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ZLTT-Series Tilting Tables
Instruction Manual

Receiving instructions:

After delivery, remove the packaging from the product. Inspect the product closely to determine whether it sustained damage during transport. If damage is discovered, record a complete description of it on the bill of lading. If the product is undamaged, discard the packaging.

NOTE:

The end-user is solely responsible for confirming that product design, use, and maintenance comply with laws, regulations, codes, and mandatory standards applied where the product is used.

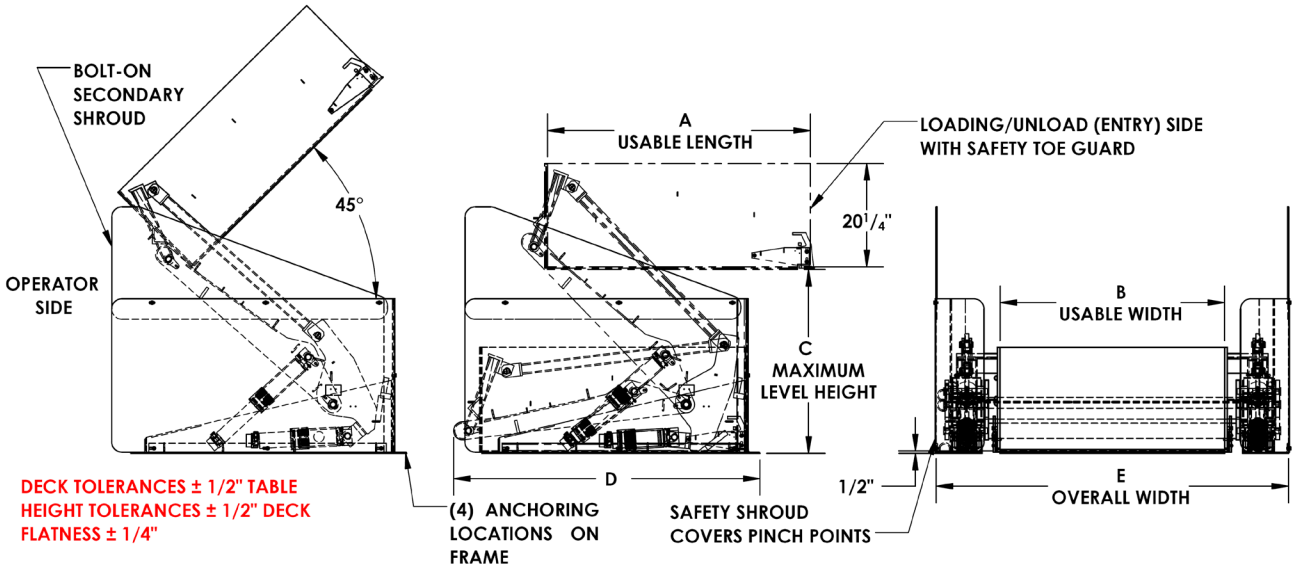
Replacement Parts and Technical Service:

For answers to questions not addressed in these instructions and to order replacement parts, labels, and accessories, call our Technical Service and Parts Department at (260) 665-7586. The department can also be contacted online at http://www.vestilmfg.com/parts_info.htm.

Table of Contents

Specifications

Dimensions and other product specifications appear in the diagrams and table below.



Model	A	B	C	D	E	Capacity	Net weight
ZLTT-4452-2-36	51 1/2" 130.8cm	44" 111.8cm	36" 91.4cm	60" 152.4cm	69" 175.3cm	2,000 lb. 909.1 kg	1926 lb. 875.5 kg
ZLTT-4452-4-36	51 1/2" 130.8cm	44" 111.8cm	36" 91.4cm	60" 152.4cm	69" 175.3cm	4,000 lb. 1,818.2 kg	1926 lb. 875.5 kg
ZLTT-5252-2-36	51 1/2" 130.8cm	52" 132.1cm	36" 91.4cm	60" 152.4cm	77" 195.6cm	2,000 lb. 909.1 kg	2029 lb. 922.3 kg
ZLTT-5252-4-36	51 1/2" 130.8cm	52" 132.1cm	36" 91.4cm	60" 152.4cm	77" 195.6cm	4,000 lb. 1,818.2 kg	2029 lb. 922.3 kg
ZLTT-4472-2-48	71 1/2" 181.6cm	44" 111.8cm	48" 121.9cm	83 3/4" 212.7cm	69 1/4" 175.9cm	2,000 lb. 909.1 kg	2630 lb. 1195.5 kg
ZLTT-4472-4-48	71 1/2" 181.6cm	44" 111.8cm	48" 121.9cm	83 3/4" 212.7cm	69 1/4" 175.9cm	4,000 lb. 1,818.2 kg	2630 lb. 1195.5 kg
ZLTT-5272-2-48	71 1/2" 181.6cm	52" 132.1cm	48" 121.9cm	83 3/4" 212.7cm	77 1/4" 196.2cm	2,000 lb. 909.1 kg	2756 lb. 1252.7 kg
ZLTT-5272-4-48	71 1/2" 181.6cm	52" 132.1cm	48" 121.9cm	83 3/4" 212.7cm	77 1/4" 196.2cm	4,000 lb. 1,818.2 kg	2756 lb. 1252.7 kg

Signal Words

This manual classifies personal injury risks and situations that might cause property damage with signal words. Signal words indicate the seriousness of injuries that might result if a particular act does, or does not, occur.

DANGER **Identifies a hazardous situation which, if not avoided, WILL result in DEATH or SERIOUS INJURY. Use of this signal word is limited to the most extreme situations.**

WARNING **Identifies a hazardous situation which, if not avoided, COULD result in DEATH or SERIOUS INJURY.**

CAUTION **Indicates a hazardous situation which, if not avoided, COULD result in MINOR or MODERATE injury.**

NOTICE Identifies practices likely to result in product/property damage, such as operation that might damage the boom.

Hazards

We strive to identify all hazards associated with the use of our products. However, material handling is dangerous and no manual can address every risk. The end-user ultimately is responsible for exercising sound judgment at all times.

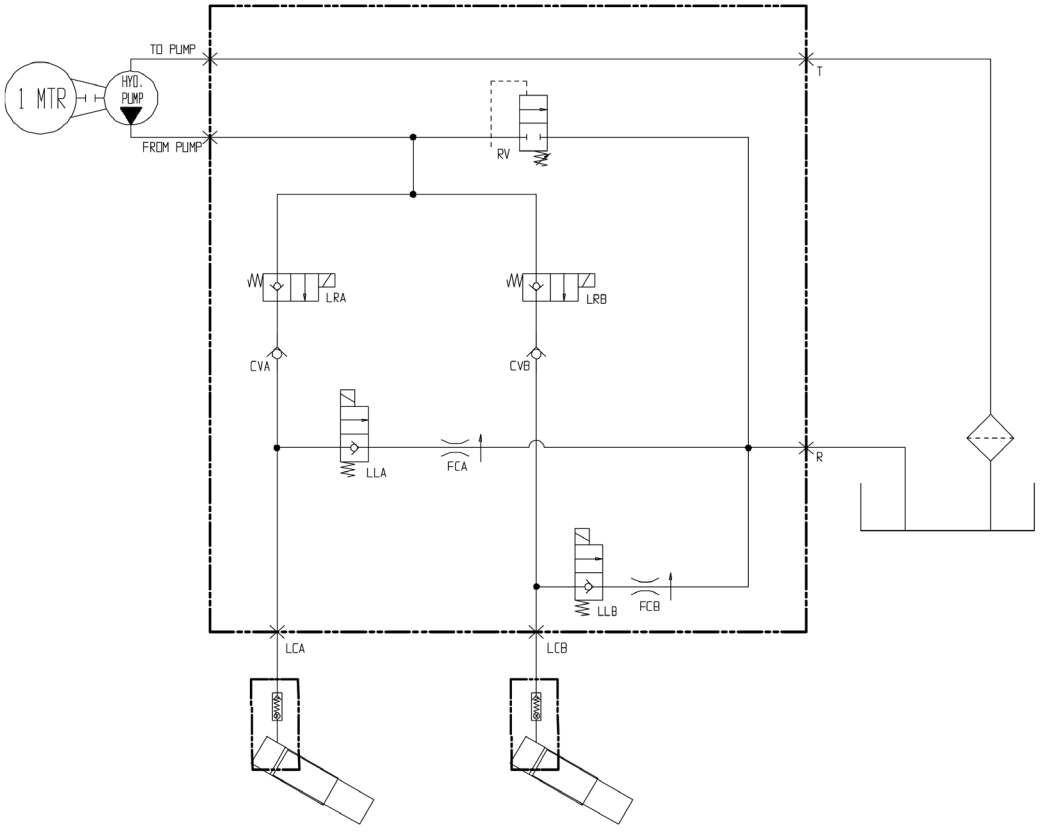
WARNING Material handling is dangerous. Improperly or carelessly operating this table might result in serious personal injuries.

