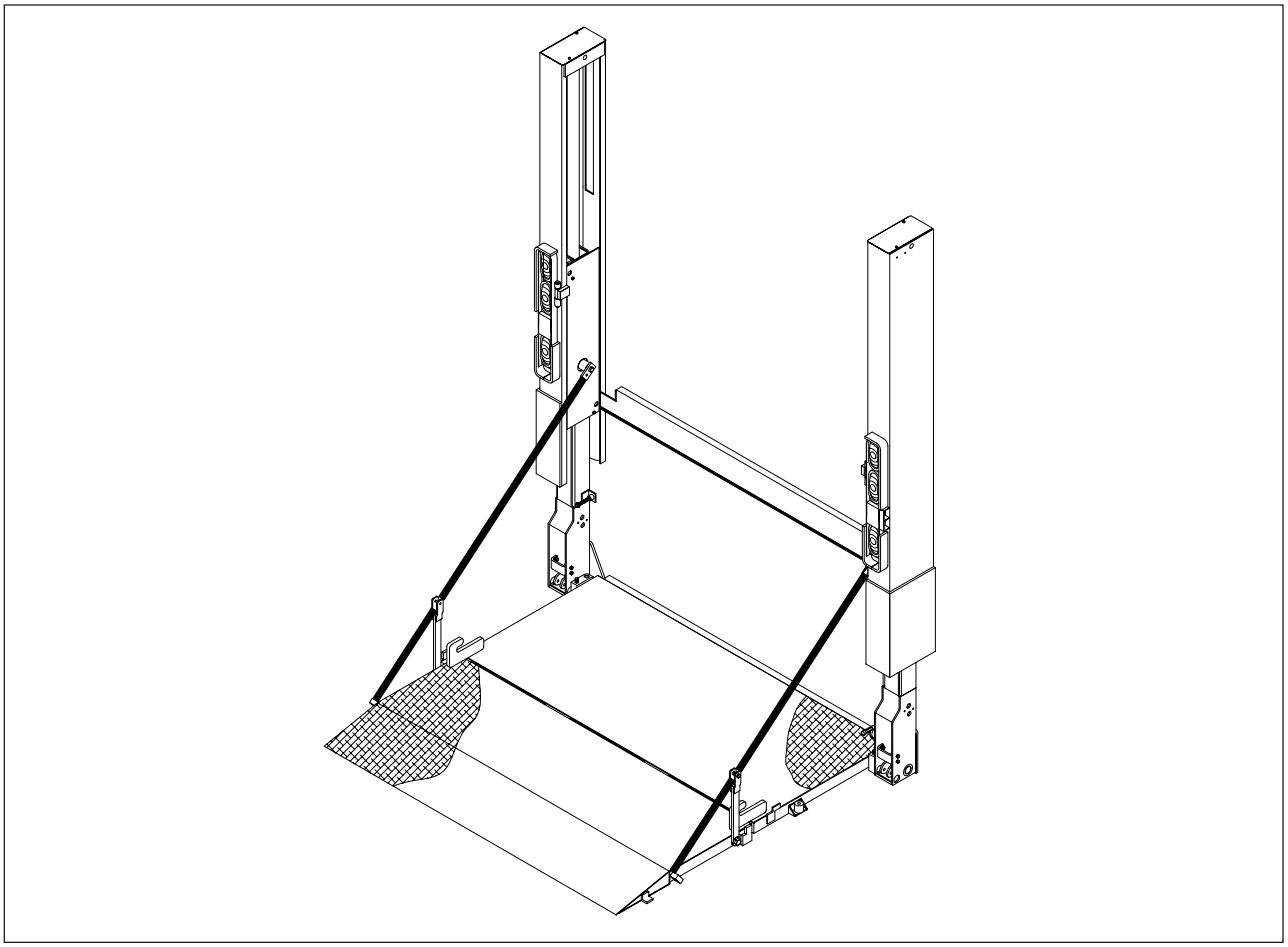
TDR SERIES

Railgates By THIEMAN

TDR-44, 55, 66
OWNERS MANUAL/PARTS LIST



⚠ IMPORTANT! KEEP IN VEHICLE!

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

THIEMAN
TAILGATES, INC.
600 East Wayne Street
Celina, Ohio 45822
Phone: 419-586-7727 Fax: 419-586-9724

NTEA
THE ASSOCIATION FOR THE WORK TRUCK INDUSTRY
MEMBER

TABLE OF CONTENTS

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, our parts department may request you email a digital photo to help identify a part.

THE FOLLOWING INFORMATION MUST BE INCLUDED:

1. Serial Number - Thieman TDR liftgate serial numbers can be found on the tag located on the outside of the curb side rail at the bottom.
2. Model number and capacity.
3. Platform size
4. Part Number
5. Description
6. Quantity Required

DIRECT YOUR REQUEST TO:
THIEMAN TAILGATES, INC.
600 E. WAYNE ST.
CELINA, OHIO 45822
PHONE: 419-586-7727
FAX: 419-586-9724

IMPORTANT

IT IS REQUIRED THAT EVERY VEHICLE THAT HAS A THIEMAN LIFTGATE HAS LEGIBLE WARNING AND OPERATION DECALS CLEARLY POSTED ON THE VEHICLE AT ALL TIMES AS A GUIDE FOR PROPER OPERATION AND MAINTENANCE.

ADDITIONAL WARNING DECALS, OPERATION DECALS, AND OWNER'S MANUALS CAN BE OBTAINED FROM THIEMAN TAILGATES, INC.

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 TDR 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.

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.

(Warnings continued on following pages)

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 TVLR series liftgates differs with each model as follows:

   TDR 44 - 4400 lbs. Maximum Load
   TDR 55 - 5500 lbs. Maximum Load
   TDR 66 - 6600 lbs. Maximum Load

   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.

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.

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. Never remove the platform support chains to load or unload the 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.

(Warnings continued on following pages)

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

23. 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.

24. Do NOT use this liftgate to load/unload from a dock, but rather, lower the liftgate's vertically folded platform out of the way, so a dock plate or dock leveler may be used for loading and unloading the truck. For this to be possible, the height of the vertically folded platform, must be less than the truck's Min. Bed Height (fully loaded). See chart below. These bed heights, and higher, allow a dock plate or dock leveler to extend over the vertically folded platform, from the dock and safely into the truck bed. For platform sizes not shown, contact the factory to determine if dock loading is possible. No loads may be transferred to the liftgate during dock loading. Do NOT attempt other methods of dock loading.

MODEL	PLATFORM	MATERIAL	MIN. BED HEIGHT (Dock Load)
TDR	80 or 86x62+15 fixed ramp	Steel	40.00
TDR	80 or 86x62+15 fixed ramp	Alum	42.00
TDR	80 or 86x74+15 fixed ramp	Steel	45.00
TDR	80 or 86x74+15 fixed ramp	Alum	48.00
TDR	80 or 86x86+16 ret. ramp	Steel	45.00
TDR	80 or 86x86+16 ret. ramp	Alum	46.00
TDRBG	80 or 86x36+15 flip ramp	Steel	42.00
TDRBG	80 or 86x42+15 flip ramp	Steel	48.00

25. DO NOT fold or unfold the platform unless the liftgate is in the fully raised position or damage to the liftgate may occur.

(Warnings continued on following pages)

26. DO NOT fold or unfold the platform with a load on the platform.

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

28. DO NOT weld anywhere on the truck or trailer this liftgate is mounted to or on the liftgate itself, without first unplugging the 23-pin connector from under the orange controller in the pump box.

(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. NEVER allow any part of the load to extend over or on, the tapered ramp portion of the platform unless the platform is lowered completely to the ground and the ramp is supported by the ground.

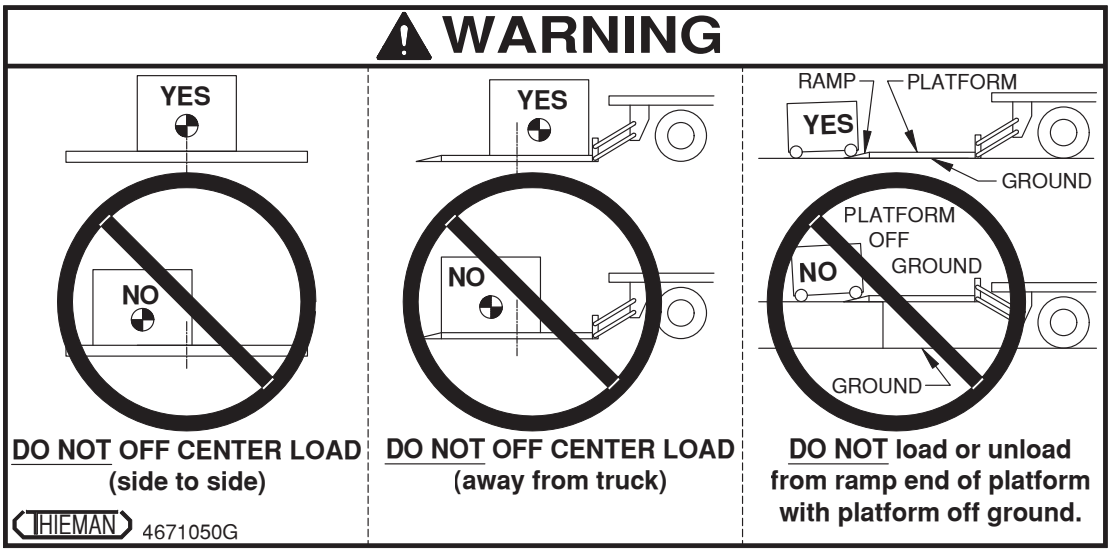


FIG. 1

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

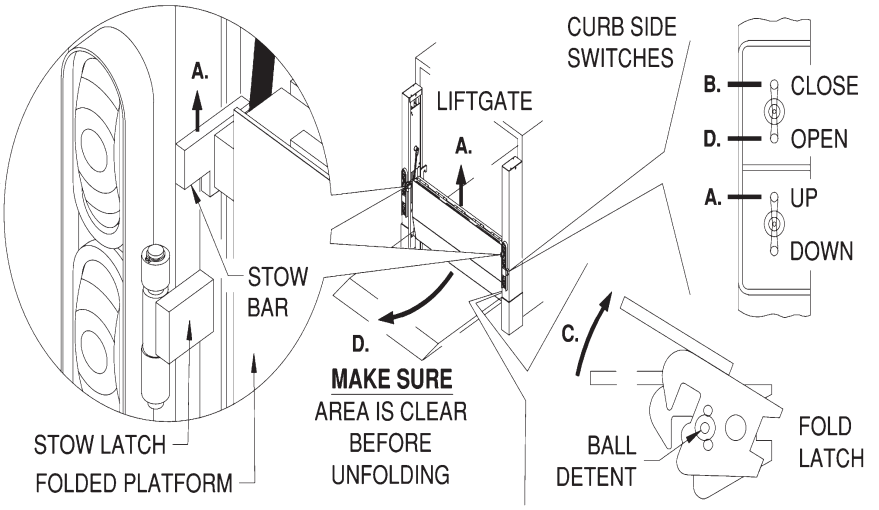
1. OPENING OF PLATFORM

A. Push UP switch, to fully raise folded platform. Stow bars must be completely above and clear of stow latches.

B. Push CLOSE switch to fold platform fully, before operating fold latch, to remove any pressure on fold latch.

C. Rotate fold latch upward, until it locks (ball detent should click). Remove hand from latch and keep hands clear of mechanism, while opening platform.

D. MAKE SURE area behind truck is Clear before unfolding. Push OPEN switch to unfold platform to horizontal position.

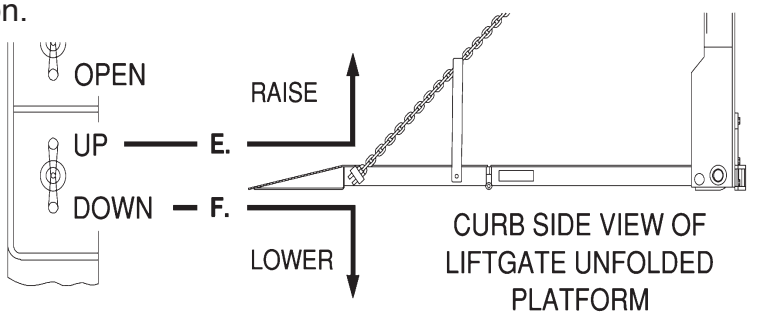


2. RAISING OF PLATFORM

E. Push switch to the UP position to raise the platform.

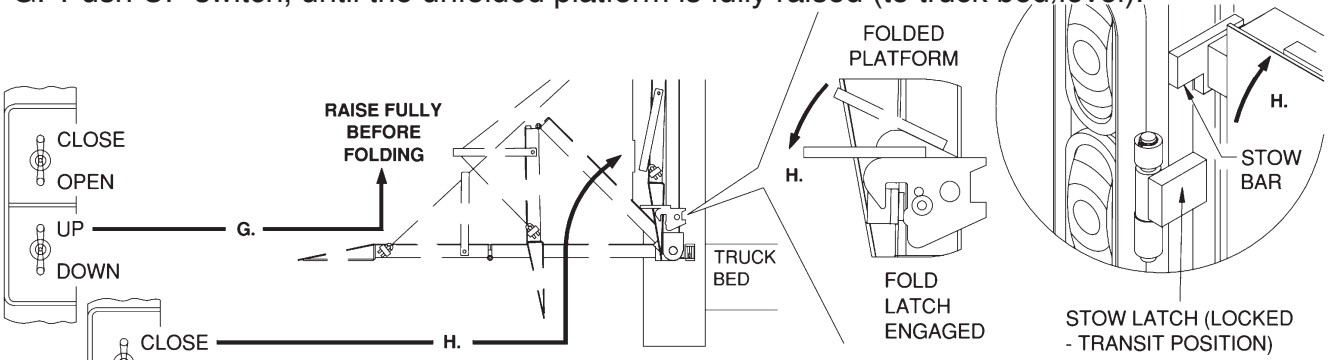
3. LOWERING OF PLATFORM

F. Push switch to the DOWN position to lower the platform.



4. STORE FOR TRANSIT

G. Push UP switch, until the unfolded platform is fully raised (to truck bed level).



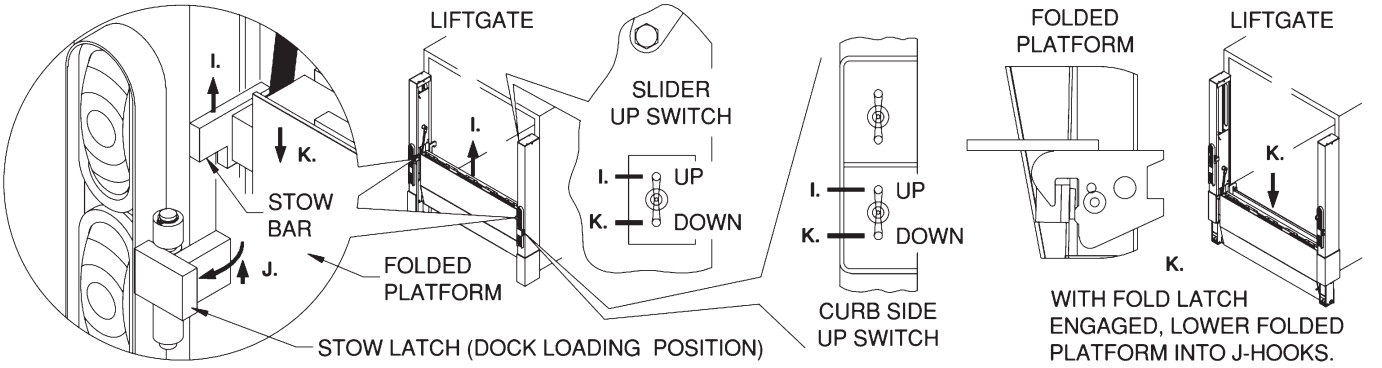
H. Push CLOSE switch until platform is fully folded to vertical. Keep hands clear of mechanism when folding. Fold latch should engage automatically. MAKE SURE fold latch is fully engaged, stow latches are in locked-transit position, and liftgate is fully raised before transit. DO NOT LOWER LIFTGATE FOR TRANSIT.

⚠ 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.

DOCK LOADING INSTRUCTIONS

NOTE: Not all TDR liftgates are capable of dock loading. See warnings in TDR Owner's Manual. Platform MUST be stored for transit before beginning these steps (see Operating Instructions above). Do NOT attempt other methods of dock loading.

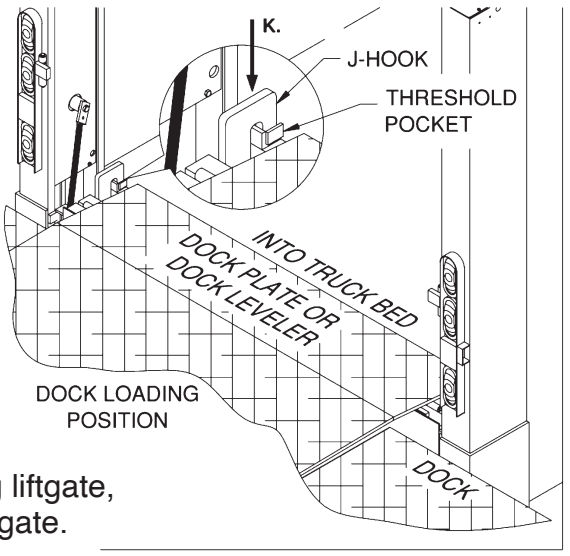


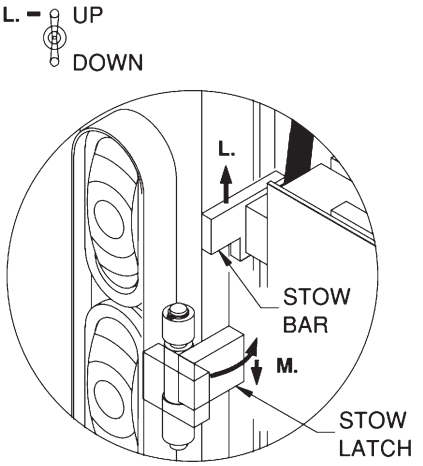
1. DOCK LOADING

I. Push either UP switch (Slider or Curb Side), until folded platform is fully raised. Stow bars must be above and clear of stow latches.

J. Lift and rotate stow latches outward fully, so they are clear of stow bars. Folded platform can now be lowered.

K. Keep Fold Latch engaged with Folded Platform. Push either DOWN switch, to lower folded platform until J-hooks drop fully into threshold pockets for dock loading. Use dock plate or dock leveler to bridge over folded platform from dock and securely into truck bed, to load or unload truck without using liftgate, while keeping loads off liftgate.





2. STORE FOR TRANSIT

L. After dock loading, remove dockplate or dock leveler. Push either UP switch, until folded platform is fully raised.

M. Rotate Stow Latches fully back to inward position, so they drop down into locked position for transit.

⚠ 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 platform is level when raised to bed height. If adjustments are necessary, this can be done by adjusting the U-bolt thru the platform block.
3. Check for apparent damage to the liftgate such as bent or distorted members and any cracked welds which may have resulted from overloading or abuse, including those on the underside of both platform sections and in and around the hinges that join these platform sections together. **NEVER allow anyone under the raised platform, where accidental or intentional lowering of the platform could crush them.** Sagging in the middle of a bi-fold platform, where the two platform sections meet, may indicate cracking welds or worn/cracking members on the underside of the platform. Inspect and repair as necessary.
4. Check for excessive wear in the following areas:
   A. Roller assemblies on slider
   B. Platform hinge pins and platform pivot pins
   C. Platform support chains
   D. UHMW wear pads on slider
5. Check that the platform pivot pins are in place and retained by their proper retainers.
6. Check that all protective covers and guards are in place and properly secured.
7. Check for leaks in these areas:
   A. Lift cylinders - replace or repack as necessary
   B. Fold cylinders - replace or repack as necessary
   C. Hydraulic hose - replace if it shows signs of wear or cracking
   D. Hydraulic fittings - tighten or replace as may be required to stop leakage
8. Check painted finish, if in poor condition, then repaint. Any rusted parts should be replaced.
9. Check condition of non-painted parts, replace if corrosion exists.
10. Check the oil level in the pump reservoir located in the pump enclosure. See charts below.

FLUID FILL POSITION AND LEVEL CHART

	Gate Position				**Fluid Level (From Top Of Reservoir)**
LIFTGATE DESCRIPTION	*Raised*	*Lowered*	*Folded*	*Unfolded*	
Gravity Down - Gravity Unfold		X		X	.50"
Gravity Down - Power Unfold		X	X		.50"
Power Down - Gravity Unfold	X			X	2.50"
Power Down - Power Unfold	X		X		2.50"

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

11. Check that all wiring and battery cable connections are tight and free of corrosion and all connections are coated with dielectric grease.

12. Lubrication of the TDR series liftgates should be as follows for all conditions:

Area of Liftgate	Type of Lubrication	Frequency
Slider Rails	SAE 10 to 20 oil	100
Slider Rollers	Grease*	50
Chain Anchor Links	SAE 10 to 20 oil	100
Platform Hinges	Grease*	100
Pump Oil Change	See above chart	Yearly
Fold Cyl Adj Block	Grease*	100

*See the parts list for location of the grease zerks.
For -40 to 120 F use #0 Grade grease.
For -20 to 200 F use #1 Grade grease.

