



OPERATORS MANUAL
for
MANUAL RV SYSTEM

81-1297 REV. 1
August, 1997



DISCOUNTED

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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 (3) jack or (4) jack electro-hydraulic leveling system consists of the following major components:

(A) Power Gear Spring Return Jacks are rated at 9,000# lifting capacity each. Each jack has a large 10" diameter (78.5 square inch) shoe for maximum flotation 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 control panel and dual axis bubble level located in the coach.

OPERATION CAUTION 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 - 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.

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 ETC.. ON EXTREMELY SOFT SURFACES USE LOAD DISTRIBUTION PADS UNDER EACH JACK.

BEFORE YOU OPERATE THE SYSTEM

The leveling system shall 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 ignition is in the run position.

LEVELING PROCEDURES

STEP 1 - Push "ON/OFF" pad on control panel. The system is now operational and the "ON/OFF" light will be lit.

STEP 2 - Push "FRONT" pad until contact with the ground is felt.

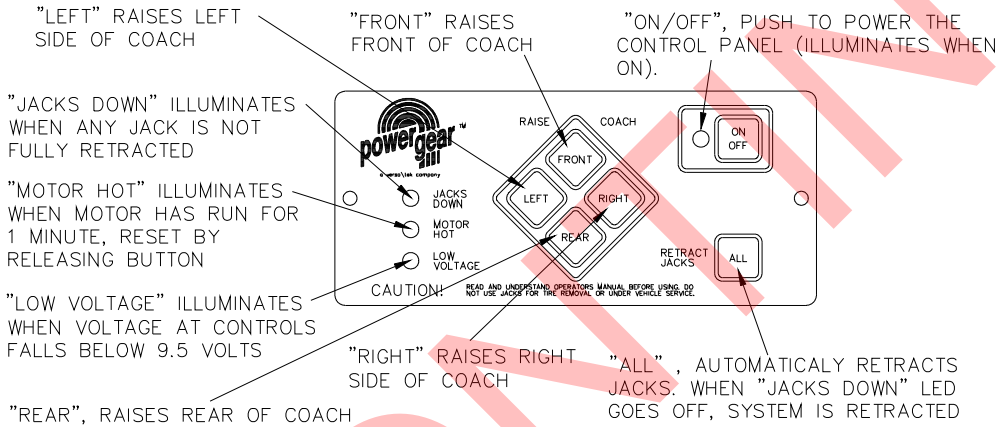
STEP 3 - Push "REAR" pad until contact with the ground is felt.

STEP 4 - Push pad ("FRONT" or "REAR") that is opposite the air bubble in the level that is pointed front and rear, (i.e. if bubble is towards front of coach push "REAR" pad.) Keep pad depressed until bubble is centered in vial.

STEP 5 - Push pad ("LEFT" or "RIGHT") that is opposite the air bubble in the level that is pointed left and right, (i.e. if bubble is towards left of coach push "RIGHT" pad.) Keep pad depressed until bubble is centered in vial.

STEP 6 - Repeat steps 4 and 5 if needed.

STEP 7 - Turn power off to leveling system by pushing "ON/OFF" pad.



*NOTE: On the four jack system the right and left rear jacks are used to level the coach side to side. There is no individual control of the right or left front jacks.

JACK RETRACT PROCEDURES

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

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

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.

NOTE: If the ignition is in the "RUN" position, jacks are down, and the operator takes the transmission out of neutral 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.

NOTE: 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.

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.

SYSTEM FLUID CAPACITIES

Round Reservoir Capacity = 6 qt.

	3-LEG	4-LEG
Max. System Capacity =	10.0 qt.	10.9 qt

Square Reservoir Capacity = 9 qt.

Max. System Capacity = 13.5 qt.

