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SPOKANE METAL PRODUCTS DIVISION

Spokane Washington

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400 GALLON FUEL BOWSER TECHNICAL MANUAL PARTS, OPERATION AND MAINTENANCE MODEL NUMBER BOW 400-06

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400 GALLON REFUELER BOWSER

TECHNICAL MANUAL PARTS, OPERATION AND MAINTENANCE MODEL NUMBER BOW 400-06

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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 CAUTION: The bowser and vacuum system should never be used inside of an enclosed area. Proper ventilation is required at all times.

2.3 Grounding

2.3.1 To eliminate static sparks, the bowser unit is equipped with two grounding reels and two grounding reciptical connectors. Connect prior to draining or filling operations as described in the operations section.

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 In spection 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, 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 3'11" 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".
- (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".
- (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 loosened 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 the 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

3.6.1 The bowser unit is supplied with two grounding reels and 2 (two) grounding receptical connectors.

3.6.2 Before filling, draining, or vacuuming, the grounding reels must be attached between 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 Drain Screen

3.8.1 A clean out screen is provided between the drain valve and the camlock connector.

3.9 Sample Port

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

3.10 Telescoping Drain Sump

3.10.1 The bowser unit is equipped with a sump. The sump is equipped with a 1/2" drain coupling. Drain the sump prior to cleaning the drain screen.

3.11 Drain Screen

3.11.1 The drain screen is located between the drain valve and the camlock connector.

3.12 Vent Overflow Preventor

3.12.1 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 1-3/4" 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) Inspect wheel bearings at (3) month intervals. Repack and, or replace as needed.
(3) Check tire pressure weekly. Maintain pressure as per tire markings.

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 a stainless steel housing 4 1/2" in diameter permanently attached to the tank and 4 (four) aluminum tube sections.

4.3.2 The stainless tube and the four aluminum tubes are equipped with a clamping assembly.

4.3.4 Each aluminum tube is 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 telescoping assembly is accomplished by rotating the four sections 180 degrees from the normal position and gently lifting each section so that the crimped edge on the tube is aligned with the slot on 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) tie down 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.

4.5 Grounding

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.

4.5.3 There are 2 (two) grounding receptical connectors located on the rear end of the skids. Clean the sleeve with a 1/4" diameter wire brush by reaming.

4.6 Sight Gauge

4.6.1 The sight gauge should be inspected monthly for loose connections and weathering of clear tubing.

4.7 Drain Screen

4.7.1 Drain strainer is located between the drain valve and the female camlock connector. See SECTION 5.7 ITEMS 1A, 1B and ITEM 4.

4.7.2 Maintenance should consist of inspection and cleaning monthly.

4.7.3 Removal:

- (1) Shut off the Drain Valve prior to servicing the Drain Screen (see SECTION 5.7 ITEM 1A).
- (2) Prior to servicing the Drain Screen ensure that fuel will not drain back when unthreading the camlock adapter.
- (3) Remove, clean or replace as needed.
- (4) Re-install and re-assemble in reverse.

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 steer 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 up-right position	Broken or stretched spring see section 5.2.1 Item #26	Replace as needed
Parking Brake does work	Need adjustment	Adjust as per instructions in section 4.1.0. Replace as needed
	Needs Repairing see section 5.2.3	
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

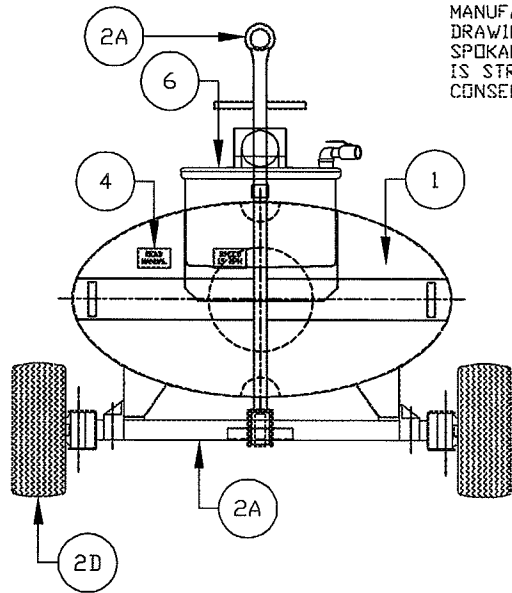
<u>SYMPTOM</u>	<u>PROBABLE CAUSE</u>	<u>PROBABLE CORRECTIONS</u>
Fuel misting is occurring through vacuum generator	Bowser tank is to full	Empty main bowser tank
	Overflow stop gasket needs replacing or adjusting, see section 3.5.0 and 5.6	Replace or adjust as needed
	Float on Vacuum shutoff is bent, see section 5.6	Fix or repair as needed
Telescoping Drain won't stay up	Loose clamp handles	Tighten handles a little tighter
Telescoping Drain is over flowing	Bowser tank is full	Empty main bowser tank
	Clogged drain screen see section 4.7 or 5.5 Item 4	Remove and clean as required
Fuel Drains out Vent	Overflow vent preventer is stuck in the open condition see section 4.8	Remove and clean as required

5.0 REPLACEMENT PARTS

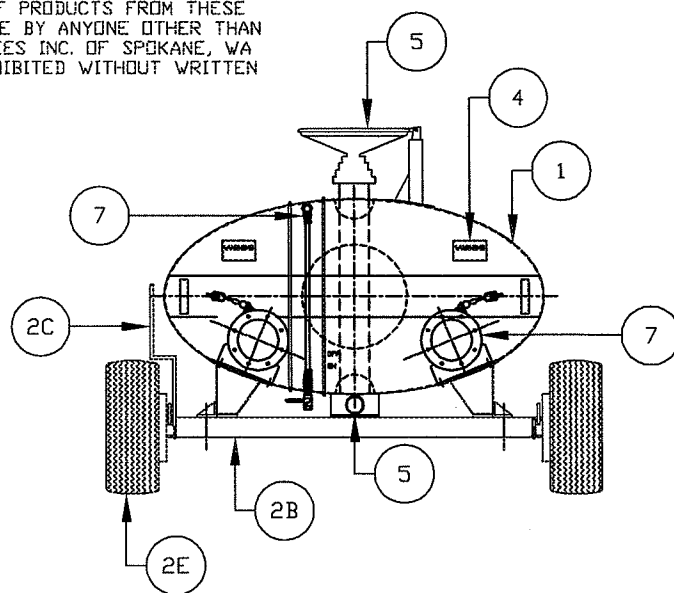
This section provides information for identification of parts for ordering. To order, it is important to have the Model Number, Subassembly Number, Part Number and Description. Parts may be ordered by calling or writing to:

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

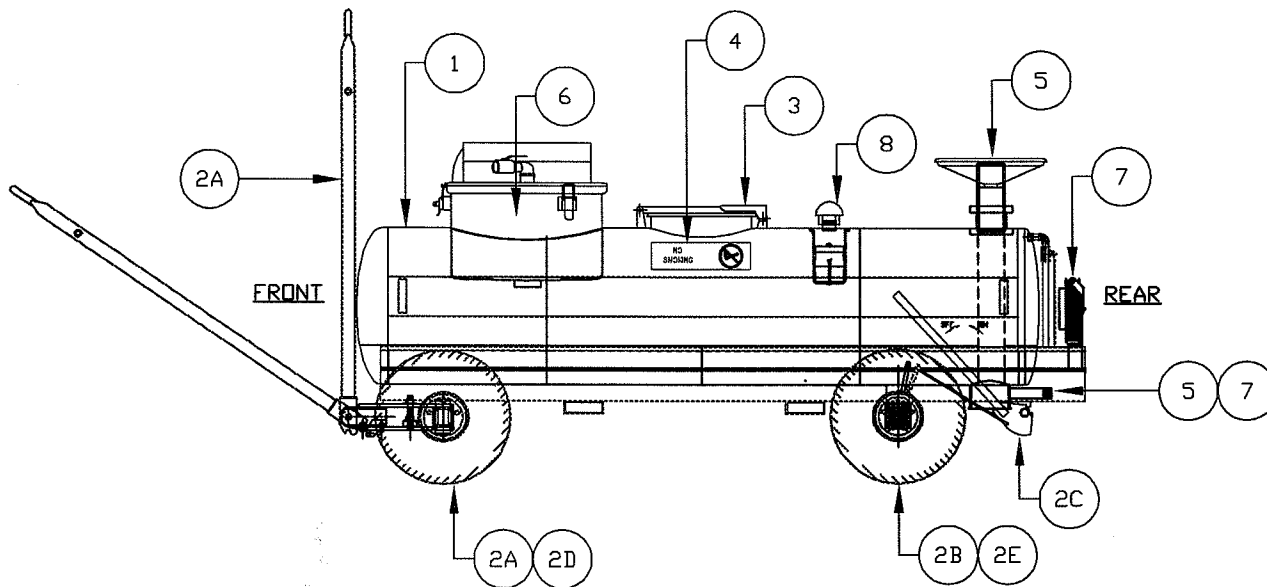
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FRONT VIEW