13. 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)
TDR44/55/66	245	2750

14. The TDR series liftgate is equipped with a pressure sensitive tapeswitch, to protect cargo, which is improperly overhanging the platform edge nearest the truck, from being crushed between the platform and the rear of the truck. During the “Raise” operation, if the tapeswitch becomes pinched by overhanging cargo, the platform will stop raising. When this occurs, push the switch to lower the platform and remove the obstruction, before attempting to raise the platform again. If the tapeswitch was accidentally damaged during the loading process or wiring is damaged, it may be necessary to temporarily bypass this feature to allow the liftgate to raise for storage. Press the GREEN Tape Switch Mode button on the orange controller in the pump box for 30 seconds, to enter “Bypass Mode” for 10 minutes (Yellow Tape Switch Status LED blinks). **WARNING: Anything overhanging the platform can become crushed during “Bypass Mode”**, so MAKE SURE nothing overhangs the edges of the platform. Do NOT use the tapeswitch “Bypass Mode” long term and NEVER for making deliveries. Replace the tapeswitch or repair the wiring ASAP.

15. Check the platform adjustment stops. They are located in the platform pivot lugs and should be set so the angles on the slider just make contact with the snubbers located on the platform.

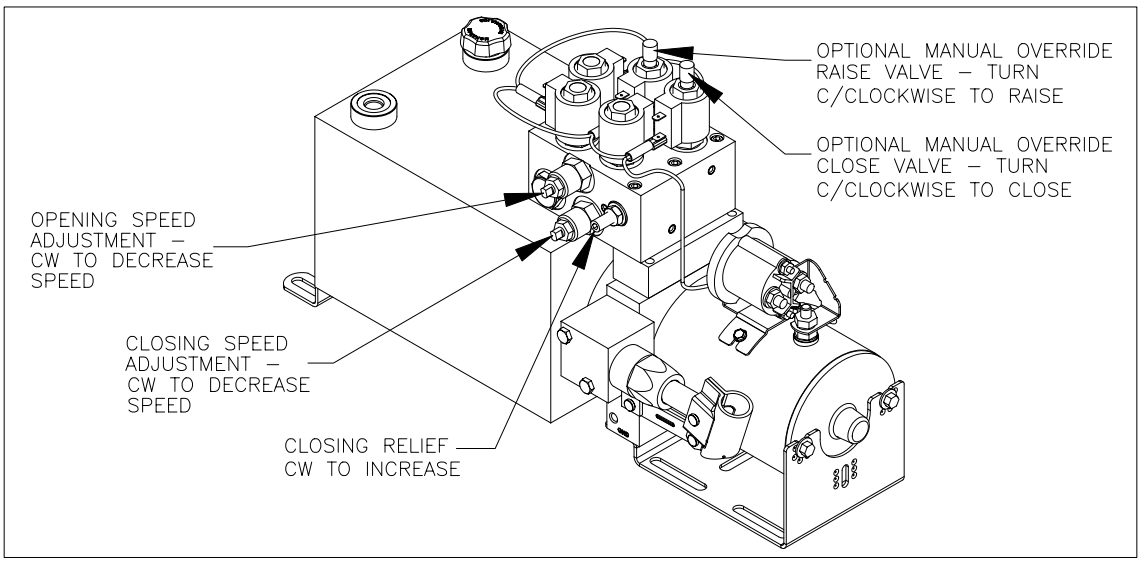
SEMI-ANNUAL INSPECTION AND MAINTENANCE

1. Perform the procedures outlined in the “Monthly Inspection and Maintenance.”
2. 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 .12” long).
   D. Clean out all residue from inside the motor housing.
   E. Apply several drops of lightweight machine oil to the armature shaft bearing in the motor end.

3. If the hydraulic oil in the reservoir is contaminated:
   A. Unfold platform and lower platform to the ground.
   B. Drain the oil from the system and flush the entire system.
   C. Remove the reservoir from the pump and clean the suction line filter. Also clean out any contaminants from the reservoir. Remount the reservoir when completed.
   D. Replace the oil as outlined in Section 8 under Monthly Maintenance and Inspection.

OPENING AND CLOSING SPEED ADJUSTMENT

1. The opening and closing speed of the platform can be adjusted with the flow controls. To increase the speed, screw the adjustment valve counterclockwise, and to decrease, screw the adjustment valve clockwise. Opening and closing speed adjustment should be set so the liftgate does not slam too hard in either direction. For standard platforms with load depths 86 inch or less, opening or closing the platform should take 5 seconds or more. Special platforms deeper than 86 inch should be set to open and close slower to avoid slamming. See the following figure.



DECAL MAINTENANCE – INSPECTION AND LOCATION OF DECALS

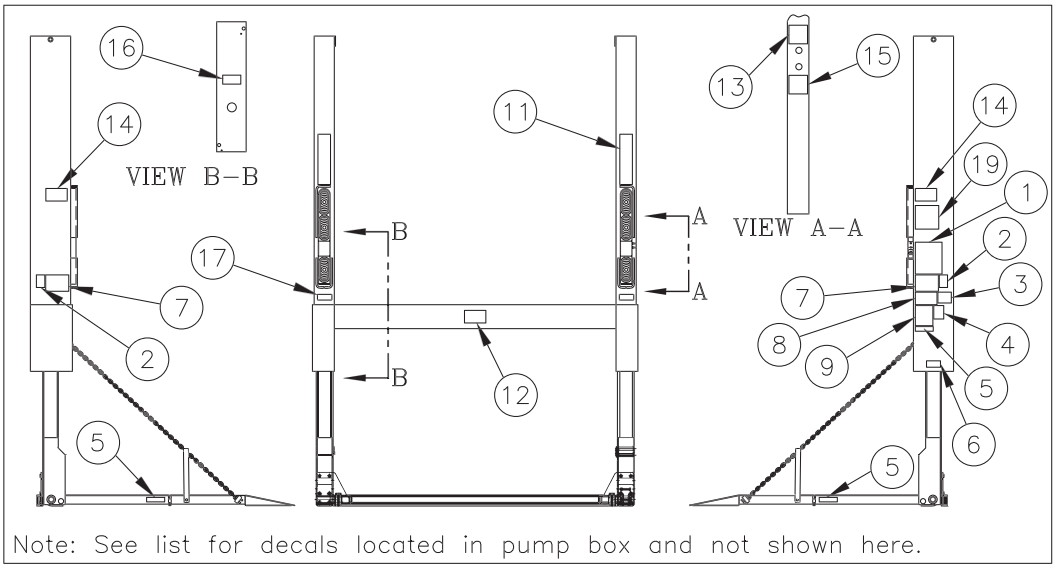
⚠ WARNING

IMPROPER OPERATION 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.**

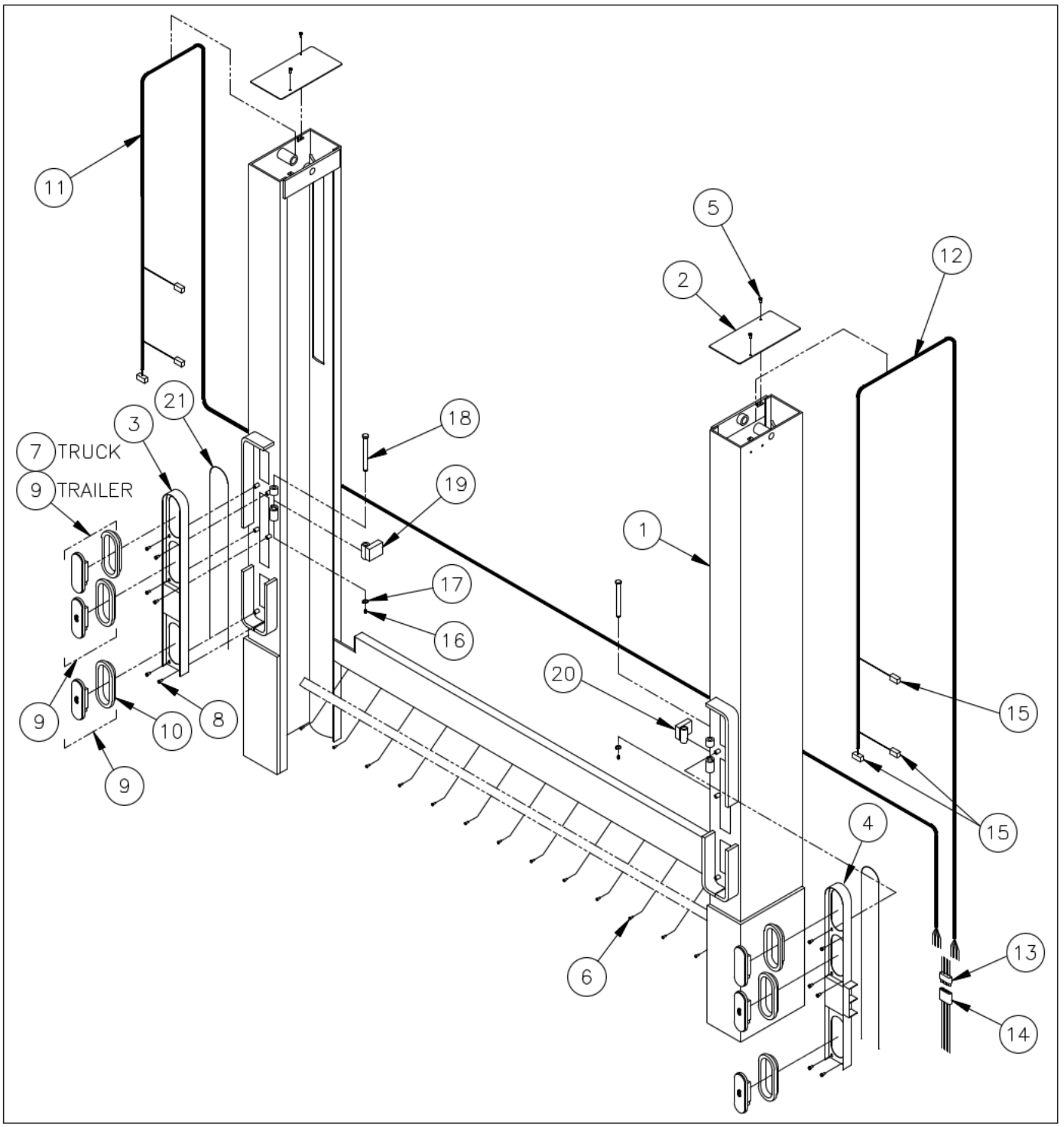
LIST OF DECALS AND LOCATIONS

Item	Part Name	Part Number
1 *	Operating Decal	4625
2	Warning Decal (3) – (1 in pump box)	4620
3	Fast Idle Decal	4650150
4	Danger Decal-No Riding	4609
5	Capacity Decal 4400# (3)	4607-025
5	Capacity Decal 5500# (3)	4607-032
5	Capacity Decal 6600# (3)	4607-033
6	Serial Tag	4650310
7	Warning Decal-Off Center Decal (2)	4671050
8	Caution Decal-Working Area	4650770
9	Warning Decal	4681
10	Wiring Decal-Tail Light (in pump box)	4623
11	Thieman Nameplate (2)	4622
12	Pinch Point Decal	4650790
13	Toggle Decal-Open/Close	4626
14 *	Latching Decal (2)	4671
15	Toggle Decal-Raise/Lower	4650820
16	Warning Decal-Cover (2)	4650760
17	Reflector (2)	5705
18	Wiring Decal-All Configurations (in pump box)	4689
* NOTE – Decals below are not standard (Included with specific optional equip.)		
1	Operating Decal (Bottle Gas)	4694
14	Bottle Gas Transit Latching Decal (2)	4695
19	Bottle Gas Rack Instructions	4696

Note: For pump enclosure decals, see page 44.



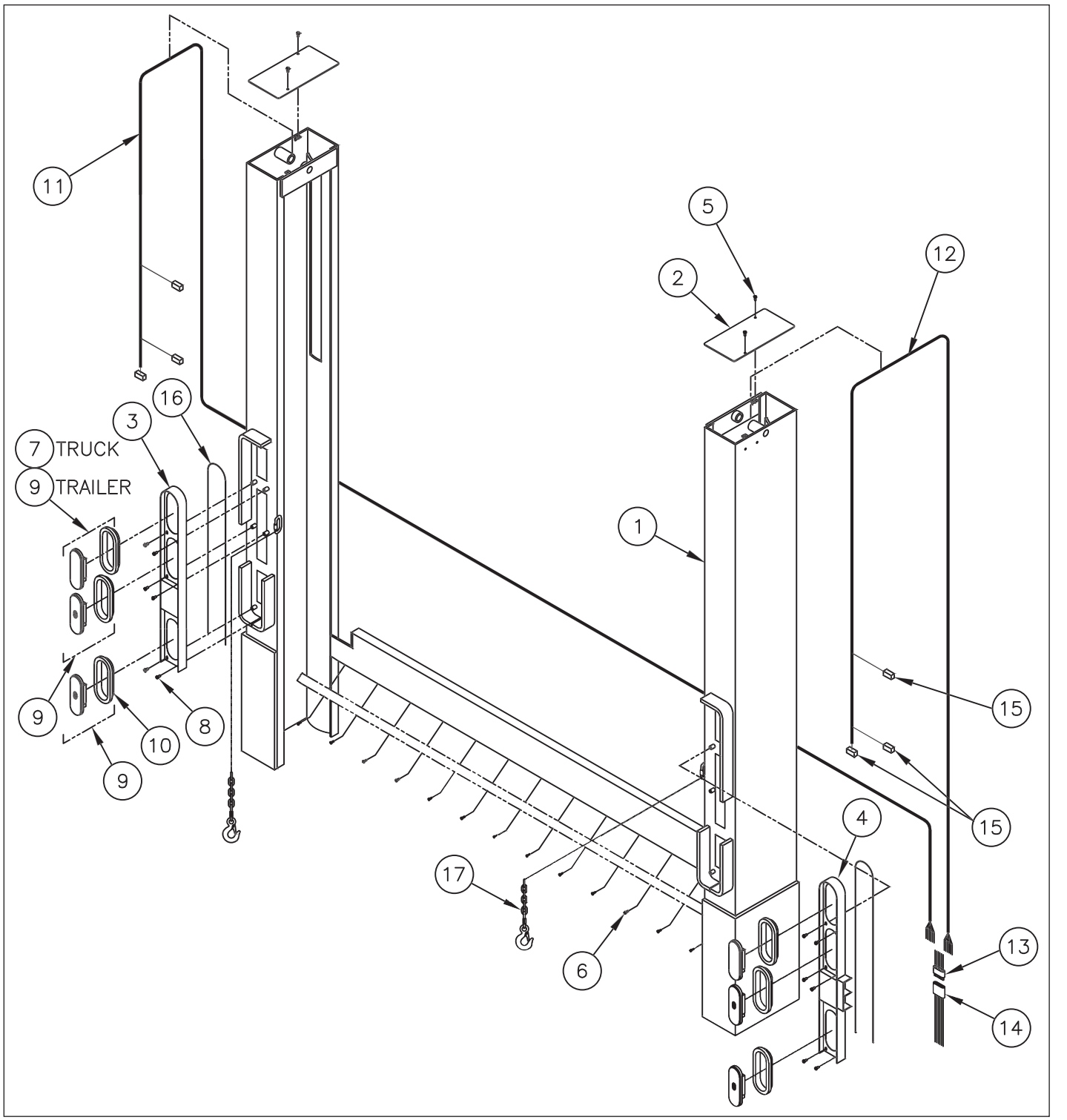
FRAME ASSEMBLY



FRAME ASSEMBLY

Item	Part Number	Description	Qty.
1	31555-001	Frame Weld 8062	1
1	31555-002	Frame Weld 8662	1
1	31555-003	Frame Weld 8074, 8086	1
1	31555-004	Frame Weld 8674, 8686	1
2	27027	Cover	2
3	31618-001	Light Box Cover LH	1
4	31618-002	Light Box Cover RH	1
5	8109-014	.25 x .75 Screw	4
6	8111-002	#10 x .75 Screw – 96”	13
6	8111-002	#10 x .75 Screw – 102”	14
7	43060	LED Back-up Light Asm. (Truck)	2
8	5793010	.25 x .75 Screw	12
9	31475	LED Stop/Turn/Tail Light Asm. (Truck)	4
9	31475	LED Stop/Turn/Tail Light Asm. (Trailer)	6
10	4301370	Grommet (Included with Asm.)	6
11	43015	LH Light Harness (Truck/Trailer)	1
12	43016	RH Light Harness (Truck/Trailer)	1
13	43017	Wire Harness (Truck/Trailer)	1
14	43018	Wire Harness (Truck/Trailer)	1
15	4301380	3-Wire Harness (Included with items 11 and 12)	6
16	8271291	Zerk	2
17	5781017	Retaining Ring	2
18	5054	Latch Pin	2
19	31236-001	Latch Weld LH	1
20	31236-002	Latch Weld RH	1
21	5749-003	Grommet	2

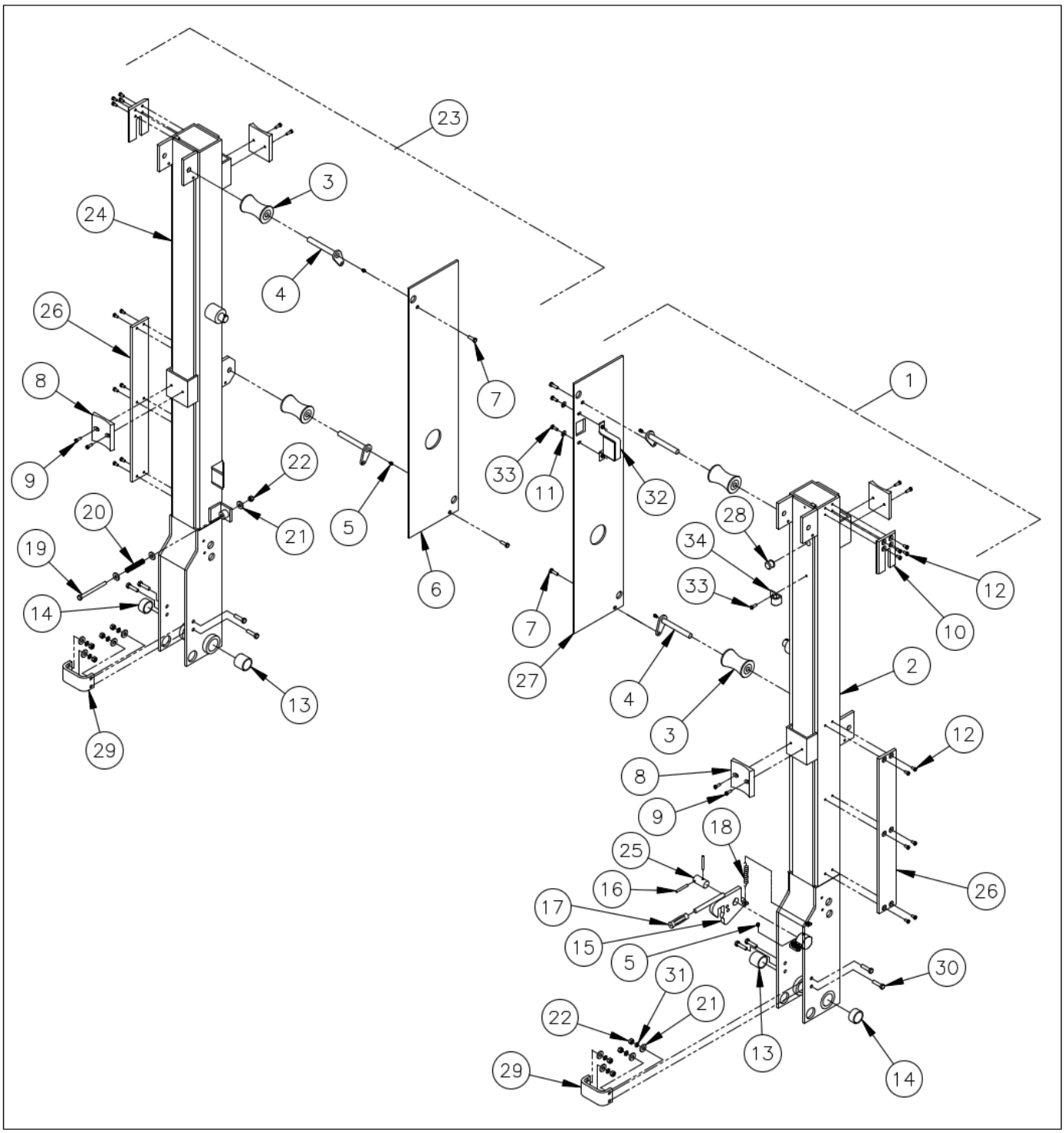
FRAME ASSEMBLY - BOTTLE GAS



FRAME ASSEMBLY - BOTTLE GAS

Item	Part Number	Description	Qty.
1	31848-001	Frame Weld 8036, 8042	1
1	31848-002	Frame Weld 8636, 8642	1
2	27027	Cover	2
3	31618-001	Light Box Cover LH	1
4	31618-002	Light Box Cover RH	1
5	8109-014	.25 x .75 Screw	4
6	8111-002	#10 x .75 Screw – 96”	13
6	8111-002	#10 x .75 Screw – 102”	14
7	43060	LED Back-up Light Asm. (Truck)	2
8	5793010	.25 x .75 Screw	12
9	31475	LED Stop/Turn/Tail Light Asm. (Truck)	4
9	31475	LED Stop/Turn/Tail Light Asm. (Trailer)	6
10	4301370	Grommet (Included with Asm.)	6
11	43015	LH Light Harness (Truck/Trailer)	1
12	43016	RH Light Harness (Truck/Trailer)	1
13	43017	Wire Harness (Truck/Trailer)	1
14	43018	Wire Harness (Truck/Trailer)	1
15	4301380	3-Wire Harness (Included with items 11 and 12)	6
16	5749-003	Grommet	2
17	31533	Chain Asm.	2

