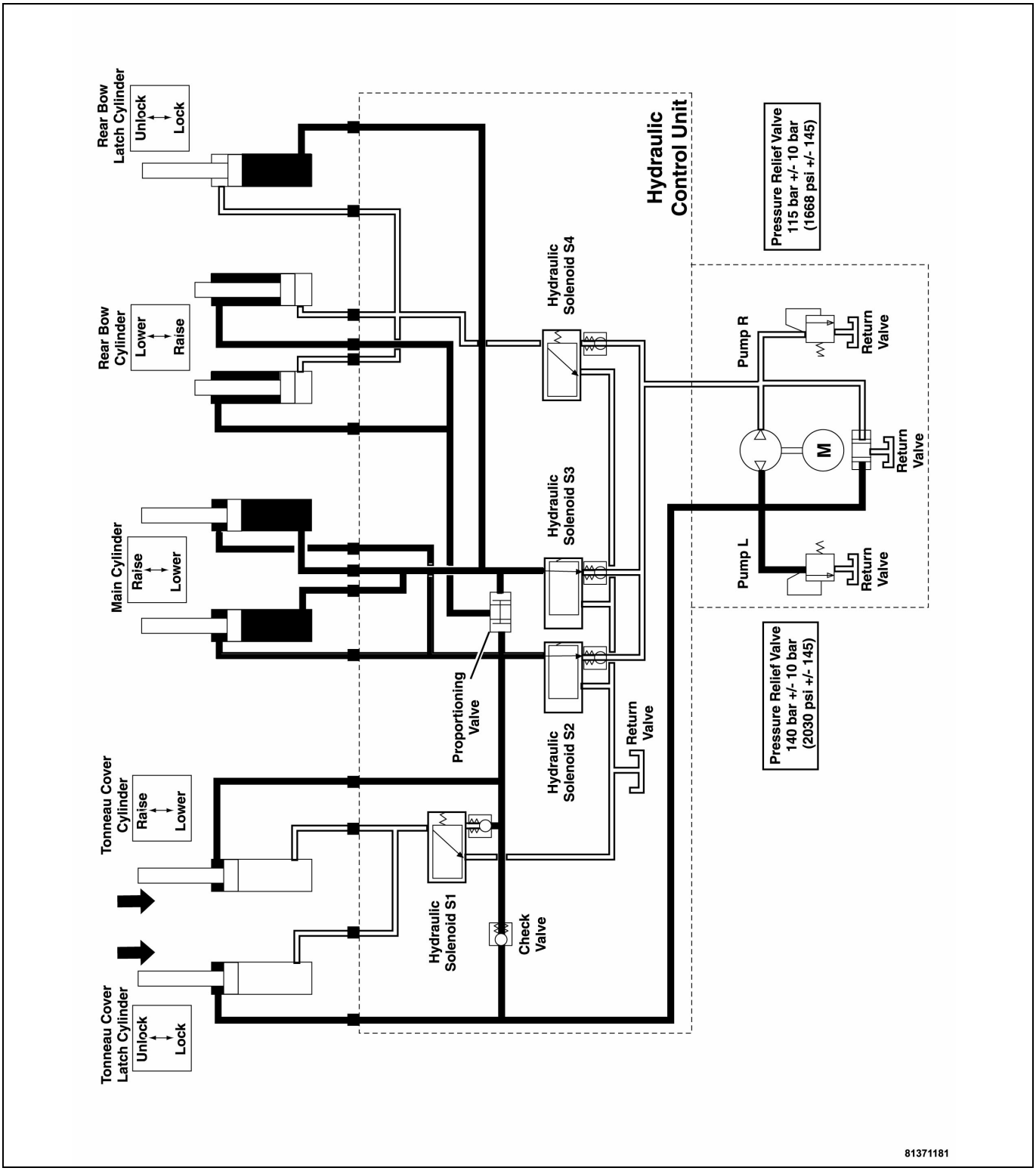


Figure 59 Close Tonneau Cover

Raising The Top

Open Tonneau Cover

When the PTCM senses that the Power Top Switch is pressed to raise the top, the PTCM activates the hydraulic pump (right), and Hydraulic Solenoids S1 and S2. The Power Top Hydraulic Assembly delivers hydraulic fluid to the following areas:

- Through Solenoid S2 and then S1 to the rod side of both Main Cylinders to stabilize the top while the Tonneau Cover opens.
- Through Solenoid S2 and then S1 to the base side of the Tonneau Cover Latch Cylinder to unlatch the Tonneau Cover.
- Through Solenoid S2 and then S1 to both sides of the Tonneau Cover Cylinder to lift the Tonneau Cover. Even though there is hydraulic pressure on both sides of the Tonneau Cover Cylinder, the cylinder slowly moves to open the Tonneau Cover because there is a greater surface area on the base side of the cylinder than the rod side.

Animation Support:

Select the "Convertible Top Hydraulic Operation" button on the course CD-ROM main menu to view an animated description of this operation.

