

# SMC Leveling System

2001, 2002 & 2003  
Marquis, Patriot & Contessa



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# SMC LEVELING SYSTEM

The leveling system is a 4-Point Frame to Axle system that operates in either Full or Semi-Automatic mode. The system will not operate if the ignition key is in the ON position. Problems in the leveling system are generally related to the electrical or hydraulic systems.

## Components:

- Leveling Cylinders – Figure 1
- Control Pad – Figure 2
- Controller (ECU) - Figure 3
- Manifold - Figure 7
- Bypass Solenoid
- Pump Solenoid
- Hydraulic Pump Motor

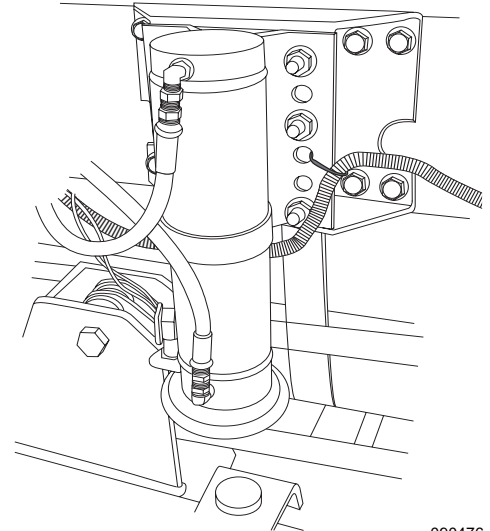


Figure 1

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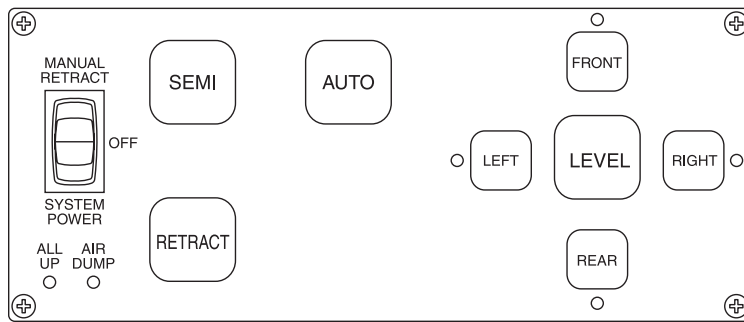


Figure 2

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## Electrical Power: (Figure 5)

The leveling system operates from the chassis batteries. Ensure the chassis batteries are fully charged prior to leveling. Two input powers come from the Front Electrical Box circuit breakers: Battery Power is a 15 Amp circuit breaker (CB05 for Patriot and Contessa, CB42 for Marquis); Ignition Power is a 15 Amp circuit breaker (CB24 for Patriot and Contessa, CB23 for Marquis).

## Factory Set-up Only

### Zero Mode: (Flashed)

Units will be shipped in Zero Mode as the default. The module allows individual and two at a time axis control of the levelers during Zero Mode in order to get the vehicle to the desired pitch and roll attitude. The installation technician will install the module and set the desired level value at the installed location. The installation technician must perform the following steps:

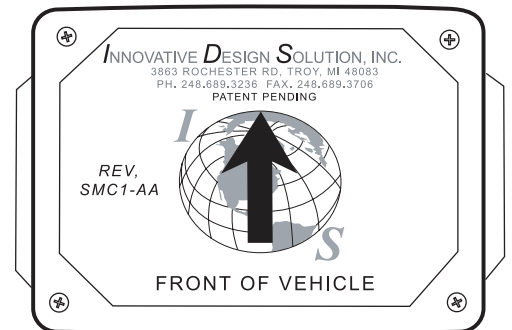


Figure 3

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## Installation/Repair Technician

### Install Main ECU and Control Panel unit and all associated wiring. (Figure 6)

Time and location are the most critical issues in installing an ECU. **Once installed the ECU must sit for 12 hours.** The location of the Main ECU must be a hard, flat and smooth surface. In Patriot and Contessa the ECU is located in the Shift Tower base. In Marquis the ECU is in the main dash pod under the access cover.

