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400 GALLON FUEL BOWSER

TECHNICAL MANUAL

PARTS, OPERATION AND MAINTENANCE

MODEL NUMBER BOW 400-05

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400 GALLON FUEL BOWSER

TECHNICAL MANUAL

PARTS, OPERATION AND MAINTENANCE

MODEL NUMBER BOW 400-05

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1.0 INTRODUCTION

- 1.1 To obtain optimum benefit from your fuel bowser unit, it is recommended that all personnel operating it read and understand this manual prior to operation.
- 1.2 Upon receipt of the Bowser unit, a visual inspection should be made to determine that it is complete and has not sustained any damage during transportation.

2.0 SAFETY

2.1 Potential Fire Or Explosion

2.1.1 Due to the nature of fuel, care should be exercised to eliminate all sparks and open flame in the area of the fuel bowser.

2.1.2 A 50 foot radius area around the fuel bowser for no smoking, sparks, or open flames is usually a good practice. It is strongly recommended all local or other regulations be consulted for further restrictions.

2.2 Telescoping Drain

2.2.1 Care should be exercised in using the telescope to prevent injury fingers between clamps by dropping sections.

2.3 Grounding

2.3.1 To eliminate static sparks, the bowser unit is equipped with two grounding reels which should be connected prior to draining or filling operations.

2.4 Towing

2.4.1 Make sure the tow bar is securely attached to the towing vehicle.

2.4.2 Before moving the bowser unit, check to assure the parking brake is released.

2.4.3 Maximum allowable towing speed is 15 MPH.

2.5 Parking

2.5.1 Parking brake must be applied when filling and draining or when left unattended.

2.6 Air Supply

2.6.1 **Caution:** Check the air pressure of supply lines to the vacuum generator to assure it is not in excess of 100 PSI.

2.7 Inspections

2.7.1 Inspection of tires, undercarriage, tow bar, vent, valves, hoses, sight gauge, reflectors, safety labels, etc., should be inspected on a periodic basis. It is recommended these inspections be performed weekly.

2.7.2 Internal inspection will be necessary to insure structural integrity and cleanliness. It is recommended that interval inspections be performed at least every (6) six months. **Caution!** When entering confined spaces such as the interior of the bowser tank, care should be taken to provide proper breathing equipment and a separate person dedicated solely to a safety watch of the person inside. It is strongly recommended that all local or other regulations be consulted.

3.0 OPERATION

3.1 Intended Use

3.1.1 The fuel bowser unit is intended for use in draining and collection of fuel from aircraft and the transportation to a disposal site. Any other use is prohibited and may void any and all warranties.

3.2 Parking Brake

3.2.1 The bowser unit is equipped with a mechanically operated parking brake. The brake should be applied prior to disengaging tow bar. The brake should be applied when filling, or draining tank, or whenever left unattended.

3.3 Tow Bar and Undercarriage

3.3.1 The bowser unit is equipped with steerable front wheels controlled by the tow bar.

3.3.2 Care should be taken not to jackknife the bowser when backing up.

3.3.3 Tire inflation should be checked and maintained as described in the maintenance section.

3.3.4 Before towing, check to see the brake is disengaged, grounding reel and hoses are disconnected, valves are closed, tow bar is securely attached to the towing vehicle, telescoping drain is collapsed, and all manways and covers are closed and latched.

3.3.5 The bowser unit is equipped with a tow bar latch to hold it in the upright position.

3.4 Telescoping Drain Assembly

3.4.1 The fuel bowser is equipped with a telescoping drain assembly. It is capable of being adjusted from 4'2" to 16'0" high.

3.4.2 To Raise:

- (1) Loosen top clamp if necessary.
- (2) Grasp top section with one hand and lift until the top clamp raises approximately 6 inches.
- (3) Tighten clamp securely with the other hand.
- (4) Reposition lifting hand by grasping tube below tightened clamp and lift until next clamp is raised approximately 6 inches.
- (5) Repeat steps 1-4 until desired height is obtained or assembly is fully extended.

3.4.3 To Lower:

- (1) Tightly grasp bottom extended tube with one hand and loosen the securing clamp.
- (2) Slowly lower tube, hand over hand, until the following clamp is resting on the loosed clamp.
- (3) Repeat steps 1 and 2 until all sections are lowered.

3.4.4 Funnel is equipped with a nitrile rubber seal around the top edge to allow placement against the underside of a wing.

3.4.5 When not in use, telescope should be collapsed and the cover closed to eliminate contamination.

3.5 Vacuum Assembly

- 3.5.1 This assembly is equipped with an air powered vacuum generator.
- 3.5.2 It is intended for vacuum draining or depuddling fuel and condensation. Caution! If other objects such as rock or metallic pieces are vacuumed into the vacuum chamber, they may create a hazard due to sparks.
- 3.5.3 Vacuum is started by attaching a recommended air supply of 60CFM at 100 PSI and turning on the air supply valve.
- 3.5.4 The vacuum chamber is equipped with an automatic drain valve that opens whenever vacuum is eliminated in the chamber. This valve opens directly into the main tank.
- 3.5.5 The vacuum generator is equipped with an automatic overflow protector. When the level of product is full, the valve shuts off and eliminates the vacuum. The vacuum chamber will then automatically drain. The air supply must be shut off to reset the overflow valve. Vacuuming may then continue.
- 3.5.6 The vacuum assembly is supplied with 50 feet of vacuum hose and a ball valve on the vacuum suction.
- 3.5.7 The vacuum assembly is equipped with (4) four each 1/2" NPT opening for use with pencil drains. To use, the pipe caps must be removed and self-closing quick disconnects attached that match local standards. To operate, close vacuum suction valve and turn air supply on and connect drain lines.

3.6 Grounding Reels

- 3.6.1 The bowser unit is supplied with two grounding reels.
- 3.6.2 Before filling, draining, or vacuuming, the grounding reels must be attached to the aircraft or object being serviced and an appropriate ground.

3.7 Drain Valves

3.7.1 The bowser unit is equipped with a 1-1/2" NPT ball valve with a camlock connector.

3.8 Sample Port

3.8.1 The bowser unit is equipped with a 1/2" NPT valve for use as a sample port.

3.9 Telescoping Drain Strainer

3.9.1 The bowser unit is equipped with a sump with removable bottom to allow cleaning of the drain strainer.

3.10 Vent Overflow Protector

3.10.1 The bowser unit is equipped with a float actuated seal to prevent fuel from flowing out the vent in the event the bowser is overfilled.

4.0 MAINTENANCE

4.1 Parking Brake

4.1.1 The bowser unit is equipped with a parking brake assembly consisting of a 7" diameter brake drum with 2-1/4" wide brake shoes.

4.1.2 The shoes are activated via a mechanical linkage, eccentric and lever.

4.1.3 Adjustment may be necessary as the shoes wear.

- (1) Tightening is accomplished by removing the bolt through one yoke and screwing yoke in to shorten connecting rod.
- (2) Do not over tighten or brakes may drag when released.

4.1.4 Replacement of shoes.

- (1) Remove wheel.
- (2) Remove nut retaining hub and drum assembly.
- (3) Disconnect actuating rod.
- (4) Remove shoe retainers.
- (5) Install new shoes.
- (6) Replace shoe retainers.
- (7) Adjust actuator rod length.
- (8) Replace wheel.

4.2 Under Carriage and Tow Bar

4.2.1 The bowser unit is equipped with steerable front wheels, fixed rear wheels, and a tow bar.

4.2.2 Maintenance should consist of the following:

- (1) King pin bushing, turning bushings and tie rod ends are self lubricating and need no additional maintenance.
- (2) Pack wheel bearing at intervals not to exceed three (3) months.
- (3) Check tire pressure weekly. Pressure should be maintained at 60 PSI.

4.2.3 Tow bar pivot pin and hook ring should be inspected monthly for excessive wear or cracks.

4.3 Telescoping Drain Assembly

4.3.1 The telescoping Drain Assembly consists of stainless steel housing 4 1/2" in diameter permanently attached to the tank and four (5) aluminum tube sections.

4.3.2 The stainless tube and four largest aluminum tubes are equipped with a clamp assembly.

4.3.3 Each clamp has a nylon clamp sleeve.

4.3.4 Each aluminum tube is equipped with a stop sleeve crimped on the lower end which acts as a stop to prevent the tube from sliding through the clamp.

4.3.5 Disassembling of the telescope assembly is accomplished by removing the four screws holding the clamp sleeve in the clamp. After removal of the clamp sleeve, the stop sleeve will slide through the clamp.

4.4 Vacuum Assembly

4.4.1 The vacuum assembly consists of a vacuum chamber with an air powered vacuum generator mounted on a removable cover. The cover is held in place by three (3) eccentric latches.

4.4.2 The vacuum chamber is equipped with an automatic drain valve. This valve is pre-adjusted at the factory and should not need further adjustment.

- 4.4.3 The vacuum cover is equipped with an overflow valve which should require no maintenance.
 - 4.4.4 The vacuum generator is attached to the chamber cover. It is equipped with an exhaust silencer which should be cleaned at six (6) month intervals or more often depending on the amount of use and conditions.
 - 4.4.5 The vacuum hose should be inspected monthly for cracks. Any sudden loss of vacuum suction power may indicate a crack in the vacuum hose.
 - 4.4.6 The cover gasket should be inspected monthly for deterioration. This gasket should be pliable and free from weather checking.
 - 4.4.7 The overflow stop and the drain stop pivot bolts should not be overtightened. Over tightening will restrict motion of the floats.
- 4.5 Grounding Reels
- 4.5.1 Grounding reel cables should be pulled out, cleaned and inspected monthly.
 - 4.5.2 Cable clamps and ends should be inspected for loose connections monthly.
- 4.6 Sight Gauge
- 4.6.1 The sight gauge should be inspected monthly for loose connections and weathering of clear tubing.
- 4.7 Telescoping Drain Strainer
- 4.7.1 Telescoping drain strainer is located on the bottom of the stainless steel drain housing.
 - 4.7.2 Maintenance should consist of inspection and cleaning monthly.
 - 4.7.3 Removal:
 - (1) Removal is accomplished by loosening the wing nut on the clamp holding the base of the sump. NOTE! Check interior to assure fuel has been thoroughly drained before loosening wing nut.
 - (2) Remove clamp and sump base.
 - (3) Loosen clamp holding screen to stainless steel drain housing and pull screen down.
- 4.8 Vent Overflow Preventor
- 4.8.1 The vent overflow preventor is located inside the tank directly under the vent.
 - 4.8.2 It consists of a caged float with an elastomer seal.