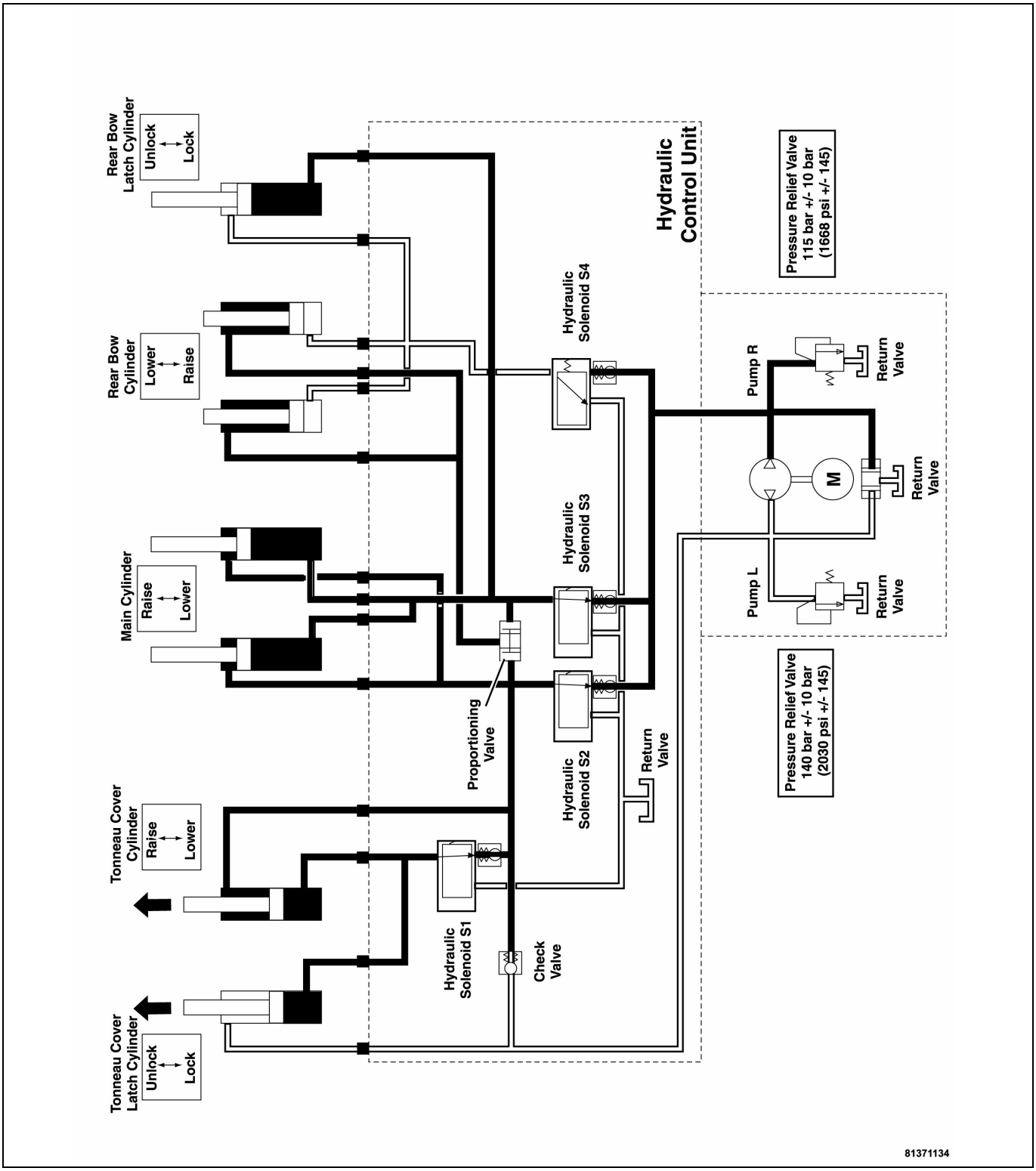


Figure 60 Open Tonneau Cover

Close Convertible Top

When the PTCM senses that the Tonneau Cover has been lifted by the Tonneau Cover Travel Sensor (Rod Side), the PTCM activates the hydraulic pump (right), and Hydraulic Solenoids S1 and S3. The Power Top Hydraulic Assembly delivers hydraulic fluid to the following areas:

- The PTCM actuates Solenoid S1 to stabilize the Tonneau Cover Cylinder and Latch Cylinder by locking the hydraulic fluid on the base side of the cylinders.
- Through Solenoid S3 to the base side of the Rear Bow Latch Cylinders to keep the latch unlatched.
- Through Solenoid S3 to the base side of both Main Cylinders to raise the top out of the storage compartment.

Animation Support:

Select the "Convertible Top Hydraulic Operation" button on the course CD-ROM main menu to view an animated description of this operation.

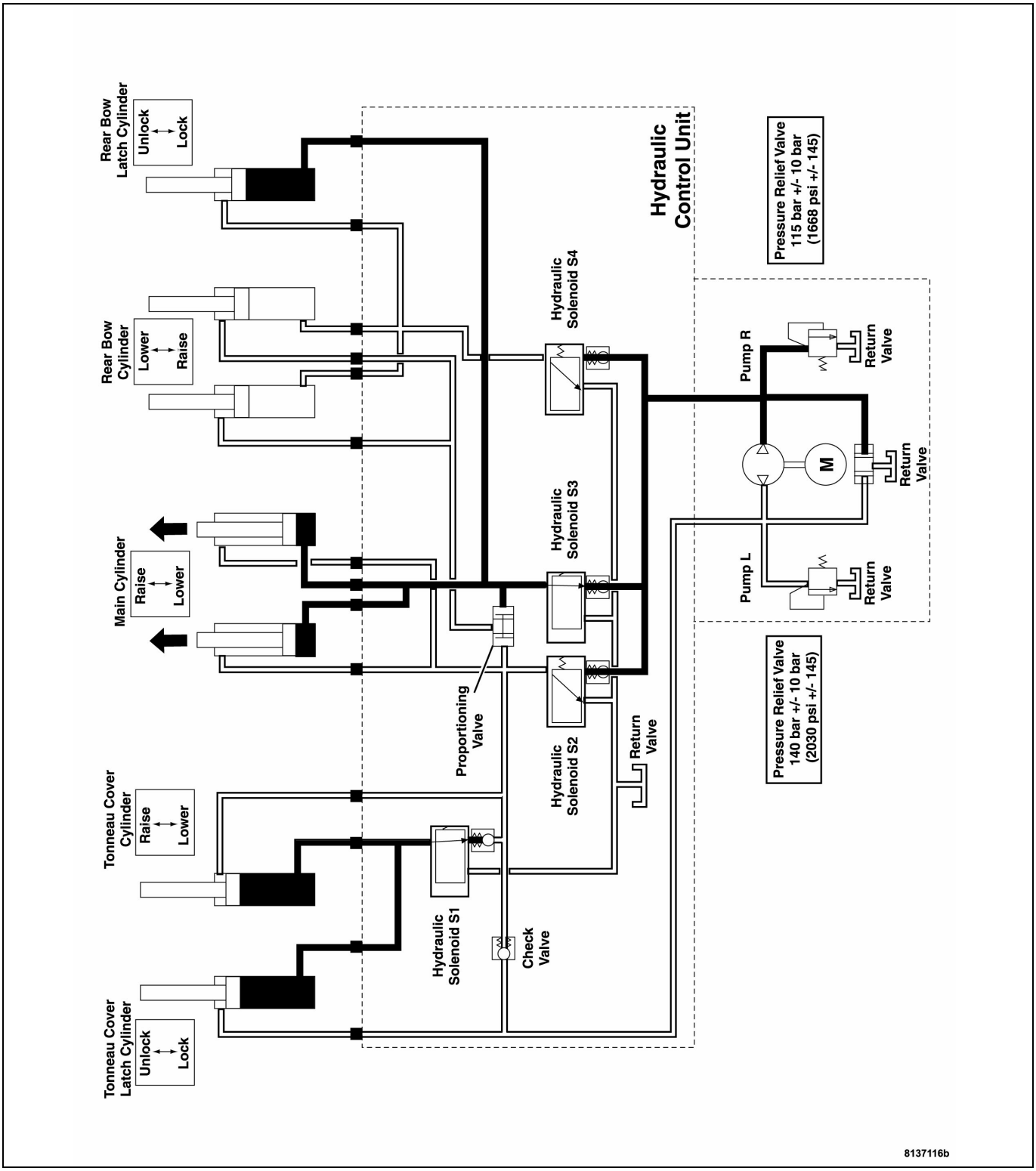


Figure 61 Close Convertible Top

Lift Rear Bow

When the PTCM senses that the Main Cylinders have closed the top by the Main Cylinder Travel Sensors (Rod Side), the PTCM activates the hydraulic pump (right) and Hydraulic Solenoids S2, S3 and S1. The Power Top Hydraulic Assembly delivers hydraulic fluid to the following areas:

