



**OPERATORS MANUAL**  
for  
**SEMI-AUTOMATIC RV SYSTEM**

82-L0020-00 Rev. 0

DISCONTINUED

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## OPERATION AND MAINTENANCE

- The Power Gear leveling system on your coach is designed and built to give you years of trouble free leveling and stabilizing operation. The Power Gear system reflects the latest state of the art technology in both hydraulic and electric components. **Please read and study this manual before you operate the leveling system.**

**SYSTEM DESCRIPTION** - The Power Gear semi-automatic electro-hydraulic leveling system consists of the following major components:

(A) Power Gear supplies spring return jacks rated at a lifting capacity appropriate for your coach. Each jack has a large 10" diameter ( 78.3 square inch ) shoe for maximum surface area on soft surfaces.

(B) Each jack is powered from a central 12VDC motor/pump assembly which also includes the hydraulic oil reservoir tank, control valve manifold, and solenoid valves.

(C) The system is controlled by the solid state touch pad located by the driver and a control box mounted in a central location in the coach.

### WARNING

**DO NOT USE LEVELING JACKS (OR AIR SUSPENSION) TO SUPPORT VEHICLE WHILE UNDER COACH OR CHANGING TIRES. THE HYDRAULIC LEVELING SYSTEM IS DESIGNED AS A LEVELING SYSTEM ONLY. DO NOT USE AS A JACK OR IN CONJUNCTION WITH A JACK. IT IS HIGHLY RECOMMENDED THAT, SHOULD A TIRE CHANGE BE REQUIRED, THAT IT BE PERFORMED BY A KNOWLEDGEABLE, TRAINED PROFESSIONAL. ATTEMPTS TO CHANGE TIRES WHILE SUPPORTING THE VEHICLE WITH THE HYDRAULIC SYSTEM COULD RESULT IN DAMAGE TO THE MOTOR HOME AND RISK CAUSING SERIOUS INJURY OR DEATH.**

### OPERATION NOTES

**CAUTION - CHECK THAT POTENTIAL JACK CONTACT LOCATIONS ARE CLEAR OF LARGE OBSTRUCTIONS OR DEPRESSIONS BEFORE OPERATION.**

**CAUTION - KEEP PEOPLE CLEAR OF COACH WHILE LEVELING SYSTEM IS IN USE.**

**CAUTION - NEVER EXPOSE HANDS OR OTHER PARTS OF THE BODY NEAR HYDRAULIC LEAKS. HIGH PRESSURE OIL LEAKS MAY CUT AND PENETRATE THE SKIN CAUSING SERIOUS INJURY.**

**CAUTION - PARK COACH ON REASONABLY SOLID SURFACE OR JACKS MAY SINK INTO GROUND. ON EXTREMELY SOFT SURFACES USE LOAD DISTRIBUTION PADS UNDER EACH JACK.**

**CAUTION - NEVER LIFT THE WHEELS OFF THE GROUND TO LEVEL THE COACH. DOING SO MAY CREATE AN UNSTABLE CONDITION.**

## **BEFORE YOU OPERATE THE SYSTEM**

The leveling system should only be operated under the following conditions:

- (A) The coach is parked on a reasonably level surface.
- (B) The coach "PARKING BRAKE" is engaged.
- (C) The coach transmission is engaged in "Neutral or Park".
- (D) The coach engine is running.

## **EXCESS SLOPE**

When the coach is parked on an excessive slope the leveling requirements may exceed the jack lift stroke capability. When the control panel "EXCESS SLOPE" light flashes, the coach is parked on an excessive slope, and the coach should be moved to a more level surface before the leveling system is deployed.

## **SELECTING A SITE**

The "EXCESS SLOPE" light and the electronic level lights can assist in choosing a suitable site for your leveling system. By pushing the "ON/OFF" pad while the engine is running, the level sensor will monitor the ground conditions as you drive. By watching the "EXCESS SLOPE" light, you can determine whether or not the jacks are capable of leveling at that particular site.

## **LEVELING PROCEDURES**

STEP 1 - Push "ON/OFF" pad on control panel. The system is now operational and the electronic level lights will be active.

STEP 2 - Check to see that the "EXCESS SLOPE" indicator is not flashing. If the indicator is flashing, the coach should be moved to a more level location so leveling can be accomplished efficiently and safely.

