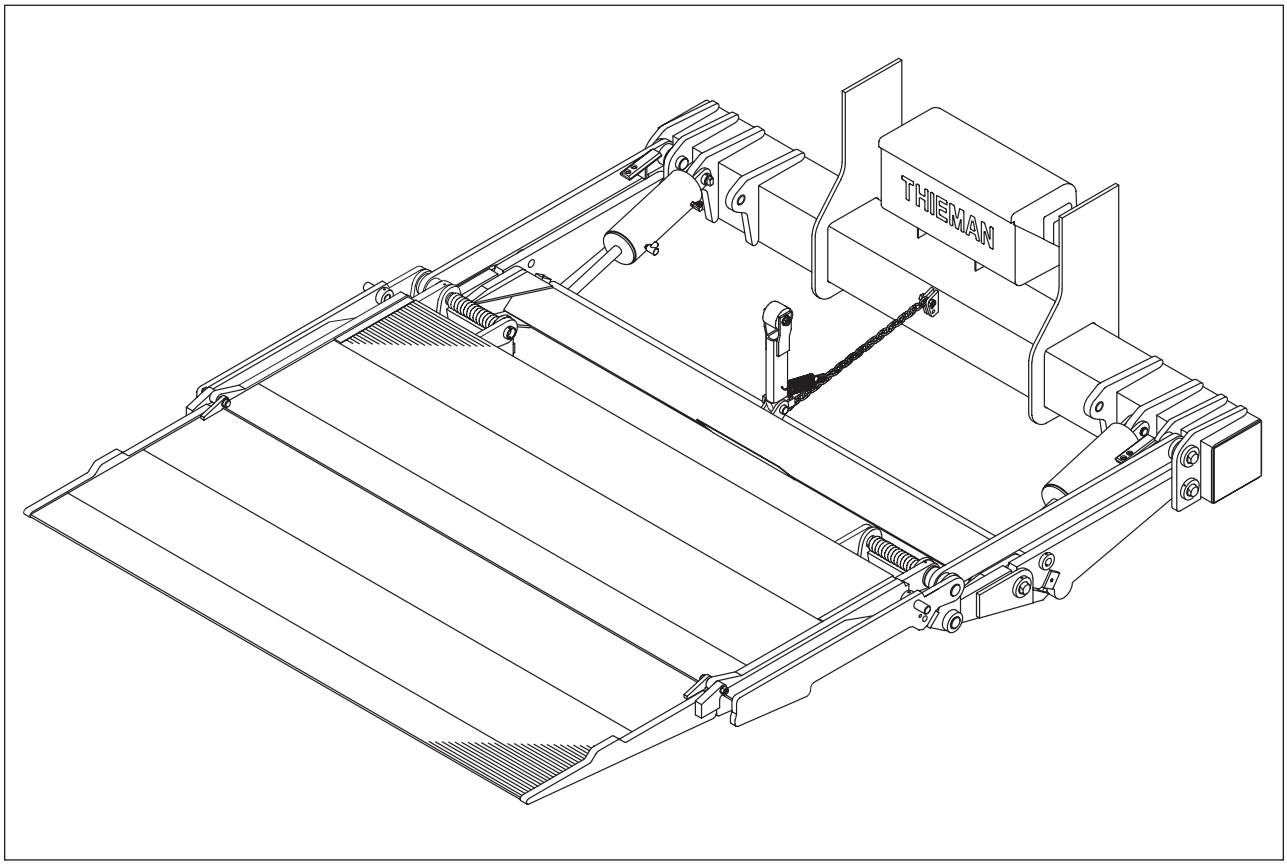
# STOWAWAY

## Tailgates By THIEMAN

# LRST-40
# OWNERS MANUAL/PARTS LIST




## ⚠ IMPORTANT! KEEP IN VEHICLE!

**PLEASE READ AND UNDERSTAND THE CONTENTS OF THIS MANUAL BEFORE OPERATING THE EQUIPMENT.**

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NTEA
THE ASSOCIATION FOR THE WORK TRUCK INDUSTRY
MEMBER

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**FOR YOUR RECORDS**

**Model No.**_____ **Date Purchased** _____

**Serial No.** _____

**NOTE: When ordering parts be sure to include this information!**

Your Thieman Tailgate is constructed of top quality material and is warranted to be free from defects in material and workmanship under normal use. With routine maintenance and proper operation this liftgate will provide long lasting service and dependability.

## PARTS ORDERING PROCEDURE

When ordering parts, please include all the information asked for below. If this information is not available, a complete written description or sketch of the required part will help Thieman identify and deliver the needed part to you.

THE FOLLOWING INFORMATION MUST BE INCLUDED:

1. Serial Number - Thieman liftgate serial numbers can be found on the tag located on the outside of the curb side mounting plate.
2. Model Number and Capacity.
3. Platform size and Material - Steel or Aluminum.
4. Part number.
5. Description.
6. Quantity required.

## SAFETY INFORMATION

This is the safety alert symbol. This manual uses this symbol combined with the Signal Words below, which together, alert you of potential personal injury hazards. **Obey all safety messages throughout this manual, including those that follow the Signal Words below, to avoid personal injury or death.** Each Signal Word is explained below.

### SIGNAL WORDS used in this manual

**DANGER**

**DANGER** – Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

Related information will follow

**WARNING**

**WARNING** – Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

Related information will follow

**CAUTION**

**CAUTION** – Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

Related information will follow

# ⚠ WARNING

**IMPROPER OPERATION OF THIS LIFTGATE MAY RESULT IN SERIOUS PERSONAL INJURY AND/OR DEATH.** DO NOT operate this liftgate unless you have been properly instructed and have read and understood the Owner's Manual and all of its warnings, operating instructions and all decals.
Operators of this liftgate MUST be at least 18 years old. Do NOT allow those younger than 18 to be on or around the liftgate or to operate the liftgate.
ALL Liftgates, regardless of manufacturer or model, are mechanical devices, with components that can fail unexpectedly, due to abuse/misuse, poor maintenance, unforeseen causes, etc. **Component failure can lead to sudden drops or tilting of the loading surface, resulting in loads falling or tipping without warning and this FACT, should ALWAYS be considered, when operating or around any liftgate.** The warnings and decals included with this liftgate, are designed to reduce exposure to these risks, for operators and bystanders.
**The following list of warnings is to be read and understood before operating the LRST40 series liftgate.** The numbered list begins below and continues on the following pages.

# WARNINGS!

1. DO NOT operate this Thieman liftgate without the Owner's Manual for this model present on the vehicle and without all decals present and legible, as guides for proper liftgate operation and maintenance (see the "Decal Maintenance - Inspection and Location of Decals" section of this manual). For replacement Owner's Manuals, decals, etc. call Thieman at 419-586-7727. For the latest manuals and warnings for each liftgate, visit our website at www.thiemantailgates.com. Note: manuals and warnings update regularly.

2. The vehicle must be securely and properly braked on level ground before using the liftgate.

3. All protective covers and guards must be in place before operating the liftgate.

4. Before using liftgate, check for signs of improper maintenance or damage (unusual noises, vibrations, fails to operate freely, missing hardware, cracked welds…etc. See the sections in this manual with "Maintenance" in the title – refer to "Table of Contents" on Page 2). DO NOT use the lift if these are evident. Only an authorized Thieman distributor is qualified to do repairs on the liftgate. DO NOT attempt to do your own repairs or modify this liftgate. Altering this product will void all warranties and may damage the liftgate or even cause serious injury. If any repairs, adjustments, or maintenance not covered in this manual are required, contact your nearest Thieman distributor or call Thieman at 419-586-7727.

5. THIS IS NOT A PERSONNEL LIFT. Because of the pinch point between the platform and the truck, fall hazards, unstable loads, etc., riding the lift may cause severe personal injury or death. ALWAYS stay clear of the liftgate when in operation. Do NOT ride the liftgate.

6. Make certain the areas, in which the platform will open or close, are clear before opening or closing the platform.

(Warnings continued on following pages)

7. Use this liftgate ONLY for its intended purpose of loading/unloading cargo between truck bed and ground. It is NOT to be used for anything other than this. The ground is defined as the surface the truck is parked on.

8. DO NOT use this liftgate to load or unload cargo from any elevated surface such as a dock, sidewalk, raised concrete slab, etc. A truck's suspension WILL squat under load, and may cause loads to become unstable. Also, this effectively changes the "bed height" of the truck, so the liftgate may not function properly on an elevated surface and may bind and damage the liftgate. Additionally, if the ENTIRE liftgate platform is not supported by the elevated surface, this partially supported condition WILL create unintended loads on the liftgate components and MAY LEAD TO A SUDDEN LIFTGATE FAILURE.

9. DO NOT OVERLOAD THE LIFTGATE. Each liftgate has a specific maximum capacity for lifting and lowering. The standard maximum rated capacity of the LRST40 series liftgates is 4,000 lbs.

   **WARNING note: Special options can lower the maximum rated capacities below those shown above.** Be certain you know what the maximum rated capacity is for your particular liftgate.

10. NEVER off-center the load on the platform, from side to side or away from truck as this may overload the liftgate. The center of weight of the load should NEVER be placed beyond the center of the platform load surface, away from truck. Loads should be placed close to platform edge nearest truck. See figure 1.

    **WARNING note: On the LRST model liftgate, off-center loading away from the truck may cause the nose of the platform to tilt downward severely when lowering from the truck bed level, greatly increasing the risks of falling loads.** PAY ATTENTION when lowering loads, to ensure the platform is staying level. **If the platform begins to tilt downward while lowering and before reaching ground, STOP LOWERING IMMEDIATELY.** Raise the load back to bed level so the load can be centered properly. If this problem continues while lowering with the load properly centered, raise the load back to truck bed level and place the load back into the truck. Stop using the liftgate and contact the proper maintenance personnel, as stiff pivots on the liftgate can contribute to this condition. **DO NOT operate this liftgate, if this condition exists.**

11. NEVER allow any part of the load to extend beyond the edges of the platform's flat load surface. Overhanging objects increase the risks of tipping loads due to unstable loading or snagging these objects on surroundings and THESE OBJECTS COULD ALSO STRIKE OR CRUSH OPERATORS OR BYSTANDERS.

12. NEVER step on or place loads on, the ramp portion of any liftgate platform (includes all ramp styles), unless the platform is lowered completely to the ground and the entire platform and ramp are supported by the ground.

13. NEVER lift or lower unstable loads. NEVER attempt to grab or retain a load that is tipping falling, or rolling off the platform, as you may fall with, and be crushed by, the load.

14. NEVER operate liftgate if platform load surface is slippery.

(Warnings continued on following pages)

15. Make certain the areas above and below the liftgate platform and other moving liftgate parts, are clear before, and at all times during, operation of the liftgate. Do NOT allow anyone under a raised liftgate platform, where accidental or intended lowering could crush them. Do NOT allow anyone to stand around the platform where a falling load could land on them.

16. When loading/unloading platform at ground level, load/unload the platform from the rear (ramp tip end). NEVER load/unload from the left or right sides of platform. Position loads on platform at ground level, considering how they can be later unloaded into truck most safely. For example, position loads on platform at ground, so loads are as near truck as possible, with any load handles within near reach of someone standing on the truck bed, once load is raised for unloading.

17. When moving cargo between truck bed and raised liftgate platform, make sure platform is level with truck floor. Keep your body entirely on truck bed when possible (avoid standing on liftgate platform when possible). For example, push loads from truck bed to liftgate platform. Avoid pulling loads from truck bed to liftgate platform, as this may place your body near the edges of the platform and increases your risk of falls and being crushed by the load. If it is necessary to temporarily stand on the liftgate platform, to safely position your load, keep yourself as close to the truck as possible and away from the outer edges of the platform, while following all other warnings in this manual.