- Through Solenoid S3 to the base side of the Rear Bow Latch Cylinder to keep the Rear Bow unlatched.
- Through Solenoids S2 and S3 to both sides of the Main Cylinders to stabilize the top while the Rear Bow Cylinders raise the Rear Bow.
- Through Solenoid S2 and then S1 to the rod side of the Tonneau Cover Cylinder and the base side of the Tonneau Cover Latch Cylinder to stabilize the cover while the Rear Bow Cylinders raise the Rear Bow out of the storage compartment.
- Through Solenoids S3 and S2 which equalizes the pressure on the proportioning valve and allows hydraulic fluid to the rod side of the Rear Bow Cylinder to lift the Rear Bow.

Animation Support:

Select the "Convertible Top Hydraulic Operation" button on the course CD-ROM main menu to view an animated description of this operation.

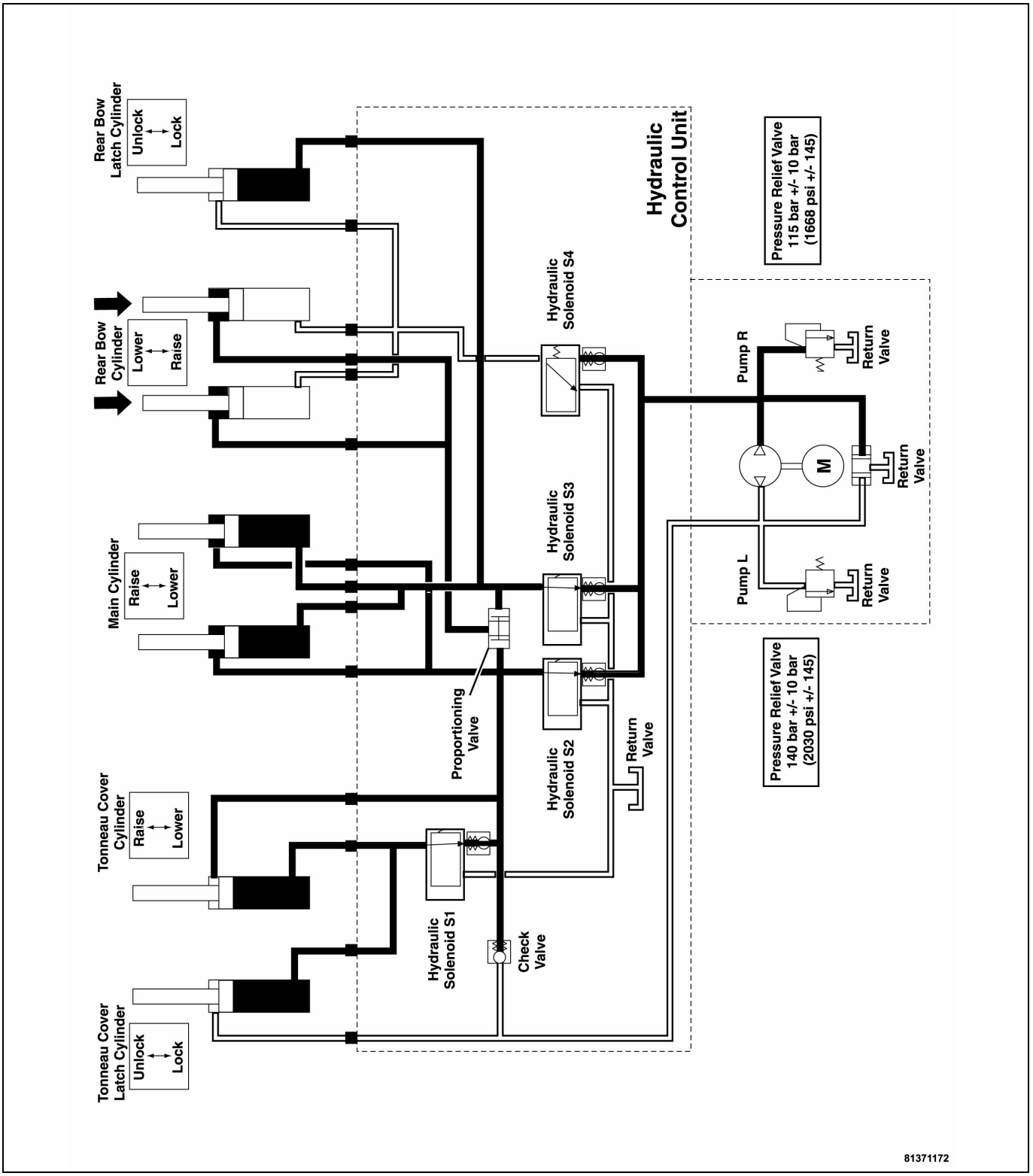


Figure 62 Lift Rear Bow

Close Tonneau Cover

When the PTCM senses that the Rear Bow has been raised out of the storage compartment by the Rear Bow Travel Sensor (Base Side), the PTCM activates the hydraulic pump (left), and Solenoids S2 and S3. The Power Top Hydraulic Assembly delivers hydraulic fluid to the following areas:

- Hydraulic Solenoids S2 and S3 are activated to allow hydraulic fluid to both sides of the Main Cylinders, the base side of the Rear Bow Latch Cylinder, and the rod side of both Rear Bow Cylinders to stabilize the top while the Tonneau Cover is lowered and locked.
- Hydraulic fluid is delivered to the rod side of the Tonneau Cover Cylinder and Tonneau Cover Latch Cylinder to lower and lock down the Tonneau Cover.

Animation Support:

Select the "Convertible Top Hydraulic Operation" button on the course CD-ROM main menu to view an animated description of this operation.

