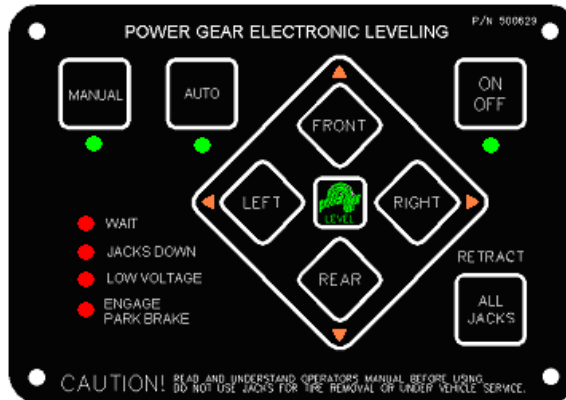
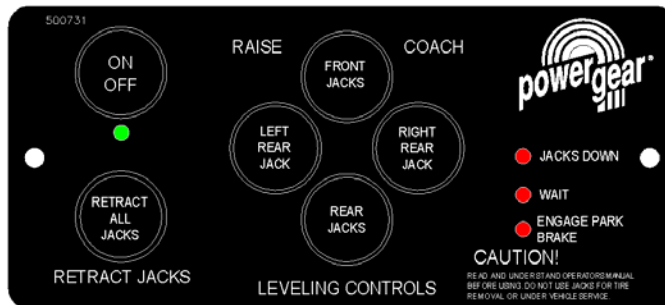


500675 & 140-1231 Semi-auto touchpad



500629 & 140-1226 Automatic touchpad



500731 Manual touchpad

Parts and service manual for hydraulic leveling systems with touch pad #'s 500675 & 140-1231, 500629 & 140-1226, and 500731 and round jack footpads

Power Gear
1217 E. 7th St.
Mishawaka, IN 46544
www.powergearus.com

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BEFORE YOU SERVICE THE COACH

WARNING

- **DO NOT USE THE POWER GEAR HYDRAULIC LEVELING SYSTEM (OR AIR SUSPENSION) TO SUPPORT VEHICLE WHILE UNDER COACH OR CHANGING TIRES. THE HYDRAULIC LEVELING SYSTEM IS DESIGNED AS A 'LEVELING' SYSTEM ONLY. TIRE REPAIRS SHOULD BE PERFORMED BY A TRAINED PROFESSIONAL. ATTEMPTS TO CHANGE TIRES WHILE SUPPORTING THE VEHICLE WITH THE HYDRAULIC SYSTEM COULD RESULT IN DAMAGE TO THE MOTOR HOME AND/OR CAUSE SERIOUS INJURY OR EVEN DEATH.**
- **KEEP PEOPLE CLEAR OF COACH WHILE LEVELING SYSTEM IS IN USE.**
- **NEVER LIFT THE WHEELS OFF THE GROUND TO LEVEL THE COACH. DOING SO MAY CREATE AN UNSTABLE CONDITION.**
- **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 THE COACH ON A REASONABLY SOLID SURFACE OR THE JACKS MAY SINK INTO GROUND. ON SOFT SURFACES, USE LOAD DISTRIBUTION PADS UNDER EACH JACK.

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

BEFORE YOU OPERATE THE SYSTEM:

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

1. The coach is parked on a reasonably level surface.
2. The coach "PARKING BRAKE" is engaged.
3. The coach transmission should be in the neutral or park position.
4. The ignition is in the run position, or engine is running.

SYSTEM DESCRIPTION

Please read and study the operating manual before you operate the leveling system.

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

- (A) Spring return jacks rated at a lifting capacity appropriate for your coach. Each jack has a large 10" diameter (78.5 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 control system located in the coach controls the system. There are 3 different control systems possible:
 - A Manual control with bubble level (touchpad # 500731).
 - A Semi-automatic control, with internal leveling sensor (touchpad # 500675 or 140-1231).
 - A fully automatic control, with internal leveling sensor (touchpad # 500629 or 140-1226)

RECOMMENDED HYDRAULIC FLUIDS

The fluids listed here are acceptable to use in your pump assembly. Contact coach manufacturer or selling dealer for information about what specific fluid was installed in your system.

Please consult factory before using any other fluids.

In most applications,

- Type A automatic transmission fluid (ATF, Dexron III, etc.,) will work satisfactorily.
- Mercon V is also recommended as an alternative fluid for Power Gear leveling systems operating in environments with large temperature swings

Operating in cold temperatures (less than -10° F) may cause the jacks to extend and retract slowly. For cold weather operation, fluid specially-formulated for low temperatures may be desirable,

- Mobil DTE 11M, Texaco Rando HDZ-15HVI, Kendall Hyden Glacial Blu, or any Mil. Spec. H5606 hydraulic fluids are recommended for cold weather operation.

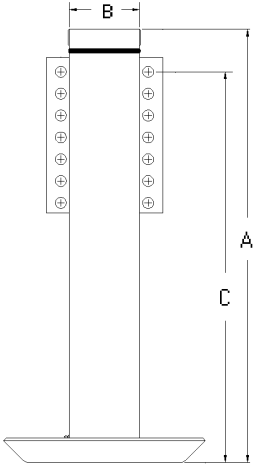
PREVENTATIVE MAINTENANCE PROCEDURES

WARNING:

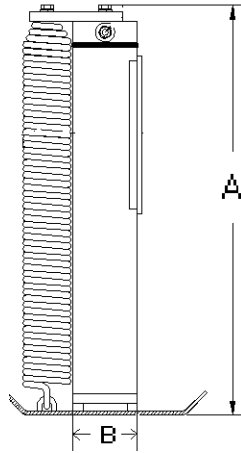
Your coach should be supported at both front and rear axles with jack stands before working underneath, failure to do so may result in personal injury or death.

1. **Check the fluid level every month.** Fill the reservoir with the jacks in the fully **retracted** position. On vertical pump assemblies, the fluid should be within 1/4 inch of the fill port lip and checked only with all jacks retracted. On horizontal pump assemblies, the fluid level should be up to the weep hole on the side of the reservoir tank and checked only with all jacks retracted.
2. **Change fluid every 24 months.**
3. **Inspect and clean all hydraulic pump electrical connections every 12 months.**
4. **Remove dirt and road debris from jacks as needed.**
5. If jacks are down for extended periods, it is recommended to **spray exposed chrome rods with a silicone lubricant** every seven days for protection. If your coach is located in a salty environment (within 60 miles of coastal areas), it is recommended to spray the rods every 2 to 3 days.
6. Jacks equipped with grease fittings at the **bottom of the cylinder should be greased with a light weight lithium grease** using a hand pump style grease gun only. 2 or 3 pumps should be sufficient for 20-30 uses.