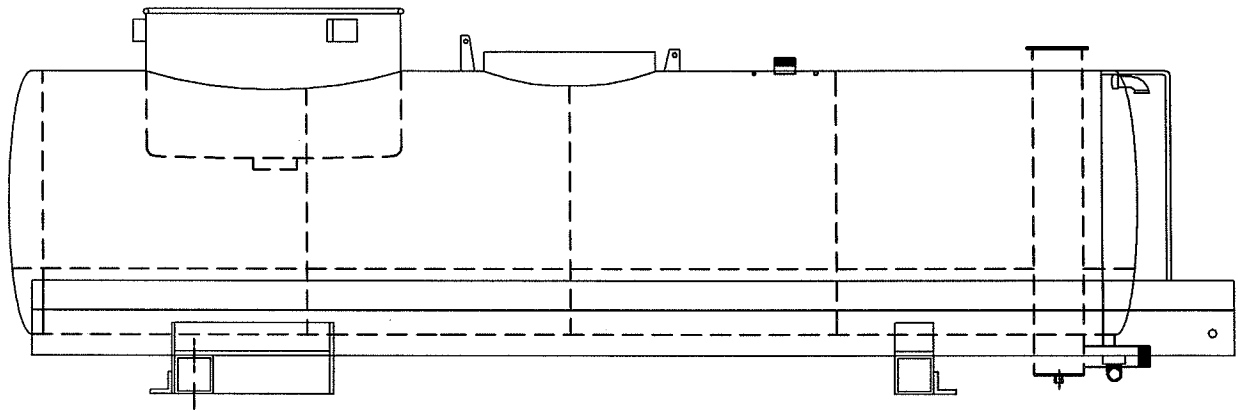


REAR VIEW



<u>ITEM No.</u>	<u>ASSEMBLY</u>	<u>SECTION</u>
1	Main Tank Assembly	5.1
2A	Axle, Front	5.2.1
2B	Axle, Rear	5.2.2
2C	Brake, Parking	5.2.3
2D	Wheel Assembly, Front	5.2.4
2E	Wheel Assembly, Rear	5.2.5
3	Manway Assembly	5.3.1
4	Decal Package	5.4
5	Telescoping Funnel/Drain	5.5
6	Vacuum Assembly	5.6
7	Miscellaneous Fixtures	5.7
8	Vent Overflow Preventor	5.8

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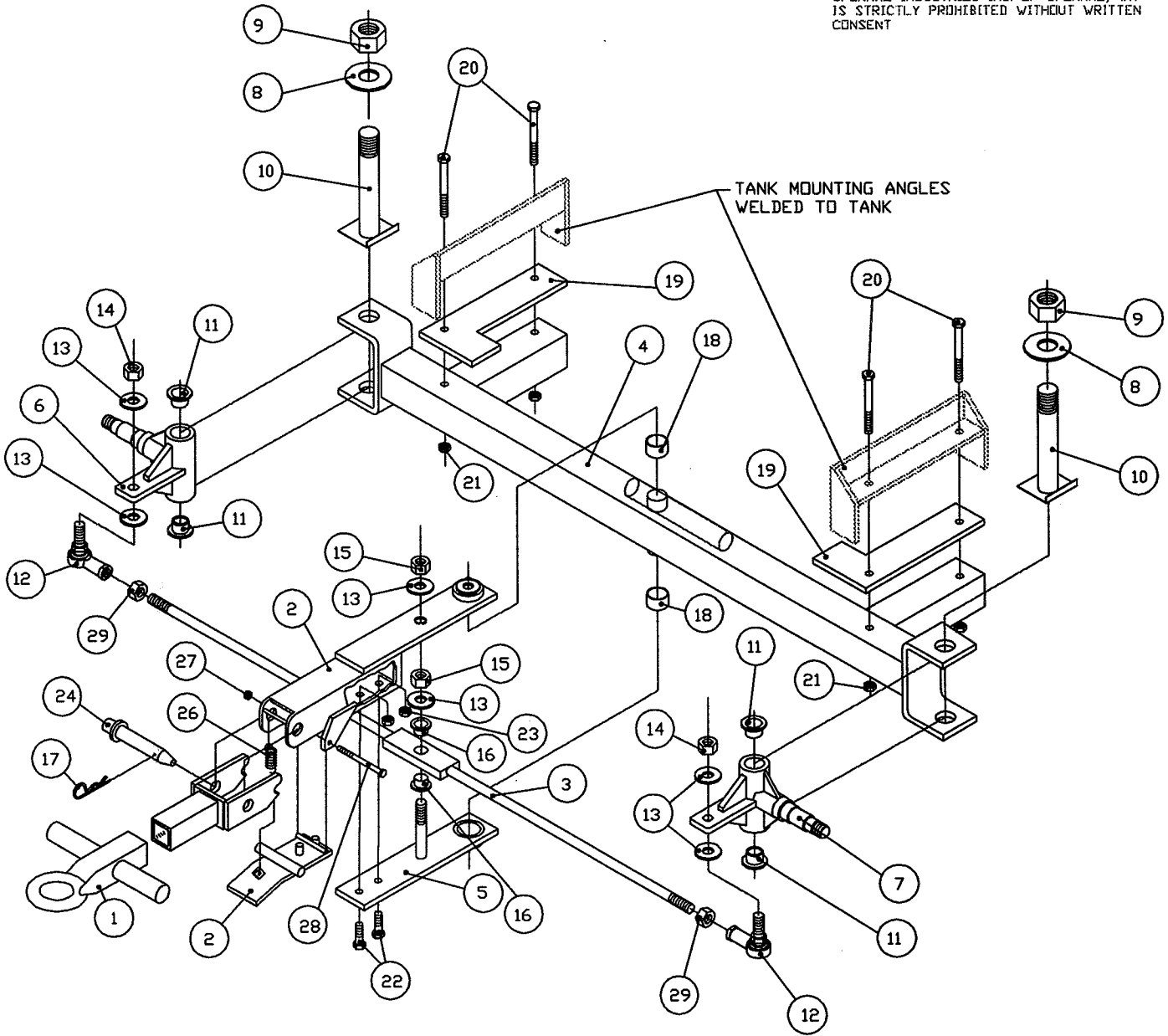


ASSEMBLY NO. 08-10009
 MAJOR ASSEMBLY-TANK WELDMENT

<u>Sub Assy</u>	<u>Item</u>	<u>Part No.</u>	<u>Quantity</u>	<u>Description</u>	<u>WT.#</u>
	1	SMP-18450	1	Stainless Steel Tank Weldment, 400 Gallon Capacity Series BOW 400-06	687#

SECTION 5.2.1
UNDERCARRIAGE, FRONT

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ASSEMBLY NO. 08-1018
MAJOR ASSEMBLY- AXLE ASSEMBLY

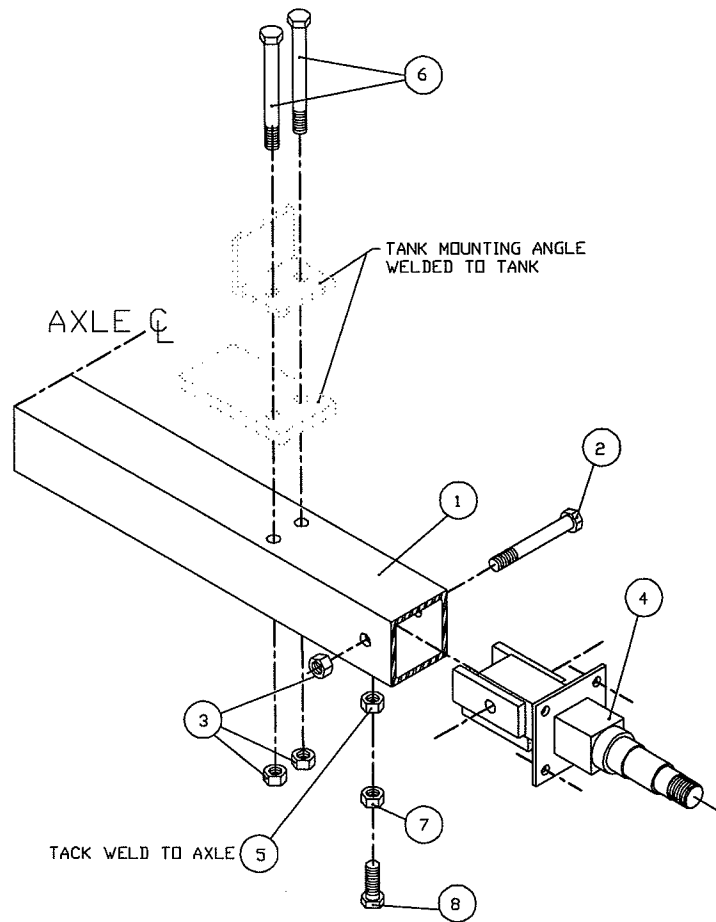
Sub Assy	Item	Part No.	Quantity	Description	WT.#
08-1018				Axle Assembly, Front	
	1	07-1103	1	Tow Bar	23
	2	07-1104	1	Arm, Turning	16
	3	07-1005	1	Tie Rod	7.3
	4	07-11071	1	Axle, Front	53