STEP 3 - Push and hold the "ALL JACKS DOWN" pad, until all the jacks contact the ground.

**NOTE: The "JACKS DOWN" light only indicates that one or more of the jacks are not fully retracted, and should not be used as a guide in this step.**

STEP 4 - Observe the "FRONT" and "REAR" electronic level lights ( arrows ). Push and hold the indicated pad until the light goes out.

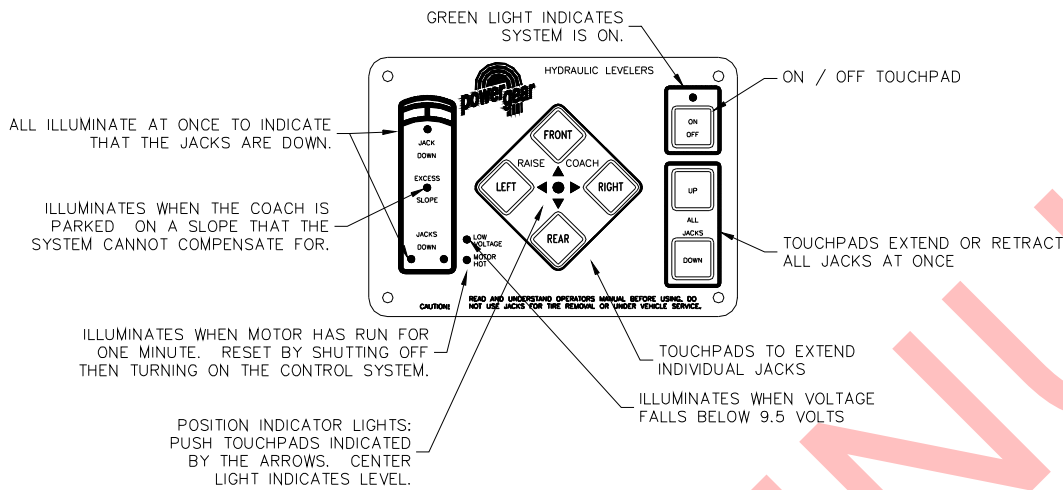
STEP 5 - Observe the "LEFT" and "RIGHT" electronic level lights ( arrows ). Push and hold the indicated pad until the light goes out.

STEP 6 - The green center light should now be lit. Repeat steps 4 and 5 if this is not the case.

STEP 7 - If further adjustments are necessary, simply push the appropriate pad to override the system and level the coach to your liking.

STEP 8 - Visually inspect jacks to ensure all pads are touching ground.

## CONTROL TOUCH PAD #500148



### **JACK RETRACT PROCEDURES**

STEP 1 - Energize the system by pushing "ON/OFF" pad on control panel. The "ON/OFF" and "JACKS DOWN" lights will be lit.

STEP 2 - Push the "UP" retract pad then release. All the jacks will start to retract and return to the full retract position automatically. When all jacks return to full retract position the "JACKS DOWN" light will go out.

**NOTE: If you wish to stop the jacks from retracting, turn the system off and back on again by pushing the "ON/OFF" pad twice. You can then re-level the coach by following "leveling procedures" steps 1 - 5 again.**

STEP 3 - When the "JACKS DOWN" light goes out push the "ON/OFF" pad on the control panel to de-energize the system. After a brief visual inspection around the coach to verify the jacks are fully retracted, you may proceed to travel.

### **AUTOMATIC SAFETY SHUTOFF FEATURE**

If the touch panel is left on and inactive for four minutes it will shut off automatically. To reset the system the coach ignition must be turned off, then back on and the "ON/OFF" pad must again be pushed.

### **DRIVE AWAY PROTECTION SYSTEM**

If the ignition is in the "RUN" position, jacks are down, and the operator takes the transmission out of neutral or park, or releases the parking brake, the "JACKS DOWN" indicator will light and the alarm beeper will activate. The system will then automatically retract the jacks until the jacks are fully retracted or the operator resets the parking brake or shifts the transmission back into park or neutral.

### **RECOMMENDED HYDRAULIC FLUIDS FOR YOUR POWER GEAR LEVELING SYSTEM**

In most applications, Type A automatic transmission fluid (ATF, Dexron III, etc.) will work satisfactorily. If operating in cold temperatures (less than -10° F) slow operation will occur.

