AUTOMATIC LEVELING SYSTEM
OPERATION & MAINTENANCE

WARNING
For maximum stability during use of the PowerPlus Leveling Systems, all levelers and wheels must be in contact with the ground. NEVER use levelers to change tires or to perform under chassis work of any type. Lifting tires off the ground creates an unstable condition in which the vehicle can roll. Use only the vehicle manufacturer’s recommended jacking device and wheel chocks for changing tires. MECHANICAL SYSTEMS / inc. cannot be held responsible for injuries or damage resulting from misuse of this leveling system.

Keep all persons away from the vehicle when operating the leveling system.

C. APPLY PARKING BRAKE AND CHOCK THE WHEELS SECURELY. With the vehicle engine running or power source activated, turn the main control panel switch ON. It will illuminate Red to indicate that the power is on. If the engine battery has recently been charged, you may operate the system without the engine running.

D. Press AUTO EXTEND once to allow all four SWING levelers to extend to a vertical position. VERTICAL and SCISSORS levelers will begin extending.

During operation the Red ON-OFF light will be flashing slowly signifying levelers are in operation.

5th wheelers & Towables – Press and hold “LF” until front of the trailer has risen high enough for separation. Pull tow vehicle forward. Press AUTO EXTEND allowing the front of vehicle to lower and rear jacks will deploy. Continue below

At this time, the ON-OFF light will stop flashing. The operator should then perform a visual check of all four levelers to assure that no obstructions or surface abnormalities are present (rocks, potholes, etc.) and that the SWING levelers are approximately vertical. If surface abnormalities are present, retract levelers and move vehicle to a more suitable site.

E. Once again press AUTO EXTEND to allow Automatic System to level all four levelers. The control console will signal that all four corners of the vehicle are level when the Green lights on the control panel are no longer lit.

A Green light “ON” indicates that corner of the vehicle is low.

The system will sense which corner(s) is low. One or more of the green lights glowing will indicate this. Whichever green light is glowing the corresponding jack will be deployed first to level the vehicle. The remaining jacks will then pulse sequentially to distribute equal pressure of about 1000 pounds to each jack, ensuring maximum stabilization. When level and stable the green lights will no longer glow.

It will take approximately two minutes to complete the automatic leveling cycle.

CAUTION
DO NOT attempt to operate levelers while the vehicle is in neutral.

1. To Extend Levelers Automatically
A. Choose a site as level as possible to minimize the extent of leveling. As you pull up to your site, visually survey the ground for variances in terrain, rocks, etc.

B. When you have come to a complete stop, place the vehicle transmission in “PARK”.

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F. Once leveling and stabilization is completed, the red slowly flashing ON-OFF light will stop flashing.

G. Turn the main control ON-OFF switch to “OFF” and turn off ignition or power source.

2. To Retract Levelers Automatically

A. Visually check the area around and under the vehicle for foreign objects.

B. Warn all persons to clear the surrounding area during the leveler retraction cycle.

C. Check to see that the wheels are securely chocked to prevent any unexpected roll.

D. Make sure the vehicle parking brake is applied and the vehicle transmission selector is in the “PARK” position. (DO NOT attempt to retract levelers while vehicle transmission is in “N”.)

E. Start vehicle engine with transmission in park or activate power source, then turn main console switch ON. If the engine battery has recently been charged, you may operate the system without the engine running. When the engine is started the Jack Down Buzzer alarm will sound. This is a safety feature alerting the operator that the vehicle should not be moved until the levelers are fully stowed.

F. Press AUTO-RETRACT switch once and levelers will automatically rise to the fully stowed position in approximately two minutes.

5th Wheelers & Towables – Press AUTO-RETRACT once, the front jacks will retract slightly and the rear jacks will fully stow. Then press and hold the “LF” switch to raise the front of the trailer to allow re-hitching. Press AUTO-RETRACT to fully stow front levelers.

G. Turn the main console switch to OFF when all the levelers are fully retracted.

H. Visually check for complete retraction of each SWING leveler to the near-horizontal position prior to moving the vehicle. VERTICAL levelers should stow with at least 8 inches of ground clearance. SCISSORS levelers should be folded against the bottom of the vehicle frame.

