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TECHNICAL MANUAL

NV SERIES

(Non-Vacuum Unit)

200/ 400/ 600 Gallon Capacity

(757, 1514, 2271 Liters)

Spokane Industries

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NOVEMBER 2021

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SECTION 1.0

INTRODUCTION

IMPORTANT:

YOU MUST READ THIS MANUAL IN ITS ENTIRETY BEFORE OPERATING, SHIPPING OR PERFORMING MAINTENANCE PROCEDURES. FLAMMABLE AND COMBUSTIBLE VAPORS CAN CAUSE FIRE, AND/OR EXPLOSION AND CAN LEAD TO SERIOUS INJURY OR DEATH.

The instructions in this manual cover the operation and maintenance of the Non-Vacuum Unit: 200, 400, and 600 Gallon Model Numbers NV 200S, NV 400S, NV 600S, NV 216S, NV 416S, and NV 616S, parts are manufactured by Spokane Industries, Inc. of Spokane Valley, Washington.

The 200, 400 and 600 gallon non-vacuum units are referred to as NV throughout the publication. The NV provides a convenient, safe and efficient means to remove and store aviation fuels. The non-vacuum unit is a product of Spokane Industries, Inc.

This manual describes the NV, the safety guidelines that must be followed while operating the NV, Maintenance and Assembly instructions and a parts breakdown section that provides part numbers and all of the necessary information to order parts, as well as allow for identification of all components on the NV.

DESCRIPTION

Refer to the chart on the next page for location and identification of major components and particulars of each size. The non-vacuum unit consists of a single shell used for primary containment. These tank depositories consist of a front and rear undercarriage, flip-lock manway and a fuel level indicator. All NV's have the option of being equipped with a telescoping funnel.

1.1

Specifications for the Non Vacuum Unit 200 Gallon

| | |
|--|-----------------------|
| Tank Volume: | |
| Nominal Capacity..... | 200-gallons |
| Max Capacity | 220-gallons |
| Equipment Dimensions: | |
| Length (Tow bar down)..... | 153-inches |
| (Tow bar up) | 93-inches |
| Width (Tire to tire) | 59-inches |
| Height (Tow bar down) | 60-inches |
| (Tow bar up) | 72-inches |
| Weight (Empty)..... | 1,400-pounds |
| (Full, at nominal capacity with fuel)..... | 2,920-pounds |
| *Telescoping Funnel Height (Fully collapsed) | 42-inches |
| (Fully extended)..... | 234-inches |
| Ground Clearance (At tow bar)..... | 6-inches |
| (At axle)..... | 8-inches |
| Environmental Conditions: | |
| Operating Temperature Range | -25°F to 110°F |
| Storage Temperature Range | -40°F to 150°F |
| Operational Characteristics: | |
| Tank Vacuum Pressure | 8-inches Hg |
| Tank Vacuum Flow..... | 89-SCFM |
| Towing Characteristics: | |
| Speed, Forward Direction | 15-MPH |
| Speed, Backward Direction..... | (hand push/pull only) |
| Turning Radius (Curb to curb)..... | 372-inches |
| Wheels and Tires: | |
| Tire Size | 20.5 x 8.0-10 |
| E Range Tire Pressure (Cold) (See Sidewall) | 90-PSIG |
| Lug Nut Torque..... | 100ft.-lbs. |
| Split Rim Nut Torque..... | 75 ft.-lbs. |
| Other Characteristics: | |
| Double Wall Construction..... | (optional) |

* The Telescoping Funnel is an optional feature that can be purchased with the 200-gallon NV

1.1

Specifications for the Non Vacuum Unit 400 Gallon

| | |
|--|-----------------------|
| Tank Volume: | |
| Nominal Capacity..... | 400-gallons |
| Max Capacity | 440-gallons |
| Equipment Dimensions: | |
| Length (Tow bar down)..... | 187-inches |
| (Tow bar up) | 128-inches |
| Width (Tire to tire) | 76-inches |
| Height (Tow bar down) | 60-inches |
| (Tow bar up) | 72-inches |
| Weight (Empty)..... | 1,650-pounds |
| (Full, at nominal capacity with fuel)..... | 4,690-pounds |
| *Telescoping Funnel Height (Fully collapsed) | 42-inches |
| (Fully extended)..... | 234-inches |
| Ground Clearance (At tow bar)..... | 6-inches |
| (At axle)..... | 8-inches |
| Environmental Conditions: | |
| Operating Temperature Range | -25°F to 110°F |
| Storage Temperature Range | -40°F to 150°F |
| Operational Characteristics: | |
| Tank Vacuum Pressure | 8-inches Hg |
| Tank Vacuum Flow..... | 89-SCFM |
| Towing Characteristics: | |
| Speed, Forward Direction | 15-MPH |
| Speed, Backward Direction..... | (hand push/pull only) |
| Turning Radius (Curb to curb)..... | 372-inches |
| Wheels and Tires: | |
| Tire Size | 20.5 x 8.0-10 |
| E Range Tire Pressure (Cold) (See Sidewall) | 90-PSIG |
| Lug Nut Torque..... | 100ft.-lbs. |
| Split Rim Nut Torque..... | 75 ft.-lbs. |
| Other Characteristics: | |
| Double Wall Construction..... | (optional) |

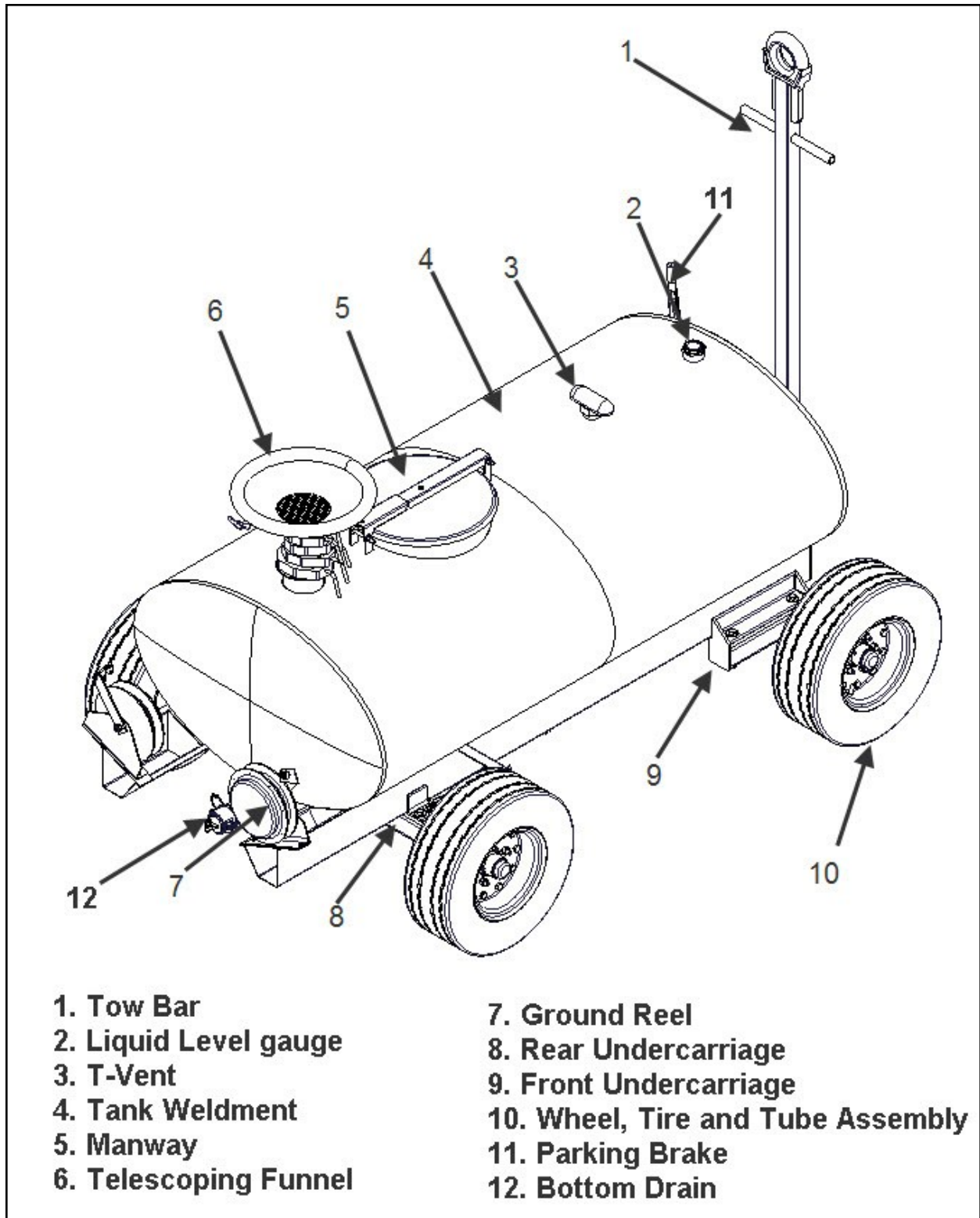
* The Telescoping Funnel is an optional feature that can be purchased with the 200-gallon NV

1.1

Specifications for the Non Vacuum Unit 600 Gallon

| | |
|--|-----------------------|
| Tank Volume: | |
| Nominal Capacity..... | 600-gallons |
| Max Capacity | 660-gallons |
| Equipment Dimensions: | |
| Length (Tow bar down)..... | 187-inches |
| (Tow bar up) | 128-inches |
| Width (Tire to tire) | 76-inches |
| Height (Tow bar down) | 62-inches |
| (Tow bar up) | 72-inches |
| Weight (Empty)..... | 2,135-pounds |
| (Full, at nominal capacity with fuel)..... | 6,695-pounds |
| *Telescoping Funnel Height (Fully collapsed) | 62-inches |
| (Fully extended)..... | 254-inches |
| Ground Clearance (At tow bar)..... | 6-inches |
| (At axle)..... | 8-inches |
| Environmental Conditions: | |
| Operating Temperature Range | -25°F to 110°F |
| Storage Temperature Range | -40°F to 150°F |
| Operational Characteristics: | |
| Tank Vacuum Pressure | 8-inches Hg |
| Tank Vacuum Flow..... | 89-SCFM |
| Towing Characteristics: | |
| Speed, Forward Direction | 15-MPH |
| Speed, Backward Direction..... | (hand push/pull only) |
| Turning Radius (Curb to curb)..... | 372-inches |
| Wheels and Tires: | |
| Tire Size | 20.5 x 8.0-10 |
| E Range Tire Pressure (Cold) (See Sidewall) | 90-PSIG |
| Lug Nut Torque..... | 100ft.-lbs. |
| Split Rim Nut Torque..... | 75 ft.-lbs. |
| Other Characteristics: | |
| Double Wall Construction..... | (optional) |

* The Telescoping Funnel is an optional feature that can be purchased with the 200-gallon NV



1.2

Figure 1-1 Component Identification

SECTION 2.0

SAFETY GUIDELINES

Within this manual are guidelines and safety recommendations for use of the NV. It is the responsibility of the end user to completely read this manual and comply with all local, state and federal laws and **regulations applicable for fueling and defueling aircraft**. Spokane Industries Inc. is not responsible for industry specific information on safety management, employment safety, health standards, safety codes, etc. Contact your local safety manager or industrial safety representative. It is the responsibility of the end user to ensure persons operating this equipment:

- **Are trained, authorized and permitted to use the equipment.**
- **Have physical and the mental ability to operate this equipment safely.**
- **Are aware of the potential hazards associated with this equipment, i.e static electricity, electrical shock, fuel spills and pinch points.**

2.1 General Safety Instructions

This manual describes physical and chemical processes which may cause injury or death to personnel, or damage to equipment if not properly followed. This safety summary includes general safety precautions that must be understood and applied during operation and maintenance to ensure safety and protection of equipment.