- ***Failure to read and understand the entire manual before assembling, using or servicing the product constitutes misuse.*** Read the manual whenever necessary to refresh your understanding of proper use and maintenance procedures.
- DO NOT use the table unless it is in normal operating condition. Inspect the unit as described in the *Inspection* instructions on p. 12-13 to determine whether it is functioning normally. DO NOT use the machine unless it passes *every* part of the inspection or until it is restored to *Original Condition*.
- DO NOT use the machine to support people. This table is designed only for material handling.
- Always watch the tabletop carefully, as well as the load/container, while raising and lowering it.
- This crane is designed for material handling ONLY. DO NOT use the crane to lift people.
- ALWAYS load the table properly. See *Loading the table* on p. 10.
- If repairs are necessary, ONLY install manufacturer-approved replacement parts.
- The tabletop should move smoothly and evenly. Watch for binding or jerky movement and listen for unusual noises. Remove the unit from service if you observe anything abnormal.
- DO NOT use this table UNLESS all labels are in place & readable. See *Labeling diagram* on p. 12.
- DO NOT modify this product in any way. Modifying the machine automatically voids the *Limited Warranty* and might make it unsafe to use.

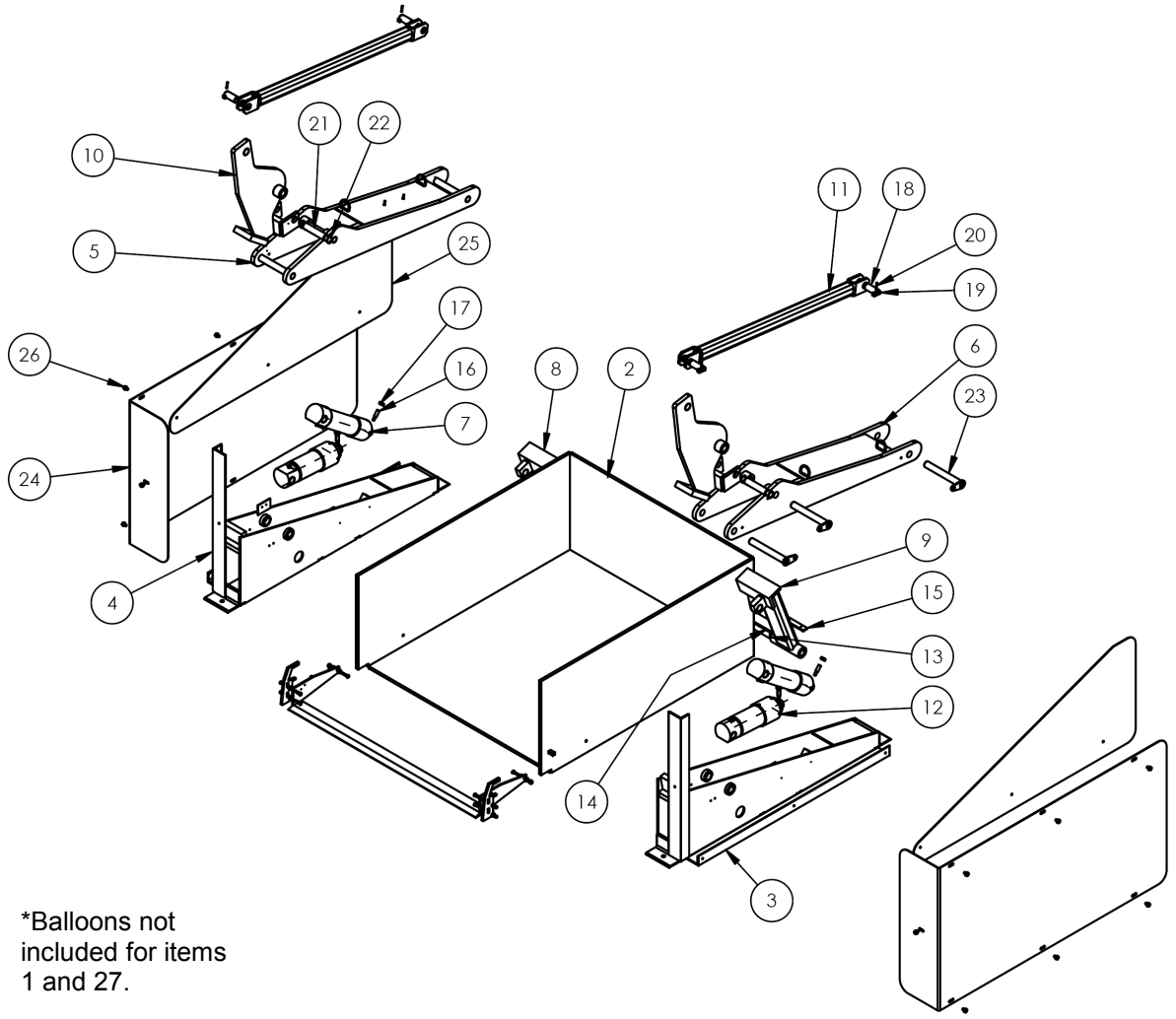
NOTICE Proper use and maintenance are essential for this product to function properly.

- Always use this product in accordance with the instructions in this manual.
- Periodically lubricate pivot point with bearing grease.
- Keep the product clean & dry at all times. Always use the unit indoors.
- Only use approved replacement parts. To order replacement or spare parts for this equipment, contact Vestil.

Hydraulic circuit diagram:



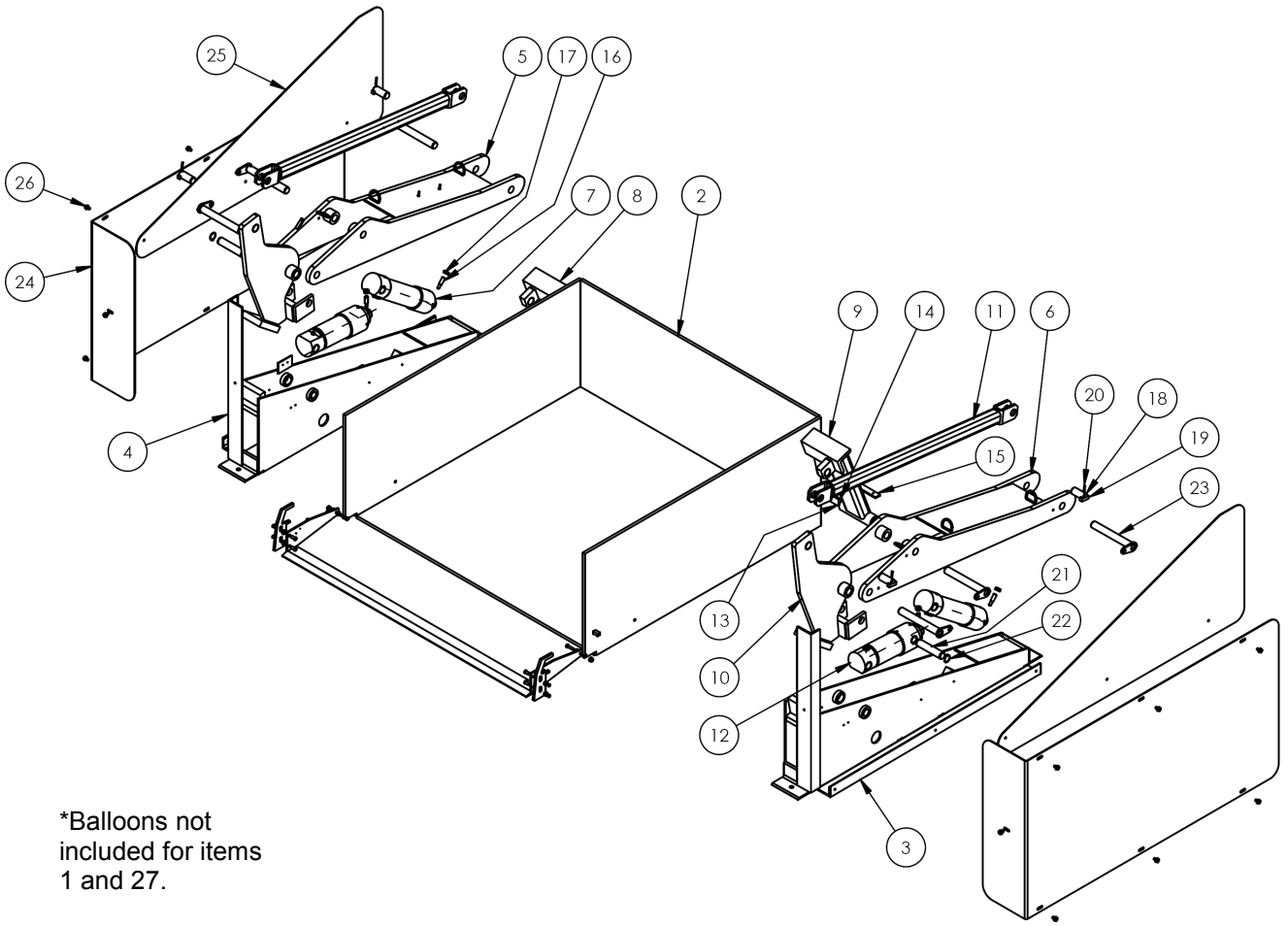
Exploded View and Bill of Materials: ZLTT-4452-2-36 & ZLTT-4452-4-36



*Balloons not included for items 1 and 27.