If slow operation in cold weather affects you, we recommend using a fluid specially-formulated for cold temperatures. We suggest the following fluids for cold temperature (Mobil DTE 11M, Texaco Rando HDZ-15HVI, Kendall Hyden Glacial Blu, or any Mil. Spec. H5606).

Please consult factory before using any other fluids.

### **PREVENTATIVE MAINTENANCE PROCEDURES**

1. Change fluid every 36 months.
  - Fill with jacks **retracted**.
  - Fill to port rim.
2. Check fluid level every month.
3. Inspect and clean all electrical connections with WD-40 or equivalent every 12 months.
4. Remove dirt and road debris from jack shoe as needed.
5. If jacks are down for extended periods, spray exposed chrome rods with a silicone lubricant every seven days for protection.

**REQUIRED INFORMATION FOR ORDERING PARTS FROM YOUR LOCAL DEALER**

When ordering parts, please provide the following information:

- 1) Your Name
- 2) Company Name
- 3) Phone Number
- 4) Shipping Address
- 5) Billing Address
- 6) Purchase Order Number

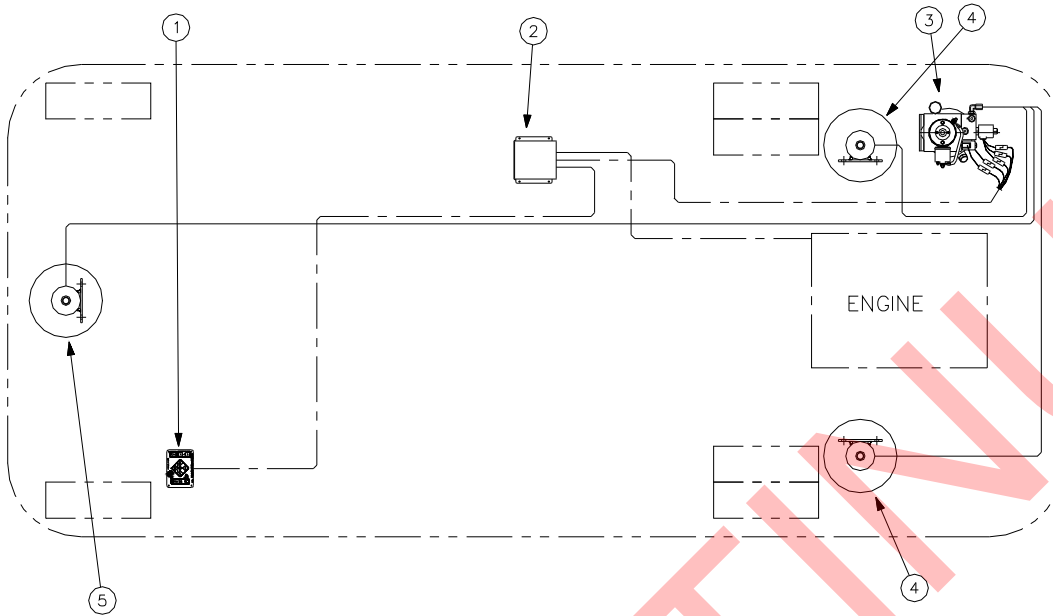
For each part needed

- 1) Coach
  - V.I.N I.D.#
  - Make
  - Model
  - Wheel Base
  - Mileage
- 2) Part Number
- 3) Description
- 4) Quantity

**ALL REPAIRS MUST BE MADE BY AN AUTHORIZED SERVICE CENTER. SYSTEMS THAT HAVE BEEN TAMPERED WITH, MODIFIED, ADJUSTED OR REPAIRED BY ANY PARTY OTHER THAN AN AUTHORIZED SERVICE CENTER WILL VOID ALL WARRANTIES.**