NOTE: The Power Plus Control Console is a convenience and aid to the owner/operator of the Power Plus Leveling System. The owner/operator should not rely solely upon the warning system. It is the owner/operator’s responsibility to visually check that all levelers are up before moving the vehicle. MECHANICAL SYSTEMS/inc. is not liable for any damages that might result from a malfunction or owner/operator misuse of the warning system.

3. To Extend Levelers Using Manual Switching

NOTE: UP means retract and DOWN means extend referring to the action of the levelers. i.e. When the levelers are going UP (retracting) the vehicle is going down. Conversely, when the levelers are going DOWN (extending) the vehicle is going up.

IMPORTANT: When using the Manual Switches always use 2 to 3 second pulses per jack and rotate around the vehicle. Damage may occur if 2 or more jacks are operated at the same time under load.

A. Perform Steps A, B and C in automatic leveling.

B. Press DOWN on one of the four leveler switches and the SWING leveler will begin lowering itself from the near horizontal travel position to the vertical position. The SWING leveler will reach the vertical position after about 5 seconds. The corresponding Red position indicator light on the control panel will illuminate when the SWING leveler passes below horizontal position.

For the VERTICAL or SCISSORS leveler this red light on the control panel will illuminate when it has started to extend. Repeat this procedure for ALL levelers.

IMPORTANT: Always extend ALL levelers to a position about 1 inch above the ground before actually extending any one of them to the ground to level the vehicle except as noted below.
5th Wheelers & Towables – Press “DOWN” for the front levelers to extend to the ground then alternate 3-second pulses of the DOWN switch until the front the unit is high enough for separation. Pull the tow vehicle forward. Press the “UP” switches alternating with 3 second pulses until the front of the vehicle is low enough to allow the rear levelers to reach a vertical position and continue below.

C. To level the vehicle, watch the four Green lights on the control panel.

Extend each leveler for 2-3 seconds. Operate each leveler sequentially (i.e. RF then RR then LR then LF) until all of the Green lights go out. This indicates that the vehicle is level. If this is done sequentially it will avoid frame twist.

An illuminated Green light indicates that corner of the vehicle should be raised.

It may be that with one of the lights out, one of the levelers is no longer in contact with the ground. If this is the case, then that leveler should be extended gently to the ground without changing the level status of the vehicle.

4. To Retract Levelers Using Manual Switching

A. Visually check the area around and under the vehicle for foreign objects.
B. Warn all persons to clear the surrounding area during the leveler retraction cycle.
C. Chock the wheels securely to prevent any unexpected roll.
D. Make sure the vehicle parking brake is applied and the vehicle transmission selector is in the “PARK” position. (DO NOT attempt to retract levelers while vehicle transmission is in “N”.)

E. Start vehicle engine with the transmission in park, then turn on main console switch.

5th Wheelers & Towables – Turn on power source. Press the FRONT switches “UP”, to retract the front jacks slightly. Press the REAR switches “UP” and fully stow the rear jacks. Then press FRONT switches “DOWN” to raise the front of the trailer to allow re-hitching. Press the FRONT switches “UP” to fully stow the front levelers alternating in 2 to 3 second pulses.

F. Retract the levelers one at a time, for about two seconds each. If this is done sequentially it will avoid frame twist.

IMPORTANT: NO individual leveler should be completely retracted all at one time. Alternate or rotate the retraction of the levelers, 2 to 3 seconds at a time, until all levelers have cleared the ground.

When each leveler reaches its upper-most limits, the red position indicator light will go out. Release switch at this time.

G. Turn off the main switch when all of the levelers are retracted to their travel position.

H. The control console has a built-in warning system so that if a leveler is not retracted the Red light under that levelers extend/retract switch will be illuminated when the ignition switch is turned on. This leveler must be fully retracted before the vehicle is driven away.

Despite this feature, visually check the levelers while outside checking the waste water and electrical plugs.

NOTE: The Power Plus Control Console is a convenience and aid to the owner/operator of the Power Plus Leveling System. The owner/operator should not rely solely upon the warning system. It is the owner/operator’s responsibility to visually check that all levelers are up before moving the vehicle. MECHANICAL SYSTEMS/inc. is not liable for any damages that might result from a malfunction.
5. Helpful Hints

A. Unless the batteries are known to be fully charged, the vehicle engine should be running during the leveling operation sequence.

