1. Basic Principles
The information provided herein must be supplemented with good job management, sound principles of safety, maintenance, application, training, inspection and operation consistent with data available regarding its intended use and expected environment. Conformance with good safety practices is the responsibility of the user and the operating personnel.

Before use of this device, the operator shall have read and understood the content of these instructions, the application limitations of the device, decals, warnings, and other instructions displayed on the device.

User shall keep and maintain a copy of these instructions with the device. Users shall inspect and maintain the device as required to ensure proper operation. Products not in proper operating conditions shall immediately be removed from any service until repaired. Only qualified persons shall make repairs and the repairs shall be in conformance with the manufacturer’s recommendations.

Before the use each day or shift, the device shall be given a visual inspection and functional test including but not limited to; operating and safety controls, loose and missing parts, structural integrity and personal protective devices.

2. Protect yourself and others
To prevent accidents and the risk of being injured it is important that you read and understand these instructions before you operate the device.

- Do not use this device if you have any doubt on how it works.
- Make sure your clothing is proper for the job in which the device is to be used.
- Do not use the device if it is broken or not working correctly.
- Learn to use the device’s controls before operating the device with load or around people.
- Never overload the device or manipulate unstable or unevenly distributed loads.
- Always be alert to the work area around you and watch how you are operating the device.
- Do not place the device on ramps or grades.
- Be extra careful if you must use the device in an area where there is risk of falling objects.
Always make sure the loads are secured before using.
Check clearances before raising and lowering any loads.
Read and obey all the warning labels.
Never climb on any parts of the device.
Never allow anyone to stand or ride anywhere on the device.
Never allow anyone under the lift platform with loads attached.
Never move the device towards anyone standing in front of a fixed object, causing the risk of pinning someone.
Always check that your path is clear from debris or holes in the floor that otherwise could cause tip over or other unexpected behavior.
Do not use on edge of docks and drop-offs, since this may cause falls and tip over.
The stated load capacity is the maximum load the unit can handle safely.
Never exceed the load capacity of the device.
Always familiarize yourself with the operation of the device before applying workload.
Always operate the unit in a location that will keep it clean and dry.

3. Transporter components

![Diagram of Transporter components]

- Warning Label
- End-effector
- Hand Pendant
- Circuit breaker
- Pendant connector
- Power disconnect switch
- Charge status display
- Lift speed adjustment
- Charging socket
- Battery compartment
- Rear caster control bar
3.1 Warning label
Each warning label on your device is important. Read and obey to protect yourself and others.

The stated load capacity is the maximum weight the device can lift and carry.

Never exceed the load capacity. The load weight must always be evenly distributed over the load surface to offer stability.

3.2 Power disconnect switch
Turn ON the power to the device by releasing the Power Disconnect Switch - turn the red knob clockwise.

Turn OFF the power to the device by pressing down on the red Power Disconnect Switch.

Always turn the power OFF when device is not used.

In an emergency, immediately press down on the Power Disconnect Switch, as this will cut off the power to the device. Thereafter, do not use the device. Report the problem to your supervisor.

3.3 Circuit breaker
If the protective circuit breaker has tripped, it may, after a period of time, be manually reset. If the circuit breaker keeps on tripping, stop using the device. Report the problem to your supervisor.

3.4 Lift speed adjustment
When lifting or lowering, you have the option to select a faster speed by turning the Lift Speed knob clockwise. The farther you rotate the knob, the faster your lift platform will move. When turning the Lift Speed knob counter clockwise the lift speed will decrease proportionally.

3.5 Charge status light
The display reflects the batteries’ state of charge during the charge cycle.

<table>
<thead>
<tr>
<th>RED/YELLOW – Batteries need charging.</th>
</tr>
</thead>
<tbody>
<tr>
<td>GREEN – Batteries fully charged - the device is ready to use.</td>
</tr>
</tbody>
</table>
3.6 Hand pendant

3.6.1 UP/DOWN motion
Push the UP button ▲ or the Down button ▼ on the Pendant to raise and lower the lift platform. Release the button when you get to the desired lift height.

Note: If the load on the platform exceeds the maximum load capacity of the device, the built-in overload circuit will interlock the lift function, preventing any UP/DOWN adjustment.

3.6.2 Leg IN/OUT motion (option)
Push the IN button ← and the OUT button → on the Pendant to adjust the leg straddle/width. Release the button when you get to the desired leg width. This allows easy passage through narrow aisles/doorways, around objects or to improve load stability at higher lift heights.

3.6.3 Turn motion (option)
Push the Clockwise button ◀ and the Counter Clockwise ▶ button on the Pendant to rotate your product. Release the button when you get to the desired turning position. Built-in micro switches will establish your rotational end-points.