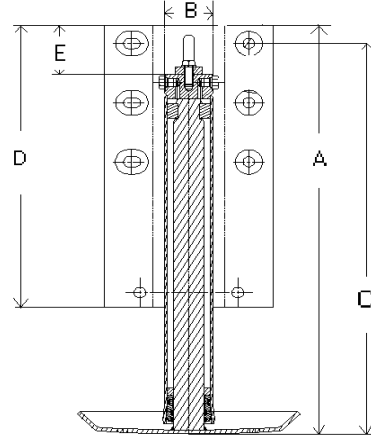
REPLACEMENT JACKS (LEGS)



Internal Spring



External Spring



Power Level Jack

Measurements in inches

Internal Spring Jacks and Rebuild Kits

Leveling jack #	Rebuild kit #	Dimensions
500385	kit # 800137S	A=22.25 B=3.625
500070	kit # 800131S	A=22.25 B=4.0
500145	kit # 800131S	A=22.25 B=4.0
500386	kit # 800130S	A=22.375 B=4.5
500620	kit # 800130S	A=22.375 B=4.5

500620 has a mounting pad width of 7.25

External Spring jacks

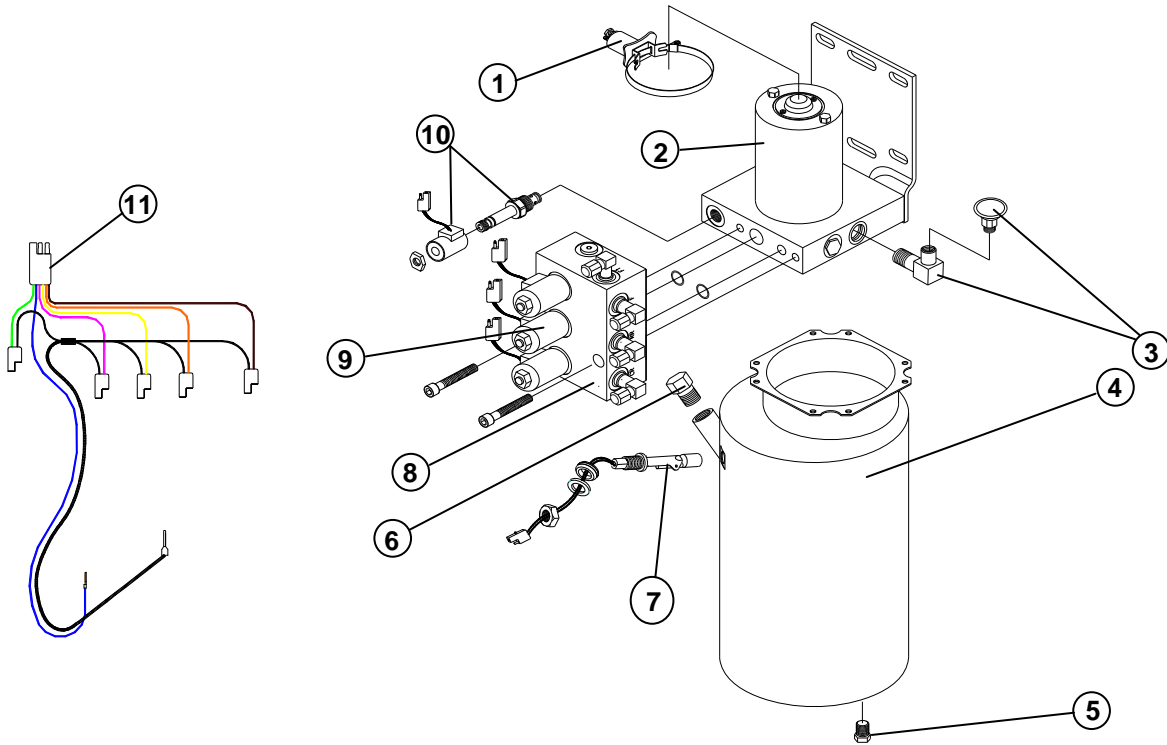
Jack #	Spring #	Rebuild kit #	Dimensions
500082	500094	kit # 800129S	A=20.75 B=3.25
500146	500094	kit # 800129S	A=20.75 B=3.25
500272	500094	kit # 800129S	A=20.75 B=3.25
500235	500252	kit # 800129S	A=18.3 B=3.25
500498	500252	kit # 800129S	A=18 B=3.25
500384	500590	kit # 800132S	A=21.25 B=2.625 (800132 kits for 2001 and later only)
500598	500590	kit # 800132S	A=21.25 B=2.625 (800132 kits for 2001 and later only)
500482	500591	kit # 800132S	A=18 B=2.625 (800132 kits for 2001 and later only)
500600	500591	kit # 800132S	A=18 B=2.625 (800132 kits for 2001 and later only)

Power Level Jacks

Jack #	Spring #	Rebuild kit #	Dimensions
500730	500591	kit # 800133S	A=19.15 B=2.25 C=16 D= 8.0
500832	500591	kit # 800133S	A=23.25 B=2.25 C=22.3 D= 8.0
500842	500591	kit # 800133S	A=20.4 B=2.25 C=19.5 D=14.3 E=2.5
500876	500591	kit # 800133S	A=18.94 B=2.25 C=17.0 D=12.3 E= .5
500933	500591	kit # 800133S	A=19.75 B=2.25 C=17.75 D=12.3 E=1.5
500759	500094	kit # 800138S	A=20.85 B=2.6 C=17.6 D= 8
500833	500094	kit # 800138S	A=23.15 B=2.6 C=22.2 D=14.3 E=3.0
500843	500094	kit # 800138S	A=21.15 B=2.6 C=20.2 D=14.3 E=1.0
500932	500094	kit # 800138S	A=25.3 B=2.6 C=24.4 D=14.3 E=5.0
500800	500094	kit # 800199S	A=19.2 B=3.25 C=16.75 D= 8.0