2.2 Protective Clothing

When fuels are being handled, approved equipment such as gloves, eye protection, face shields, etc. shall be used.

2.3 Static Bonding and Grounding and Other Fire Hazard Precautions

Improper static bonding and grounding can lead to a fire, and as with any other equipment dealing with fuel, there is always a risk of fire if all safety precautions are not followed or the equipment is not used correctly. Make sure to read and understand all instructions before operating this equipment.

2.4 Lockout / Tagout

Personnel shall be aware of the hazards associated with unguarded machinery parts, capacitors, gaseous and wet pipe systems, spring loaded devices, etc. Lockout / Tagout the energy source prior to performing maintenance, adjustment or other procedures that would bypass safety guards, barriers, or otherwise expose personnel to hazardous energy sources. Any equipment, machine or process that could unexpectedly energize, start-up or release energy will be equipped with a means to lockout / tagout the energy sources.

2.5 Recoverable Products

This equipment has been designed to operate outdoors only. Flammable and/or combustible vapors in ignitable quantities could be produced under certain circumstances. Additionally, local protocols must be consulted to determine if fuel draining equipment can be used in the location being considered.

SECTION 3.0

OPERATION INSTRUCTIONS

3.1 Using the Non-Vacuum Unit When Draining Fuel

- a. Position the unit near the item to be drained.
- b. Ground unit to appropriate grounding sites.
- c. Open Manway cover to gain access to NV tank.
- d. Perform defuel operations as needed, monitor tank fluid level to prevent over fill conditions.
- e. When finished, close the Manway cover securely.
- f. Remember to disconnect the ground cables if the NV unit is to be towed.
- g. Tow and position NV unit over approved waste receptacle, or connect drain hose, if available, to drain valve cam lock.
- h. Open drain valve slowly.

3.2 Using the telescoping Funnel (This piece is optional)

The telescoping funnel is designed as a gravity feed system, no additional support equipment is needed.

CAUTION

Make sure the unit has enough storage capacity for the defueling operation.

- a. Position telescoping funnel under the drain.
- b. Ground the unit to approved grounding sites.

- c. Open cover on top of funnel, clean screen if necessary.
- d. Extend the funnel by raising the upper section first, tightening clamp securely. Extend the next section, if needed, and tighten clamp securely.
- e. Begin the defueling process.
- f. When finished, close the funnel isolation valve.
- g. Lower funnel sections in reverse order.
- h. Close and latch the funnel cover.

WARNING

Raising telescoping funnel sections creates a pinch hazard for hands. Make sure that you have a tight grip on the sections during the lifting process and that the clamps are securely tightened before extending each section.

SECTION 4.0

MAINTENANCE AND ASSEMBLY

The NV should always be inspected prior to use to make sure it is in working order.

4.1 Repair and Replace Instructions

Remember to set the parking brake while performing maintenance procedures. Approved jack stands and wheel chocks must also be used. Serious injury or death may occur from rolling or falling equipment.

The following procedures are used for the disassembly and reassembly for equipment components.

4.2 Manway Assembly and Maintenance

The manway assembly is located on the top of the tank. The manway assembly has one adjustment point. Use Figure 4-1 for the following maintenance steps.

Manway Disassembly/Reassembly

- a. Open handle (2).
- b. Open Manway Assembly.
- c. Remove nut (7).
- d. Remove gasket retainer (5), gasket (4), and lid (3).
- e. Remove bolt (6) and nut (10) to remove cross-arm (1).
- f. Repair / replace components
- g. Reassemble in reverse order, leaving nut (7) only partially threaded onto cross arm (1).

Manway Adjustment

- a. Open handle (2).
- b. Open Manway Assembly.
- c. Rotate nut (11) to adjust lid position. Turn clockwise to move lid closer to the tank. Turn counter clockwise to move the lid away from the tank.
- d. Tighten nut (7) until snug.

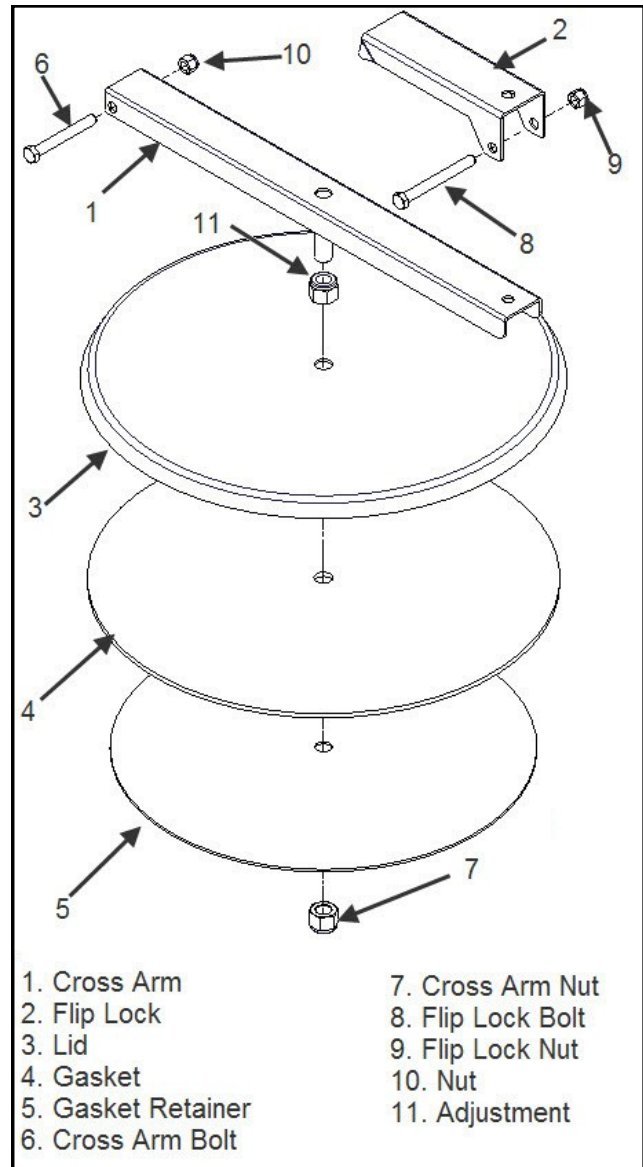


Figure 4-1 Manway Assembly

4.3 Telescoping Funnel Assembly

The instructions for assembly and maintenance for the optional Telescoping funnel can be found on this page. Please refer to Figure 4-2 for all numerical references regarding the telescoping assembly with the exception of the base clamp which is referenced in Figure 4-3.

The Telescoping Funnel Assembly is located at the top, rear of the tank. The assembly consists of (starting at the top), a cover assembly, a gasket, a funnel screen, a funnel section and four telescoping sections and a base clamp.

Funnel Cover Assembly

The funnel cover (1) is removed by removing nut (6) and bolt (5).

Funnel Gasket

The funnel gasket (3) is replaced by opening funnel cover (1). Remove damaged gasket and install new one.

Funnel Screen

The funnel screen (2), prevents FOD from entering the tank. The screen is replaced by opening the funnel cover and removing nut (7). Replace screen and reinstall nut.

Funnel and Telescoping Sections

The funnel section (4) and telescoping sections are removed independently; starting at the uppermost subassembly, until the section needing repair/replacement is reached.

Base Clamp

The base clamp (4), is attached directly to the tank.

- Rotate entire funnel assembly (all telescoping section and funnel section) 180 degrees until clamp handles are facing the front of the tank (toward the tow bar).
- Lift entire funnel assembly by the largest telescoping section. When bottom edge of bottom telescoping section tube reaches the base clamp (4), lift firmly and rotate assembly slightly clockwise and counterclockwise to guide alignment past alignment notch in base clamp (see reference arrow A).
- Remove bolts (5) and lock washers (6).
- Repair / replace components.

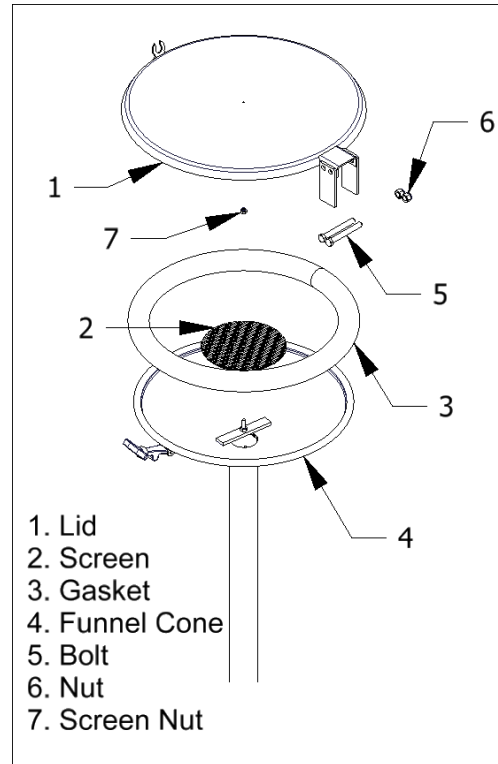


Figure 4-2 Funnel Section Assembly

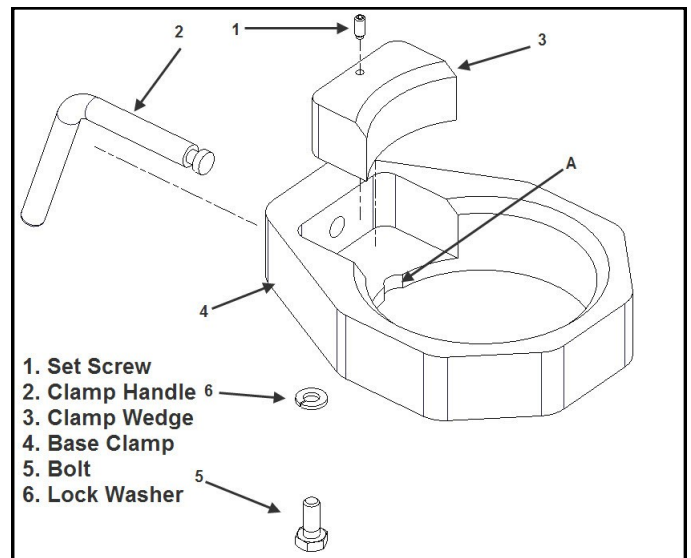


Figure 4-3 Base Clamp

4.4 Front Undercarriage Assembly

The Front Undercarriage assembly consists of a wheel assembly, a hub assembly, a spindle assembly, a tow latch assembly, a steering arm assembly and an adjustable tie rod assembly.

4.5 Front Wheel Assembly Removal

To remove the wheel assembly, the equipment must have the front end raised and placed on approved jack stands.

- a. Loosen lug nuts on wheel assembly requiring maintenance one turn while equipment is still on the ground.
- b. Raise equipment with suitable maintenance jack (see Figure 4-4, reference arrow A for jack placement) high enough to remove wheel assembly.
- c. Place approved jack stands under front axle (see Figure 4-4, reference arrow for stand placement).
- d. Remove lug nuts of wheel assembly needing maintenance, and remove.