ASSEMBLY NO. 08-1018
 MAJOR ASSEMBLY- AXLE ASSEMBLY (CONTINUED)

<u>Sub Assy</u>	<u>Item</u>	<u>Part No.</u>	<u>Quantity</u>	<u>Description</u>	<u>WT.#</u>
	5	07-1016	1	Steering Arm, Lower Plate	6
	6	05-1009	1	Sleeve, King Pin, Right	24
	7	05-1009	1	Sleeve, King Pin, Left	24
	8	02-11131	2	Washer, King Pin	1
	9	02-12131	2	Nut, King Pin	1
	10	07-10105	2	King Pin Assembly	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	2
	14	02-12071	2	Nuts, Tie Rod Ends	1
	15	02-12071	1	Nut, Tie Rod Pivot	1
	16	03-1015	2	Bushing, Tie Rod Pivot	1
	17	02-1300	2	Cotter Pin	1
	18	03-1014	2	Bushing, Axle Pivot	1
	19	06-1023	2	Mounting Pad, Tank	4
	20	02-1503	4	Bolts, Tank Mounting	1
	21	02-12041	4	Nuts, Tank Mounting	1
	22	02-1502	2	Bolts, Turning Arm Clamp	1
	23	02-12041	2	Nuts, Turning Arm Clamp	1
	24	02-1304	1	Hitch Pin	2
	25	07-1020	1	Tow Latch	3
	26	04-1054	1	Spring, Tow Latch	1
	27	02-1201	1	Nut, Tow Latch	1
	28	02-1501	1	Bolt, Tow Latch	1
	29	02-12141	2	Hex Nut, Tie Rod	1

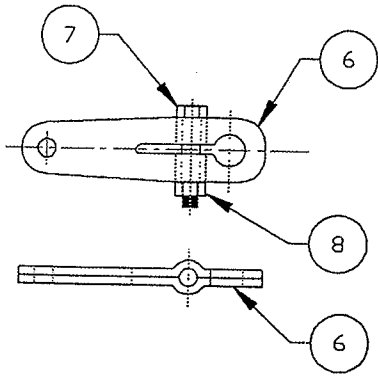
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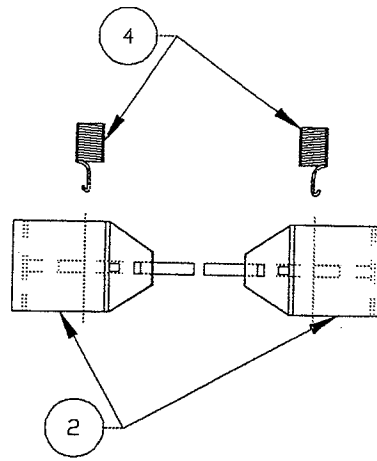


ASSEMBLY No. 08-10102R
 MAJOR ASSEMBLY- AXLE ASSEMBLY

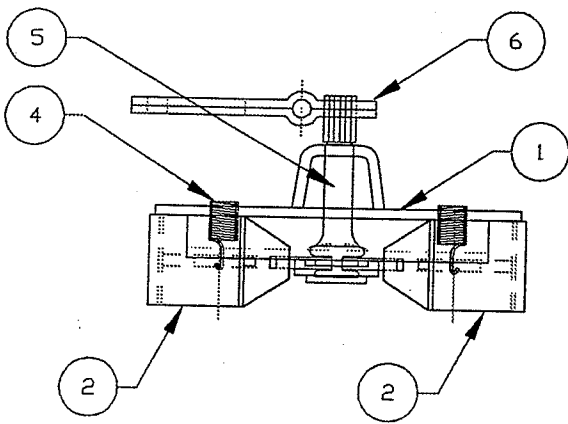
Sub Assy.	Item	Part No.	Quantity	Description	Wt. #'s
08-10102R			1	Axle, Assembly, Rear	60#
	1	05-1023	1	Axle,Rear, Special	40.0
	2	02-1505	2	Bolts, Mounting Spindle	.6
	3	02-12041	2	Nuts, Mounting Spindle	.5
	4	07-1010R	2	Spindle, Rear	17.0
	5	02-12035	1	Nut, Jam	.1
	6	02-1503	4	Bolt, Mounting Angles	1.3
	7	02-1203	4	Nuts, Mounting	.5
	8	02-10041	2	Bolt, Mounting Spindle	.5



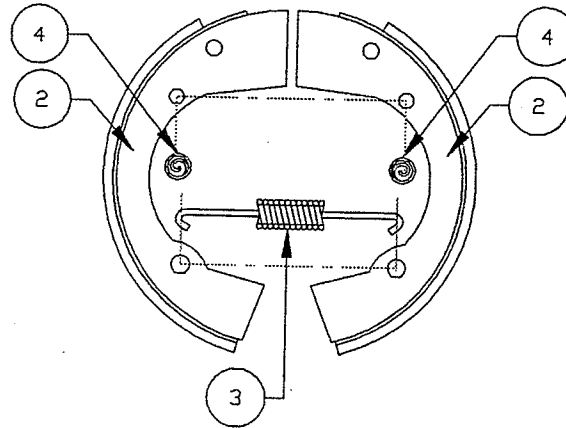
CAM LEVER OPERATOR DETAIL



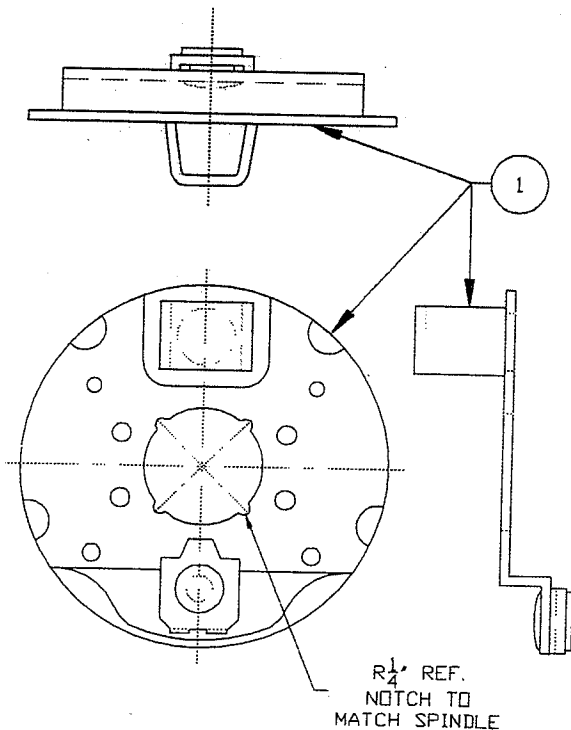
BRAKE SHOE / HOLD DOWN SPRING DETAIL



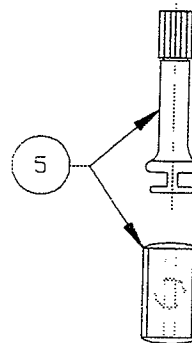
BRAKE/CAM/LEVER/BACKING PLATE ASSY



BRAKE SHOE / SPRING ORIENTATION
RETURN SPRING



BACKING PLATE DETAIL

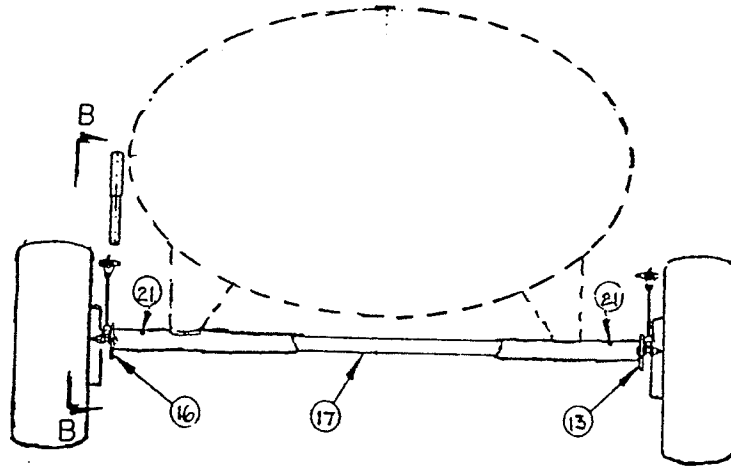


CAM DETAIL

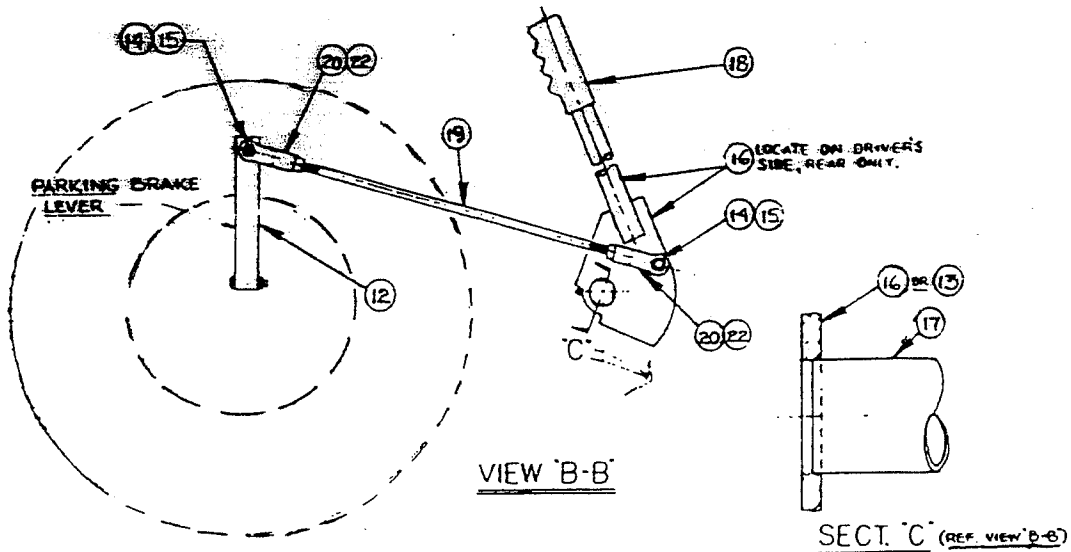
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REAR VIEW
MTS