VERTICAL PUMP ASSEMBLIES

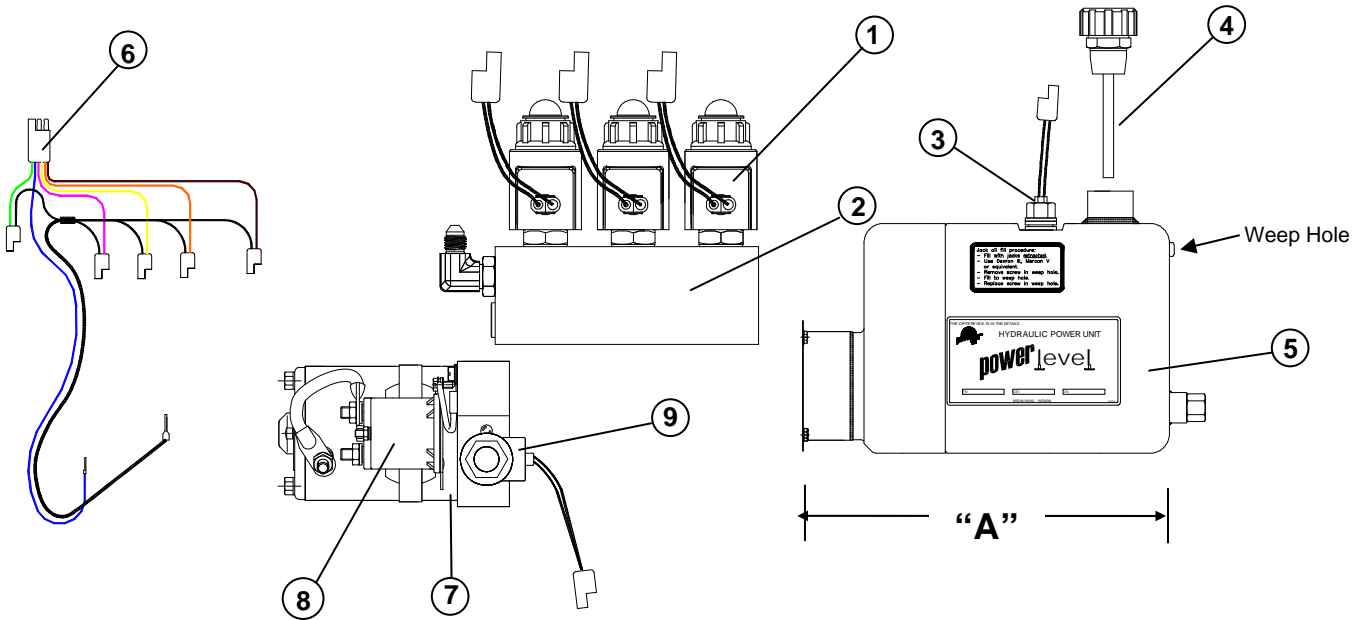
2003 - PRESENT



ITEM	PART #	DESCRIPTION	QTY	APPLICATION
1 - 11	500721	Complete power unit (1.5 gal. capacity)	1	2003 - present
	500888	Complete power unit w/ manual override valves		
	500893	Complete power unit		
	500911	Complete power unit		
8,9	500505	Valve manifold assembly (used w/ pump # 500893)	1	1999 - present
	500641	Valve manifold assembly (used w/ pump # 500721)		
	500595	Valve manifold assembly (used w/ pump # 500911)		
	500454	Valve manifold assembly w/ manual override valves (used w/ 50088)		
2	800302	Motor + Bearing	1	1999 - present
4	800036S	Tank replacement service kit (2.0 gal only)		
6	07-1238	Fill plug	1	1999 - present
	130-1214	Breather cap/dip stick (used with pump # 500911 only)		
	130-1214	Push-in breather cap and dipstick		
	030-1040	Grommet, push-in breather cap		
5	07-1239	Drain plug	1	1999 - present
7 See Fluid Sensors, Page 10	500118	Fluid sensor assembly	1	1993 - 1999
	500199	Fluid sensor assembly with 1k ohm resistor	1	2000 - present
	500450	Fluid sensor assembly w/ Packard connector (American Coach)	1	1995 - present
	500119	90 degree fluid sensor assembly	1	1993 - 1998
	500299	90 degree fluid sensor assembly w/ Packard connector		1995 - 1998
11	500661	Pump harness	1	2003 - present
	500894	Pump harness w/ Packard connectors	1	
10	500097	Dump valve assembly	1	1994 - present
	500440	Dump valve assembly w/ manual override		
1	500310	Motor solenoid	1	1999 - present
3	500685	Air breather	1	1999 - present
1,2,4,5,6	13-1100	Pump/motor assy. (used with pump assembly # 500893)	1	1999 - present
	13-1138	Pump/motor assy. (used with pump assembly # 500721)		
	130-1162	Pump/motor assy. (used with pump assembly # 500888)		
	130-1189	Pump/motor assy. (used with pump assembly # 500911)		
9	500099	Leg valve assembly	3	1994 - present
	500439	Leg valve assembly w/ manual override		

HORIZONTAL PUMP ASSEMBLIES

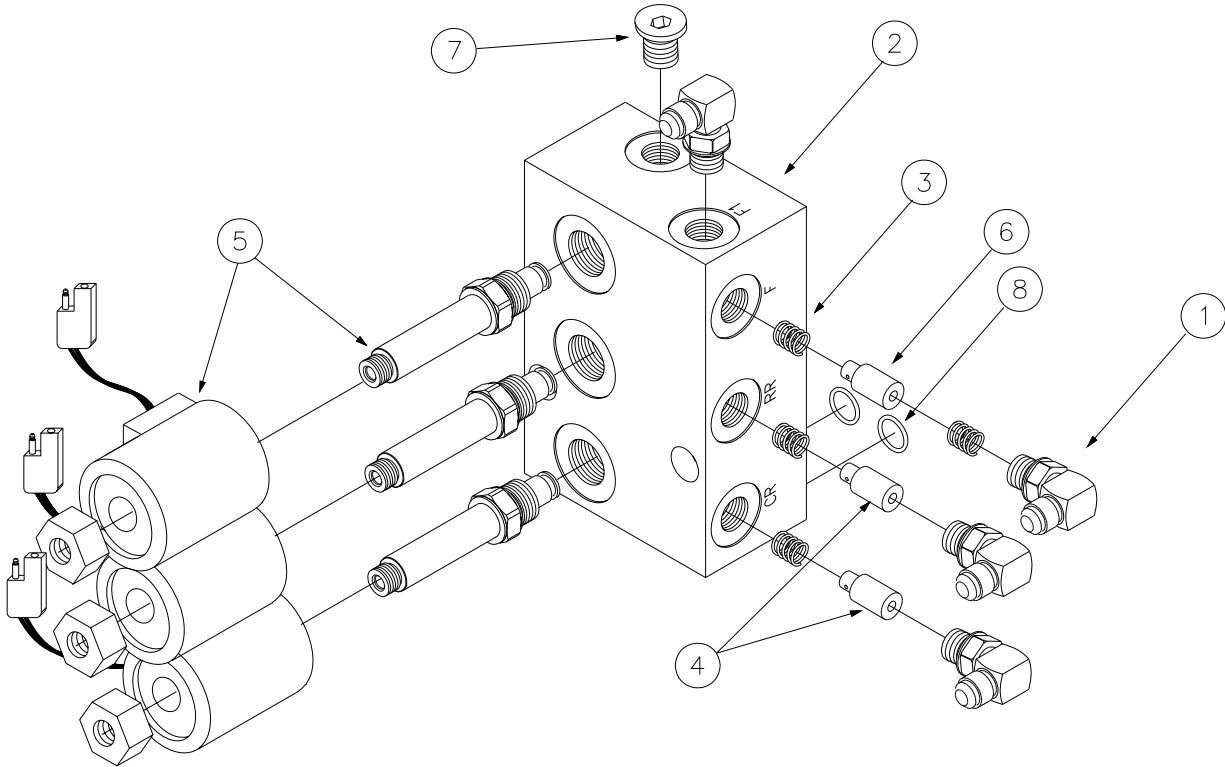
2003 - PRESENT



ITEM	PART #	DESCRIPTION	"A"	QTY	APPLICATION
Complete 3-valve pump assy					
1-8	500773	1.0 gal. capacity w/ manual override valves	11.0"	1	2003 - present
	500781	1.6 gal. capacity w/ manual override valves	9.0"	1	2003 - present
	500825	1.0 gal. capacity w/o manual override valves (obsolete)	11.0"	1	2002 - 2004
Complete 4- valve pump assy					
1-9	500197	1.5 gal. capacity w/o manual override valves (obsolete)		1	1992-1995
	500910	1.0 gal. capacity w/o manual override valves (replaces pump # 500825)	9.8"	1	2003 - present
	500920	1.4 gal. capacity w/o manual override valves	13.3"	1	2003 - present
	500925	1.4 gal capacity w/ manual override valves	13.3"	1	2003 - present
	501000	1.0 gal capacity w/ manual override valves	9.8"	1	2004 - present
	501013	1.4 gal capacity w/ manual override valves	13.3"	1	2004 - present
Manifold assembly w/ manual override valves					
1-2	500772	Manifold assy. pump #'s 500773 & 500781		1	2003 - present
	500960	Manifold assy. pump #'s 500925 & 501000		1	2003 - present
	500641	Manifold assy. pump # 501013		1	2004 - present
Manifold assembly w/o manual override valves					
1-2	500959	Manifold assy. pump #'s 500910 and 500920		1	2003 - present
1	500099	Leg valve assembly		3	1994 - present
	500439	Leg valve assembly w/ manual override		3	1994 - present
3	140-1146	Fluid sensor (Horizontal pump assemblies only) (see page 10)		1	2002 - present
4	130-1213	Breather cap and dipstick		1	2002 - present
	130-1214	Push-in breather cap and dipstick (pump assy. 500781)		1	2003 - present
	030-1040	Grommet, push-in breather cap		1	2003 - present
5	130-1194	1.0 gal. reservoir (obsolete)		1	2003 - present
	130-1196	1.4 gal. reservoir (obsolete)		1	2003 - present
6	500661	Pump harness		1	2002 - present
7	800302	Motor + Bearing only		1	2002 - present
	130-1150	Pump/motor assy. for power unit assy's 500773 and 500825		1	2003 - present
	130-1151	Pump/motor assy. for power unit assy 500781		1	2003 - present
	130-1193	Pump/motor assy. for power unit assy's 500910 and 501000		1	2003 - present
	130-1195	Pump/motor assy. for power unit assy's 500920 and 500925		1	2003 - present
8	500310	Motor solenoid		1	1994 - present
9	500097	Dump valve assembly w/o manual override		1	1994 - present
	500440	Dump valve assembly w/ manual override		1	1994 - present