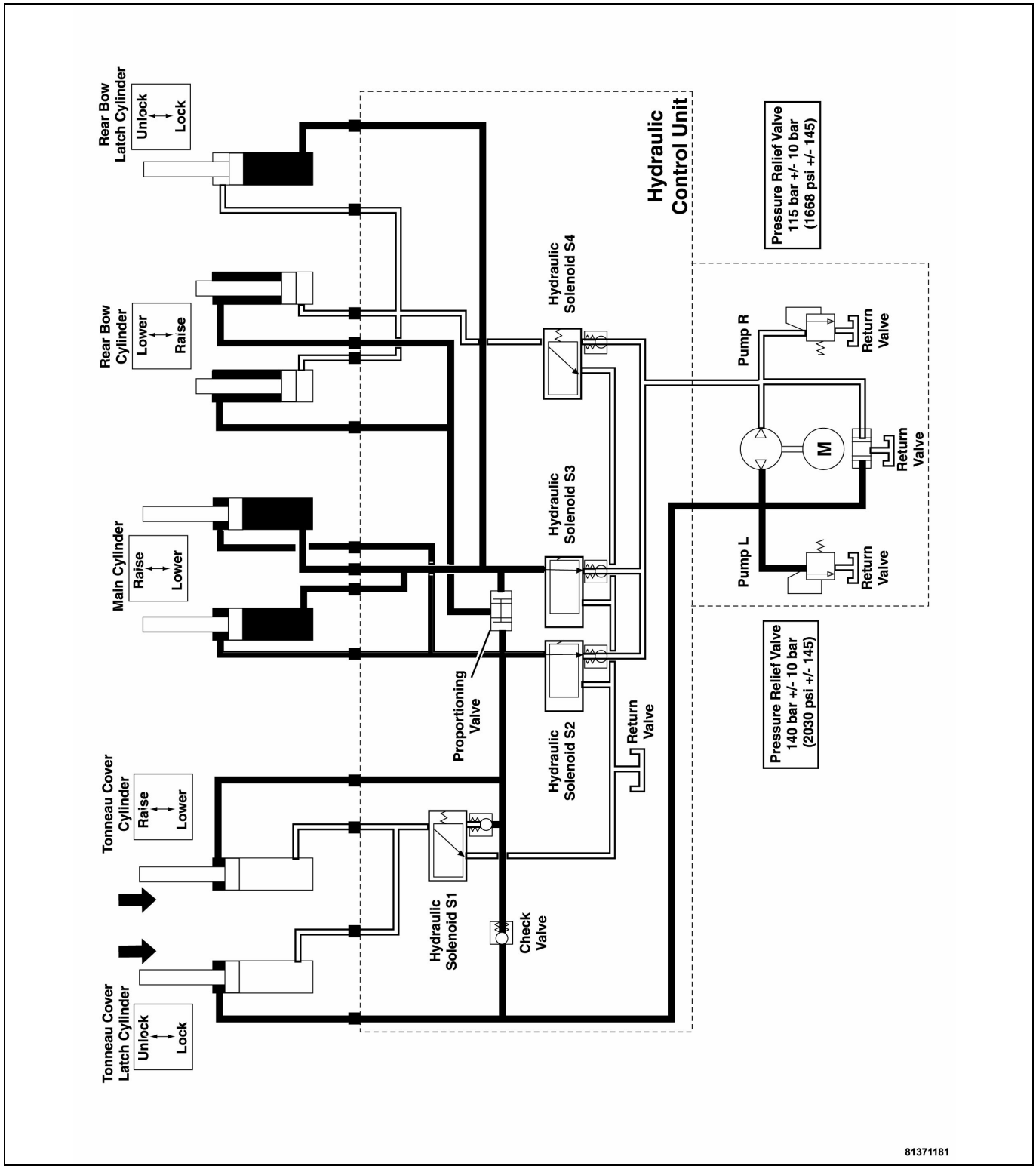


Figure 63 Close Tonneau Cover

Lower and Latch Rear Bow

When the PTCM senses that the Tonneau Cover has been lowered and locked down by the Tonneau Cover Travel Sensor (Base Side) and the Tonneau Cover Switch, the PTCM activates the hydraulic pump (right), and Solenoid F4. The Power Top Hydraulic Assembly delivers hydraulic fluid to the following areas:

- Hydraulic fluid is delivered through Hydraulic Solenoid F4 to the base side of both Rear Bow Cylinder to lower the Rear Bow onto the Tonneau Cover.
- Hydraulic fluid is delivered through Hydraulic Solenoid F4 to the rod side of the Rear Bow Latch Cylinder to lock down the Rear Bow.
- When the PTCM senses that the Rear Bow has been lowered and locked by the Rear Bow Travel Sensor and the Rear Bow Switch, the Power Top Switch is released; all hydraulic pressure is released.

Animation Support:

Select the "Convertible Top Hydraulic Operation" button on the course CD-ROM main menu to view an animated description of this operation.