PREVENTATIVE MAINTENANCE PROCEDURES

1. Change fluid every 36 months.
2. Check fluid level every month. Fluid should be within 1/4 inch of fill port lip and checked only with all jacks retracted.
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

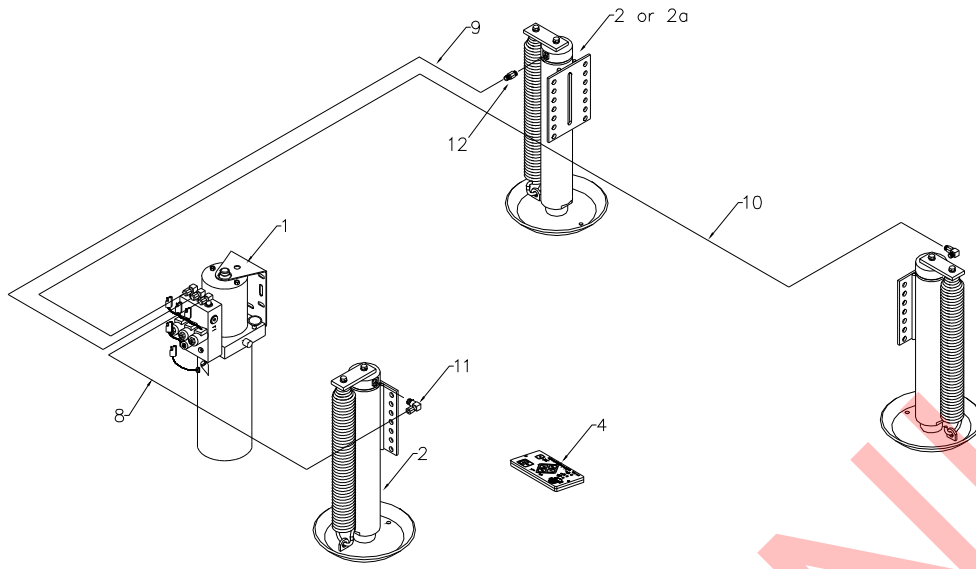
For each part needed

- 1) Coach
 - 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.

REPLACEMENT PARTS

3 JACK SYSTEM



ITEM	PART NO	DESCRIPTION	QTY	QTY
1-12	500087-T	COMPLETE LEVELING SYSTEM	1	-
1-12	500237-T	COMPLETE LEVELING SYSTEM	-	1
1	500328	POWER UNIT ASSEMBLY	1	1
2	500146	RV LEG ASSEMBLY 15"	3	1
2a	500269	RV LEG ASSEMBLY 12"	-	2
3	*5014-XXX	CHASSIS HARNESS (SEE NOTE 1)	1	1
4	500210	FRONT CONTROL PANEL	1	1
5	*500091	RV LEG MOUNTING KIT	3	3
6	*14-1050	"JACKS DOWN INDICATOR LIGHT	1	1
7	*14-1049	"JACKS DOWN" DECAL	1	1
8-10	08-XXXX	HOSES (SEE NOTE 2)	3	3
11	07-1059	90 DEGREE ELBOW	2	2
12	07-1085	CONNECTOR	1	1