# GENERAL ARRANGEMENT

# 3 JACK SYSTEM

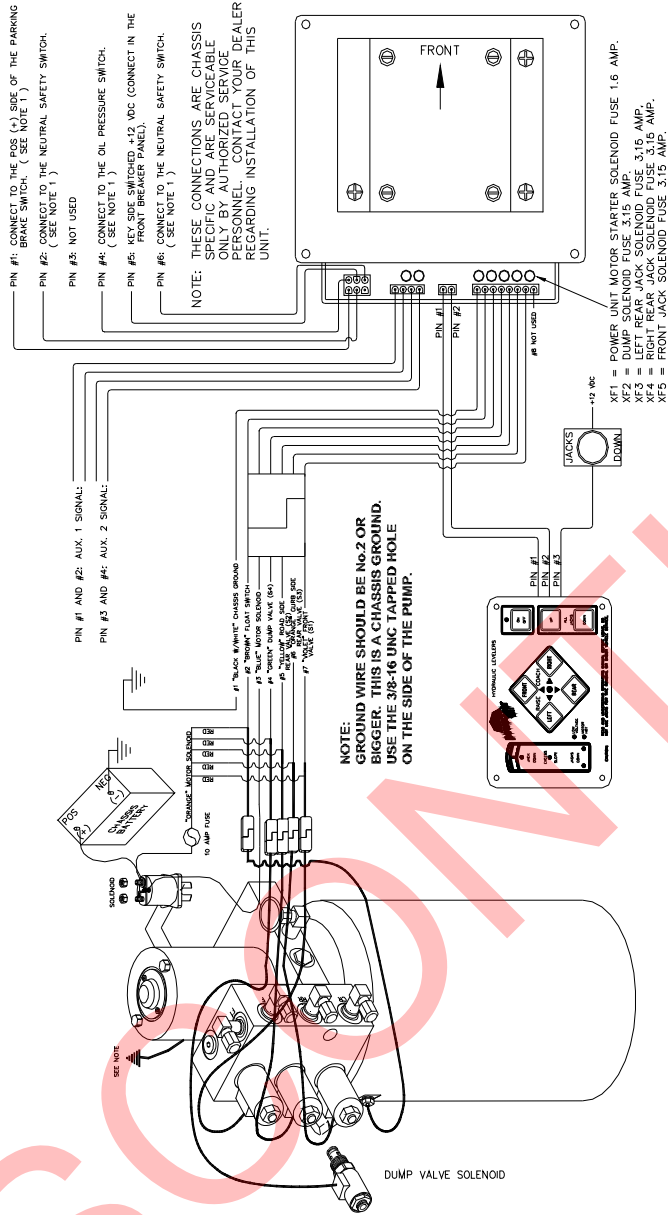


ITEM	PART NO	DESCRIPTION	QTY
1	500148	TOUCHPAD CONTROL - S.AUTO SYSTEM	1
2	500149	CONTROL CENTER - SEMI-AUTO. SYSTEM	1
3	500453	PUMP / MOTOR ASSEMBLY	1
4	NOTE 1	REAR JACKS	2
5	NOTE 1	FRONT JACK	1

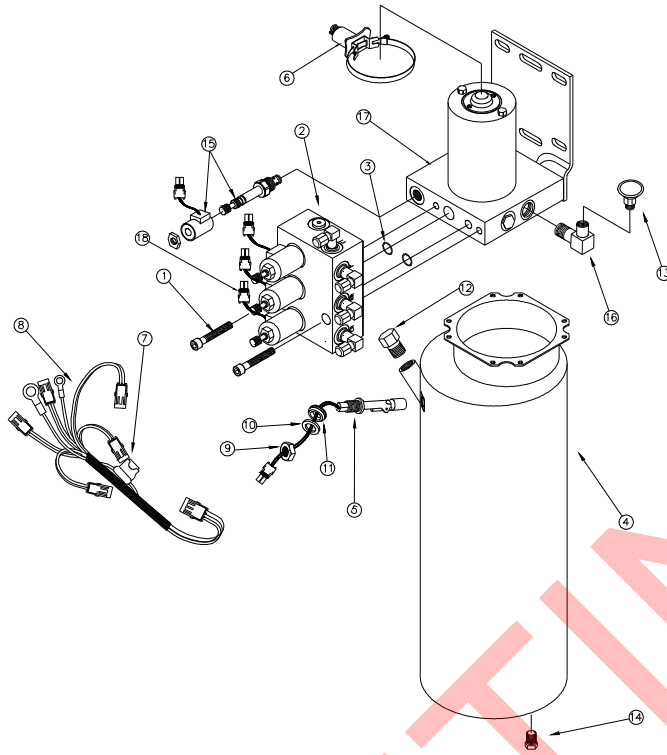
NOTE 1: THE PARTICULAR JACKS USED VARY BY COACH MODEL. PLEASE INDICATE THE MODEL AND YEAR OF YOUR COACH TO IDENTIFY WHICH JACKS ARE USED.