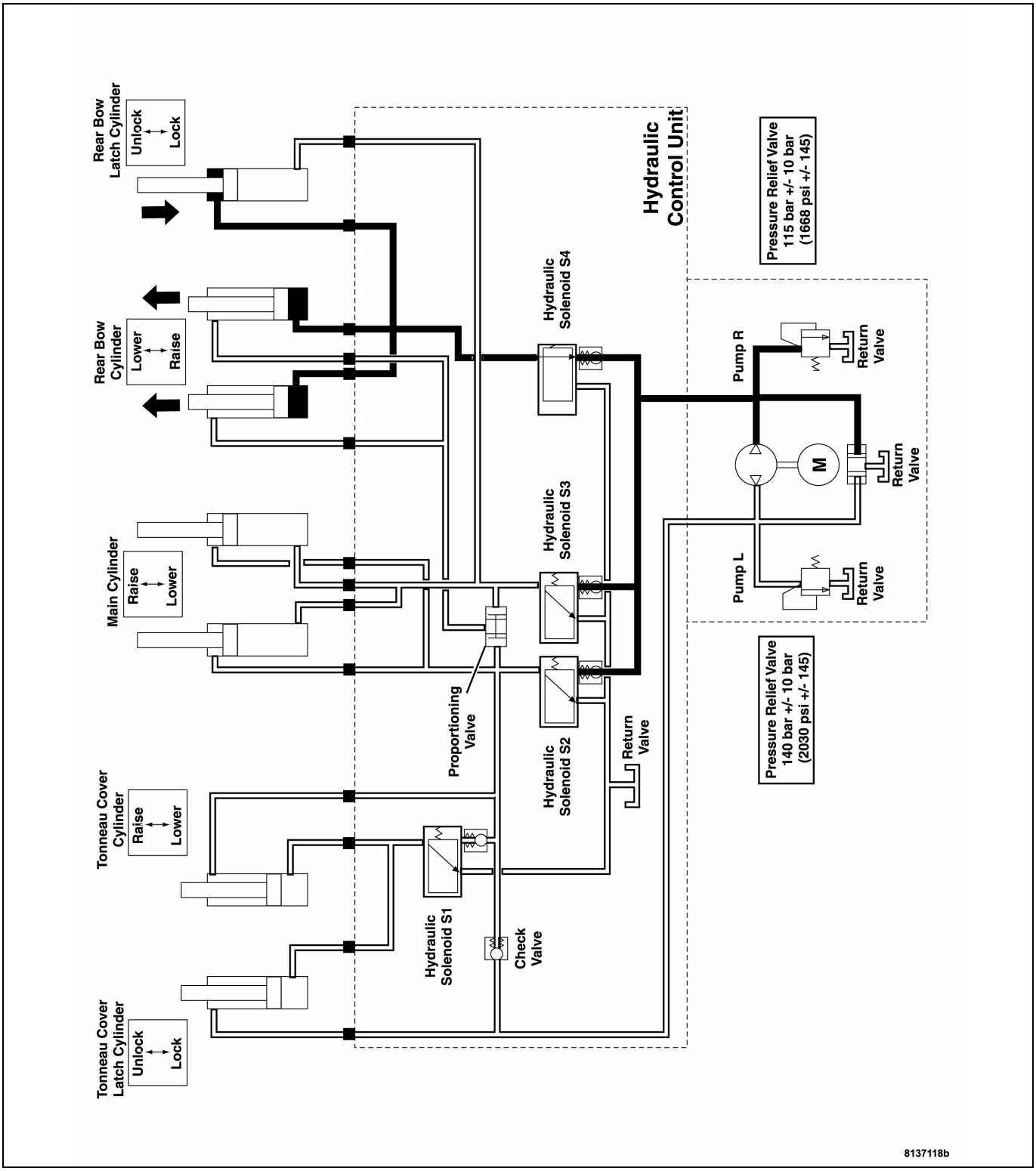


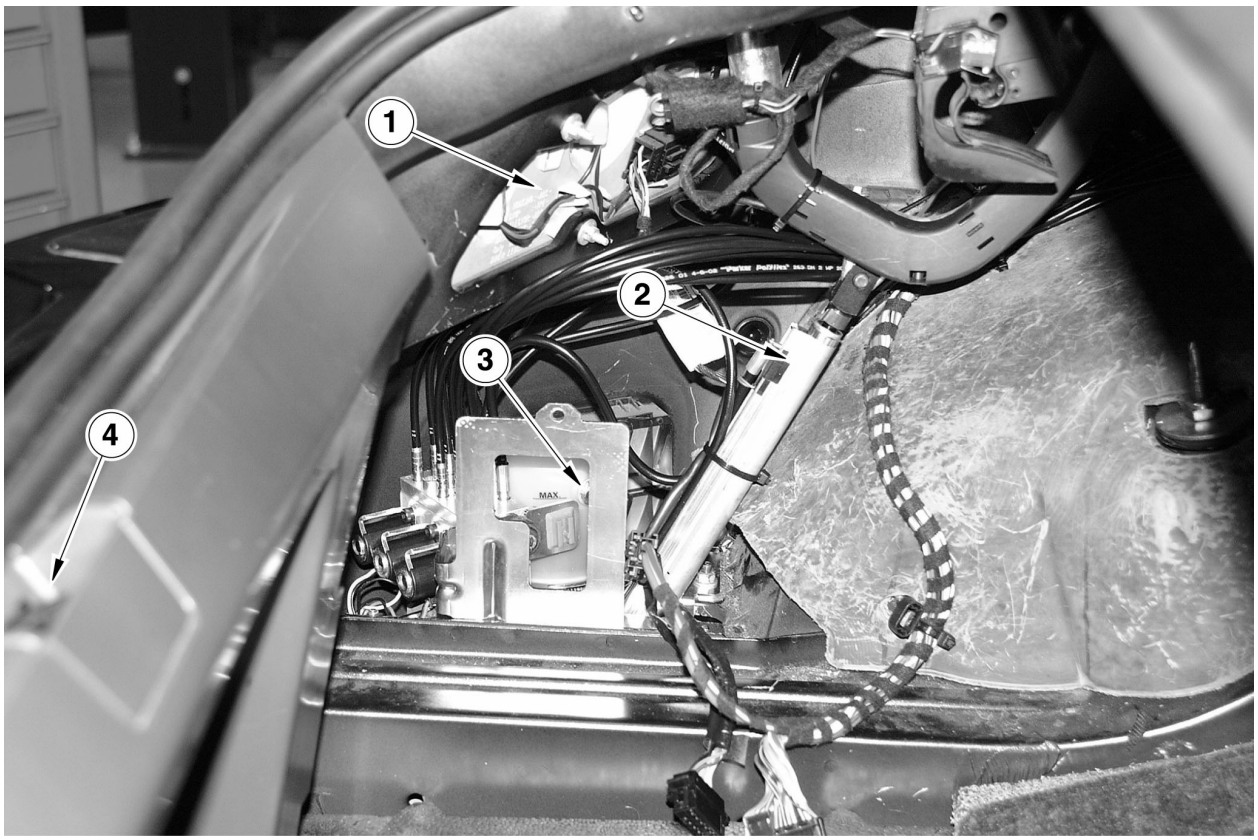
Figure 64 Lower and Latch Rear Bow

ADJUSTMENTS/SERVICE

Adjustments to the convertible top are not recommended. Manufacturing procedures ensure a proper fit and seal. If the vehicle encounters a fit or seal issue, verify that the problem is not with the remainder of the vehicle. If the top is found to be out of adjustment, a new convertible top frame will need to be installed.

If the rear window or rear defogger grid requires replacement, the convertible top material and window assembly will need to be replaced.

DIAGNOSIS, TESTING AND SERVICING



1	Left/Rear Tail Light	3	Filler Plug
2	Tonneau Cover Cylinder	4	Decklid Latch Striker

Figure 65 Filler Plug Location

Hydraulic Motor/Pump Fill/Bleeding

If the convertible top hydraulic system has been opened to the atmosphere or run out of fluid, the system will need to be bled. Fill the system reservoir with the specified

fluid and reinstall the filler plug. Operate the convertible top up and down while maintaining the correct fluid level until all air has been bled out of the system.

WARNING: DO NOT OPERATE THE HYDRAULIC PUMP WHILE THE RESERVOIR FILLER PLUG IS OUT. PERSONAL INJURY COULD OCCUR.

Fluid Specification

The recommended hydraulic fluid to be used for the power top hydraulic system is Mopar part number 05127381AA.

Replacement Of Convertible Top Material

The convertible top material is designed to be easily replaced. Removal does not require disassembly of the convertible top frame. Basic hand tools, a rivet gun and a drill are the only tools needed to service the top material. Refer to the Service Information for the procedure used for this operation.

Emergency Top Release Procedures

CAUTION: Manually closing the convertible top is a complicated and technically demanding procedure. This procedure should be performed with great care by two people. Close the convertible top manually in emergency cases only.

WARNING: IT IS IMPORTANT THAT A SECOND PERSON HELP YOU TO PREVENT INJURIES.