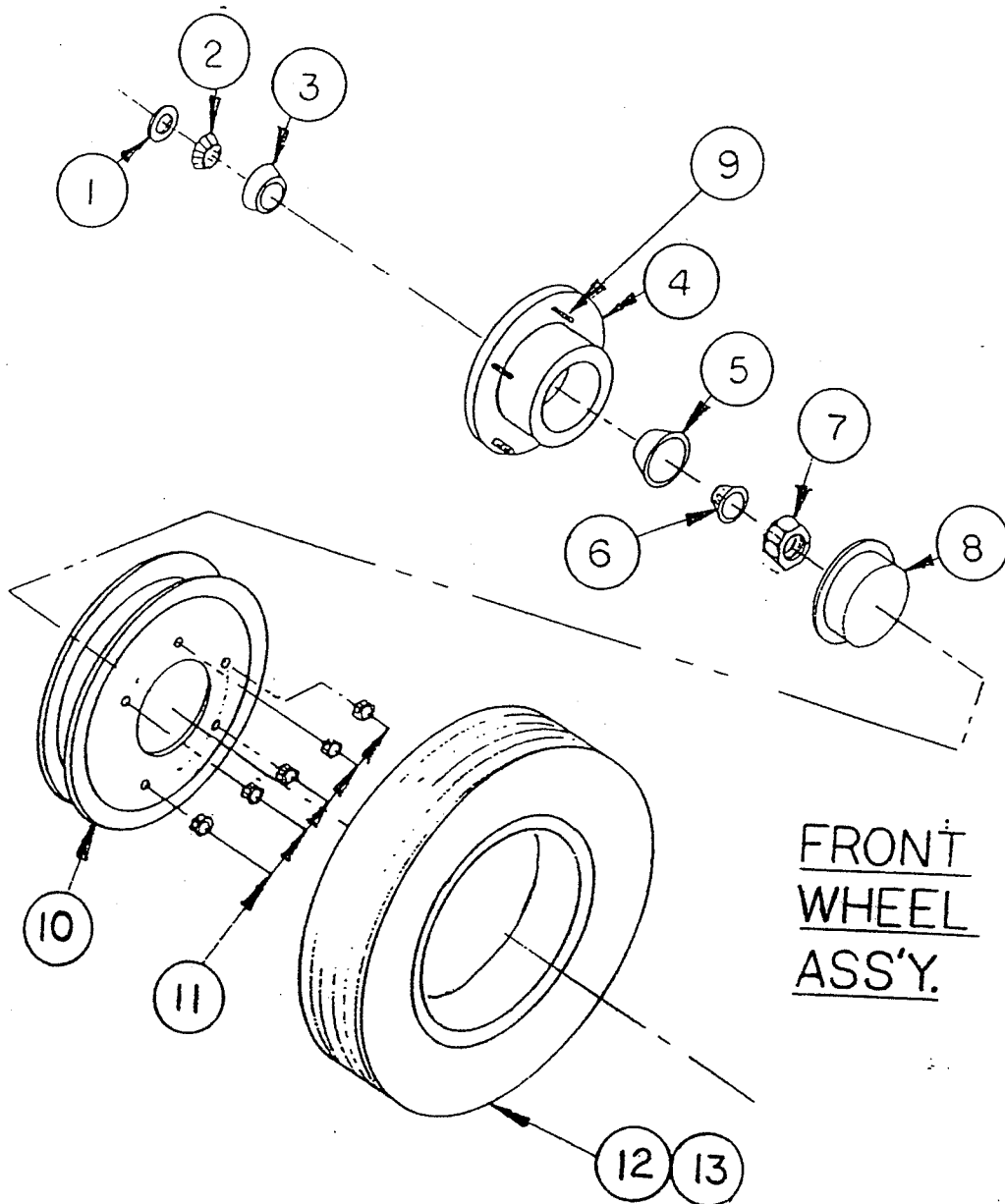
14 B

ASSEMBLY No. 10-100030R
MAJOR ASSEMBLY - BRAKE, PARKING

Sub Assy.	Item	Part No.	Quantity	Description	Wt. #
08-1007R		04-1063		Brake Assembly (2 Req.)	4.4
	1	04-1064R	1	Backing Plate Assembly	1.4
	2	04-1065R	2	Brake Shoe Assembly	1.6
	3	04-10265R	1	Return Spring	.04
	4	04-1026R	2	Hold Down Spring	.06
	5	04-1028R	1	Cam	.5
	6	04-1030R	1	Cam Lever	.7
	7	02-10017R	1	Cam Bolt	.07
	8	02-12012	1	Cam Nut	.03
	9				
	10				
	11				
	12				
08-1008				Brake Linkage Assembly	14.8
	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, Fab'd Sub Assy	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	.5

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SECTION 5.2.4



FRONT
WHEEL
ASS'Y.