18. Never operate lift trucks on or over any part of the platform.

19. Follow all sections in this manual with “Maintenance” in the title – refer to “Table of Contents” on Page 2.

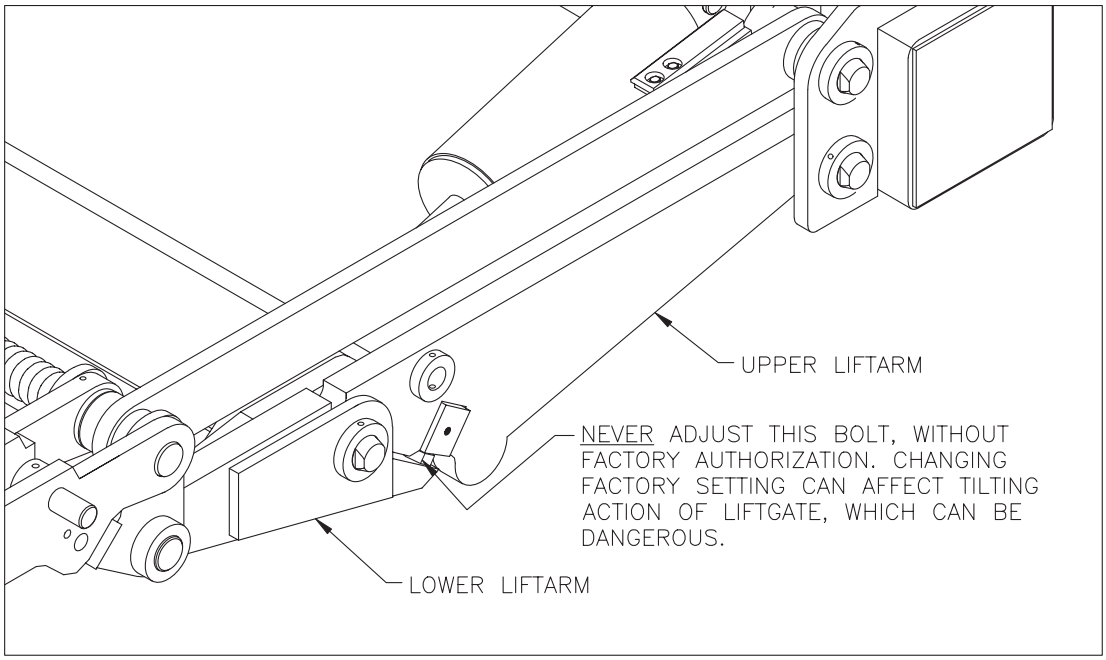
20. NEVER move vehicle unless platform is properly stowed and power is off. An open liftgate on a moving vehicle poses a serious traffic hazard.

21. ALWAYS stow liftgate in transit position when not in use. Liftgates left in their open positions, may create hazards for people and vehicles passing nearby.

22. Take care to retain cargo during transit. Liftgates are not designed to retain objects on the truck. Improperly retained objects may fall from the vehicle and pose serious traffic hazards and larger objects could shift and damage the liftgate or truck.

(Warnings continued on following pages)

23. NEVER adjust the bolts between the upper and lower lift arms. This is a factory setting and should NOT be tampered with or the tilting action of the liftgate can be affected, which can be dangerous.




24. Any time the vehicle is washed, this liftgate MUST be inspected to MAKE SURE all parts are properly lubricated and have the appropriate protectants. Failure to replace lubricants and protectants after washing the vehicle, may lead to improper operation of the liftgate, accelerated corrosion, and possible component failure.

25. NEVER operate the liftgate, while using a cell phone or while distracted. Safe liftgate operation, requires your full attention.

(Warnings continued on following pages)

# ⚠ WARNING

An improperly positioned load can overload the liftgate and result in sudden liftgate failure and/ or increased risks to personnel of being hit or crushed by loads. **IMPROPERLY POSITIONED LOADS MAY RESULT IN SERIOUS PERSONAL INJURY AND/OR DEATH.** Always position loads properly on the liftgate platform. Follow information below on how to position loads properly.

## POSITION LOADS PROPERLY ON PLATFORM

NEVER off-center the load on the platform, from side to side or away from truck as this may overload the liftgate. The center of weight of the load should NEVER be placed beyond the center of the platform load surface, away from truck. Loads should be placed close to the platform edge nearest truck. If a load is not uniformly distributed, then the heaviest portion should be closest to the edge of the platform nearest the truck. NEVER allow any part of the load to extend beyond the edges of the platform's flat load surface.

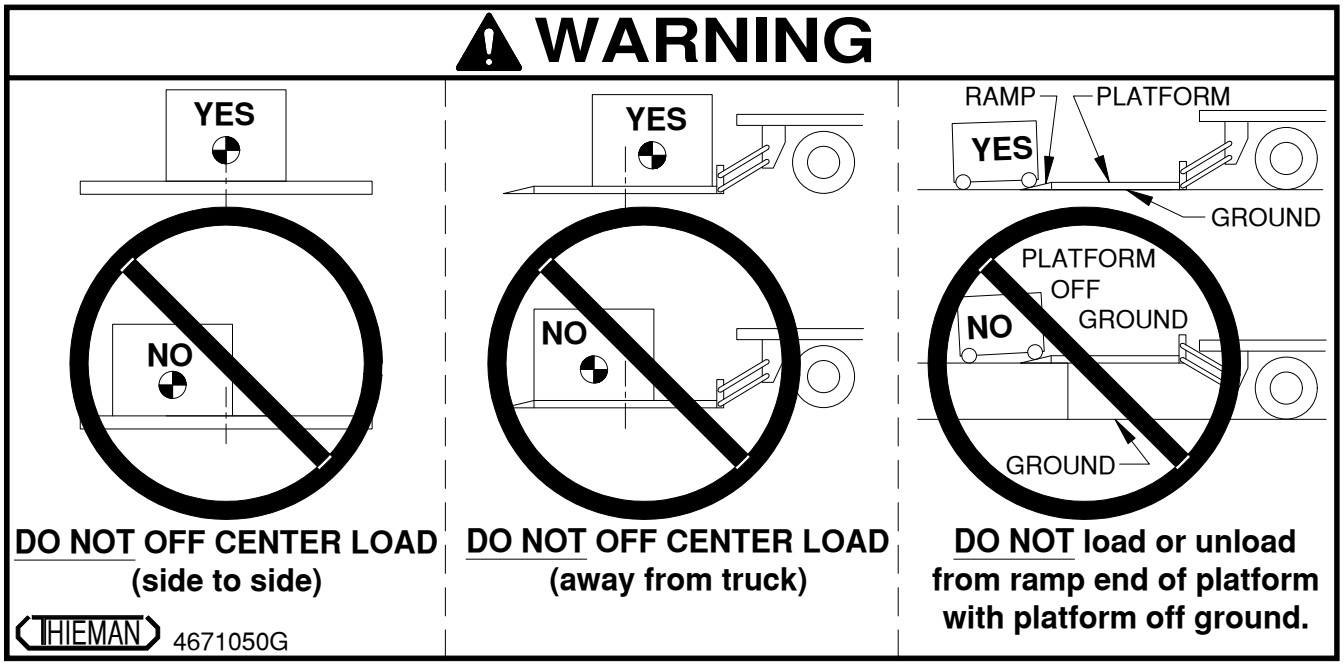



FIG. 1

## DO NOT OVERHEAT THE HYDRAULIC PUMP

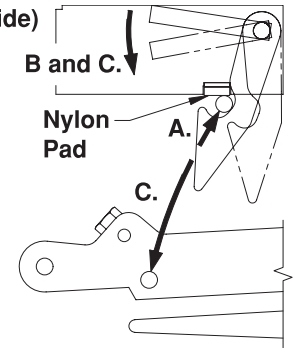
Exceeding the duty cycle of the hydraulic pump, can overheat many components, including the gear pump, the hydraulic motor, the motor start solenoid, valve coils, etc., and significantly shorten the expected life of these components. In extreme cases, immediate damage to the pump or related components may occur. Refer to the Thermal data below.

**THERMAL DATA:** To avoid overheating the motor do not operate this unit for more than 5 cycles/ 10 minutes with the maximum load. The motor then must be allowed to completely cool down to ambient temperature before cycling the lift again. This unit also has a 10% duty cycle, which means the liftgate can be cycled no more than 2 cycles/10 minutes constantly with the maximum load.

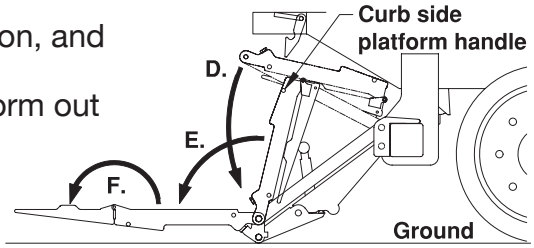
# ⚠ WARNING

**IMPROPER OPERATION OF THIS LIFTGATE MAY RESULT IN SERIOUS PERSONAL INJURY AND/OR DEATH.** DO NOT operate this liftgate unless you have been properly instructed and have read and understood the Owner's Manual and all of its warnings, operating instructions and all decals.

## OPERATING INSTRUCTIONS

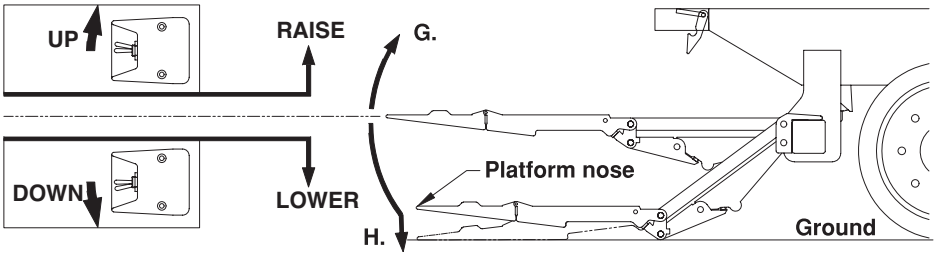



1. UNLATCH
   - A. Raise liftgate by pushing switch to UP position, until stow pins are tight against nylon pads of spacer.
   - B. Push spacer handle down with finger tips to disengage spacer latches and maintain this position through next step C.
   - C. While holding spacer handle down, lower liftgate by pushing switch to DOWN position, until stow pins are clear of spacer latches. Release spacer handle.



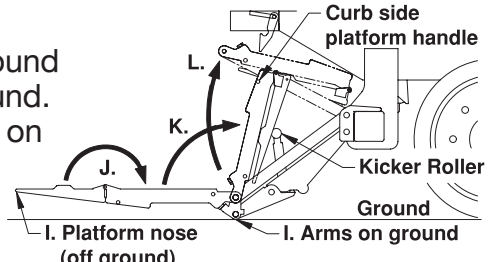

2. UNFOLD
   - D. Lower liftgate by pushing switch to DOWN position, and stop once arms contact the ground.
   - E. Grasp curb side platform handle and rotate platform out to horizontal position.
   - F. Unfold platform extension until horizontal.

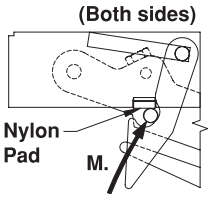
3. RAISE OR LOWER
   - G. Push switch to UP position to raise liftgate. Platform levels, then raises off ground.




   - H. Push switch to DOWN position to lower liftgate. Once arms contact the ground, continue holding switch in DOWN position, until platform nose tilts downward and touches ground.