Item	Part no.	Description	Qty.	Item	Part no.	Description	Qty.
*1	04-514-045 04-514-045-001	Weldment, frame: ZLTT-4452-2-36 ZLTT-4452-4-36	1	15	04-016-025	Bracket, plastic guard mt.	1
2	04-513-047	Weldment, deck w/ toeguard	1	16	01-118-001	Bolt, cylinder retaining	4
3	04-514-026	Weldment, frame, left	1	17	36209	$^1/_2$"–13 hex jamb nut	4
4	04-514-027	Weldment, frame, right	1	18	01-112-008	Pin, scissor pivot	4
5	04-510-015	Weldment, leg assembly, right	1	19	01-020-003	Boss, stop pin mt.	4
6	04-510-102	Weldment, leg assembly, left	1	20	64135	Pin, roll, $^3/_{16}$"x1$^1/_4$"	4
7	99-021-906-001 99-021-901-001	Cylinder, hydraulic, ram style ZLTT-4452-2-36: 2$^1/_2$"x10" ZLTT-4452-4-36: 3"x10"	2	21	15-112-002	Pin, cylinder bracket	2
8	04-512-003	Weldment, hinge assy. w/ upper link arm, right	1	22	68021	External retaining ring, phosphate finish, 1$^1/_8$"	4
9	04-512-004	Weldment, hinge assy. w/ upper link arm, left	1	23	04-612-006	Assembly, pin, retaining	6
10	04-514-024	Weldment, frame, pivot arm, tilt	2	24	04-024-012	Cover, shroud, formed	2
11	04-514-023	Weldment, frame, linkage arm	2	25	04-024-013	Cover, shroud, optional	2
12	99-021-907-003	Cylinder, hydraulic, 3"x7" ram style, machined end	2	26	32415	$^5/_{16}$"–18x$^1/_2$" HWH thread-cutting screw, type F, zinc	14
13	04-014-017	Frame, round	1	*27	04-024-018	Guard/cover, PVC	1
14	04-014-054	Frame, angle, back	1				

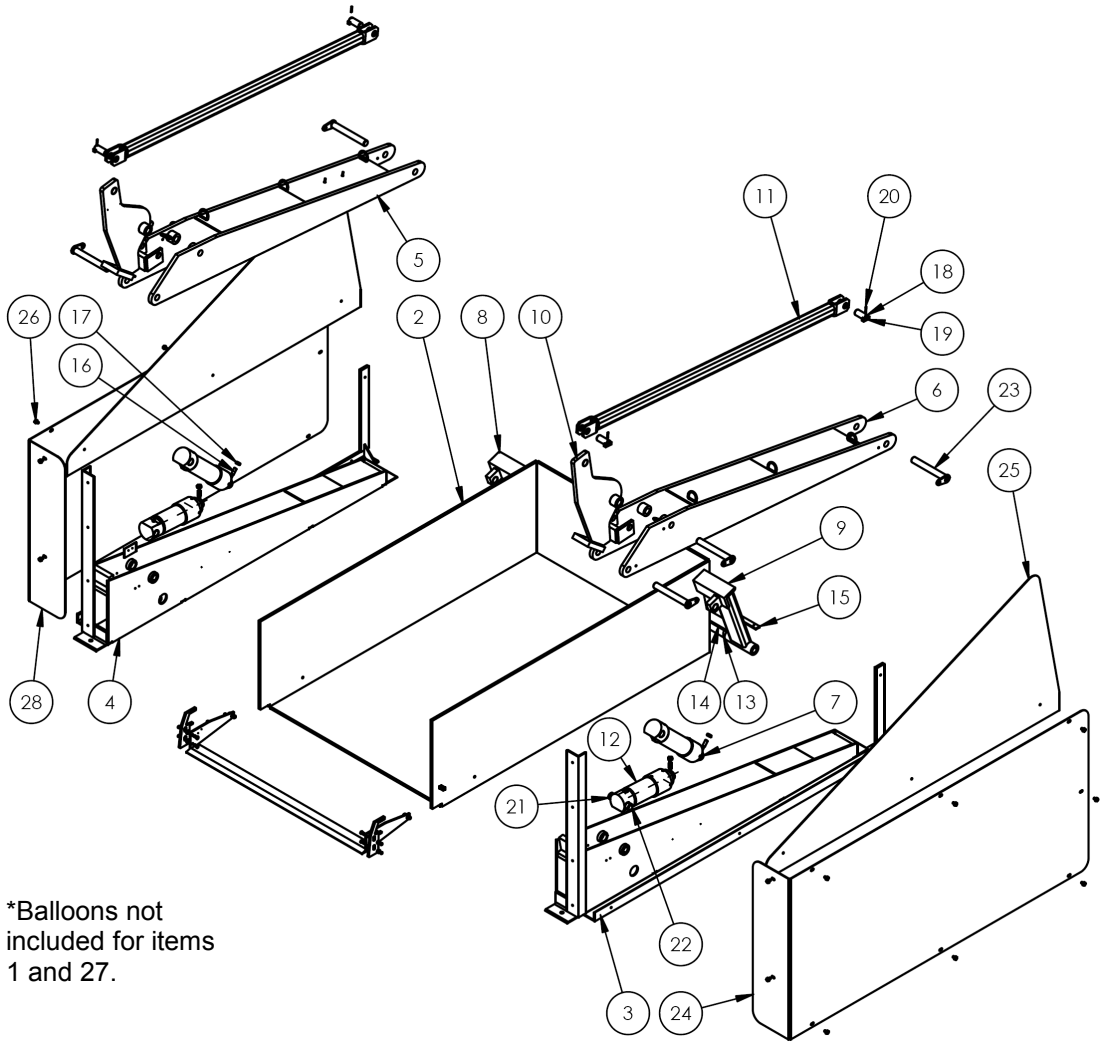
Exploded View and Bill of Materials: ZLTT-5252-2-36 & ZLTT-5252-4-36



*Balloons not included for items 1 and 27.

Item	Part no.	Description	Qty.	Item	Part no.	Description	Qty.
*1	04-514-046 04-514-046-001	Weldment, frame: ZLTT-5252-2-36 ZLTT-5252-4-36	1	15	04-016-026	Bracket, plastic guard mt.	1
2	04-513-048	Weldment, deck w/ toeguard	1	16	01-118-001	Bolt, cylinder retaining	4
3	04-514-026	Weldment, frame, left	1	17	36209	$^{1}/_{2}$"–13 hex jamb nut	4
4	04-514-027	Weldment, frame, right	1	18	01-112-008	Pin, scissor pivot	4
5	04-510-015	Weldment, leg assembly, right	1	19	01-020-003	Boss, stop pin mt.	4
6	04-510-102	Weldment, leg assembly, left	1	20	64135	Pin, roll, $^{3}/_{16}$"x1$^{1}/_{4}$"	4
7	99-021-906-001 99-021-901-001	Cylinder, hydraulic, ram style ZLTT-5252-2-48: 2$^{1}/_{2}$"x10" ZLTT-5252-4-36: 3" x 10"	2	21	15-112-002	Pin, cylinder bracket	2
8	04-512-003	Weldment, hinge assy. w/ upper link arm, right	1	22	68021	External retaining ring, phosphate finish, 1$^{1}/_{8}$"	4
9	04-512-004	Weldment, hinge assy. w/ upper link arm, left	1	23	04-612-006	Assembly, pin, retaining	6
10	04-514-024	Weldment, frame, pivot arm, tilt	2	24	04-024-012	Cover, shroud, formed	2
11	04-514-023	Weldment, frame, linkage arm	2	25	04-024-013	Cover, shroud, optional	2
12	99-021-907-003	Cylinder, hydraulic, 3"x7" ram style, machined end	2	26	32415	$^{5}/_{16}$"–18x$^{1}/_{2}$" HWH thread-cutting screw, type F, zinc	14
13	04-014-018	Frame, round	1	*27	04-024-019	Guard/cover, PVC	1
14	04-014-009	Frame, angle, back	1				