4.9 TROUBLE SHOOTING

<u>SYMPTOM</u>	<u>PROBABLE CAUSE</u>	<u>PROBABLE CORRECTIONS</u>
Bowser does not track or steer correctly or steers loosely	Bent King Pin housing see section 5.2.1 Item #7	Replace King Pin housing
	Defective Tie Rod End see section 5.2.1 Item #12	Replace Tie Rod End
	Loose or worn out Bushings, see section 5.2.1 Items #11,16 or 18	Replace as needed
Toe Bar does not stay in the upright position	Broken or stretched spring see section 5.2.1 Item #26	Replace as needed
Parking Brake does not work	Need adjustment	Adjust as per instructions in section 4.1.0
	Needs repairing see section 5.2.3	Replace as needed
Vacuum System does not have much suction	Defective lower drain stop gasket, see section 5.6 Item #2	Replace as needed
	Not enough air pressure to operate vacuum generator, see section 3.5.3 and 4.4	Increase air pressure and volume
	Plugged outlet Filter see section 5.6	Replace or clean as required
Fuel misting is occurring through vacuum generator	Bowser tank is to full	Empty main Bowser tank
	Overflow stop gasket needs replacing or adjusting, see section 3.5.0 and 5.6	Replace or adjust as needed
	Float on Vacuum shut-off is bent, see section 5.6	Fix or repair as needed

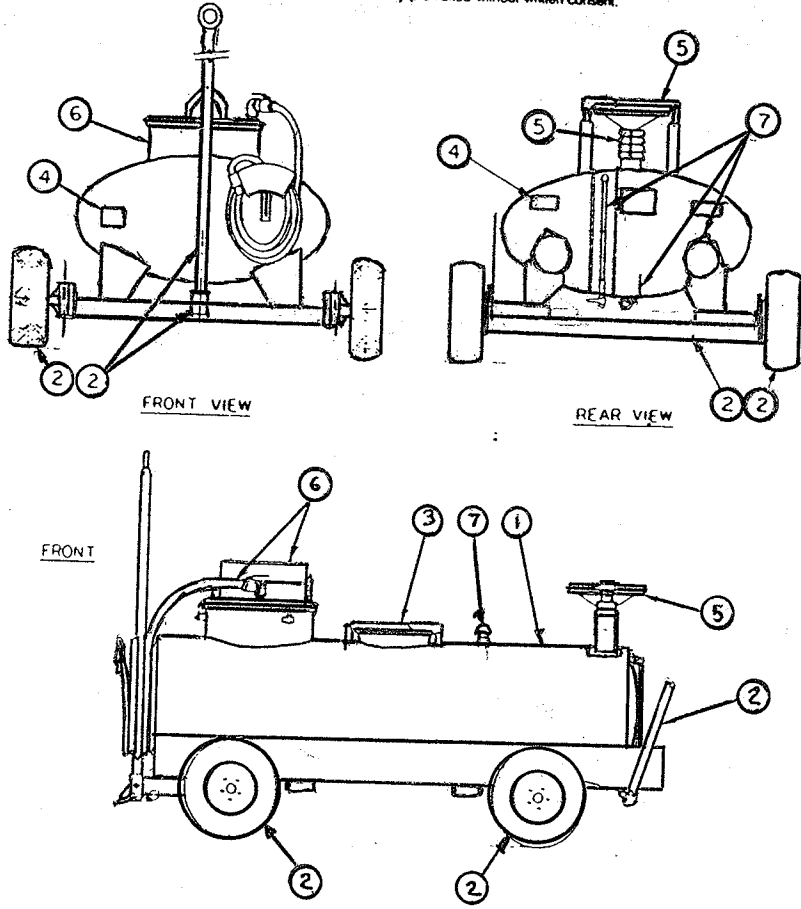
<u>SYMPTOM</u>	<u>PROBABLE CAUSE</u>	<u>PROBABLE CORRECTIONS</u>
Telescoping Drain won,t stay up	Loose clamp handles Worn Sleeve Clamp Liners, see section 5.5	Tighten handles a little tighter Replace as needed
Telescoping Drain is over flowing	Bowser tank is full Clogged screen or strainer, see section 4.7 and or 5.5	Empty main Bowser tank Remove and clean as required

5.0 REPLACEMENT PARTS

This section provides information for identification of parts for ordering. To order, it is important to have the Model Number, Subassembly Number, Part Number and Description. Parts may be ordered by calling or writing to:

SPOKANE METAL PRODUCTS
P.O. Box 3303
Spokane, WA 99220-3303
Telephone: (509)928-0720
Tele Fax:(509)927-0826

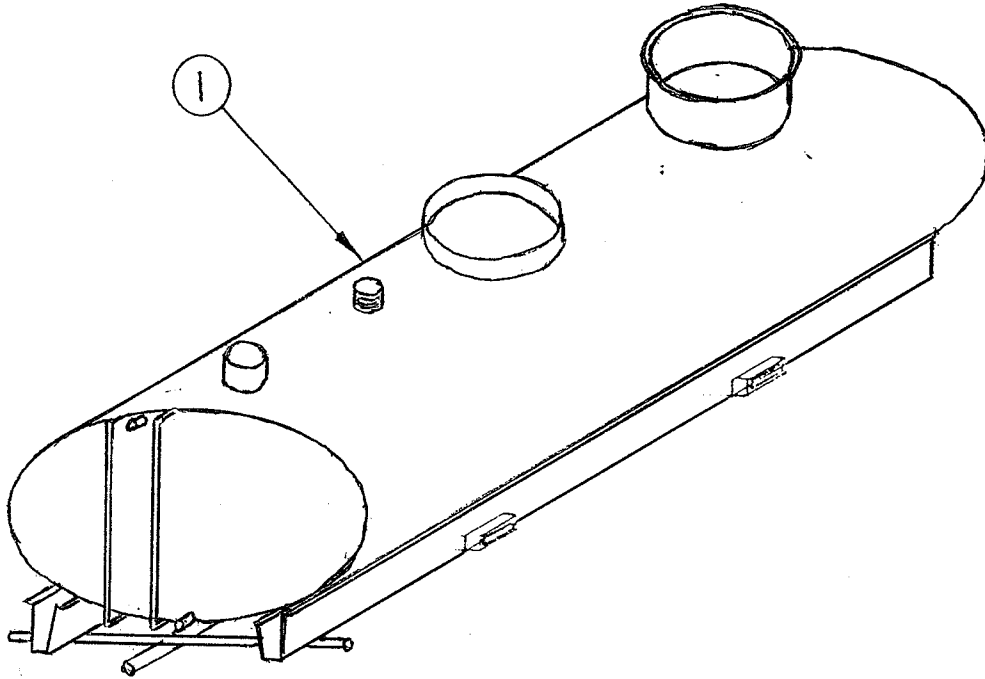
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<u>Item No.</u>		<u>Section</u>
1	Main Tank	5.1
2	Axle, Front	5.2.1
2	Axle, Rear	5.2.2
2	Brake, Parking	5.2.3
2	Wheel Assembly, Front	5.2.4
2	Wheel Assembly, Rear	5.2.5
3	Manway Assembly	5.3
4	Decal Package	5.4
5	Telescoping Drain	5.5
6	Vacuum Assembly	5.6
7	Miscellaneous Fixtures	5.7
7	Vent, Overflow Preventor	5.8

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SECTION 5.1



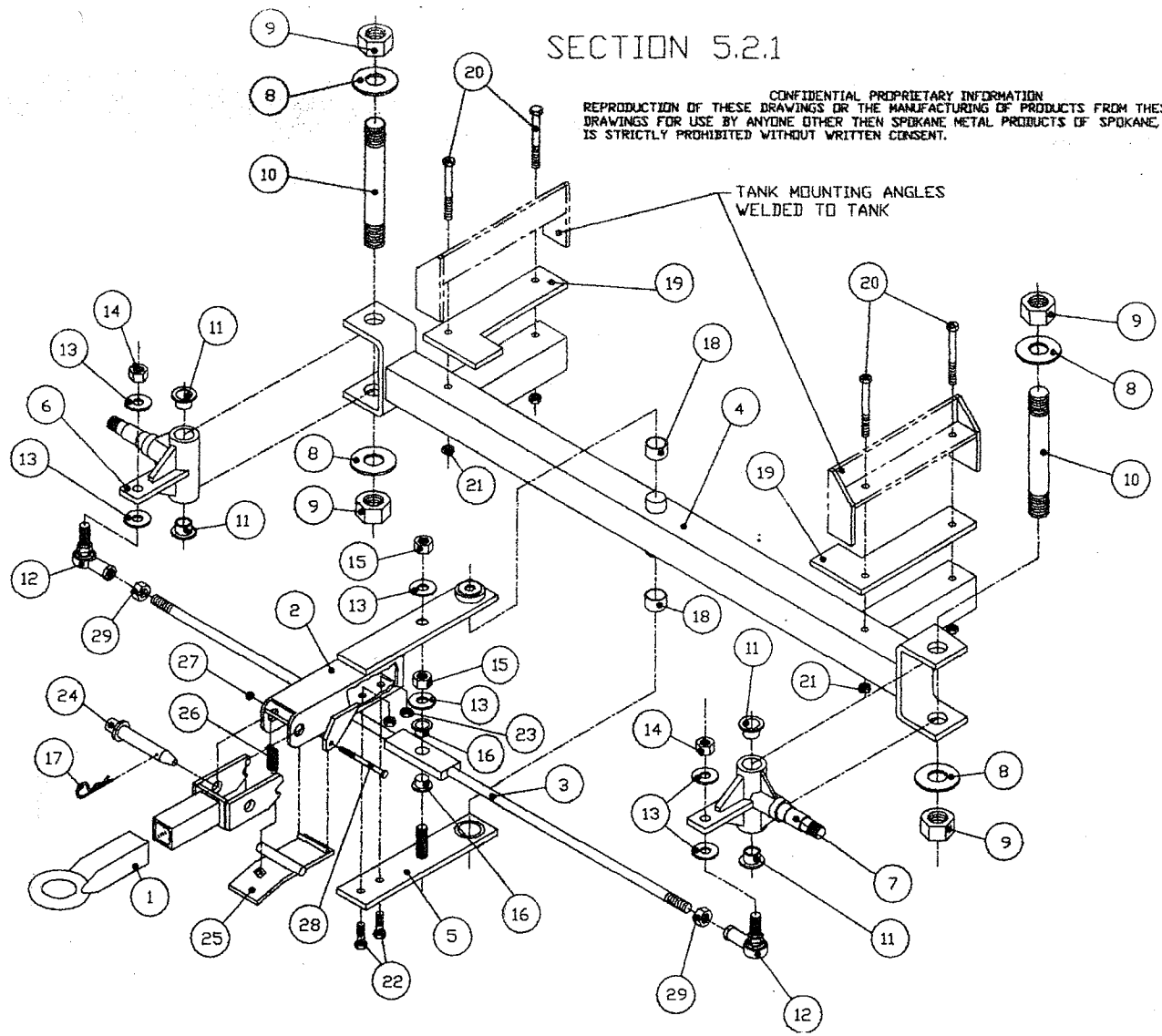
ASSEMBLY NO. 08-11119

MAJOR ASSEMBLY - TANK WELDMENT

Sub Assy.	Item	Part No.	Quantity	Description	Wt. #
	1	08-11119	1	Stainless Steel Tank Weldment, 400 Gallon Capacity Series BOW 400-05	692