4. STORE FOR TRANSIT
   - I. Raise or lower liftgate with switch, so arms are on ground and platform is horizontal, with platform nose off ground.
   - J. Grab platform nose and fold platform extension over on top of main section of platform.
   - K. Lift from underside of platform and fold entire platform upward. Grab platform handle on curb side to lower platform inward against nylon kicker roller.
   - L. Raise liftgate by pushing switch to UP position.
   - M. Continue raising liftgate until the stow pins on both sides of the liftgate have powered up tight against the nylon pads on the spacer. MAKE SURE stow pins are engaged in latches. DO NOT lower stow pins on latches.



# ⚠ WARNING

**IMPROPER MAINTENANCE OF THIS LIFTGATE MAY RESULT IN SERIOUS PERSONAL INJURY AND/OR DEATH.** Never use a liftgate, that has not been properly maintained. Follow all maintenance outlined in this manual, beginning with “Maintenance Guide” thru and including “Decal Maintenance - Inspection and Location of Decals”.

## MAINTENANCE GUIDE

The following inspection and maintenance operations should be performed at the recommended intervals or anytime the liftgate shows signs of abuse, and improper or abnormal operation.

## MONTHLY INSPECTION AND MAINTENANCE

Operate the liftgate throughout its entire operational cycle and check the following:

1. Check that there are no unusual noises or vibrations.
2. Check that the when the truck is on level ground and the platform is in its "leveled" and unloaded position that the entire load surface is level or toed up at the ramp tip so that when the usual load is placed on it, it becomes leveled under load. For instructions on adjusting leveling screw and platform toe. See figure 2.

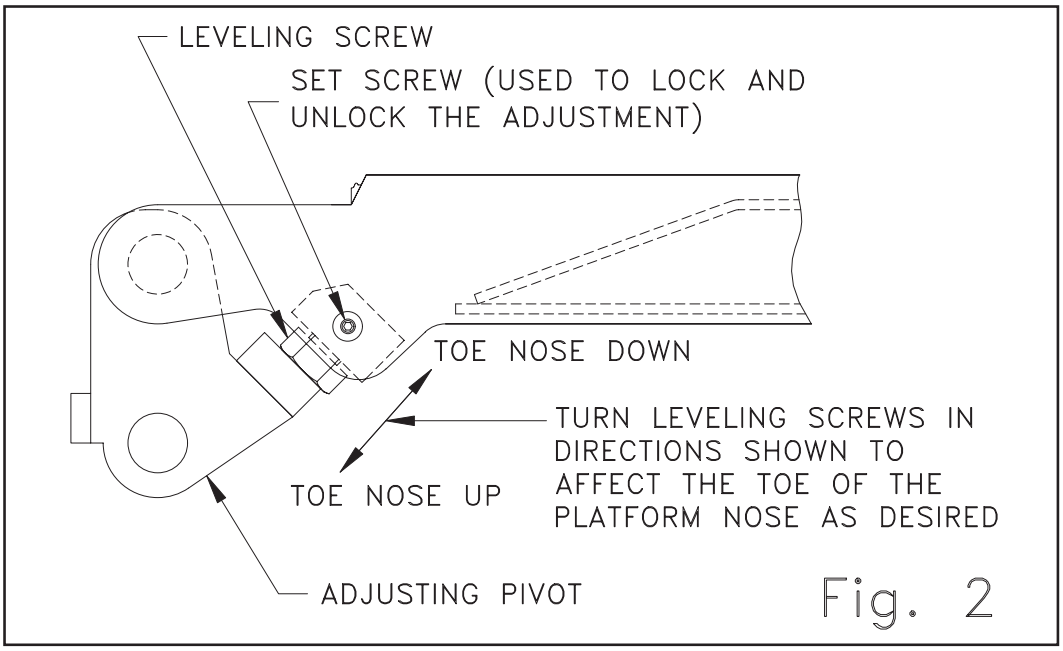


Fig. 2

3. Check platform height relative to the spacer. If platform is lower, adjust cylinder on low side with a 15/16 wrench to obtain necessary height.
4. Check for apparent damage to the liftgate such as bent or distorted members, any cracked welds, etc., which may have resulted from overloading or abuse.
5. Check for any excessive wear in the following pivot areas (Note: For bushed pivots, if the gap between pin and bushing exceeds 1/32 of an inch, the bushing should be replaced. For pivots without bushings, replace worn components if gap between pin and pivot exceeds 1/32 of an inch. Refer to parts breakdowns in this manual):
   - A. Aluminum Platform hinge shoulder bolts, pins, and bushings.
   - B. All cylinder pins and bushings.
   - C. All pins and bushings joining liftarm or idler arms to trunnion or platform.

D. Kicker arm pins, bushing, white nylon roller, etc.
E. Stow pins or nylon pads on spacer.
F. Rear Impact Guard (optional) pins and bushings.

6. Check that ALL pins, bolts, hardware, etc. are in place and retained by their proper retainers.
7. Check that all protective covers and guards are properly in place and secured.
8. Check finish of steel parts, if in poor condition, then repair finish if possible. Any rusted parts should be replaced.
9. Check condition of non-painted parts, replace if corrosion exists. Eck from Vannay.com should be used to prevent corrosion between dissimiliar metals. Do not use Never Seez or similar anti-seize products which contain abrasives that may harm the bushings.
10. Check snubbers, while platform is in stored position, to make sure they are slightly compressed by platform. If not, they should be relocated or replaced. Lack of properly installed snubbers can greatly increase wear rate of liftgate during transit.
11. Check for oil leaks in these areas:
    A. Lift cylinders
    B. Hydraulic hoses - replace if they show signs of wear or cracking.
    C. Hydraulic fittings - tighten or replace as may be required to stop leakage.
12. Check the oil level in the hydraulic reservoir. With the liftgate in the stowed position, the oil should be within 1/2 inch from the top of the reservoir. See chart below for oil applications.
13. Check that all wiring and battery cable connections are tight and free of corrosion.
14. Lubrication of the LRST 40 series liftgate should be as follows for all user conditions:

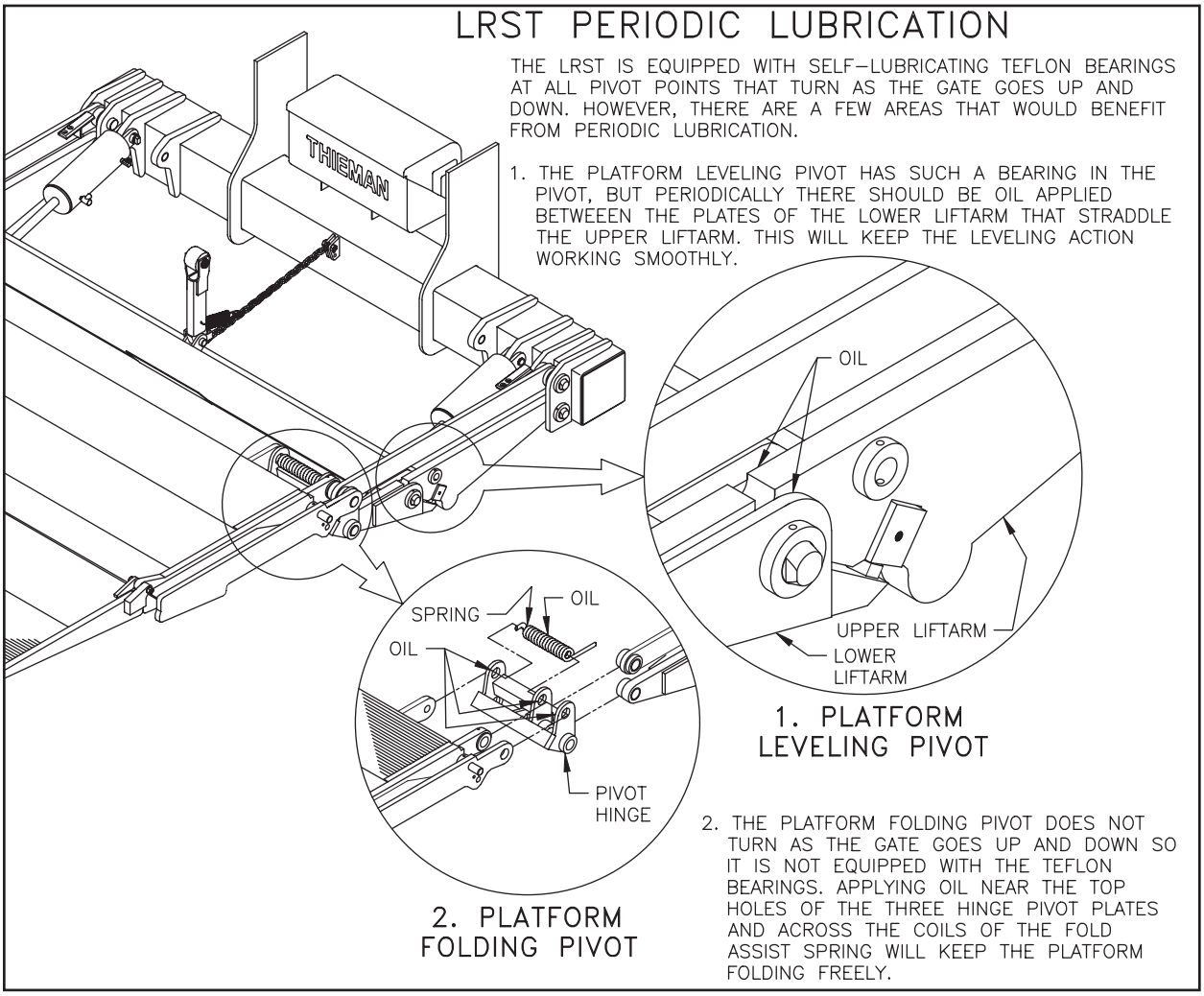
| Area of Tailgate | Type of Lubrication | Frequency |
|---|---|---|
| Spacer Latches | SAE 10 to SAE 20 oil | 50 cycles |
| Pump Oil Change | See Chart Below | Yearly |

NOTE: Many pivot points of the LRST 40 have special bushings which do not require lubrication, but must be inspected regularly for wear to avoid costly repairs or component failures.

| **HYDRAULIC FLUID CHART** | |
|---|---|
| Temperature Range | Acceptable Fluids |
| -45° to 155° F | Mobil Univis HVI-26 |
| 0° to 140° F | Dexron VI (or Dexron III)<br>Mobil 1 Synthetic ATF<br>Shell Spirax S6 ATF X |
| -55° to 100° F | AeroShell Fluid 41<br>Mobil Aero HF<br>Mobil Univis HVI-13<br>MIL-PRF-5606J |

15. Check the pump relief pressure and also the motor amperage at this pressure. These values should be as follows:

| Model | Max Amp Draw | Relief Pressure (psi) |
|---|---|---|
| LRST 40 | 255 | 265 |




## SEMI-ANNUAL INSPECTION

1. Perform the procedures outlined in the “Monthly Inspection and Maintenance.”

2. Repaint original painted components as necessary to prevent rust and corrosion from reducing structural integrity of original components.

3. Inspect pump motor by:
   A. Disconnecting battery cable
   B. Remove motor end cover
   C. Examine the armature brushes for wear. (Brushes should be replaced if they are less than 1/8” long).
   D. Clean all residue out from inside of the motor housing.
   E. Apply several drops of light weight machine oil to the armature shaft bearing in the motor end cover and reassemble the motor end cover.

4. If the hydraulic oil in the reservoir is dirty:
   A. Unfold platform and lower platform to the ground. Raise platform to bed height so cylinders are fully retracted. Support platform in this position with a lift truck or crane.
   B. Drain the oil from the hydraulic system and flush the entire system.
   C. Remove reservoir from pump and clean suction line filter. Also, clean out any contaminants inside reservoir. Remount reservoir when completed.
   D. Replace the oil as outlined in Section 12 under Monthly Maintenance and Inspection.