3 OR 4 JACK (LEG) VALVE ASSEMBLY

1999 - PRESENT

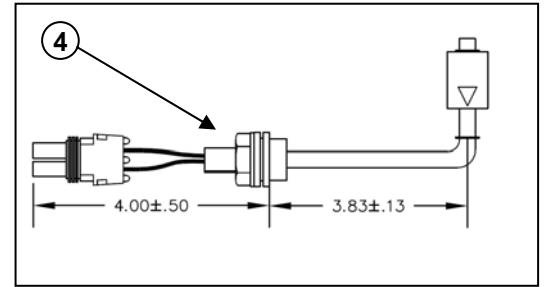
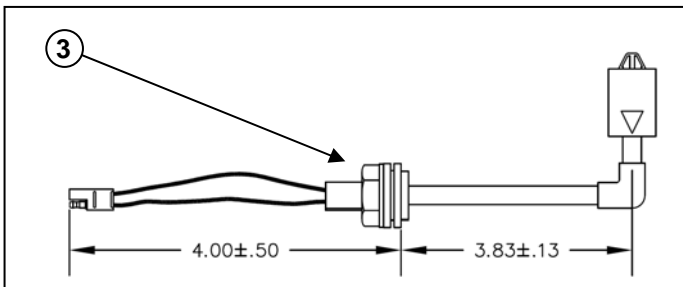
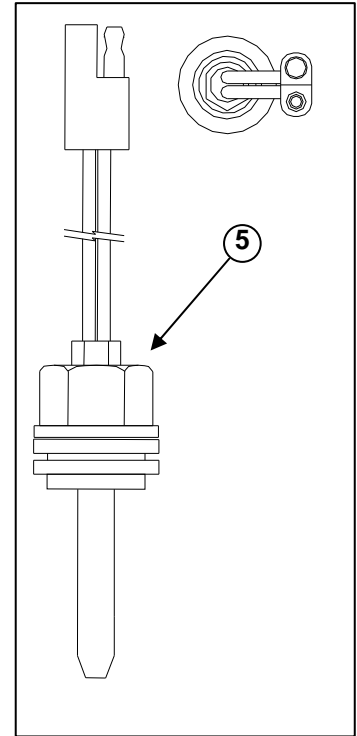
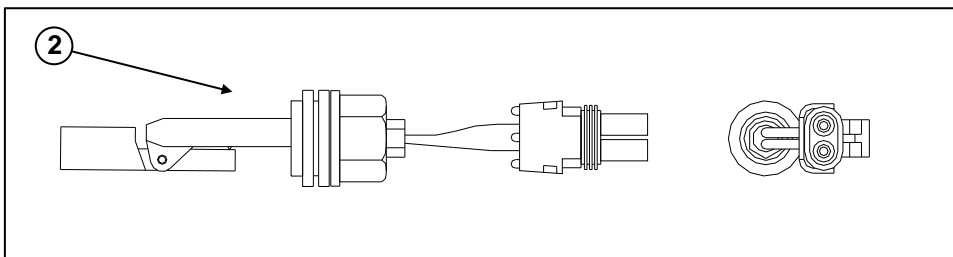
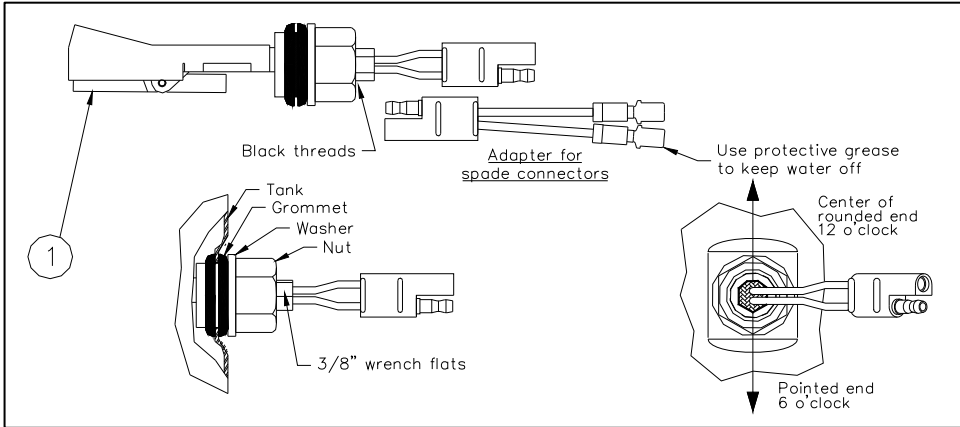


Valve manifold assembly

ITEM	PART #	DESCRIPTION	QTY	APPLICATION
1,3,4	500636S	Rear hose connector kit	1	1999- present
1,3,6	500637*	Front hose connector kit	1	1999- present
5	500099	Leg valve kit	1	1994- present
	500439	Leg valve kit w/ manual override	1	
8	500523	O-ring kit	1	1999- present
1-7	500505	Valve manifold assembly, pump # 500893	1	1999- present
	500641	Valve manifold assembly, pump # 500721	1	2003- present
	500454	Valve manifold assembly, pump # 500888		
	500772	Valve manifold assembly, pump # 500773 & 500781		
	500960	Valve manifold assembly, pump # 500925 & 501000		
500959	Valve manifold assembly, pump # 501013			

*"F" port has 2 springs

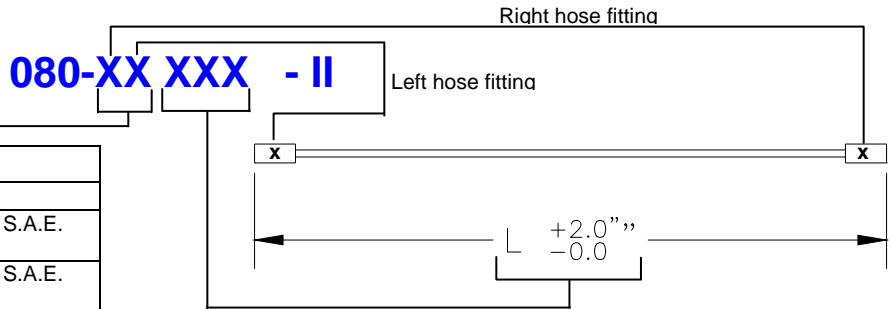
FLUID SENSORS



ITEM	PART #	DESCRIPTION	QTY	APPLICATION
1	500118	Fluid sensor	1	1993-1999
	500199	Fluid sensor with 1k ohm resistor	1	2000 - present
2	500450	Fluid sensor w/ Packard connector (American Coach)	1	1995 - present
3	500119	90 degree fluid sensor assembly	1	
4	500299	90 degree fluid sensor assy w/ Packard connector	1	
5	140-1146	Horizontal pump assy. fluid sensor	1	2002 - present

HOSES AND FITTINGS

Hose

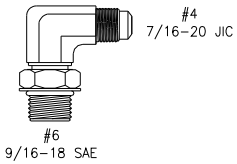


Hose fitting at each end	
Letter	Definition
A	#4 37 deg female swivel end, 7/16-20 thread per S.A.E. J514/J.I.C
B	#6 37 deg female swivel end, 9/16-18 thread per S.A.E. J514/J.I.C
C	90 deg short bend tube, #4 37 deg female swivel 7/16-20 thread per S.A.E. J514/J.I.C
D	90 deg short bend tube, #6 37 deg female swivel 9/16-18 thread per S.A.E. J514/J.I.C
E	45 deg short bent tube, #4 37 deg female swivel 7/16-20 thread per S.A.E. J514/J.I.C
F	#4 37 deg male rigid end 7/16-20 thread per S.A.E. J514/J.I.C
G	#6 37 deg male rigid end 9/16-18 thread per S.A.E. J514/J.I.C

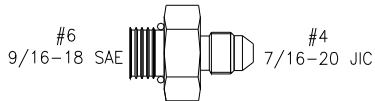
Example: Hose assembly # 080-AA264-II is 264 inches long, with #4 37 deg female swivel end fittings on both ends.