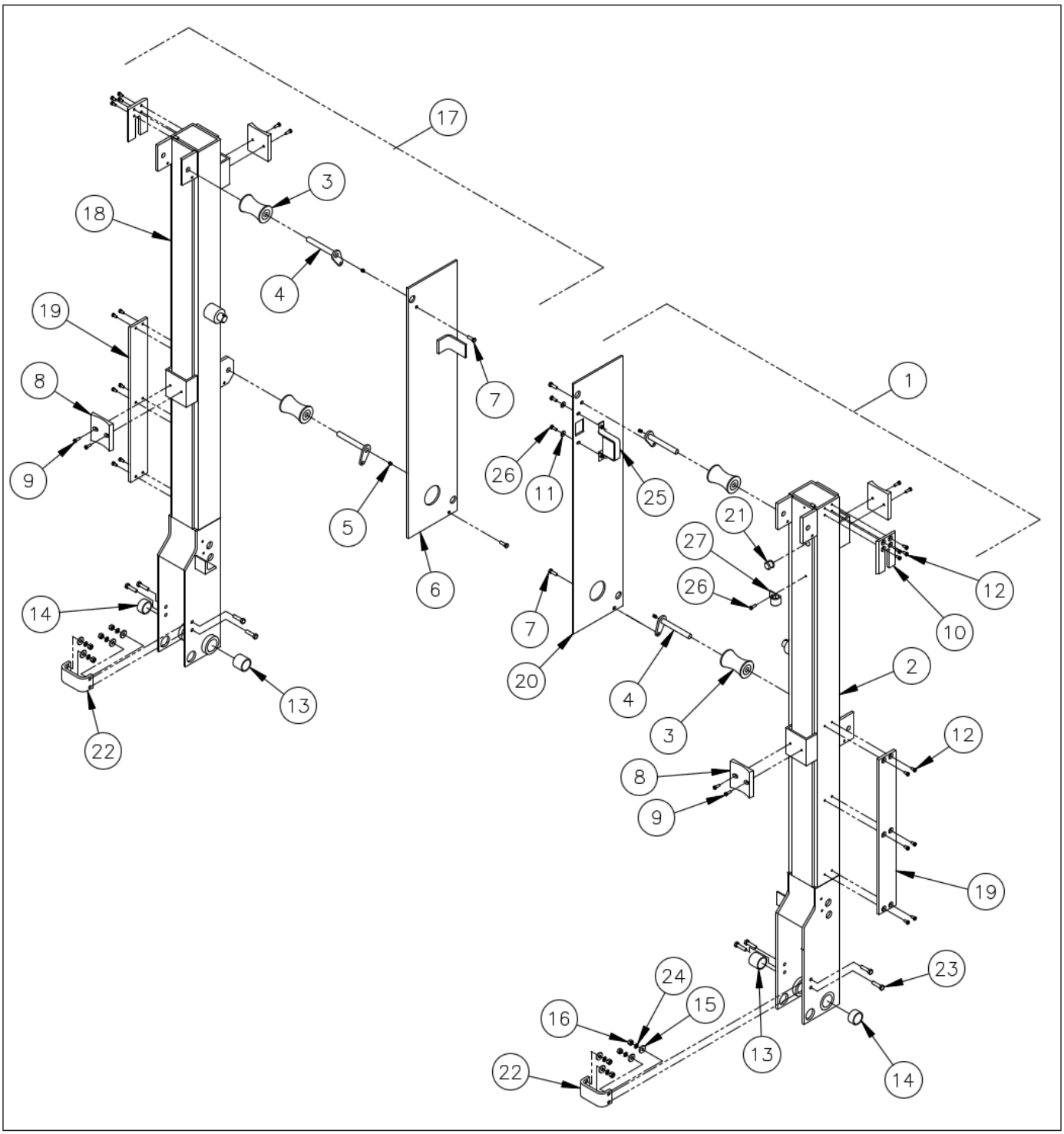
SLIDER ASSEMBLY



SLIDER ASSEMBLY

Item	Part Number	Description	Qty.
1	31619	Slider Asm RH	1
2	31721	Slider Weld RH	1
3	31157	Roller Asm	4
4	31158	Pin Weld	4
5	8271291	Zerk	5
6	27022	Cover LH	1
7	8104-006	.31 x 1.00 Screw	4
8	5722	Wear Pad	4
9	8449646	.25 x .75 Screw	8
10	5781	Wear Pad	2
11	8120386	.25 Flatwasher	2
12	8109-014	.25 x .50 Screw	20
13	5504-007	Bushing	2
14	5504-006	Bushing	2
15	31335	Latch	1
16	5708-001	Spring Pin	2
17	5701041	Handle Grip	1
18	5101100	Spring	1
19	8108-007	.38 x 4.50 Screw	1
20	5105	Spring	1
21	8120388	.38 Flatwasher	10
22	9413534	.38 Locknut	9
23	31629	Slider Asm LH	1
24	31628	Slider Weld RH	1
25	5037-002	Pin	1
26	5745	Wear Pad	2
27	27248	Cover RH	1
28	5778	Grommet	1
29	23134	Lower Slider Brace	2
30	8108-008	.38 x 1.25 Screw	8
31	8120382	.38 Lockwasher	8
32	31725	Switch Enclosure Weldment	1
33	8109-012	.25 x .75 Screw	3
34	5702230	Cord Clamp	1

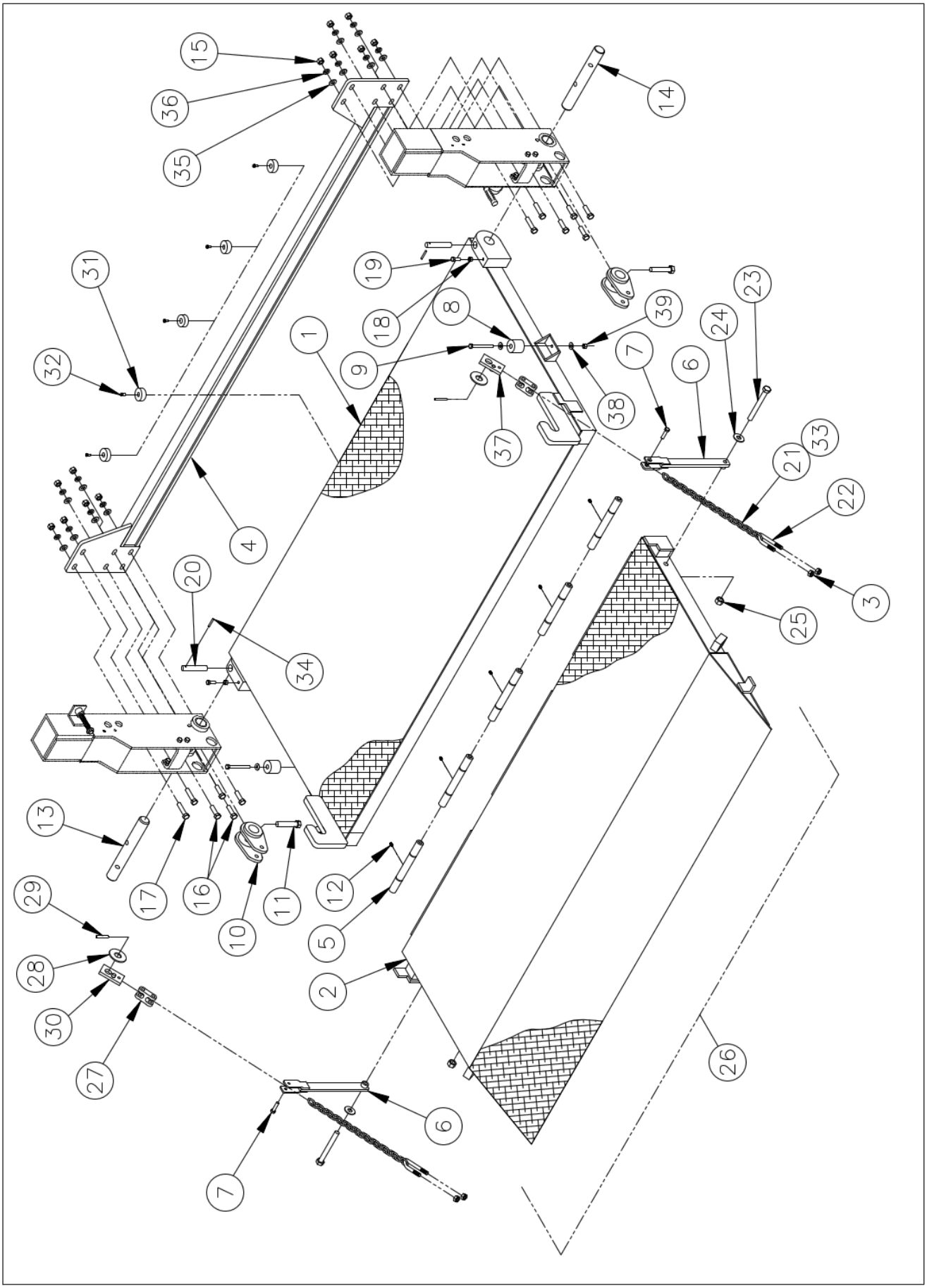
SLIDER ASSEMBLY - BOTTLE GAS



SLIDER ASSEMBLY - BOTTLE GAS

Item	Part Number	Description	Qty.
1	31846	Slider Asm RH	1
2	31844	Slider Weld RH	1
3	31157	Roller Asm	4
4	31158	Pin Weld	4
5	8271291	Zerk	4
6	31847-001	Cover LH	1
7	8104-006	.31 x 1.00 Screw	4
8	5722	Wear Pad	4
9	8449646	.25 x .75 Screw	8
10	5781	Wear Pad	2
11	8120386	.25 Flatwasher	2
12	8109-014	.25 x .50 Screw	20
13	5504-007	Bushing	2
14	5504-006	Bushing	2
15	8120388	.38 Flatwasher	8
16	9413534	.38 Locknut	8
17	31845	Slider Asm LH	1
18	31843	Slider Weld LH	1
19	5745	Wear Pad	2
20	31847-002	Cover RH	1
21	5778	Grommet	1
22	23134	Lower Slider Brace	2
23	8108-008	.38 x 1.25 Screw	8
24	8120382	.38 Lockwasher	8
25	31725	Switch Enclosure Weldment	1
26	8107-012	.25 x .75 Screw	3
27	5702230	Cord Clamp	1

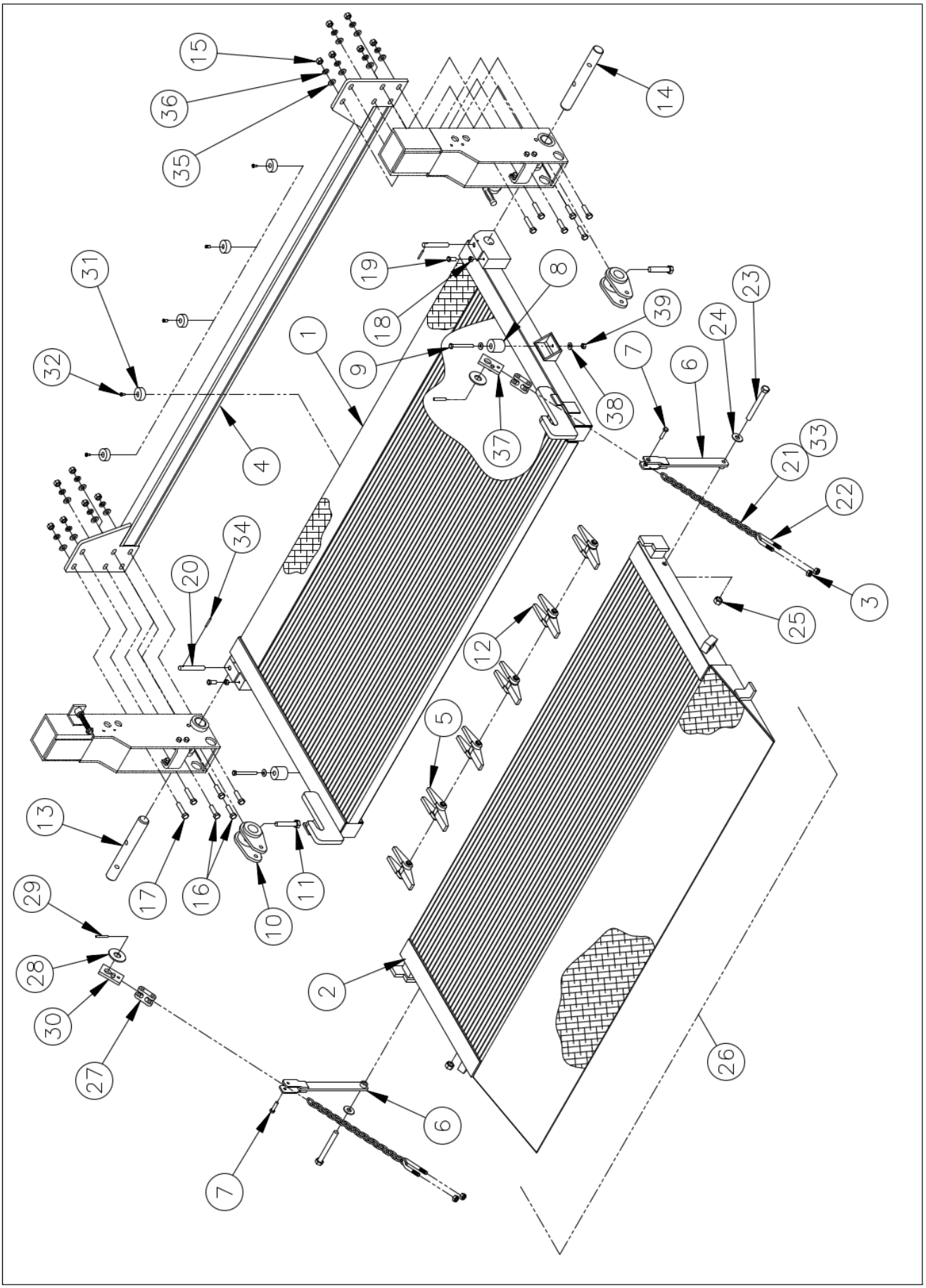
PLATFORM ASSEMBLY – 62” & 74” DEEP (STEEL)



PLATFORM ASSEMBLY – 62” & 74” DEEP (STEEL)

Item	Part Number	Description	Qty.
1	31171-001	Main Section 8062	1
1	31171-002	Main Section 8662	1
1	31171-003	Main Section 8074	1
1	31171-004	Main Section 8674	1
2	31180-001	Extension 8062	1
2	31180-002	Extension 8662	1
2	31180-003	Extension 8074	1
2	31180-004	Extension 8674	1
3	9414073	.44 Lock Nut	4
4	31160-001	Slider Support – 96” Frame Width	1
4	31160-002	Slider Support – 102” Frame Width	1
5	3106270	Hinge Asm	5
6	31375-001	Fold Lever	2
7	8108-012	.38 x 1.50 Screw	2
8	5702290	Snubber	2
9	5792010	.31 x 2.25 Screw	2
10	31174	Closing Bracket	2
11	8102-007	.62 x 3.25 Screw	2
12	8271291	Zerk	5
13	5034-001	Platform Pivot Pin LH	1
14	5034-002	Platform Pivot Pin RH	1
15	9414074	.50 Locknut	12
16	8100-011	.50 x 1.75 Screw	8
17	8100-009	.50 x 2.25 Screw	4
18	8103-007	.38 Jam Nut	2
19	8180122	.38 x 1.00 Screw	2
20	5068	Pin	2
21	4100356	Chain – 74” Deep	2
21	4100357	Chain – 62” Deep	2
22	5793150	U-Bolt	2
23	8102-001	.62 x 5.50 Screw	2
24	8130999	.62 Flatwasher	2
25	8103-001	.62 Locknut	2
26	3420-001	Platform Asm 8062, incl – 1, 2, 5	1
26	3420-002	Platform Asm 8662, incl – 1, 2, 5	1
26	3420-003	Platform Asm 8074, incl – 1, 2, 5	1
26	3420-004	Platform Asm 8674, incl – 1, 2, 5	1
27	5725	Double Clevis Link	2
28	8107-010	1.00 Flatwasher	2
29	5708-001	.25 x 2.00 Spring Pin	2
30	31524-001	Chain Anchor LH	1
31	5701	Snubber	5
32	8449646	.25 x .75 Screw	5
33	5702300	Nylon Chain Cover (Sold in inches)	4
34	5708-004	.18 x 1.00 Spring Pin	2
35	8120396	.50 Flatwasher	12
36	8120384	.50 Lockwasher	12
37	31524-002	Chain Anchor RH	1
38	8120386	.31 Flatwasher	4
39	9413447	.31 Locknut	2

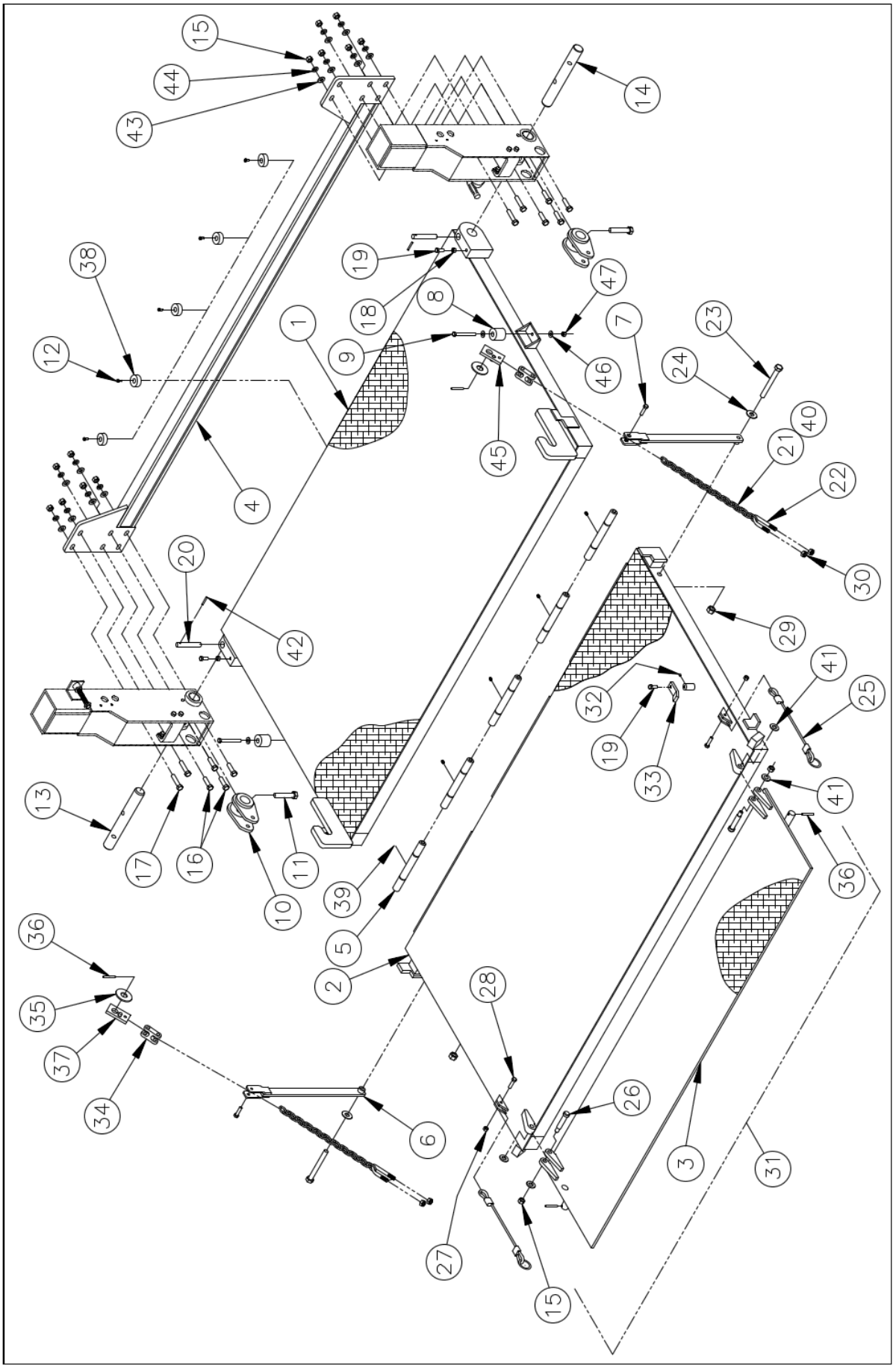
PLATFORM ASSEMBLY – 62” & 74” DEEP (ALUMINUM)



PLATFORM ASSEMBLY – 62” & 74” DEEP (ALUM.)