# WIRING DIAGRAM



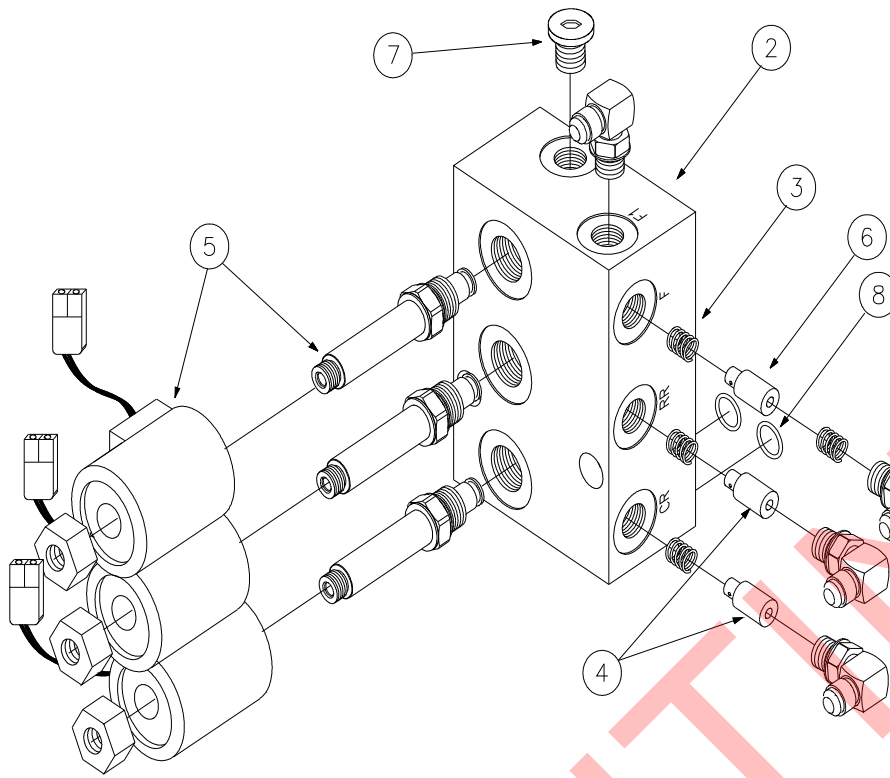
# PUMP DIAGRAM



ITEM	P/N	DESCRIPTION	QTY EACH	APPLICATION
1-18	500453	COMPLETE POWER UNIT	1	1998 - PRESENT
1, 2, 3	500454	VALVE BLOCK ASSEMBLY	1	SEE PAGE 9
4, 12, 14	500189	TANK, FILL PLUG, DRAIN PLUG	1	1998 - PRESENT
12	07-1238	FILL PLUG	1	1998 - PRESENT
14	07-1239	DRAIN PLUG	1	1998 - PRESENT
5, 9, 10, 11	500199	FLOAT SWITCH ASSEMBLY	1	1998 - PRESENT
7, 8	500438	PUMP HARNESS WITH FUSE	1	1998 - PRESENT
7	14-1055	FUSE 10 AMP	1	1998 - PRESENT
15	500440	DUMP VALVE SOLENOID	1	SEE PAGE 9
6	500310	MOTOR SOLENOID	1	1998 - PRESENT
13, 16	500511	AIR BREATHER	1	1998 - PRESENT
17	13-1088	MOTOR/PUMP ASSEMBLY	1	1998 - PRESENT
18	500440	LEG VALVE AND SOLENOID	1	SEE PAGE 9