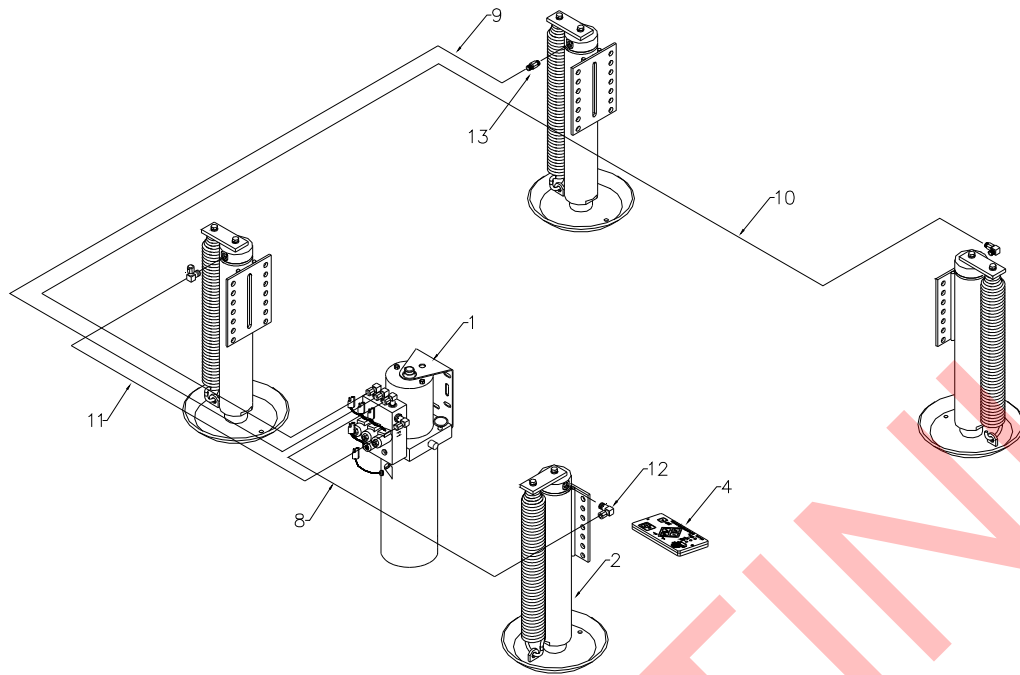
* ITEMS NOT SHOWN

NOTE 1 - ORDER HARNESS BY MODEL AND WHEEL BASE

NOTE 2 - ORDER HOSES BY MODEL AND WHEEL BASE

REPLACEMENT PARTS

4 JACK SYSTEM



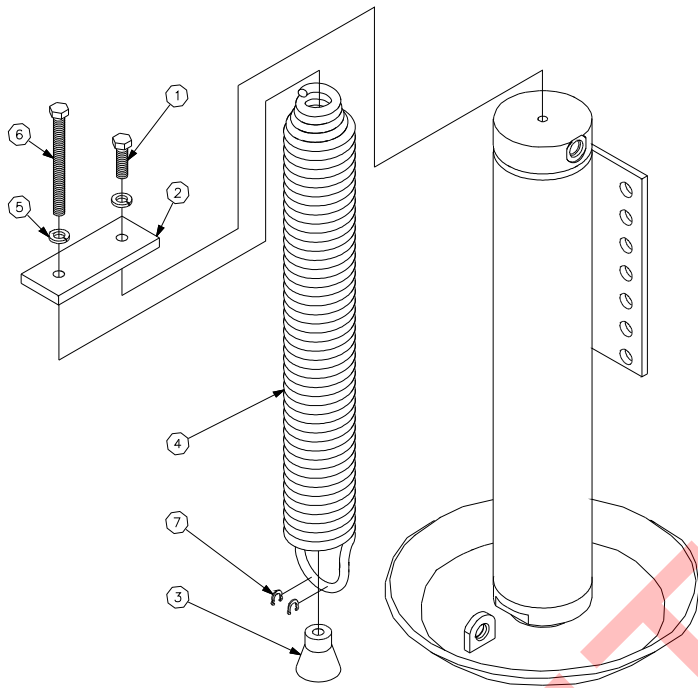
ITEM	PART NO	DESCRIPTION	QTY
1-13	500275-T	COMPLETE LEVELING SYSTEM	1
1	500329	POWER UNIT ASSEMBLY	1
2	500146	RV LEG ASSEMBLY 15"	4
3	*5014-XXX	CHASSIS HARNESS (SEE NOTE 1)	1
4	500210	FRONT CONTROL PANEL	1
5	*500091	RV LEG MOUNTING KIT	4
6	*14-1050	"JACKS DOWN INDICATOR LIGHT	1
7	*14-1049	"JACKS DOWN" DECAL	1
8-11	08-XXXX	HOSES (SEE NOTE 2)	4
12	07-1059	90 DEGREE ELBOW	3
13	07-1085	CONNECTOR	1