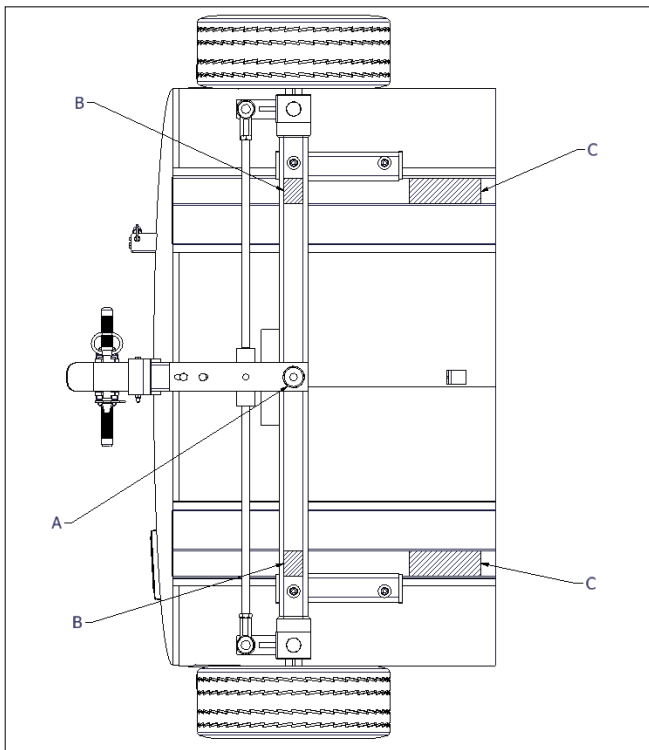


Figure 4-4 Lift Points

4.6 Front Hub Assembly

To remove the front hub assembly, follow these maintenance steps using Figure 4-5.

- a. Remove dust cap (1) by lightly tapping with a rubber hammer.
- b. Remove cotter pin (2), castle nut (3), and washer (4).
- c. Grasp front hub (7) and pull firmly. Ensure that bearing (5) doesn't separate from hub and strike the ground.
- d. Remove bearing (5), seal (10), and bearing (9) from the front hub (7). Using a suitable H-frame press, remove bearing races (6) and (8).
- f. Replace components and grease bearings before reassembly.
- g. When reassembling, the Castle nut (3) should be tightened until the hub assembly rotates past free.

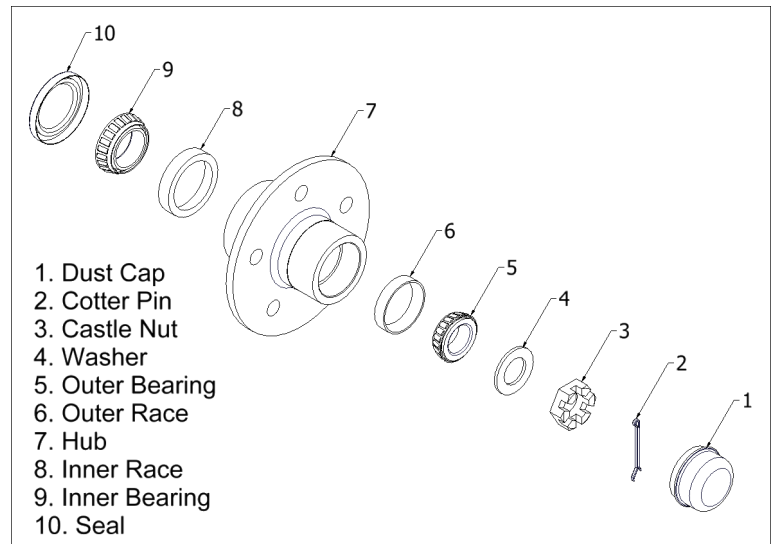


Figure 4-5 Front Hub Assembly

4.7 Tow Latch Assembly

The tow latch assembly is used to secure the tow bar in the upright position. (See Figure 4-6).

- a. Remove tow bar (1) by placing the tow bar in upright, latched position. Remove pin (2). While holding onto tow bar, place foot on toe latch assembly (See reference arrow A) and depress.
- b. Pull hitch pin (3) from steering arm assembly and place tow bar to the side.

The remaining steps are illustrated in Figure 4-7.

- c. Remove bolt (7) and nut (10).
- d. Rotate toe latch plate (9) downward to free from assembly.
- e. Detach spring (8) from toe latch plate (9) and spring anchor (24).

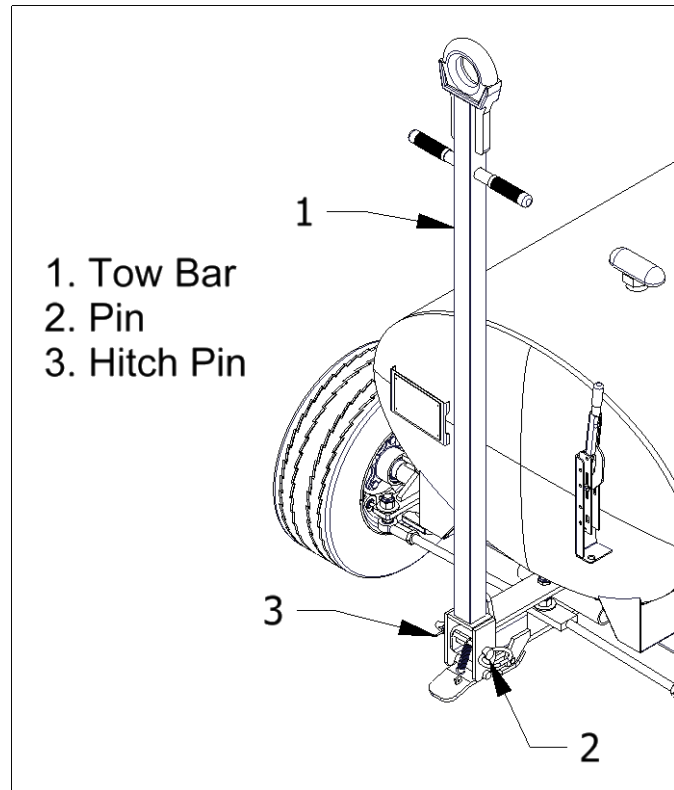


Figure 4-6 Tow Bar Removal

NOTE:

Removing hitch pin from steering arm assembly will free tow bar. Prevent tow bar from falling by holding it firmly until free. Set aside.

4.8 Spindle Assembly

To remove the spindle assembly, follow the maintenance steps for the front hub assembly before beginning the next steps. See Figure 4-7.

- Remove nut (17) and washer (16).
- Remove nut (21) and washer (20).
- Remove king pin (14) from yoke by using a rubber hammer.
- Grasp spindle assembly (18) and rotate toward front of tank until the yoke is free.
- Remove spindle assembly from tie rod (15).
- Remove bushings (19) with bronze punch and hammer.
- Repair / replace components.

4.9 Steering Arm Assembly

- Remove the thin lock nut (1).
- Remove nuts (17) and flat washers (16).
- Remove bolts (22) and nuts (5). Allow lower steering arm subassembly (11), bushing (3), and tie rod assembly

- (12) to drop down; place to side.
- Lift upper steering arm subassembly vertically to clear pivot pin (reference arrow (A)), then pull to clear tank and front axle tube.
- Remove tie rod assembly (12) by removing nut (6) and flat washer (4). Note the presence of the bushings (23).
- Repair / replace components.

4.10 Tie Rod Assembly

Refer to Figure 4-7 for the removal of the tie rod. Before beginning this process make sure that you have followed the steps for the steering arm assembly. **Note presence and location of bushings (23) when removing tie rod assembly from steering arm assembly.**

- Disassemble the tie rod assembly by the unthreaded components. Before disassembly mark rod length with masking tape. Note that tie rod ends angle downward when reassembling.
- Adjust tire toe in /toe out as needed.

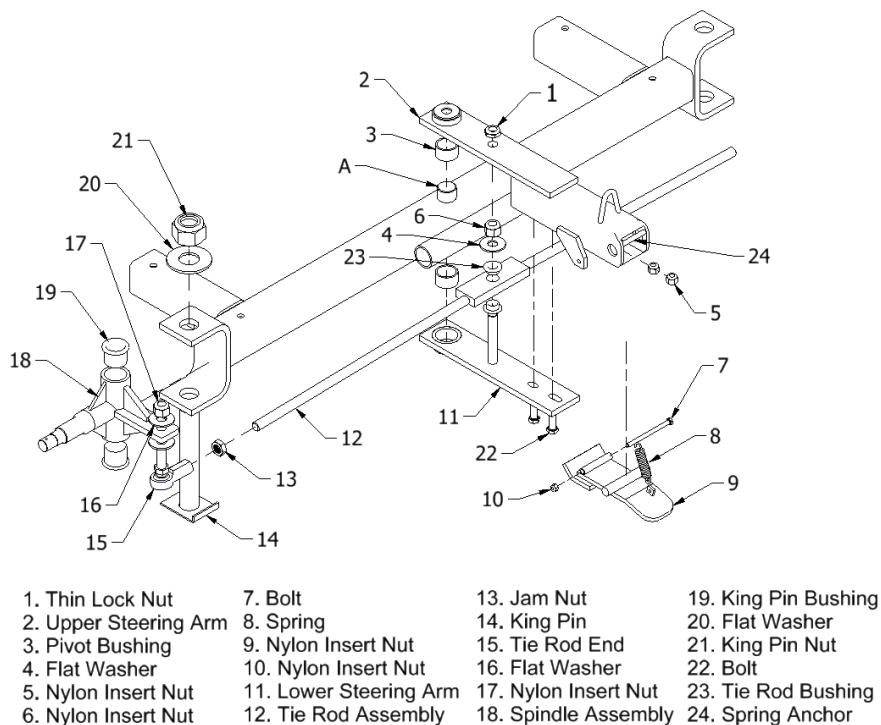


Figure 4-7 Exploded View of Undercarriage

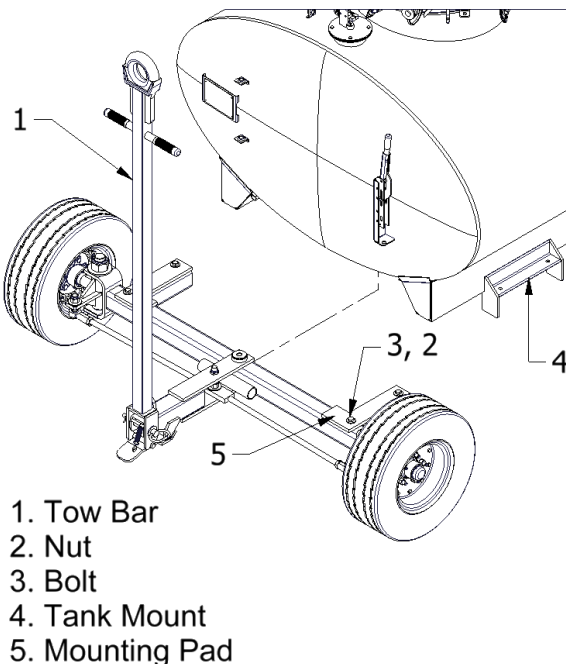
4.11 Front Undercarriage Removal

To remove the entire Front Undercarriage assembly, the equipment must have the front end raised. See Figure 4-4 for lift points.

- Raise equipment with suitable maintenance jack (see Figure 4-4 arrow A for jack placement) to allow four inches of space between the wheels and ground.
- Place cribbing under tank skirts (see Figure 4-4, reference arrows C) to safely support the equipment.
- Lower onto cribbing. Leave jack in place.
- Raise jack to apply slight pressure on assembly. **(Tow bar must be in upright position.)**
- Remove bolts (2) and nuts (3).
- Carefully lower jack and assembly until wheels are on the ground and front axle tube clears tank mounts.
- Pull Front Undercarriage forward. Note location of rubber mounting pads (5).