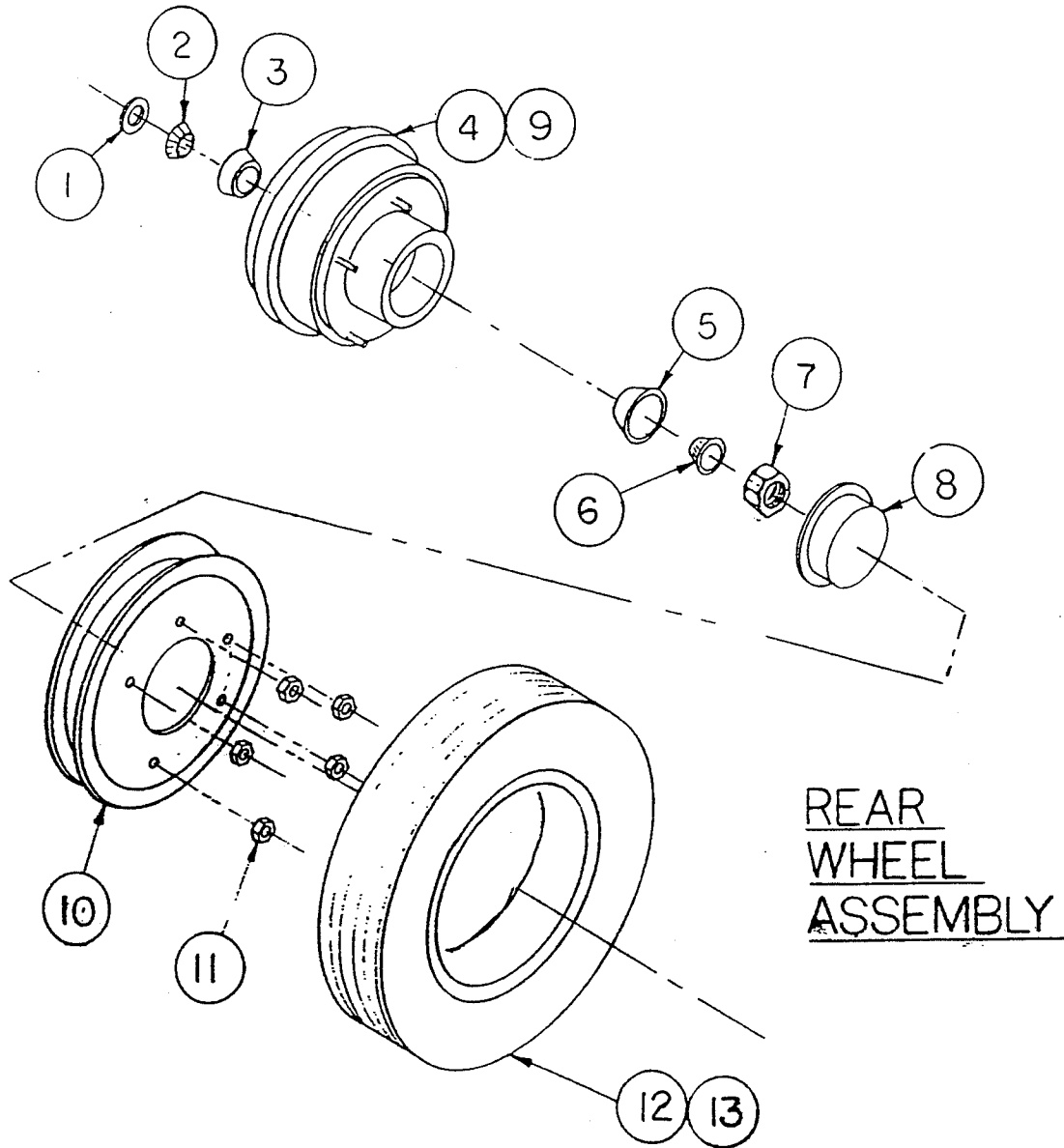
ASSEMBLY NO. 10-100042

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

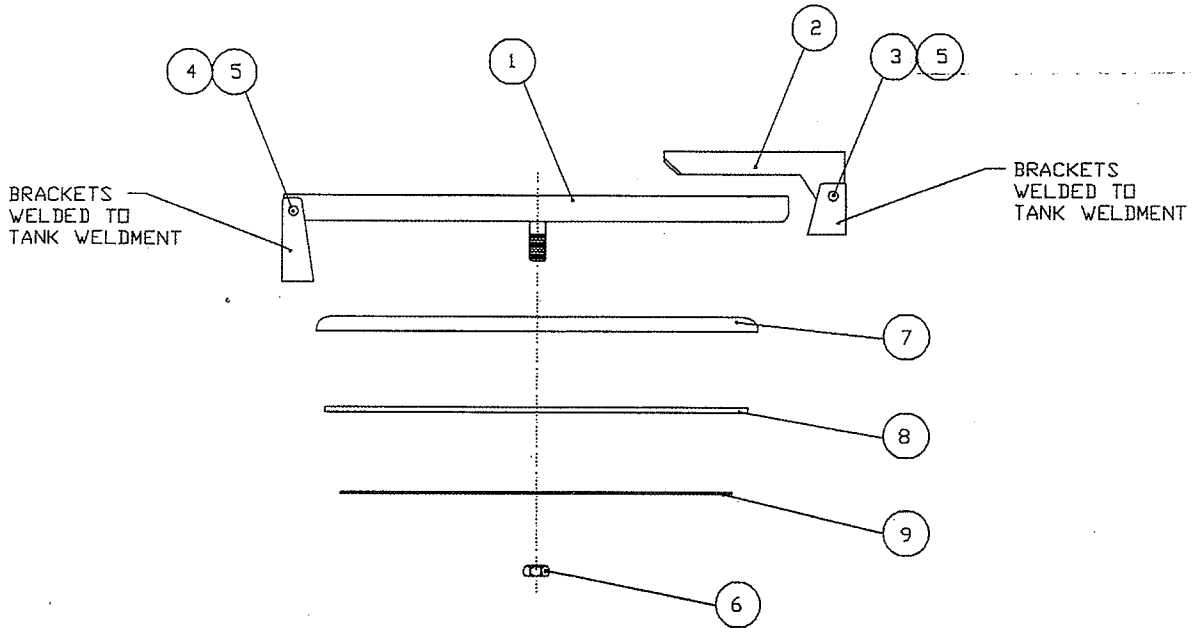


ASSEMBLY NO. 10-100052R

MAJOR ASSEMBLY - WHEEL ASSEMBLY, REAR

Sub Assy.	Item	Part No.	Quantity	Description	Wt.#
08-10111R		04-1062R		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	05-1008R	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		04-10201		Tire/Wheel/Tube Assembly (2 Reqd)	
	10	04-1020	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. 10-100060

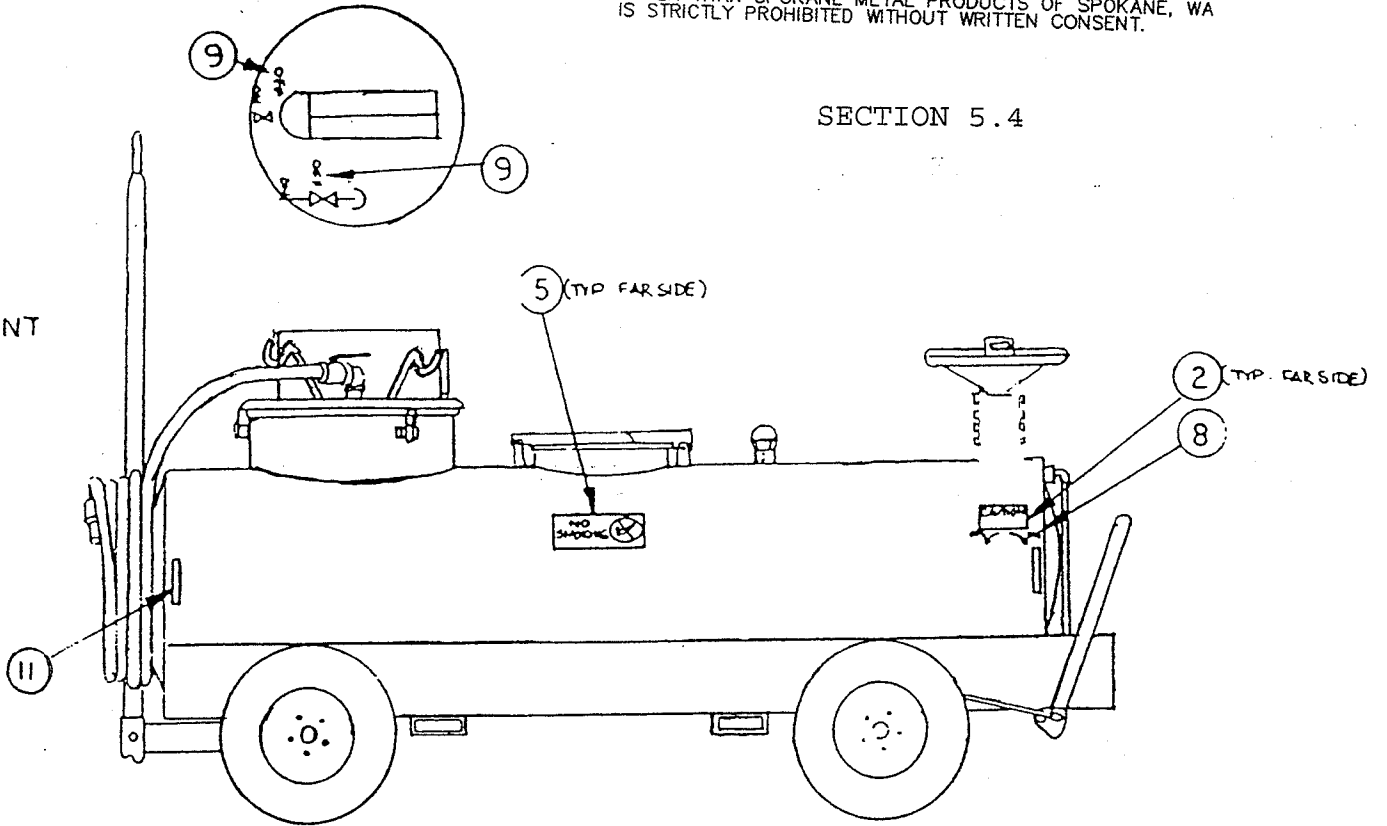
MAJOR ASSEMBLY - MANWAY ASSEMBLY

Sub Assy.	Item	Part No.	Quantity	Description	Wt.#
07-2102				Manway Cover Assembly	
	1	07-1039S	1	20" Cross Arm S/S Sub-Assy	2.5
	2	01-8222S	1	7" Cross Arm S/S	1
	3	02-10014	1	Bolt, 3/8"-UNC S/S	.5
	4	02-10013	1	Bolt, 3/8"-UNC S/S	.4
	5	02-1202	2	Nut, Nylon Lock, 3/8-UNC S/S	.1
	6	02-1206	1	Nut, Nylon Lock, 5/8"-NF S/S	.2
01-86001	7	01-86001	1	Cover, Manway Lid S/S	6
06-25025	8	06-25025	1	Gasket, Manway, Buna-N	1
	9	07-2303	1	Gasket Retainer, Alum	1