* ITEMS NOT SHOWN

NOTE 1 - ORDER HARNESS BY MODEL AND WHEEL BASE

NOTE 2 - ORDER HOSES BY MODEL AND WHEEL BASE

KITS FOR 9000 LB JACK ASSEMBLY

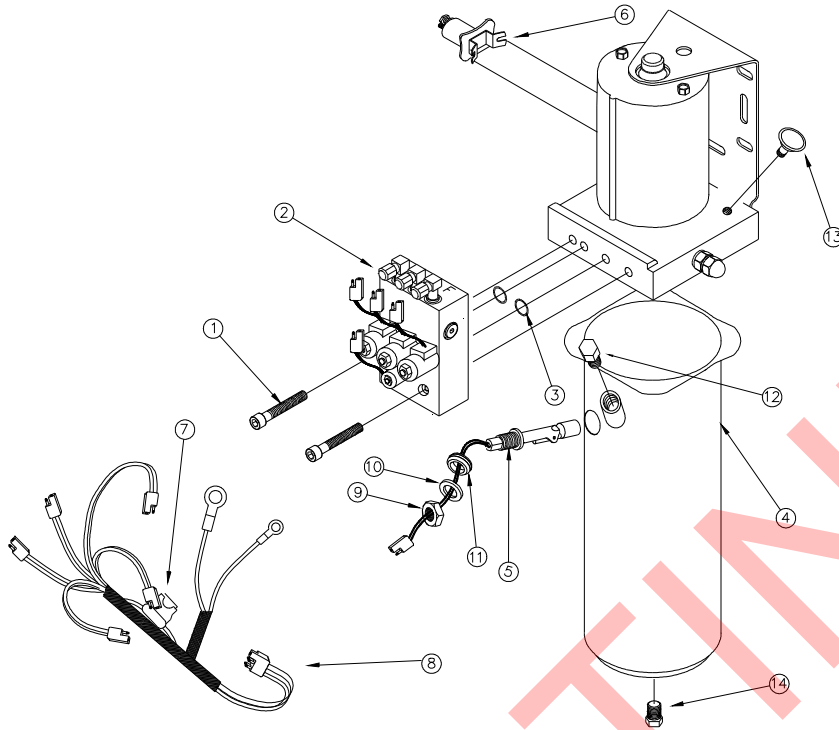


	15" STROKE	12" STROKE
	500146	500269
	500082	500235

ITEM	PART NO	DESCRIPTION	QTY	QTY
1-7	500094	LONG SPRING REPLACEMENT KIT	1	-
1-7	500252	SHORT SPRING REPLACEMENT KIT	-	1
1	NOTE 1	BOLT 3/8-16 X 1-1/4	1	1
2	NOTE 1	SPRING ANCHOR PLATE	1	1
3	NOTE 1	SPRING PLUG CONE	1	1
4	NOTE 1	SPRING	1	1
5	NOTE 1	LOCK WASHER 3/8	2	2
6	NOTE 1	SPRING TENSION SCREW	1	1
7	NOTE 1	RETAINING RING	2	2