SECTION 5.2.1

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ASSEMBLY NO. 08-1018

MAJOR ASSEMBLY - AXLE ASSEMBLY

Sub Assy.	Item	Part No.	Quantity	Description	Wt. #
08-1018				Axle, Assembly, Front	
	1	07-1103	1	Tow Bar	23
	2	07-1104	1	Arm, Turning	16
	3	07-1005	1	Tie Rod	7.3
	4	07-11071	1	Axle, Front	53

ASSEMBLY NO 08-1018

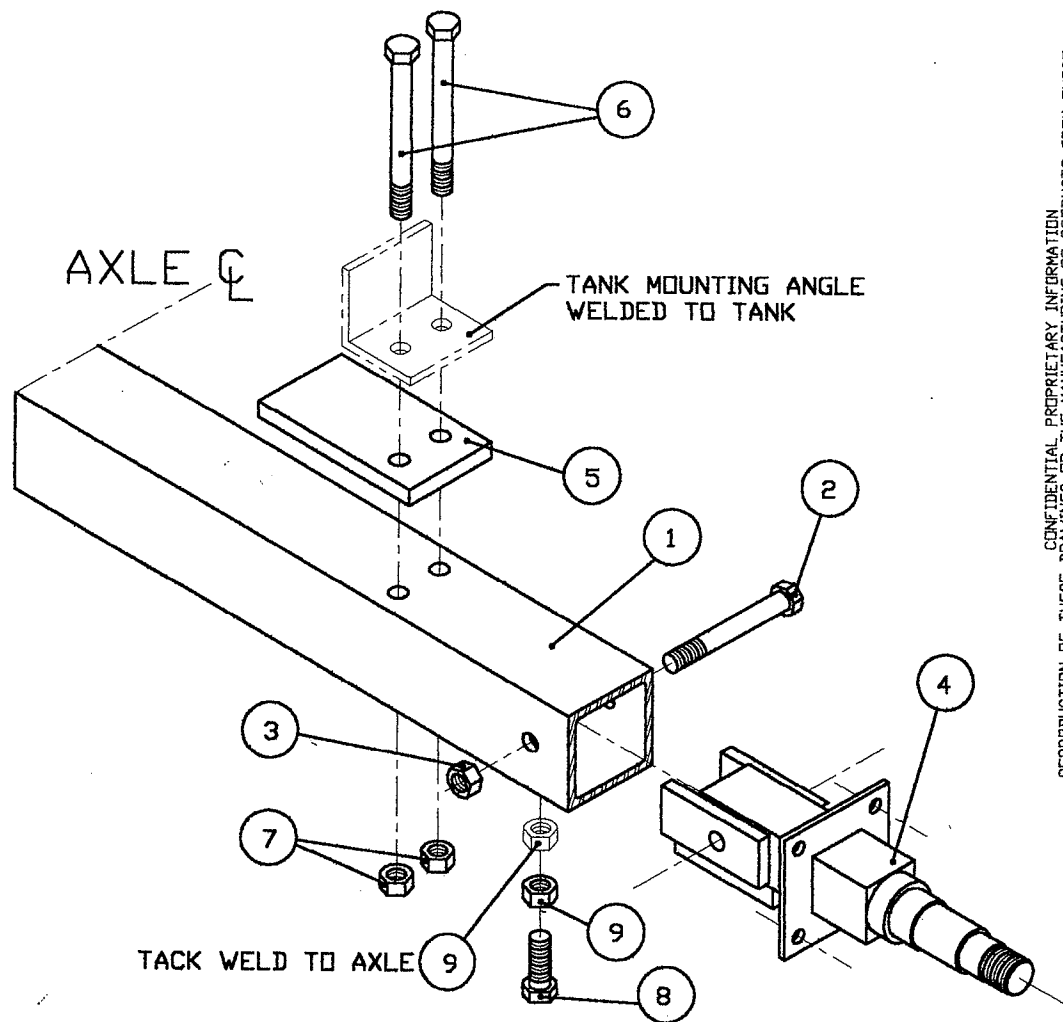
MAJOR ASSEMBLY - AXLE ASSEMBLY (CONTINUED)

Sub Assy.	Item	Part No.	Quantity	Description	Wt.#
	5	07-1016	1	Steering Arm, Lower Plate	6.1
	6	05-1009	1	Sleeve, King Pin, Right	24
	7	05-1009	1	Sleeve, King Pin, Left	24
	8	02-11131	4	Washer, King Pin	1
	9	02-12131	4	Nut, King Pin	2
	10	05-1010	2	King Pin	11
	11	03-1013	4	Bushing, King Pin Sleeve	1
	12	03-1016	2	Ends, Tie Rod	5
	13	02-11072	5	Washers, Tie Rod	
	14	02-12071	2	Nuts, Tie Rod Ends	1
	15	02-12071	1	Nut, Tie Rod Pivot	.5
	16	03-1015	2	Bushing, Tie Rod Pivot	.8
	17	02-1300	2	Cotter Pin	.2
	18	03-1014	2	Bushing, Axle Pivot	1
	19	06-1023	2	Mounting Pad, Tank	4
	20	02-1503	4	Bolts, Tank Mounting	1.3
	21	02-12041	4	Nuts, Tank Mounting	.5
	22	02-1502	2	Bolts, Turning Arm Clamp	.32
	23	02-12041	2	Nuts, Turning Arm Clamp	.2
	24	02-1304	1	Hitch Pin	2
	25	07-1020	1	Toe Latch	3.1

ASSEMBLY NO. 08-1018

MAJOR ASSEMBLY - AXLE ASSEMBLY (CONTINUED)

Sub Assy.	Item	Part No.	Quantity	Description	
	26	04-1054	1	Spring, Toe Latch	.5
	27	02-1201	1	Nut, Toe Latch	.1
	28	02-1501	1	Bolt, Toe Latch	.2
	29	02-12141	2	Hex Nut, Tie Rod	.2



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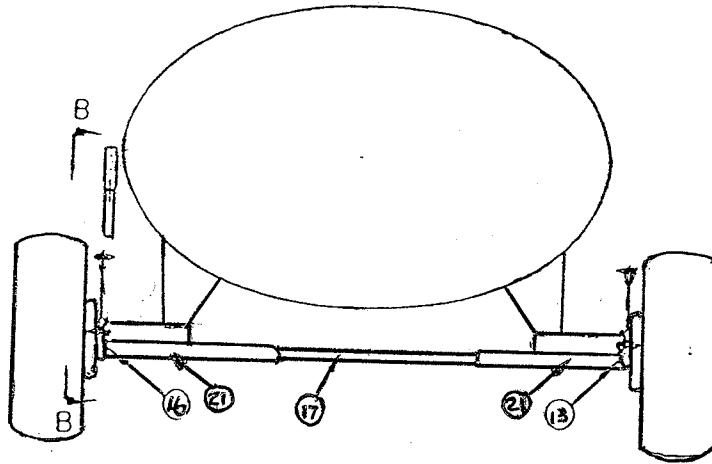
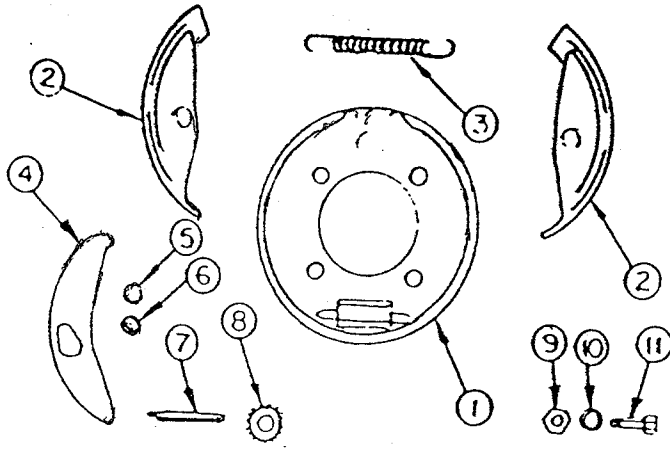
ASSEMBLY NO. 08-1010U

MAJOR ASSEMBLY - AXLE ASSEMBLY

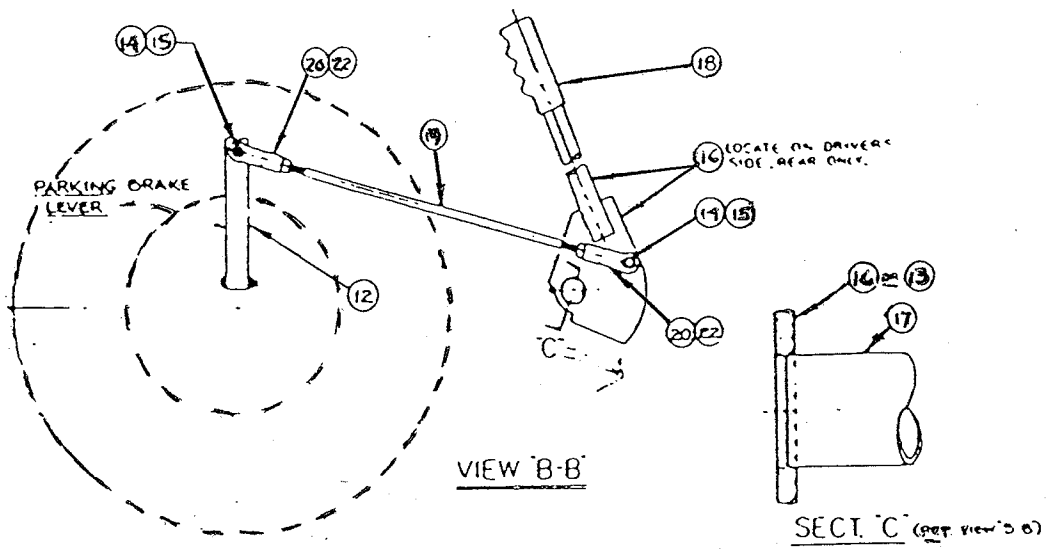
08-10102				Axle Assembly, Rear	
	1	05-1023	1	Axle, Rear Weldment	40
	2	02-1505	2	Bolts, Mounting Spindle	.6
	3	02-12041	2	Nuts, Mounting Spindle	.5
	4	05-1022	2	Spindle, Rear	17
	5	06-1012	2	Mounting Pad, Tank	1
	6	02-1503	4	Bolt, Tank Mounting	1.3
	7	02-12041	4	Nuts, Tank Mounting	.5
	8	02-10041	2	Bolt, Spindle Stabilizer	1.3
	9	02-1203	4	Nuts, Spindle Stabilizer	.5

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SECTION 5,2,3.



