**J71 AUTOMATIC APPLY PARKING BRAKE**

The J71 system has an internal expanding parking brake. It consists of a park brake motor

switch (pressure maintenance switch), park brake switch relay, electric/hydraulic pump,

reservoir, high-pressure actuator, solenoid valve, light switch, park/neutral relay, park/neutral

switch, and manual push-pull switch.

To release the electric/auto park brake, move the shift lever on the steering column from the

park position and push in the park brake switch push-button. Note both conditions must

occur for the brake to release. Once these conditions exists, the circuit to the park/neutral

switch opens in turn closing the park/neutral relay allowing current to flow to the solenoid

valve. The solenoid valve closes and holds system pressure. The park/neutral relay also supplies

current to the park brake pump motor switch (pressure maintenance switch). The park brake

motor switch closes at pressures below 1200 psi turning on the pump to supply fluid pressure

to the actuator. The actuator has a large spring inside that applies the parking brake. Fluid

pressure overcomes spring tension and moves the piston in the actuator. This movement is

transferred to the parking brake through the parking brake cable. When the fluid pressure

reaches approximately 1600 psi the park brake motor switch opens and the pump shuts off.

The solenoid valve is holding pressure. The park brake motor switch opens and closes

depending on system pressure.

Putting the shift lever back to park, turning off the ignition, or pulling the push/pull switch

de-energizes the solenoid valve dumping fluid back into the reservoir. As the pressure decreases

the spring tension in the actuator moves the piston and applies the park brake through the

movement of the parking brake cable.

The “AUTO PARK” WARNING LAMP turns on when the system pressure is less than 450 psi

or when the electric/hydraulic pump is running due to the park brake motor switch being

closed. The lamp will flash at partial release pressures.

The PARKING BRAKE LIGHT SWITCH is located on the back of the actuator assembly. The

switch controls the groundside of the “AUTO PARK” lamp. The lamp switch closes when

system is below 450 PSI turning on the light when the ignitions on.

The PARK BRAKE PULL SWITCH is mounted on the instrument

panel. This is a manual activation switch for the park brake. This

switch is normally closed, pushed in. When pulled, this opens the

circuit to the park/neutral relay and in turn the solenoid valve

allowing fluid pressure to return to the reservoir applying the park

brake. The body manufacturer determines final location of this

switch.

The PARKING BRAKE PUMP ASSEMBLY is located in a component box on the passengers’

side of the vehicle on 1999 and 2000 model year chassis. The component box is on the inside

of the right frame rail behind the transmission. On 2001 through 2004 P Series models the

pump assembly was moved to the front driver’s side radiator core support. The pump

assembly consists mainly of an electric pump and fluid reservoir. The pump provides fluid

pressure for the system. A pressure relief valve in the pump limits system pressure to 1800 psi.

The PARK BRAKE MOTOR SWITCH (pressure

maintenance switch) mounts to the parking brake

pump assembly housing. It is a hydraulic pressure

switch that operates within a certain pressure range turning the pump motor on and off. The

park brake motor switch closes when system pressure is below 1200 psi and opens when system

pressure reaches approximately 1600 psi. The park brake motor switch applies B+ to the coil

side (control side) of the park brake motor relay.

The PARKING BRAKE SOLENOID VALVE switch is a solenoid and valve assembly located

in the component box in the underside of the vehicle on 1999 and 2000 model year chassis.

On 2001 through 2004 models on the pump assembly, including the solenoid valve was

moved to the front driver’s side radiator core support. The solenoid controls when fluid can

return to the pump reservoir. When the parking brake is released, the valve closes to hold

pressure in the system. When the parking brake is applied, the valve opens to allow fluid to

return to the pump reservoir.

The PARK BRAKE PUMP MOTOR RELAY is located in the component box underneath the

vehicle on the inside of the passenger frame rail in 1999 and 2000 model year chassis. On

2001 and 2002 models the pump assembly, including the relay, was moved to the front driver’s

side of the radiator core support. It receives B+ from the park brake motor switch and acts as

the automatic control circuit for the high voltage current required to run the pump motor.

When the park brake motor switch supplies B+ to the relay switch, the contacts close to

complete the feed circuit to the pump motor.

The ACTUATOR is located on the inside of the right frame

rail in the component box in 1999 and 2000, underneath the

vehicle. The location of the actuator did not change in 2001

through 2004 but the other components that were located in

the component box were relocated. The actuator is a springloaded

device that operates the parking brake cable. A large

spring inside the actuator applies the parking brake. When

hydraulic fluid pressure is applied against the actuator piston it

overcomes the spring tension and pushes the brake cable to

release the parking brake.

The PARK/NEUTRAL POSITION SWITCH is located on the

left side of the transmission near the middle. When the column

shifter is in the park position the switch is closed to supply

current to the park/neutral relay opening the circuit to the

park brake motor switch and the solenoid valve. When the

column shifter moves out of the park position the switch

opens. Once the circuit is open this allows the park/neutral

relay to close providing B+ to the park brake motor switch and

the solenoid valve.

The PARK/NEUTRAL POSITION SWITCH RELAY is located

above the engine, mounted to the right hand side of the

driver’s island on 1999 and 2000 chassis; refer to the service

manual for location on 2001 and newer chassis. It is a normally

closed switch that is open when the park/neutral position

switch is in the park position supplying B+ current to the relay. When the column shifter

moves out of the park position the park/neutral position switch opens. Once the circuit is

open this allows the park/neutral relay to close routing B+ current to the park brake motor

switch and the solenoid valve.