When installing the ECU ensure the arrow is pointed towards the front of the motorhome. Secure to the flat surface using four mounting screws with all screws firmly tightened to prevent ECU movement.

### **NOTE:**

**There cannot be any foam, carpet or debris under the ECU. The axis control inside the ECU is an oil dampened gyro. Shipping or handling conditions necessitate that the ECU remain firmly stationary for 12 hours after installation prior to applying power and attempting calibration procedures. Attempting to calibrate the ECU prior to the required settling time will result in inaccurate calibration and incorrect reference.**

### **READ THE FOLLOWING INSTRUCTIONS COMPLETELY PRIOR TO CALIBRATION AND ECU SET-UP PROCEDURES.**

- Ensure the Leveler Control pad is OFF.
- Connect wiring and harnesses to ECU module after the 12 hour delay.
- Turn the ignition switch ON. All lights should be flashing.
- Manually dump air from the air bags using the air dump switch.
- Power the Control unit. Allow 40 seconds to go through the diagnostic mode. After the delay, the ECU module is in Zero Mode (all LEDs on and flashing). If all lights are not flashing, press the SEMI button to place the ECU in “BLEED” mode to allow each cylinder to extend and retract independently.
- Install two temporary torpedo levels or equivalent level indicators, inline with both leveling axis on a board placed in the middle of the motorhome (Figure 4) or in the bottom of the refrigerator. Place one level side to side, the other level front to rear.