Item	Part Number	Description	Qty.
1	31531-001	Main Section 8062	1
1	31531-002	Main Section 8662	1
1	31531-003	Main Section 8074	1
1	31531-004	Main Section 8674	1
2	31534-001	Extension 8062	1
2	31534-002	Extension 8662	1
2	31534-003	Extension 8074	1
2	31534-004	Extension 8674	1
3	9414073	.44 Locknut	4
4	31160-001	Slider Support – 96” Frame Width	1
4	31160-002	Slider Support – 102” Frame Width	1
5	31277-001	Hinge Asm	3
6	31375-001	Fold Lever	2
7	8108-012	.38 x 1.50 Screw	2
8	5702290	Snubber	2
9	5792010	.31 x 2.25 Screw	2
10	31174	Closing Bracket	2
11	8102-007	.62 x 3.25 Screw	2
12	31277-002	Hinge Asm	3
13	5034-001	Platform Pivot Pin LH	1
14	5034-002	Platform Pivot Pin RH	1
15	9414074	.50 Locknut	12
16	8100-011	.50 x 1.75 Screw	8
17	8100-009	.50 x 2.25 Screw	4
18	8103-007	.38 Jam Nut	2
19	8180122	.38 x 1.00 Screw	2
20	5068	Pin	2
21	4100356	Chain – 74” Deep	2
21	4100357	Chain – 62” Deep	2
22	5793150	U-Bolt	2
23	8102-001	.62 x 5.50 Screw	2
24	8130999	.62 Flatwasher	2
25	8103-001	.62 Locknut	2
26	3452-001	Platform Asm 8062, incl – 1, 2, 5, 12	1
26	3452-002	Platform Asm 8662, incl – 1, 2, 5, 12	1
26	3452-003	Platform Asm 8074, incl – 1, 2, 5, 12	1
26	3452-004	Platform Asm 8674, incl – 1, 2, 5, 12	1
27	5725	Double Clevis Link	2
28	8107-010	1.00 Flatwasher	2
29	5708-001	.25 x 2.00 Spring Pin	2
30	31524-001	Chain Anchor LH	1
31	5701	Snubber	5
32	8449646	.25 x .75 Screw	5
33	5702300	Nylon Chain Cover (Sold in inches)	4
34	5708-004	.18 x 1.00 Spring Pin	2
35	8120396	.50 Flatwasher	12
36	8120384	.50 Lockwasher	12
37	31524-002	Chain Anchor RH	1
38	8120386	.31 Flatwasher	4
39	9413447	.31 Locknut	2

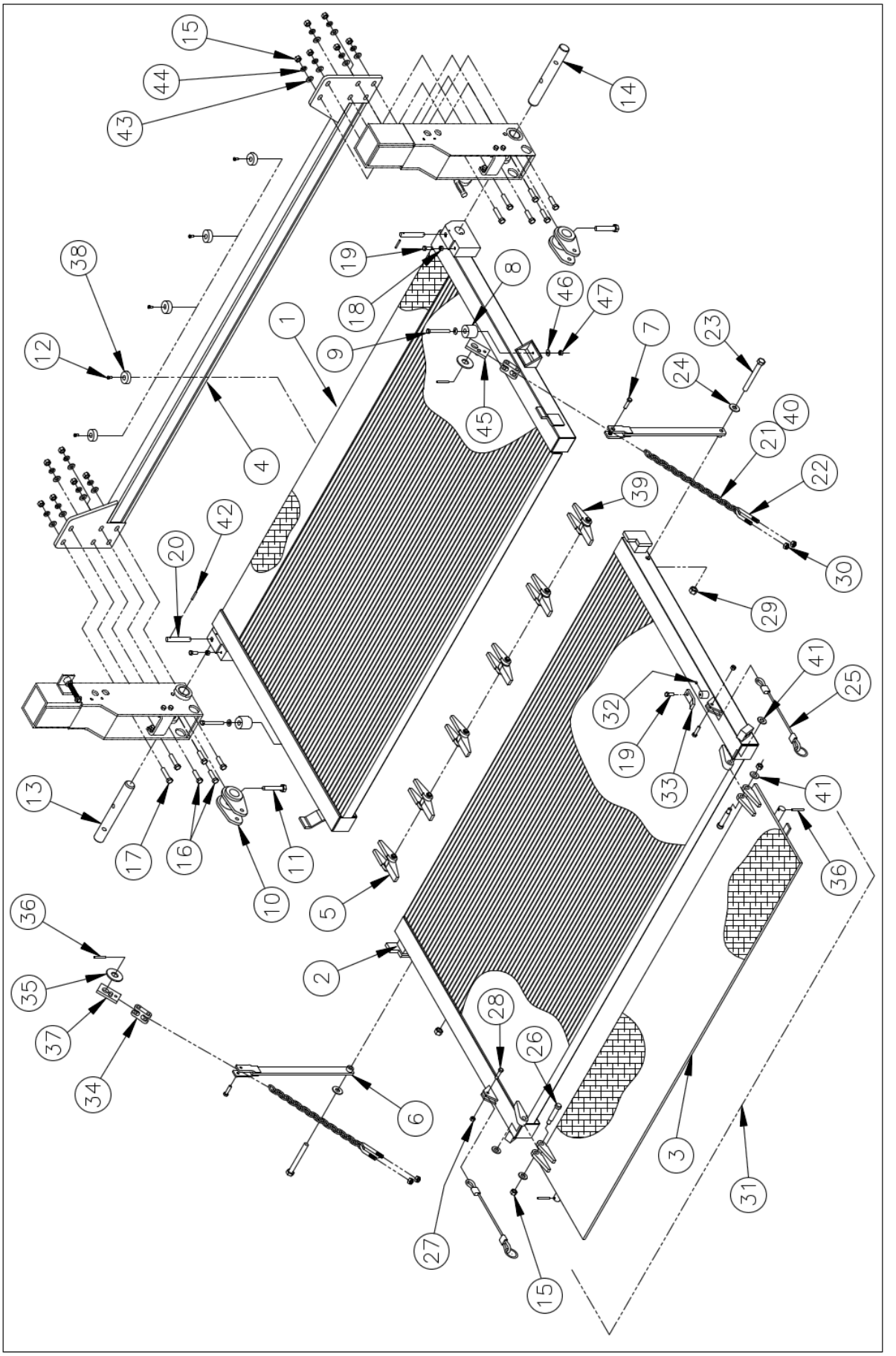
PLATFORM ASSEMBLY – 86” DEEP (STEEL)



PLATFORM ASSEMBLY – 86” DEEP (STEEL)

Item	Part Number	Description	Qty.
1	31171-003	Main Section 8086	1
1	31171-004	Main Section 8686	1
2	31172-001	Extension 8086	1
2	31172-002	Extension 8686	1
3	31173-001	Ramp – 96” Frame Width	1
3	31173-002	Ramp – 102” Frame Width	1
4	31160-001	Slider Support – 96” Frame Width	1
4	31160-002	Slider Support – 102” Frame Width	1
5	3106270	Hinge Asm	5
6	31375-002	Fold Lever	2
7	8108-012	.38 x 1.50 Screw	2
8	5702290	Snubber	2
9	5792010	.31 x 2.25 Screw	2
10	31174	Closing Bracket	2
11	8102-007	.62 x 3.25 Screw	2
12	8449646	.25 x .75 Screw	5
13	5034-001	Platform Pivot Pin LH	1
14	5034-002	Platform Pivot Pin RH	1
15	9414074	.50 Locknut	14
16	8100-011	.50 x 1.75 Screw	8
17	8100-009	.50 x 2.25 Screw	4
18	8103-007	.38 Jam Nut	2
19	8180122	.38 x 1.00 Screw	2
20	5068	Pin	2
21	4106-004	Chain	2
22	5793150	U-Bolt	2
23	8102-001	.62 x 5.50 Screw	2
24	8130999	.62 Flatwasher	2
25	5741	Cable Asm	2
26	8118	.62 x 2.25 Screw	2
27	9413534	.38 Nut	2
28	8180126	.38 x 1.50 Screw	2
29	8103-001	.62 Locknut	2
30	9414073	.44 Locknut	4
31	3419-001	Platform Asm 8086	1
31	3419-002	Platform Asm 8686	1
32	8106-008	.25 Set Screw	1
33	2386	Retainer	1
34	5725	Double Clevis Link	2
35	8107-010	1.00 Flatwasher	2
36	5708-001	.25 x 2.00 Spring Pin	4
37	31524-001	Chain Anchor LH	1
38	5701	Snubber	5
39	8271291	Zerk	5
40	5702300	Nylon Chain Anchor (Sold in inches)	4
41	8107-011	.62 Washer	4
42	5708-004	.18 x 1.50 Spring Pin	2
43	8120396	.50 Flatwasher	12
44	8120384	.50 Lockwasher	12
45	31524-002	Chain Anchor RH	1
46	8120386	.31 Flatwasher	4
47	9413447	.31 Locknut	2

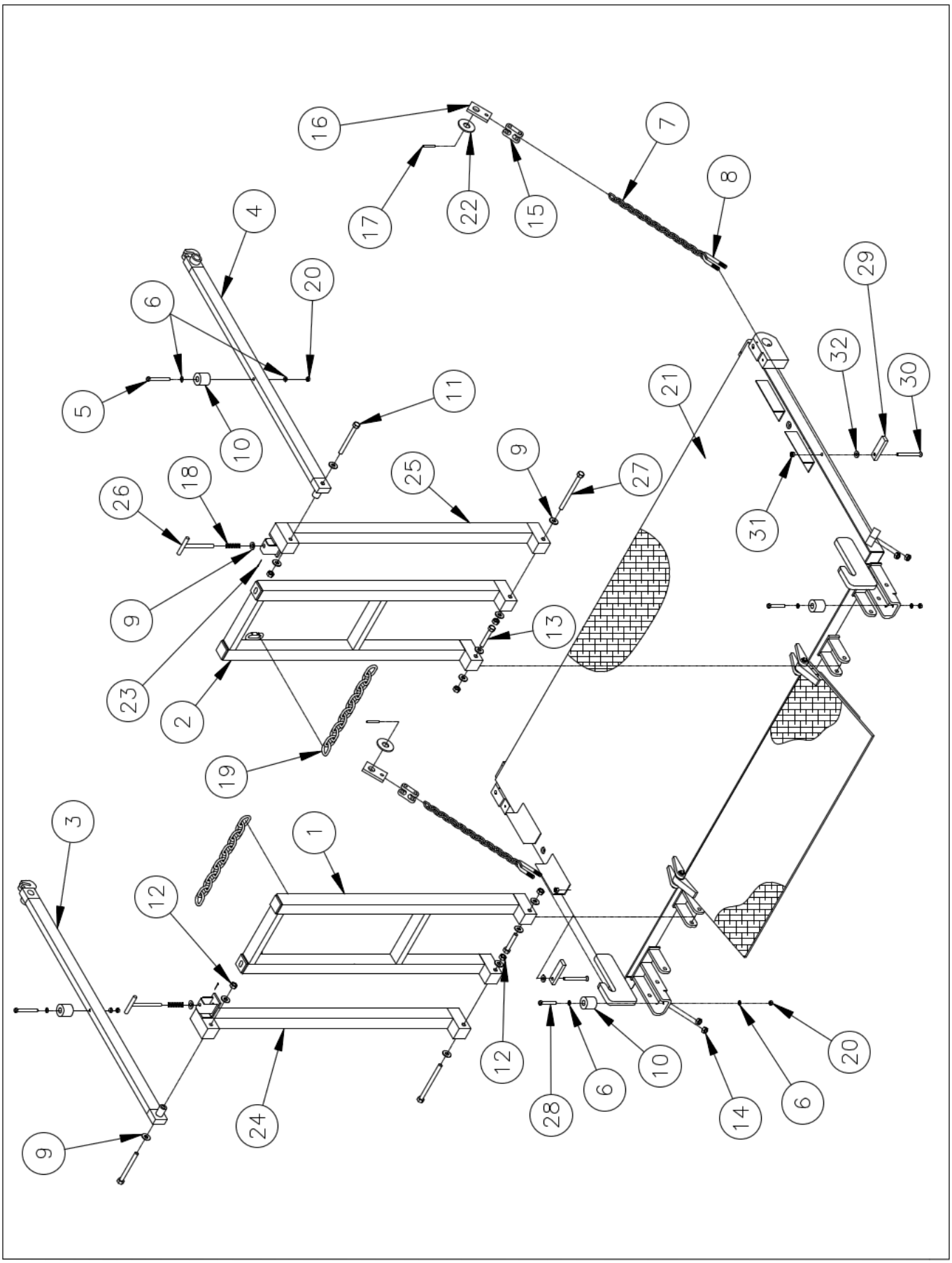
PLATFORM ASSEMBLY – 86” DEEP (ALUMINUM)



PLATFORM ASSEMBLY – 86” DEEP (ALUMINUM)

Item	Part Number	Description	Qty.
1	31531-003	Main Section 8086	1
1	31531-004	Main Section 8686	1
2	31532-001	Extension 8086	1
2	31532-002	Extension 8686	1
3	31173-003	Ramp – 96” Frame Width	1
3	31173-004	Ramp – 102” Frame Width	1
4	31160-001	Slider Support – 96” Frame Width	1
4	31160-002	Slider Support – 102” Frame Width	1
5	31277-001	Hinge Asm	3
6	31375-002	Fold Lever	2
7	8108-012	.38 x 1.50 Screw	2
8	5702290	Snubber	2
9	5792010	.31 x 2.25 Screw	2
10	31174	Closing Bracket	2
11	8102-007	.62 x 3.25 Screw	2
12	8449646	.25 x .75 Screw	5
13	5034-001	Platform Pivot Pin LH	1
14	5034-002	Platform Pivot Pin RH	1
15	9414074	.50 Locknut	14
16	8100-011	.50 x 1.75 Screw	8
17	8100-009	.50 x 2.25 Screw	4
18	8103-007	.38 Jam Nut	2
19	8180122	.38 x 1.00 Screw	2
20	5068	Pin	2
21	4106-004	Chain	2
22	5793150	U-Bolt	2
23	8102-001	.62 x 5.50 Screw	2
24	8130999	.62 Flatwasher	2
25	5741	Cable Asm	2
26	8118	.62 x 2.25 Screw	2
27	9413534	.38 Nut	2
28	8180126	.38 x 1.50 Screw	2
29	8103-001	.62 Locknut	2
30	9414073	.44 Locknut	4
31	3451-001	Platform Asm 8086	1
31	3451-002	Platform Asm 8686	1
32	8106-008	.25 Set Screw	1
33	2386	Retainer	1
34	5725	Double Clevis Link	2
35	8107-010	1.00 Flatwasher	2
36	5708-001	.25 x 2.00 Spring Pin	4
37	31524-001	Chain Anchor LH	1
38	5701	Snubber	5
39	31277-002	Hinge Asm	3
40	5702300	Nylon Chain Anchor (Sold in inches)	4
41	8107-011	.62 Washer	4
42	5708-004	.18 x 1.50 Spring Pin	2
43	8120396	.50 Flatwasher	12
44	8120384	.50 Lockwasher	12
45	31524-002	Chain Anchor RH	1
46	8120386	.31 Flatwasher	4
47	9413447	.31 Locknut	2

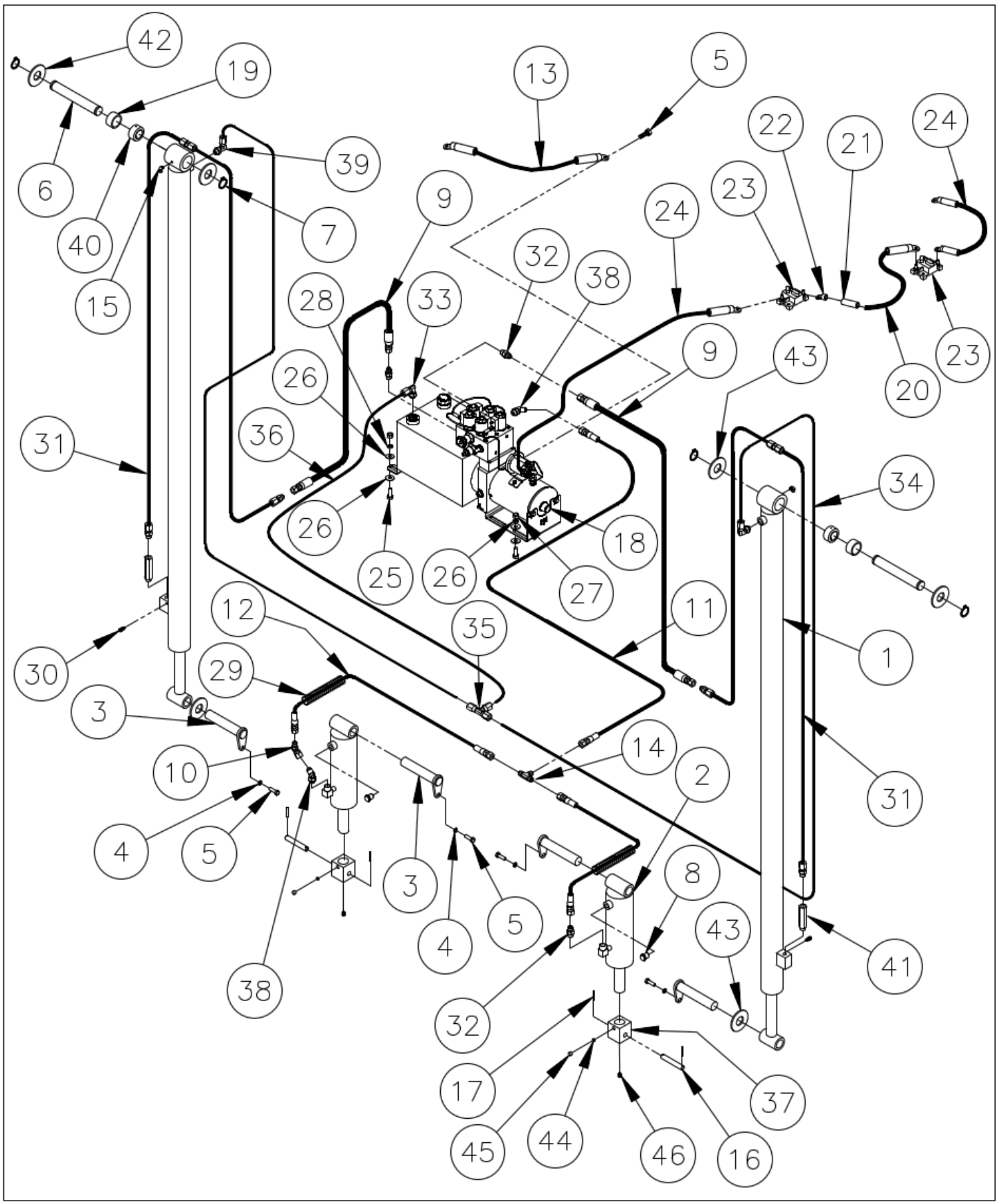
FOLD DOWN BOTTLE GAS RACK (STEEL)



FOLD DOWN BOTTLE GAS RACK (STEEL)

Item	Part Number	Description	Qty.
1	31510-001	End Rail Weld LH 80 Wide	1
1	31510-003	End Rail Weld LH 86 Wide	1
2	31510-002	End Rail Weld RH 80 Wide	1
2	31510-004	End Rail Weld RH 86 Wide	1
3	31513-001	Hor. End Rail 42” LH	1
3	31513-003	Hor. End Rail 36” LH	1
4	31513-002	Hor. End Rail 42” RH	1
4	31513-004	Hor. End Rail 36” RH	1
5	8104-001	.31 x 3.50 Screw	2
6	8120386	.31 Flatwasher	8
7	4100359	Platform Chain	2
8	5793150	U-Bolt	2
9	8120396	.50 Flatwasher	14
10	5702290	Rubber Bumper	4
11	8100-008	.50 x 5.25 Screw	2
12	9414074	.50 Locknut	6
13	8100-007	.50 x 4.00 Screw	2
14	9414073	.44 Locknut	2
15	5725	Double Clevis Link	2
16	2384	Chain Anchor	2
17	5708-001	Spring Pin	2
18	5101160	Spring	2
19	4100304	Chain 42” Deep	2
19	4100302	Chain 36” Deep	2
20	9413447	.31 Locknut	4
21	3477-001	Platform 8036	1
21	3477-002	Platform 8636	1
21	3477-003	Platform 8042	1
21	3477-004	Platform 8642	1
22	8107-010	1.00 Flatwasher	2
23	8121222	Cotter Pin	2
24	31511-001	Vertical Rail Weld LH	1
25	31511-002	Vertical Rail Weld RH	1
26	31336	Locking Pin Weld	2
27	8100-013	.50 x 6.50 Screw	2
28	8180091	.31 x 2.50 Screw	2
29	23130	Latch	2
30	8108-011	.38 x 4.0 Flat Head Screw	2
31	8103-015	.38 Locknut	2
32	8120388	.38 Flatwasher	2