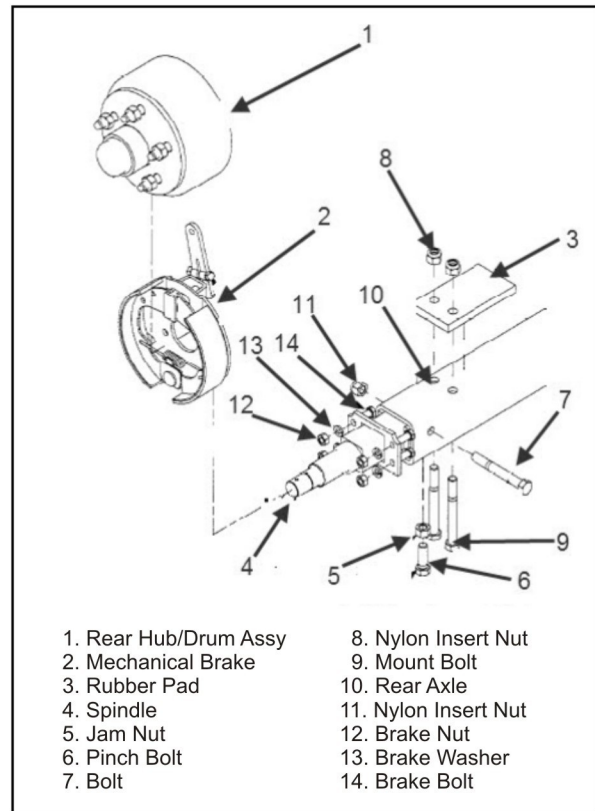
▲WARNING

Use suitable lifting and support equipment when performing these steps. Serious injury or death could occur from rolling or falling equipment.



- Tow Bar
- Nut
- Bolt
- Tank Mount
- Mounting Pad

Figure 4-8 Front Undercarriage Removal



- | | |
|-----------------------|----------------------|
| 1. Rear Hub/Drum Assy | 8. Nylon Insert Nut |
| 2. Mechanical Brake | 9. Mount Bolt |
| 3. Rubber Pad | 10. Rear Axle |
| 4. Spindle | 11. Nylon Insert Nut |
| 5. Jam Nut | 12. Brake Nut |
| 6. Pinch Bolt | 13. Brake Washer |
| 7. Bolt | 14. Brake Bolt |

Figure 4-9 Rear Undercarriage Removal

4.12 Rear Undercarriage Assembly

See Figure 4-9 for the following maintenance steps. The rear undercarriage assembly consists of: a wheel assembly, a hub and brake drum assembly (1), a mechanical parking brake assembly (2), a rear spindle (4), and the axle (10).

4.13 Rear Wheel Assembly Removal

To remove wheel assembly, the equipment must have the back end raised and placed on approved jack stands. Points A and B are similar on both the rear and front axles.

- Raise equipment with suitable maintenance jack high enough to remove wheel assembly. (see Figure 4-4, arrow A for jack placement).
- Place approved jack stands under rear axle (see Figure 4-4, arrow B for stand placement).
- Remove lug nuts of wheel assembly needing maintenance.

4.14 Rear Hub / Brake Drum Assembly

To remove the rear hub and brake drum assembly, follow the maintenance steps for the rear wheel assembly removal before beginning the next steps. Figure 4-10 illustrates the process for the rear hub/ brake drum assembly.

- Remove dust cap (1) by lightly tapping with a rubber hammer.
- Remove cotter pin (2), castle nut (3) and washer (4).
- Grasp rear hub (7) and drum (8) and pull outward firmly. Ensure that bearing (5) doesn't fall from hub and strike the ground.
- Remove bearing (5), seal (11), and bearing (10) from the rear hub (7).
- Using a suitable H-frame press, remove bearing races (6) and (9).
- Remove drum (8) by pressing out wheel studs (12) in suitable H-frame press.
- Replace components and grease bearings before reassembly.
- Reassemble in reverse order. Castle nut (3) should be tightened until the hub assembly rotates barely past free.

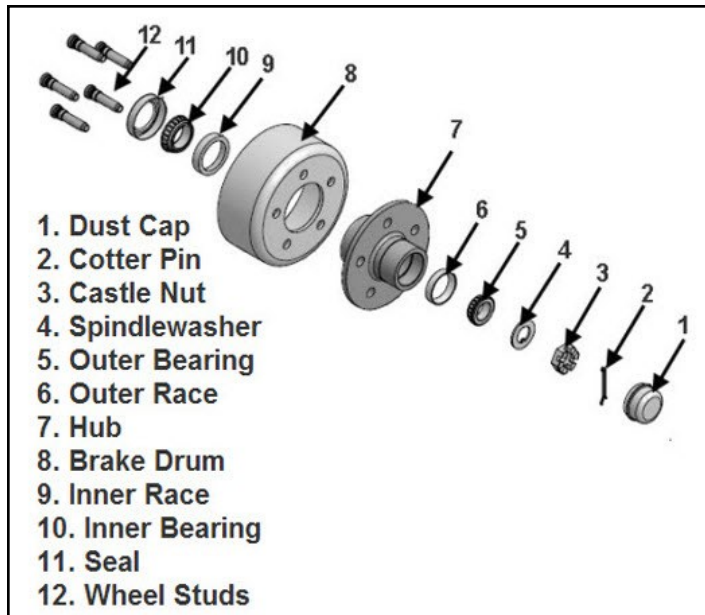


Figure 4-10 Rear Hub and Brake Drum

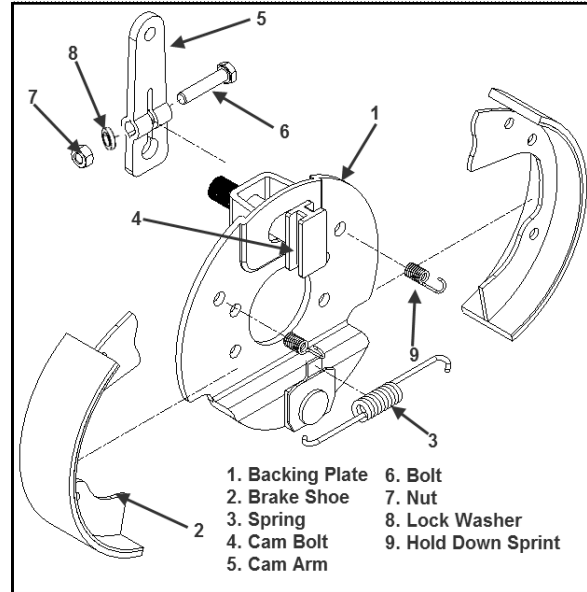


Figure 4-11 Mechanical Brake

4.15 Mechanical Brake Assembly

The assembly can be disassembled while attached to the rear spindle or removed from the unit. See Figure 4-11 unless otherwise specified.

- Remove Rear Wheel Assembly as described in section 4.13.
- Remove Rear Hub and Brake Drum Assembly as described in section 4.14 on this page.
- Remove brake cable end from arm (5) as described in Section 4.17, step (a).
- Remove nuts (12), washers (13), and bolts (14) shown in Figure 4-9.
- Remove Mechanical Brake Assembly and place on flat surface.
- Remove spring (3).
- Release brake shoes (2) by removing springs (9) from the backing plate (1).
- Remove nut (7), lock washer (8), and bolt (6) to release arm (5).
- Remove brake cam (4) by pulling directly outward.

NOTE: Steps (d) and (e) are needed only if Mechanical Brake Assembly is to be removed from the axle.

4.16 Parking Brake Assembly and Adjustment

The parking brake assembly consists of a brake handle, cable assembly and a mechanical brake assembly. The parking brake can be adjusted at three different locations.

An in-field adjustment can be made at the brake handle by turning the handle cap clockwise to tighten brakes and counterclockwise to loosen the brakes (see reference arrow D in Figure 4-12.) This adjustment must be made with the brake handle in the off position. Maintenance level adjustments can be made at reference arrow E and reference arrow F of Figure 4-12 (each side).

4.17 Brake Handle and Cable Assembly

The brake handle and cable assembly only need to be disassembled to the point that the repair is needed. These instructions start at the wheel assembly and progress toward the brake handle.

- a. Remove cotter pin (13) and clevis pin (14) to release clevis (12).
- b. Unthread clevis (12) from cable
- c. Remove nut (15) and remove cable housing (10) from bracket.
- d. Remove nut at opposite end of cable and disassemble cable linkage parts (6), (7), (8), and (9).
- e. Repeat steps a. through d. for opposite side.
- f. Remove nut (4) to release cable equalizer (5).
- g. Repeat step c. for cable housing leading to brake handle.
- h. Remove nut at other end of cable and release cable by disassembling cable linkage from brake handle (1).
- i. Remove bolts (2) and nuts (3) to free brake handle (1).

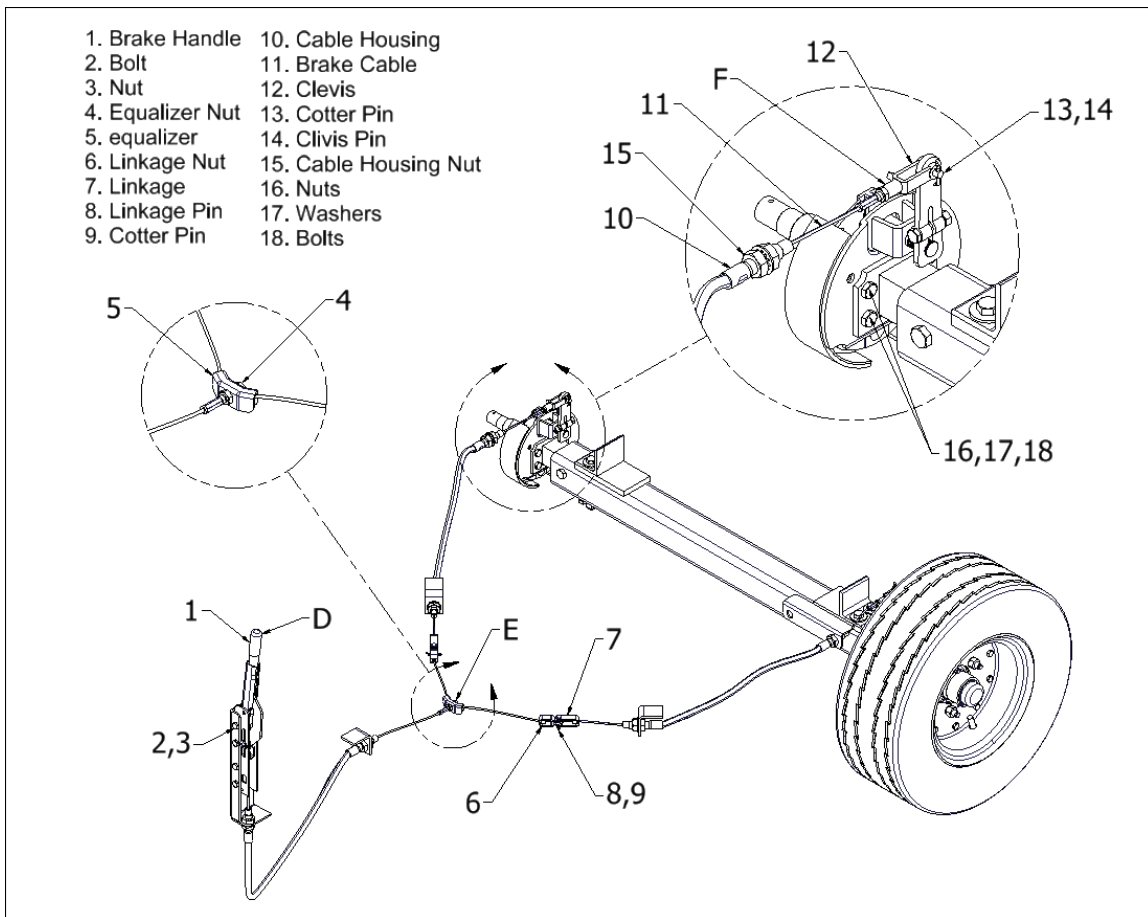


Figure 4-12 Brake and Cable Assembly

4.18 Rear Undercarriage Assembly Removal

To remove the entire Rear Undercarriage assembly, the equipment must have the back end raised. See Section 4.12 and use figure 4-13 for these instructions.