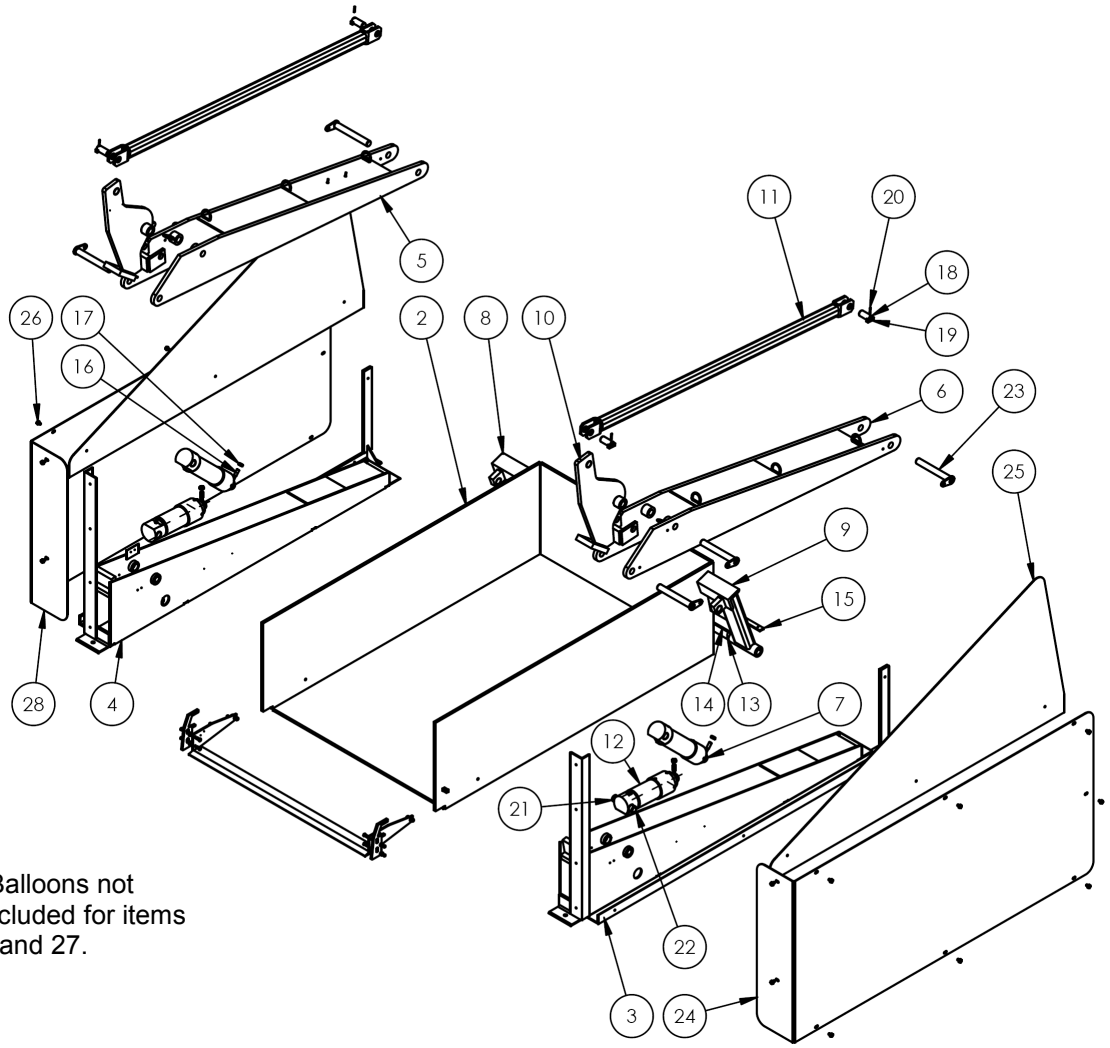
Exploded View and Bill of Materials: ZLTT-4472-2-48 & ZLTT-4472-4-48



*Balloons not included for items 1 and 27.

Item	Part no.	Description	Qty.	Item	Part no.	Description	Qty.
*1	04-514-047 04-514-047-001	Weldment, frame: ZLTT-4472-2-48 ZLTT-4472-4-48	1	15	04-016-025	Bracket, plastic guard mt.	1
2	04-513-011	Weldment, deck w/ toeguard	1	16	01-118-001	Bolt, cylinder retaining	4
3	04-514-093	Weldment, frame, left	1	17	36209	$^{1}/_{2}$"–13 hex jamb nut	4
4	04-514-092	Weldment, frame, right	1	18	01-112-008	Pin, scissor pivot	4
5	04-510-103	Weldment, leg assembly, right	1	19	01-020-003	Boss, stop pin mt.	4
6	04-510-104	Weldment, leg assembly, left	1	20	64135	Pin, roll, $^{3}/_{16}$"x1$^{1}/_{4}$"	4
7	99-021-906-001 99-021-901-001	Cylinder, hydraulic, ram style: ZLTT-4472-2-48: 2$^{1}/_{2}$"x10" ZLTT-4472-4-48: 3" x 10"	2	21	15-112-002	Pin, cylinder bracket	2
8	04-512-003	Weldment, hinge assy. w/ upper link arm, right	1	22	68021	External retaining ring, phosphate finish, 1$^{1}/_{8}$"	4
9	04-512-004	Weldment, hinge assy. w/ upper link arm, left	1	23	04-612-006	Assembly, pin, retaining	6
10	04-514-024	Weldment, frame, pivot arm, tilt	2	24	04-024-028	Guard, lower, left	1
11	04-514-028	Weldment, frame, linkage arm	2	25	04-024-029	Guard, upper	2
12	99-021-907-003	Cylinder, hydraulic, 3"x7" ram style, machined end	2	26	32415	$^{5}/_{16}$"–18x$^{1}/_{2}$" HWH thread-cutting screw, type F, zinc	18
13	04-014-017	Frame, round	1	*27	04-024-018	Guard/cover, PVC	1
14	04-014-054	Frame, angle, back	1	28	04-024-014	Guard, lower, right	1

Exploded View and Bill of Materials: ZLTT-5272-2-48 & ZLTT-5272-4-48

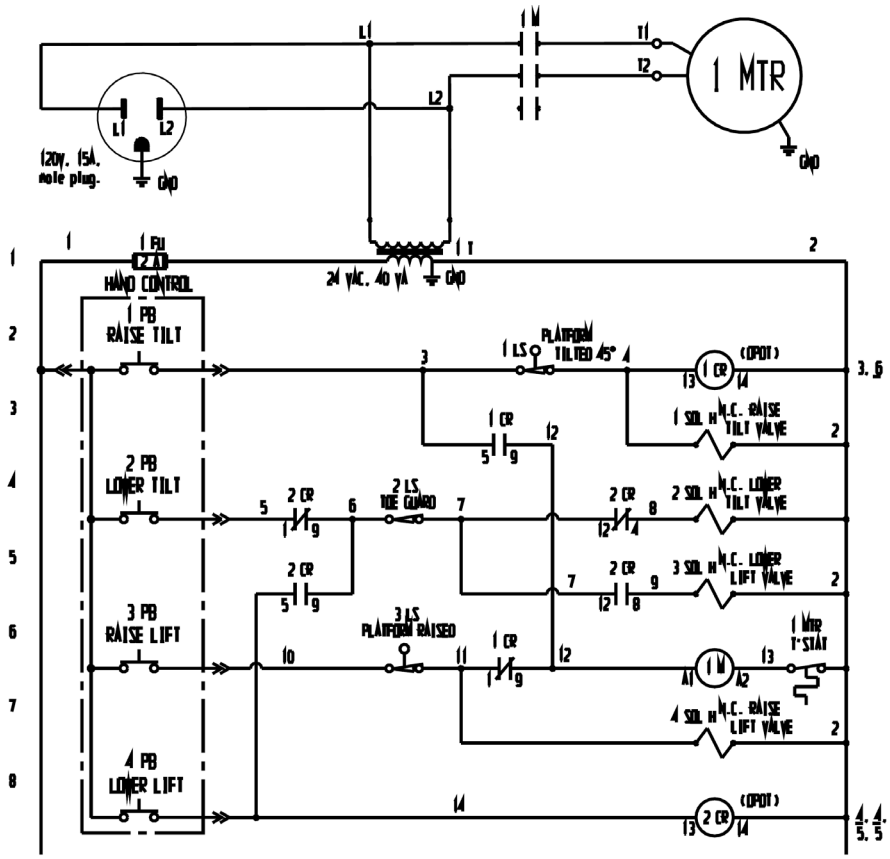


*Balloons not included for items 1 and 27.