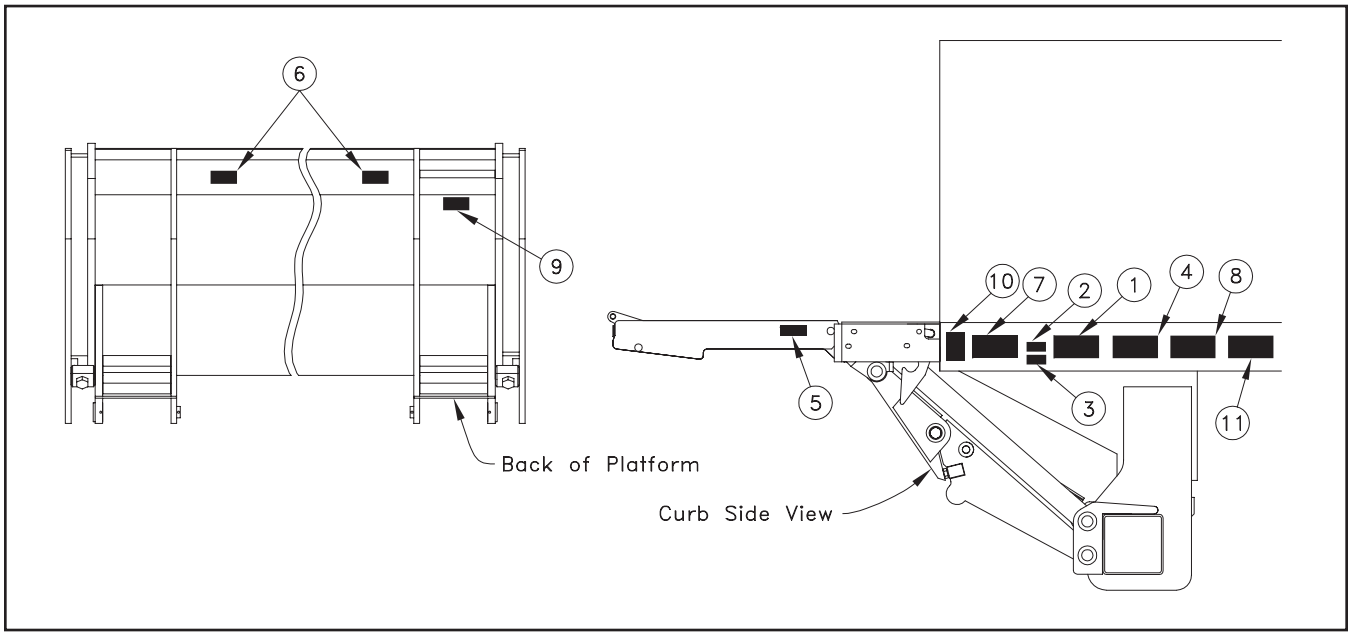
## DECAL MAINTENANCE - INSPECTION AND LOCATION OF DECALS

# ⚠ WARNING

**IMPROPER MAINTENANCE OF THIS LIFTGATE MAY RESULT IN SERIOUS PERSONAL INJURY AND/OR DEATH.** Liftgate decals provide important information, which is vital for proper and safe operation of the liftgate. Replace any decals which are missing or which are not fully legible. **DO NOT operate liftgate unless all decals are legible and are properly located.**

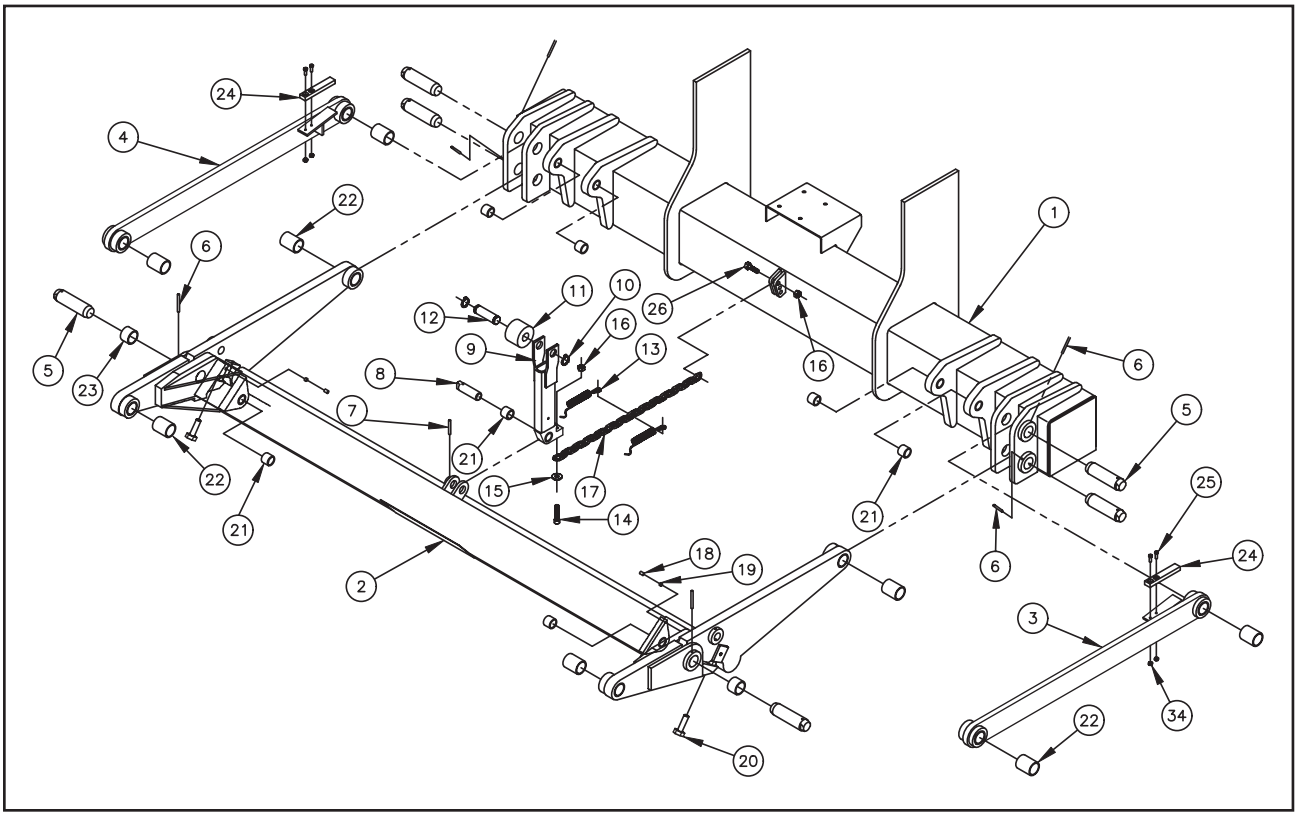
### LIST OF DECALS AND LOCATIONS

| Item | Part Name | Part Number |
|---|---|---|
| 1 | Warning Decal-Off Center | 4671050 |
| 2 | PTO Decal | 4650140 |
| 2 | Fast Idle Decal | 4650150 |
| 3 | Danger Decal-No Riding | 4609 |
| 4 | Operating Decal | 4669 |
| 5 | Capacity Decal 4000# | 4650130 |
| 6 | Warning Decal-Keep Hands Clear | 4604 |
| 7 | Warning Decal-General Warnings | 4681 |
| 8 | Warning Decal-Working Area | 4650770 |
| 9 | Warning Decal-Use Handle | 4605 |
| 10 | Warning Decal-High Pressure | 4620 |
| 11 | Wiring Decal | 4614 |
| 12 | Reflector (3) | 5705 |



## TRUNNION, LIFT ARM, IDLER ARM

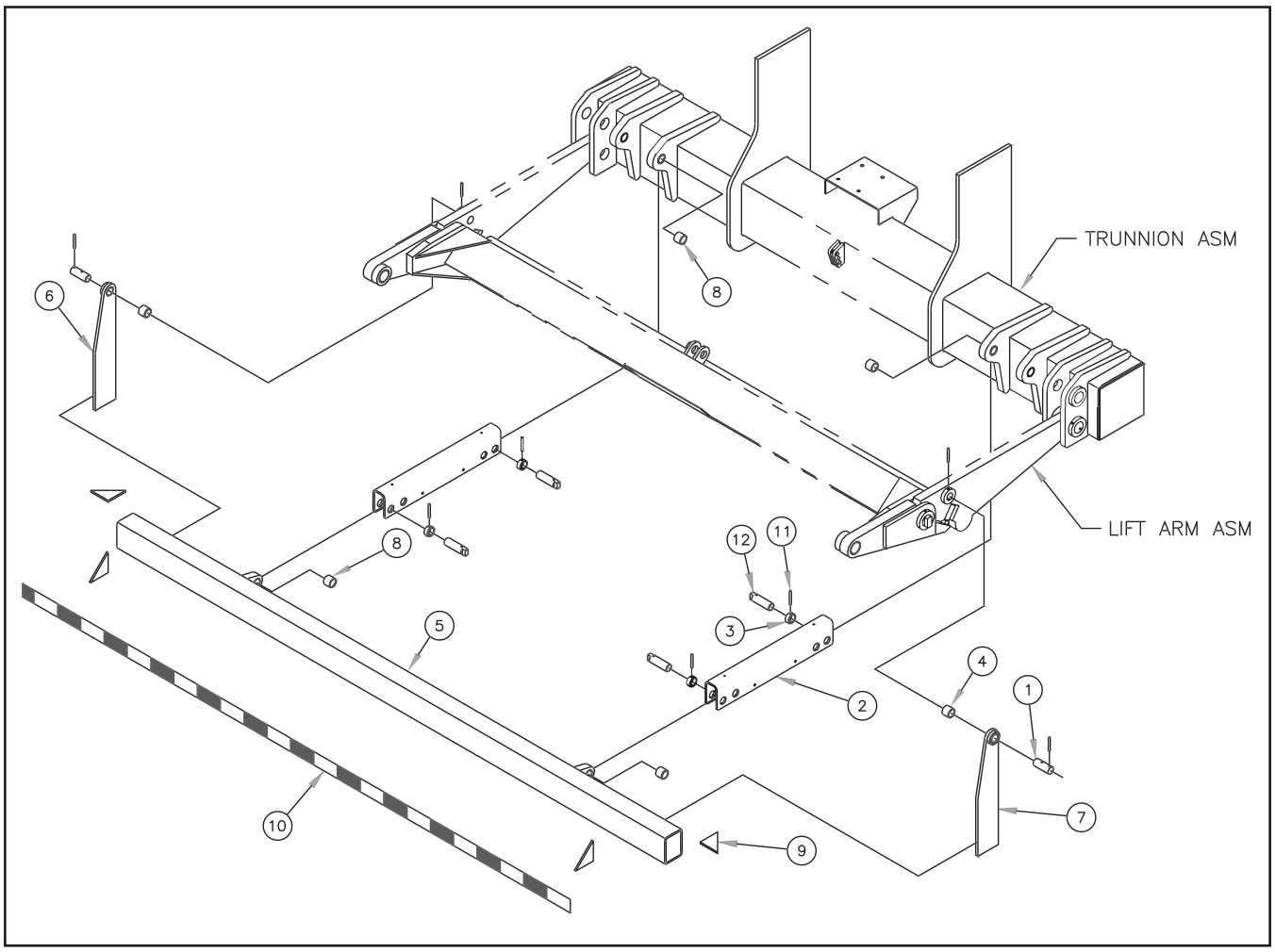
| Item | Part Number | Description | Qty. |
|---|---|---|---|
| 1 | 31411 | Trunnion asm – Includes item 21 | 1 |
| 2 | 31410 | Lift arm asm – Includes items 5,6,18,19,20,21,22,23 | 1 |
| 3 | 31388-002 | Idler arm asm RH – Includes item 22 | 1 |
| 4 | 31388-001 | Idler arm asm LH – Includes item 22 | 1 |
| 5 | 5071 | Pin | 6 |
| 6 | 5708-009 | Spring pin | 6 |
| 7 | 5708-001 | Spring pin | 1 |
| 8 | 5024 | Pin | 1 |
| 9 | 31633 | Kicker asm – Includes items 10,11,12,21 | 1 |
| 10 | 5781008 | Retaining ring | 2 |
| 11 | 5775 | Roller | 1 |
| 12 | 5001400 | Pin | 1 |
| 13 | 5100180 | Spring | 2 |
| 14 | 8427570 | Screw .44-14 x 2.50 | 1 |
| 15 | 8120396 | Flatwasher .50 | 1 |
| 16 | 9414073 | Locknut .44 | 2 |
| 17 | 4101-017 | Chain | 1 |
| 18 | 8108-005 | Set screw .38 | 2 |
| 19 | 4220240 | Nylon insert | 2 |
| 20 | 8271771 | Screw .75-10 x 2.00 | 2 |
| 21 | 5504-001 | Bushing | 7 |
| 22 | 5504-014 | Bushing | 8 |
| 23 | 5504-015 | Bushing | 2 |
| 24 | 5789 | Wear pad | 2 |
| 25 | 8449646 | Self tapping screw | 4 |
| 26 | 5701910 | Bolt .44-14 x 1.50 | 1 |