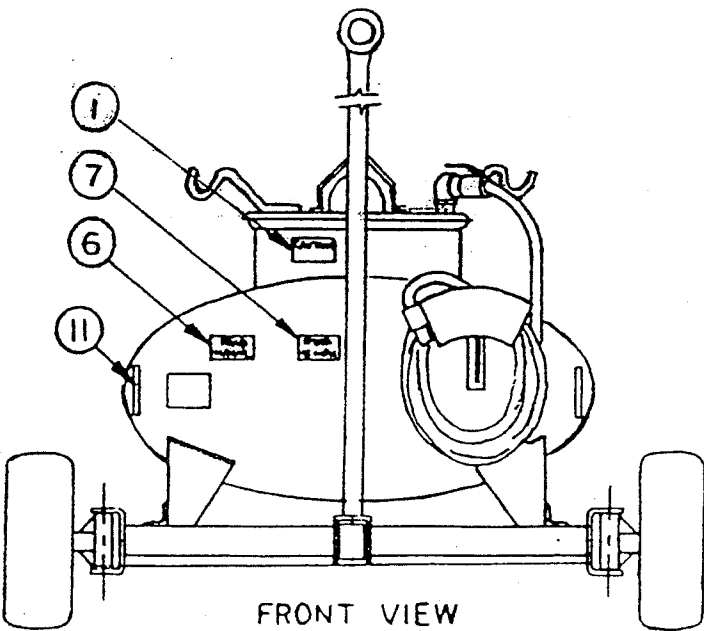
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SECTION 5.4