3.6.4 Grip motion (option)
Push the Open button ← and the Close button → on the Pendant to grip or release the holding function of your product. Built-in sensor will limit the grip torque. When fully engaged this sensor will release a clicking noise.

Note: To allow grip release, the Open button AND the top Enable button have to be pressed simultaneously.

3.7 Rear caster control
The control bar connected between the two rear casters may be positioned by foot for multiple functions:

- Parking Brake.
  Push the Control Bar to the most forward position.
  Always park the device in this position.

- Directional Locked Casters.
  Move the Control Bar to the rear control position to facilitate a pointed travel.

- Swivel Caster.
  Move the Control Bar to the middle position location to allow turning of the device.
3.8 Limit switch adjustment

The upper and lower lift travel stop points can be adjusted. The upper and one lower limit switches are located behind the blue strip on the front right side of the mast. The upper limit switch is typically set by the factory to its highest point and the lower limit switch is set to its lowest possible point.

To adjust set points, use a 0.05” Allen wrench and loosen the set screws of the limit switches.

If additional electrical wire is required to allow full adjustment, the cover beneath the bottom plate should be removed and the wire to the corresponding switch should be loosened.

When the limit switch is moved to its desired position, tighten the set screw and insert the blue strip.

4. Safety checks before operation

Always check that your device is safe before operating. Walk around the device and check it over. As an example, always check:

- The physical condition of the device.
- That the maneuvering of the device is smooth in both directions.
- The batteries are charged.
- That the Power Disconnect switch works properly.
- The UP/DOWN lift motion follows the pendant functions.
- The Lift platform automatically stops in the far top and bottom positions.
- The Lift Speed is proportional to Lift Speed settings.
- The Parking brake is holding device safely.
- All optional equipment (if so equipped) is functioning correctly.
If anything on the device doesn’t look or feel right, don’t use the device. Report the problem to your supervisor.

5. Maintenance
The device may be wiped clean with a moist rag. Any power connections to the system must be removed before cleaning and not reapplied until the system is thoroughly dry.

Before any maintenance, repair or adjustments are started on the device, the following precautions shall be applied in a safe proper work area:

- Remove all loads from the device.
- Make sure all controls are in an OFF position.
- The brake is fully applied.
- All platforms or other end-effectors are lowered to its full down or neutral position.

No attempts should be made to repair or otherwise modify the device without prior approval of the manufacturer. When components are replaced they shall be identical or equivalent to the original components.

6. General
It is recommended that the device be kept in a location that will keep it clean and dry.

When device is NOT in use, make sure the POWER DISCONNECT button is in OFF position.

7. Battery charging
Charge the batteries in an area that is ventilated and otherwise suited for such operation.

- Plug the provided line cord into the charging socket on the battery box.
- Plug the other end of the line cord into an appropriate AC outlet.
- Check the Charge Status display to learn the state of charge of the batteries.
- If none of the charge status lights come on, the charger is not getting power. Make sure the AC outlet is working and the line cord is OK.
- When the green charge status light comes on the charging is finished.
- Unplug the charge cord.
- The device is ready to use.

Note: Whenever storing the unit, the device should be connected to power for charger.
8. Battery maintenance
Wear protective eyewear, gloves and clothing when replacing batteries. Follow the battery manufacturer’s safety recommendations.

The two battery packs are accessed after removing the protective battery compartment lid. The polarized connector simplifies removal and replacement.

Note: Batteries may contain Sulfuric Acid, which cause severe burns if exposed. In case of contact, flush immediately and thoroughly with water.

9. Troubleshooting
If your device doesn’t work, here are a few things to check before you call for service assistance.

- **Battery Charger does not appear to charge the batteries.**
  - Disconnect and remove batteries.
  - Plug in Battery Charger.
  - Measure voltage between the TOP battery connector pin (+) and the BOTTOM battery connector pin (-) on battery connector terminal block inside battery compartment.
  - Measured voltage should be around 27V Dc.
  - If voltage is not present or below 24 V Dc, the battery charger has failed.