## OPTIONAL REAR END PROTECTION ASSEMBLY

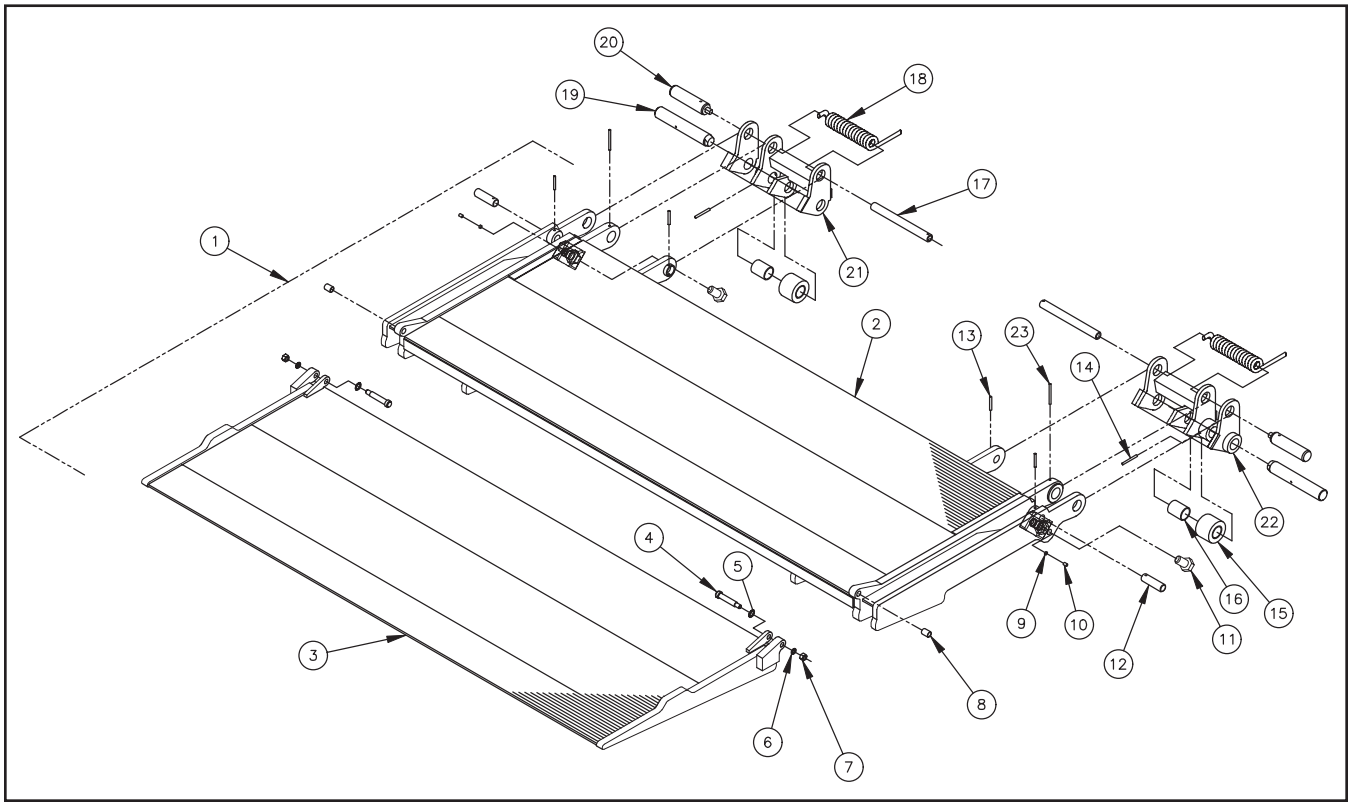
| Item | Part Number | Description | Qty. |
|---|---|---|---|
| 1 | 5073 | Fold pin | 2 |
| 2 | 31855 | Reinforced HD Support Arm Weld | 2 |
| 3 | 3016 | Collar | 4 |
| 4 | 5504-005 | Bushing | 2 |
| 5 | 31857 | HD Guard weld – Includes item 8 | 1 |
| 6 | 31854-001 | HD Fold arm weld-LH – Includes item 4 | 1 |
| 7 | 31854-002 | HD Fold arm weld-RH – Includes item 4 | 1 |
| 8 | 5504-001 | Bushing | 4* |
| 9 | 27307-002 | Gusset (.25) | 4 |
| 10 | 5714-002 | Conspicuity Tape (94.00) | 1 |
| 11 | 5708-001 | Spring Pin | 8 |
| 12 | 5024 | Pin | 4 |

*Qty(2) included in Trunnion Asm



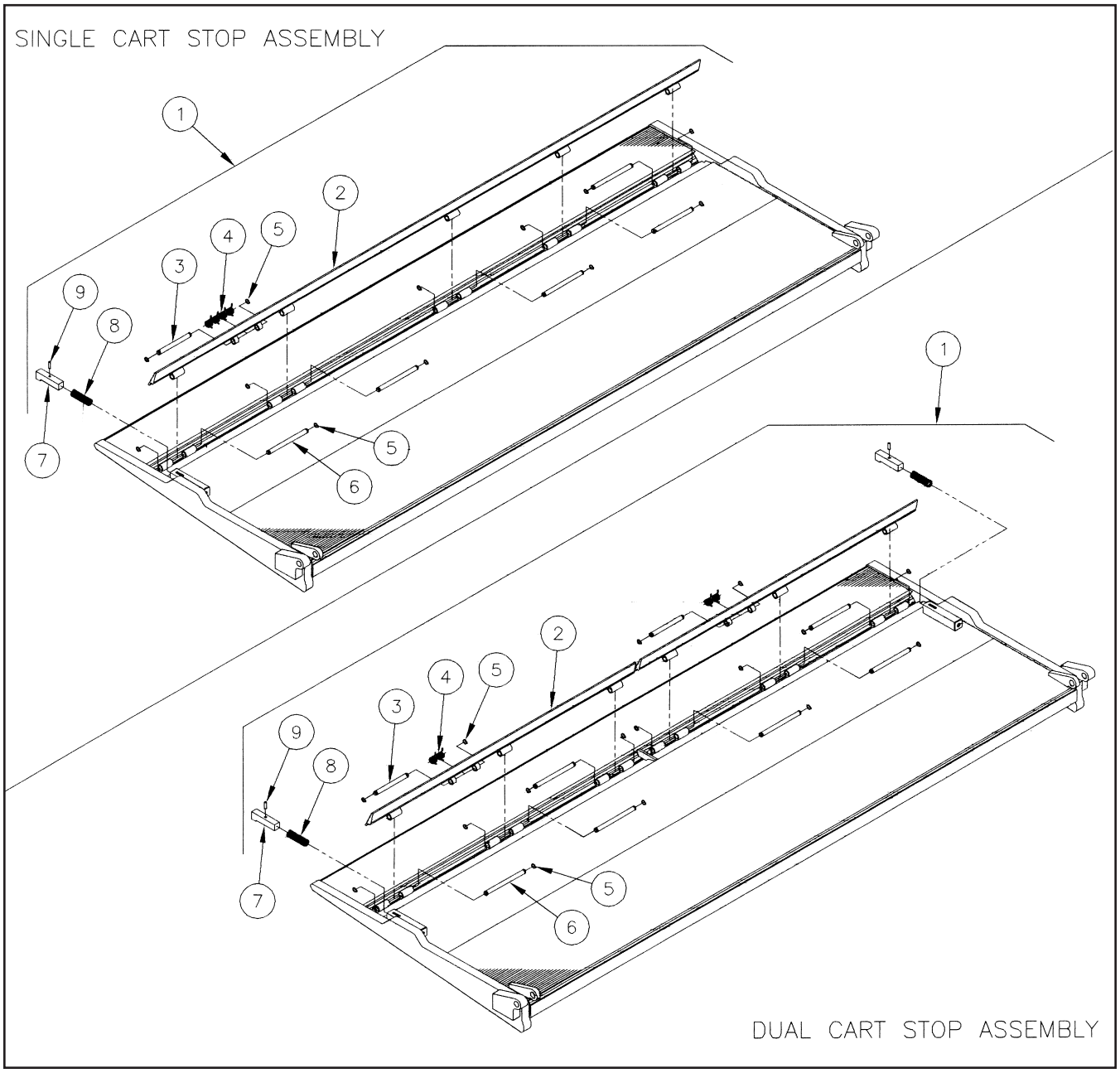
## PLATFORM-TORSION SPRING ASSIST ASSEMBLY

| Item | Part Number | Description | Qty. |
|---|---|---|---|
| 1 | 3442 | Platform asm - Items 2 thru 7 | 1 |
| 1 | 3445-001 | Platform asm (single ramp cart stop) | 1 |
| 1 | 3445-002 | Platform asm (dual ramp cart stop) | 1 |
| 2 | 31401 | Platform main section | 1 |
| 3 | 31407 | Platform extension | 1 |
| 3 | 31439-001 | Platform extension (single ramp cart stop)-see page 10 | 1 |
| 3 | 31439-002 | Platform extension (dual ramp cart stop)-see page 10 | 1 |
| 4 | 8119 | Shoulder bolt .62 | 2 |
| 5 | 8106-009 | Lockwasher .62 | 2 |
| 6 | 8106-008 | Lockwasher .50 | 2 |
| 7 | 9414074 | Locknut | 2 |
| 8 | 5504-013 | Bushing | 2 |
| 9 | 4220240 | Nylon insert | 2 |
| 10 | 8108-005 | Set screw .38 | 2 |
| 11 | 8114-002 | Screw 1.00-8 x 2.00 | 2 |
| 12 | 5072 | Stow pin | 2 |
| 13 | 5708-001 | Spring pin .25 x 2.00 | 4 |
| 14 | 5708-009 | Spring pin .25 x 2.50 | 2 |
| 15 | 31379 | Roller asm | 2 |
| 16 | 5504-014 | Bushing | 2 |
| 17 | 3057 | Spring tube | 2 |
| 18 | 5101260 | Spring | 2 |
| 19 | 5074 | Pin | 2 |
| 20 | 5070 | Pin | 2 |
| 21 | 31405 | Pivot hinge weld-LH | 1 |
| 22 | 31406 | Pivot hinge weld-RH | 1 |
| 23 | 5708-013 | Spring Pin .25 x 3.00 | 2 |