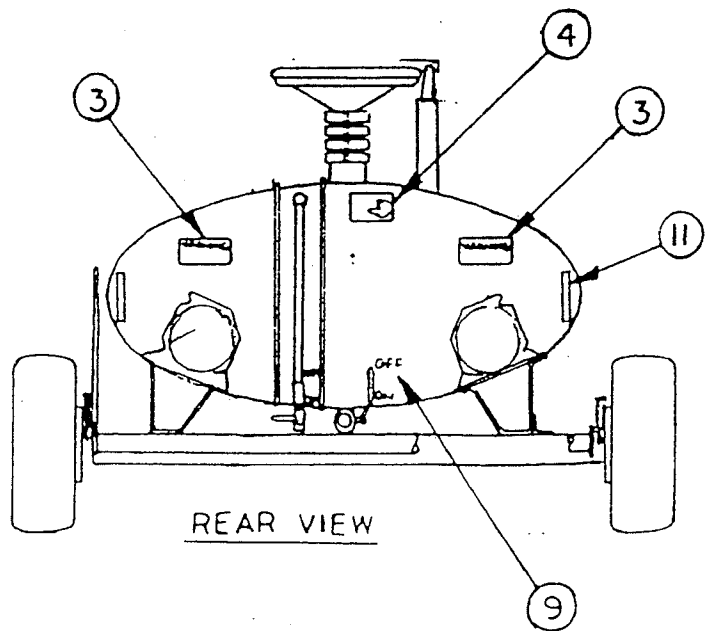
FRONT



FRONT VIEW



REAR VIEW



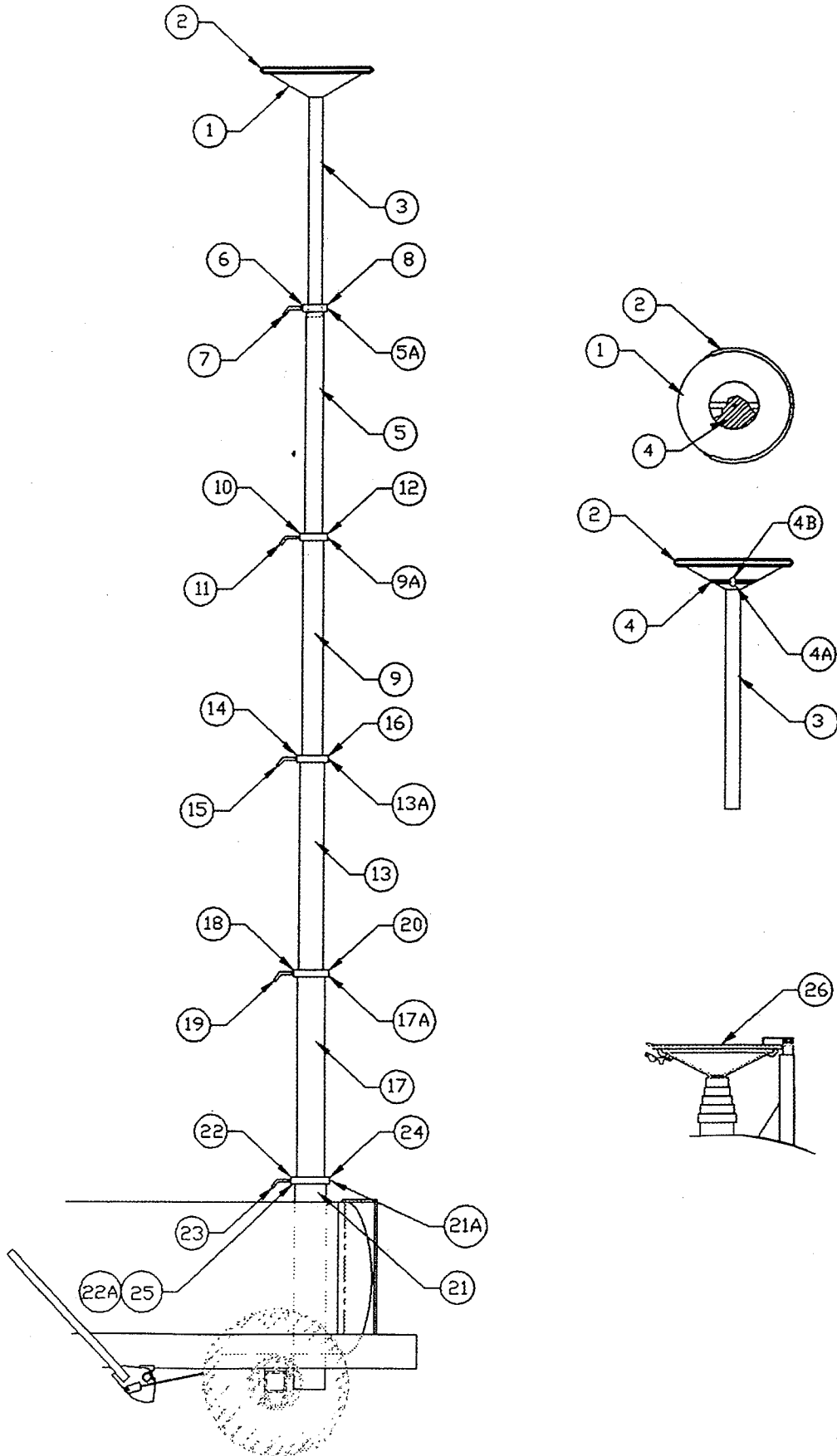
ASSEMBLY NO 10-100070

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

* = ITEMS NOT SHOWN

SECTION 5.5



ASSEMBLY NO. 08-1034U

TELESCOPING DRAIN ASSEMBLY

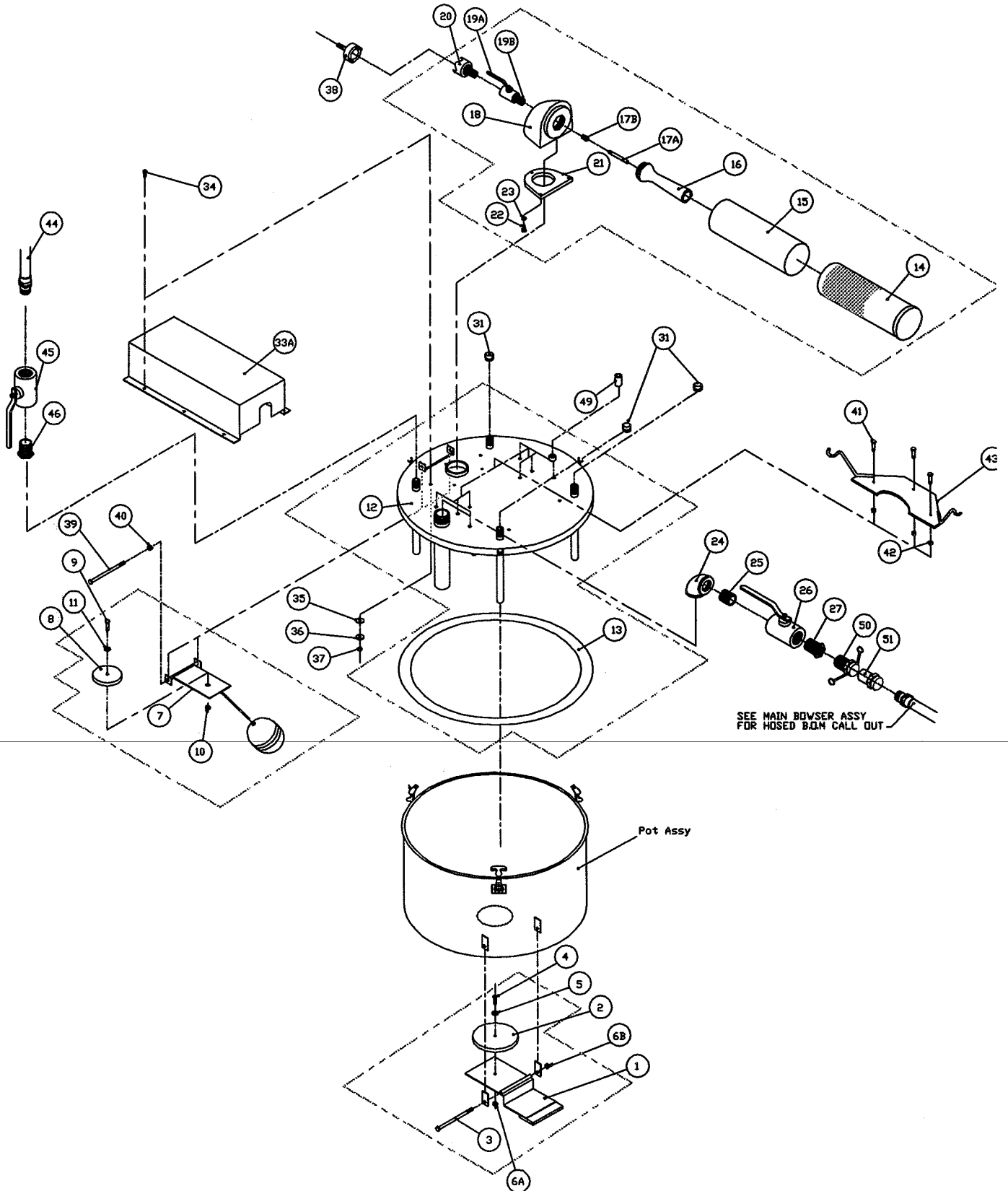
Sub Assy.	Item	Part No.	Quantity	Description	Wt.#
07-10541				Drain Funnel Section Assembly	
	1	01-8250	1	Drain, Top (Funnel)	5
	2	06-1022	1	Gasket	.7
	3	01-92402	1	Tubing, 2" OD	1.5
	4	04-1039	1	Screen	.5
	4A	02-10002	1	Bolt, 1 1/4"	.2
	4B	02-1200	1	Nut, 1 1/4"	.1
08-1017U				Drain, Telescoping Section Assembly, 2 1/2" OD	
	5A	05-10271	1	Clamp, 2"	2
	5	01-9242	1	Tubing, 2 1/2" OD	1.5
	6	05-10051	1	Wedge, 1"x 11/16" x 1 1/4"	.3
	7	05-10181	1	Handle, Clamp	.3
	8	02-1005	1	Screw, Set	.01
08-1027U				Drain, Telescoping Section Assembly, 3" OD	
	9A	05-10281	1	Clamp, 2 1/2" OD	2.5
	9	01-92452	1	Tubing, 3" OD	1.7
	10	05-10021	1	Wedge, 1"x 7/8" x 1 9/16"	.3
	11	05-10181	1	Handle, Clamp	.3
	12	02-1005	1	Screw, Set	.01
08-1028U				Drain, Telescoping Section Assembly, 3 1/2" OD	
	13A	05-10291	1	Clamp, 3" OD	2.5
	13	01-9248	1	Tubing, 3 1/2" OD	1.9

TELESCOPING DRAIN ASSEMBLY

Sub Assy.	Item	Part No.	Quantity	Description	Wt.#
08-1028U Continued				Drain, Telescoping Section Assembly, 3 1/2" OD	
	14	05-10031	1	Wedge, 1"x1 1/16"x 1 13/16"	.3
	15	05-10181	1	Handle, Clamp	.3
	16	02-1005	1	Screw, Set	.01
07-1014U				Drain, Telescoping Section Assembly, 4" OD	
	17A	05-10301	1	Clamp, 3 1/2" OD	2.8
	17	01-9259	1	Tubing, 4" OD	2.1
	18	05-10041	1	Wedge, 1"x1 7/32"x 2 1/8"	.3
	19	05-10181	1	Handle, Clamp	.3
	20	02-1005	1	Screw, Set	.01
07-1041U				Drain, Telescoping Section Assembly, 4 1/2" OD	
	21A	05-10302	1	Base Clamp, 4" OD	3.0
	21	01-92565S	1	Tubing, 4 1/2" OD	2.3
	22	05-10051	1	Wedge, 1" x 1" x 2 1/2"	.3
	22A	04-10561	1	Flange, Base	.1
	23	05-10181	1	Handle, Clamp	.3
	24	02-1005	1	Screw, Set	.01
	25	02-100121	1	Mount Bolts, 1/4"-16x3/4"	.2
	26	08-1026A	1	Cover Assembly	5

SECTION 5.6
VACUUM ASSEMBLY

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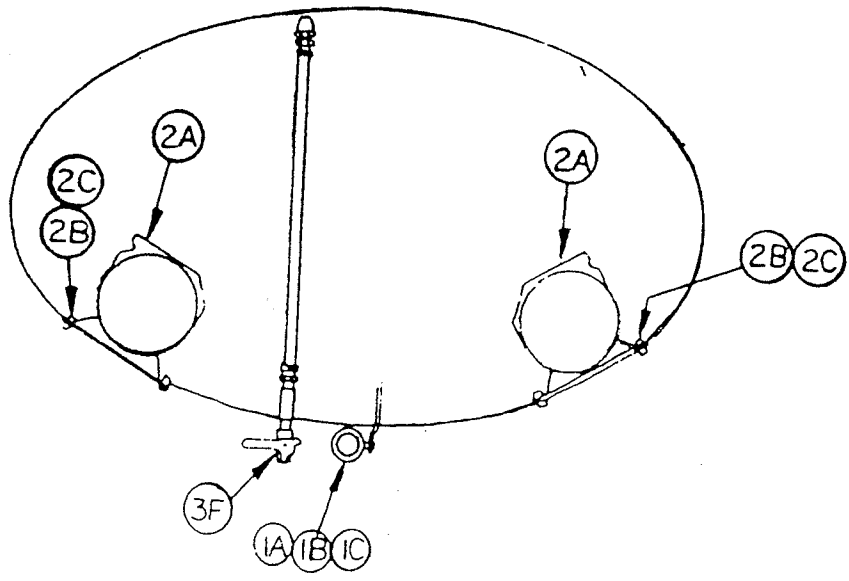
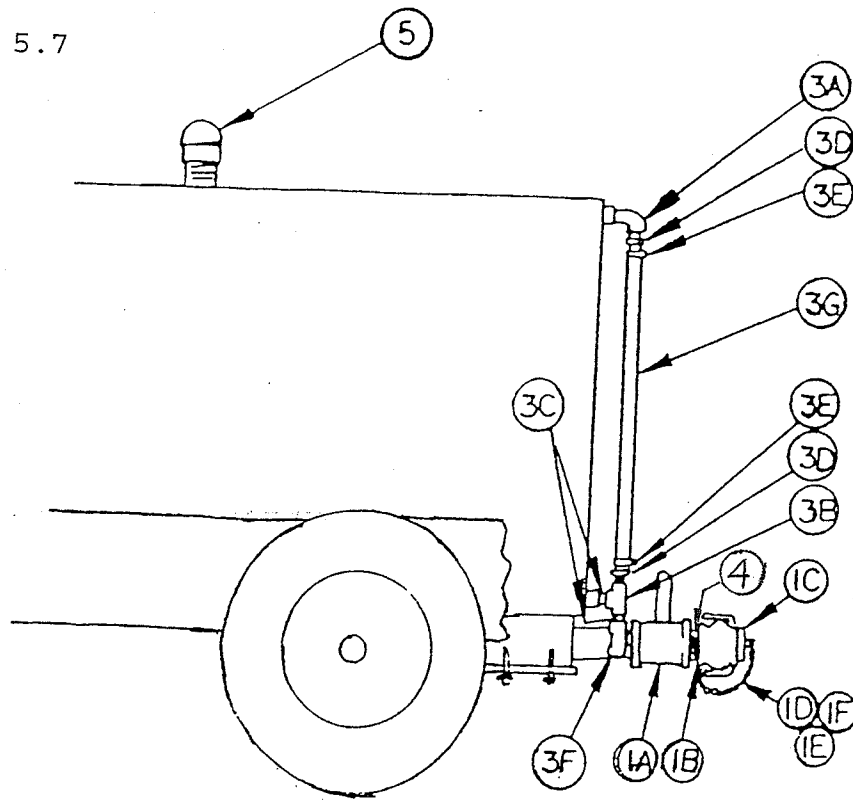
ASSEMBLY No. 08-0001U
MAJOR ASSEMBLY- VACUUM SYSTEM