ORDER BY MODEL AND YEAR

## JACK (LEG) VALVE ASSEMBLY 1998 - PRESENT



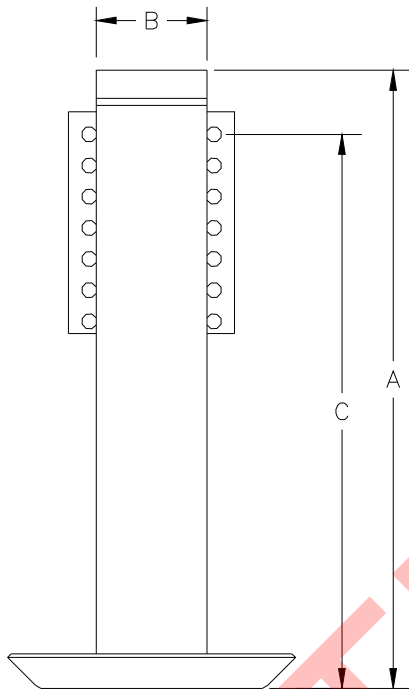
**3 JACK WITH MANUAL OVERRIDE**

ITEM	P/N	DESCRIPTION	QTY EACH	APPLICATION
1, 3, 4	500512	REAR HOSE CONNECTOR KIT	1	1998 - PRESENT
1, 3, 6	500513*	FRONT HOSE CONNECTOR KIT	1	1998 - PRESENT
5	500439	LEG VALVE SOLENOID	1	1998 - PRESENT
7		PLUG		
8	500523	O-RING KIT	2	1998 - PRESENT
1-8	500454	VALVE BLOCK ASSEMBLY	1	1998 - PRESENT

\* - "F" PORT HAS TWO SPRINGS

**ORDER BY MODEL AND YEAR**

## REPLACEMENT JACKS (LEGS)

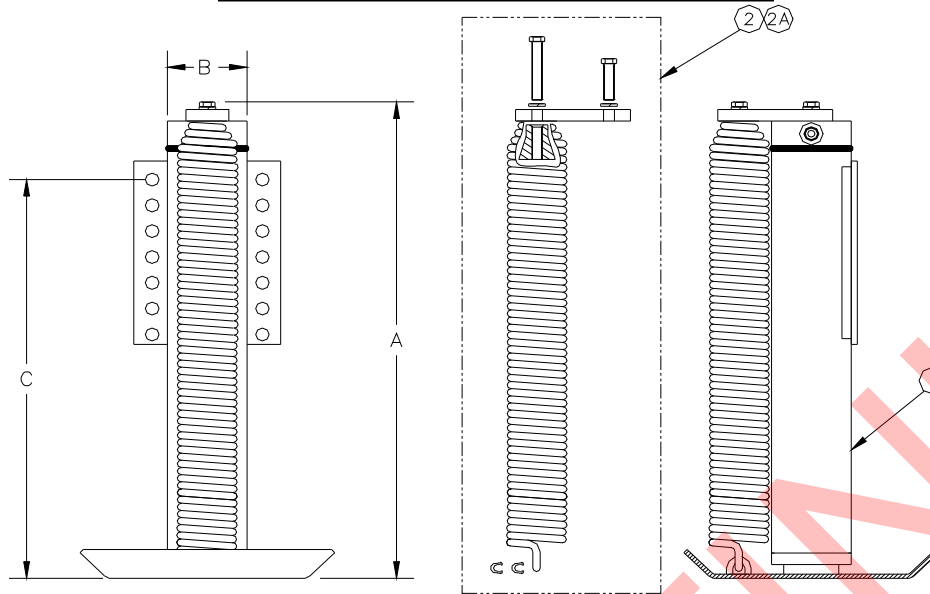


ITEM	P/N	NOTE	DESCRIPTION	QTY EACH	APPLICATION
1	500145	N	16,000 LBS. JACK (LEG) ASSY. 16" STROKE A=22-5/16" B=4" C=20"	1	1994 - PRESENT MODEL YEAR
1	500385	N	12,000 LBS. JACK (LEG) ASSY. 16" STROKE A=22-5/16" B=3-5/8" C=20-1/8"	1	1999 - PRESENT MODEL YEAR
1	500386	N	24,000 LBS. JACK (LEG) ASSY. 16" STROKE A=22-3/8" B=4-1/2" C=20-3/32"	1	1999 - PRESENT MODEL YEAR

**N - ORDER BY MODEL, YEAR, AND WHEEL BASE OR BY DIMENSIONS A, B, C  
NO SERVICEABLE PARTS, ORDER COMPLETE JACK (LEG)**

X - NOT SHOWN (ORDER BY LENGTH)