REAR VIEW
 NTS

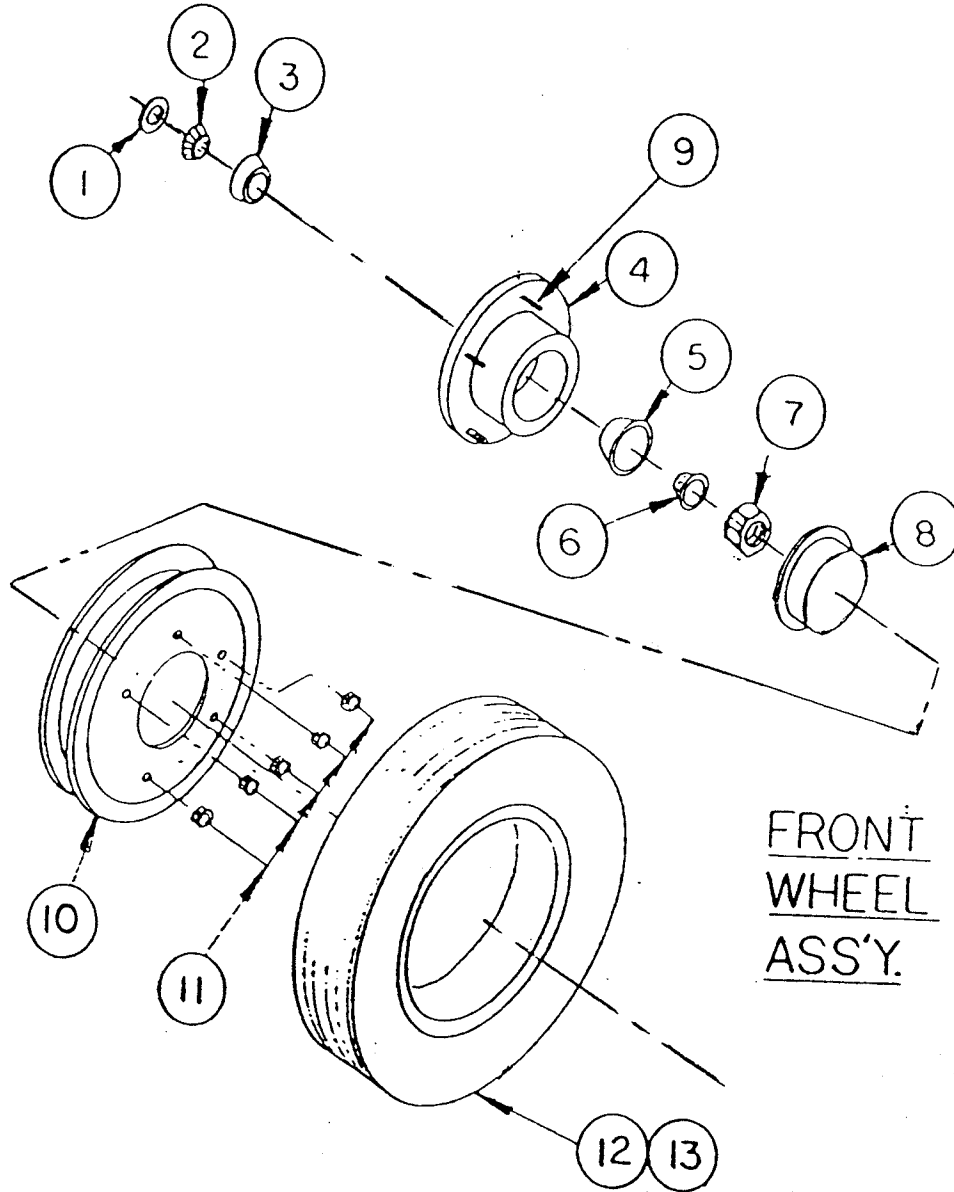


MAJOR ASSEMBLY - BRAKE, PARKING

Sub Assy.	Item	Part No.	Quantity	Description	Wt.#
08-1007		04-1063		Brake Assembly (2 Req'd)	
	1	04-1023	1	Brake, Plate Assembly	7
	2	04-1024	1	Brake, Shoe Assembly	4
	3	04-1026	2	Brake, Shoe Lever Spring	1
	4	04-1025	2	Brake, Shoe Lever	1
	5	02-1400	2	1\2" Retaining Ring	.2
	6	02-1303	2	Anchor Pin	.2
	7/8	04-1027	2	Adjusting Screw Assembly	.7
	9	02-12031	4	Nut	.2
	10	02-11031	4	Lockwasher	.1
	11	02-10031	4	Bolt, 7/16" Shoulder	.5
	12	04-1030	1	Brake, Control Arm	3
08-1008				Brake Linkage Assembly	
	13	05-1025	1	Cam, Brake Linkage	1.4
	14	02-10012	1	Bolt	.4
	15	02-12021	1	Nut	.1
	16	07-1033	1	Brake Handle, Fabd Sub-Ass	5.4
	17	01-8104	1	Brake Handle, Connector	4
	18	04-1055	1	Grip, Vinyl	1
	19	05-1026	1	Rod, Brake Linkage	1
	20	04-2516	4	Yoke Ends	.5
	21	03-1020	2	Grease Fitting	.5
	22	02-100231	4	Jam Nut, 3/8"	.5

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SECTION 5.2.4.



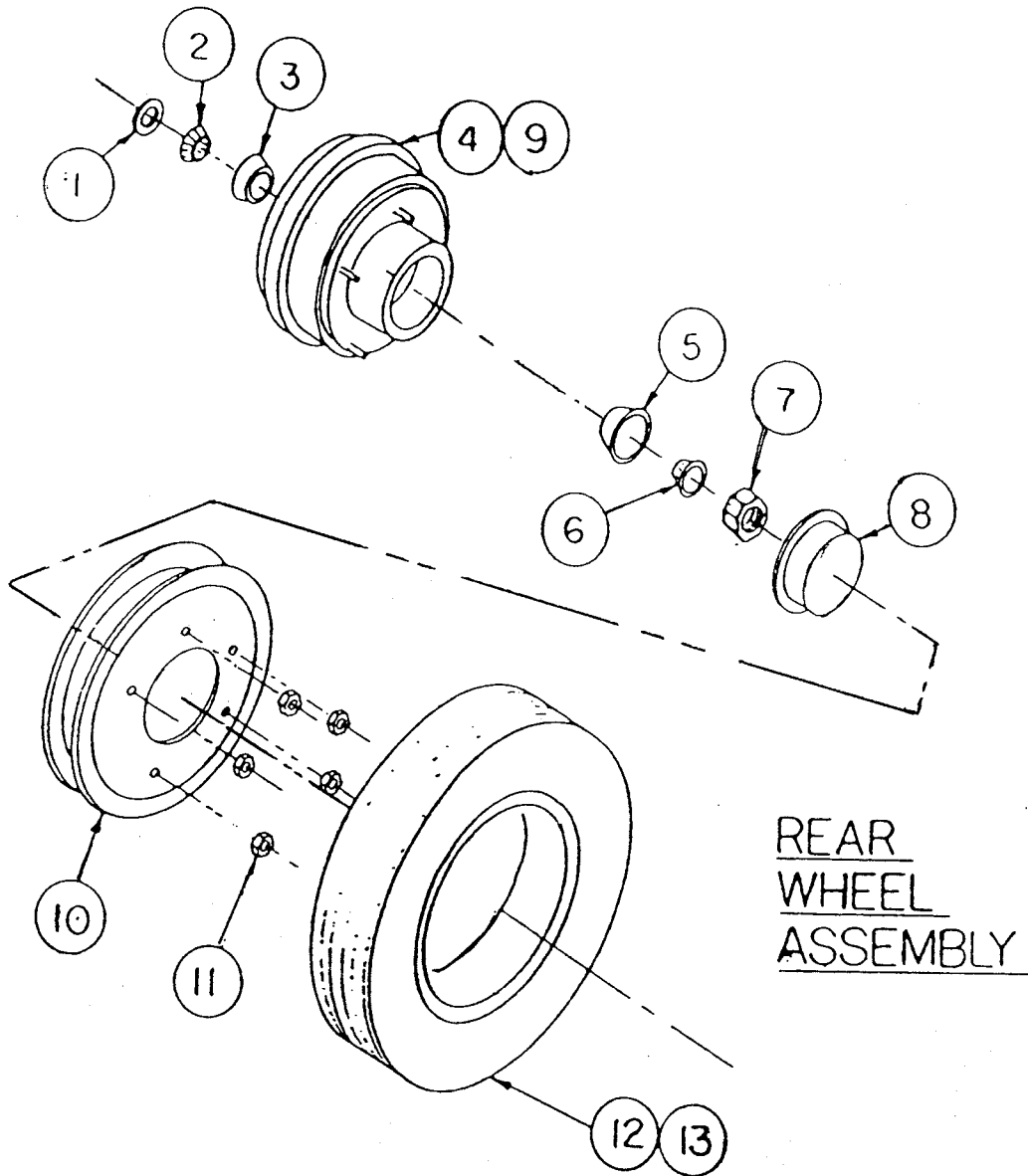
ASSEMBLY NO. 10-100042

MAJOR ASSEMBLY - WHEEL ASSEMBLY, FRONT

Sub Assy.	Item	Part No.	Quantity	Description	Wt.#
08-1011		04-1050		Bearing & Hub Assembly (2 Reqd)	
	1	04-1012	1	Seal, Bearing	1
	2	04-1013	1	Bearing, Inner	3
	3	04-1015	1	Cup, Inner	2
	4	04-1017	1	Hub, Wheel	7
	5	04-1016	1	Cup, Outer	4
	6	04-1014	1	Bearing, Outer	3
	7	02-1205	1	Spindle Nut	1
	8	04-1019	1	Dust Cap	1
	9	02-1017	5	Studs, Hub	1
08-10061		04-10201		Tire/Wheel/Tube Assembly (2 Reqd)	
	10	04-1020	1	Wheel, Split Rim, 10"	9.5
	11	04-1021	5	Lug Nuts, Wheel	1
	12	04-10221	1	Tire, 10"	4
	13	04-1045	1	Tube Assembly	11