NOTE: The multifunction tool from the glovebox is required for this job.

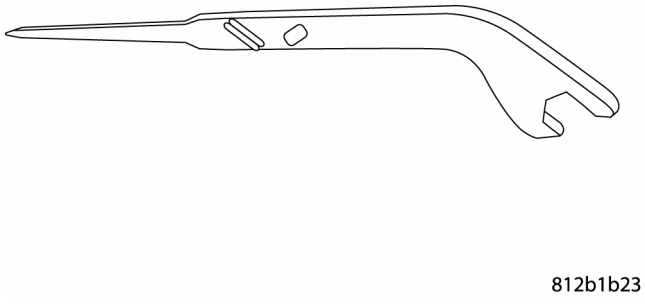


Figure 66 Multifunction Tool

1. Lower the windows and open the doors.
2. Turn the ignition key off.

CAUTION: Ensure that the trunk lid is closed while raising the convertible top manually to prevent the possibility of contact between the trunk lid and the convertible top compartment cover.

WARNING: DO NOT PLACE YOUR HANDS NEAR THE CONVERTIBLE TOP FRAME, UPPER WINDSHIELD AREA, OR THE CONVERTIBLE TOP STORAGE COMPARTMENT WHILE THE CONVERTIBLE TOP IS BEING RAISED AND LOCKED. SERIOUS PERSONAL INJURY MAY OCCUR.

3. Unlatch the storage compartment by placing the open-end multifunction tool (supplied in the vehicle tool kit) on the bolt between the backrest and the convertible top compartment cover. Turn the multifunction tool in the direction of the arrow to its stop and remove the tool.

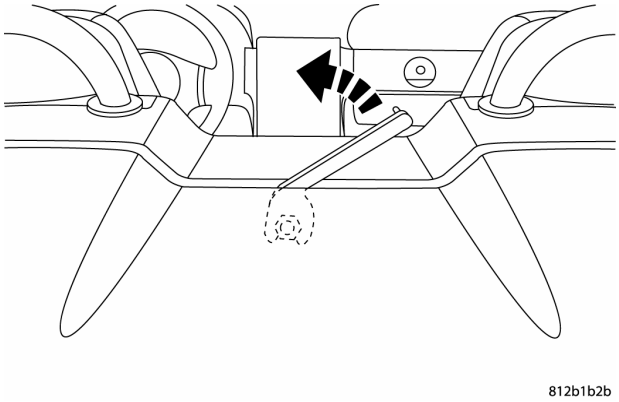


Figure 67 Turning The Multifunction Tool

4. Open the convertible top compartment cover and place it in the upright position.
5. Pull up hard on the front of the convertible top to move it out of its storage compartment.

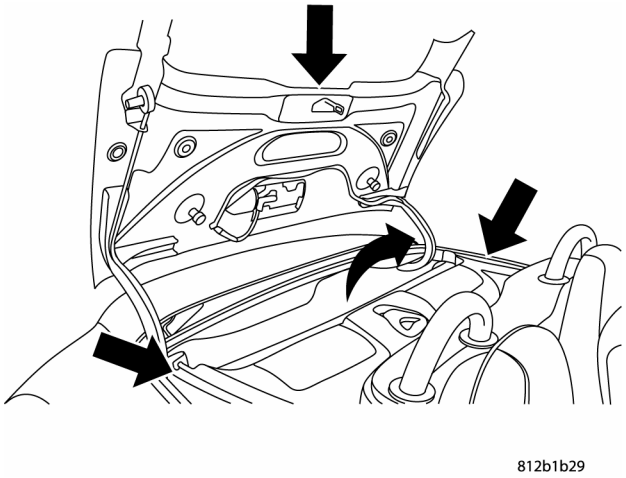


Figure 68 Moving Convertible Top Step 1

NOTE: Do not let go of the convertible top as it may fall back into the convertible top storage compartment.

6. Move the convertible top toward the windshield header.

WARNING: DO NOT PLACE YOUR HANDS IN THE CONVERTIBLE TOP FRAME AREAS. SERIOUS PERSONAL INJURY MAY OCCUR.

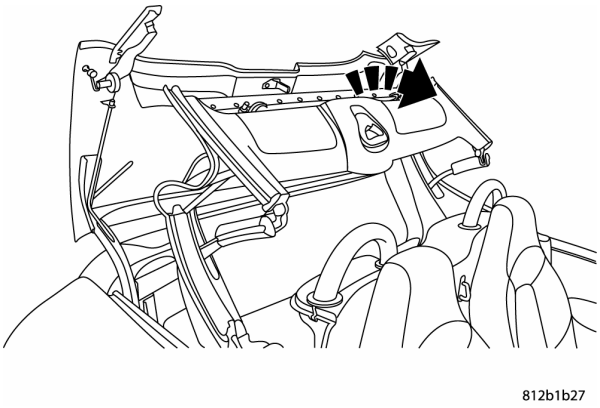


Figure 69 Moving Convertible Top Step 2

7. Do not place the convertible top frame onto windshield header.
8. Place the rear window section of the convertible top in its vertical position.
9. Close the convertible top compartment cover by placing hands near the edges (arrows) and slowly lowering it. The convertible top compartment cover must lock in the first notch of the compartment cover catch.

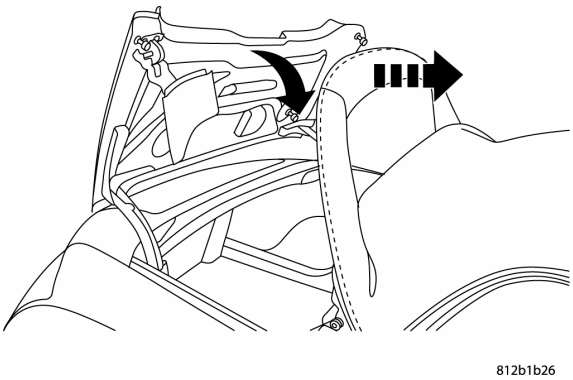


Figure 70 Closing Convertible Top Cover

10. Lock the convertible top storage compartment by placing the open-end multifunction tool on the bolt between the sports bar trim and the convertible top compartment cover. Turn the multifunction tool in the direction of the arrow to its stop and remove the tool.