NOTE 1: ITEMS INCLUDED IN SPRING REPLACEMENT KIT NOT SOLD SEPARATELY

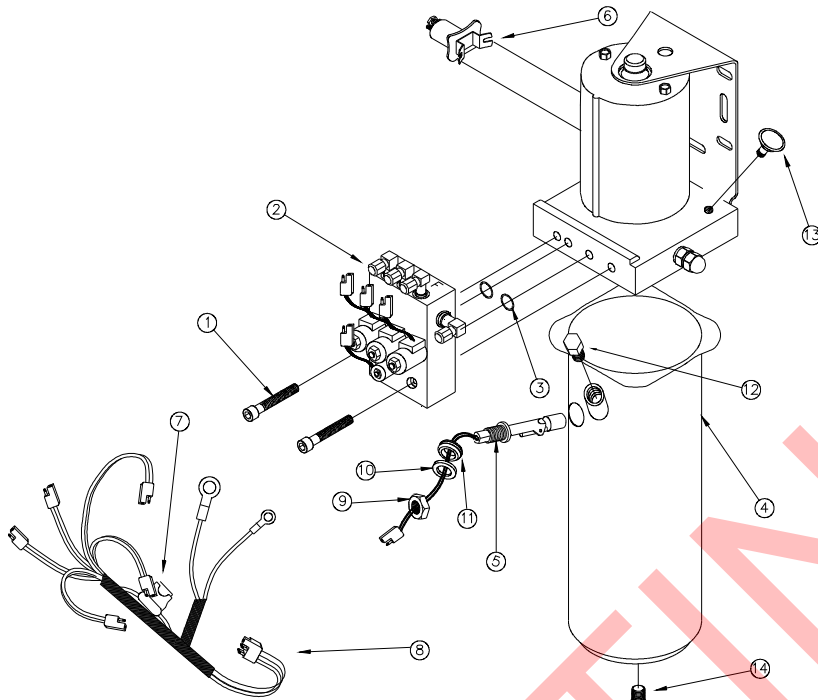
3 JACK SMALL CAPACITY POWER UNIT ASSEMBLY



ITEM	PART NO	DESCRIPTION	QTY
1-14	500328	SMALL CAPACITY POWER UNIT	1
1	15-1337	SHCS 3/8-16 X 2	2
2	500333	VALVE ASSEMBLY	1
3	01-1029	O-RING, (.614 I.D.X .07 C.S.)	2
4	13-1095	TANK, 1.5 GAL	1
5	*	FLOAT SWITCH	1
6	500310	12VDC SOLENOID	1
7	14-1055	10 AMP FUSE	1
8	500325	WIRING HARNESS, PUMP	1
9	*	NUT, FLOAT SWITCH	1
10	*	WASHER, FLOAT SWITCH	1
11	*32-1019	GROMMET, FLOAT SWITCH	1
12	07-1238	FILL PLUG, SAE #10 W/O-RING	1
13	06-1004	BREATHER	1
14	07-1239	DRAIN PLUG, SAE #6 W/O-RING	1

* Available with kit 500342

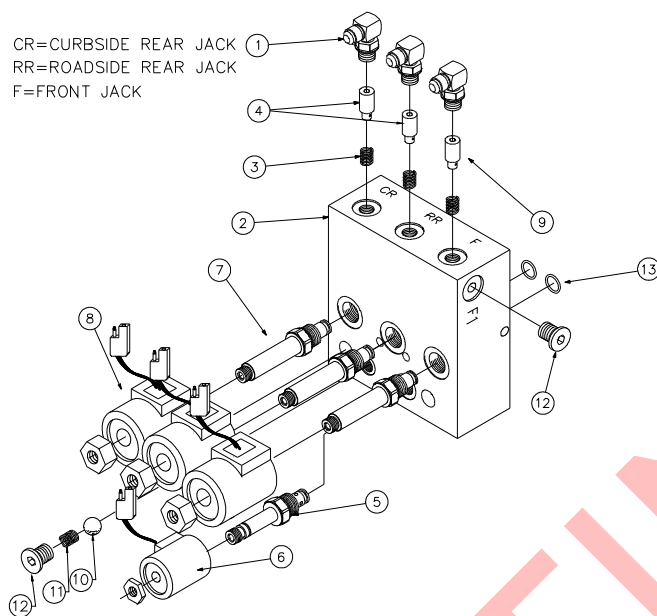
4 JACK SMALL CAPACITY POWER UNIT ASSEMBLY



ITEM	PART NO	DESCRIPTION	QTY
1-14	500329	SMALL CAPACITY POWER UNIT	1
1	15-1337	SHCS 3/8-16 X 2	2
2	500334	VALVE ASSEMBLY	1
3	01-1029	O-RING, (.614 I.D.X .07 C.S.)	2
4	13-1095	TANK, 1.5 GAL	1
5	*	FLOAT SWITCH	1
6	500310	12VDC SOLENOID	1
7	14-1055	10 AMP FUSE	1
8	500325	WIRING HARNESS, PUMP	1
9	*	NUT, FLOAT SWITCH	1
10	*	WASHER, FLOAT SWITCH	1
11	*32-1019	GROMMET, FLOAT SWITCH	1
12	07-1238	FILL PLUG, SAE #10 W/O-RING	1
13	06-1004	BREATHER	1
14	07-1239	DRAIN PLUG, SAE #6 W/O-RING	1