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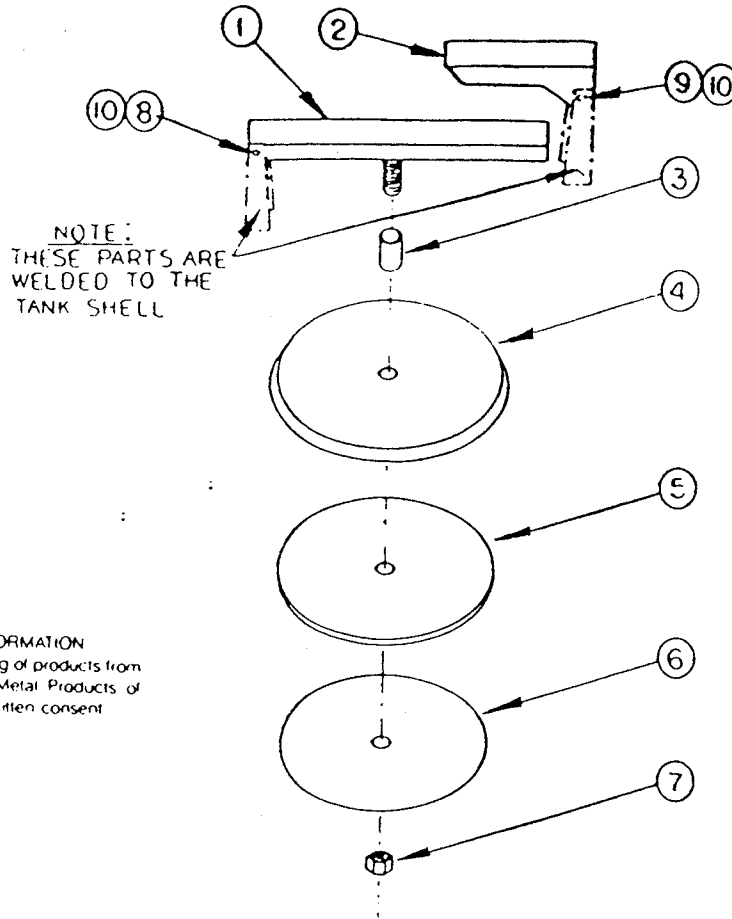
SECTION 5,2,5.



ASSEMBLY NO. 10-100052

MAJOR ASSEMBLY - WHEEL ASSEMBLY, REAR

Sub Assy.	Item	Part No.	Quantity	Description	Wt.#
08-10111		04-1062		Bearing & Hub Assembly (2 Reqd)	
	1	04-1012	1	Seal, Bearing	1
	2	04-1013	1	Bearing, Inner	3
	3	04-1015	1	Cup, Inner	2
	4	05-1008	1	Hub/Brake Drum Sub-Assy	16
	5	04-1016	1	Cup, Outer	4
	6	04-1014	1	Bearing, Outer	3
	7	02-1205	1	Nut, Spindle	1
	8	04-1019	1	Dust Cap	1
08-10061		04-1020		Tire/Wheel/Tube Assembly (2 Reqd)	
	10	04-10201	1	Wheel, Split Rim	9.5
	11	04-1021	5	Lug Nuts, Wheel	1
	12	04-10221	1	Tire, 10"	4
	13	04-1045	1	Tube Assembly	11



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SECTION 5,3

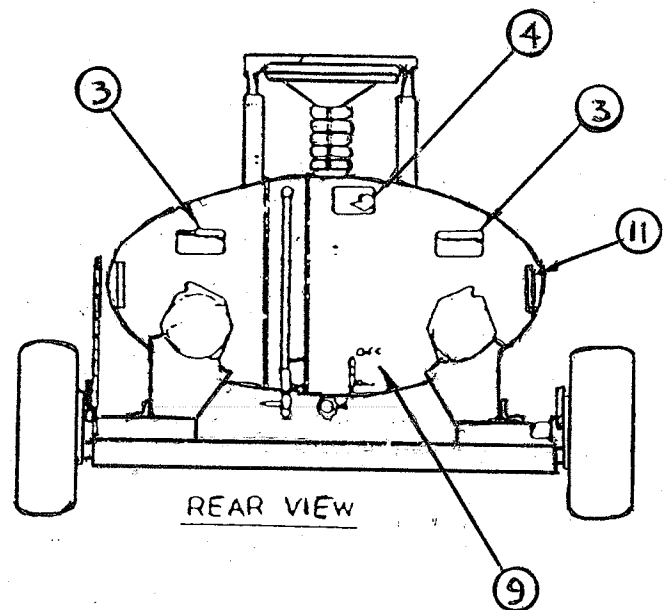
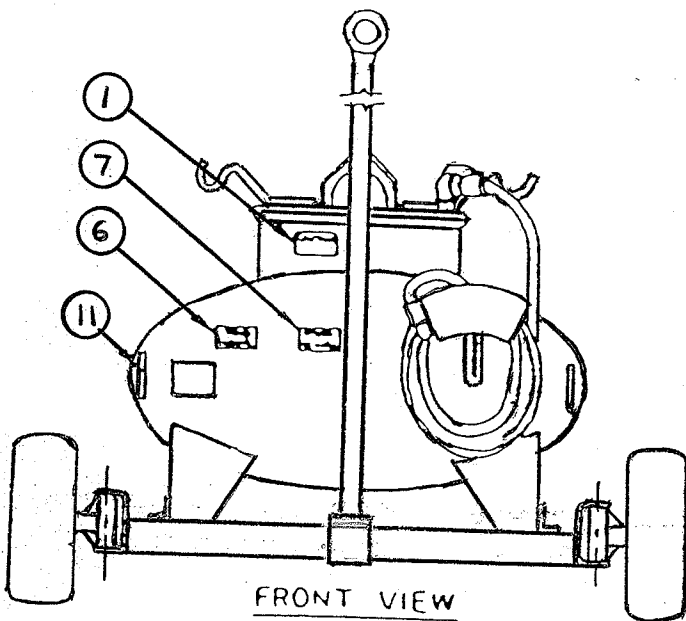
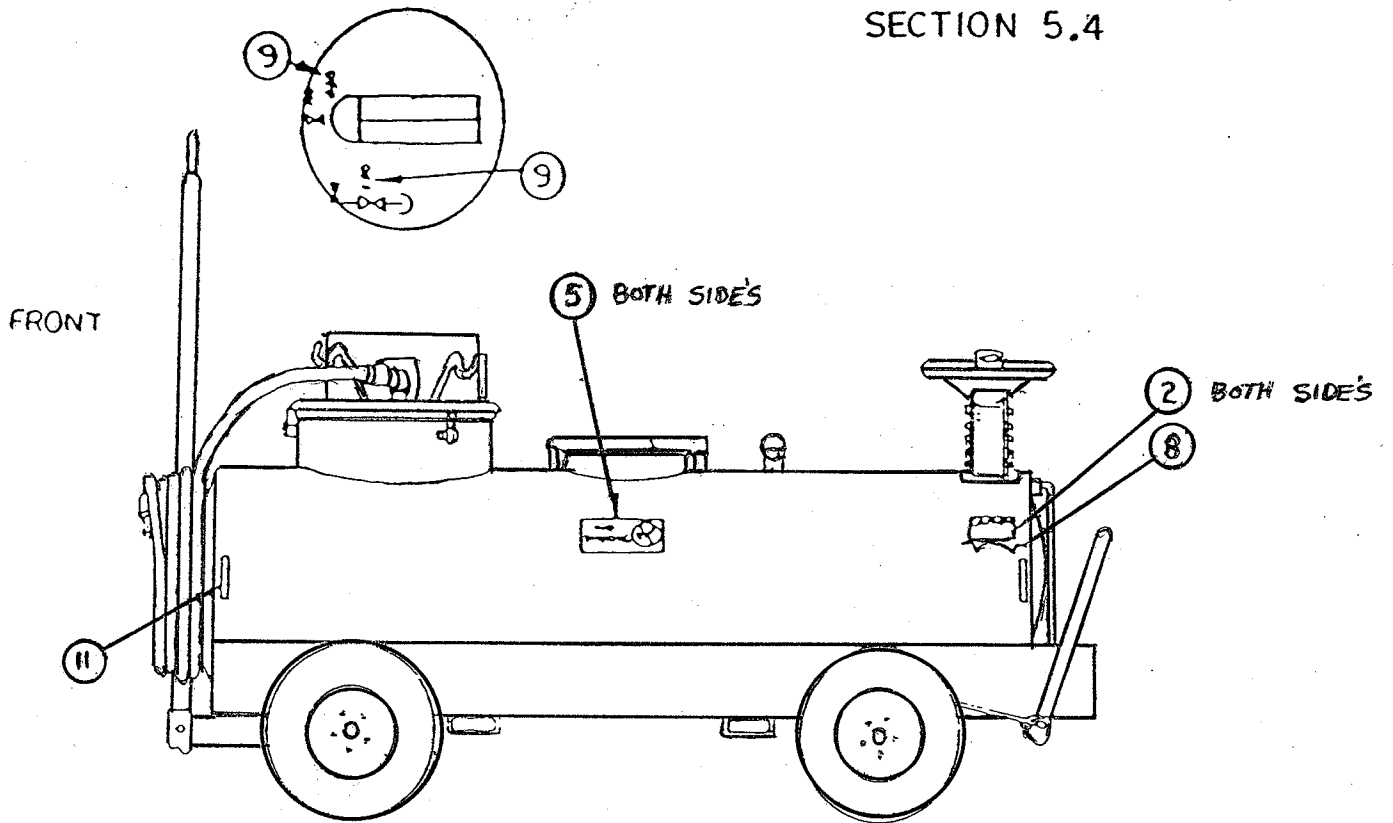
ASSEMBLY NO. 08-1025

MAJOR ASSEMBLY - MANWAY ASSEMBLY

Sub Assy.	Item	Part No.	Quantity	Description	Wt.#
08-1025				Manway Cover Assembly	
	1	07-1039S	1	19-1/2" Cross Arm Sub-Assy	2.5
	2	01-8222S	1	7" Cross Arm	4
	3	01-93455S	1	Spacer	.5
	4	01-86001	1	Cover	5
	5	06-25025	1	Gasket	1
	6	07-2303	1	Gasket Retainer	2
	7	02-1206	1	Nut	.5
	8	02-10013	1	Bolt	1
	9	02-10014	1	Bolt	1
	10	02-1202	2	Nut	.5