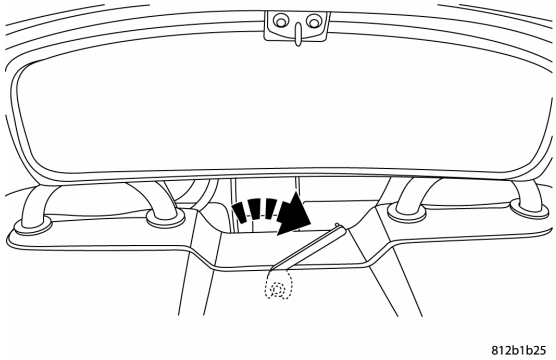


Figure 71 Locking Convertible Top Cover

11. Lower the rear window section of the convertible top down and lock into the convertible top compartment cover.

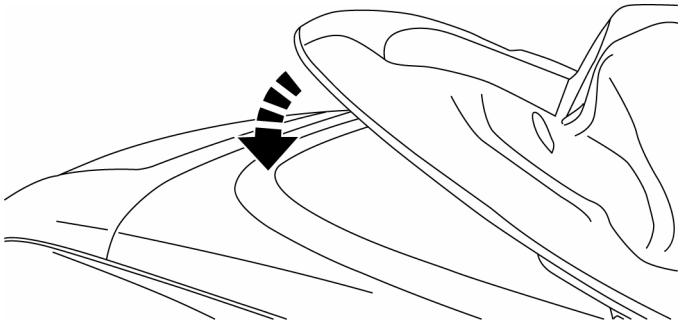


Figure 72 Lowering Rear Window Section

12. Press latch handle release button and fold down the locking latch handle.
13. Turn the latch handle one quarter turn clockwise and pull the convertible top frame carefully down until it meets the windshield header attachment points.

14. Turn the latch handle counterclockwise to the stop in order to lock the convertible top.

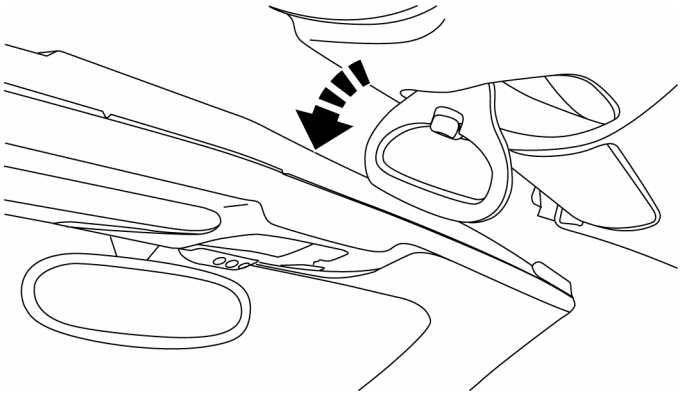


Figure 73 Turning The Latch Handle

15. Fold the latch handle up until the release button engages. The convertible top is now locked onto the windshield header.

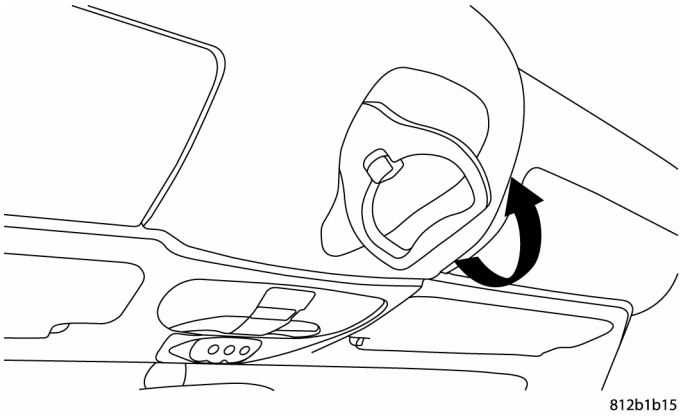


Figure 74 Folding The Latch Handle

CONVERTIBLE TOP DIAGNOSIS

Fault Code Reading

Fault code reading is performed with the DRBIII. An LED on the convertible top switch will blink when an electronic fault exists in the convertible top system.

Diagnostic Trouble Codes

The Diagnostic Trouble Codes (DTCs) are listed here for your reference. Refer to the Service Information for diagnostic procedures.

9004	POWER TOP CONTROL MODULE EEPROM TIMING
9005	POWER TOP CONTROL MODULE EEPROM ERROR
9010	POWER TOP CONTROL MODULE LOW VOLTAGE
9011	POWER TOP CONTROL MODULE OVER VOLTAGE
9012	STOP MODE LONGER THAN 10 MINUTES
9013	THERMO PROTECTION ACTIVE
9076	NO COMMUNICATION WITH THE BODY CONTROL MODULE
9078	NO COMMUNICATION WITH CENTRAL LOCKING PUMP/SECURITY SYSTEM MODULE
9610	MAIN CYLINDER TRAVEL SENSOR (ROD SIDE) +/- CIRCUITS OPEN/SHORT TO GROUND
9611	MAIN CYLINDER TRAVEL SENSOR (ROD SIDE) (-) CIRCUIT SHORT TO B(+)
9612	MAIN CYLINDER TRAVEL SENSOR (ROD SIDE) (+) CIRCUIT SHORT TO B(+)
9620	MAIN CYLINDER TRAVEL SENSOR (ROD SIDE) +/- CIRCUITS OPEN/SHORT TO GROUND
9621	MAIN CYLINDER TRAVEL SENSOR (ROD SIDE) (-) CIRCUIT SHORT TO B(+)
9622	MAIN CYLINDER TRAVEL SENSOR (BASE SIDE) (+) CIRCUIT SHORT TO B(+)
9630	REAR BOW CYLINDER TRAVEL SENSOR (ROD SIDE) +/- CIRCUITS OPEN/SHORT TO GROUND
9631	REAR BOW CYLINDER TRAVEL SENSOR (ROD SIDE) (-) CIRCUIT SHORT TO B(+)
9632	REAR BOW CYLINDER TRAVEL SENSOR (ROD SIDE) (+) SHORT TO B(+)
9640	REAR BOW CYLINDER TRAVEL SENSOR (BASE SIDE) +/- CIRCUITS OPEN/SHORT TO GRD
9641	REAR BOW CYLINDER TRAVEL SENSOR (BASE SIDE) (-) CIRCUIT SHORT TO B(+)
9642	REAR BOW CYLINDER TRAVEL SENSOR (BASE SIDE) (+) SHORT TO B(+)
9650	TONNEAU COVER CYLINDER TRAVEL SENSOR (ROD SIDE) +/- CKTS OPEN/SHORT TO GRD
9651	TONNEAU COVER CYLINDER TRAVEL SENSOR (BASE SIDE) (-) CKT SHORT TO B(+)
9652	TONNEAU COVER CYLINDER TRAVEL SENSOR (BASE SIDE) (+) CKT SHORT TO B(+)
9710	RIGHT ROTATION CONTROL CIRCUIT SHORT TO GROUND
9711	RIGHT ROTATION CONTROL CIRCUIT OPEN/SHORT TO B(+)
9720	LEFT ROTATION CONTROL CIRCUIT SHORT TO GROUND
9721	LEFT ROTATION CONTROL CIRCUIT OPEN/SHORT TO B(+)
9810	HYDRAULIC SOLENOID F1 SUPPLY VOLTAGE CIRCUIT SHORT TO GROUND
9811	HYDRAULIC SOLENOID F1 SUPPLY VOLTAGE CIRCUIT OPEN/SHORT TO B(+)
9820	HYDRAULIC SOLENOID F2 SUPPLY VOLTAGE CIRCUIT SHORT TO GROUND
9821	HYDRAULIC SOLENOID F2 SUPPLY VOLTAGE CIRCUIT OPEN/SHORT TO B(+)
9830	HYDRAULIC SOLENOID F3 SUPPLY VOLTAGE CIRCUIT SHORT TO GROUND
9831	HYDRAULIC SOLENOID F3 SUPPLY VOLTAGE CIRCUIT OPEN/SHORT TO B(+)
9840	HYDRAULIC SOLENOID F4 SUPPLY VOLTAGE CIRCUIT SHORT TO GROUND
9841	HYDRAULIC SOLENOID F4 SUPPLY VOLTAGE CIRCUIT OPEN/SHORT TO B(+)
9860	TRUNK LATCH ACTUATOR UNLATCH CONTROL CIRCUIT SHORT TO GROUND
9861	TRUNK LATCH ACTUATOR UNLATCH CONTROL CIRCUIT SHORT TO B(+)
9870	TRUNK LATCH ACTUATOR LOCK CONTROL CIRCUIT SHORT TO GROUND