Sub Assy.	Item	Part No.	Quantity	Description	Wt. #'s
08-0001U			1	VACUUM SYSTEM ASSEMBLY	208.1#
08-1000	1	07-1000	1	Drain Stop Arm (Optional)	3.5
-	2	04-1000	1	Gasket (Optional)	.1
-	3	02-10016	1	Bolt (Optional)	.1
	4	02-10002	1	Bolt (Optional)	.1
	5	02-1100	1	Washer, Flat (Optional)	.1
	6A	02-1201	1	Nut (Optional)	.1
	6B	02-1200	1	Nut (Optional)	.1
08-1001			1	Overflow Stop Assembly	
	7	07-1001	1	Float Assembly	4
	8	04-1001	1	Gasket	.1
	9	02-10003	1	Bolt	.1
	10	02-1200	1	Nut, Nylon Lock	.1
	11	02-1102	1	Washer, Flat	.1
08-1002	12		1	Cover Assembly	29.6
06-1022	13		1	Gasket	3.5
08-1003			1	Vacuum Generator Assembly	
	14	04-1004	1	Housing, Exhaust	9.5
	15	04-1005	1	Silencer	4.7
	16	04-1006	1	Venturi	2.2
	17A	04-1007	1	Jet, Air	2.7
	17B	03-11135	1	Reducer, Air Jet	.1
	18	04-1008	1	Box, Venturi	2.7
	19A	04-1032	1	Valve, Ball	5.8
	19B	03-0264S	1	Nipple	.2
	20	04-1056	1	Coupler, Air Twist	.7
	21	04-1010	1	Gasket	.1
	22	02-10010	3	Bolt	.1
	23	02-11002	3	Washer, Lock	.1
08-1004			1	Assessories	
	24	03-1001	1	Elbow, 90°	2
	25	03-02922S	1	Nipple	.5
	26	04-10321	1	Valve, Ball	3
	27	03-1002	1	Bushing	.2
	28	06-10162	50ft	Hose, Jet Fuel Bonded and Certified	25
	29	-	-	-	-
	30	-	-	-	-

ASSEMBLY No. 08-0001U
MAJOR ASSEMBLY- VACUUM SYSTEM

	31	03-1021	3	Cap, Pipe	1
	32	-	-	-	-
	33A	-	-	-	-
	33B	07-1034U	1	Cover, Vacuum Generator	11
	34	02-10010	6	Bolt	.1
	35	06-25123	6	Washer, Flat	.1
	36	02-1100	6	Washer, Flat	.1
	37	02-1200	6	Nut, Nylon Insert	.1
	38	04-1057	1	Coupler, Air Twist	.1
	39	02-10004	1	Bolt	.1
	40	02-1200	1	Nut	.1
	41	02-100115	6	Bolt (Optional)	1
	42	02-1202	6	Nut (Optional)	.5
	43	07-1075	2	Hanger, Hose (Optional)	3
	44	-	3	Hose,Jet Fuel Bonded/Certified (Optnl)	12
	45	04-2507	3	Valve, Ball (Optional)	6
	46	-	3	Bushing (Optional)	3.1
	47	-	-	-	-
	48	-	-	-	-
07-10341	49		1	Valve, Vacuum Check Assembly	2.5
	50	04-10335	1	Camlock, B Adapter	1
	51	04-10336	1	Camlock, A Adapter	1

SECTION 5.7



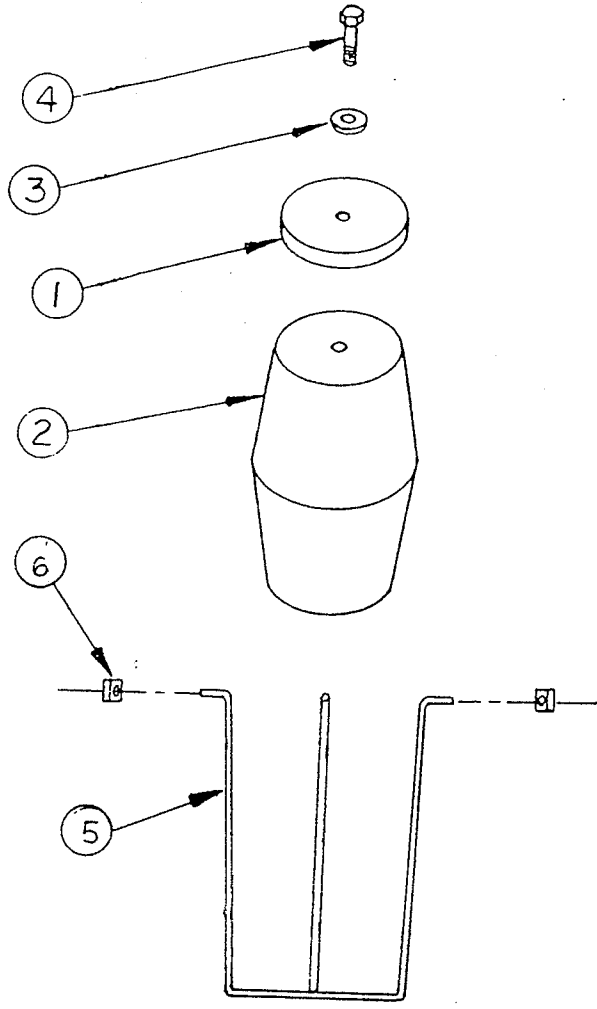
REAR VIEW

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
	4	04-10393	1	Drain Screen	.1
	5	04-1037	1	Vent	3

SECTION 5.8

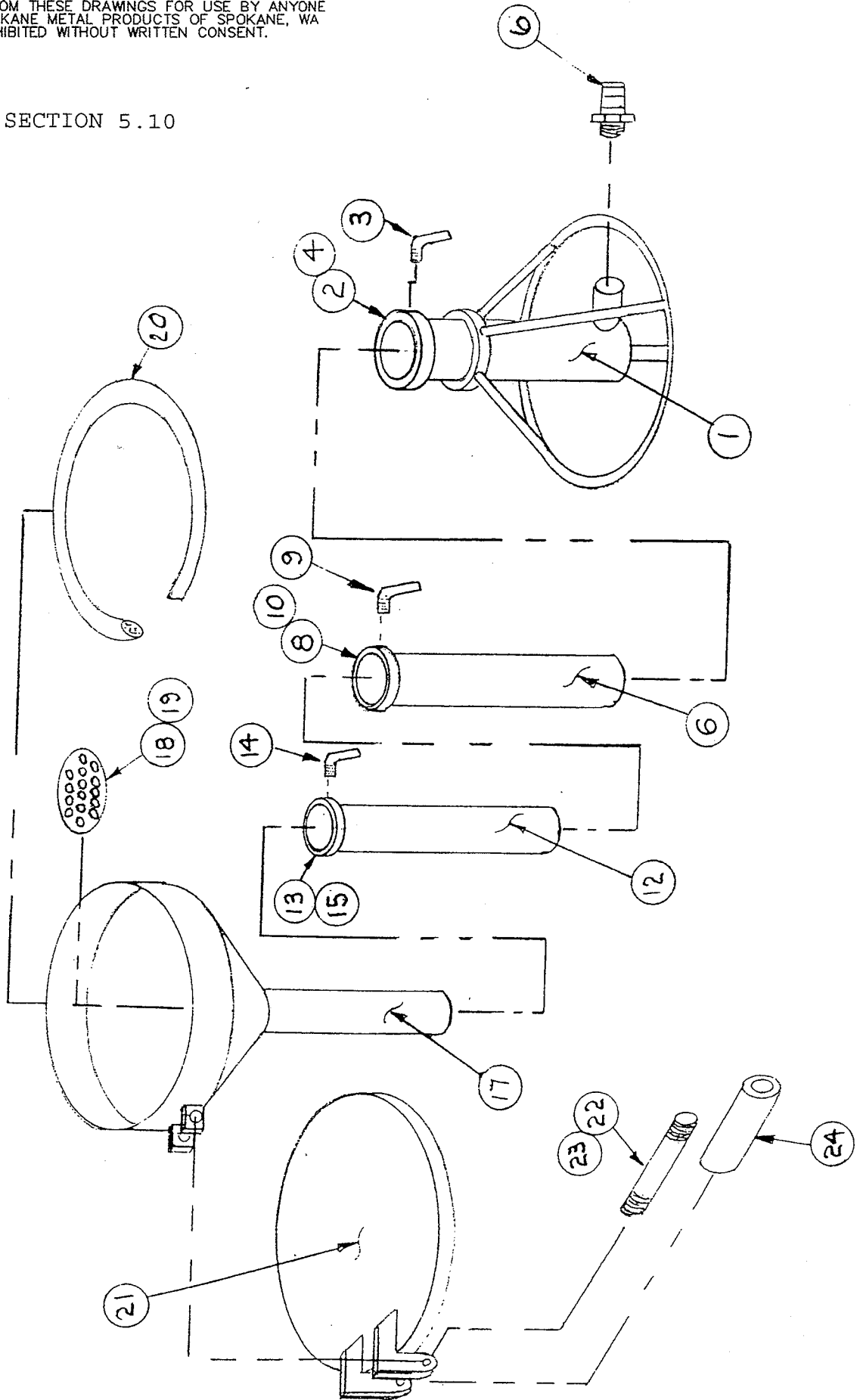


MAJOR ASSEMBLY - VENT OVERFLOW PREVENTOR

ASSEMBLY 08-10011

08-1022					
	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					
	5	07-1032	2	Wire Cage	.9
	6	02-12140	4	Nut	.1

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	

WARRANTY

SPOKANE INDUSTRIES, INC.

SPOKANE METAL PRODUCTS DIVISION

Spokane Washington

FUEL DRAIN BOWSER
ONE YEAR LIMITED WARRANTY

Seller warrants its "Fuel Drain Bowser" 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 two 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 damages 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 this 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 THIS UNIT.