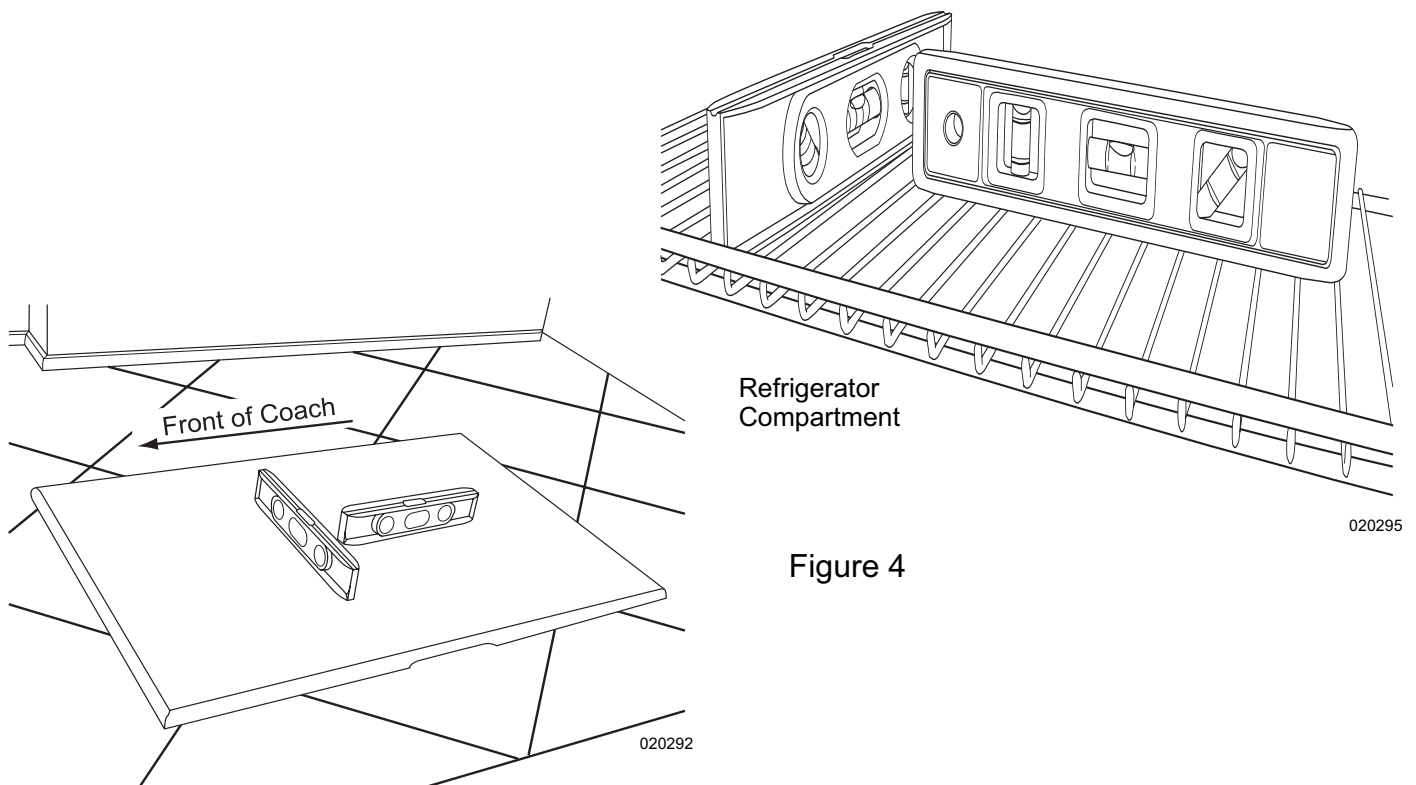


Figure 4

Actuate individual levelers to establish contact with the axle. Observe temporary levels and actuate leveler in pairs to achieve desired attitude at bubble level location.

SINGLE SWITCH	CONTROLS	USED WITH	CONTROLS
Front	Right Front Leveler	Left	Front Levelers
		Right	Right Side Levelers
Right	Right Rear Leveler	Front	Right Side Levelers
		Rear	Rear Levelers
Rear	Left Rear Leveler	Right	Rear Levelers
		Left	Left Side Levelers
Left	Left Front Leveler	Rear	Left Side Levelers
		Front	Front Levelers

**NOTE:**

**For maximum accuracy it is recommended the unit be zeroed at approximately room temperature (72° +/-10° F).**

Once the motorhome is level the ECU can be programmed.

- Turn the Control Pad OFF and wait 30 seconds.
- Turn the Control Pad ON and allow the diagnostic cycle to complete.
- Listen for the hydraulic pump to engage.
- When the hydraulic pump engages, hold the AUTO button for six seconds or until all lights flash.

**NOTE:**

**Once all lights flash the ECU must be programmed in 20 seconds.**

Press the RETRACT button three consecutive times. The hydraulic pump and lights will shut OFF. The air dump light remains illuminated. Press the RETRACT button another three consecutive times and the air dump light will extinguish. When all lights extinguish and stop flashing, the SMC light will illuminate to confirm the ECU is programmed.

## Leveling the Motorhome

**Automatic Mode:**

- Ensure the wheels are straight.
- Place the transmission in neutral.
- Apply the parking brake.
- Turn the engine off.

**NOTE:**

**Movement in the motorhome during the leveling process will confuse the sensors.**

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The control pad for the system can be found on the shift tower panel. When the power switch is set to the ON position, a self diagnostic mode will cause the level lights to flash in a circular pattern for approximately 40 seconds. Once the diagnostic mode is complete, directional lights will illuminate to indicate LOW sides of the motorhome. The level light will flash if the motorhome is level.

Next, press the Auto button on the control pad to release air from the suspension. The air dump light will illuminate and the process will take approximately 90 seconds.

The system should now extend the jacks to the axles and begin the leveling process. Once complete, the green level light will come on and it is then safe to move about in the motorhome.

**NOTE:**

**If the coach is too far out of level, the system will indicate this by flashing all the directional lights and the level light simultaneously.**

When left in Automatic Mode the system will automatically correct for any shift in motorhome position. Once the motorhome has been automatically leveled, it takes fifteen minutes plus or minus two minutes of continuous readings to induce a change or correction. This will eliminate the possibility of the controller entering a correction sequence based on transitory events such as wind, occupant movement, etc.