Fittings:

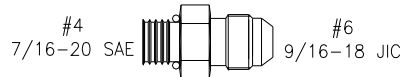
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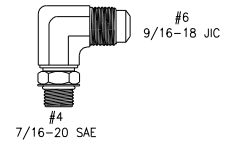
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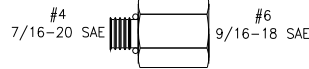
070-1268



070-1269

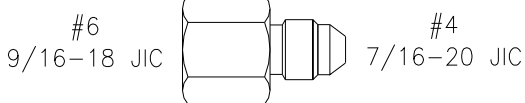


070-1262

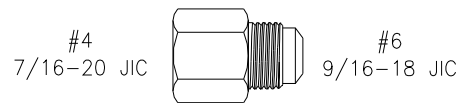


Reducers:

070-1258

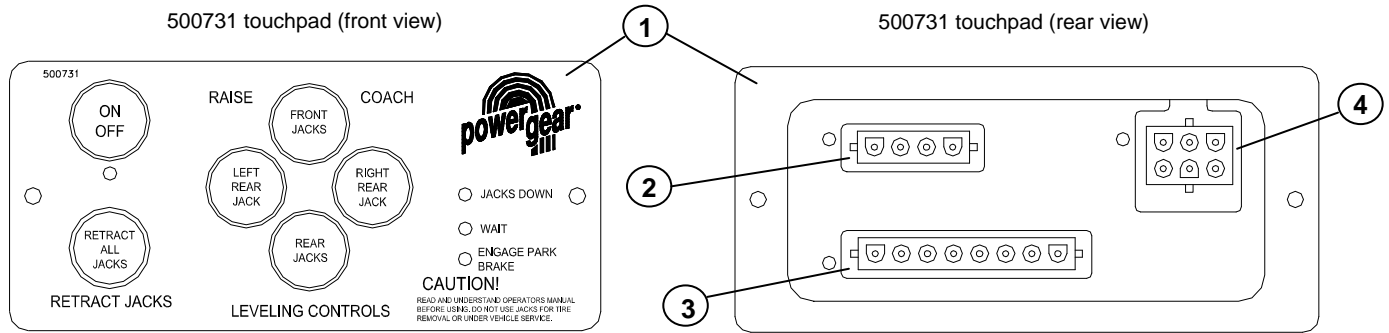


070-1263



MANUAL TOUCH PAD CONTROL

2004-present



ITEM	NOTE	PART #	DESCRIPTION	QTY	APPLICATION
1		500731	Manual system touchpad	1	2004-present
3	N	5021-XXX	Pump harness	1	2004-present
		141-0005XXX	Pump harness (with fuse)		
4	N	5010-XXX	Safety interconnect harness	1	2004-present
		5018-XXX			

N=Part not shown

"-XXX" = length of harness in inches

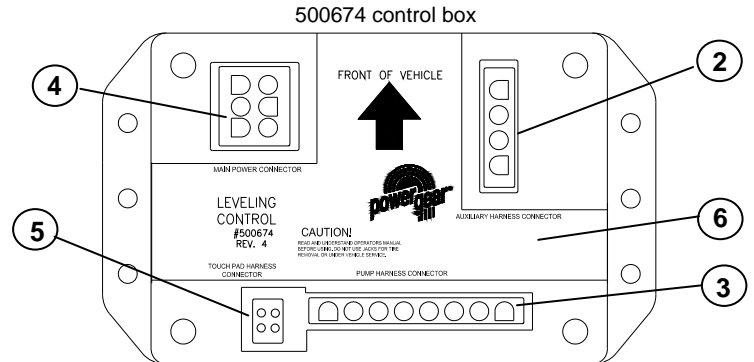
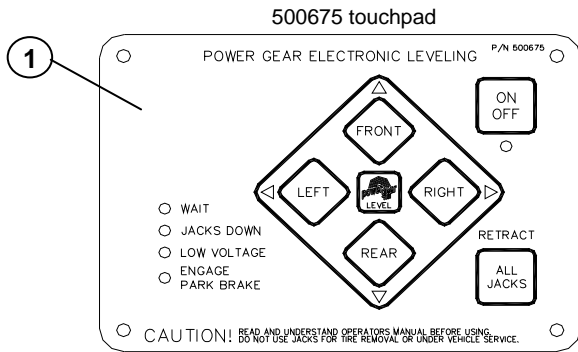
Note: See TIP Sheet # 204 for calibration instructions for this system. Calibration is required after installation.

SEMI AUTO AND AUTO CONTROLS

PLEASE SEE POWER GEAR TIP SHEET # 218 FOR INFORMATION REGARDING UPDATING OF SEMI AUTO AND AUTOMATIC LEVELING TOUCH PADS AND CONTROL BOXES

SEMI-AUTOMATIC CONTROLS

2002-2005

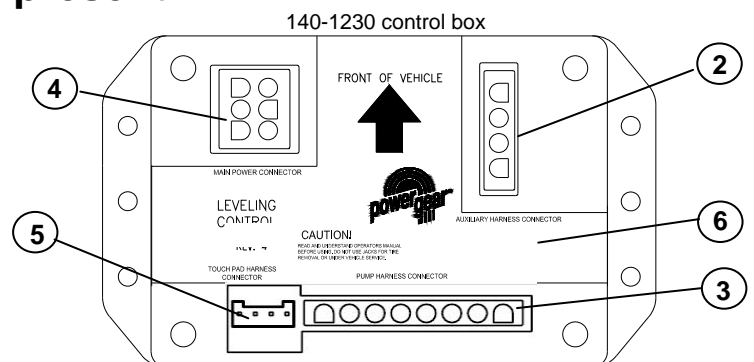
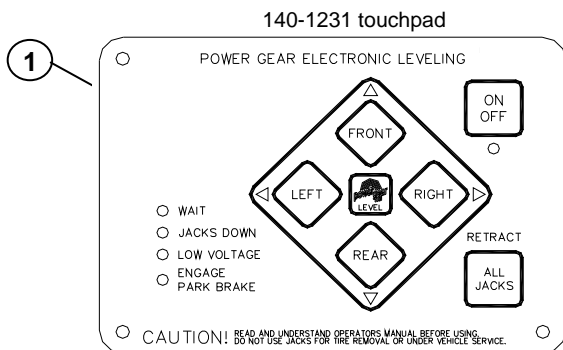


ITEM	NOTE	PART #	DESCRIPTION	QTY	APPLICATION
1		500675	Semi-auto touchpad Obsolete - use 500675S	1	2002-2005
2	N	500663	Auxiliary harness	1	2002-present
3	N	5021-XXX	Coach interconnect harness	1	2002-present
4	N	5020-XXX 5018-XXX	Safety interconnect harness	1	2002-present
5	N	5019-XXX	Touch pad harness Obsolete	1	2002-2005
6		500674	Control box Obsolete - use 500674S	1	2002-2005
		500673	Semi-auto control kit (touchpad, control box, touchpad/control box harness)		2002-present