Item	Part no.	Description	Qty.	Item	Part no.	Description	Qty.
*1	04-514-048 04-514-048-001	Weldment, frame: ZLTT-5272-2-48 ZLTT-5272-4-48	1	15	04-016-026	Bracket, plastic guard mt.	1
2	04-513-012	Weldment, deck w/ toeguard	1	16	01-118-001	Bolt, cylinder retaining	4
3	04-514-093	Weldment, frame, left	1	17	36209	$^{1}/_{2}$"–13 hex jamb nut	4
4	04-514-092	Weldment, frame, right	1	18	01-112-008	Pin, scissor pivot	4
5	04-510-103	Weldment, leg assembly, right	1	19	01-020-003	Boss, stop pin mt.	4
6	04-510-104	Weldment, leg assembly, left	1	20	64135	Pin, roll, $^{3}/_{16}$"x1$^{1}/_{4}$"	4
7	99-021-906-001 99-021-901-001	Cylinder, hydraulic, ram style ZLTT-5272-2-48: 2$^{1}/_{2}$"x10" ZLTT-5272-4-48: 3" x 10"	2	21	15-112-002	Pin, cylinder bracket	2
8	04-512-003	Weldment, hinge assy. w/ upper link arm, right	1	22	68021	External retaining ring, phosphate finish, 1$^{1}/_{8}$"	4
9	04-512-004	Weldment, hinge assy. w/ upper link arm, left	1	23	04-612-006	Assembly, pin, retaining	6
10	04-514-024	Weldment, frame, pivot arm, tilt	2	24	04-024-028	Guard, lower, left	1
11	04-514-028	Weldment, frame, linkage arm	2	25	04-024-029	Guard, upper	2
12	99-021-907-003	Cylinder, hydraulic, 3"x7" ram style, machined end	2	26	32415	$^{5}/_{16}$"–18x$^{1}/_{2}$" HWH thread-cutting screw, type F, zinc	18
13	04-014-018	Frame, round	1	*27	04-024-019	Guard/cover, PVC	1
14	04-014-009	Frame, angle, back	1	28	04-024-014	Guard, lower, right	1

115VAC, Single-Phase Electric Circuit Diagram (04124018 Rev. E)

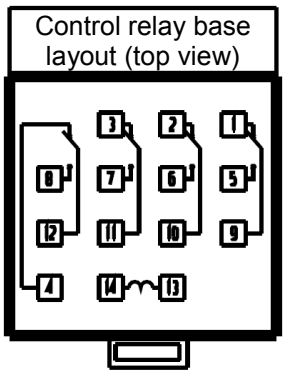
NOTE: Overcurrent & short-circuit protection and disconnect must be provided by the end-user.



NOTES:

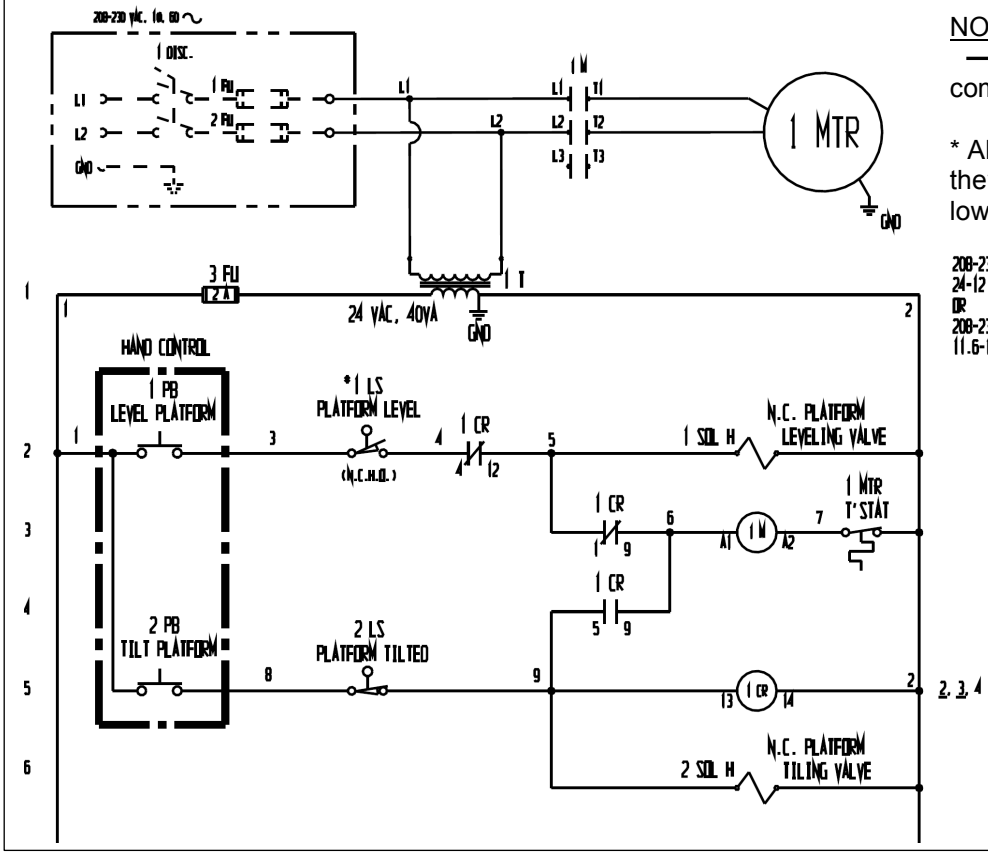
* All components represented as they would be with the table in its “Home” (resting) position.

Control relay base layout (top view)



203-240VAC Single Phase Electric Circuit Diagram (04124019 Rev. D)

NOTE: Overcurrent & short-circuit protection and disconnect must be provided by the end-user.



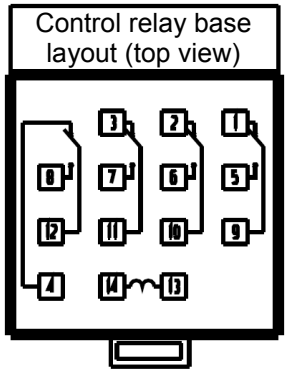
NOTES:

— · · — Indicates wire and/or components customer must provide.

* All components represented as they would be with the table in its lowered “home” (resting) position.

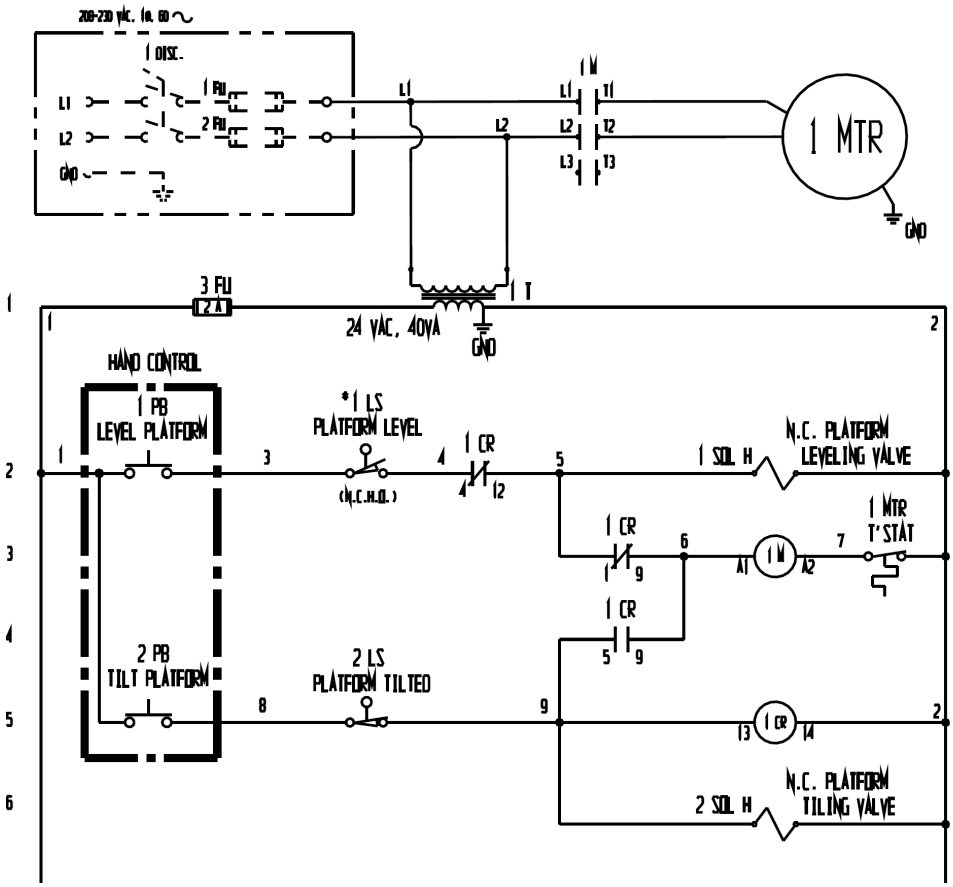
208-230VAC, 1.5HP
24-12 FLA, 1725 RPM
OR
208-230VAC, 2 HP
11.6-10.2 FLA, 3450 RPM

Control relay base layout (top view)



3-Phase Electric Circuit Diagram (04124020 Rev. E)

NOTE: Overcurrent & short-circuit protection and disconnect must be provided by the end-user.

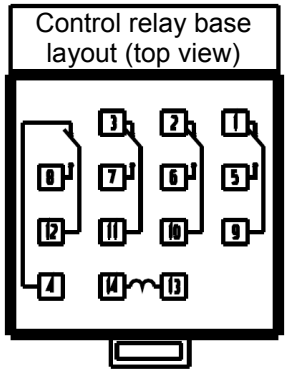


NOTES:

— · · — Indicates wire and/or components customer must supply.