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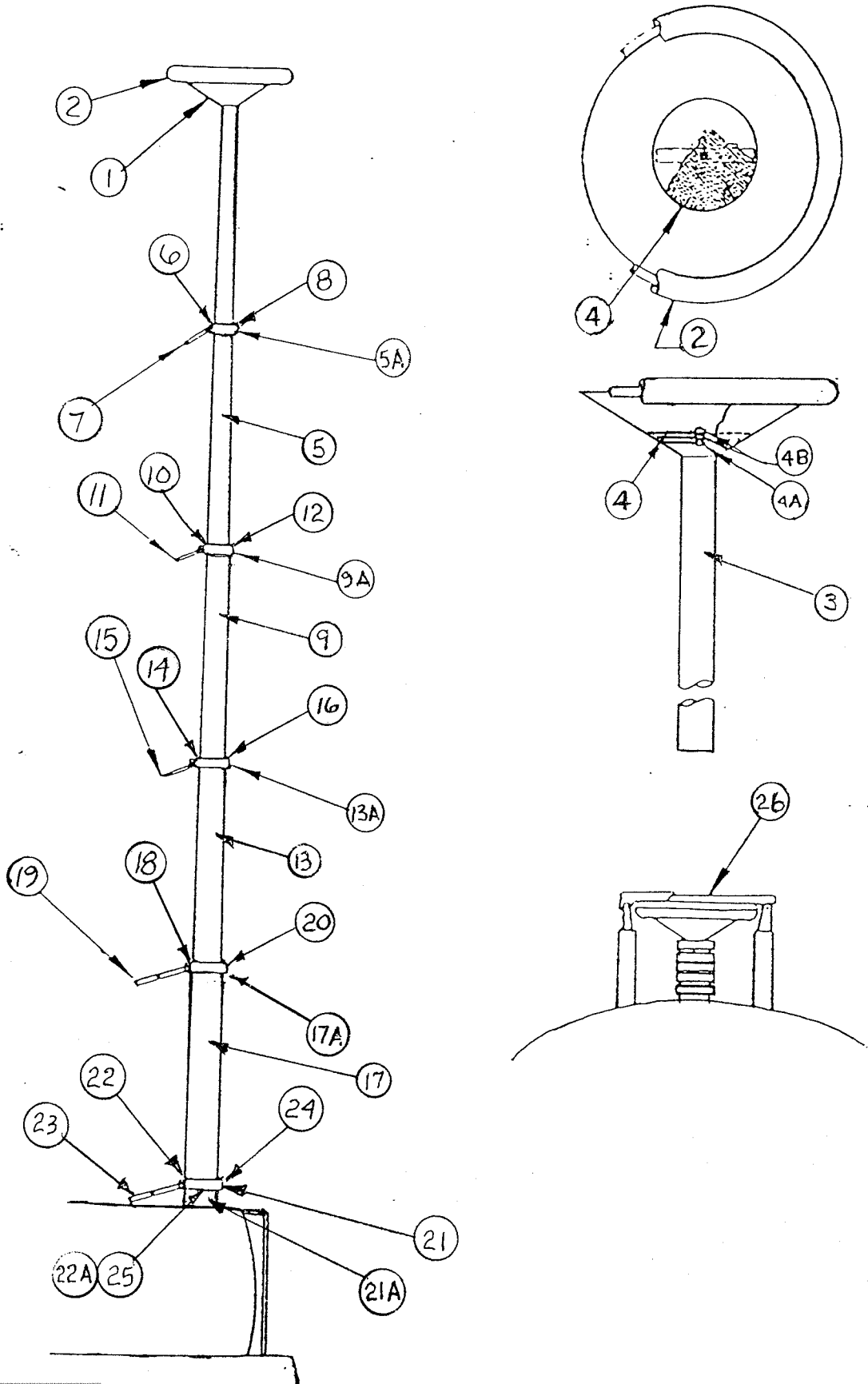
ASSEMBLY NO 10-100070

MAJOR ASSEMBLY - DECAL PACKAGE

Sub Assy.	Item	Part No.	Quantity	Description	Wt.#
10-100070				Decal Assembly	.1
	1	06-1002	1	Caution, Vacuum System	.1
	2	06-1003	1	Caution, Parking Brake	.1
	3	06-1004	2	Warning, Grounding Reels	.1
	4	06-1005	1	Warning, Telescoping Drain	.1
	5	06-1006	2	Danger, No Smoking	.2
	6	06-1007	1	Notice, Read Manual	.1
	7	06-1008	1	Maximum Towing Speed 15MPH	.1
	8	06-1010	1	Off/On, Parking Brake	.1
	9	06-1011	8	Off/On, Drain Valve	.8
	11		8	Reflector Tape	.8

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SECTION 5.5



ASSEMBLY 08-1034U
MAJOR ASSEMBLY - TELESCOPING DRAIN ASSEMBLY

Sub Assy.	Item	Part No.	Quantity	Description	Wt. #
07-10541				Drain Funnel Section Assembly	
	1	01-8250	1	Drain, Top (funnel)	5
	2	06-1022	1	Gasket	.7
	3	01-92402	1	Tubing, 2" OD	
	4	04-1039	1	Screen	.5
	4A	02-10002	1	Bolt, 1/4"	.2
	4B	02-1200	1	Nut, 1/4"	.1
08-1017U				Drain, Telescoping Sect. Assembly, 2-1/2" OD	
	5A	05-10271	1	Clamp, 2"	
	5	01-9242	1	Tubing, 2-1/2" OD	
	6	05-10051	1	WEDGE, 1"x1 1/16"x1 1/4"	.2
	7	05-10181	1	HANDLE, CLAMP	.3
	8	02-1005	1	SCREW, SET	.01
08-1027U				Drain, Telescoping Sect. Assembly, 3" OD	
	9A	05-10281	1	Clamp, 2-1/2" OD	
	9	01-92452	1	Tubing, 3" OD	
	10	05-10021	1	WEDGE, 1"x7/8"x1 9/16"	.3
	11	05-10181	1	HANDLE, CLAMP	.3
	12	02-1005	1	SCREW, SET	.01
08-1028U				Drain, Telescoping Sect. Assembly, 3-1/2" OD	
	13A	05-10291	1	Clamp, 3" OD	
	13	01-9248	1	Tubing, 3-1/2" OD	
	14	05-10031	1	WEDGE, 1"x1 1/16"x1 13/16"	.4
	15	05-10181	1	HANDLE, CLAMP	.3
	16	02-1005	1	SCREW, SET	.01

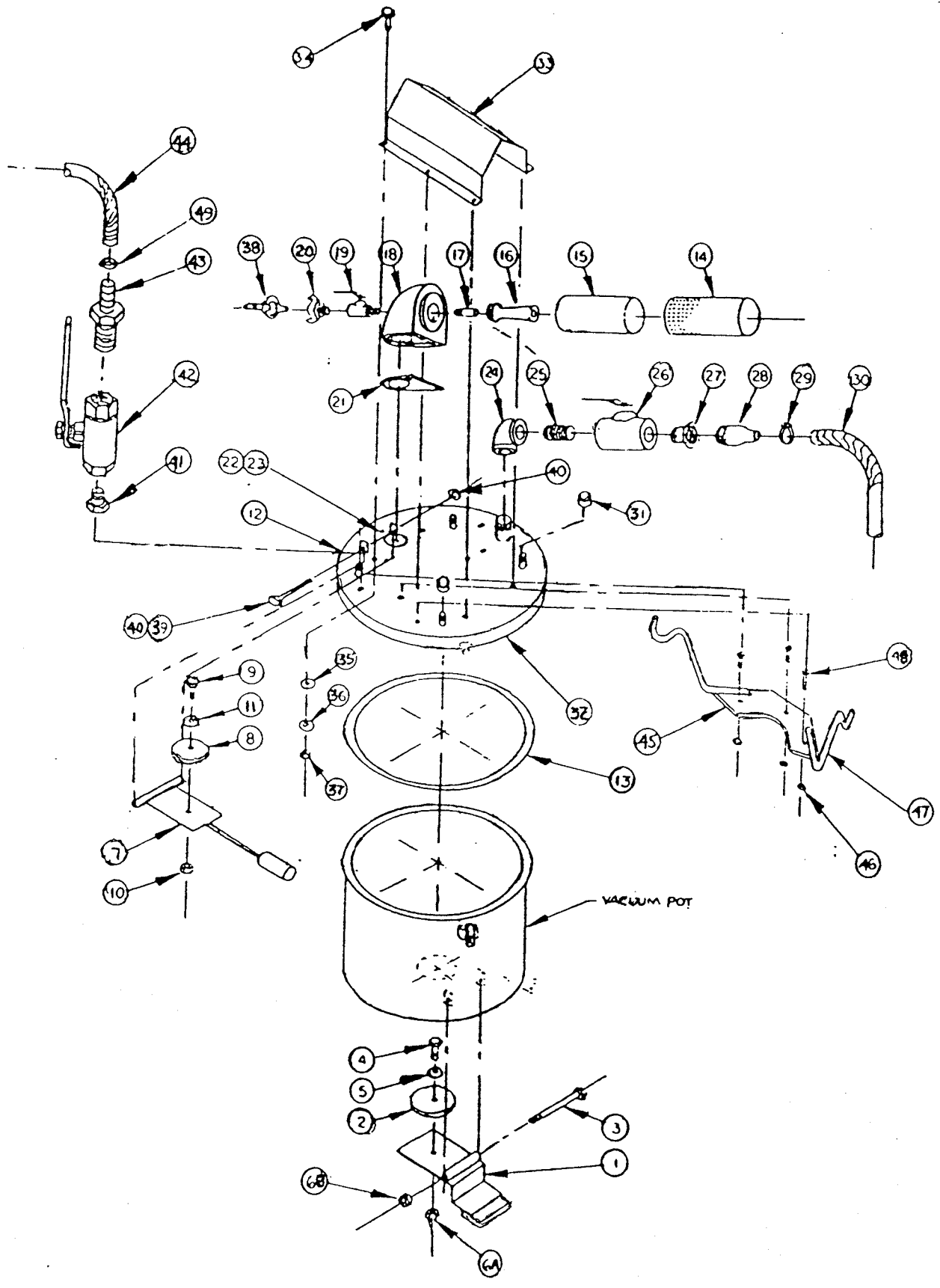
ASSEMBLY 08-1034U CONTINUED

MAJOR ASSEMBLY - TELESCOPING DRAIN ASSEMBLY

07-1014U				Drain, Telescoping Sect. Assembly, 4" OD	
	13A	05-10301	1	Clamp, 3-1/2" OD	
	13	01-9259	1	Tubing, 4" OD	
	14	05-10041	1	WEDGE, 1"x1 1/4"x2 1/8"	.4
	15	05-10181	1	HANDLE, CLAMP	.3
	16	02-1005	1	SCREW, SET	.01
07-1041				Drain, Telescoping Section Assembly, 3-1/2" O.D.	
	17A	05-10301	1	Clamp, 3-1/2" OD	
	17	01-9259	1	Tubing, 4" OD	
	18	05-10041	1	WEDGE, 1"x1 7/32"x2 1/8"	.5
	19	05-10181	1	Handles, Clamp	.3
	20	02-1005	1	SCREW, SET	.01
	22A	04-10562	1	Base Flange	
	25	02-100121	4	MOUNTING BOLTS, 1/4-16x3/4"	.2
	26	08-1026	1	COVER ASSEMBLY	5