B. If the vehicle is parked on asphalt or soft ground, use larger pads under the levelers. An 8" to 12" square 3/4" thick plywood piece makes an ideal pad, providing enough flexibility to ensure stability.

C. In the unlikely event of a malfunction, extending or retracting the other levelers may free the problem leveler so it can be tied up out of the way until it can be repaired.

D. The levelers should be cycled once or twice every 3 months, or whenever the vehicle is used, to keep them in operating condition.

6. Lubrication & Cleaning

The gear housing of the Jack assemblies are packed with Lubriplate 1200-2 extreme pressure lithium grease. Field maintenance/replacement of this grease should not be required for the first three years of use. Thereafter it should be inspected and/or repacked by a competent technician.

Caked mud or salt should be removed using a cold water spray. Extend each leveler to within approximately 1" of the ground. Wash with a pressure washer or hose and then rinse.

Allow to air dry and then apply lubricant. External moving parts should be protected and lubricated with a dry film lubricant. On SWING levelers use an Anti-Seize spray on shoulder bolts (top and bottom) of the retract arms. On SCISSOR levelers use dry silicone spray at all four pivot points.

7. Owner Maintenance Items

A. Make sure the electrical wiring is routed to avoid sharp edges of undercarriage components and heat producing portions of the vehicle or generator exhaust system.

B. Keep the 12-volt battery system charged. If it is necessary to start the engine prior to operating the Power Plus Automatic Levelers, it could be an indication that there is a battery drain, non-sufficient charging of the battery or the power and ground terminals are corroded.

C. Check the entire charging system. Battery problems can also breed leveler problems.

D. The following maintenance checklist should be employed before, during and after any extended use of the leveling system.

8. Owner Maintenance Check-Off List for Power Plus Levelers

- Condition of battery terminals
- Battery electrolyte level
- Right front unit inspection
- Right rear unit inspection
- Left rear unit inspection
- Left front unit inspection
- In order for the leveling units to operate properly, levelers should be periodically checked for dirt buildup and cleaned.
- Spare 30 amp Slow Blow fuse (#129001)
- Whenever a fuse is burned out, check for the cause.
- REPLACEMENT FUSE: Use ONLY 30 AMP SLOW BLOW (MDL) – (#129001)
- Continual replacement of fuses is a warning of a jack or wiring problem.

NOTE: When inspecting each leveler, check if any wires have been pulled down or pulled loose during the previous trip.
SWING JACK LUBRICATION

Every three to five years
Remove gear housing lid and
lubricate the gears with white
Mo-Lith #2 grease.

Once or twice yearly
Lubricate pivot points on
both sides of jacks with
Permatex Anti-Seize

3/4" Pivot Bolts and
3/8" Pivot Shoulder Bolts

3/8" Pivot Shoulder Bolts
EMERGENCY RETRACT
INSTRUCTIONS and CAUTION

Power Plus Automatic and Standard systems have an emergency retract plug installed on the relay assembly. The Basic systems have an emergency retract plug installed at the control panel.

This will allow you, the operator, to retract any jack(s) in almost any emergency situation. However, caution must be used when utilizing this device. The instructions must be read in full before attempting this procedure.

NOTE: Before using the Emergency Retract feature, check the fuse, power and battery connections on Automatic systems for corrosion. On Standard and Basic systems check the circuit breaker, power and battery connections for corrosion.

PROCEDURE:

1. Have vehicle emergency brake ON, vehicle in PARK and wheels CHOCKED. Start engine or power source, attempt to use controller retract.

2. To use cut the tie-wrap securing the red & black set of wires with a black plastic rectangular plug wrapped around the solenoid on the Automatic relay, below the Standard relay, or the back of the Basic control panel.

3. Unplug the cable going to the affected jack from the side of the relay on Automatic or Standard systems or from the back of the control panel on a Basic system. All cables should have white tags noting which jack you are dealing with (RR for Right Rear, LF for Left Front, etc.)