* Available with kit 500342

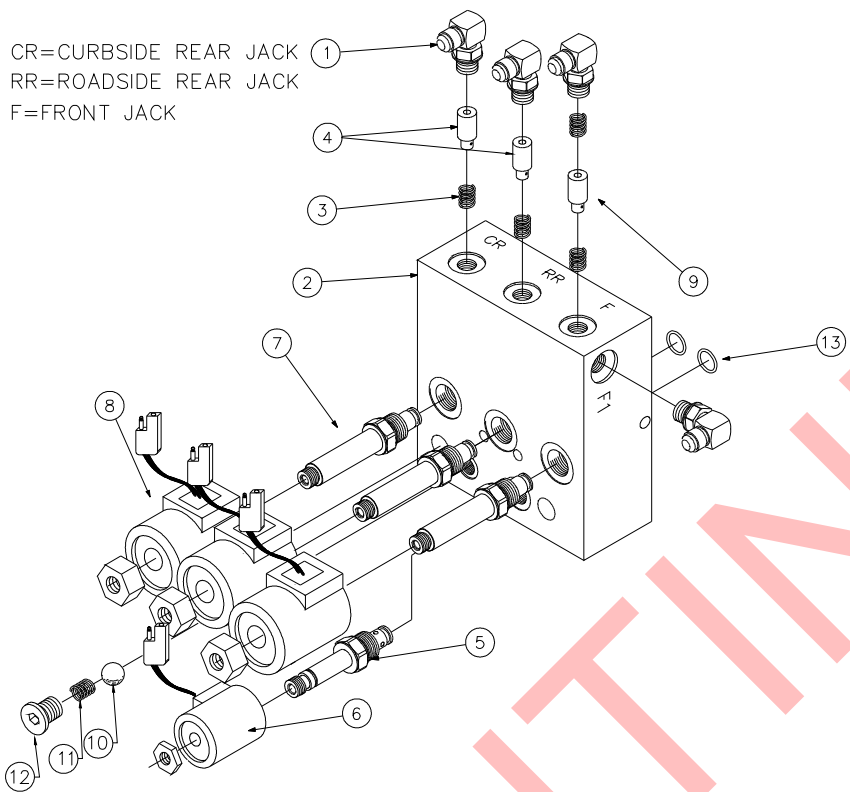
3 JACK VALVE ASSEMBLY



ITEM	PART NO	DESCRIPTION	QTY
1-13	500333	3 LEG VALVE ASSEMBLY	1
1	07-1059	90 DEG. ELBOW	3
2	NOTE 1	MANIFOLD	1
3	31-1001	SHUNT VALVE SPRING	3
4	1003-038	SHUNT VALVE POPPET (.038)	2
5	09-1111	DUMP VALVE CARTRIDGE W/NUT	1
6	09-1114	DUMP VALVE SOLENOID	1
7	09-1109	DUAL POPPET VALVE CARTRIDGE W/NUT	3
8	09-1113	DUAL POPPET VALVE SOLENOID	3
9	1003-052	SHUNT VALVE POPPET (.052)	1
10	19-1005	BALL, STEEL CHECK	1
11	31-1031	SPRING, STEEL CHECK	1
12	07-1135	SHC PLUG W/O-RING, SAE #6	2
13	01-1029	O-RING, ARP-016	2

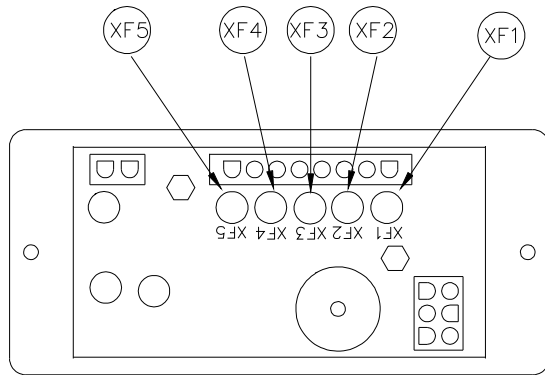
NOTE 1: Item not available as parts, included in assembly 500333.