- a. Raise equipment with suitable maintenance jack (see Figure 4-13 reference arrow A for jack placement) and allow for 2-inches of space between the wheels and the ground.
- b. Place cribbing under tank skids to safely support the equipment. (see Figure 4-13, reference points labeled with a C).
- c. Lower onto cribbing. Leave jack in place.
- d. Disconnect parking brake cables at mechanical brake assembly as described in Section 4.17, step (a).
- e. Raise jack to apply slight pressure on assembly.
- f. Remove mounting nuts and bolts from both sides of axle assembly.
- g. Carefully lower jack and assembly until wheels are on the ground and the front axle tube clears tank mounts.

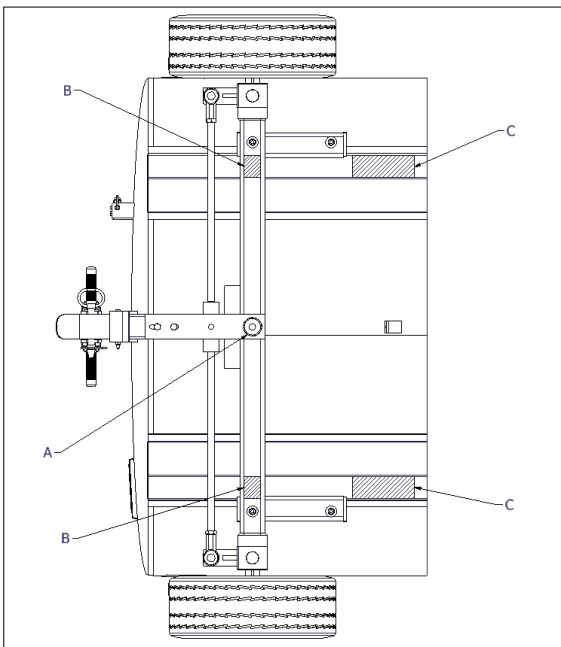


Figure 4-13 Lift Points

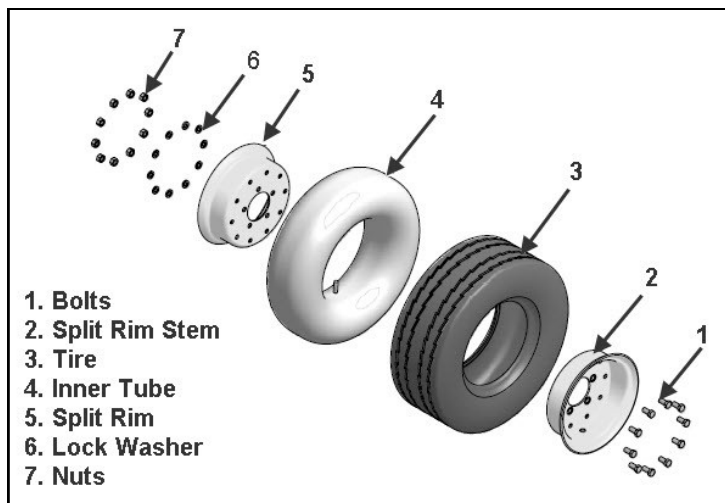


Figure 4-14 Wheel Assembly

4.19 Wheel Assembly

The Wheel assembly is a two-piece, split rim design. Use Figure 4-14 for the following maintenance steps.

- a. Remove wheel assembly as described in Section 4.5 for the side needing repair.
- b. Release air pressure from the inner tube by depressing stem valve or by removing the stem valve.
- c. Remove nuts (7), lock washers (6), and bolts (1).
- d. Separate split-rims (2) and (5) from tire (3).
- e. Remove inner tube (4) from tire (3). When reassembling, make sure that the inner tube stem is positioned through access hole in split-rim.
- f. Torque nuts (7) to 75-foot-pounds before applying air pressure to wheel.
- g. Torque lug nuts to 100-foot-pounds.

SECTION 5.0

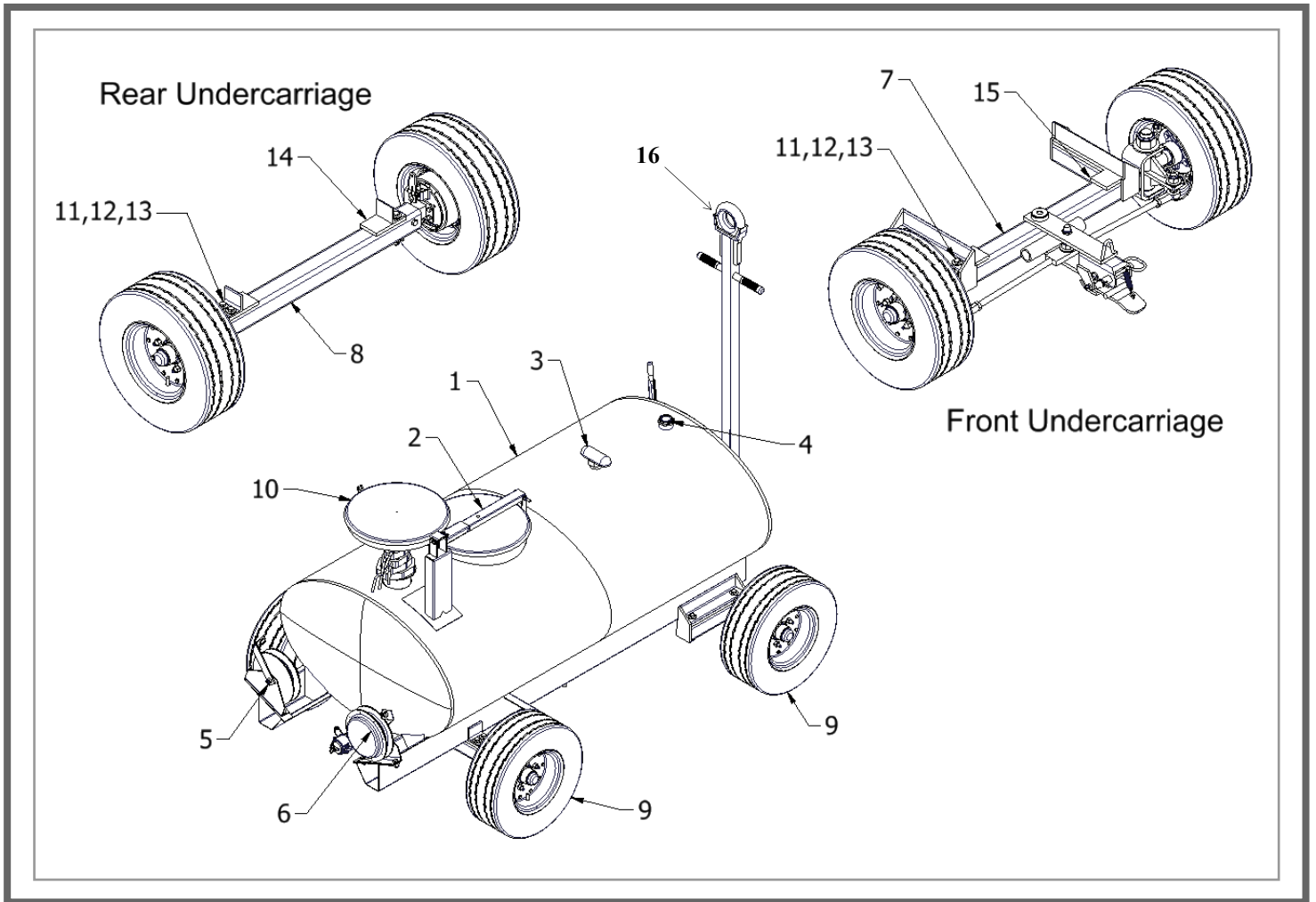
PARTS BREAKDOWN DRAWINGS AND PART NUMBERS

The following figures are supplied to assist in component identification and parts reordering. When reordering, ensure the complete model number and serial number are provided to the sales representative.

You may access customer service by contacting the Metal products Division at 800-541-3601, or 509-928-0720. (The toll free number does not work internationally). If you would like more information about the Spokane metal products division of Spokane Industries you may visit the website at www.spokaneindustries.com/stainless-steel-tanks/index.php.

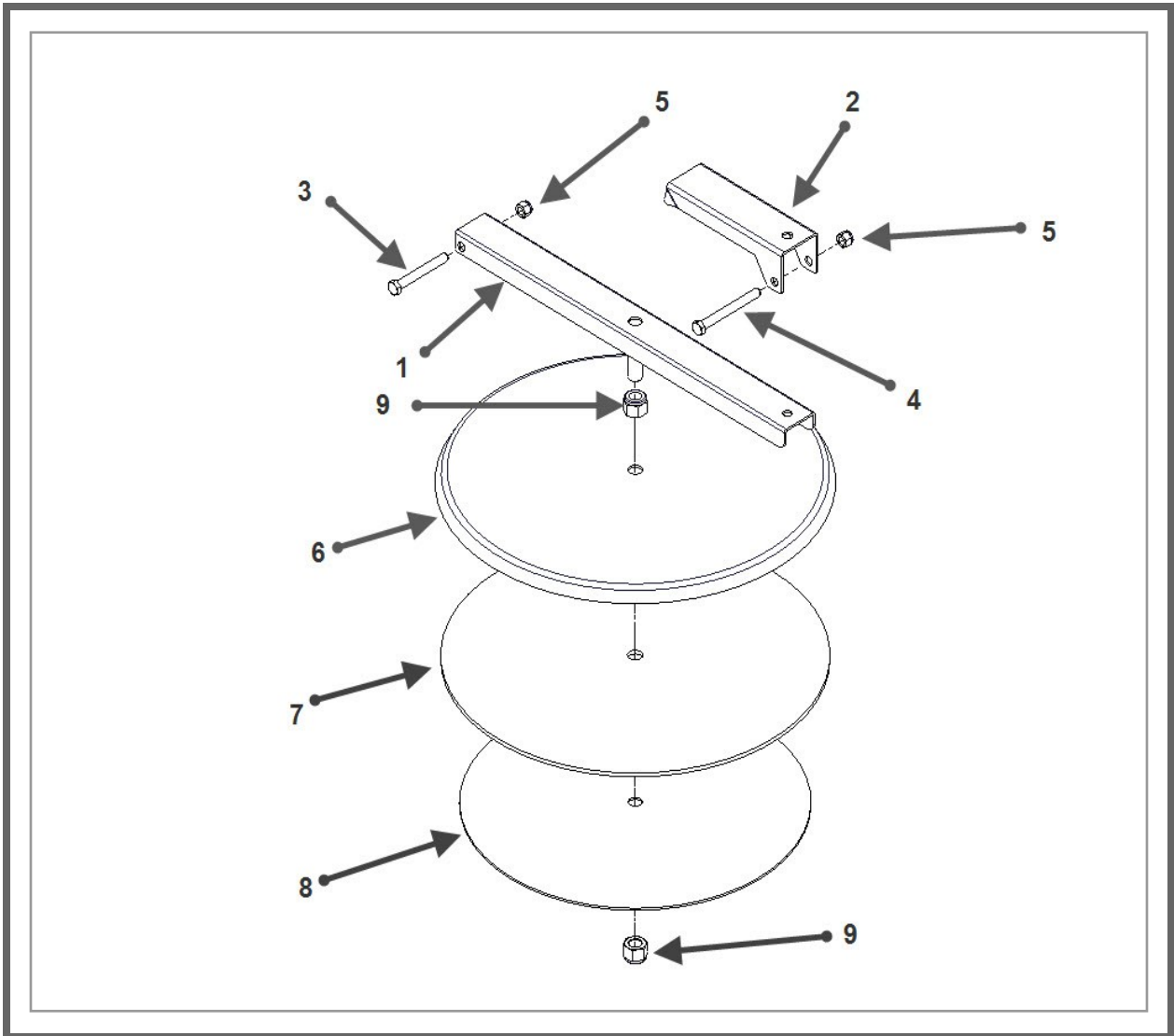
DRAWING NUMBER

- 1.0 Overview, Component Identification**
- 2.0 Manway Assembly**
- 3.0 Telescoping Funnel Assembly**
- 4.0 Front Undercarriage**
- 5.0 Rear Undercarriage and Axle**
- 6.0 Front Hub Assembly**
- 7.0 Rear Hub & Drum Assembly**
- 8.0 Wheel & Tire Assembly**