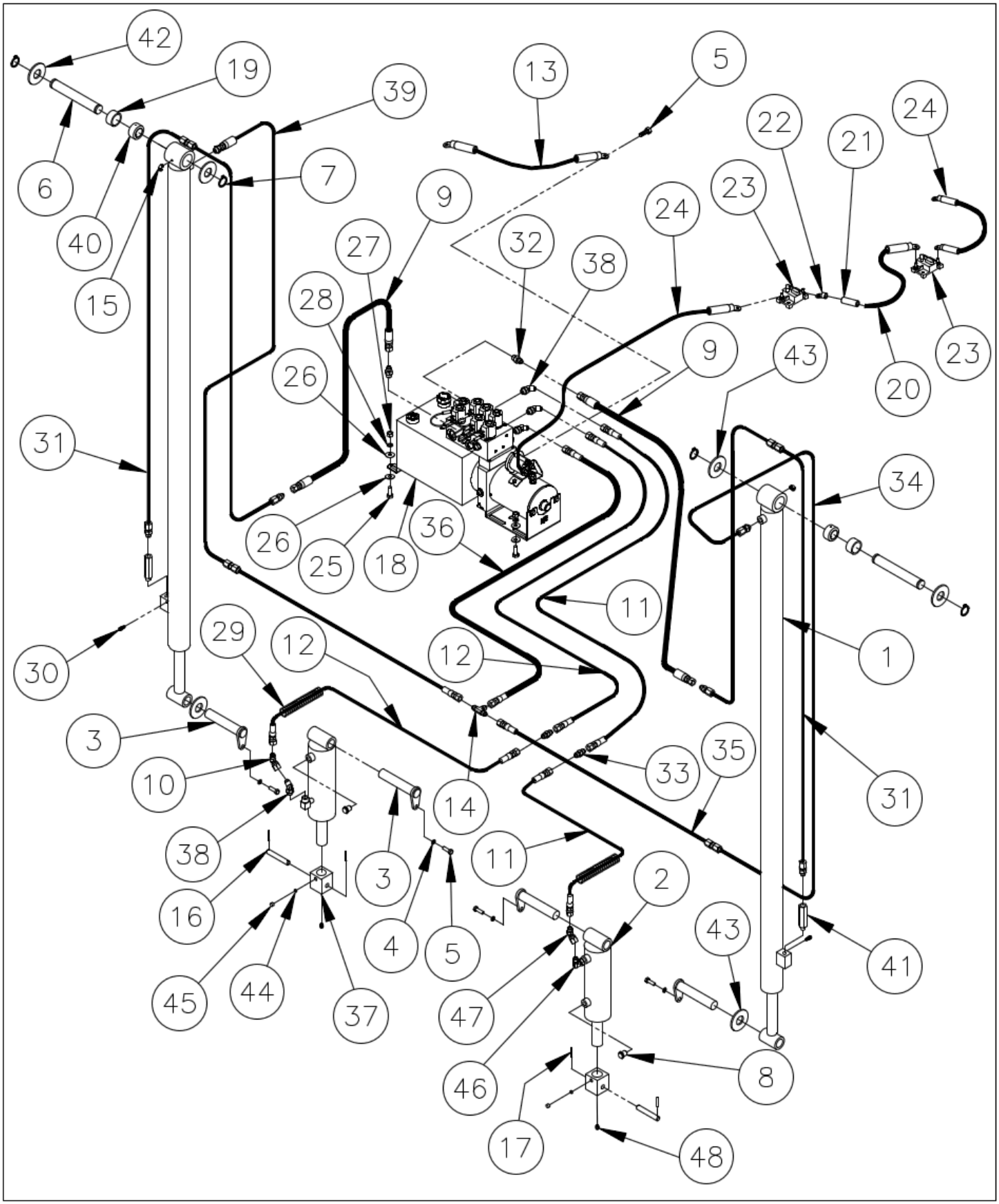
GRAVITY DOWN – GRAVITY UNFOLD (GDGU)
PUMP & CYLINDER ASSEMBLY



GRAVITY DOWN – GRAVITY UNFOLD (GDGU)
PUMP & CYLINDER ASSEMBLY

Item	Part Number	Description	Qty.
1	42008	Lift Cylinder	2
2	42009	Fold Cylinder	2
3	31159	Pin Weld	4
4	8120214	.31 Lockwasher	4
5	8104-006	.31 x 1.00 Screw	5
6	5035	Pin	2
7	5781008	Retaining Ring	4
8	4954	Breather	2
9	4950-002	.38 Hose 248”	2
10	4958-001	Elbow 45° MJ-FJS	1
11	4951-009	.25 Hose 205”	1
12	4951-010	.25 Hose 248”	2
13	4318-002	Ground Cable #2 x 2’	1
14	4953-001	Tee MJ-MJ-MJ	1
15	9411032	Zerk 90°	2
16	5046	Pin	2
17	5708-008	Spring Pin	4
18	4440	Power Unit	1
19	3055	Spacer	2
20	4318-007	Battery Cable #2 x 33’	1
21	4319-002	Heat Shrink	1
22	4350	Cable Lug	1
23	4301770	Circuit Breaker	2
24	4318-001	Battery Cable	2
25	8180122	.38 x 1.00 Screw	4
26	8106-010	.38 Internal Tooth Lockwasher	8
27	8120377	.38 Nut	4
28	8120388	.38 Flatwasher	4
29	5109	Spring – 36”	2
30	5735	Bleeder Screw	2
31	4444	.38 Steel Tubing	2
32	4941-001	Straight MJ-MAORB	3
33	4933-002	Elbow 90° BT-MAORB	1
34	4921-002	Tube – 178”	2
35	4942-001	Tee BT-BT-BT	1
36	4922-002	Tube – 240”	1
37	5748	Adjustment Block	2
38	4940-001	Elbow 45° MJ-MAORB	2
39	4933-001	Elbow 90° BT-MAORB	2
40	5509	Spherical Bearing	2
41	4952	Flow Control – 3 GPM	2
42	8107-008	1.00 Shim Washer	2
43	8107-010	1.00 Flatwasher	4
44	4220240	Nylon Plug	2
45	8108-005	.38 x .25 Set Screw	2
46	8271291	Zerk	2

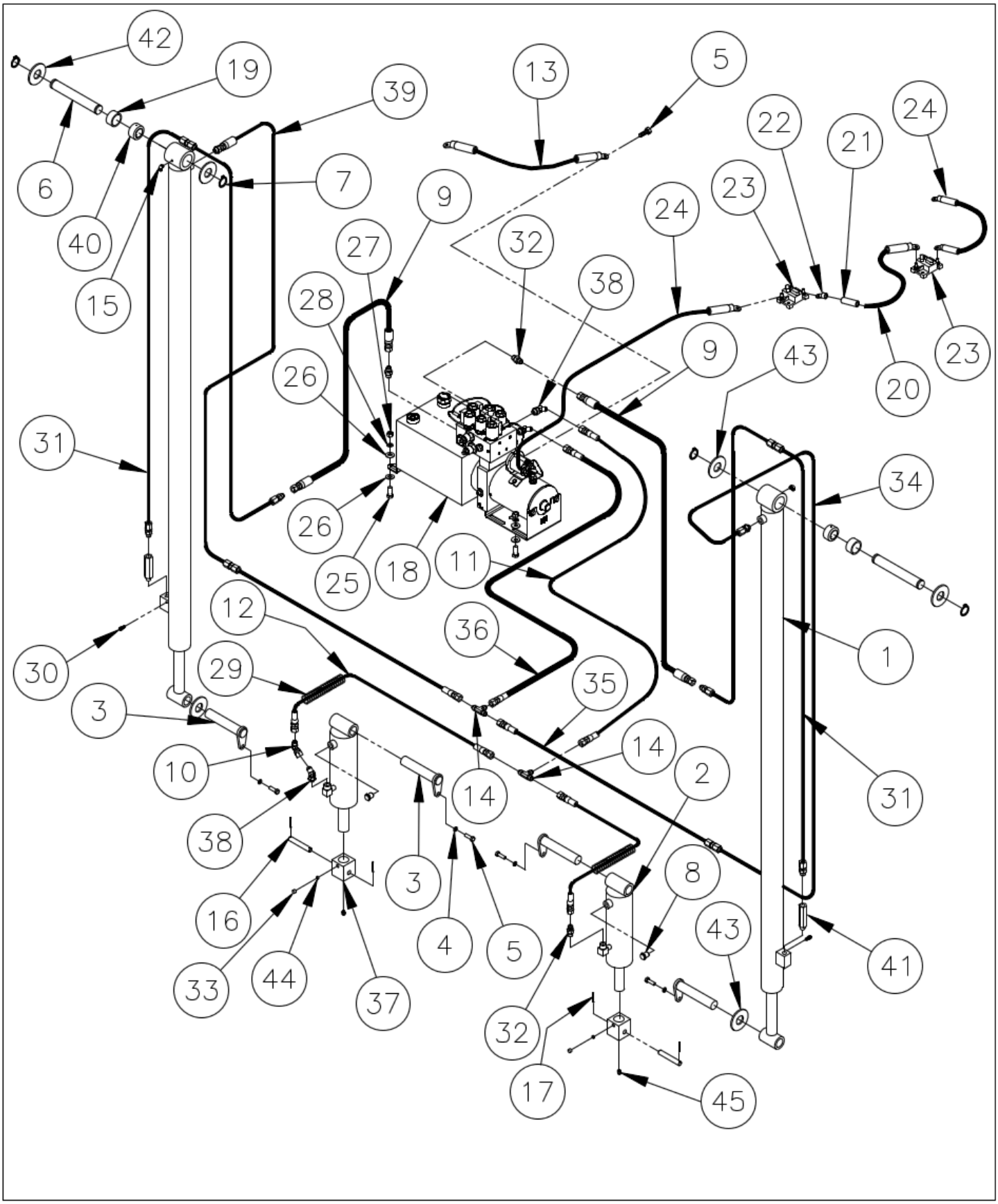
POWER DOWN – POWER UNFOLD (PDPU)
PUMP & CYLINDER ASSEMBLY



POWER DOWN – POWER UNFOLD (PDPU)
PUMP & CYLINDER ASSEMBLY

Item	Part Number	Description	Qty.
1	42008	Lift Cylinder	2
2	42009	Fold Cylinder	2
3	31159	Pin Weld	4
4	8120214	.31 Lockwasher	4
5	8104-006	.31 x 1.00 Screw	5
6	5035	Pin	2
7	5781008	Retaining Ring	4
8	4954	Breather	2
9	4950-002	.38 Hose 248”	2
10	4958-001	Elbow 45° MJ-FJS	1
11	4951-009	.25 Hose 205”	2
12	4951-010	.25 Hose 248”	2
13	4318-002	Ground Cable #2 x 2’	1
14	4953-001	Tee MJ-MJ-MJ	1
15	9411032	Zerk 90°	2
16	5046	Pin	2
17	5708-008	Spring Pin	4
18	4472	Power Unit	1
19	3055	Spacer	2
20	4318-007	Battery Cable #2 x 33’	1
21	4319-002	Heat Shrink	1
22	4350	Cable Lug	1
23	4301770	Circuit Breaker	2
24	4318-001	Battery Cable	2
25	8180122	.38 x 1.00 Screw	4
26	8106-010	.38 Internal Tooth Lockwasher	8
27	8120377	.38 Nut	4
28	8120388	.38 Flatwasher	4
29	5109	Spring – 36”	2
30	5735	Bleeder Screw	2
31	4444	.38 Steel Tubing	2
32	4941-001	Straight MJ-MAORB	2
33	4937-001	Straight Adapter MJ-MJ	2
34	4436	.38 Steel Tubing CS	2
35	4950-004	.38 Hose 62”	2
36	4950-001	.38 Hose 240”	1
37	5748	Adjustment Block	2
38	4940-001	Elbow 45° MJ-MAORB	4
39	4435	.38 Steel Tubeing SS	2
40	5509	Spherical Bearing	2
41	4952	Flow Control – 3 GPM	2
42	8107-008	1.00 Shim Washer	2
43	8107-010	1.00 Flatwasher	4
44	4220240	Nylon Locking Plug	2
45	8108-005	.38 x .25 Set Screw	2
46	4957-001	Elbow 90°	1
47	4939-001	Elbow 45°	1
48	8271291	Zerk	2

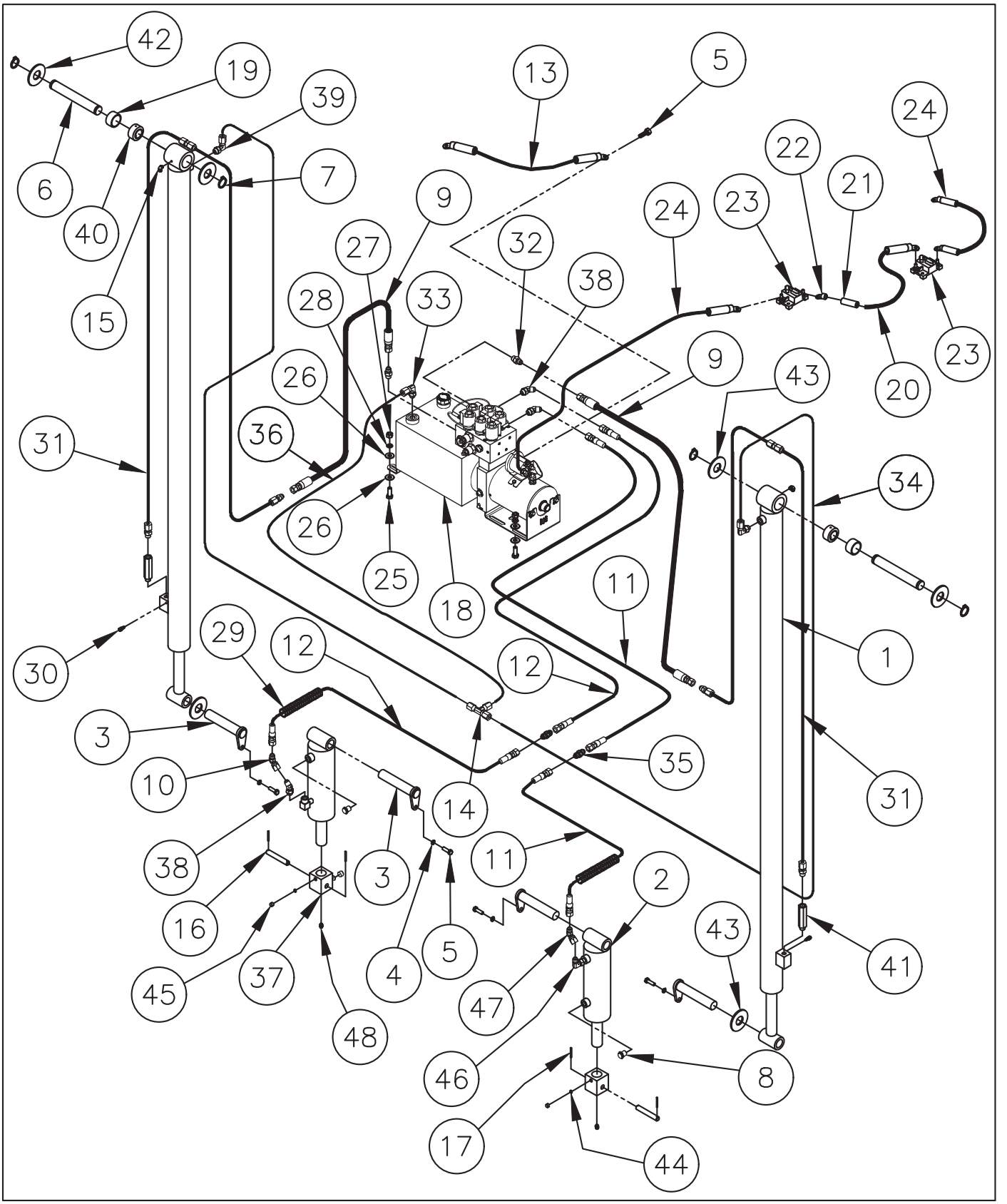
POWER DOWN – GRAVITY UNFOLD (PDGU)
PUMP & CYLINDER ASSEMBLY



POWER DOWN – GRAVITY UNFOLD (PDGU)
PUMP & CYLINDER ASSEMBLY

Item	Part Number	Description	Qty.
1	42008	Lift Cylinder	2
2	42009	Fold Cylinder	2
3	31159	Pin Weld	4
4	8120214	.31 Lockwasher	4
5	8104-006	.31 x 1.00 Screw	5
6	5035	Pin	2
7	5781008	Retaining Ring	4
8	4954	Breather	2
9	4950-002	.38 Hose 248”	2
10	4958-001	Elbow 45° MJ-FJS	1
11	4951-009	.25 Hose 205”	1
12	4951-010	.25 Hose 248”	2
13	4318-002	Ground Cable #2 x 2’	1
14	4953-001	Tee MJ-MJ-MJ	2
15	9411032	Zerk 90°	2
16	5046	Pin	2
17	5708-008	Spring Pin	4
18	4442	Power Unit	1
19	3055	Spacer	2
20	4318-007	Battery Cable #2 x 33’	1
21	4319-002	Heat Shrink	1
22	4350	Cable Lug	1
23	4301770	Circuit Breaker	2
24	4318-001	Battery Cable	2
25	8180122	.38 x 1.00 Screw	4
26	8106-010	.38 Internal Tooth Lockwasher	8
27	8120377	.38 Nut	4
28	8120388	.38 Flatwasher	4
29	5109	Spring – 36”	2
30	5735	Bleeder Screw	2
31	4444	.38 Steel Tubing	2
32	4941-001	Straight MJ-MAORB	3
33	8108-005	.38 x.25 Set Screw	2
34	4436	.38 Steel Tubing CS	1
35	4950-004	.38 Hose 62”	2
36	4950-001	.38 Hose 240”	1
37	5748	Adjustment Block	2
38	4940-001	Elbow 45° MJ-MAORB	3
39	4435	.38 Steel Tubing SS	1
40	5509	Spherical Bearing	2
41	4952	Flow Control – 3 GPM	2
42	8107-008	1.00 Shim Washer	2
43	8107-010	1.00 Flatwasher	4
44	4220240	Nylon Locking Plug	2
45	8271291	Zerk	2

GRAVITY DOWN – POWER UNFOLD (GDPU)
PUMP & CYLINDER ASSEMBLY

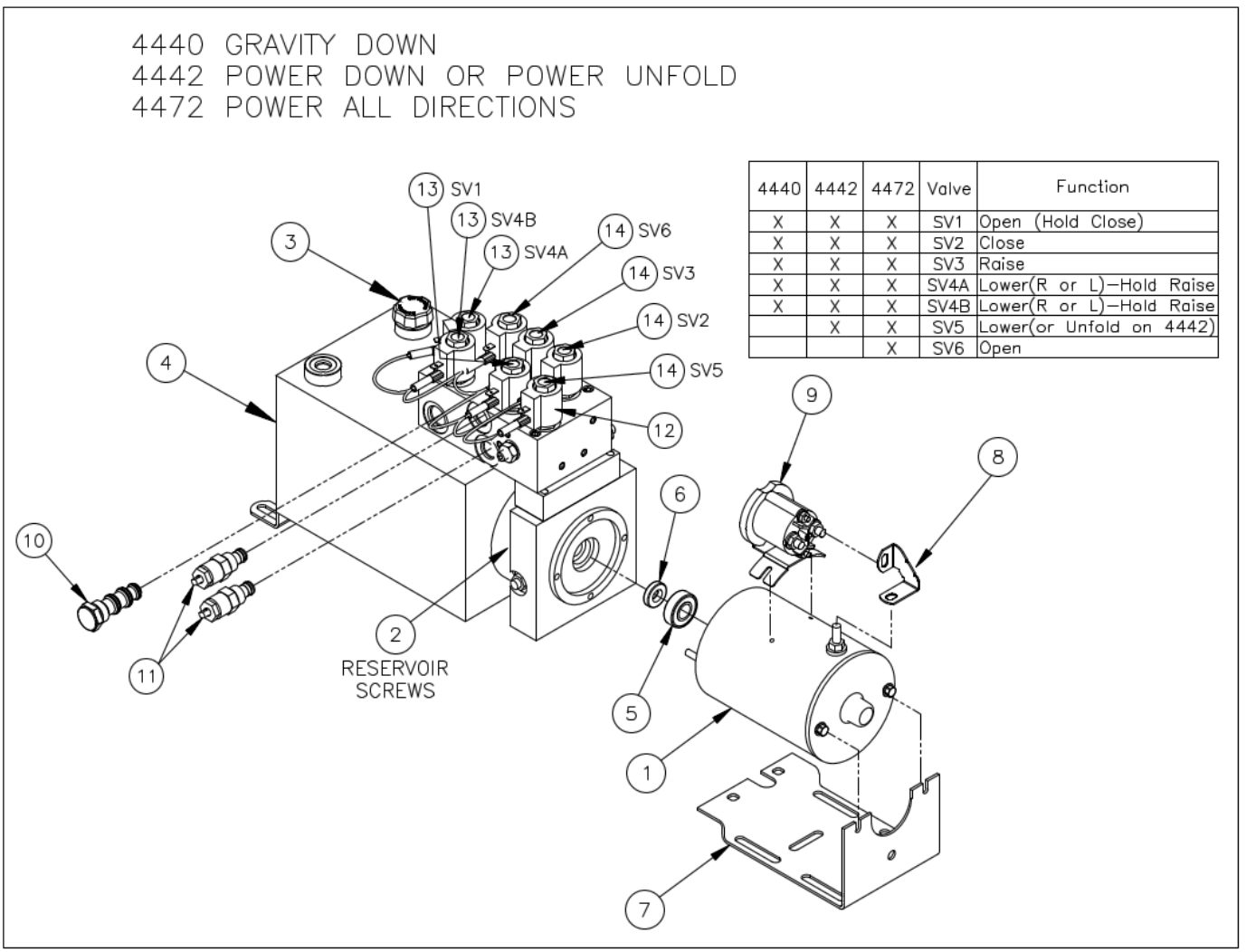


GRAVITY DOWN – POWER UNFOLD (GDPU)
PUMP & CYLINDER ASSEMBLY

Item	Part Number	Description	Qty.
1	42008	Lift Cylinder	2
2	42009	Fold Cylinder	2
3	31159	Pin Weld	4
4	8120214	.31 Lockwasher	4
5	8104-006	.31 x 1.00 Screw	5
6	5035	Pin	2
7	5781008	Retaining Ring	4
8	4954	Breather	2
9	4950-002	.38 Hose 248”	2
10	4958-001	Elbow 45° MJ-FJS	1
11	4951-009	.25 Hose 205”	2
12	4951-010	.25 Hose 248”	2
13	4318-002	Ground Cable #2 x 2’	1
14	4942-001	Tee BT-BT-BT	1
15	9411032	Zerk 90°	2
16	5046	Pin	2
17	5708-008	Spring Pin	4
18	4442	Power Unit	1
19	3055	Spacer	2
20	4318-007	Battery Cable #2 x 33’	1
21	4319-002	Heat Shrink	1
22	4350	Cable Lug	1
23	4301770	Circuit Breaker	2
24	4318-001	Battery Cable	2
25	8180122	.38 x 1.00 Screw	4
26	8106-010	.38 Internal Tooth Lockwasher	8
27	8120377	.38 Nut	4
28	8120388	.38 Flatwasher	4
29	5109	Spring – 36”	2
30	5735	Bleeder Screw	2
31	4444	.38 Steel Tubing	2
32	4941-001	Straight MJ-MAORB	2
33	4930-001	Elbow 90° MJ-MAORB	1
34	4921-002	Tubing 178”	2
35	4937-001	Straight Adapter MJ-MJ	2
36	4922-002	Tube 240”	1
37	5748	Adjustment Block	2
38	4940-001	Elbow 45° MJ-MAORB	3
39	4933-001	Elbow 90° BT-MAORB	2
40	5509	Spherical Bearing	2
41	4952	Flow Control – 3 GPM	2
42	8107-008	1.00 Shim Washer	2
43	8107-010	1.00 Flatwasher	4
44	4220240	Nylon Locking Plug	2
45	8108-005	.38 x .25 Set Screw	2
46	4957-001	Elbow 90°	1
47	4939-001	Elbow 45°	1
48	8271291	Zerk	2