N=Part not shown

"-XXX" = length of harness in inches

2006-present



ITEM	NOTE	PART #	DESCRIPTION	QTY	APPLICATION
1		140-1231	Semi-auto touchpad	1	2006-present
2	N	500663	Auxiliary harness	1	2002-present
3	N	5021-XXX	Coach interconnect harness	1	2002-present
4	N	5020-XXX 5018-XXX	Safety interconnect harness	1	2002-present
5	N	141-0045XXX	Touch pad harness	1	2005-present
6		140-1230	Control box	1	2006-present
1,5,6		500673	Semi-auto control kit (touchpad, control box, touchpad/control box harness)		2002-present

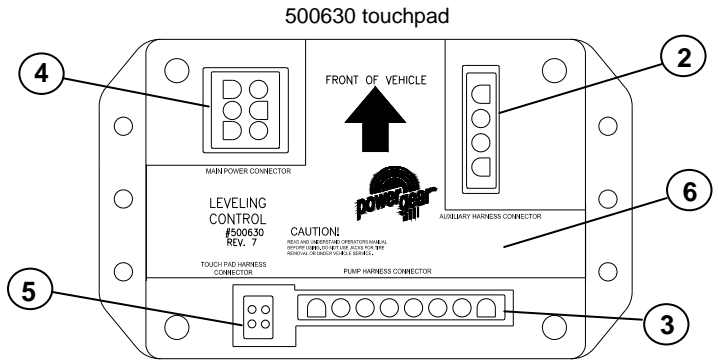
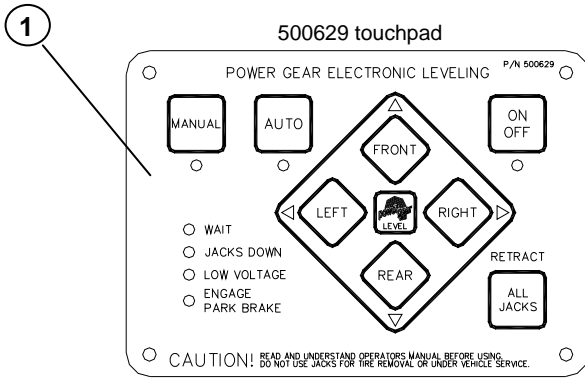
N=Part not shown

"-XXX" = length of harness in inches

Note: See TIP Sheet # 152 for calibration instructions for this system. Calibration is required after installation.

AUTOMATIC TOUCH PAD CONTROL

2002-2005

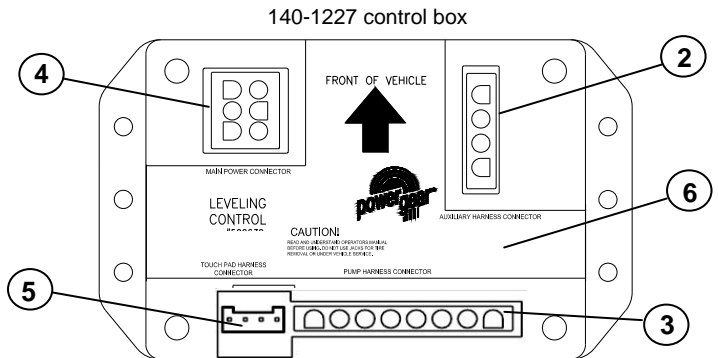
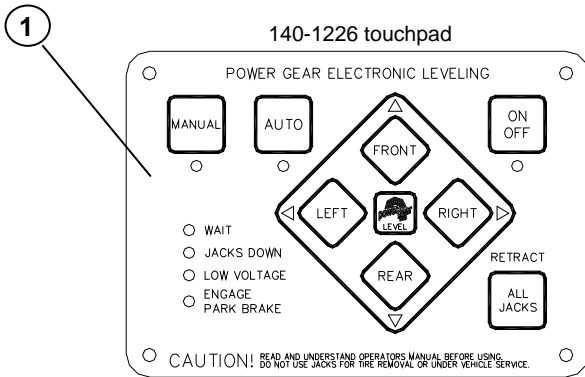


ITEM	NOTE	PART #	DESCRIPTION	QTY	APPLICATION
1		500629	Auto touch pad Obsolete - use 500629S	1	2002-2005
2	N	500771	Auxiliary harness	1	2002-present
		500787			
		5013-XXX			
3	N	5021-XXX	Coach interconnect harness	1	2002-present
4	N	5020-XXX	Safety interconnect harness	1	2002-present
5	N	5019-XXX	Touch pad harness Obsolete	1	2002-2005
6		500630	Control box Obsolete - use 500630S	1	2002-2005
		500643	Automatic control kit (touchpad, control box, touchpad/control box harness)	1	2002-present

N=Part not shown

"-XXX" = length of harness in inches

2006-present



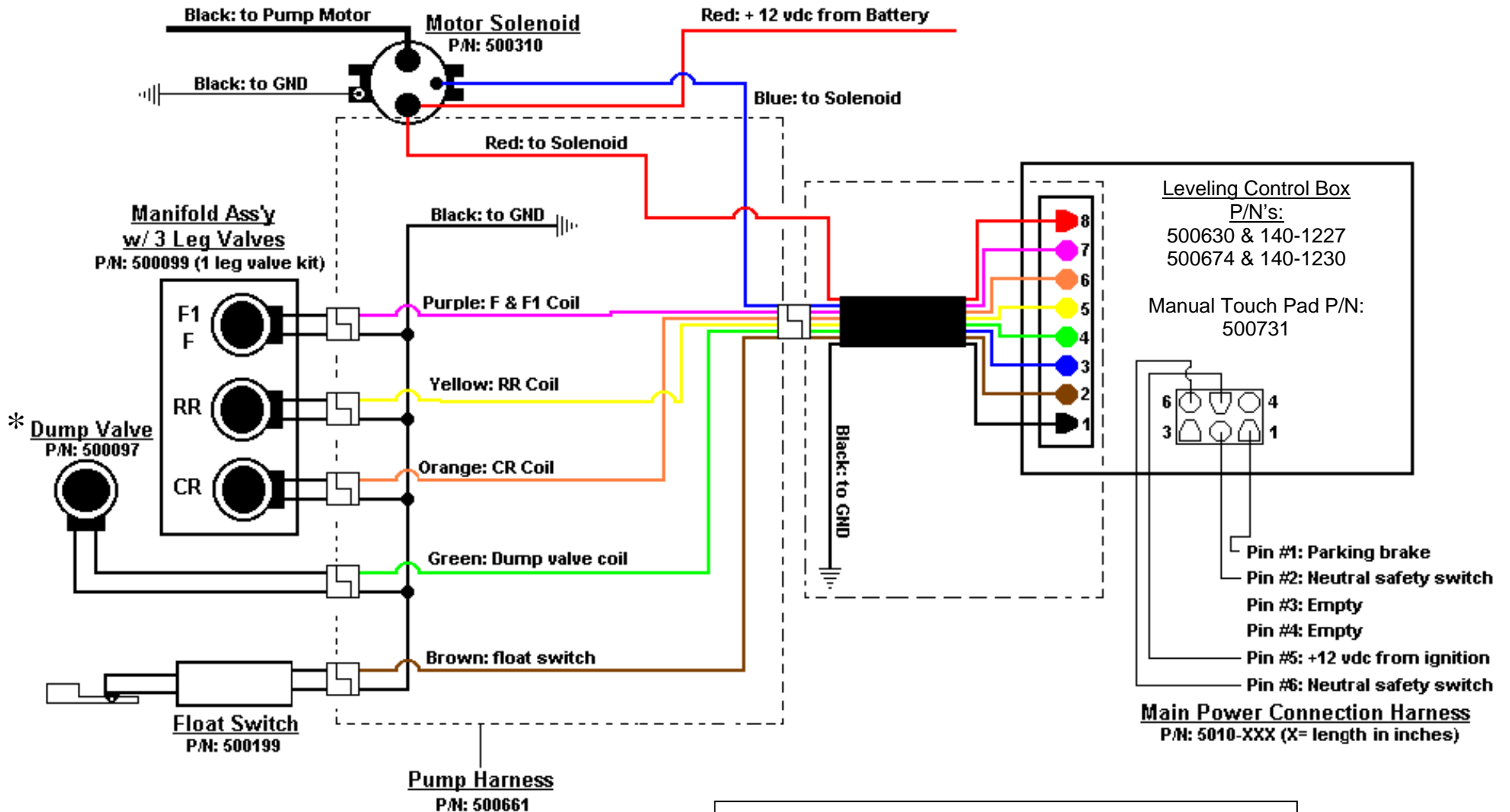
ITEM	NOTE	PART #	DESCRIPTION	QTY	APPLICATION
1		140-1226	Auto touch pad	1	2006-present
2	N	500771	Auxiliary harness	1	2002-present
		500787			
		5013-XXX			
3	N	5021-XXX	Coach interconnect harness	1	2002-present
4	N	5020-XXX	Safety interconnect harness	1	2002-present
5	N	141-0045XXX	Touch pad harness	1	2006-present
6		140-1227	Control box	1	2006-present
1, 5, 6		500643	Automatic control kit (touchpad, control box, touchpad/control box harness)	1	2002-present