### REPLACEMENT JACKS (LEGS)



ITEM	P/N	NOTE	DESCRIPTION	QTY EACH	APPLICATION
1	500146	N	9,000 LBS. JACK (LEG) ASSY. 15" STROKE - A=20-3/4" B=3-1/4" C=17-3/8"	1	1994 - PRESENT
			MODEL YEAR		
1	500235	NN	9,000 LBS. JACK (LEG) ASSY. 12" STROKE - A=18-15/16" B=3-1/4" C=17-3/8"	1	1994 - PRESENT
			MODEL YEAR		
1	500272	N	9,000 LBS. JACK (LEG) ASSY. 15" STROKE - A=20-3/4" B=3-1/4" C=17-13/16" (SHOE = 10' DIA. FLAT)	1	1996 BEAVER PATRIOT ONLY
1	500384	N	6,000 LBS. JACK (LEG) ASSY. 14" STROKE - A=21-5/16" B=2-7/8" C=17-15/16"	1	1999 - PRESENT
			MODEL YEAR		
1	500482	NN	6,000 LBS. JACK (LEG) ASSY. 12" STROKE - A=18" B=2-5/8" C=15-3/8"	1	1999 - PRESENT
			MODEL YEAR		
2	500094		SPRING KIT FOR 15" STROKE JACK (LEG) ASSY.	1	1994 - PRESENT
			MODEL YEAR		
2A	500252		SPRING KIT FOR 12" STROKE JACK (LEG) ASSY.	1	1994 - PRESENT
			MODEL YEAR		
08-XXXX	X		HOSE ASSEMBLY	1	SEE PAGE L32

N - ORDER BY MODEL, YEAR AND WHEEL BASE OR BY DIMENSIONS A, B, C  
NO SERVICEABLE PARTS, ORDER COMPLETE JACK (LEG)

N - INCLUDES ITEM 2 OR 2A

NN - INCLUDES ITEM 2 OR 2A

X - NOT SHOWN (ORDER BY LENGTH)

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**SYSTEM WILL NOT TURN ON, INDICATOR LIGHT DOES NOT LIGHT**

<b>PROBABLE CAUSE</b>	<b>CORRECTIVE ACTION</b>
1 COACH IGNITION NOT IN RUN POSITION	TURN IGNITION TO RUN POSITION
2 TRANSMISSION NOT IN PARK OR NEUTRAL	PLACE TRANSMISSION IN PARK OR NEUTRAL
3 PARKING BRAKE NOT SET	SET PARKING BRAKE
4 CONTROL HAS BEEN LEFT ON FOR MORE THAN FOUR MINUTES, AUTO SHUT OFF	PUSH ON/OFF BUTTON TWICE
5 OTHER	CONTACT YOUR LOCAL AUTHORIZED SERVICE CENTER

**JACKS WILL NOT EXTEND, PUMP IS NOT RUNNING**

<b>PROBABLE CAUSE</b>	<b>CORRECTIVE ACTION</b>
1 FUSE ON CONTROL PANEL BLOWN	REPLACE FUSE XF1, SEE PAGE 7
2 OTHER	CONTACT YOUR LOCAL AUTHORIZED SERVICE CENTER

**JACKS WILL NOT EXTEND, PUMP IS RUNNING**

<b>PROBABLE CAUSE</b>	<b>CORRECTIVE ACTION</b>
1 FLUID LEVEL LOW	FILL TANK WITH AUTOMATIC TRANSMISSION FLUID SEE PAGE 4
2 PUMP HARNESS FUSE BLOWN	REPLACE WITH 10 AMP MINI FUSE SEE PAGE 8
3 OTHER	CONTACT YOUR LOCAL AUTHORIZED SERVICE CENTER

**ALWAYS CHECK FOR GOOD WIRE CONNECTIONS**

**ONLY FRONT JACKS WILL NOT EXTEND, PUMP IS RUNNING**

**PROBABLE CAUSE**

**CORRECTIVE ACTION**

- |   |                             |  |
|---|-----------------------------|--|
| 1 | FUSE ON CONTROL PANEL BLOWN | REPLACE FUSE XF5<br>SEE PAGE 7               |
| 2 | OTHER                       | CONTACT YOUR LOCAL AUTHORIZED SERVICE CENTER |

**ANY ONE OF THE REAR JACKS WILL NOT EXTEND, PUMP IS RUNNING**

**PROBABLE CAUSE**

**CORRECTIVE ACTION**

- |   |                             |  |
|---|-----------------------------|--|
| 1 | FUSE ON CONTROL PANEL BLOWN | REPLACE FUSE XF3 FOR ROAD SIDE JACK<br>REPLACE FUSE XF4 FOR CURB SIDE JACK<br>SEE PAGE 7 |
| 2 | OTHER                       | CONTACT YOUR LOCAL AUTHORIZED SERVICE CENTER   |