4 JACK VALVE ASSEMBLY



ITEM	PART NO	DESCRIPTION	QTY
1-13	500334	4 LEG VALVE ASSEMBLY	1
1	07-1059	90 DEG. ELBOW	4
2	NOTE 1	MANIFOLD	1
3	31-1001	SHUNT VALVE SPRING	4
4	1003-038	SHUNT VALVE POPPET, REAR (.038)	2
5	09-1111	DUMP VALVE CARTRIDGE W/NUT	1
6	09-1114	DUMP VALVE SOLENOID	1
7	09-1109	DUAL POPPET VALVE CARTRIDGE W/NUT	3
8	09-1113	DUAL POPPET VALVE SOLENOID	3
9	1003-052	SHUNT VALVE POPPET, FRONT (.052)	1
10	19-1005	BALL, STEEL CHECK	1
11	31-1031	SPRING, STEEL CHECK	1
12	07-1135	SHC PLUG W/O-RING, SAE #6	1
13	01-1029	O-RING, ARP-016	2

NOTE 1: Item not available as parts, included in assembly 500334.

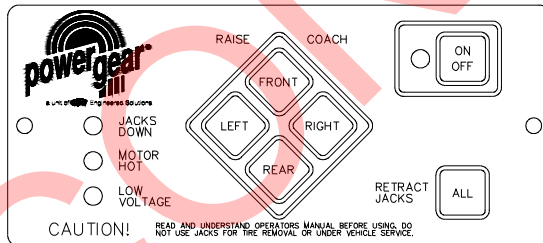


(BACK VIEW)

ITEM	PART NO	DESCRIPTION	QTY
XF1-XF5	500210	TOUCH PAD MANUAL CONTROL	1
XF1	NOTE 1	FUSE SOCKET 1.6 AMP (FUSE 14-1082) PUMP-SOLENOID	1
XF2	NOTE 1	FUSE SOCKET 1.6 AMP (FUSE 14-1082) DUMP VALVE	1
XF3-XF5	NOTE 1	FUSE SOCKET 3.15 AMP (FUSE 14-1083) LEG-VALVE	3