N=Part not shown

"-XXX" = length of harness in inches

Note: See TIP Sheet # 153 for calibration instructions for this system. Calibration is required after installation.

Wiring diagram for systems with control #'s 500731, 500675 & 140-1231, 500674 & 140-1230, 500629 & 140-1226, 500630 & 140-1227



* Horizontal pump assemblies 500773, 500781, and 500825 do not use a dump valve assembly.

TROUBLESHOOTING

SYSTEM WILL NOT TURN ON, INDICATOR LIGHT DOES NOT LIGHT	
PROBABLE CAUSE	CORRECTIVE ACTION
Coach ignition not in run position	Turn ignition to run position
Transmission not in park or neutral	Place transmission in park or neutral
Parking brake not set	Set brake
Control has been left on for more than four minutes, auto shut off has occurred	Push on/off button twice
No power to control	Pin #5 of the 6 pin connector on the control must have +12 VDC with ignition in run position, check coach fuse or breaker
Ground wire disconnected or shorted	Pin #1 of the 8 pin connector is the main ground. Test for continuity with ground.
Neutral safety switch wires shorted	Check for voltage at pin #6 at the 6 pin connector on the control. If it has 12v+ make sure pin #2 also has 12v+. If it is ground, try grounding pin #2. If the control then operates, repair or replace wires or neutral safety switch
Parking brake wire not grounded, or faulty parking brake switch	Check continuity between pin #1 of the 6 pin connector and ground. If there is no continuity, the switch is bad, the parking brake is not set, or the wires to the switch are bad.
Faulty control	If all previous causes and actions do not apply replace control
JACKS WILL NOT EXTEND, PUMP IS NOT RUNNING	
PROBABLE CAUSE	CORRECTIVE ACTION
Motor solenoid wire defective	Check for power at the blue solenoid signal wire while front or rear button is pushed (pin #3 of the 8 pin connector). If no power, check wires, and control..
No power from battery to pump	Check for +12 VDC at the large battery terminal of the solenoid, if no voltage recharge battery or replace power cable.
Bad ground to pump motor	Add new ground cable from pump motor to chassis battery; check chassis ground connection
Motor solenoid faulty	Check for power at the blue solenoid signal wire while jacks down button is pushed. If no power, check wires, and control. If power is present, connect +12 VDC to motor side terminal of solenoid; if motor runs, replace solenoid
Pump motor faulty	Check for continuity between the motor and ground. Connect +12 VDC to motor side terminal of solenoid; if motor does not run, replace pump motor (see TIP sheet 216 for details).
Faulty control	If all previous causes and actions do not apply replace control
JACKS WILL NOT EXTEND, PUMP IS RUNNING	
PROBABLE CAUSE	CORRECTIVE ACTION
Fluid level low; pump cavitating	Fill tank to proper level with automatic transmission fluid see tip sheet 140
Pump harness faulty	Check for ground at the black wire for each solenoid valve. If none, repair the wire. While pushing the button for "jacks down" check for 12 v + at the control wire for each solenoid valve, if none check for voltage at these wires where they exit the controller. If voltage is present, repair the wires.
	If no voltage is present check the controller for trouble codes (see tip sheet 184). If no trouble codes check for proper signals on the 6 pin harness see "system will not turn on, indicator light does not light ". If proper signals are present, replace the controller.
Dump valve stuck open or faulty	It is possible to use a leg valve to diagnose by swapping the dump valve and one leg valve. If the system then builds pressure the dump valve is bad (the leg that now has the dump valve will malfunction). Replace dump valve and return leg valve to original position. NOTE- If there still is no pressure after swapping the valves, the pump may be faulty. See TIP sheet 215 for pump diagnostic details.
Pump itself is damaged	See TIP sheet 215 for details. Remove tank and disassemble pump for visual inspection.
Leg solenoid wires damaged	Check for 12 V + at leg coil wires from control while pushing the button "front" or "rear" for that jacks valve. If no 12 V + signal, check for continuity on each wire between coil and controller. Good wire = bad control. Check for ground at the black wire for each solenoid valve coil. Repair if necessary
Valve solenoids mis-wired	Check wiring diagrams

ONLY FRONT JACKS WILL NOT EXTEND, PUMP IS RUNNING	
PROBABLE CAUSE	CORRECTIVE ACTION
Leg solenoid wires damaged	Check for 12 V + at leg coil wires from control while pushing the button "front" or "rear" for that jacks valve. If no 12 V + signal, check for continuity on each wire between coil and controller. Good wire = bad control. Check for ground at the black wire for each solenoid valve coil. Repair if necessary
Valve solenoid coil defective	Check coil for continuity, if none replace solenoid coil
Front jack valve faulty	Replace cartridge valve
ANY ONE OF THE REAR JACKS WILL NOT EXTEND, PUMP IS RUNNING	
PROBABLE CAUSE	CORRECTIVE ACTION
Leg solenoid wires damaged	Check for 12 V + at leg coil wires from control while pushing the button "front" or "rear" for that jacks valve. If no 12 V + signal, check for continuity on each wire between coil and controller. Good wire = bad control. Check for ground at the black wire for each solenoid valve coil. Repair if necessary
Valve solenoid coil defective	Check coil for continuity, if none replace solenoid coil
Cartridge valve faulty	Replace cartridge valve
ALL JACKS WILL NOT RETRACT OR WILL NOT RETRACT FULLY	
PROBABLE CAUSE	CORRECTIVE ACTION
Dump solenoid wires damaged	Check for 12 V + at leg coil wires from control while pushing the button "front" or "rear" for that jacks valve. If no 12 V + signal, check for continuity on each wire between coil and controller. Good wire = bad control. Check for ground at the black wire for each solenoid valve coil. Repair if necessary
System overfilled with fluid	Drain fluid to recommended level-see tip 140
System is operating as if the jacks are already retracted	Check float switch operation. Check the float switch for proper orientation. Check the system for overfilling. Check for continuity on brown wire from float switch to control. Check for ground to float on black wire.
Dump solenoid coil defective	Check coil for continuity, if none replace solenoid
Dump cartridge valve faulty	Replace valve
ANY ONE OR TWO JACKS WILL NOT RETRACT AT ALL	
PROBABLE CAUSE	CORRECTIVE ACTION
Broken jack spring (s)	Replace jack spring see tip sheet 34
Jack coil signal wire faulty	Pin #5 of the 8 pin connector completes circuit for road side rear jack
	Pin #6 of the 8 pin connector completes circuit for curb side rear jack
	Pin #7 of the 8 pin connector completes circuit for front jack (s)
	Check for continuity, if none replace wire
Jack coil ground wire faulty	Check for ground at the coil terminal black wire repair if necessary
Jack solenoid valve coil faulty	Check coil for continuity, if none replace solenoid
Jack rod guide is rusted or dirty	Clean chrome rod, grease rod guide if equipped with grease fittings. Otherwise lubricate with silicone fluid. It may be necessary to reseal jack or replace.
Jack valve faulty	Replace cartridge valve
Shunt valve clogged	Remove hose fitting on manifold for that jack, to gain access to valve. Clean valve passages with solvent and compressed air.
Hose damaged	Replace kinked, or damaged hose (damage may not be visible externally)
ANY JACK RETRACTS VERY SLOWLY	
PROBABLE CAUSE	CORRECTIVE ACTION
Shunt valve clogged	Remove hose fitting on manifold for that jack, to gain access to valve. Clean valve passages with solvent and compressed air.
Shunt valve spring damaged	Replace spring
Hose damaged	Replace kinked, or damaged hose (damage may not be visible externally)
Jack rod guide is rusted or dirty	Clean chrome rod, grease rod guide if equipped with grease fittings. Otherwise lubricate with silicone fluid. It may be necessary to reseal jack or replace.
Internal failure within jack	Rebuild / replace components or jack as necessary.