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SECTION 5,6



ASSEMBLY NO. 08-0001U

VACUUM SYSTEM ASSEMBLY

Sub Assy.	Item	Part No.	Quantity	Description	Wt.#
08-1000				Drain Stop Assembly	
	1	07-1000	1	Drain Stop Arm	3.5
	2	04-1000	1	Gasket	1.5
	3	02-10016	1	Bolt	.1
	4	02-10002	1	Bolt	.1
	5	02-1100	1	Flatwasher	.1
	6A	02-1201	1	Nut	.1
	6B	02-1200	1	Nut	.1
08-1001				Overflow Stop Assembly	
	7	07-1109	1	Float Sub. Assembly	4
	8	04-1001	1	Gasket	.1
	9	02-10003	1	Bolt	.1
	10	02-1200	1	Nut	.1
	11	02-1100	1	Flatwasher	.1
08-10022				Cover Assembly	
	12	07-1002	1	Lid	5
	13	06-1022	1	Gasket	2.7
08-1003				Nortech Vacuum Head Assy.	
	14	04-1004	1	Exhaust Housing	9.5
	15	04-1005	1	Exhaust Silencer	4.7
	16	04-1006	1	Venturi	2.2

ASSEMBLY NO. 08-0001U (CONTINUED)

VACUUM SYSTEM ASSEMBLY

	17	04-1007	1	Air Jet	2.7
	18	04-1008	1	Venturi Box	2.7
	19	04-1032	1	Valve	5.8
	20	04-1056	1	Coupler	1.7
	21	04-1010	1	Gasket	.1
	22	02-10010	3	Bolt	.1
	23	02-11001	3	Washer	.1
08-1004				Accessories	
	24	03-1001	1	Elbow	2
	25	03-02922S	1	Nipple	.5
	26	04-10321	1	Valve	3
	27	03-1002	1	Hex Bushing	.2
	28	03-1003	1	Nipple	.1
	29	03-10101	1	Hose Clamp	.1
	30	06-10161	1	Hose	15
	31	03-1021	4	Pipe Cap (Optional)	1
	32	07-1019	1	Lid	24
	33	07-1034	1	Cover, Vacuum Generator	8
	34	02-10010	6	Bolt	.1
	35	06-1021	6	Washer	.1
	36	02-1100	6	Washer	.1
	37	02-1200	6	Nuts	.1

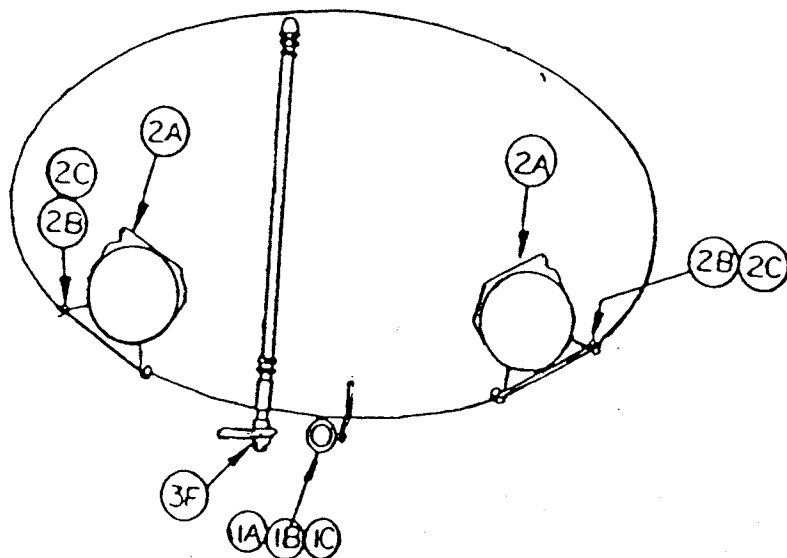
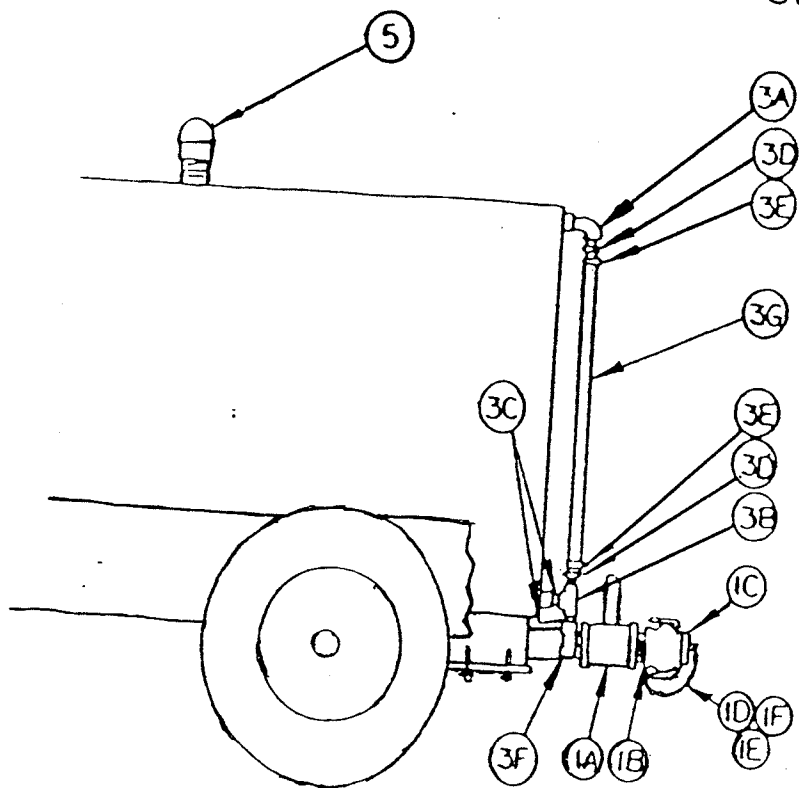
ASSEMBLY NO. 08-0001U (CONTINUED)

VACUUM SYSTEM ASSEMBLY

	38	04-1057	1	Coupler	.5
	39	02-10016	1	Bolt	.5
	40	02-1201	1	Nut	.1
	41	03-10155	4	Bushing (Optional)	.5
	42	04-10320	4	Ball Valve (Optional)	4
	43	03-10091	4	Hose Barb (Optional)	2
	44	06-10185	4	Tubing (Optional)	4
	45	01-9026S	2	Hanger Plate (Optional)	3
	46	02-12014	6	Hex Nuts (Optional)	.5
	47	01-9172S	4	Tubing Hangers (Optional)	2.5
	48	02-100115	6	Bolt (Optional)	1
	49	03-101005	4	Hose Clamp (Optional)	.5

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SECTION 5.7



REAR VIEW

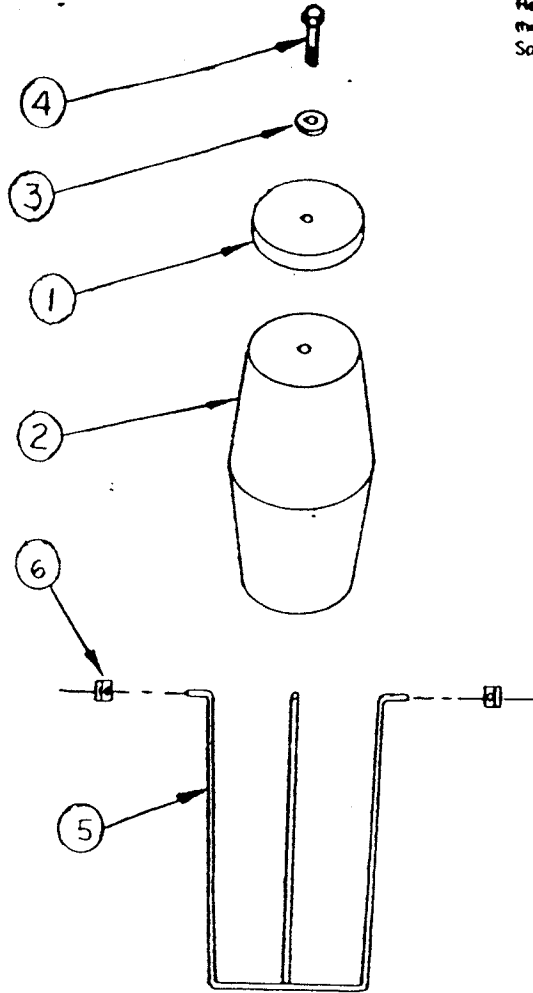
ASSEMBLY NO. 10-100110

MAJOR ASSEMBLY - MISC. FIXTURES

Sub Assy.	Item	Part No.	Quantity	Description	Wt. #
08-1012				Drain Assembly	
	1A	04-10321	1	Ball Valve	6
	1B	04-1033	1	Camlock Adaptor	1.5
	1C	04-10331	1	Camlock Plug	.5
	1D	04-1034	1	Safety Chain	.2
	1E	04-1034	1	S-Hook, Safety Link	.1
	1F	04-1035	1	S-Hook, Safety Link	.1
08-1013				Grounding Reel Assembly	
	2	04-10361	1	Grounding Reel	12
	2A	04-1036	1	Grounding Reel	12
	2B	02-10040	4	Bolts	.3
	2C	02-12041	4	Nuts	.1
08-1014	3			Sight Gauge Assembly	
	3A	03-0017S	2	Elbow	.5
	3B	03-1007	1	Tee	.5
	3C	03-1008	2	Nipple	.5
	3D	03-11130	2	Hose Barb	1
	3E	03-1010	2	Hose Clamp	.1
	3F	04-1032	1	Ball Valve	2.7
	3G	06-2527	1	Tubing	.1
	5	04-1037	1	Vent	3