**NOTE:**

**In Semi-automatic and Automatic mode, there is a delay of 5.0+/-0.5 seconds between successive activation of hydraulics during the process of establishing contact and the first leveling process.**

There is also a time out indicator. Each operation has an allotted amount of time to complete a task. Should time run out before the task is complete, the right and left lights along with the level light will flash simultaneously to indicate one or more jack cylinders are at full extension and CANNOT level the coach.

**Semi-automatic Leveling:**

The semi-automatic leveling method allows the operator to control the timing of the leveling process. The level sensing unit will control the amount of lift necessary to level the coach. With the ignition off, turn on the leveling system power and wait for the self-diagnostic mode to finish. The leveling lights will stop the circular motion and indicate which end or side is low.

Press the Semi button on the control pad and wait for the air to stop releasing. This will take about 90 seconds and the air dump light will illuminate during this process. The system will lower the two jacks on the lowest side, or end of the motorhome, until seated on the pad. Once the jacks are seated a light will flash on the control panel to indicate which jack should be extended. Press this button until the light goes out.

The remaining jacks will then be seated as necessary. The system will use a flashing light to indicate the next button to press and continues until the motorhome is level. The Level light illuminates when the process is complete.

**To retract the levelers and return to ride height:**

Start the engine and allow it to run until at least 110 lbs. is indicated on the air pressure gauge before moving the slide room or the motorhome. It takes at least 110 lbs. of pressure to get the motorhome to ride height.

If the system was left in the Automatic mode, press the retract button. All jacks will fully retract. The "ALL UP" Light indicates when this occurs. The automatic retract only works if the system has not been shut off. If the system was OFF, press and hold the manual retract button until all jacks are up, as indicated by the "ALL UP" light.