**ALL JACKS WILL NOT RETRACT**

**PROBABLE CAUSE**

**CORRECTIVE ACTION**

- |   |                             |   |
|---|-----------------------------|---|
| 1 | FUSE ON CONTROL PANEL BLOWN | REPLACE FUSE XF2<br>SEE PAGE 7                |
| 2 | PUMP HARNESS FUSE BLOWN     | REPLACE WITH 10 AMP MINI FUSE -<br>SEE PAGE 8 |
| 3 | OTHER                       | CONTACT YOUR LOCAL AUTHORIZED SERVICE CENTER  |

**ANY ONE OR TWO JACKS WILL NOT RETRACT**

**PROBABLE CAUSE**

**CORRECTIVE ACTION**

- |   |                             |   |
|---|-----------------------------|---|
| 1 | BROKEN SPRING (S)           | REPLACE SPRING  |
| 2 | FUSE ON CONTROL PANEL BLOWN | REPLACE FUSE XF3 FOR ROAD SIDE JACK<br>REPLACE FUSE XF4 FOR CURB SIDE JACK<br>REPLACE FUSE XF5 FOR FRONT JACK (S)<br>SEE PAGE 7 |
| 3 | OTHER                       | CONTACT YOUR LOCAL AUTHORIZED SERVICE CENTER  |

**ALWAYS CHECK FOR GOOD WIRE CONNECTIONS**



**SETTLING OF JACKS, WITH POSSIBLE POPPING SOUND**

**PROBABLE CAUSE**

**CORRECTIVE ACTION**

- |                                  |   |
|----------------------------------|---|
| 1 AIR IN SYSTEM                  | EXTEND ALL JACKS TO FULL EXTENSION, THEN<br>RETRACT FULLY, REPEAT 4 CYCLES, CHECK FLUID LEVEL |
| 2 OLD, DIRTY FLUID               | REPLACE FLUID, COMPLETE STEP 1  |
| 3 JACK LEGS CREATE POPPING SOUND | EXTEND JACK LEGS, CLEAN ROD<br>LUBRICATE WITH SILICONE SPRAY                                  |

**NOTE:**

**CHANGES IN TEMPERATURE CAUSES EXPANDING AND CONTRACTING OF FLUID, WHICH CAN MAGNIFY POPPING SOUND, TO HELP MINIMIZE THIS PROBLEM COMPLETE STEPS 1, 2 AND 3 ACCORDING TO OWNERS MANUAL**

**PANEL JACKS DOWN LIGHT WILL NOT GO ON WITH JACKS EXTENDED**

**PROBABLE CAUSE**

**CORRECTIVE ACTION**

- |                        |   |
|------------------------|---|
| 1 FLOAT SWITCH SHORTED | CHECK FOR +12 VDC AT FLOAT SWITCH<br>REPLACE 10 AMP MINI FUSE ON PUMP HARNESS |
| 2 OTHER                | CONTACT YOUR LOCAL AUTHORIZED SERVICE CENTER                                  |

**PANEL JACKS DOWN LIGHT WILL NOT GO OFF WITH JACKS RETRACTED**

**PROBABLE CAUSE**

**CORRECTIVE ACTION**

- |                   |   |
|-------------------|---|
| 1 LOW FLUID LEVEL | FILL TANK WITH AUTOMATIC TRANSMISSION FLUID<br>SEE PAGE 4 |
| 2 OTHER           | CONTACT YOUR LOCAL AUTHORIZED SERVICE CENTER              |

**PANEL JACKS DOWN LIGHT AND ALARM WILL GO ON WHILE DRIVING, JACKS RETRACTED**

**PROBABLE CAUSE**

**CORRECTIVE ACTION**

- |                   |   |
|-------------------|---|
| 1 LOW FLUID LEVEL | FILL TANK WITH AUTOMATIC TRANSMISSION FLUID<br>SEE PAGE 4 |
| 2 OTHER           | CONTACT YOUR LOCAL AUTHORIZED SERVICE CENTER              |

**NOTE:**

**" JACKS DOWN " LIGHT ON DASH, PRE 1999 MODELS, AND CONTROL ALARM ONLY COME ON DURING EMERGENCY RETRACT MODE**

**This document has been modified from the original Power Gear Rev. 0 release. All former references to the Power Gear warranty and contact information were removed.**

**For all concerns or questions, please contact  
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