4440/4442/4472 PUMP PARTS

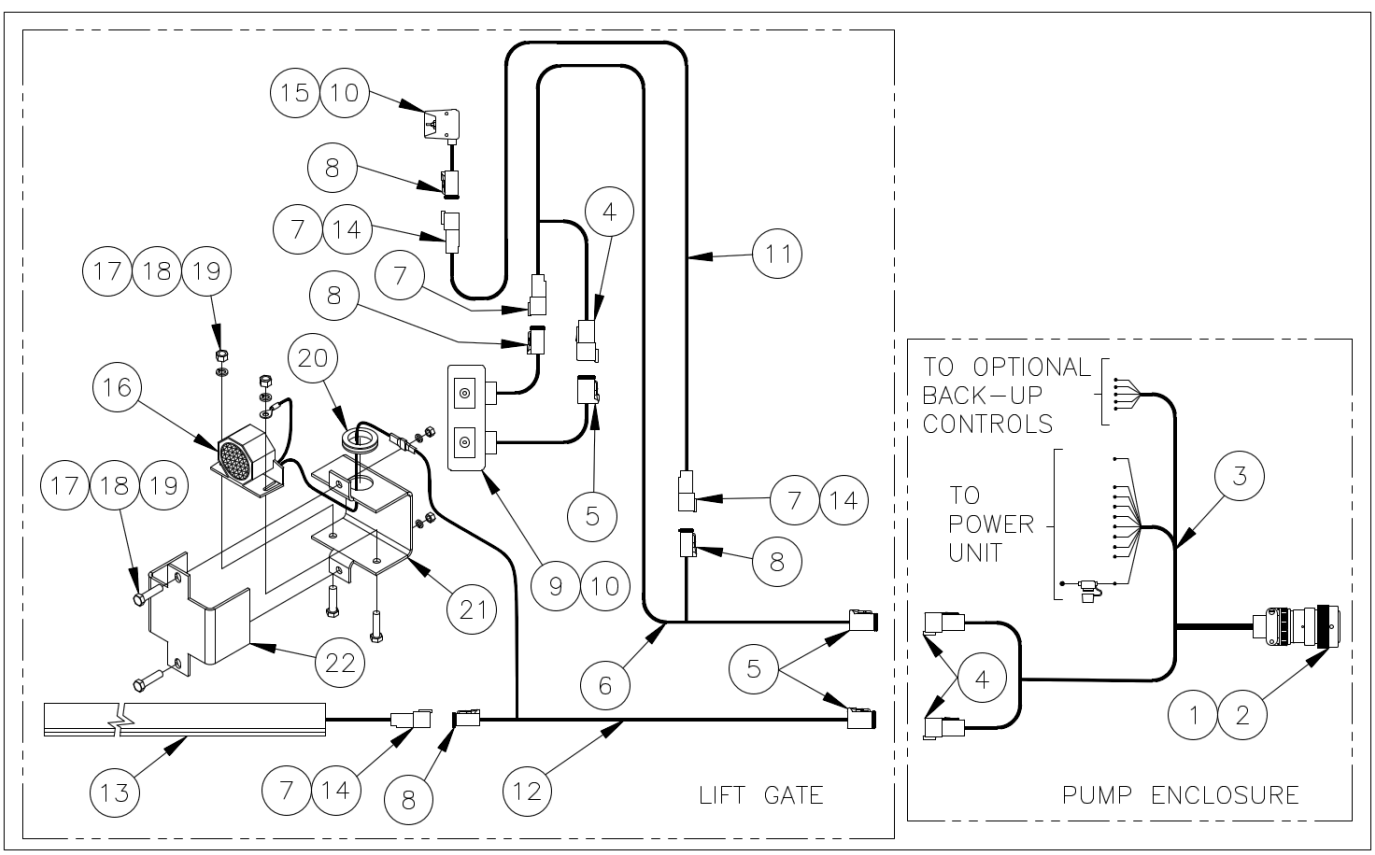
Item	Part Number	Description	Qty./Model
1	4423520	Motor 8111	1
2	4421660	#10 x .38 Self Tap Screw	6
3	4420410	Breather Cap	1
4	4448	Reservoir	1
5	4421520	Bearing	1
6	4421530	Seal	1
7	4421420	Bracket	1
8	4480	Buss Bar	1
9	4468	Solenoid	1
10	4450	Flow Divider Valve	1
11	4449	Flow Control Valve	2
12	4452	Valve Coil	5, 6, or 7
13	4445	Valve Asm	3
14	4422	Valve Asm	2, 3, or 4



4440	4442	4472	Valve	Function
X	X	X	SV1	Open (Hold Close)
X	X	X	SV2	Close
X	X	X	SV3	Raise
X	X	X	SV4A	Lower(R or L)—Hold Raise
X	X	X	SV4B	Lower(R or L)—Hold Raise
	X	X	SV5	Lower(or Unfold on 4442)
		X	SV6	Open

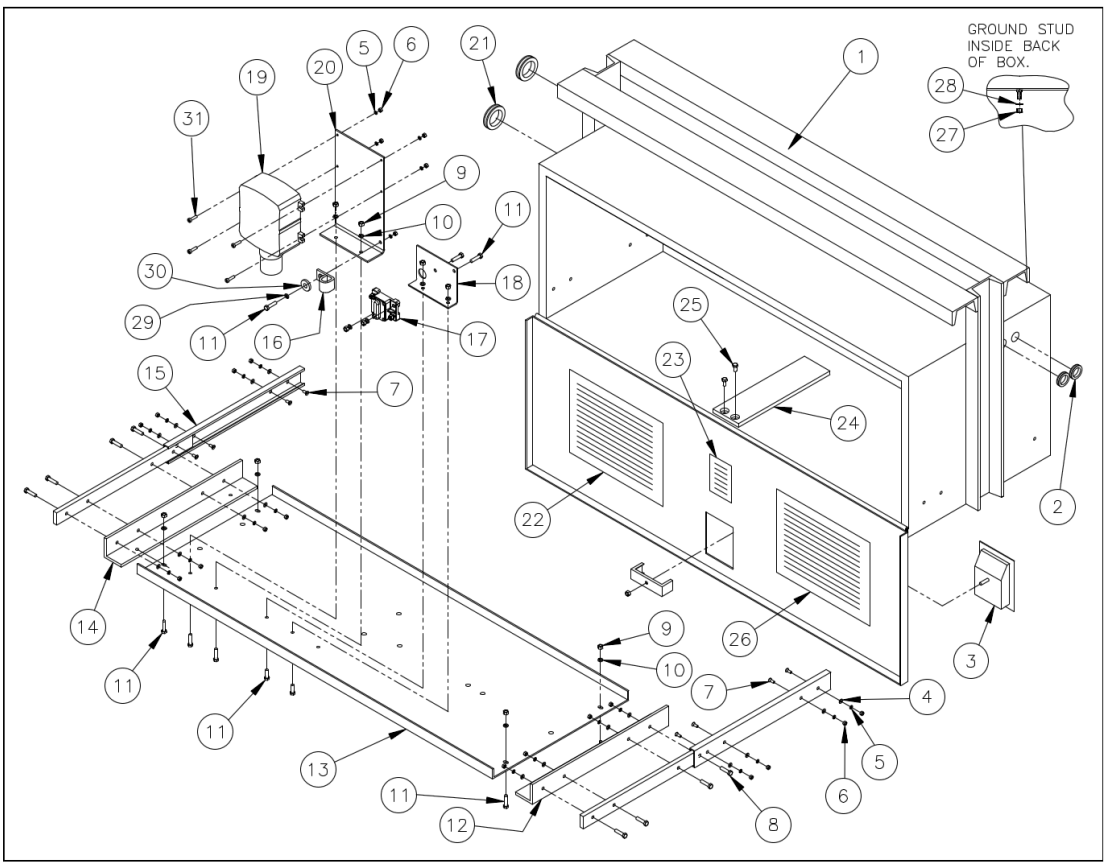
HARNESS ASSEMBLIES

Item	Part Number	Description	Qty.
1	4387	Socket Connector	1
2	4393	Seal Plug	13
3	43103	Pump Harness for Controller	1
4	43051	Six Way Receptacle	3
5	43050	Six Way Plug	3
6	43102	Frame Harness Wired Controls	1
7	43012	Four Way Receptacle	4
8	43013	Four Way Plug	4
9	31617	Dual Toggle Switch Asm. Inc -#5,8	2
10	4301750	Toggle Seal	3
11	43011-002	Cord Control 18/4	1
12	43105	Harness Tape Switch -Alarm	1
13	5730-001	Tape Switch - 96” Frame Width	1
13	5730-002	Tape Switch - 102” Frame Width	1
14	4300-022	Male Terminals	8
15	31557	Toggle Switch Asm. – Inc #10	8
16	31850	Operating Alarm	1
17	8109-012	.25 x .75 Screw	4
18	8120380	.25 Lockwasher	4
19	8120375	.25 Nut	4
20	5701960	Grommet	1
21	27320	Alarm Bracket	1
22	27321	Alarm Cover	1



PUMP ENCLOSURE ASSEMBLY – TOGGLE CONTROL

Item	Part Number	Description	Qty.
1	31178-001	Enclosure Weld	1
2	5701960	Grommet	2
3	5728	Latch	1
4	8107-007	#10 Flatwasher	16
5	8106-007	#10 Lockwasher	16
6	8103-010	#10 Nut	16
7	8111-007	#10 x .50 Flat Head Screw	8
8	8111-002	#10 x .75 Screw	8
9	8120375	.25 Nut	10
10	8120380	.25 Lockwasher	10
11	8180022	.25 x 1.00 Screw	11
12	2030-002	Angle RH	1
13	31570	Tray Weld	1
14	2030-001	Angle LH	1
15	5729-002	Slides (Pair)	1
16	5701000	Hose Clamp .50	1
17	4301770	Circuit Breaker	1
18	27318	Bracket Breaker/Remote	1
19	43106-XXX	Receiver (Need Serial Number)	1
20	27319	Bracket Receiver	1
21	5701200	Grommet	2
22	4689	Wiring Decal-All Configs	1
23	4620	Warning Decal – High Pressure	1
24	5761	Wear Pad	1
25	8109-014	.25 x .50 Screw	2
26	4623	Wiring Decal-Tail Light	1
27	8120377	.38 Nut (Ground Stud)	1
28	8106-010	.38 Lockwasher (Ground Stud)	1
29	8120386	.25 Flatwasher	1
30	8120388	.38 Flatwasher	1
31	8111-008	#10 x 1.00 Round Head Screw	4



TROUBLESHOOTING GUIDE
TDR 44/55/66 ET (ALL CONFIGURATIONS)

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 and hydraulic diagrams and hose connection drawings in the Owner's Manual when 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.

ORANGE CONTROLLER (CNTLR) IN PUMP BOX – ERROR CODES

The orange controller can identify problems with the system in the form of error codes. See the ERROR CODE CHART below for explanation of the error codes. The green LED indicator will blink twice on the controller and then the Red indicator will blink at a steady rate and in a number indicating the EC-Error Code if applicable (i.e. 3 blinks indicate issue with SV3 raise coil). Only one EC can display at a time (higher priority displays over lower).

EC #	Red LED	Priority	Error Code Explanation
EC12	12 Blinks	Lowest → to → Highest	Low system voltage – See Problems 1c thru 1e.
EC1	1 Blink		SV1 Open Coil Error (Coil burned out or wires disconnected)
EC2	2 Blinks		SV2 Close Coil Error (Coil burned out or wires disconnected)
EC3	3 Blinks		SV3 Raise Coil Error (Coil burned out or wires disconnected)
EC4	4 Blinks		SV4A Left Lower Coil Error (Coil burned out or wires disconnected) SV4B Right Lower Coil Error (Coil burned out or wires disconnected)
EC5	5 Blinks		SV5 Coil Error (Coil burned out or wires disconnected). SV5 is Power Down Coil (on PDPU or PDGU liftgates). SV5 is Power Open Coil (on GDPU Liftgates)
EC6	6 Blinks		SV6 Power Open Coil Error (Coil burned out or wires disconnected) – PDPU only.
EC7	7 Blinks		Motor Start Solenoid Error (Solenoid burned out or wires disconnected)
EC8	8 Blinks		Tapeswitch Error – See Problem 3a.
EC9	9 Blinks		Alarm Error (Alarm burned out or wires disconnected)

1. Problem – Liftgate will not MOVE in any direction and valves and motor start solenoid don't energize (no clicking sounds heard from valves or motor start solenoid and valve coils don't magnetize)	
Cause	**Correction**
a. Tripped circuit breaker (No LED's lit on CNTLR)	Reset the circuit breaker located within 2ft of the liftgate supply battery(ies).
b. Blown 20A fuse (No LED's lit on CNTLR)	Replace 20A fuse. The orange 701 wire should have a 20A in-line fuse, near where it connects to the 2ga. battery cable at the motor start solenoid. See Problem 12.
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 11V at maximum conditions, with pump motor, batteries, and cables under max. load. If the voltage is dropping below 11V under max. load, the distance between the battery source and pump may be too long. System voltage below 11V, can cause the orange controller in the pump box to shut down (Low Voltage Error Code EC12 – 12 red LED blinks). Thieman recommends aux. batteries be installed in the pump enclosure to limit voltage drops. If aux. batteries are installed, make sure they are charging properly. Alternately, 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 ground stud in the enclosure. Replace any damaged cables and repair any bad connections.

1. Problem – (continued)	
Cause	**Correction**
d. Defective or undercharged battery(ies)	If proper voltage is not present, load test batteries and replace any defective batteries. The aux. batteries (2) in the enclosure (or batteries on the vehicle if no aux. batteries installed) should be that which have a minimum 180A reserve capacity. System voltage below 11V, can cause the orange controller in the pump box to shut down (Low Voltage Error Code EC12 – 12 red LED blinks).
e. Improper voltage or ground to Orange Controller in pump box	Disconnect the 23-pin connector (23C) at the bottom of the orange controller (CNTLR) in the pump box. Check to make sure there is 12V at pin A (23C-A). If no voltage is present, check for broken 701 wire from 20A fuse (no lights on orange controller). System voltage below 11V, can cause the orange controller in the pump box to shut down (Low Voltage Error Code EC12 – 12 red LED blinks). Check for ground at pin (23C-X). Repair or replace 506 wire if broken or correct connection to ground. If ground is missing, no lights would appear on the orange controller.
f. Defective Harnesses	After checking problem cause 1e. above, reconnect the 23-pin connector (23C) to the orange controller (CNTLR) and check for proper control voltage (12V) coming from controller to liftgate controls. Check 6-way plug on 43103 pump harness that connects to liftgate controls harness 43102. There should be 12V at Black wire on this 6-way plug (Pin 1). If not, check for break in wire from 23C-P to Pin 1 of 6-way plug and repair/replace any damaged harness. Check 12V supply voltage to SW1 slider switch from 6-way connector in pump box, through Black wire in harness 43102, to 4-way connector at bottom of curb side rail, through wire Black #1 of 43011-002, and finally to Pin-3 on 4-way connector of SW1 slider switch. Check 12V supply voltage to SW2/SW3 dual-molded toggle in light box, from 6-way connector in pump box, through Black wire in harness 43102, to 6-way connector behind the light box (Pin 3). Repair/replace any damaged harness.
g. Defective Orange Control Module	After checking problem cause 1f. above, disconnect the 23-pin connector (23C) from the orange controller (CNTLR). Use a jumper wire to get 12V to pin CNTLR-A and a second jumper wire to get ground to pin CNTLR-X. **WARNING: Never jumper 12V power to any controller pin other than pin CNTLR-A and never jumper ground to any controller pin other than pin CNTLR-X, or irreversible damage to controller may occur.** With the power and ground jumpers in place, check for following outputs from controller: 12V power at pin CNTLR-P, 3V power at pin CNTLR-N, and 3V power at pin CNTLR-O. If output voltages are incorrect or not present or no lights on orange controller light up, please contact the factory as your controller may be defective. Please have the serial number off the liftgate and off the controller and the controller part number 43106-### or 4688-###.

2. Problem – Liftgate will not RAISE and motor does NOT run (other functions work)	
Cause	**Correction**
a. Defective SW1 slider switch.	Check the 4-way connector within a few inches of the SW1 slider switch. With switch in UP position, there should be continuity between pins 3 (Black wire) and 4 (White wire). If no continuity and no bad connections are found, replace the SW1 slider switch.
b. Defective Slider Harness 43011-002	There are two 4-way connectors on the ends of the 43011-002 slider harness (one attaches to the SW1 slider switch and the other connects to the 43102 harness at the bottom of the curb side rail). Check continuity through this 43011-002 harness on the Green/Yellow wire (pin 4 to pin 4). Repair or replace harness if damaged.
c. Defective SW2 Raise/ Lower switch in light box (molded with SW3)	Check the 6-way connector within a few inches of the SW2 Raise/Lower switch in the light box. With switch in UP position, there should be continuity between pins 3 (Black wire) and 1 (White wire). If no continuity and no bad connections are found, replace the SW2/SW3 dual molded toggle switch.

2. Problem – (continued)	
Cause	**Correction**
d. Defective Liftgate Control Harness 43102	Check continuity through the 43102 harness on the Blue wire (pin 4 of 4-way connector to 43011-002 to pin 3 of the 6-way connector in the pump box). Also, Check continuity through the 43102 harness on the Blue wire (pin 1 of 6-way connector to SW2 to pin 3 of the 6-way connector in the pump box). Repair or replace harness if damaged.
e. Defective Pump Harness 43103	Check continuity through the 43103 harness on the Blue wire (pin 3 of the 6-way connector that connects to 43102) to pin Q of the 23-pin connector at the controller (23C-Q). Repair or replace harness if damaged.
f. Tapeswitch activated or defective or improperly wired	The black rubber tapeswitch (SW5) is basically the width of the platform and is positioned between the street and curb side frame rails, about 6 to 7 inches below the truck floor under the liftgate threshold. It is designed to prevent anything, overhanging the platform edge nearest the truck, from getting pinched between the platform and the threshold. If something is pinched while raising or an issue with the tapeswitch or its wiring occurs, the orange controller will not send voltage to the SV3 raise valve OR the motor start solenoid to allow the liftgate to raise. Lower platform and remove any obstruction. Make sure the rubber tapeswitch is nested with its aluminum track properly. If problem still exists, check continuity between TA (106 wire at 6-way connector on harness 43105, pin 4) and TC (200 wire at 6-way connector on harness 43105, pin 2) **white wires at tapeswitch**, Next check continuity between TB (301 wire at 6-way connector on harness 43105, pin 5) and TD (405 wire at 6-way connector on harness 43105, pin 3) **black wires at tapeswitch**. If continuity does not exist between **white wires** OR **black wires**, and a broken wire can't be found, then tapeswitch must be replaced. IF, there is continuity **from black to white wires** at tapeswitch, without the tapeswitch pinched, the tapeswitch must be replaced (Tapeswitch Error Code EC8 – 8 red LED blinks). If an operator is on a delivery route and they are seeing an EC8 error code from the controller, indicating there are problems with the tapeswitch or its wiring or if they know the tapeswitch or its wiring has been physically damaged, they may need to temporarily bypass the tapeswitch safety system to get the liftgate raised off the ground and placed in the stored position for transit, so the device can be properly repaired. For this reason, the orange receiver can be temporarily placed into Tapeswitch Bypass Mode. NOTE: Tapeswitch Bypass Mode should ONLY be entered if the tapeswitch is not functioning properly due to a faulty tapeswitch or associated wiring AND the liftgate needs to be raised to store the liftgate for transit. Tapeswitch Bypass Mode should NOT be used long term and should NEVER be used for making deliveries, as anything overhanging the platform is not protected. Once the tapeswitch or wiring is known to be defective, replace the defective parts immediately to restore this safety system to its original factory condition. **WARNING: With the system in Tapeswitch Bypass Mode, anything overhanging the edge of the platform nearest the truck can be crushed with the full hydraulic power of the liftgate. MAKE SURE nothing is overhanging the edges of platform load surface in all circumstances.** **TO TEMPORARILY ENTER TAPESWITCH BYPASS MODED:** Press the **GREEN** - Tape Switch Mode button on the orange controller for 30 seconds (Tapeswitch Bypass Mode will last for 10 minutes before switching back to normal operation mode). NOTE: In normal operation mode, the Tapeswitch Status yellow LED is on continuously, but in Tapeswitch Bypass Mode, the yellow LED blinks.