ANY JACK RETRACTS WITH NO POWER, WITH POSSIBLE POPPING SOUND	
PROBABLE CAUSE	CORRECTIVE ACTION
Air in system	Check for coils in hose. Remove the coil if present then extend all jacks to full extension, then retract fully, repeat 4 cycles waiting a few minutes between cycles, check fluid level in between cycles
Contaminated fluid	Replace fluid, see page a3, tip sheet 140 and 141.
Leg solenoid valves stuck open	Remove solenoid valve, clean or replace
Dump solenoid valve contaminated	Remove solenoid valve, clean or replace
Dump solenoid valve stuck open	Replace solenoid valve
All solenoid valves stuck open	Replace all valves
Jack legs create popping sound	Extend jack legs, clean rod, lubricate with light weight grease if equipped with grease fittings or lubricate with silicone spray Due to changes in temperature, expanding and contracting of fluid will magnify the problem of popping jacks, to help minimize this replace fluid with Mercon V fluid
PANEL JACKS DOWN LIGHT WILL NOT GO ON WITH JACKS EXTENDED	
PROBABLE CAUSE	CORRECTIVE ACTION
Harness wire faulty	Check for ground at fluid sensor wires. Brown wire to control should read ground when jacks are down. Other wire should read ground at all times.
Fluid sensor mis-adjusted	See tip sheet 30, 54 or 81 for fluid sensor orientation
Fluid sensor faulty	Check fluid sensor for continuity* with jacks extended, if no continuity, replace sensor * continuity: pre 2001 models, resistance should be near zero. For 2001 and newer units, resistance should be near 1 KW
Open on the brown wire	Check for continuity between brown wire at float sensor and brown wire at control. If none replace wire.
Defective light on touch pad	Apply +12 VDC at brown wire to 8 pin harness with key on. If no light. Replace touch pad, control, or both.
PANEL JACKS DOWN LIGHT WILL NOT GO OFF WITH JACKS RETRACTED	
PROBABLE CAUSE	CORRECTIVE ACTION
Low fluid level	Fill tank with automatic transmission fluid see tip sheet 140
Fluid sensor misadjusted	See tip sheet 30, 54 or 81 for fluid sensor orientation
Fluid sensor faulty	Check fluid sensor for continuity* with jacks extended, if no continuity, replace sensor * : pre 2001 models, resistance should be near zero. For 2001 and newer units, resistance should be near 1 KW
Control faulty	If all other probable causes have been checked, replace control and touch pad.
JACKS DOWN LIGHT AND ALARM WILL GO ON WHILE DRIVING, JACKS RETRACTED	
PROBABLE CAUSE	CORRECTIVE ACTION
Low fluid level	Fill tank with automatic transmission fluid see tip sheet 140
Fluid sensor misadjusted	See tip sheet 30, 54 or 81 for fluid sensor orientation
Float sensor faulty	Check fluid sensor for continuity* with jacks extended, if no continuity*, replace sensor: pre 2001 models, resistance should be near zero. For 2001 and newer units, resistance should be near 1 KW
Short in harness	Check float switch wires for open circuit.
SYSTEM LEVELS OK BUT RETRACTS WHEN KEY IS TURNED OFF	
PROBABLE CAUSE	CORRECTIVE ACTION
Improper wiring to 6 pin harness.	See tip sheets 195, 196, 197, 199, 200, 204, 205
SYSTEM JUMPS DOWN SLIGHTLY AS KEY IS SHUT OFF	
PROBABLE CAUSE	CORRECTIVE ACTION
Improper wiring to 6 pin harness.	See tip sheets 195, 196, 197, 199, 200, 204, 205
LEVELING SYSTEM DUMPS WHEN KEY IS PUT INTO ACC POSITION	
PROBABLE CAUSE	CORRECTIVE ACTION
Improper wiring to 6 pin harness	See tip sheets 195, 196, 197, 199, 200, 204, 205

SYSTEM WILL NOT AUTO RETRACT WHEN THE CHASSIS IS PUT INTO DRIVE	
PROBABLE CAUSE	CORRECTIVE ACTION
Improper wiring to 6 pin harness.	See tip sheets 195, 196, 197, 199, 200, 204, 205
Neutral safety switch wires shorted	Check for voltage at pin #6 at the 6 pin connector on the control. If it has 12v+ make sure pin #2 also has 12v+. If it is ground, try grounding pin #2. If the control then operates, repair or replace wires or neutral safety switch
SYSTEM DOES NOT GO TO CORRECT LEVEL POSITION	
PROBABLE CAUSE	CORRECTIVE ACTION
Control / level needs to be recalibrated	See tip sheet 147, 152, or 153,
Faulty control	If previous causes and actions do not apply replace control
Control box is not mounted in proper orientation	Arrow on control box must point forward. Mounting flange for control box must be on top, with wire harnesses coming out the bottom.
TOUCH PAD LIGHTS ARE FLASHING	
PROBABLE CAUSE	CORRECTIVE ACTION
Jacks are still down partially	Press retract all jacks button to allow jacks to fully retract
Possible trouble code being displayed	See tip sheet 184 for trouble codes and corrections
Coach is in emergency retract mode	Fluid low, see tip sheet 140 Sensor in pump tank is misadjusted see tip sheets 30, 54,81
SYSTEM TURNS ON BUT TURNS OFF AS SOON AS A BUTTON IS PUSHED	
PROBABLE CAUSE	CORRECTIVE ACTION
Low system voltage	Voltage must remain above 10 volts while in operation-check battery condition and connections.

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THIS WARRANTY SHALL NOT APPLY TO:

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- Products which are modified or altered in a manner not authorized by Power Gear in writing.
- Failure due to misapplication of product.
- Telephone or other communication expenses.
- Living or travel expenses.
- Overtime labor.
- Failures created by improper installation of the product's slideout system or slideout room to include final adjustments made at the plant for proper room extension/retraction; sealing interface between slideout rooms and side walls; synchronization of inner rails; or improper wiring or ground problems.
- Failures created by improper installation of leveling systems, including final adjustments made at the plant, or low fluid level, wiring or ground problems.
- Replacement of normal maintenance items.

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