* All components represented as they would be with the table in its "Home" (resting) position, i.e. the tabletop is horizontal

208-230VAC, 1.5HP
24-12 FLA, 1725 RPM
OR
208-230VAC, 2 HP
11.6-10.2 FLA, 3450 RPM



Installation

NOTE: Numbers in parentheses () correspond to item numbers in the *Exploded Views* on pages 4, 5, 6, & 7.

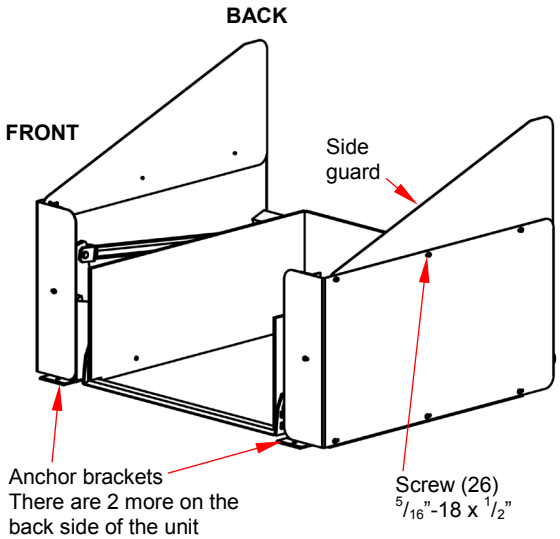
Move the table to its installation location. Orient the unit as desired.

Connect the power unit to your electric utility. Refer to the appropriate *Electric Circuit Diagram* on p. 8 or 9.

There are 4 anchor brackets welded to the frame: 2 on the front side and 2 on the back side. Each bracket has a bolt hole for $^1/_2$" anchor bolts. The necessary length of the anchor bolts should be determined by the building engineer.

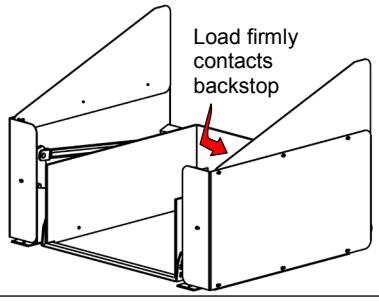
Drill $^1/_2$" holes into the concrete at the location of each bracket hole to the necessary depth for your anchor bolts. NOTE: The anchor brackets on the back side of the unit are not accessible unless the tabletop is raised.

The side guards (24 & 25) are attached upside down to the side walls and must be turned right side up. Remove the screws (26). Orient the side guards as shown in the diagram and reinstall the screws. The guards ***must*** be in place before the table is put into service.



Loading the Table

ZLTT-series tables include a backstop feature to retain loads while the tabletop is tilted. The open side of the table provides a tapered edge for pallet trucks to access the table interior. The backstop will be lower than the open side of the table when it is tilted so the load must rest against the backstop when it is applied to the table. Otherwise, as the table tilts the load will slide. The load should also be centered against the backstop. The load center should be no more than 36 inches above the tabletop.



Sequence of Operation

Powered lift and tilt functions are provided by an electric-hydraulic power unit (EHPU). The EHPU uses an electric motor coupled to a gear-type hydraulic pump to pressurize the hydraulic system. Hydraulic pressure allows the cylinders to extend. Cylinder extension lifts and tilts the tabletop. Control components are housed inside a manifold bolted onto the gear pump. All hydraulic components are rated for 3,000 psi working pressure.

Standard units utilize a 4-button, constant pressure (dead man), push-button controller. Pressing the LIFT button extends the lift cylinder and raises the tabletop. The tabletop remains horizontal. Press the TILT UP button to tilt the tabletop up to a maximum angle of 45°. The table moves only as long as a button is pressed. The tabletop stops as soon as the button is released and maintains position until a button is pressed.

Notable parts of the power unit include:

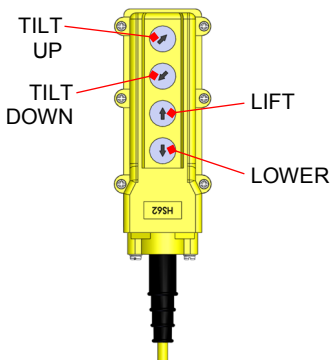
- Electric motor: Used to power the hydraulic system. The motor is either single-phase AC or three-phase AC as selected by the customer. Regardless of phase, every motor is dual-voltage capable.
- Gear pump: The pump shaft is coupled directly to the shaft of the electric motor. Several displacements are available to match the horsepower of the motor selected.
- Check valve: Prevents backflow of fluid through the pump. This allows the tabletop to maintain position/configuration when the handheld controller is not in use.
- Pressure relief valve: This valve opens a path for fluid to flow back to the reservoir if fluid pressure exceeds 3,000psi. The relief valve is a safety feature designed to prevent damage to the hydraulic system that would otherwise be caused by excessive pressure.
- Lowering solenoid valve: An electrically-operated cartridge valve with an integral screen. The screen prevents contaminants from entering the valve.
- Pressure compensated flow control spool: The spool determines the cylinder retraction speed and thereby fixes the lowering speed of the tabletop. The spool is located beneath the lowering valve. This component allows the tabletop to descend at a constant rate regardless of the weight applied to it.
- Hydraulic cylinders: Extend and retract to change the configuration of the tabletop. Each cylinder includes a bleeder valve located at the top end. The bleeder allows air to be removed from the hydraulic system.
- Velocity fuse: A safety device installed in the hose port of each cylinder. The fuse closes automatically if a sudden, significant drop in hydraulic pressure occurs. A closed fuse traps oil inside the cylinder which prevents the cylinder from retracting further. Consequently, the tabletop remains stationary until system pressure is reestablished.
- Hydraulic fluid: HO150 hydraulic fluid. Only use anti-wear hydraulic fluid with a viscosity grade of 150 SUS at 100°F (ISO 32 @ 40°C) like AW-32 or Dexron transmission fluid.

Operating the Table

A. LIFT and LOWER functions

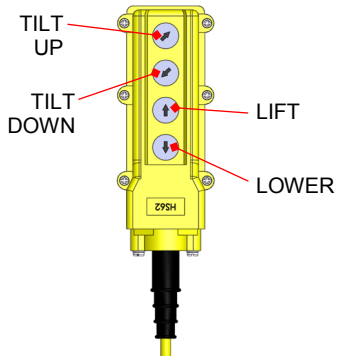
1. Raise the tabletop by pressing the LIFT button.
   - The motor turns and rotates the gear pump. While the pump rotates, oil is drawn out of the reservoir.
   - Oil passes through the suction filter and enters the pump.
   - The pump propels oil through the check valve and towards the lift cylinders.
   - Releasing the button immediately halts the tabletop.
   - A limit switch automatically turns off the motor when the tabletop reaches its maximum height.
2. Lower the tabletop by pressing the LOWER button.
   - The lowering valve opens and bypasses the check valve. Oil in the cylinder flows to the reservoir. Oil flow is regulated by the pressure compensated flow control valve. By regulating the volume of oil that can flow through the spool, the speed at which the tabletop lowers is constant.

Handheld Controller and Control Buttons



- Releasing the DOWN button during operation causes motion to stop. The tabletop maintains position until you press a control button.
- A lower limit switch stops the motor when the tabletop is completely lowered.

Handheld Controller and Control Buttons



B. TILT UP and TILT DOWN functions

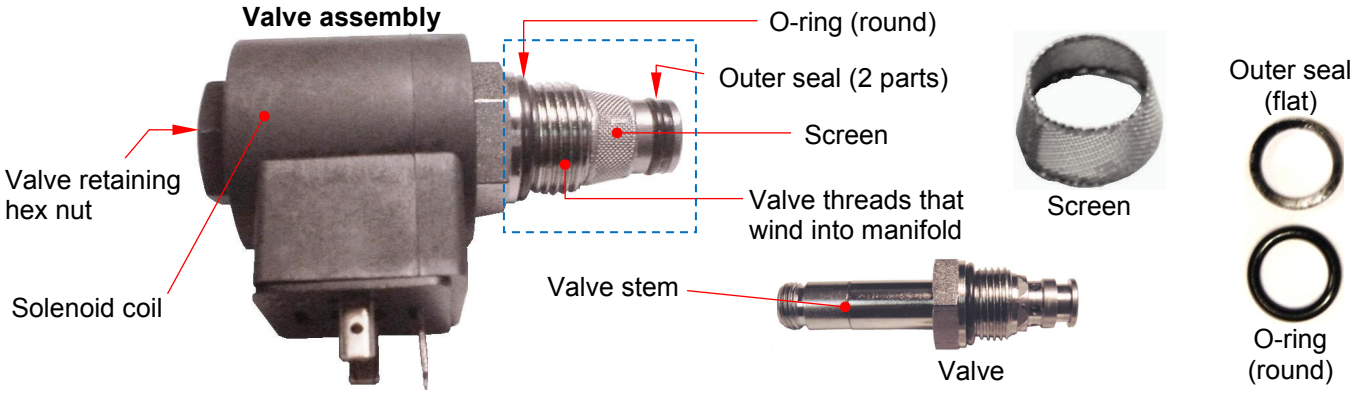
1. Tilt the tabletop by pressing the TILT UP button.
   - The motor turns and rotates the gear pump. While the pump rotates, oil is drawn out of the reservoir.
   - Oil passes through the suction filter and enters the pump.
   - The pump propels oil through the check valve and towards the lift cylinders.
   - Releasing the button immediately halts the tabletop.
   - A limit switch automatically turns off the motor when the tabletop reaches its maximum height.
2. Un-tilt the tabletop by pressing the TILT DOWN button.
   - The lowering valve opens and bypasses the check valve. Oil in the cylinder flows to the reservoir. Oil flow is regulated by the pressure compensated flow control valve. By regulating the volume of oil that can flow through the spool, the tabletop un-tilts at a constant speed.
   - Releasing the TILT DOWN button during operation causes motion to stop. The tabletop maintains position until you press a control button.
   - A lower limit switch stops the motor when the tabletop is completely un-tilted.