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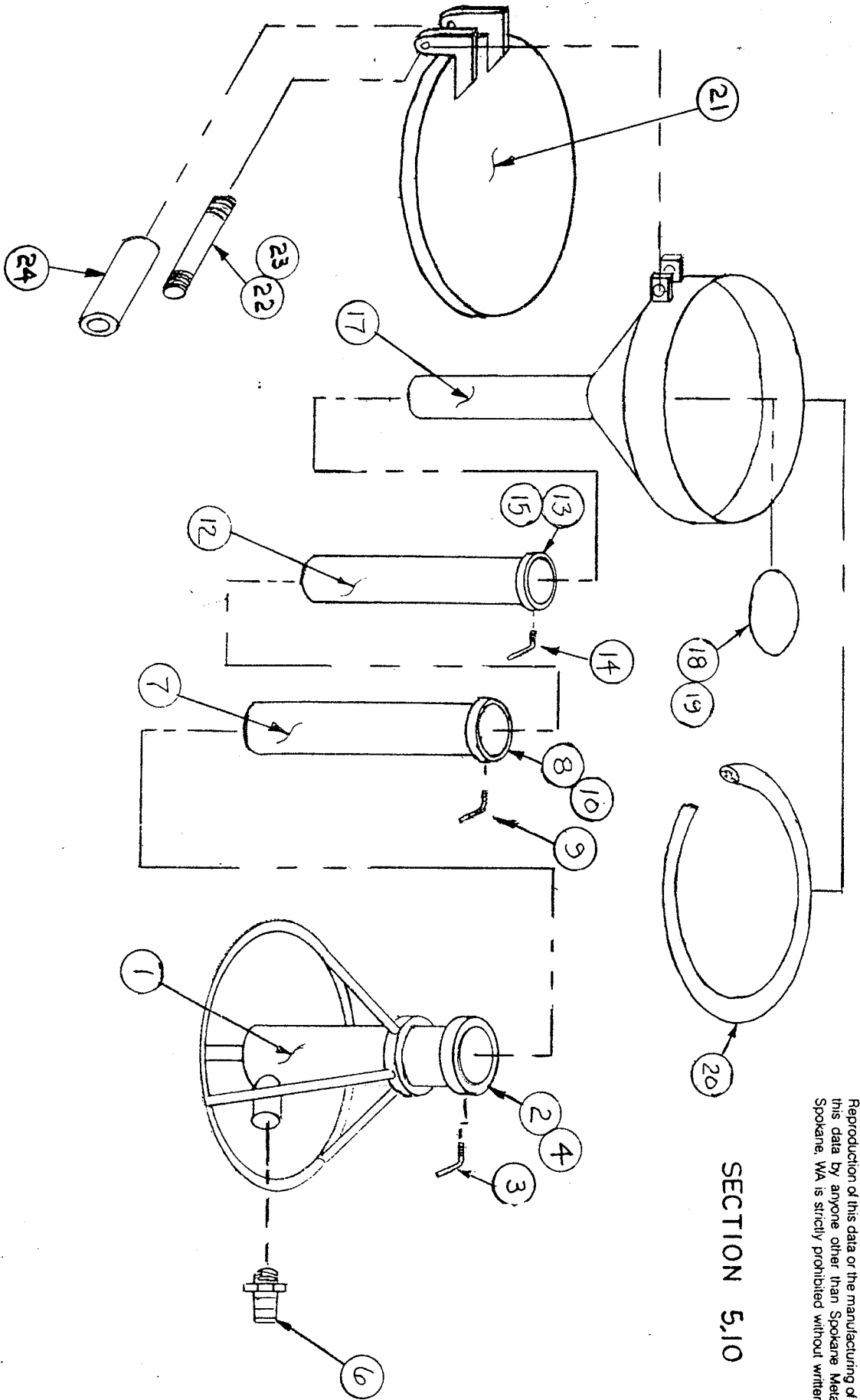


ASSEMBLY NO. 08-1001
 MAJOR ASSEMBLY - VENT, OVERFLOW PREVENTOR

Sub Assy.	Item	Part No.	Quantity	Description	Wt. #
08-1022				Float Assembly	
	1	04-1047	1	Gasket	1
	2	06-1013	1	Float	.5
	3	02-1100	1	Washer	.1
	4	02-10001	1	Bolt	.1
08-1023				Cage Assembly	
	5	07-1032	2	Wire Cage	.9
	6	02-12140	4	Nut	.1

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SECTION 5,10



SECTION 5.10

MAJOR ASSEMBLY - REMOTE DRAIN FUNNEL
ASSEMBLY 07-1110U

Sub Assy.	Item	Part No.	Quantity	Description	Wt. #
07-11103				REMOTE DRAIN FUNNEL, BASE	17
	1	07-1100	1	BASE SECTION FAB S/S	
	2	05-10012	1	CLAMP, BASE	
	3	02-10181	1	SCREW, CLAMP	
	4	05-0037	1	PLASTIC	
07-11104				REMOTE DRAIN FUNNEL, LOWER	2.5
	7	01-92452	1	TUBE, 3" O.D.	
	8	05-10022	1	BASE CLAMP	
	9	02-10181	1	SCREW, CLAMP	
	10	05-0037	1	PLASTIC	
07-11105				REMOTE DRAIN FUNNEL, UPPER	1.75
	12	01-9242	1	TUBE, 2-1/2" O.D.	
	13	05-10032	1	CLAMP, BASE	
	14	02-10015	1	SCREW, CLAMP	
	15	05-0037	1	PLASTIC	
07-11106				REMOTE DRAIN FUNNEL, TOP, FAB	13
	17	01-8250	1	FUNNEL, CAST ALUM	
	18	04-1039	1	DEBRIS SCREEN	
	19	02-1200	1	LOCK NUT	
	20	06-1022	1	NITRILE GASKET	

SECTION 5.10 (CONTINUED)

MAJOR ASSEMBLY - REMOTE DRAIN FUNNEL

ASSEMBLY 07-1110U

07-11107		07-1116		REMOTE FUNNEL LID ASSY	12
	21	01-9007	1	LID FABRICATION	
	22	01-91984S	1	ROD, THREADED	
	23	02-1200	2	LOCK NUTS	
	24	01-9233S	1	PIPE	

PARTS CROSS OVER LISTING

Part #	Description	MATERIAL
02-10013	Bolt, 3/8"-16unc x 3"lg.	T-304SS
02-10014	Bolt, 3/8"-16unc x 3 1/2"lg.	"
02-1202	Nut, 3/8"-16unc,nylon insert	"
02-1206	Nut, 5/8"-18unf,nylon insert	"
02-11131	Washer,Flat 1 1/2"	Zinc Plate
02-12131	Nut 1 1/2"-12unf,nylon insert	"
02-11072	Washer,flat 3/4"	"
02-12071	Nut, 3/4"-16unf,nylon insert	"
02-1300	Pin,cotter 3/16 x 1 1/2"	"
02-1503	Bolt, 1/2"-13unc x 5" gr5	"
02-12041	Nut, 1/2"-13unc,nylon insert	"
02-1502	Bolt, 1/2"-13unc x 1 3/4" gr5	"
02-1304	Pin,hitch 1" Dia x 4 1/2"	"
02-1201	Nut, 5/16"-18unc,nylon insert	"
02-1501	Bolt, 5/16"-18unc x4 1/2"	"
02-12141	Nut,Jam 3/4"-unf	"
02-1505	Bolt, 1/2"-13unc x 4"lg g5	"
02-10012	Bolt, 3/8"-16unc x 2"lg g5	"
02-12021	Nut, 3/8"-16unc,nylon insert	"
02-100231	Nut, 3/8"-20unf,Jam nut	"
02-10002	Bolt, 1/4"-20unc x 1"lg	T-304SS
02-1200	Nut, 1/4"-20unc,nylon insert	"
02-1100	Washer,flat 1/4"	"
02-1500	Screws,flat hd. #10-24unc x 3/8"	"
02-10021	Bolts, 3/8"-16unc x 4 1/2"	"
02-10023	Bolts, 3/8"-16unc x 5	"
02-100016	Bolts, 5/16"-18unc x 6"	"
02-11001	Lockwasher, 1/4"	"
02-10010	Bolt, 1/4"-20unc x 5/8"	"
02-10003	Bolt, 1/4"-20unc x 1"	"
02-10040	Bolt, 1/2"-12unc x 1"	"
02-10041	Nut, 1/2"-12unc,nylon insert	"
02-10001	Bolt, 1/4"-20unc x 1 1/2"	T-304SS
03-1013	Bushing,Oilite # FFB-2428-12	Bronze
03-1014	Bushing,Oilite # AA-1704-15	"
03-1015	Bushing,Oilite # FF-1011-2	"
03-1016	Tie Rod #6072K38	Steel
03-1020	Grease zerk 1/8" x 45 DEG	"
03-1001	Elbow 1 1/2"NPT x 90 DEG	Alum
03-02922s	Nipple 1 1/2"NPT	"
03-1002	Bushing 1 1/2" x 1 1/4 Hex	"
03-1003	King Nipple 1 1/4"	"
03-10101	Hose Clamp, Ideal #6824	T-304SS
03-1021	Caps, pipe 1/2"NPT	"
03-0017s	Elbow, street 1/2"NPT	"
03-1007	Tee, 1/2"NPT	"
03-1008	Nipple,close 1/2"	"
03-11130	King Nipple, 1/2"	Brass
03-1010	Hose Clamp, Ideal #6806	T-304SS

04-1054	Spring, # 9628K5	
04-1063	Brake, dic #17122	
04-1055	Grip #9729K73	
04-2516	Yoke end- 3/8"unf	Steel
04-1050	Hub #mow 1/2"UHI 86429s	"
04-1012	Seal #58846	
04-1013	Bearing #L68149	
04-1015	Cup #L68111	
04-1014	Bearing #L44649	
04-1016	Cup #L44610	
04-1019	Dust cap #46749	
04-10221	Tire,Goodyear #20580x10E	
04-1045	Tube #10"x8"x20"	
04-10201	Tire and Rim #MOW 10520580E45	
04-1021	Lug nut #19374	
04-1040	Lever nut #91038A031	
04-1005	Silencer,Nortech #686	
04-1032	Valve,Nortech #651	
04-1056	Coupler,Nortech #610	
04-1010	Gasket,Nortech #682	
04-10321	Valve,Apollo #10-107-01 1 1/2"NPT	Brass
04-1057	Coupler,Dixon AM7	Steel
04-1033	Camlock-1 1/2"BPPT	Alum
04-10331	Camlock-1 1/2"DP	"
04-1036	Ground reel-AMETEK #ML2930-30	
04-10361	Ground reel-AMETEK #ML2930-31	
04-1032	Valve,Apollo #70 1/2"NPT	Brass
04-1037	Vent,Morrison #155 1 1/2"NPT	Alum
06-10161	Hose, 1 1/4" Goodyear wing craft x 50 ft.	
06-1013	Float,polypropylene #9775K21	

SPOKANE METAL PRODUCTS

Spokane Washington

400 GALLON BOWSER FUEL DRAIN TANK

ONE YEAR LIMITED WARRANTY

Seller warrants its 400 Gallon Bowser Fuel Drain Tank to be free from defects in material and workmanship under the normal use and service for which the unit is intended if, but only if the unit has been properly operated, maintained and stored in accordance with printed directions contained in the product manual. Our obligation under this Warranty shall be limited to the repair or exchange of equipment and parts which may prove defective within one year of the date the unit is put into service but shall in no event extend beyond a date three years from the date the unit is shipped from our plant. All transportation charges on parts returned to us for replacement under this warranty must be returned pre-paid.

This warranty does not extend to damage caused by environmental factors varying from normal design conditions, whether natural or man-made, or to units subjected to misuse, negligence or accident. This warranty likewise does not extend to the unit or any parts thereof which have been repaired or altered improperly or in any way so as to effect adversely its stability or reliability. This warranty does not cover parts or labor required to repair or replace parts whose usefulness is exhausted due to normal operation of the unit.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE NOT SET FORTH IN A WRITING SIGNED BY AN AUTHORIZED REPRESENTATIVE OR SELLER. SELLER SHALL IN NO EVENT BE LIABLE FOR ANY CONSEQUENTIAL LOSS OR DAMAGE RESULTING FROM THE USE OR LOSS OF USE OF THE UNIT.