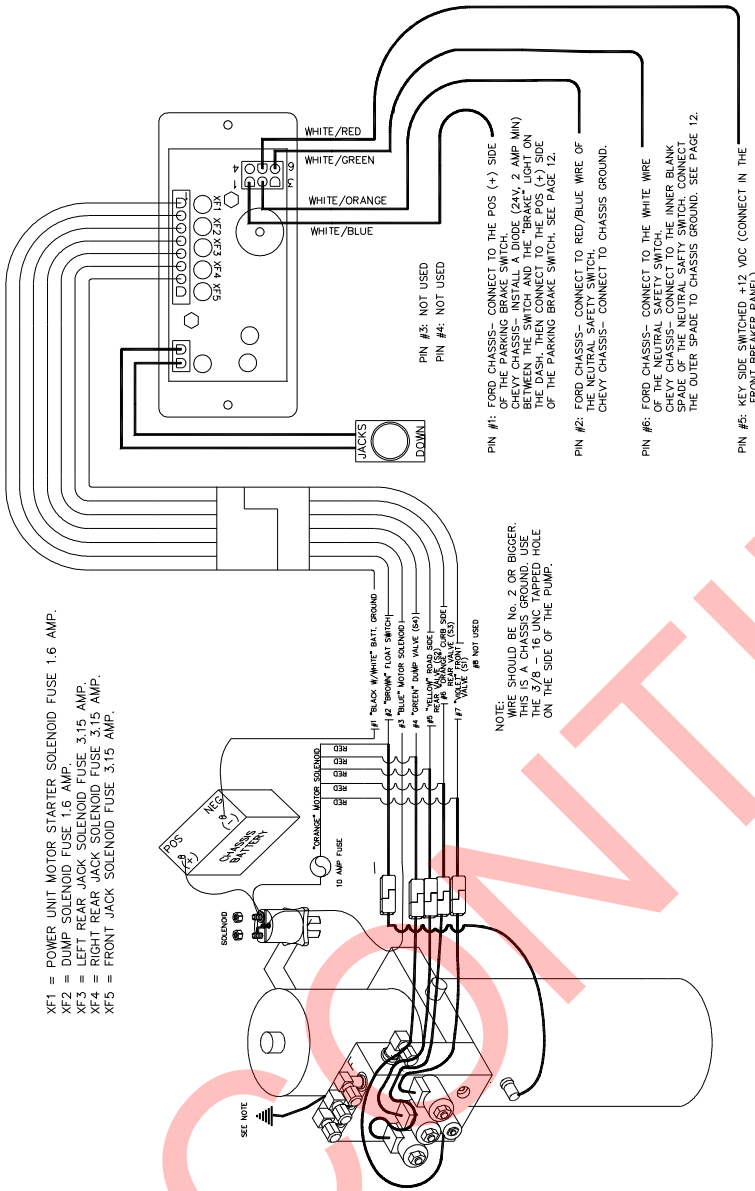
ITEM	PART NO	DESCRIPTION	QTY
NOT SHOWN	500281	FUSE KIT	1
NOT SHOWN	14-1082	FUSE 1.6 AMP	5
NOT SHOWN	14-1083	FUSE 3.15 AMP	5

NOTE 1: FUSES SOLD IN KIT #500281 (NOT INCLUDED WITH CONTROL PAD #500089)
FUSES NOT SOLD INDIVIDUALLY



(FRONT VIEW)

WIRING DIAGRAM



TROUBLE SHOOTING MANUAL SYSTEM

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
System will not turn on and ON/OFF indicator light does not light	Coach ignition not in run position.	Turn ignition to run position.
	Transmission not in neutral or park.	Place transmission in neutral or park.
	Parking brake not set.	Set parking brake.
	Panel has been left on for more than four minutes. Auto time out has occurred.	Turn ignition key off and back on.
Jacks will not extend to the ground; pump is not running.	Fuse on touch pad is blown.	Replace fuse, XF1 on touch pad with Power Gear p/n 14-1082.
Jacks will not extend to ground, pump is running.	No fluid or not enough fluid in reservoir.	Fill reservoir with Dexron III automatic transmission fluid.
	Fuse blown in pump harness.	Replace fuse with 10 amp mini-fuse Power Gear p/n 14-1055.
One jack will not extend, others will.	Fuse is blown on touch pad. See page 9.	Replace appropriate fuse on touch pad with Power Gear p/n 14-1083.
None of the jacks will retract.	Fuse on touch pad blown.	Replace fuse, XF2 on touch pad with Power Gear p/n 14-1082.
Any one or two of the jacks will not retract.	Broken spring(s). See page 7.	Replace spring.

"JACKS DOWN" light on the dash does not come on when the jacks are extended.	"JACKS DOWN" light comes on during emergency retraction of the jacks.	None. Normal operation for system.
"JACKS DOWN" lights on the touch pad do not go out when all jacks are retracted.	Low fluid level.	Fill reservoir to proper level with recommended fluid. See page 3.
Alarm sounds and "JACKS DOWN" light on dash starts flashing while traveling. The jacks are fully retracted.	Low fluid level.	Fill reservoir to proper level with recommended fluid. See page 3.

DISCONTINUED

WARRANTY

This document has been modified from the original Power Gear Rev. 1 AUG97 release. All former references to the Power Gear warranty and contact information were removed.

**For all concerns or questions, please contact
Lippert Components, Inc.**

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