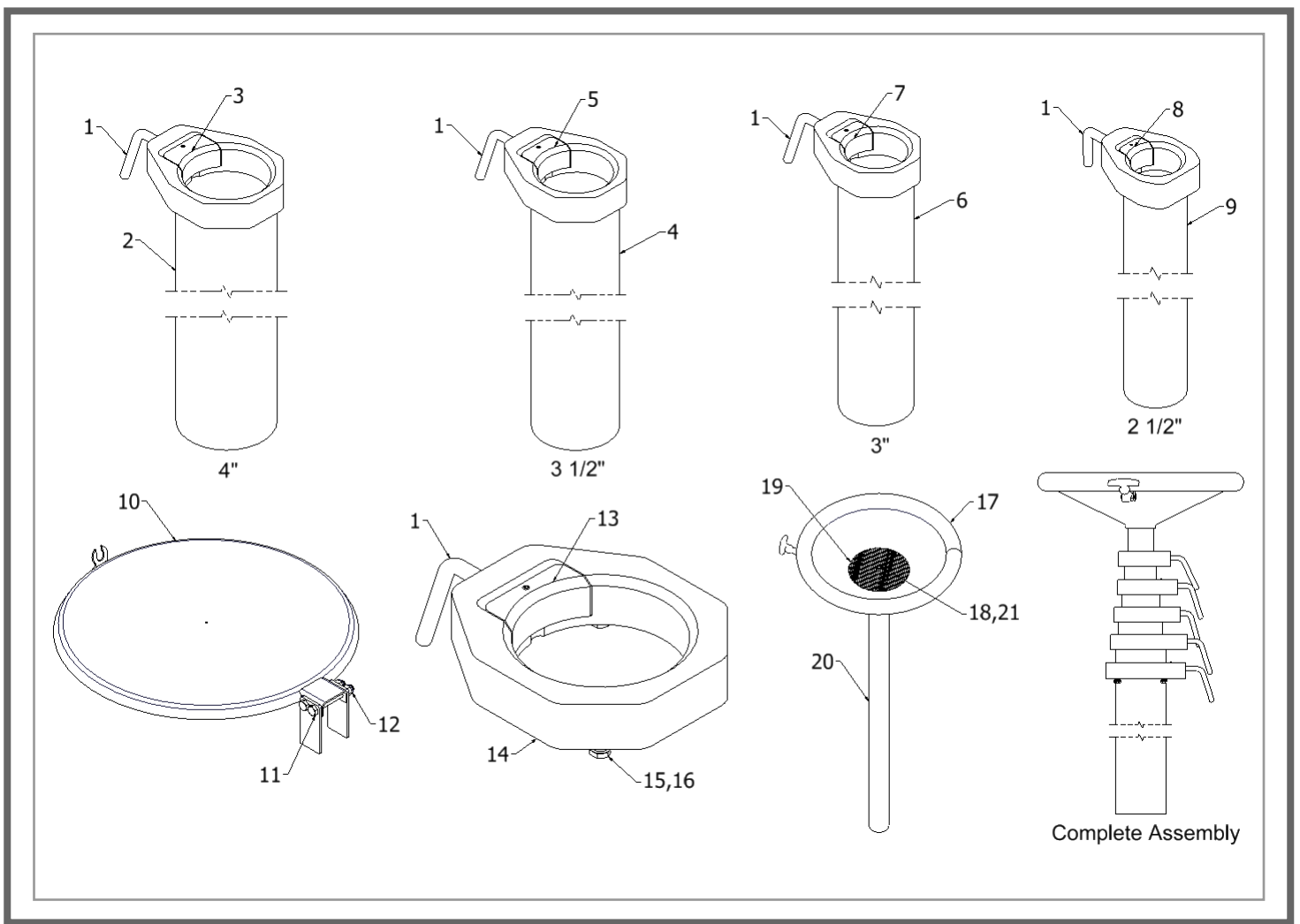
DRAWING 1.0 Overview, Component Identification

| ITEM | QTY | P.N. | DESCRIPTION | MATERIAL | WEIGHT |
|------|-----|------------|--------------------------------|-----------------|------------|
| 1 | 1 | - | Non-Vac Tank Weldment | Stainless Steel | - |
| 2 | 1 | 08-10251 | Cross Arm and Lid Assembly | Stainless Steel | 15.75 lb. |
| 3 | 1 | 04-1037 | T-Vent, 1/2 Inch | Various | .08 lb. |
| 4 | 1 | - | Liquid Level Gauge | Various | 9.39 lb. |
| 5 | 1 | 04-10361 | Grounding Reel With Plug | Various | 9.39 lb. |
| 6 | 1 | 08-10361R | Grounding Reel With Clamp | Various | 9.39 lb. |
| 7 | 1 | - | Front Undercarriage | Various | 126.01 lb. |
| 8 | 1 | - | Rear Undercarriage | Various | 182.16 lb. |
| 9 | 4 | 07-10201-1 | Wheel, Tire and Tube Assembly | Various | 31.90 lb. |
| 10 | 1 | 08-1034U | Telescoping Funnel | Steel, Mild | 20.21 lb. |
| 11 | 8 | 02-3087 | Nut, Nylon Insert, 1/2" UNC | Steel, Mild | .05 lb. |
| 12 | 8 | 02-3025 | Hex Bolt, 1/2" UNC x 4 1/2" LG | Steel Mild | .31 lb. |
| 13 | 8 | 02-3125 | Washer, Flat, 1/2-IN | Steel Mild | .30 lb. |
| 14 | 2 | 06-1012 | Rear Mounting Pad | Rubber | .75 lb. |
| 15 | 2 | 06-1023 | Front Mounting Pad | Rubber | 1.5 lb. |
| 16 | 1 | 07-1103-1 | Tow Bar | Mild steel | 33.8 lb. |



Drawing 2.0 Manway Assembly

| ITEM | QTY | P.N. | DESCRIPTION |
|------|-----|----------|--------------------------------|
| 1 | 1 | 07-1039S | Cross Arm |
| 2 | 1 | 01-8222S | Flip Lock |
| 3 | 1 | 02-3044 | Bolt, 3/8-16 x3 " LG (AP) |
| 4 | 1 | 02-3045 | Bolt, 3/8-16 x3 1/2 " LG (AP) |
| 5 | 2 | 02-3089 | Nut, Nylon Insert, 3/8-16 (AP) |
| 6 | 1 | 01-86001 | Manway Lid, 16" |
| 7 | 1 | 06-25025 | Manway Gasket |
| 8 | 1 | 01-8710 | Retainer Gasket, SV |
| 9 | 2 | 02-3091 | Nut, Nylon Insert |

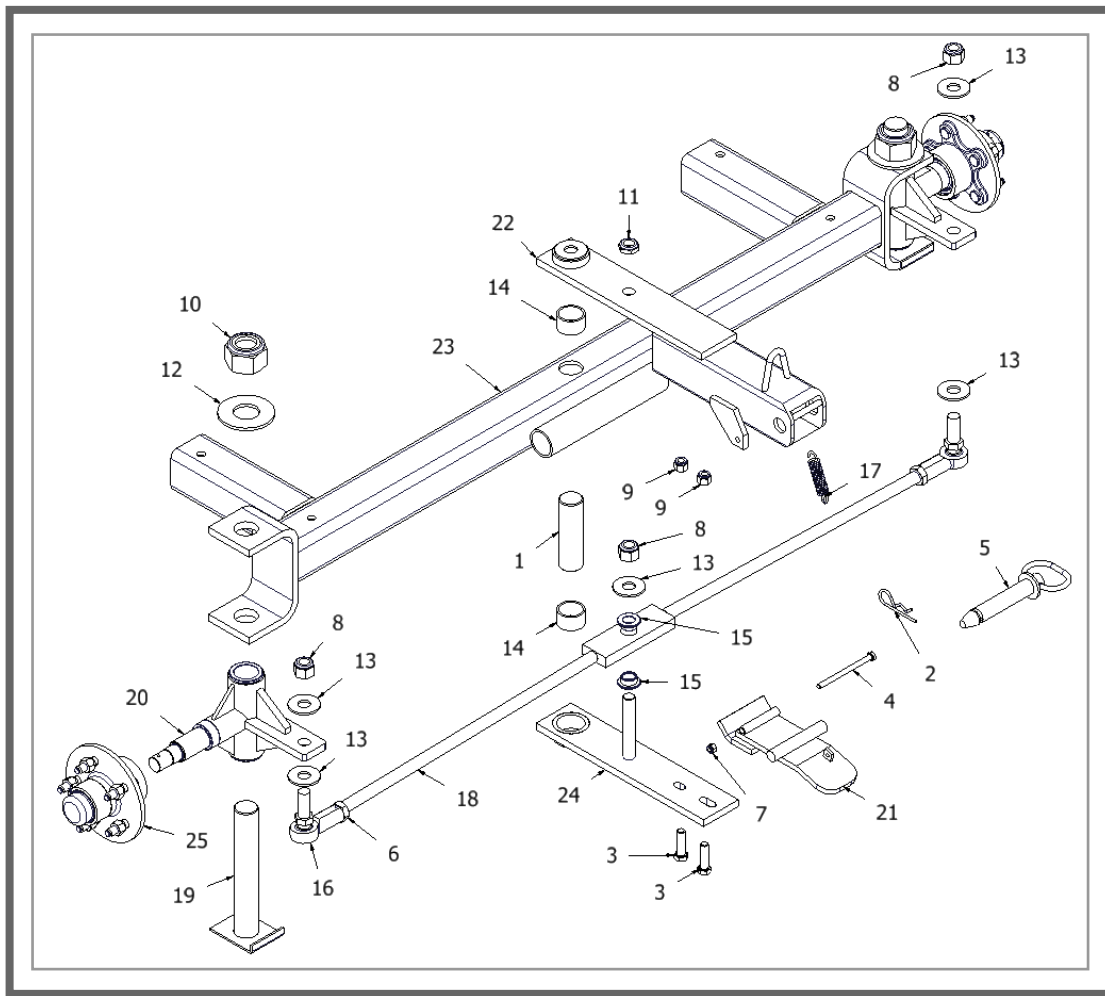


Drawing 3.0

Telescoping Funnel Assembly

| ITEM | QTY | P.N. | DESCRIPTION |
|------|-----|-------------------|-------------------------------------|
| | 1 | 08-1034U | Telescoping Funnel Asm. |
| 1 | 5 | 05-10181 | Handle |
| 2 | 2 | 07-1014U | 4" Tube (16 Ft.) |
| 3 | 1 | 05-10041 | Wedge, Clamp 3 1/2" |
| 4 | 1 | 08-1028U (16 ft.) | 3 1/2" Tube |
| 5 | 1 | 05-10031 | Wedge, Clamp 3" |
| 6 | 1 | 08-1027U (16 ft.) | Tube, 3"x.065" Wall |
| 7 | 1 | 05-10021 | Wedge, Clamp 2 1/2" |
| 8 | 1 | 05-10011 | Wedge, Clamp 2" |
| 9 | 1 | 08-1017U (16 ft.) | Tubing, .065" Wall, 2 1/2" |
| 10 | 1 | 01-86002 | Lid |
| 11 | 1 | 02-3042 | Hex Hd. Capscrew, NC, 3/8" by 3" LG |

| ITEM | QTY | P.N. | DESCRIPTION |
|------|-----|-------------------|---------------------------------------|
| 12 | 1 | 02-3089 | Nut, Nylon Insert 3/8" UNC |
| 13 | 1 | 05-10051 | Wedge, Clamp 4" |
| 14 | 1 | 05-10302 (16 ft.) | Base Clamp |
| 15 | 4 | 02-3138 | Lockwasher 1/4" |
| 16 | 4 | 02-3030 | Hex Hd. Capscrew, NC, 1/4" by 5/8" LG |
| 17 | 4 | 06-1022T | Gasket |
| 18 | 1 | 02-3088 | Nut, Nylock, NC, 1/4"-20 |
| 19 | 1 | 04-1039 | Strainer |
| 20 | 1 | 07-10541 (16 ft.) | Funnel Section |
| 21 | 1 | 02-3000 | Bolt, Carriage, 1/4" by 1" LG |