3. Problem – Liftgate will not RAISE or raises very slowly, AND motor is running in raise mode.	
Cause	**Correction**
a. Overload condition	The power unit on the Thieman TDR is equipped with a lifting relief valve to prevent overloading of the liftgate. See relief settings in “Maintenance Guide” section of this manual.
b. Defective or improperly wired SV3 raise solenoid valve and/or coil	With SW1 or SW2 in the “UP” position, there should be voltage at the SV3 raise valve coil terminal. If no voltage is present, the 507 wire from controller connector 23C-D to SV3 is broken and needs replaced. Check for proper ground at the purple wire on the SV3 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 shifting 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 507 wire and purple wire from the spade terminals on the raise coil and check the resistance between these spade terminals (3.6 - 4.4 Ohm acceptable). Note: High resistance will lower the coils magnetic force and may not shift the valve. Low resistance can act like a short and blow the 20A fuse. If the SV3 coil is burned out or has an open circuit (SV3 Error Code EC3 – 3 red LED blinks), replace the defective coil, otherwise replace the defective raise coil/valve assembly.
c. Relief Valve misadjusted or defective	See section b for relief valve settings and adjust as necessary by using a pressure gauge. If the relief pressure is not attainable the relief valve must be replaced.
d. Lift cylinders are bypassing	If liftgate is raising very slowly or only partially or is only raising on one side, the lifting cylinder(s) may be allowing fluid to bypass internally. Fully raise the liftgate to bed level. On gravity down liftgates, disconnect the low pressure return lines at the top port of each raise cylinder. On power down liftgate, disconnect the steel lines from the top port of each raise cylinder. Then push the UP switch for several seconds. If a steady stream or steady trickle of fluid comes out of the top port under this condition, that cylinder is bad and needs rebuilt or replaced.
e. Broken or pinched or kinked hydraulic line or hose	Broken or punctured hydraulic lines and hoses must be replaced with care to avoid injury from high pressure oil streams. Pinched lines must be replaced, as damage to the line could cause failure of the hose. Kinked hydraulic lines may be straightened to allow free flow through the hose, but also must be replaced if they are damaged.
f. Defective pump or motor	If the motor turns at normal speed and pump develops proper pressure, but the gate still raises slowly, the pump may be worn out. Replace the power unit. If the motor turns slowly, but has proper voltage and ground, replace the motor.

4. Problem – Liftgate will not OPEN (other functions work)	
Cause	**Correction**
a. Kickout spring is damaged or broken	Gravity Unfold (GU) gates use a spring to start the gate unfolding. Replace spring and bolt as needed located on the inside edge of the left-hand slider.
b. Defective SW3 Open/ Close switch in light box (molded with SW2)	Follow problem cause, 1f. With switch SW3 in OPEN position, there should be continuity between pin 3 (Black wire on 6-way plug) and pin 4 (Blue wire on 4-way plug). If no continuity and no bad connections are found, replace the SW2/SW3 dual molded toggle switch.
c. Defective Liftgate Control Harness 43102	Check continuity through the 43102 harness on the Red wire (pin 4 of 4-way connector to SW3 to pin 6 of the 6-way connector in the pump box). Repair or replace harness if damaged.
d. Defective Pump Harness 43103	Check continuity through the 43103 harness on the Red wire (pin 6 of the 6-way connector that connects to 43102) to pin T of the 23-pin connector at the controller (23C-T). Repair or replace harness if damaged

4. Problem – (continued)	
Cause	**Correction**
e. Defective SV1 open solenoid valve and/or coil (on Power Unfold PU liftgates ONLY, the motor would run, but gate would still not open)	With SW3 in the "OPEN" position, there should be voltage at the SV1 open valve coil terminal. If no voltage is present, the 116 wire from controller connector 23C-B to SV1 is broken and needs replaced. Check for proper ground at the purple wire on the SV1 coil. Repair or replace ground as required. If there is voltage (minimum of 9.5 volts) and proper ground at the opening coil and the valve is not shifting to allow the gate to open, either the open coil is bad or the entire open coil/valve assembly is bad. To check to see if the coil is defective, remove the 116 wire and purple wire from the spade terminals on the open coil and check the resistance between these spade terminals (3.6 - 4.4 Ohm acceptable). Note: High resistance will lower the coils magnetic force and may not shift the valve. Low resistance can act like a short and blow the 20A fuse. If the SV1 coil is burned out or has an open circuit (SV1 Error Code EC1 – 1 red LED blink), replace the defective coil, otherwise replace the defective open coil/valve assembly.
f. Improper Opening Speed Adjustment or Relief	If Opening Speed Adjustment is set too slow, the gate may not open (Gate should NOT slam open, 5+ seconds normal) or opening relief may be out of adjustment.

5. Problem – Liftgate platform will not LOWER	
Cause	**Correction**
a. Defective SW1 slider switch.	Check the 4-way connector within a few inches of the SW1 slider switch. With switch in DOWN position, there should be continuity between pin 3 (Black wire) and pin 2 (Red wire). If no continuity and no bad connections are found, replace the SW1 slider switch.
b. Defective Slider Harness 43011-002	There are two 4-way connectors on the ends of the 43011-002 slider harness (one attaches to the SW1 slider switch and the other connects to the 43102 harness at the bottom of the curb side rail). Check continuity through this 43011-002 harness on the Black #3 wire (pin 2 to pin 2). Repair or replace harness if damaged.
c. Defective SW2 Raise/ Lower switch in light box (molded with SW3)	Check the 6-way connector within a few inches of the SW2 Raise/Lower switch in the light box. With switch in DOWN position, there should be continuity between pin 3 (Black wire) and pin 4 (Green wire). If no continuity and no bad connections are found, replace the SW2/SW3 dual molded toggle switch.
d. Defective Liftgate Control Harness 43102	Check continuity through the 43102 harness on the Yellow wire (pin 2 of 4-way connector to 43011-002 to pin 4 of the 6-way connector in the pump box). Also, Check continuity through the 43102 harness on the Yellow wire (pin 4 of 6-way connector to SW2 to pin 4 of the 6-way connector in the pump box). Repair or replace harness if damaged.
e. Defective Pump Harness 43103	Check continuity through the 43103 harness on the Yellow wire (pin 4 of the 6-way connector that connects to 43102) to pin R of the 23-pin connector at the controller (23C-R). Repair or replace harness if damaged
f. Defective SV4A or SV4B lowering solenoid valve and/or coil. (Gravity Down GD Liftgates)	SV4A lowers the LEFT side of the liftgate, while SV4B lowers the RIGHT side (assuming hoses weren't switched). With SW1 or SW2 in the "DOWN" position, there should be voltage on SV4A and SV4B lowering coils. Check for voltage at the 315A wire on SV4A and at the 315B wire on SV4B. If no voltage is present at SV4A, the 315A wire from controller connector 23C-E to SV4A is broken and needs replaced. If no voltage is present at SV4B, the 315B wire from controller connector 23C-F to SV4B is broken and needs replaced. Check for proper ground at the purple wire on the SV4A and SV4B coils. Repair or replace grounds as required. If there is voltage (minimum of 9.5 volts) and proper ground at these lowering coils and a valve(s) is not shifting to allow the gate to lower, either the lower coil(s) is bad or the entire raise coil/valve assembly is bad on the side(s) that won't lower. To check to see if the coil is defective, remove the 315A or 315B wires and purple ground wire from the spade terminals on either of these lower coils and check the resistance between these spade terminals (3.6 - 4.4 Ohm acceptable). Note: High resistance will lower the coils magnetic force and may not shift the valve. Low resistance can act like a short and blow the 20A fuse. If either the SV4A or SV4B coils are burned out or have an open circuit (SV4A or SV4B Error Code EC4 – 4 red LED blinks) the orange controller won't lower either side to prevent unlevel lowering. Replace the defective coil or coils, otherwise replace the coil/valve assembly.

5. Problem – (continued)	
Cause	**Correction**
g. Defective SV5 or Motor Start Solenoid (Power Down PD Liftgates ONLY)	Power down liftgates behave similarly (see Problem/Cause 5f), in that if SV4A or SV4B are burned out or have open circuits, the orange controller will not lower either side. However, on power down liftgates, if SV4A or SV4B are defective, the motor WILL run and the pump WILL attempt to push the liftgate down, but it will barely move with SV4A and SV4B lowering valves closed. Additionally, on power down liftgates, the liftgate won't lower if the SV5 power down coil is burned out or disconnected (Error Code EC5 – 5 red LED blinks) or if the motor start solenoid is burned out or disconnected (Error Code EC7 – 7 red LED blinks). If either SV5 or the motor start solenoid are burned out or are disconnected, the gate will not move and the motor will NOT run. This is to prevent gravity lowering and reservoir overflow.

6. Problem – Liftgate will not CLOSE (other functions work)	
Cause	**Correction**
a. Defective SV5 or Motor Start Solenoid (Power Down PD Liftgates ONLY)	Follow problem cause, 1f. With switch SW3 in CLOSE position, there should be continuity between pin 3 (Black wire on 6-way plug) and pin 2 (Yellow wire on 4-way plug). If no continuity and no bad connections are found, replace the SW2/SW3 dual molded toggle switch.
b. Defective Liftgate Control Harness 43102	Check continuity through the 43102 harness on the Green wire (pin 2 of 4-way connector to SW3 to pin 5 of the 6-way connector in the pump box). Repair or replace harness if damaged.
c. Defective Pump Harness 43103	Check continuity through the 43103 harness on the Green wire (pin 5 of the 6-way connector that connects to 43102) to pin S of the 23-pin connector at the controller (23C-S). Repair or replace harness if damaged
d. Defective SV2 close solenoid valve and/or coil (the motor will run, but gate will still not close)	With SW3 in the "CLOSE" position, there should be voltage at the SV2 close valve coil terminal. If no voltage is present, the 406 wire from controller connector 23C-C to SV2 is broken and needs replaced. Check for proper ground at the purple wire on the SV2 coil. Repair or replace ground as required. If there is voltage (minimum of 9.5 volts) and proper ground at the closing coil and the valve is not shifting to allow the gate to close, either the close coil is bad or the entire close coil/valve assembly is bad. To check to see if the coil is defective, remove the 406 wire and purple wire from the spade terminals on the close coil and check the resistance between these spade terminals (3.6 - 4.4 Ohm acceptable). Note: High resistance will lower the coils magnetic force and may not shift the valve. Low resistance can act like a short and blow the 20A fuse. If the SV2 coil is burned out or has an open circuit (SV2 Error Code EC2 – 2 red LED blinks), replace the defective coil, otherwise replace the defective close coil/valve assembly.
e. Improper Closing Speed Adjustment or Relief	If Closing Speed Adjustment is set too slow, the gate may not close (Gate should NOT slam close, 5+ seconds normal) or closing relief may be out of adjustment.
f. Defective Closing cylinder(s)	Gravity Unfold (GU) gates, use both cylinders to fold the platform. Power Unfold (PU) Gates, use only the street side cylinder to fold the platform. If fluid is leaking from the closing cylinder(s) breather port (top port on cylinder), or the rod end seals in a steady stream, the cylinder will need to be replaced or repaired.

7. Problem – POWER UNFOLD (PU) LIFTGATES ONLY: The liftgate opens AND motor runs, BUT does not pump fluid to push the gate open (no power unfold).	
Cause (PDPU Only)	**Correction for Power Down – POWER UNFOLD Only**
a1. Defective SV6 Power Open solenoid valve and/or coil	With SW3 in the "OPEN" position, there should be voltage at the SV6 power open valve coil terminal. If no voltage is present, the 409 wire from controller connector 23C-H to SV6 is broken and needs replaced. Check for proper ground at the purple wire on the SV6 coil. Repair or replace ground as required. If there is voltage (minimum of 9.5 volts) and proper ground at the power opening coil and the valve is not shifting to allow the gate to power open, either the coil is bad or the entire coil/valve assembly is bad. To check to see if the coil is defective, remove the 409 wire and purple wire from the spade terminals on the SV6 coil and check the resistance between these spade terminals (3.6 - 4.4 Ohm acceptable). Note: High resistance will lower the coils magnetic force and may not shift the valve. If the SV6 coil is burned out or has an open circuit (SV6 Error Code EC6 – 6 red LED blinks), replace the defective coil, otherwise replace the defective open coil/valve assembly.
Cause (GDPU Only)	**Correction for Gravity Down – POWER UNFOLD Only**
a2. Defective SV5 Power Open solenoid valve and/or coil	With SW3 in the "OPEN" position, there should be voltage at the SV5 power open valve coil terminal. If no voltage is present, the 305 wire from controller connector 23C-G to SV5 is broken and needs replaced. Check for proper ground at the purple wire on the SV5 coil. Repair or replace ground as required. If there is voltage (minimum of 9.5 volts) and proper ground at the power opening coil and the valve is not shifting to allow the gate to power open, either the coil is bad or the entire coil/valve assembly is bad. To check to see if the coil is defective, remove the 305 wire and purple wire from the spade terminals on the SV5 coil and check the resistance between these spade terminals (3.6 - 4.4 Ohm acceptable). Note: High resistance will lower the coils magnetic force and may not shift the valve. If the SV5 coil is burned out or has an open circuit (SV5 Error Code EC5 – 5 red LED blinks), replace the defective coil, otherwise replace the defective open coil/valve assembly.

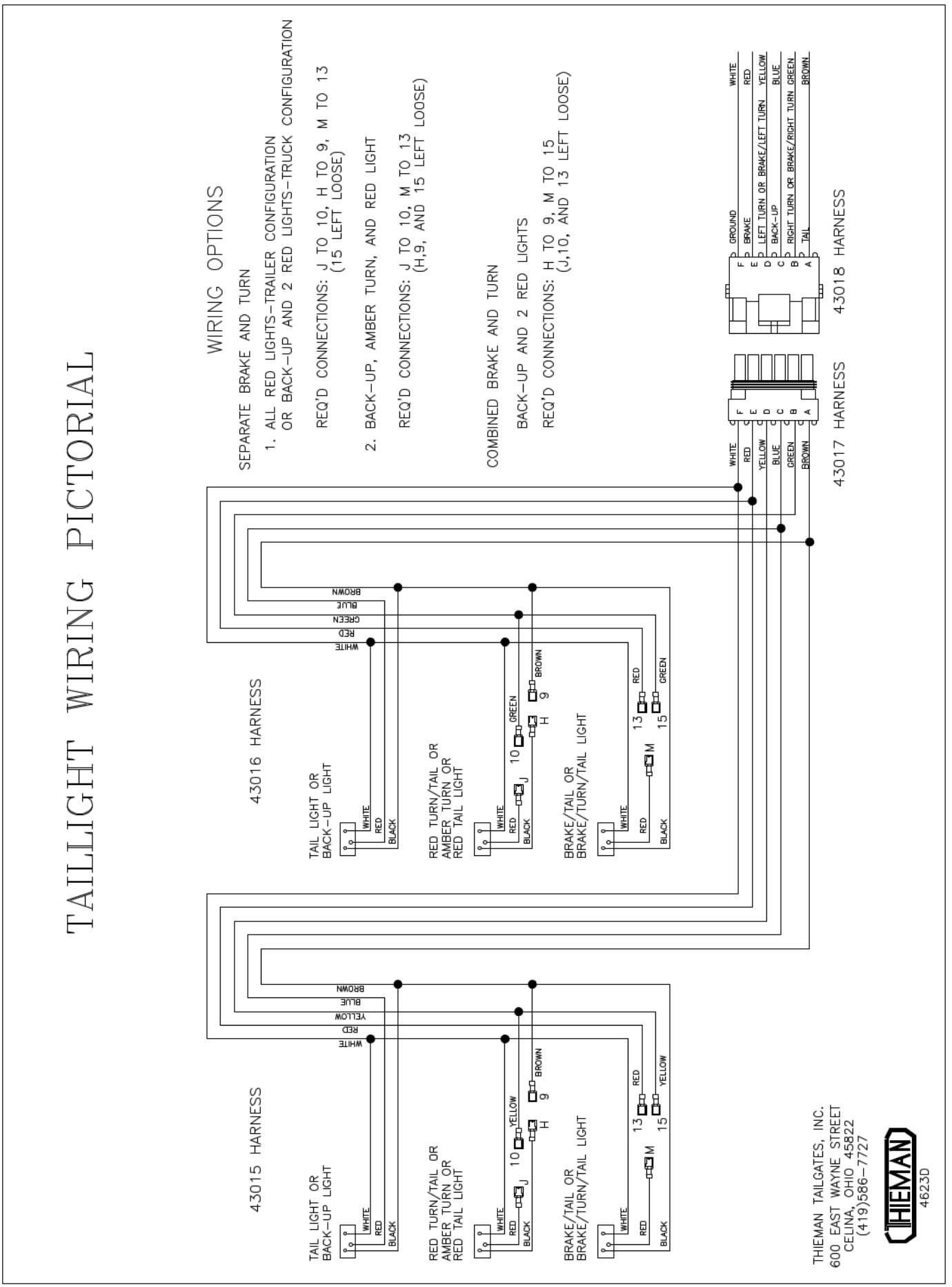
8. Problem - Pump motor will not run in the powered modes, but valve coils are being actuated and magnetized properly (NOTE: Lowering Power Down PD liftgate without the motor running will cause the reservoir to overflow because fluid is returning to reservoir, but none is being pumped out). **· Gravity Down – Gravity Unfold (GDGU): Motor runs RAISING, CLOSING** **· Power Down – Power Unfold (PDPU): Motor runs RAISING, CLOSING, LOWERING, OPENING** **· Power Down – Gravity Unfold (PDGU): Motor runs RAISING, CLOSING, LOWERING** **· Gravity Down – Power Unfold (GDPU): Motor runs RAISING, CLOSING, OPENING**	
Cause	**Correction**
a. Defective or improperly wired motor start solenoid switch (K1)	With SW1 or SW2 in the "UP" position, there should be voltage at the K1-1 motor start solenoid terminal. If no voltage is present, the 407 wire from controller connector 23C-J to motor start solenoid is broken and needs replaced. Check for proper ground at the purple wire on K1-2 motor start solenoid terminal. Repair or replace ground as required. If there is voltage (minimum of 9.5 volts) and proper ground at the motor start solenoid and the solenoid is not closing to start the motor, the solenoid coil may be bad. To check to see if the coil is defective, check the resistance between the K1-1 and K1-2 terminals (5.0 – 6.0 Ohm acceptable). If the motor start solenoid is burned out or has an open circuit (Error Code EC7 – 7 red LED blinks), replace the defective motor star solenoid. If motor start solenoid clicks, but proper voltage (minimum of 9.5 volts) does not pass through solenoid from K1-4 to K1-3, replace the defective motor start solenoid. On pumps with dual motors, check that voltage passes through SW6 properly, to both motor start solenoids K4-1 or K1-1. Perform all tests mentioned on both motor start solenoids.
b. Defective pump motor	With switch SW1 or SW2 in the "UP" position and the motor start solenoid activated, check for voltage (11V minimum) at the motor terminal connected to K1-3 via copper buss bar. If proper voltage is present and the motor is not running, double check the motor ground (see Cause/Correction 1c). If the motor has proper voltage and good ground and does not run, replace the motor.

9. Problem – One or both sides of the platform are drifting at a rapid rate (more than 1/4 inch/hour).	
Cause	**Correction**
a. Air in lifting hydraulic circuit	Follow the instructions in this manual for "Opening of Platform". Once the platform is completely open, lower the platform to the ground and then raise the platform completely to bed height and run the pump for five seconds to force any air out of the system. Additional bleeding of the system can be done by fully extending the lift cylinders. It will be necessary to raise the truck or trailer to obtain a bed height of 60 inches. Open one bleeder screw, see parts list for location of this screw on the cylinder valve block. Connect a jumper wire from K1-1 to SV3 raise valve and a loose wire connected to K1-1. Touch the loose lead from K1-1 to K1-4 and hold the toggle switch in the "Down" position. This will force out any air in the cylinder. NOTE: Due to length of hoses from pump to lift cylinders, it may be necessary to pump a lot of fluid out of the breather to purge all of the air. Then close the bleeder valve when a solid red stream of fluid is present (no air bubbles). Repeat this procedure for the other side.
b. Lift cylinders are bypassing	See Problem -Cause/Correction 3d.
c. Defective SV4A or SV4B lowering solenoid valve and/or coil.	If the lift cylinders as checked in 9b above are not bypassing and are therefore not the cause of the drift, replace the solenoid valve for whichever side is drifting. SV4A controls Port A and should be plumbed to the left lift cylinder and SV4B controls Port B and should be plumbed to the right lift cylinder. Trace the hydraulic lines to ensure lines were not switched at some point, to ensure the correct valve is replaced.

10. Problem – Alarm no longer operates in ANY of the following modes "UP", "DOWN", "OPEN", or "CLOSE".	
Cause	**Correction**
a. Defective Pump Harness 43103	Check continuity through the 43103 harness on the Orange 700 wire (pin 1 of the 6-way connector that connects to 43105 to pin K of the 23-pin connector at the controller). Repair or replace harness if damaged.
b. Defective Alarm/ Tapeswitch Harness 43105	Check continuity through the 43105 harness on the Red 204 wire (from alarm to pin 1 of the 6-way connector in the pump box). Repair or replace harness if damaged.
c. Disconnected or Defective Alarm	NOTE: The alarm should sound in ALL modes with any switch activated. Check for voltage on 204 wire to alarm with switch activated. If voltage is present and alarm does not sound, check the ground lead on the alarm for a proper ground. If voltage is present on alarm and ground is good but alarm does not sound, replace alarm.