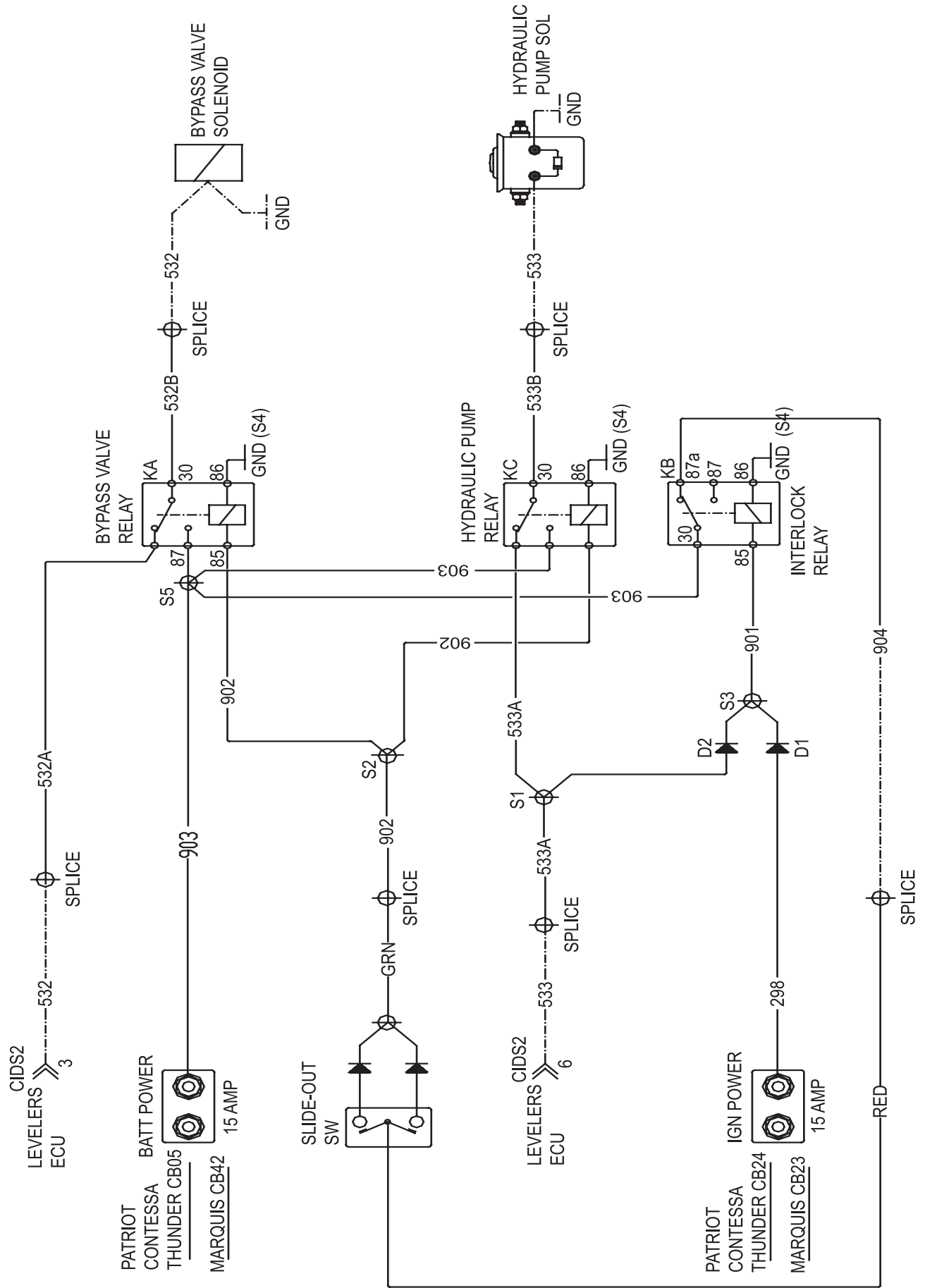
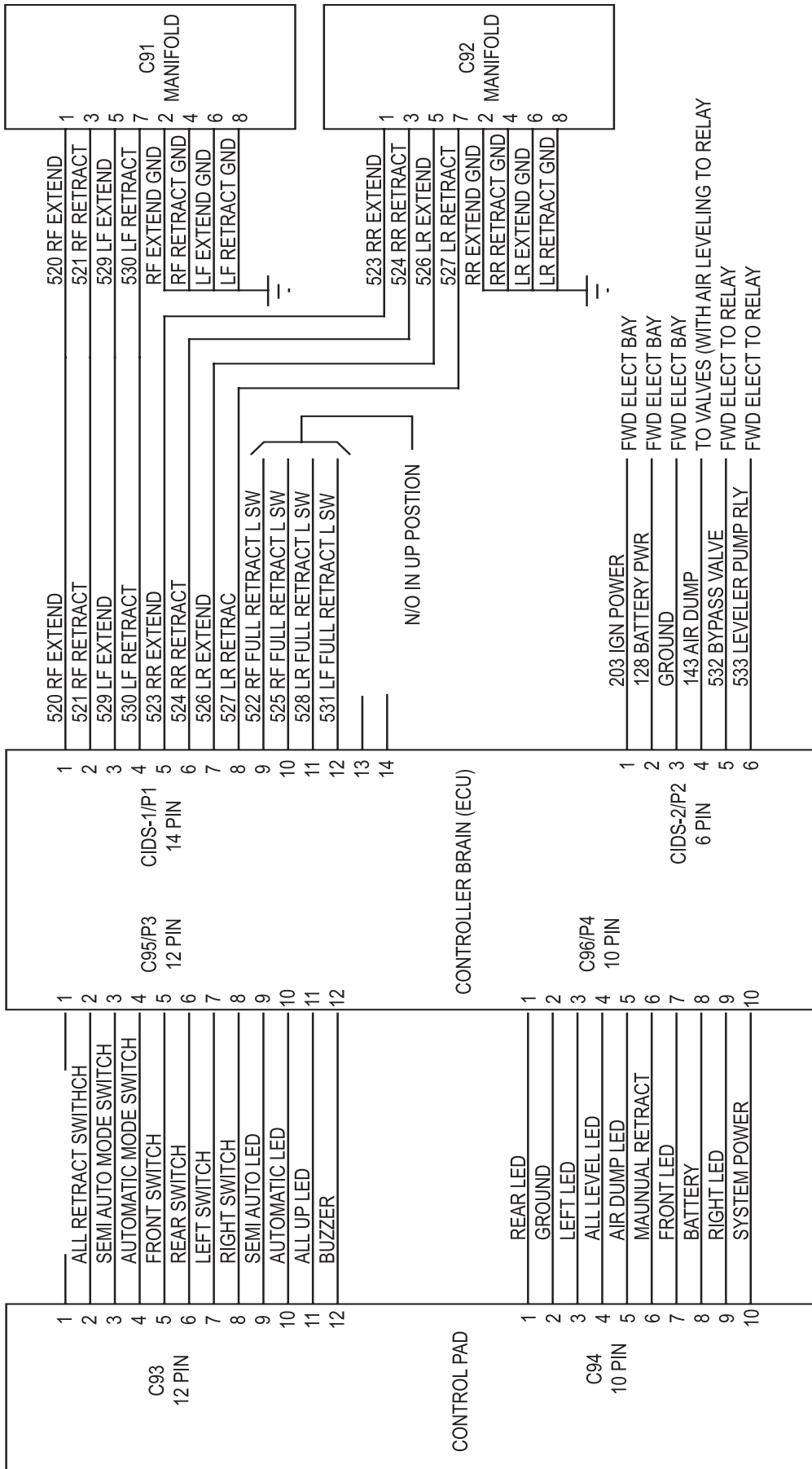