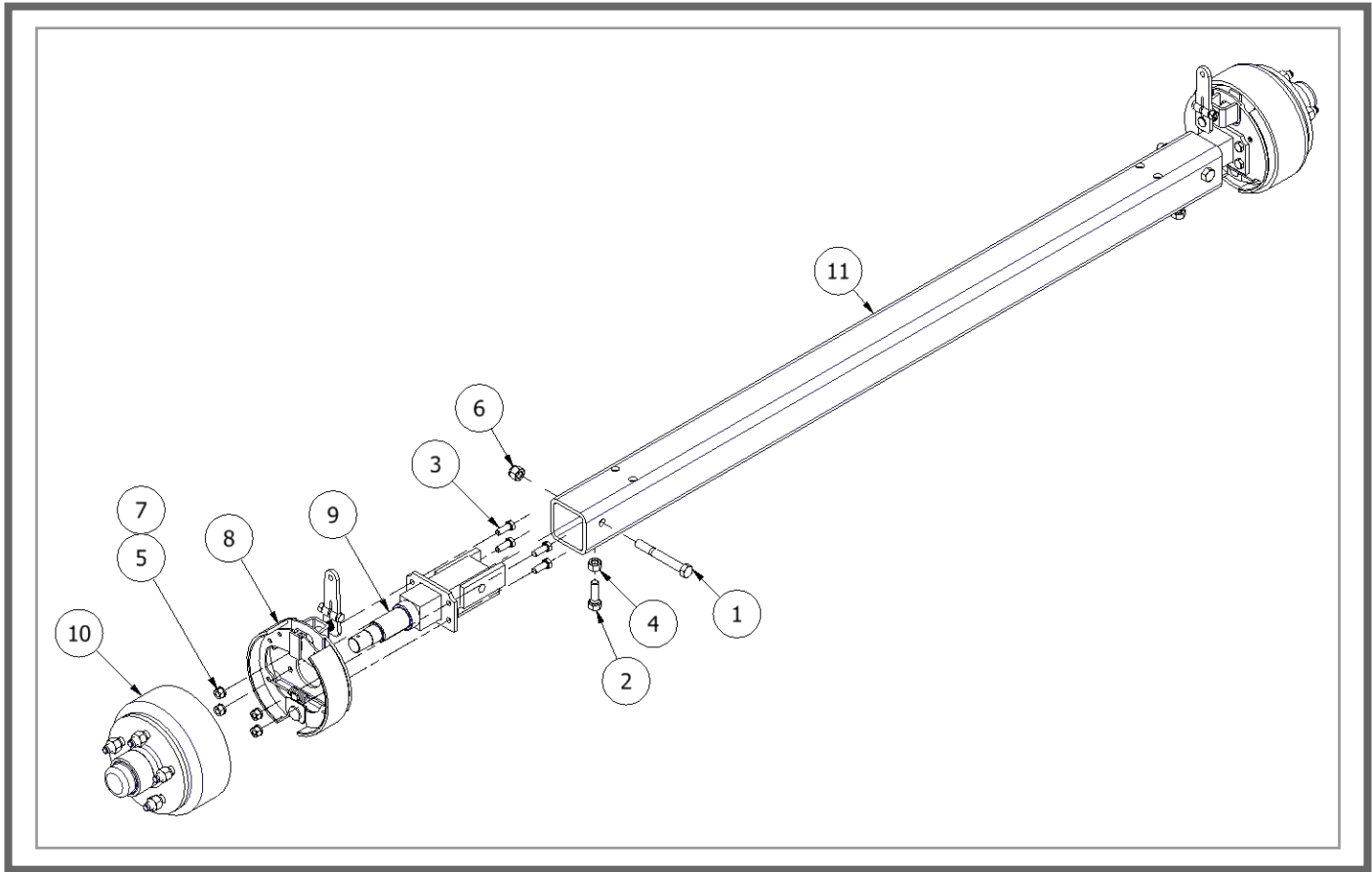


Drawing 4.0

Front Undercarriage

| ITEM | QTY | P.N. | DESCRIPTION |
|------|-----|---------|--|
| 1 | 1 | 01-8414 | PIVOT PIN, FRONT AXLE |
| 2 | 1 | 02-3016 | HITCH PIN CLIP |
| 3 | 2 | 02-3022 | HEX HD CAPSCREW, NC, 1/2-IN BY 1 3/4-IN, GRD 5, PLATED |
| 4 | 1 | 02-3055 | HEX HD CAPSCREW, NC, 5/16-IN BY 4 1/2-IN LG, PLATED |
| 5 | 1 | 02-3063 | HITCH PIN, 1-IN BY 4 1/2-IN LG, PLATED |
| 6 | 2 | 02-3081 | NUT, JAM, UNF, 3/4-IN-16, PLATED |
| 7 | 1 | 02-3082 | NUT, NYLOCK, NC, 5/16-IN-18 |
| 8 | 3 | 02-3083 | NUT, NYLOCK, NF, 3/4-IN-16 |
| 9 | 2 | 02-3087 | NUT, NYLOCK, NC, 1/2-IN-13, FIN, PLATED |
| 10 | 2 | 02-3093 | NUT, NYLOCK, UNF, 1 1/2-IN-12, FIN |
| 11 | 1 | 02-3094 | NUT, NYLOCK, NF, 3/4-IN-16, FIN, THIN |
| 12 | 2 | 02-3127 | WASHER, FLAT, 1 1/2-IN, PLATED |

| ITEM | QTY | P.N. | DESCRIPTION |
|------|-----|----------|---------------------------------------|
| 13 | 5 | 02-3131 | WASHER, FLAT, 3/4-IN, PLATED |
| 14 | 2 | 03-1014 | BUSHING, STEERING ARM |
| 15 | 2 | 03-1015 | BUSHING, TIE ROD, PIVOT POINT |
| 16 | 2 | 03-1016 | ROD END, BALL JOINT LINKAGE |
| 17 | 1 | 04-1054 | SPRING, TOW LATCH |
| 18 | 1 | 07-1005 | TIE ROD ASSEMBLY, 400/600 GALLON |
| 19 | 2 | 07-10105 | KING PIN |
| 20 | 2 | 07-1015 | ASM., KING PIN |
| 21 | 1 | 07-1020 | TOW LATCH WMT, ALL SIZES |
| 22 | 1 | 07-1104 | STEERING ARM, UPPER, 400 & 600 GALLON |
| 23 | 1 | 07-11071 | FRONT AXLE WELDMENT, 400 & 600 GALLON |
| 24 | 1 | 07-5002 | STEERING ARM, LOWER PLATE, ALL SIZES |
| 25 | 2 | 08-1011 | FRONT HUB ASSEMBLY |