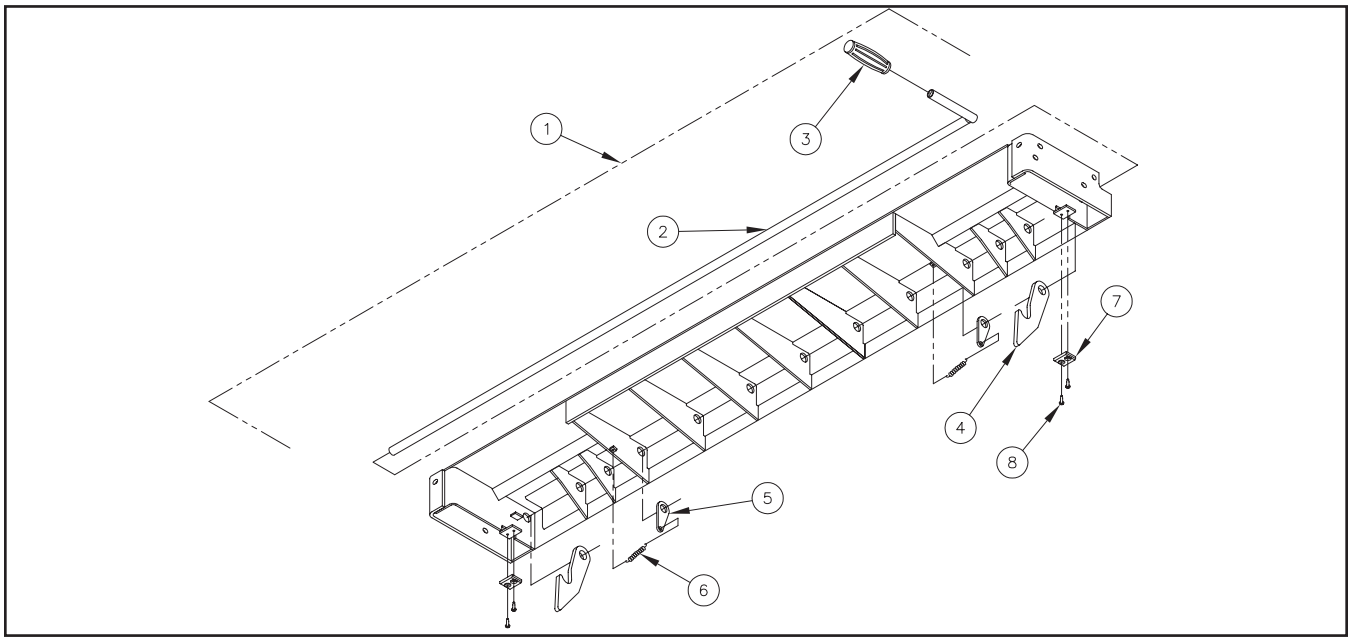
## CART STOP ASSEMBLY - OPTIONAL

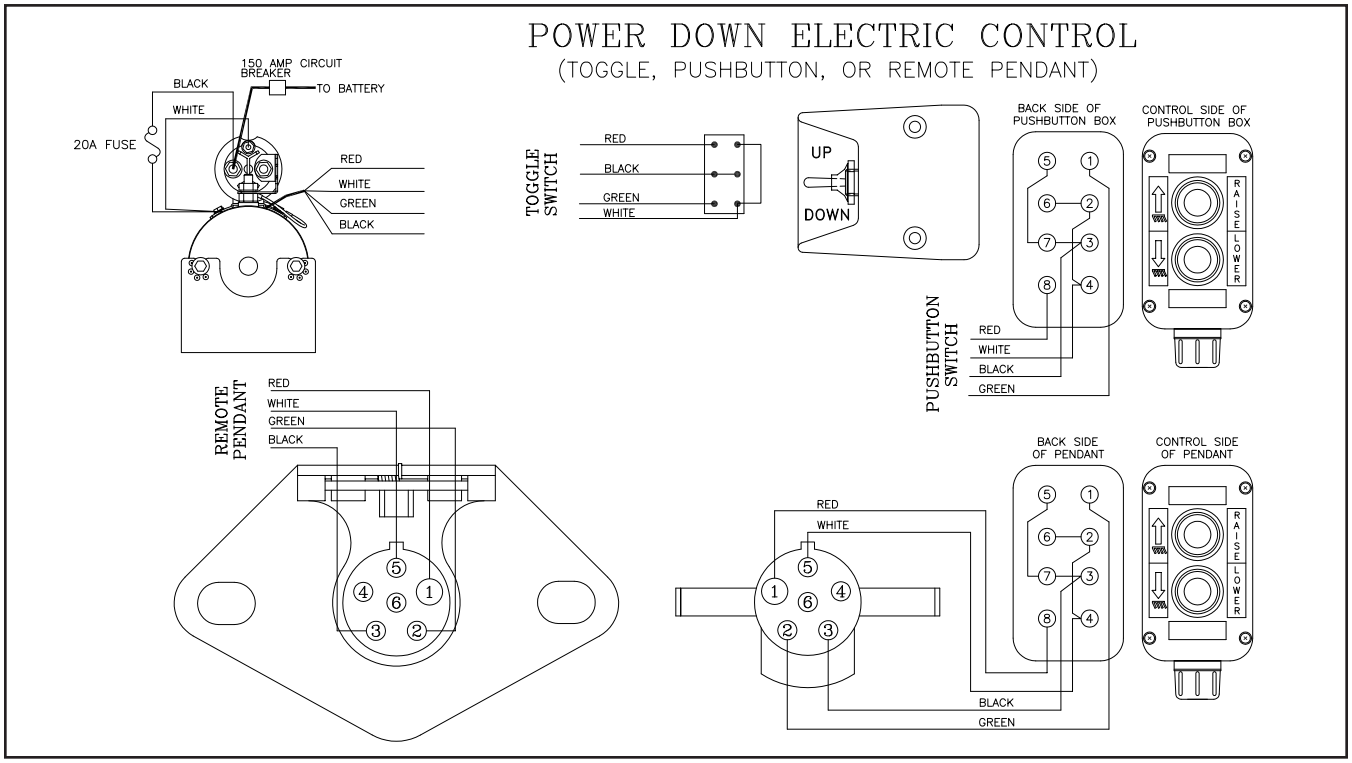
| Item | Part Number | Description | Cart Stop Type | |
|---|---|---|---|---|
| | | | Single | Dual |
| 1 | 31439-001 | Cart Stop Extension Asm. (Single Cart Stop)-includes items 2-9 | 1 | |
| 1 | 31439-002 | Cart Stop Extension Asm. (Dual Cart Stop)-includes items 2-9 | | 1 |
| 2 | 31436-001 | Cart Stop Sub Weld (Single Cart Stop) | 1 | |
| 2 | 31436-002 | Cart Stop Sub Weld (Dual Cart Stop) | | 2 |
| 3 | 5076-002 | Pin | 1 | 2 |
| 4 | 5110 | Torsion Spring | 4 | 4 |
| 5 | 5764-001 | Retaining Ring-.44 | 12 | 16 |
| 6 | 5076-001 | Pin | 5 | 6 |
| 7 | 2811 | Latch Bar | 1 | 2 |
| 8 | 5101160 | Latch Spring | 1 | 2 |
| 9 | 5708-010 | S.S. Spring Pin .19 x .75 | 4 | 4 |



## SPACER ASSEMBLY

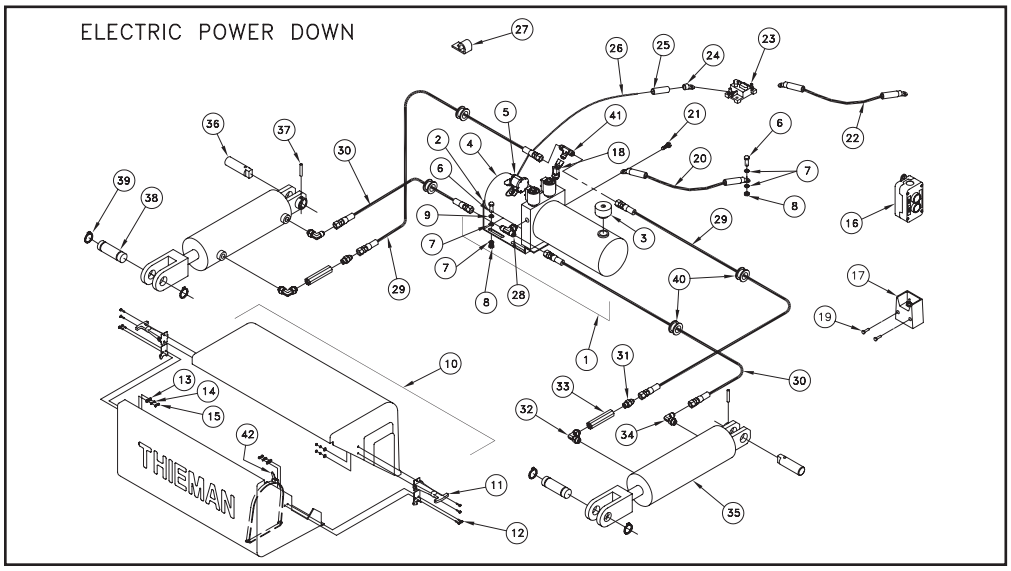
| Item | Part Number | Description | Qty. |
|---|---|---|---|
| 1 | 3502-001 | Spacer asm - Includes items 2 thru 8, (96") | 1 |
| 1 | 3502-002 | Spacer asm - Includes items 2 thru 8, (102") | 1 |
| 2 | 31549-001 | Control shaft (96" Spacer) | 1 |
| 2 | 31549-003 | Control shaft (102" Spacer) | 1 |
| 3 | 5701043 | Handle grip | 1 |
| 4 | 27117 | Latch | 2 |
| 5 | 2901170 | Lever | 2 |
| 6 | 5101100 | Spring | 2 |
| 7 | 5703 | Pad | 2 |
| 8 | 8449646 | Self-tap screw | 4 |