11. Problem – The 20A fuse keeps blowing.	
Cause	**Correction**
a. Shorted Power-12V wire from Orange Controller to switches (Fuse blows immediately when replaced)	The switches receive power from the orange controller leaving pin 23C-P. See Problem 1 – Cause f, for the path the 12V power takes from 23C-P on the controller to the switches. If your 20A fuse blows immediately, upon being replaced, there is a short to ground somewhere in this path. Repair or replace wiring to prevent 12V short to ground.
b. Short in control wiring from switches back to orange controller (Fuse blows when hitting a specific function).	If the fuse blows when trying a specific function, there is a short to ground located between the switch associated with that function and the orange controller. For Raise function, see Problem 2-Causes a thru e and Problem/Cause 3b for path from switches back to orange controller. For Lower function, see Problem 5. For Close function, see Problem 6-Causes a thru d. For Open function, see Problem 4-Causes a thru e.

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.


TAILLIGHT WIRING PICTORIAL
WIRING OPTIONS
SEPARATE BRAKE AND TURN
1. ALL RED LIGHTS–TRAILER CONFIGURATION
OR BACK–UP AND 2 RED LIGHTS–TRUCK CONFIGURATION
REQ'D CONNECTIONS: J TO 10, H TO 9, M TO 13
(15 LEFT LOOSE)
2. BACK–UP, AMBER TURN, AND RED LIGHT
REQ'D CONNECTIONS: J TO 10, M TO 13
(H,9, AND 15 LEFT LOOSE)
COMBINED BRAKE AND TURN
BACK–UP AND 2 RED LIGHTS
REQ'D CONNECTIONS: H TO 9, M TO 15
(J,10, AND 13 LEFT LOOSE)
43016 HARNESS
43015 HARNESS
43017 HARNESS
43018 HARNESS
TAIL LIGHT OR
BACK–UP LIGHT
RED TURN/TAIL OR
AMBER TURN OR
RED TAIL LIGHT
BRAKE/TAIL OR
BRAKE/TURN/TAIL LIGHT
WHITE
RED
GREEN
BLUE
BROWN
YELLOW
BLACK
GROUND
BRAKE
LEFT TURN OR BRAKE/LEFT TURN
BACK–UP
RIGHT TURN OR BRAKE/RIGHT TURN
TAIL
THIEMAN TAILGATES, INC.
600 EAST WAYNE STREET
CELINA, OHIO 45822
(419)586–7727
THIEMAN
4623D

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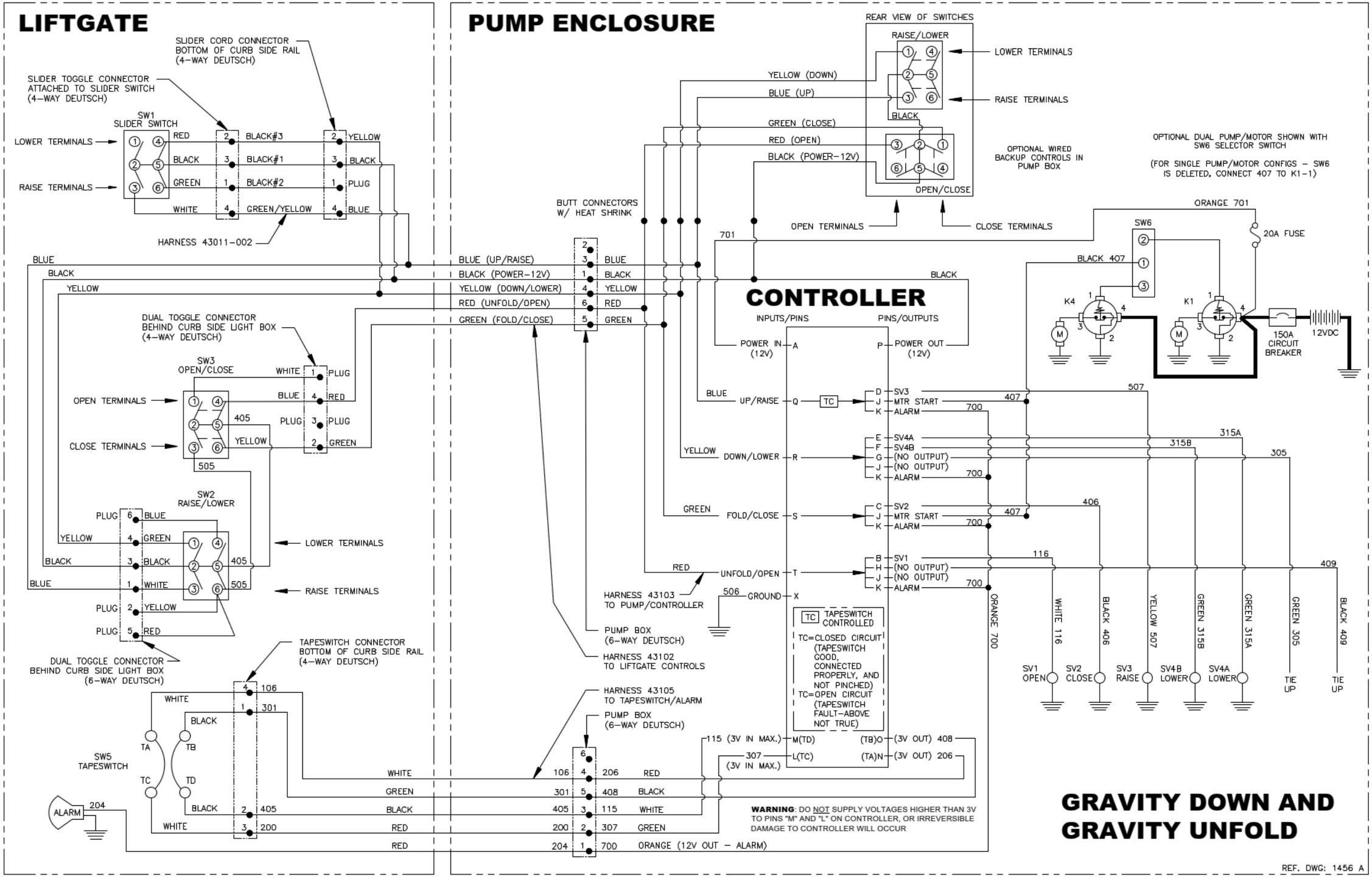
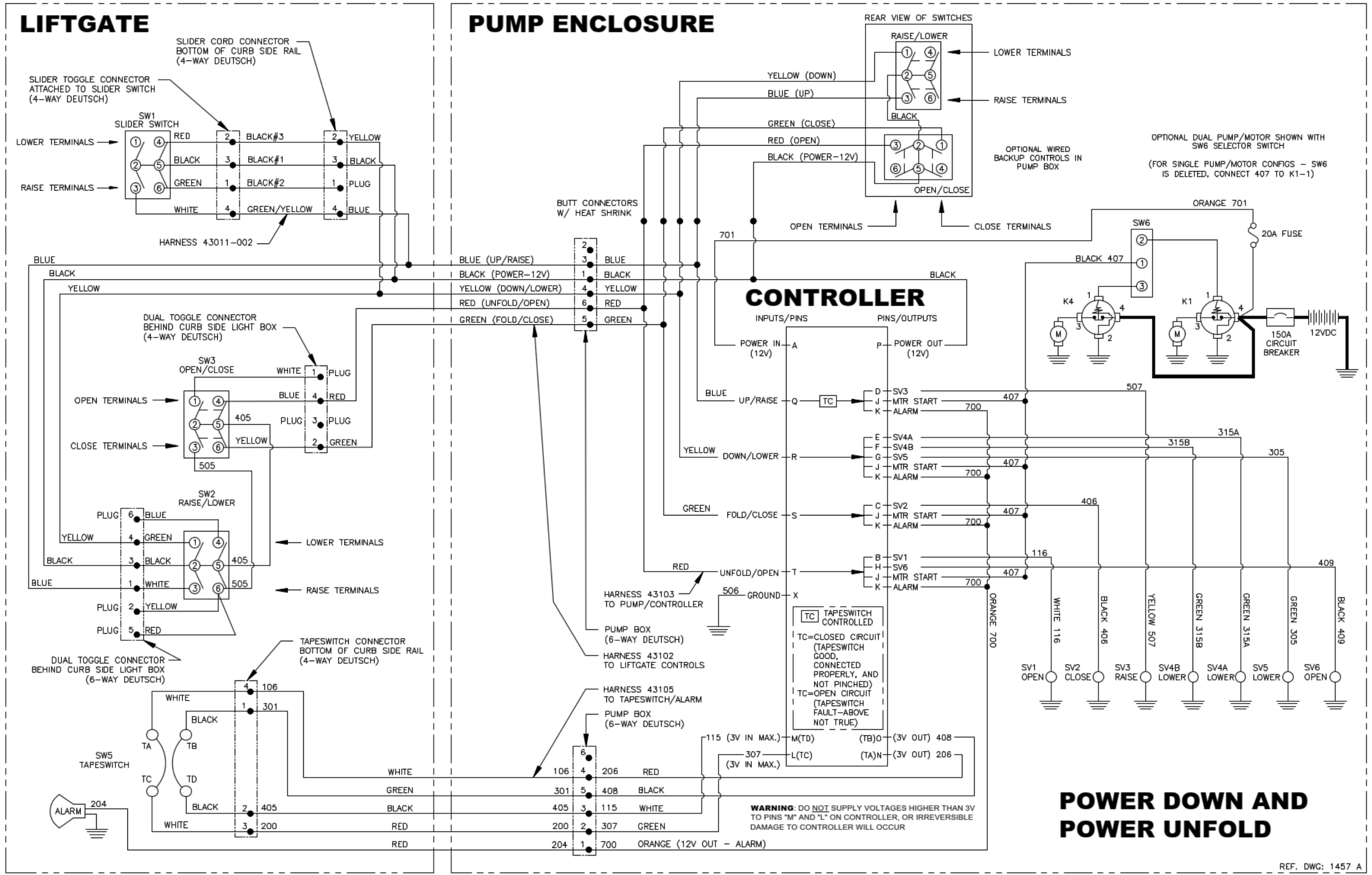
ELECTRIC SCHEMATIC – Gravity Down/Gravity Unfold



ELECTRIC SCHEMATIC – POWER Down/POWER Unfold



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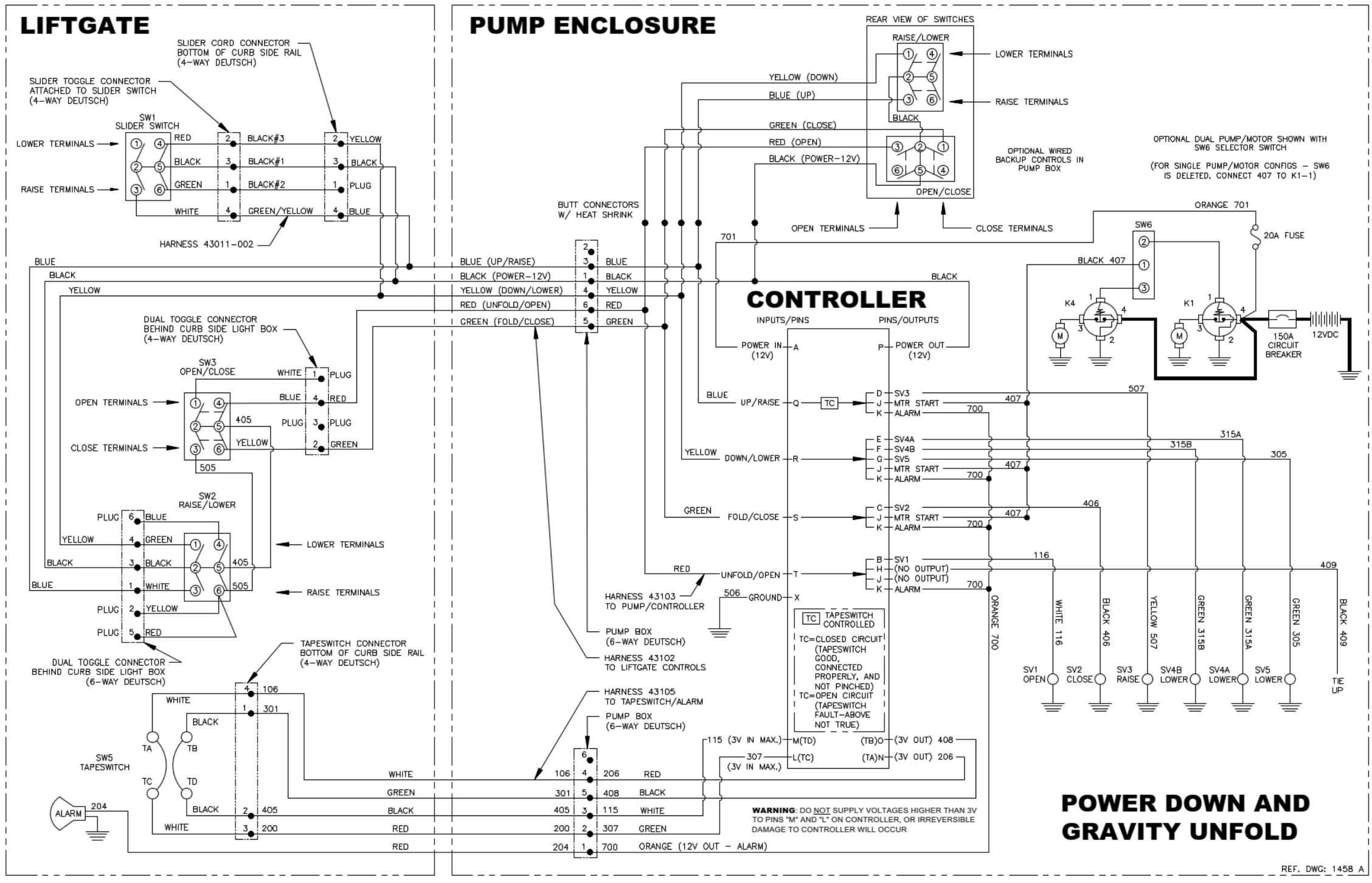
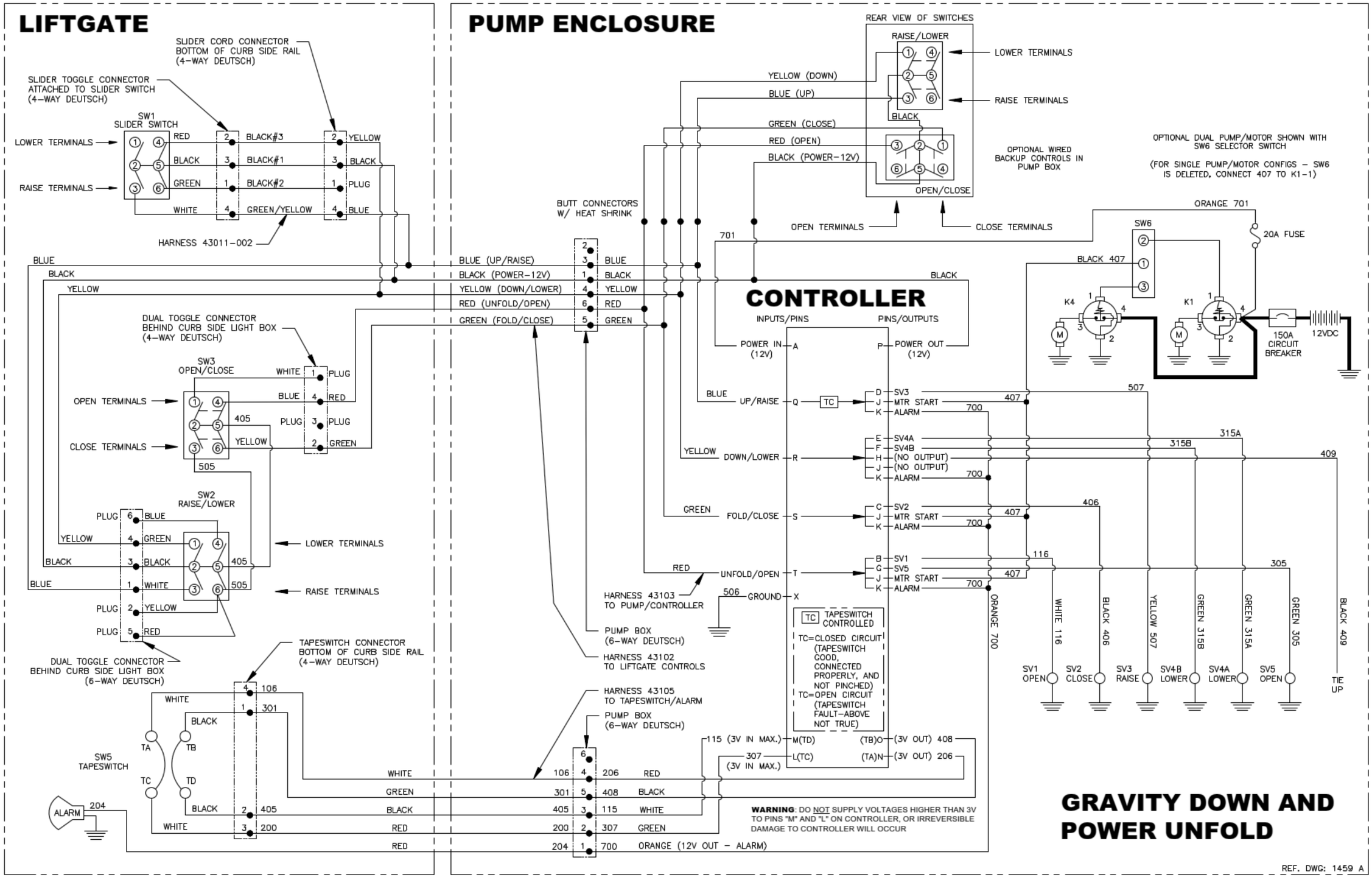
ELECTRIC SCHEMATIC – POWER Down/Gravity Unfold



ELECTRIC SCHEMATIC – Gravity Down/POWER Unfold



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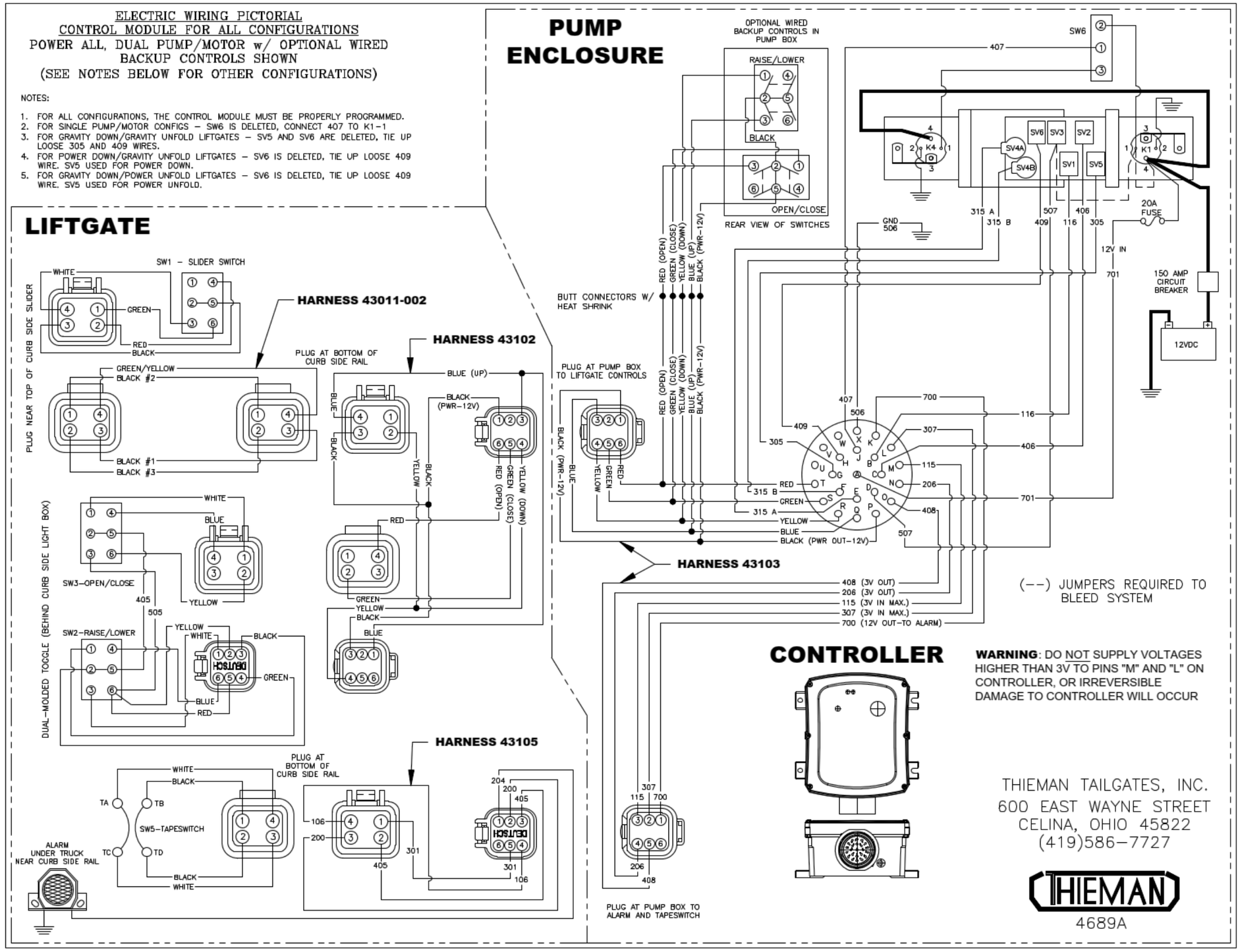
ELECTRIC PICTORIAL – All Configurations



HYDRAULIC SCHEMATICS