- **No up/down lift function.**
  - Pull UP the Battery Disconnect switch, allowing power to be supplied from the batteries to the motor.
  - Make sure the Lift Speed Adjustment is turned all the way up for full speed.
  - Check that the Circuit Breaker has not released.
  - Press UP/DOWN on pendant. If there is still no lift function proceed with electrical trouble shooting as follows:
    - Remove battery front access cover (turn wing nuts)
    - Measure VOLTAGE between TOP terminal (+) and BOTTOM (-) terminal on battery connector terminal block. Note: Leave batteries connected to terminal block during measurement.
    - If measurement is below 24V repeat measurements at the corresponding RED and BLACK wire terminals of the actual batteries.
    - If measurement is below 24V, the batteries are in need of charging. No further troubleshooting required.
    - Remove bottom cover (4 screws).
    - Check for loose connections. Press in ALL connectors including the two white control connectors on “blue” control board.
    - Check Up/Down functions to determine if function failure was due to loose connection.
    - Measure voltage between terminals marked B+ and B- on “blue” lift motor control board – terminals located at base of board.
    - If voltage is below 24V there is an open/wire breakage between battery terminal and control board location.
• Check that the “POWER ON” Light is lit on the “blue” control board. It should be lit when Power Disconnect switch is in UP position. If LED is not lit check the red wire running from the large terminal P1 on “blue” control board and the second interface board.

• Measure voltage between terminals marked M1 and M2 on “blue” lift control board – terminals located at top of board, while pressing up/down pendant buttons to call for up/down lift motion. Voltage should be approximately 24 Volt.

• If no output voltage between M1 and M2, the “blue” lift control board needs to be replaced.

• If voltage is present between M1 and M2, but no lift motor function: check white and black lift motor wire connections as well as the two white motor brake wire connections. Also check connection of the two black brake control wires from brake connector to white connector on “blue” control board.
10. Part List (ET-220/450 Fixed Legs)
<table>
<thead>
<tr>
<th>No.</th>
<th>Part No.</th>
<th>Qty</th>
<th>Component Description</th>
<th>No.</th>
<th>Part No.</th>
<th>Qty</th>
<th>Component Description</th>
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<tbody>
<tr>
<td>1</td>
<td>ETP070</td>
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<td>Base Plate - Fixed Legs</td>
<td>44</td>
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<td>Reed Switch Tube</td>
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<td>Extrusion Cap</td>
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<td>ETP119</td>
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<td>New Vertical Brushes</td>
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<td>Upper Screw Bearing</td>
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<td>ETP057</td>
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<td>Caster Control Bar</td>
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<td>R37 Ball Screw - 220/450 lbs.</td>
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<td>Lower Bearing</td>
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<td>ETP501/502</td>
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<td>ET- Interface Circuit Board</td>
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<td>3 Socket/3 Plug</td>
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<td>ETP495/494</td>
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</table>

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11. Electrical schematics
12. Maintenance

A. **Load Arm Bearings** - Grease every 100th hour using white lithium or equivalent (ET-600 Only)
   90 degree needle required, McMaster Carr #10475K92
B. **Vertical Lift Ball Screw** - Grease every 100th hour using white lithium or equivalent (All models)
C. **Gripper Ball Screw** - Grease every 100th hour using white lithium or equivalent (If applicable)
13. Technology

13.1 Battery charger
The built-in charger is a fully automatic, state of the art, switch mode 24Volt battery charger suitable for either gel-cell or wet sealed lead acid batteries. The advanced technology offers universal charger input (90VAC to 264V AC) allowing the charger to be connected anywhere in the world, while appropriately staging the charging cycle through suitable charge modes, and protecting the batteries for long life. The charger can therefore, be left connected indefinitely, while maintaining full charge without harming the batteries. While the charger is connected, the transporter lift circuit is disabled for safety reasons.

13.2 Solid state lift speed control
The electronic DC motor speed control offers a smooth bi-directional drive and brake control of the lift. The state of the art design provides a highly efficient operation with infinitely variable speed adjustment in both up and down directions while assuring a safe lift hold/brake control at any desired lift height. A built-in over current circuitry protects against attempting to overload the device beyond the load rating while an under voltage cutback function protects against operation under low battery capacity.

13.3 Sleep mode
The electronic system includes a sleep mode function that automatically deactivates the unit when it is left idle for more than approximately 3 minutes. The electronic system immediately wakes up again when any of the pendant buttons are pressed. This supervisory function extends battery life.

14. Warranty policy
The product is warranted against manufacturing defects in materials and workmanship for a period of one (1) year from the date of shipment. Batteries not included.

This warranty shall not cover failure or defective operation caused by operation in excess of recommended capacities, misuse, negligence, improper use, abuse, or alteration or repair not authorized by the manufacturer. The manufacturer is in no way liable to any party for any loss of profit, loss of use, installation of defective equipment, damages, incidental or consequential damages.

Any remedies under this warranty are limited to repair or replacement of failed component returned to the manufacturer during the warranty period. All defective parts replaced under this warranty shall become the property of the manufacturer and must be returned to the manufacturer properly packaged.

15. Contact information

Ergotronix, Inc.
6408 Parkland Drive,
Sarasota, FL 34243

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