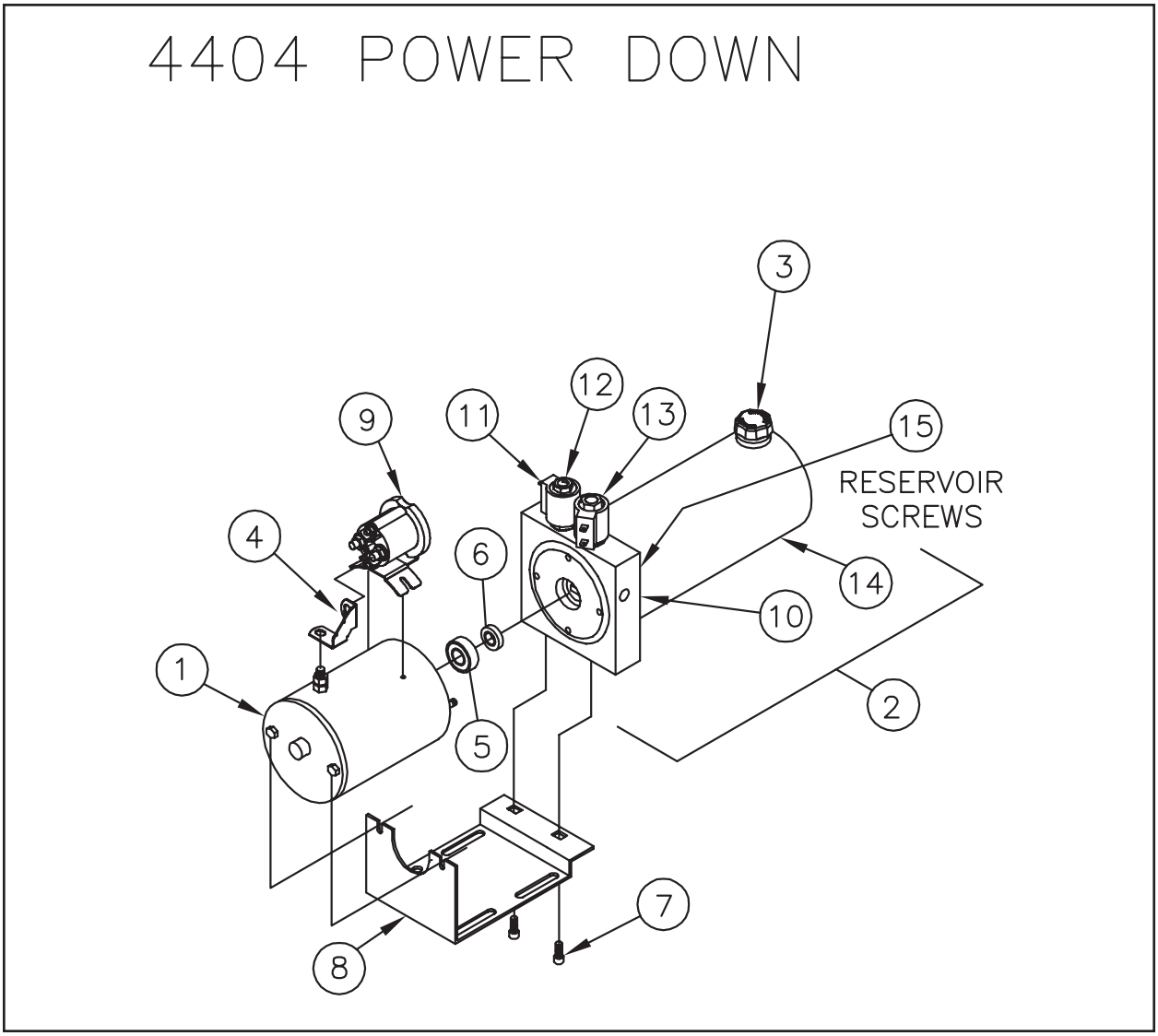
## PUMP ASSEMBLY-TOGGLE AND PUSHBUTTON CONTROL

| Item | Part Number | Description | Qty. |
|---|---|---|---|
| 1 | 4404 | Pump asm - Includes items 2 thru 5 | 1 |
| 2 | 4421420 | Pump bracket | 1 |
| 3 | 4420410 | Breather | 1 |
| 4 | 4423520 | Motor heavy duty 8111 | 1 |
| 5 | 4468 | Solenoid | 1 |
| 6 | 8180122 | Bolt .38-16 x 1.00 | 5 |
| 7 | 8106-010 | Internal Tooth Lockwasher | 10 |
| 8 | 8120377 | Nut .38 | 5 |
| 9 | 8120388 | Flatwasher | 4 |
| 10 | 3717 | Pump enclosure asm - Includes items 11 thru 15 | 1 |
| 11 | 5758 | Rubber T-handle asm | 2 |
| 12 | 8110-006 | Screw #6-32 x .50 | 8 |
| 13 | 8107-006 | Flatwasher #6 | 8 |
| 14 | 8106-006 | Lockwasher #6 | 8 |
| 15 | 8103-017 | Nut #6 | 8 |
| 16 | 4422860 | Pushbutton | 1 |
| 17 | 31445 | Toggle switch asm | 1 |
| 18 | 4938-001 | 45° Elbow MAORB-FJS | 1 |
| 19 | 8111-005 | Screw #10 x .75 | 2 |
| 20 | 4318-002 | Ground Cable #2 x 2' | 1 |
| 21 | 8104-006 | Screw .31 x 1 | 1 |
| 22 | 4318-001 | Cable asm - 2 Ga. x 2 ft | 1 |
| 23 | 4301770 | Circuit breaker - 150A | 1 |
| 24 | 4350 | Cable lug | 1 |
| 25 | 4319-002 | Heat shrink | 1 |
| 26 | 4300030 | Battery cable -2 Ga. x 25 ft | 1 |
| 27 | 5701260 | Cable retainer | 12 |
| 28 | 4932-001 | MJ-MJ-MAORB Tee | 1 |
| 29 | 4951-005 | Hose 60.00 | 2 |
| 30 | 4951-015 | Hose 51.00 | 2 |
| 31 | 4941-001 | MJ-MORB Straight | 2 |
| 32 | 4936-001 | MAORB-MAORB 90° | 2 |
| 33 | 4948-006 | Flow Control 1.0 GPM | 2 |
| 34 | 4930-001 | MJ-MAORB 90° | 2 |
| 35 | 31477 | Cylinder 3.5 Bore x 8 Stroke | 2 |
| 36 | 5024 | Pin | 2 |
| 37 | 5708-001 | Spring pin | 2 |
| 38 | 5009 | Pin | 2 |
| 39 | 5781008 | Retaining ring | 2 |
| 40 | 5763 | Grommet | 4 |
| 41 | 4953-001 | Branch tree MJ-MJ-MJ | 1 |
| 42 | 5700100 | Tie Strap 32.00 | 1 |



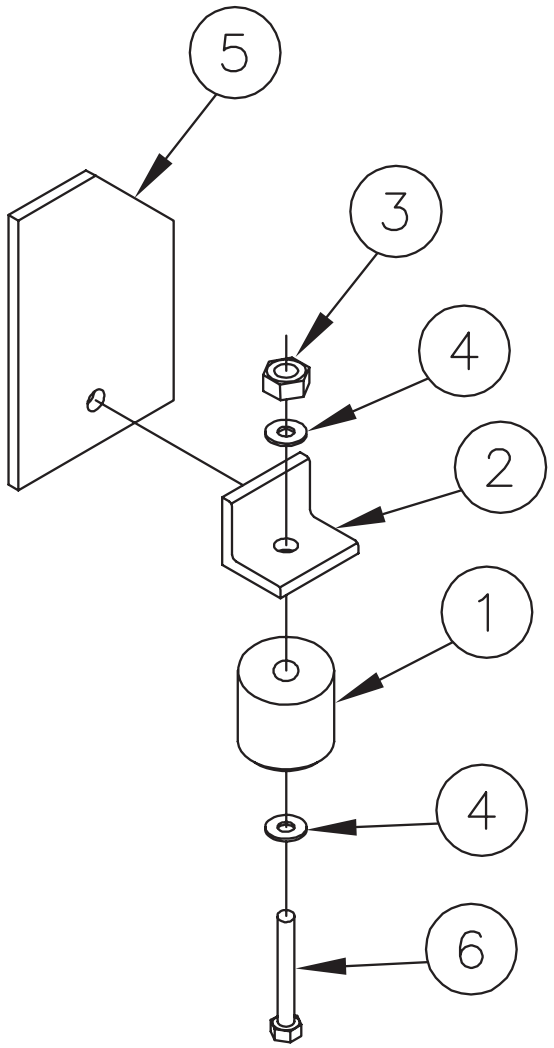
## 4404 PUMP PARTS

| Item | Part Number | Description | Qty./Model |
|---|---|---|---|
| 1 | 4423520 | Motor 8111 | 1 |
| 2 | 4439 | Pump and Reservoir Only | 1 |
| 3 | 4420410 | Breather Cap | 1 |
| 4 | 4480 | Buss Bar | 1 |
| 5 | 4421520 | Bearing | 1 |
| 6 | 4421530 | Seal | 1 |
| 7 | 8109-012 | Screw .25 x .75 | 2 |
| 8 | 4421420 | Bracket | 1 |
| 9 | 4468 | Solenoid | 1 |
| 10 | 4421600 | O-Ring | 2 |
| 11 | 4452 | Solenoid Coil Only | 2 |
| 12 | 4445 | Solenold Valve Asm (lower) | 1 |
| 13 | 4438 | Solenoid Valve Asm (raise) | 1 |
| 14 | 4457 | Reservoir Ø4.50 x 12.00 | 1 |
| 15 | 4421660 | Self Tap Screw #10 x .38 | 6 |



## SNUBBER KIT 172

| Item | Description | Part Number | Qty. |
|---|---|---|---|
| Kit 172 | Snubber Kit Includes Items 1 to 6 | 3735330 | 1 |
| 1 | Snubber | 5702290 | 2 |
| 2 | Mounting Angle | 2019033 | 2 |
| 3 | Locknut .31-18 | 9413447 | 2 |
| 4 | Flat Washer .31 | 8120386 | 4 |
| 5 | Base Plate | 23049-001 | 2 |
| 6 | Screw .31-18 | 8180091 | 2 |



**TROUBLESHOOTING GUIDE**
**LRST40EST**

**Test Equipment:**
1. 0-5000 psi pressure gauge
2. DC voltmeter/ohm meter
3. DC amp meter
4. standard mechanics tools

Note: Please refer to the electrical diagrams and hose connection drawings in the liftgate's owners manual when troubleshooting. This guide is only for standard Thieman liftgates. Special liftgates with options other than those in the owner's manual will require special diagrams for troubleshooting. Read and understand this entire guide completely before doing any troubleshooting. Certain listed problems may be related to other problems listed so a comprehensive knowledge is required before proceeding.

| **1. Problem - Pump motor will not run in the raise or lower mode** | |
|---|---|
| | |
| **Causes** | **Correction** |
| a. Tripped circuit breaker | Reset the circuit breaker located within 2ft of the liftgate supply battery(ies). |
| b. Blown 20A fuse | Replace 20A fuse(s). Each control cord should have a 20A in-line fuse on the black wire, where it connects to the 2ga battery cable at the motor start solenoid. |
| c. Improper battery cable connection or improper ground connection | The "at rest" voltage for the batteries without the engine running and under no load should be at least 12.5V, and this voltage should be seen on the heavy 2ga. battery cable, where it connects to the large terminal of the motor start solenoid. The minimum voltage between the motor stud and ground is 10V at maximum conditions, with pump motor, batteries, and cables under max. load. If the voltage is dropping below 10V under max. load, bad connections may be acting like resistors and causing larger voltage drops than expected. Check voltage drops with system under load at different locations between the liftgate and battery source, to locate bad connections along the battery cable. Trace ground cable connections also to locate improper connection(s) along the ground path. Make sure the ground cable is installed going from the 5/16 tapped hole in the aluminum pump base marked GND to the liftgate mounting plate (scrape paint to bare metal for good ground). The ground cable from the batteries to the frame must be a heavy 2ga cable that is connected to bare metal on the frame. Replace any damaged cables and repair any bad connections. |
| d. Defective or undercharged battery(ies) | If proper voltage is not present, load test batteries and replace any defective batteries. The battery(ies) on the vehicle should be that which has a minimum 180 amp reserve capacity. |
| e. Defective or improperly wired raise switch | Check for voltage on the black wire at the control switch. If no voltage is present the black wire from the motor start solenoid is loose or broken and needs repaired. If voltage is present then check for voltage at the white wire on the switch with the switch in the "UP" position. If no voltage is present, replace the switch. |
| f. Defective or improperly wired lower switch | If the pump motor runs in the "UP" position but will not run in the "DOWN" position, then check for voltage on the white wire at the switch with the switch in the "DOWN" position. If no voltage is present replace the switch. NOTE: If the motor does not run while the liftgate is lowered and the gate lowers under gravity, the reservoir will overflow with oil. See Problem 4. |
| g. Defective or improperly wired solenoid start switch | Check for voltage on the white wire at the motor start switch when the switch is activated either "UP" or "DOWN". If no voltage exists the white wire is loose or broken between the switch and the motor start solenoid. Check that the purple ground wire on the start solenoid is connected properly and there are no bad connections. If there is voltage on the white wire and the coil does not energize or if there is no voltage on the motor side of the solenoid or a large voltage drop present across the large terminals of the motor start solenoid then replace the motor start solenoid. |
| h. Defective pump motor | With the switch activated in the "UP" or "DOWN" position and the motor start solenoid activated, check for voltage (10V minimum) at the motor terminal. If proper voltage is present and the motor is not running, double check the motor ground (see correction c. above.). If the motor has proper voltage and good ground and does not run, replace the motor. |