Hydraulic system issues and solutions

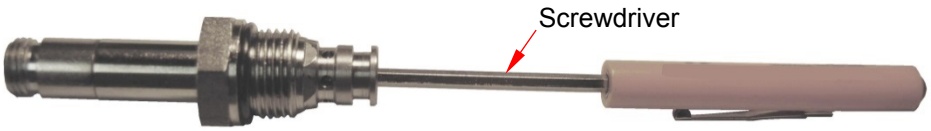
Refer to the *Hydraulic Circuit Diagram* on p. 3 as necessary to determine component location.

A. If the table slowly lowers or un-tilts without pressing either of the necessary control buttons, then the corresponding lowering cartridge valve needs to be cleaned. Remove, inspect, and clean the lowering cartridge valve. If the tabletop **un-tilts** on its own, valve LLB must be removed and cleaned. If the table **lowers** on its own, remove and clean valve LLA.

1. Press the TILT DOWN button. Then, press the LOWER button until the tabletop returns to home position.
2. Disconnect all electrical power to the equipment.
3. Unload the table.
4. Remove the valve retaining nut that fastens the solenoid coil to the valve stem. Then, unscrew the valve from the manifold (not shown).
   NOTE: The end of the valve inside the dashed lines winds into the manifold. It is not visible until the valve is unscrewed from the manifold.



5. Inspect the outside of the valve and the valve cavity in the manifold (not shown) for debris. Replace the valve if the valve stem is bent.
6. Inspect the O-ring and the outer seal for cuts, tears etc.
7. Remove debris from the valve:
   a. Use a small screwdriver to press on the end of the valve. Insert the screwdriver into the valve as shown on the following page. A poppet inside the valve is held closed by spring tension. If the poppet is unaffected by debris, it moves approximately $^{1}/_{16}$" when pressed. If the poppet cannot move when pressed, the valve might be damaged. Blow compressed air through the valve while pressing the poppet open. Mineral-spirits or kerosene can be used to flush debris out of the valve.



b. Replace the valve if the poppet does not move.
   NOTE: A flow control spool is located inside the lowering valve cavity of the manifold. It is visible once the valve is removed. The outer body is threaded into the cavity. The inner part of the spool has a spring behind it and can move under gentle pressure. Press gently on the center of the spool with a small, standard head screwdriver to determine if it can move freely up and down. If the spool does not move, the spring or the entire spool must be replaced. Contact *Technical Service* to discuss your observations if you are uncertain whether the spring or spool must be replaced.
c. Reinstall the screen, the O-ring, and the outer seal.

8. Reinstall the valve in the manifold and tighten it with 20 lb·ft of torque.

B. Bleeding air from the hydraulic system.

If the tabletop moves slowly while either the LOWER, or TILT DOWN, button is pressed, then air might be present in the cylinders. Air can cause one or both of the velocity fuses to close. A closed fuse prevents oil from flowing out of its cylinder. Air must be bled from the system to correct the problem.

- Lower the tabletop completely and unload it.
- If the tabletop moves slowly when the LOWER button is pressed, then unpin the higher end of the lifting cylinders and lay them on the base frame. If the tabletop moves slowly when the TILT DOWN button is pressed, then unpin the
- Hold a rag over the hose fitting at the blind end of the cylinder.
- Loosen the hose fitting by ½ turn.
- Push the cylinder rod in. Air will sputter from the fitting.
- Tighten the hose fitting when no more air escapes is present—only a clear stream of oil flows from it.
- Check the oil level in the reservoir. If the surface of the oil is more than 1 to 1½ in. below the fill hole, add oil. Bring the surface level up to within 1" and 1½" of the fill hole.

Record of Original Condition

Make a record of the unit in its original condition before putting it into service. Thoroughly photograph the unit from all sides. Include close range photos of each label applied to the unit, all 4 anchor bolts, and all pivot points. Use the handheld controller to elevate the table. Photograph the elevated table. Describe the motion of the table as it rises as well as how it sounds. Tilt the table. Take more photographs and again describe the motion and sounds heard as the power unit operates. Un-tilt the tabletop and lower it to the home position. Describe the motion and sound of the table as it lowers. Collate all documentation and photographs. This record establishes "original condition". Compare the results of every inspection to this record. Repair or replace all parts that no longer are in original condition. Purely cosmetic changes are not changes from original condition. However, touchup paint should be applied to all areas where the surface coating is damaged as soon as the damage occurs.

Inspections & Maintenance

Inspect the unit regularly for changes from *Original Condition*. Refer to the appropriate *Exploded View* on pages 4-7 to identify parts listed in these inspection procedures. Contact *Technical Service* to discuss any issues not addressed in these procedures or if you are unsure that the table is safe to continue using.

A. Inspect the following parts ***before each use***.
1. Side guards: Confirm that the side guards are properly and securely attached to the side walls.
2. Frame, legs, and tabletop: Look for damaged welds, warps, cracks, or other deformations. Give special attention to the cylinder mounting brackets, i.e. the structures that connect the cylinders to the frame.
3. Hydraulic system: Check all hoses for kinks, pinches, cuts, punctures, etc. Examine hose fittings and couplers. Make sure there are no oil leaks. Cycle the table from home position to the fully raised and tilted position and then back to home. Listen to the motor for unusual sounds during operation and watch the legs and tabletop. Confirm that the table moves smoothly, e.g. without binding or jerking. The tabletop should rotate evenly and at a uniform rate. Make sure that the cylinders are straight and undamaged.
4. Limit switches: Confirm normal operation of all limit switches by cycling the tabletop.
   a. Push the LIFT button. The motor should turn off when the tabletop reaches its fully raised position.
   b. Press the TILT UP button. A limit switch should turn off the motor when the tabletop is tilted 45°.
   c. Press the TILT DOWN button until the tabletop is no longer tilted. Then, press the LOWER button. The motor should turn off when the tabletop is returned to the home position.
5. Fasteners: check bolts and nuts. Make sure all fasteners are tightly connected.

B. Perform the following inspections at least once per month.
1. Oil tank: Check the oil level in the reservoir. Remove the cover from the power unit. Find the white, plastic tank. Oil should be within 1 inch of the fill hole. Add oil as needed. See Part C, "Maintaining the hydraulic oil" for oil specifications.
2. Hydraulic hoses: Examine all hoses for damage (cuts, punctures, bulges, etc.), leaks, and loose connections.
3. Electrical wiring and handheld controller: Check wiring for wear and damage. Make sure that the handheld controller is intact. Internal wiring of the controller should not be exposed. Buttons should move freely.
4. Pivot points: Lubricate pivot points with bearing grease. Inspect pivot points for severe wear. Make sure the metal around pivot points is not cracking, bending, or warping.
5. Fasteners: Check all bolts and pins and retaining hardware. Confirm that are connections are sound. Tighten loose connections.
6. Anchor points: Examine the anchor bolts and the anchoring surface. Bolts should be securely attached to the floor. Flooring should not be chipped or broken around the anchors. If anchor points are unsound, the table must be moved and reinstalled.
7. Frame, legs, tabletop, and side guards: Check for warps, damaged welds, corrosion, and fatigue. Closely examine the cylinder brackets. Lubricate cylinder pins with bearing grease.
8. Motor & pump: cycle the tabletop to the fully tilted position and back to the home position. Listen for unusual sounds as the tabletop cycles. Watch the tabletop to confirm that it tilts smoothly and at a uniform rate.
9. Labels: Examine the labels. Each label shown in the *Labeling diagram* should be undamaged and readable. Replace any label that is damaged or missing.

C. Maintaining the hydraulic oil:

Change the oil if it has a milky appearance (indicating the presence of water) darkens, or becomes gritty. Only use anti-wear hydraulic oil of viscosity grade 150 SUS at 100°F (ISO 32 at 40°C), such as AW 32 or HO 150 or a non-synthetic transmission fluid. Synthetic transmission fluid can be used, but only after slushing the hydraulic system with the synthetic fluid before filling the tank. The tank is full when the surface of the oil is within 1 inch of the fill hole.