9871	TRUNK LATCH ACTUATOR LOCK CONTROL CIRCUIT SHORT TO B(+)
9901	MAIN CYLINDER TRAVEL SENSOR (ROD SIDE) INOPERATIVE
9902	MAIN CYLINDER TRAVEL SENSOR (ROD SIDE) STUCK
9903	MAIN CYLINDER TRAVEL SENSOR (BASE SIDE) INOPERATIVE
9904	MAIN CYLINDER TRAVEL SENSOR (BASE SIDE) STUCK
9905	REAR BOW CYLINDER TRAVEL SENSOR (ROD SIDE) INOPERATIVE
9906	REAR BOW CYLINDER TRAVEL SENSOR (ROD SIDE) STUCK
9907	REAR BOW CYLINDER TRAVEL SENSOR (BASE SIDE) INOPERATIVE
9908	REAR BOW CYLINDER TRAVEL SENSOR (BASE SIDE) STUCK
9909	REAR BOW SWITCH SENSE OPEN
9910	REAR BOW SWITCH CIRCUIT SHORTED TO GROUND
9911/ 9912	TONNEAU COVER SWITCH SENSE OPEN
9913/ 9914	TONNEAU COVER SWITCH SENSE SHORTED TO GROUND
9915	TRUNK LATCH LOCKED SIGNAL CIRCUIT OPEN
9916	TRUNK LATCH LOCKED SIGNAL CIRCUIT SHORT TO GROUND
9917	TRUNK LATCH UNLATCHED SIGNAL CIRCUIT OPEN
9918	TRUNK LATCH UNLATCHED SIGNAL CIRCUIT SHORT TO GROUND
9919	POWER TOP SWITCH OPEN CIRCUIT SHORT TO GROUND
9920	POWER TOP SWITCH CLOSE CIRCUIT SHORT TO GROUND
9921	POWER TOP SWITCH OPEN/CLOSE CIRCUIT SHORT TO B(+)
9930	UNKNOWN TOP POSITION
9931	TOP POSITION UNKNOWN (MAIN CYL TRVL SNSRS (ROD SIDE/BASE SIDE)
9932	TOP POSITION UNKNOWN (MAIN CYLINDER TRAVEL SENSORS/D-HANDLE SWITCH)
9933	TOP POSITION UNKNOWN (REAR BOW CYL (BASE)/REAR BOW CYL (ROD)
9934	TOP POS UNKNOWN (REAR BOW CYLINDER TRAVEL SENSOR (BASE)/REAR BOW LATCHED)
9935	TOP POS UNKNOWN (TONNEAU COVER LATCHED/TONNEAU COVER CYL TRAVEL SENSOR)
9936	TOP POSITION UNKNOWN (TRUNK LATCH UNLATCH SIGNAL/TRUNK LATCH LOCK SIGNAL)
9937	TOP POSITION UNKNOWN (REAR BOW SWITCH LATCHED/MAIN CYLINDER TRAVEL SENSOR)
9938	TOP POS UNKNOWN REAR BOW SWITCH LATCHED/TONNEAU COVER SWITCH UNLATCHED)
9939	TOP POS UNKNOWN (D-HANDLE SWITCH LATCHED/TONNEAU COVER TRAVEL SENSORS)
9940	TOP POSITION UNKNOWN (D-HANDLE SWITCH LATCHED/TONNEAU COVER SW UNLATCHED)
9941	TOP POSITION UNKNOWN D-HANDLE SWITCH LATCHED/REAR BOW TRAVEL SENSOR (BASE)
9830	HYDRAULIC SOLENOID F3 SUPPLY VOLTAGE CIRCUIT SHORT TO GROUND

System Defaults/Fail-Safes

If an electrical malfunction occurs, the LED in the convertible top switch will blink and the PTCM will disable all hydraulic operations. To raise and lower the convertible top, see information in this training book or the Service Information.

DRBIII Support

The convertible top system is fully supported by the DRBIII. Functions include (but are not limited to) input/outputs, DTC retrieval and actuation tests. Refer to the Service Information for specific diagnostic and servicing procedures.

Lamp And Audible Signal Chart

Below is a table containing all of the visuals and audible signals that can be observed or heard during the top's operation or if a fault is present.

Table 2 Lamp and Audible Signal Chart

Visual and Audible Signals	Operation Mode or Fault
Single audible signal is heard	Roof reaches fully open position
	Roof reaches fully closed position
Convertible top switch lamp flashes slowly and a slow audible beep is heard.	Decklid open
	Cargo compartment divider is not secured in vertical position
	Top latch at windshield header not unlatched
	Top unlatched but not released from windshield header
	Vehicle speed greater than 15 km/h (9 mph) while trying to operate top
	Battery voltage less than 10.6 volts
Convertible top switch lamp flashes quickly and a slow audible beep is heard.	Maximum hydraulic pump run time reached
	Power window motor(s) or rear spoiler inoperative
	Vehicle speed greater than 15 km/h (9 mph) during top operation
	Top operation suspended longer than 10 minutes
Convertible top switch lamp flashes quickly (no audible beep)	General top control module fault

Chrysler Crossfire Convertible and Supercharger Engine Update