Figure 5

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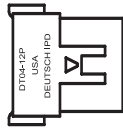
2505431 IDS LEVELER HARNESS, 2001 MARQUIS AM (40' TO 42' CHASSIS)  
 2505673 IDS LEVELER HARNESS, ALL 33' TO 36' CHASSIS  
 505620 LEVELERS/SLIDE-OUT INTERLOCK HARNESS

2505630 TOUCH PAD-ECU INTERFACE

# IDS LEVELER WIRING

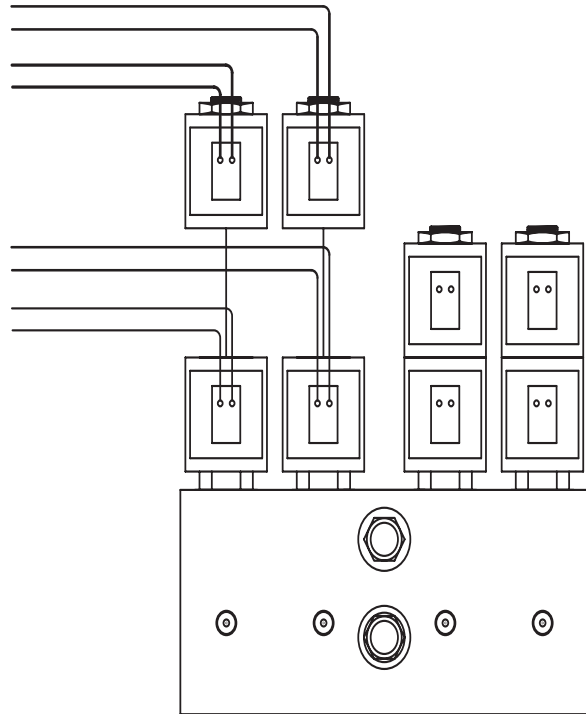
Figure 6

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- (5) 526 LR EXTEND
- (6) SOL GROUND
- (1) 523 RR EXTEND
- (2) SOL GROUND