Troubleshooting

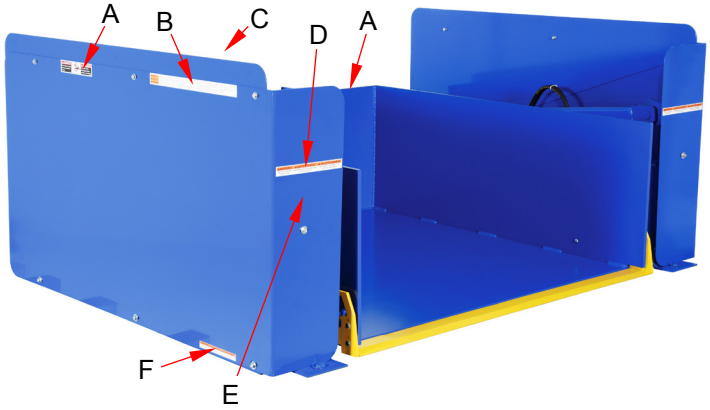
The following table describes a few issues that might occur with these tilting tables. If your unit experiences a problem not described in this guide, tag the unit "Out of Service" and contact the factory for assistance. Do not use the table again until it is restored to original condition.

Issue:	Explanation	Solution
1) I press the LIFT or TILT UP button but nothing happens.	a) Transformer fuse is blown. b) No supply voltage. c) Limit switch is engaged or malfunctioning. See Electric Circuit diagrams on pages 8-9. d) Bad connection in control circuit. e) Malfunctioning control transformer. f) Open motor relay coil.	a) Test with multi-meter. Replace if necessary. b) Make sure power cord is plugged in. Also check fuses, breakers, and overloads to determine cause. c) Inspect and test switch. Replace if defective. d) Test all parts of circuit with multi-meter. e) Check for 24VAC and replace transformer if malfunctioning. f.) test with meter, replace if bad.
2) Motor runs but table does not move.	g) Motor rotation is backwards. h) Pump not working. i) Inadequate volume of hydraulic fluid.	g) Confirm that motor shaft turns counterclockwise. h) Replace with manufacturer-approved pump. i) Bring fluid level to within 1in. of fill hole.
3) A control button/pedal is pressed, motor hums, squeals, clatters, or buzzes and table does not move.	j) Pump not working k) Inadequate power wire (thickness too small) leading to excessive voltage drop from electrical socket to motor. l) [3-phase systems only] Motor is single-phasing. m) Pressure relief valve opening.	j) Replace with manufacturer approved pump. k) Check incoming voltage *while motor running*. Correct problem: use shortest, thickest power cord to motor. l) Determine cause of voltage loss on one phase and correct. m) Check for structural damage causing binding. During operation. Reduce load to within rated capacity of table.

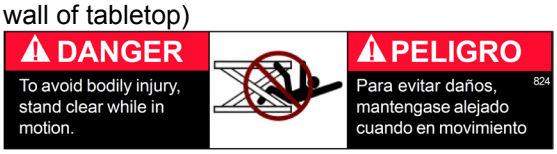
4) Tabletop tilts very slowly	o) Pinched hose. p) Velocity fuse locking. q) Incorrect counterbalance valve setting.	o) Examine all hoses for kinks. Straighten kinked hose(s) to restore oil flow. p) Counterbalance setting is incorrect. Contact Vestil for assistance. q) Decrease counterbalance setting by turning socket head screw counterclockwise.
5) Tabletop does not tilt	r) Velocity fuse locking. s) Control transformer fuse blown. t) No supply voltage. u) Bad connection in control circuit. v) Something physically blocking the tabletop. w) Solenoid valve malfunctioning x) Solenoid valve or suction hose screen plugged.	r) See solution P above. s) Test with multi-meter. Replace if necessary. t) Make sure power cord is plugged in. Also check fuses, breakers, and overloads to determine cause. u) Test all parts of circuit with multi-meter. v) Walk around the table and look for items, material, etc. interfering with table movement. w) Check solenoid with multi-meter on diode-check function (measuring Ohms does not accurately test coil). x) Remove, inspect, and clean the valve.

Labeling diagram

The unit should be labeled as shown in the diagram. However, label content and location are subject to change so your product might not be labeled exactly as shown. Replace all labels that are damaged, missing, or not easily readable (e.g. faded). Order replacement labels by contacting the *Parts Department* online at http://www.vestilmfg.com/parts_info.htm. Alternatively, you may request replacement parts and/or service by calling (260) 665-7586 and asking the operator to connect you to the Parts Department.



A: Label 824 (both side walls and load-retaining wall of tabletop)



B: Label 207 (both side walls)

C: Label 221 (on toeguard junction box)

DANGER	ELECTRICAL SHOCK 221 Rev 0111 Shut power off and consult owners manual before working on this equipment.
PELIGRO	El GOLPE ELECTRICO Corte la corriente consulte el manual de propietario antes de trabajar en este equipo.
DANGER	CHOC ELECTRIQUE Couper le courant et consulter le manuel d'utilisation avant de travailler sur cet équipement

D: Label 208 (both sides)

WARNING	ADVERTENCIA	AVERTISSEMENT
KEEP CLEAR OF PINCH POINT	MANTENGASE ALEJADO DEL PUNTO DE CORTE	SE TENIR À DISTANCE DU POINT DE PINCEMENT 208A

E: Label 287

MODEL/MODÉLO/MODÈLE _____
STATIC CAPACITY (evenly distributed) _____ lbs.
LA CAPACIDAD CONSTANTE (distribuida uniformemente) _____ kgs.
CAPACITÉ STATIQUE (distribuée régulièrement) _____ kgs.
SERIAL/SERIE/SÉRIE _____
287 REV 0812

F: Label 204 (both sides)

WARNING	ADVERTENCIA	AVERTISSEMENT
SECURE FRAME TO FLOOR	ASEGURE EL BASTIDOR AL PISO	FIXER SOLIDEMENT LE CADRE AU PLANCHER 204 Rev 1110

LIMITED WARRANTY

Vestil Manufacturing Corporation ("Vestil") warrants this product to be free of defects in material and workmanship during the warranty period. Our warranty obligation is to provide a replacement for a defective, original part covered by the warranty after we receive a proper request from the Warrantee (you) for warranty service.

Who may request service?

Only a warrantee may request service. You are a warrantee if you purchased the product from Vestil or from an authorized distributor AND Vestil has been fully paid.

Definition of "original part"?

An original part is a part used to make the product as shipped to the Warrantee.

What is a "proper request"?

A request for warranty service is proper if Vestil receives: 1) a photocopy of the Customer Invoice that displays the shipping date; AND 2) a written request for warranty service including your name and phone number. Send requests by one of the following methods:

US Mail	Fax	Email
Vestil Manufacturing Corporation	(260) 665-1339	info@vestil.com
2999 North Wayne Street, PO Box 507	Phone	Enter "Warranty service request"
Angola, IN 46703	(260) 665-7586	in the subject field.

In the written request, list the parts believed to be defective and include the address where replacements should be delivered. After Vestil receives your request for warranty service, an authorized representative will contact you to determine whether your claim is covered by the warranty. Before providing warranty service, Vestil will require you to send the entire product, or just the defective part (or parts), to its facility in Angola, IN.

What is covered under the warranty?

The warranty covers defects in the following original, dynamic parts: motors, hydraulic pumps, motor controllers, and cylinders. It also covers defects in original parts that wear under normal usage conditions ("wearing parts"), such as bearings, hoses, wheels, seals, brushes, and batteries.

How long is the warranty period?

The warranty period for original dynamic components is 1 year. For wearing parts, the warranty period is 90 days. Both warranty periods begin on the date Vestil ships the product to the Warrantee. If the product was purchased from an authorized distributor, the periods begin when the distributor ships the product. Vestil may, at its sole discretion, extend a warranty period for products shipped from authorized distributors by up to 30 days to account for shipping time.

If a defective part is covered by the warranty, what will Vestil do to correct the problem?

Vestil will provide an appropriate replacement for any *covered* part. An authorized representative of Vestil will contact you to discuss your claim.

What is not covered by the warranty?

The Warrantee (you) is responsible for paying labor costs and freight costs to return the product to Vestil for warranty service.

Events that automatically void this Limited Warranty.

- Misuse;
- Negligent assembly, installation, operation or repair;
- Installation/use in corrosive environments;
- Inadequate or improper maintenance;
- Damage sustained during shipping;
- Collisions or other accidents that damage the product;
- Unauthorized modifications: Do not modify the product IN ANY WAY without first receiving written authorization from Vestil.

Do any other warranties apply to the product?

Vestil Manufacturing Corp. makes no other express warranties. All implied warranties are disclaimed to the extent allowed by law. Any implied warranty not disclaimed is limited in scope to the terms of this Limited Warranty. Vestil makes no warranty or representation that this product complies with any state or local design, performance, or safety code or standard. Noncompliance with any such code or standard is not a defect in material or workmanship.