CAUTION: You are over-riding the power shut-off, have someone monitor the jack while it retracts. The jack will not stop automatically when using the emergency plug.
If the jack is allowed to continue running on the Emergency Retract Plug after it has reached the stowed position the jack will be damaged.

4. Gently connect the emergency plug so that it will just make contact with the cable going to the affected jack. Hold together for a 2 to 5 second pulse to reduce the chance of over-retraction.

5. Have someone watch the jack as you raise it.

6. Immediately disconnect the plug when the jack has reached the stow position. On a SWING jack this happens just short of horizontal. On a VERTICAL jack this is less than 8 inches above the ground. On a SCISSOR jack this is before fully collapsed.

7. Contact Mechanical Systems for service.
WARNING

(PowerPlus Scissor Jack Users)

PERMANENT DAMAGE TO THE SCISSOR JACK WILL OCCUR IF THE VEHICLE IS MOVED WITH THE FOOT OF THE JACK IN CONTACT WITH THE GROUND.

THIS DAMAGE IS NOT COVERED UNDER THE TERMS OF OUR LIMITED WARRANTY

The PowerPlus electric powered scissor jack was developed to fit in installations where the vertical mounting clearance to ground is too low to allow use of other vertical rigid or swing jacks.

The PowerPlus Scissor Jack series fills a specific need in the RV industry, however the following information regarding stability of the scissor jack must be understood and accepted by the user.

The scissor jack mechanism that is used throughout the RV industry relies on the use of gear teeth sections in the mating areas of the two top and two bottom arms to assure a vertical travel while extending or retracting the jacks.

Historically, these jacks have been operated by a hand crank mechanism. This type of mechanism requires close attention by the user while the jack is in operation. This mechanism has been used for years in manual crank jacks with an extremely low rate of field problems.

Due to the type of gear mechanism that most the scissor jacks utilize, they will not tolerate vehicle movement when the jack foot pad is in contact with the ground. Vehicle movement of more than one or two inches (such as attempting to drive the vehicle while any jacks are in contact with the ground) will deform the jack arms making the jack inoperable.

PowerPlus scissor jacks have several major design advantages that greatly minimize potential damage:

A. Mechanical Systems has widened each gear engagement area by 300%. Then each of the gear engagement areas is welded together with a 7/8” spacer support bar. Each jack now has six load bearing, heat-treated surfaces adding to the strength of the jack assembly.

B. Mechanical Systems provides an audible sonic alarm with each system which, when installed, will alert the operator that one or more jacks are down when they start the vehicle or attempt to drive away.
Caution: The following are some key points to the installation of the PowerPlus Automatic leveling system. Be sure that all items on this checklist are confirmed prior to the installation of the 30-amp slow-blow fuse. Failure to do so could cause malfunctioning and/or damage to the leveling system.

- The 10 gauge red wire from relay box is connected directly to the positive terminal of the starter battery.
- Each of the 10 gauge black and 16 gauge black wires from the relay box must be connected directly to the negative terminal of the starter battery (These wires must not be spliced together to form a single wire before connection to the negative battery post).
- The 12-strand gray cable is connected from the relay to the control panel per the diagram below. Be sure that the connector is not off by a pin.
- The 5-strand cable is connected from the level sensor to the control panel per the diagram below. Be sure that the connector is not off by a pin.
- The 18 gauge white wire from the control panel is connected to the accessory side of the ignition.
- The 18 gauge blue wire from the relay unit is connected to a "T" connector on the white control panel wire. The 18 gauge white wire from the level sensor is connected to a "T" connector on the white control panel wire.
- The female connector on the 16 gauge black wire from the control unit is connected to the male connector on the 16 gauge black wire from the relay unit.
- The female connector on the 18 gauge violet wire from the control panel is connected to the male connector on the 18 gauge violet wire from the relay unit.
- The jacks are mounted per the attached instruction sheet.
- The level sensor is adjusted per the attached instruction sheet.
- All cabling connections are pressed together securely.
- A 30 amp slow-blow or MDL fuse ONLY is installed.
- CYCLE EACH JACK WITH THE MANUAL SWITCHES BEFORE USING THE “AUTO EXTEND” OR “AUTO RETRACT” FEATURE. VERIFY THAT EACH JACK’S RED LIGHT GLOWS DURING OPERATION.