**2. Problem - Liftgate will not raise or raises slowly with a load and the pump motor running. The raise speed of the LRST 40 from ground on a 56" bed height while empty at 70°F is approximately 15 seconds.**

| Cause | Correction |
|---|---|
| a. Low hydraulic fluid | Make sure the reservoir has the proper amount of fluid. The hydraulic fluid should be within ½" of the top of the reservoir with the liftgate in the stored position. Fill with Dexron III automatic transmission fluid or other acceptable fluid (see Hydraulic Fluid Chart in "Maintenance Guide" section of this manual). Low fluid levels can introduce air, which will compress, especially when loaded and can make the liftgate feel "spongy". It can also make the gate raise at varying and alternating speeds (i.e. slower as the air is compressed, then suddenly quicker as the air expands in a repeating pattern). |
| b. Cold Weather | Refer to Hydraulic Fluid Chart in "Maintenance Guide" section of this manual, for alternative oils to use for cold weather conditions |
| c. Cylinders are plumbed incorrectly to pump | Check that the cylinders and pump are plumbed together according to the drawings in this liftgate owner's manual. The C1 port on the pump (C1 is stamped in the aluminum pump base by this port) is the high pressure port and should connect to the rod end ports of the cylinders. The other ports on the cylinders are the low pressure lowering ports and should be plumbed to the C2 port on the pump (C2 is stamped in the aluminum pump base by this port) |
| d. Overload condition | The power unit on the LRST40 is equipped with a lifting relief valve to prevent overloading of the liftgate while attempting to raise a load. See relief setting in "Maintenance Guide" section of this manual. Do NOT overload the liftqate. |
| e. Low voltage and/or bad ground | If the voltage reaching the motor drops below 10V under max. load conditions, this low voltage can cause the liftgate to slow. If voltages get low enough or ground is inadequate, the liftgate may not raise at all (see Problem 1) and will not be able to develop the rated relief pressure. Low voltages can cause motor start solenoids to overheat and internally weld the contacts closed, which can lead to motor overheating and pump failure. DO NOT run the liftgate under low voltage/and or bad ground conditions. |
| f. Defective raise solenoid coil or valve | With the "UP" switch engaged check for voltage on the green wire at the switch. If no voltage is present, then replace the switch. If voltage is present, with the "UP" switch engaged, check for voltage at the green wire on the raise solenoid valve coil terminal at the pump. If no voltage is present, the green wire from the "UP" switch is loose or broken and needs repaired. Check for proper ground at the purple wire on the raising solenwoid coil. Repair or replace ground as required. If there is voltage (minimum of 9.5 volts) and proper ground at the raising coil and the valve is not opening to allow the gate to raise, either the raise coil is bad or the entire raise coil/valve assembly is bad. To check to see if the coil is defective, remove the green and purple wires from the spade terminals on the raise coil and check the resistance between these spade terminals (3.6 - 4.4 Ohm acceptable). Note: Low resistance can cause the 20 fuse to blow (see Problem 1, part b) and high resistance will lower the coils magnetic force and may not shift the valve. If proper resistance does not exist, replace the defective coil, otherwise replace the defective raise coil/valve assembly. |
| g. Improperly adjusted or defective main relief valve | See section "d" above for relief valve setting. Lower the gate completely to the ground to relieve all pressure from the hydraulic system and remove all loads from the platform. Plumb a pressure gauge into the high pressure circuit of the liftgate (those hoses connected to the C1 port on the pump). Engage the "UP" switch until the liftgate is fully raised. Keep the "UP" switch engaged until the pump bypasses through the relief valve and note the pressure on the gauge at this time. If the rated relief pressure is not present during relief, adjust the high pressure relief valve setting as necessary. There are two relief valves on this pump so make sure to adjust only the high presure relief setting at this time. The high pressure relief is the higher one on the aluminum pump base. If the relief pressure is not attainable the relief valve must be cleaned and/or replaced or the pump is defective. See part k below. |

Continued on following page

| **2. Problem - (continued)** | |
|---|---|
| | |
| **Cause** | **Correction** |
| h. Lift cylinders are bypassing, liftgate is drifting down too quickly | If the liftgate will not raise with a load on the platform but empty is raising slowly or only partially, one or both of the cylinders may be bypassing. Bypassing cylinder(s) will cause increased hydraulic drift in the liftgate. The LRST40 liftgate's maximum allowable drift is .19 inch/hr. (the platform can lower .19 inch/hr). To check for bypassing cylinders do the following. Lower the gate to the ground to relieve all pressure from the cylinders. Disconnect both cylinders from the liftarm. Press the "UP" switch until both cylinders are fully retracted. Disconnect the low pressure hoses from the power unit at the T-fitting at the C2 port at the pump. Plug the newly opened end(s) of the T-fitting on the pump. Put the loose ends of the disconnected hoses in a container to catch any oil, which comes out during this test. Press the "UP" switch for 15 to 20 seconds and watch for a steady stream of fluid coming out of one of the disconnected hose ends into the container. If no steady stream of oil is present reconnect all hoses and press the "DOWN" switch until both cylinders are fully extended. Disconnect the high pressure hoses from the power unit at the Tfitting at the C1 port at the pump. Plug the newly opened end(s) of the T-fitting on the pump. Put the loose ends of the disconnected hoses in a container to catch any oil, which comes out during this test. Press the "DOWN" switch for 15 to 20 seconds and watch for a steady stream of fluid coming out of one of the disconnected hose ends into the container. Replace or rebuild any cylinder with fluid coming out of its disconnected hose end, as this indicates fluid is bypassing the piston seals on the cylinder. Reconnect rebuilt or replaced cylinders and hoses as before. |
| i. Broken hydraulic line | Broken or punctured hydraulic lines and fittings must be replaced with care to avoid iniury from high pressure oil streams. |
| j. Clogged or disconnected suction line | With the liftgate at the ground, disconnect the power unit and remove the reservoir. Check to see if the suction tube is clogged or has fallen out of the pump base. Clean the screen or reattach the suction tube as required. |
| k. Defective pump | If all else fails, the power unit MAY be defective. If the liftgate is older, the pump may be worn out and unable to pump fluid at pressure with the correct flow rate. Feel free to contact Thieman for further consultation. |

| **3. Problem - Liftgate will not lower with the pump motor running** | |
|---|---|
| | |
| Cause | **Correction** |
| a. Defective lowering solenoid coil or valve | With the "DOWN" switch engaged check for voltage on the red wire at the switch. If no voltage is present replace the switch. If voltage is present, with the "DOWN" switch engaged, check for voltage at the red wire on the lower solenoid valve coil terminal. If no voltage is present, the red wire from the "DOWN" switch is loose or broken and needs replaced. Check for proper ground at the purple wire on the lowering solenoid coil. Repair or replace ground as required. If there is voltage (minimum of 9.5 volts) and proper ground at the lowering coil, and the valve is not opening to allow the gate to lower, either the lower coil is bad or the entire lower coil/valve assembly is bad. To check to see if the coil is defective, remove the red and purple wires from the spade terminals on the lower coil and check the resistance between these spade terminals (3.6 - 4.4 Ohm acceptable). Note: Low resistance can cause the 20 fuse to blow (see Problem 1, part b) and high resistance will lower the coils magnetic force and may not shift the valve. If proper resistance does not exist, replace the defective coil, otherwise replace the defective lower coil/valve assembly |
| b. Clogged or defective hydraulic lines, fittings or flow controls | Remove any obstruction in the hoses, fittings or flow controls or replace any hose, fitting or flow control, which does not allow fluid to flow through freely. |

| **4. Problem - Oil or foamy oil/air mixture flowing from reservoir breather** | |
|---|---|
| | |
| **Cause** | Correction |
| a. Air is present in the system | This can occur if the motor is not running as the liftgate is lowered. See Problem 1, part f and g. Also air can enter the system if the fluid level is low, see Problem 2, part a, or if the suction tube is disconnected, see problem 2, part j. Also air may enter through fittings, which are not tightened properly, so check for any leaks around fittings or hoses. Once the source of the air is determined, the cylinders must be bled of all air. Most air can be removed from the system by lowering the gate to the ground to relieve all pressure from the cylinders, unpinning the cylinders and cycling them back and forth several times from fully extended to fully retracted and allowing the pump to bypass through the relief valves for a few seconds in each direction. |
| b. Flow control is on backwards, **gate lowers too fast** | The flow control provided is rated at 1.0 GPM. The arrow on the flow control must point away from the cylinder, designating the direction of the controlled flow. Flow controls larger than 1.0 GPM or improper arrow orientation, will cause the gate to lower too quickly (9 sec min – max load from 56" bed height). Correct as needed. |
| c. Inoperable flow control, **gate lowers too fast** | Inoperable flow controls can cause the gate to lower too quickly. Remove and disassemble the flow control and check for excessive wear and contamination. Clean as needed and reassemble. Replace the flow control if necessary. |
| d. Motor is not running while lowering the gate | This liftgate is a power down liftgate, which means the pump should push the liftgate down. If the pump motor does not run while lowering, fluid is coming in the reservoir from the rod end of the cylinders and not getting pumped back out to the butt end of the cylinders. This will cause the pump reservoir to overflow with oil. See Problem 1. |
| e. Reservoir was overfilled or filled with liftgate in wrong position. | See the **MONTHLY INSPECTION AND MAINTENANCE** in the "Maintenance Guide" section of this manual to find out what position the liftgate should be in when checking the reservoir level and how full the reservoir should be in that position. |

| **5. Problem - Platform difficult to unfold to horizontal position, after lowering gate from stored position OR platform hard to fold up from horizontal position.** | |
|---|---|
| | |
| **Cause** | Correction |
| a. Kicker chain is not adjusted properly | The kicker chains should be adjusted properly as part of the standard LRST40 installation procedure. If this was not done properly or if the kicker chain was replaced, the kicker chain may need adjusting. A properly adjusted kicker chain will make the platform easier to unfold to the horizontal position. Refer to the "LRST40 Kicker Chain Adjustments" near the end of the standard "LRST-40 Installation Instructions" manual. For the latest copy of the "LRST-40 Installation Instructions" manual, visit www.thiemantailgates.com or contact the factory. |
| b. Platform pivot pins are seizing up in platform pivots | Check that the platform pivot pins turn freely in the platform pivots. Any tightness in these pivots will result in additional force required when folding or unfolding the platform. Grease-able pins are optional on the LRST40. Grease if so equipped. |
| c. Worn out platform springs or springs which are not properly lubricated | If the platform pivot pins turn freely in the platform pivots, but the platform is still hard to fold from the horizontal to vertical position, one or both of the coiled torsion springs on the platform may be weak or broken. Replace any springs which are broken or which are permanently deformed and do not return to the same position as a new spring. Alternately, the springs on the platform may need lubrication. Under the "Maintenance Guide" section of this manual, there are instructions for periodic lubrication, which includes lubrication across the coils of the platform springs. This allows the coils to slide past each other as the torsion spring is loaded and the coils rotate. Springs that are not lubricated, can make the platform harder to fold. |

If you have any questions or problems that are not covered in this guide please call Thieman's Engineering Department at 1-800-524-5210

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