- (7) 527 LR RETRACT
- (8) SOL GROUND
- (3) 524 RR RETRACT
- (4) SOL GROUND



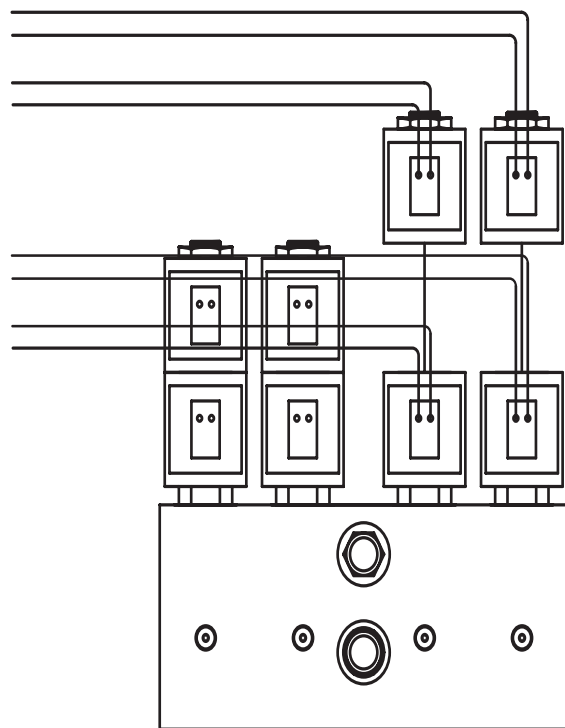
MANIFOLD PART # 0206317

J91



- (5) 529 LF EXTEND
- (6) SOL GROUND
- (1) 520 RF EXTEND
- (2) SOL GROUND

- (7) 530 LF RETRACT
- (8) SOL GROUND
- (3) 521 RF RETRACT
- (4) SOL GROUND

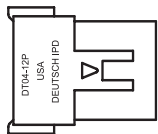


MANIFOLD PART # 0206317

Figure 7

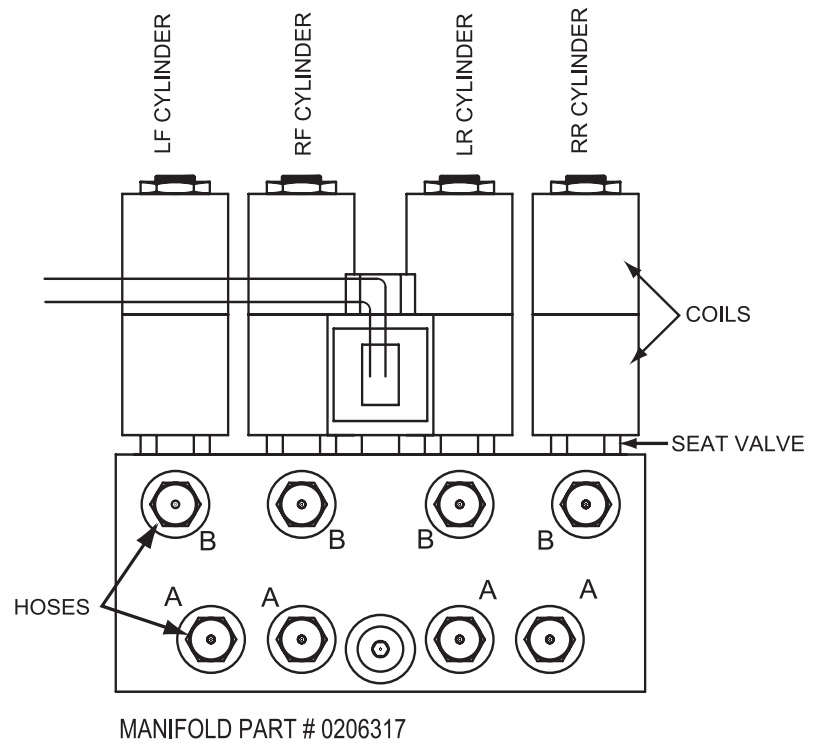


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(9) 532A BYPASS VALVE  
(10) BYPASS VALVE GROUND

SEE SHEET # 1 FOR PARTS DESCRIPTION



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RETRACT - ENERGIZE BOTTOM SOLENOID PRESSURIZES A PORT, B PORT RETURN  
EXTEND - ENERGIZE TOP SOLENOID PRESSURIZES B PORT, A PORT RETURN

SWAP HOSE AT "A" TO "B" AND "B" TO "A"  
SWAP COILS - UPPER TO BOTTOM AND BOTTOM TO UPPER

Figure 8