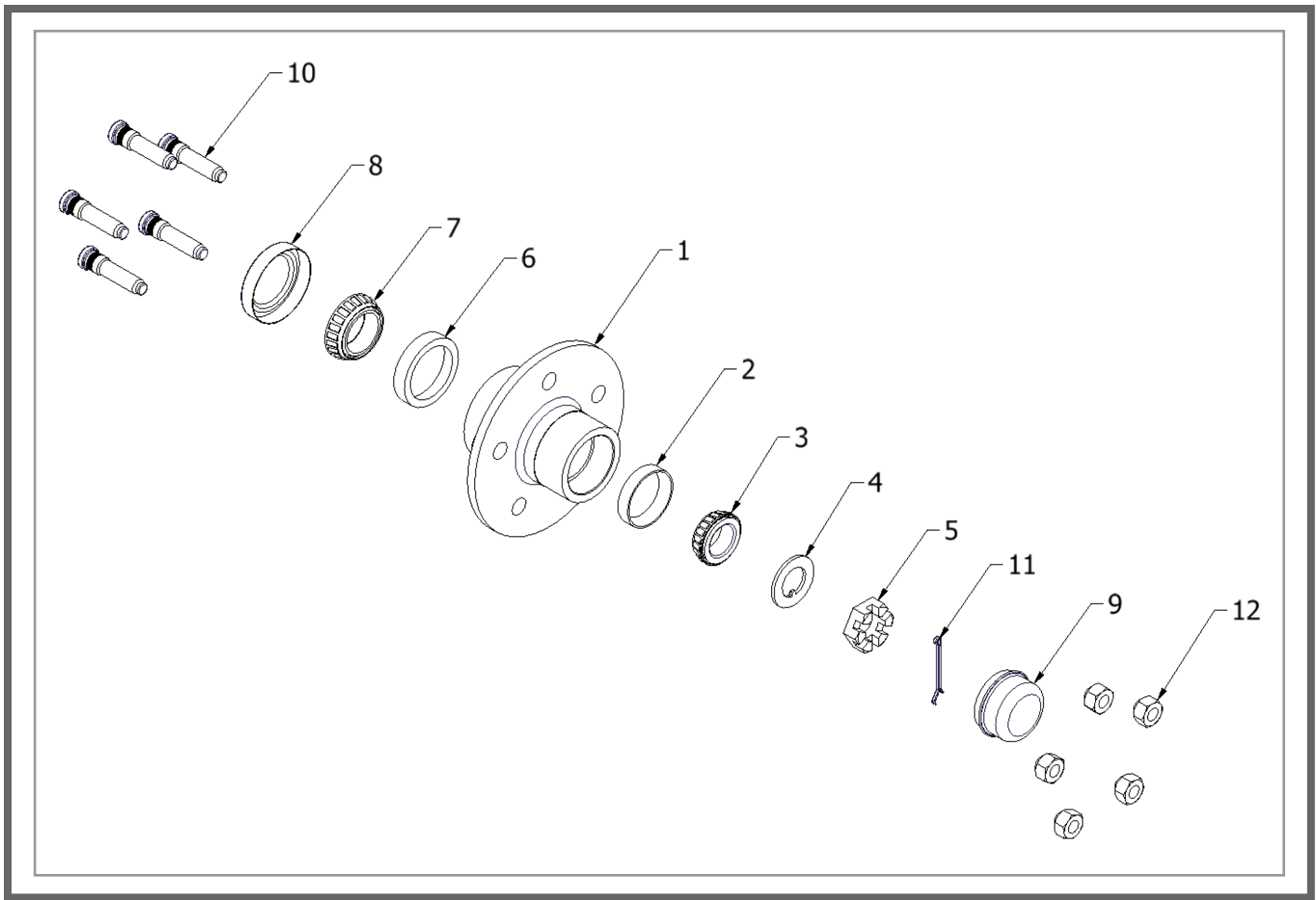


Drawing 5.0

Rear Undercarriage and Axle

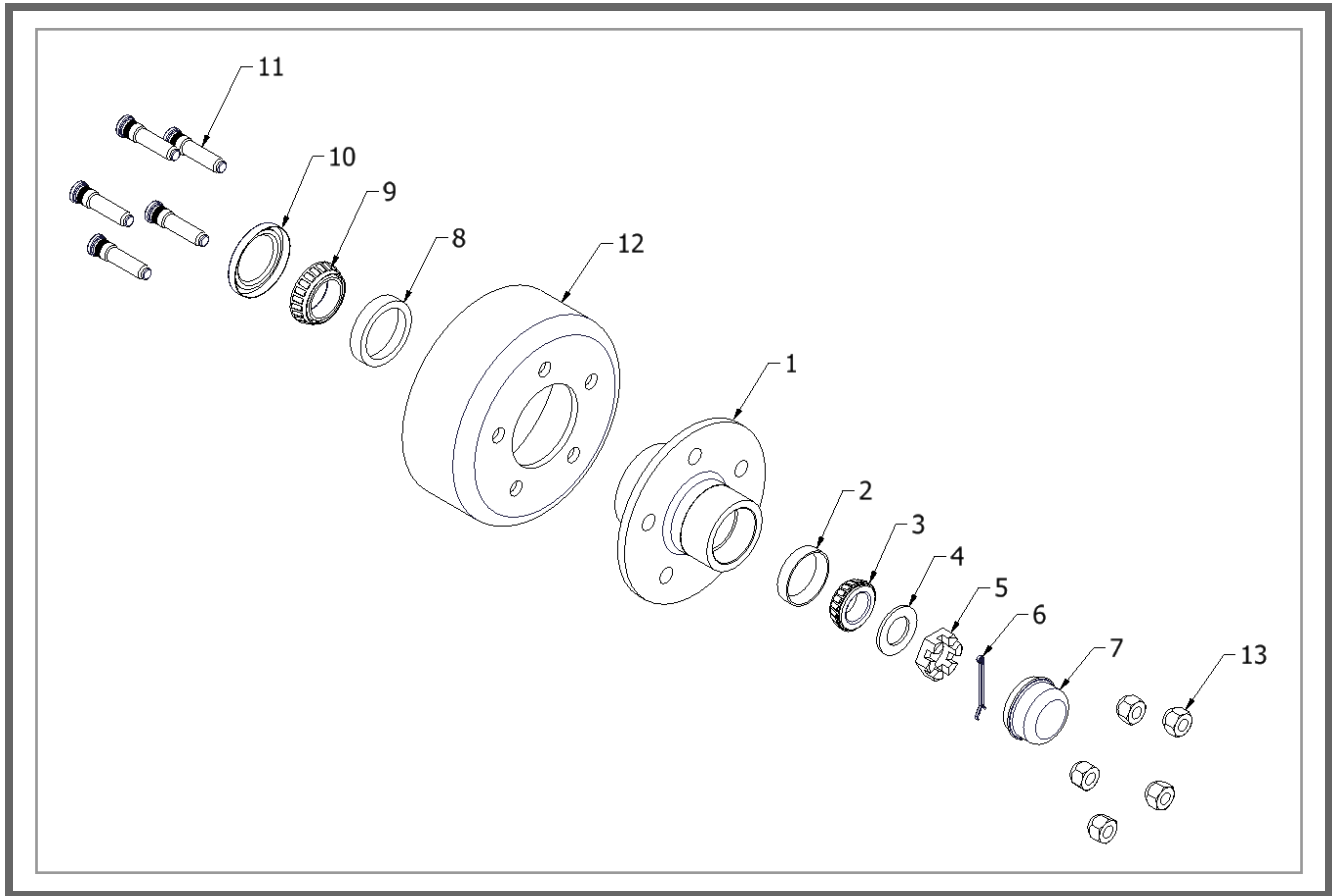
| ITEM | QTY | P.N. | DESCRIPTION |
|------|-----|------------|--|
| 1 | 2 | 02-3024 | HEX HD CAPSCREW, NC, 1/2-INCH BY 4-INCH, GRD 5, PLATED |
| 2 | 2 | 02-3026 | HEX HD CAPSCREW, NC, 1/2-INCH BY 1 1/2-INCH, GRD 5, PLATED |
| 3 | 8 | 02-3050 | HEX HD CAPSCREW, NC, 3/8-INCH BY 1-INCH, GRD 5, PLATED |
| 4 | 2 | 02-3068 | NUT, HEX, 1/2"-13 UNC PLATED |
| 5 | 8 | 02-3072 | NUT, HEX, NC, 3/8-IN-16, FIN., PLATED |
| 6 | 2 | 02-3087 | NUT, NYLOCK, NC, 1/2-INCH-13, FIN., PLATED |
| 7 | 8 | 02-3143 | WASHER, MEDIUM LOCK, 3/8-INCH PLATED |
| 8 | 2 | 04-1063RBO | BRAKE ASSEMBLY |
| 9 | 2 | 07-1010 | REAR SPINDLE WELDMENT, REAR AXLE |
| 10 | 2 | 08-10111 | REAR HUB & DRUM ASSEMBLY |
| 11 | 1 | 08-103011 | REAR AXLE WELDMENT, 400 & 600 GALLON |

- Not Illustrated



Drawing 6.0 Front Hub Assembly

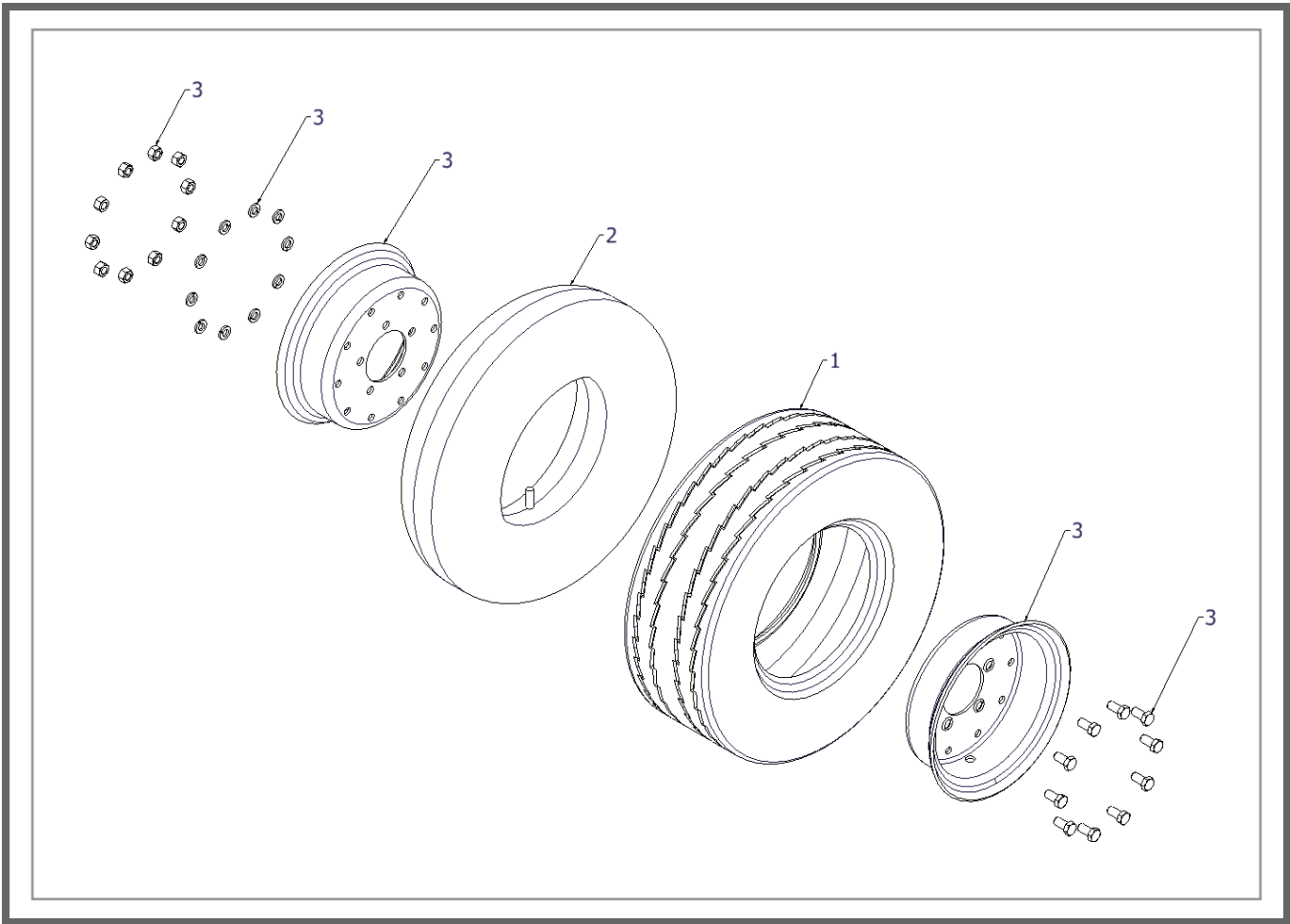
| ITEM | QTY | P.N. | DESCRIPTION |
|------|-----|----------|---------------------|
| | 1 | 08-1011 | Front Hub Assembly |
| 1 | 1 | 04-1017 | Hub, Front Axle |
| 2 | 1 | 04-1016 | Cup, Outer Bearing |
| 3 | 1 | 04-1014 | Cone, Outer Bearing |
| 4 | 1 | 02-12055 | Washer |
| 5 | 1 | 02-1205 | Nut, Castle |
| 6 | 1 | 04-1015 | Cup, Inner Bearing |
| 7 | 1 | 04-1013 | Cone, Inner Bearing |
| 8 | 1 | 04-1012 | Seal Bearing |
| 9 | 1 | 04-1019 | Cap, Hub |
| 10 | 5 | 02-1017 | Stud |
| 11 | 1 | 02-1303 | Pin, Cotter |
| 12 | 5 | 02-3065 | Nut, lug, 1/2" |



Drawing 7.0

Rear Hub and Drum Assembly

| ITEM | QTY | P.N. | DESCRIPTION |
|------|-----|--------------|--------------------------|
| | 2 | 08-10111 | Rear Hub & Drum Assembly |
| 1 | 1 | 04-1017 | Hub, Rear Axle |
| 2 | 1 | 04-1016 | Cup, Outer Bearing |
| 3 | 1 | 04-1014 | Cone, Outer Bearing |
| 4 | 2 | 02-12055 | Washer |
| 5 | 1 | 02-1205 | Nut, Castle |
| 6 | 1 | 02-1303 | Pin, Cotter |
| 7 | 2 | 04-1019 | Cap, Hub |
| 8 | 2 | 04-1015 | Cup, Inner Bearing |
| 9 | 1 | 04-1013 | Cone, Inner bearing |
| 10 | 1 | 04-1012 | Seal, Bearing |
| 11 | 5 | 02-1303 | Stud |
| 12 | 1 | 08-10111-002 | Drum, Brake |
| 13 | 5 | 02-3065 | Nut Lug |



Drawing 8.0

Wheel and Tire Assembly

| ITEM | QTY | P.N. | DESCRIPTION |
|------|-----|------------|---------------------------------------|
| | 4 | 07-10201-1 | Complete Wheel Assembly (All Numbers) |
| 1 | 1 | 04-10221 | Tire, 20.5x 8.0-10, E-Range |
| 2 | 1 | 04-1059 | Inner Tube |
| 3 | 2 | 04-1020 | Split Rim Wheel Assembly |