

SPOKANE METAL PRODUCTS

Spokane Washington

CONFIDENTIAL PROPRIETARY INFORMATION
Reproduction of this data or the manufacturing of products from
this data by anyone other than Spokane Metal Products of Spokane
Washington is strictly prohibited without written consent

600 GALLON FUEL BOWSER

TECHNICAL MANUAL

PARTS, OPERATION AND MAINTENANCE

MODEL NUMBER BOW 600-06

© COPYRIGHT 1991 By SPOKANE INDUSTRIES INC.
ALL RIGHTS RESERVED

This document discloses subject matter in which Spokane Metal Products has Proprietary rights and such subject matter shall not, without the written permission of Spokane Metal Products, be either (A) used, released or disclosed in whole or in part outside the government, (B) used in whole or in part by the government for manufacture, or (C) used by a party other than the government, except for (1) emergency repair or overhaul work only, by or for the government, where the item or process concerned is not otherwise reasonably available to enable timely performance of the work, provided that release or disclosure hereof outside the government shall be made subject to a prohibition against further use, release or disclosure, or (2) release to a foreign government, or for emergency repair or overhaul work by or for such government under the conditions of (1) above. This legend shall be marked on any reproduction hereof in whole or in part.

SPOKANE METAL PRODUCTS

Spokane Washington

CONFIDENTIAL PROPRIETARY INFORMATION
Reproduction of this data or the manufacturing of products from
this data by anyone other than Spokane Metal Products of Spokane
Washington is strictly prohibited without written consent

600 GALLON FUEL BOWSER

TECHNICAL MANUAL

PARTS, OPERATION AND MAINTENANCE

MODEL NUMBER BOW 600-06

INDEX

	<u>Page</u>
<u>Section 1.</u> Introduction	1
<u>Section 2.</u> Safety	1
<u>Section 3.</u> Operation	
3.1 Intended Use	2
3.2 Parking Brake	2
3.3 Tow Bar and Under Carriage	2
3.4 Telescoping Drain Assembly	3
3.5 Vacuum Assembly	4
3.6 Grounding Reels	4
3.7 Drain Valve	5
3.8 Sample Port	5
3.9 Telescoping Drain Strainer	5
3.10 Vent Overflow Preventor	5
<u>Section 4.</u> Maintenance	
4.1 Parking Brake	5
4.2 Under Carriage and Tow Bar	6
4.3 Telescoping Drain Assembly	6
4.4 Vacuum Assembly	6
4.5 Grounding Reels	7
4.6 Sight Gauge	7
4.7 Telescoping Drain Strainer	7
4.8 Vent Overflow Preventor	7

4.9 Trouble shooting..... 8

Section 5. Replacement Parts 9

5.1 Main Tank 10

5.2 Under Carriage

 Axle, Front 12

 Axle, Rear 14

 Brake, Parking 15

 Wheel Assembly, Front 17

 Wheel Assembly, Back 19

5.3 Manway Assembly 21

5.4 Decal Package 22

5.5 Telescoping Drain 24

5.6 Vacuum Assembly 26

5.7 Miscellaneous Fixtures 29

5.9 Vent, Overflow Preventor 31

5.10 Remote Drain Funnel..... 32

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 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 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.
 - 4.3.4 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 telescope assembly is accomplished by rotating the four sections 180 degrees from 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) 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.

4.5 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

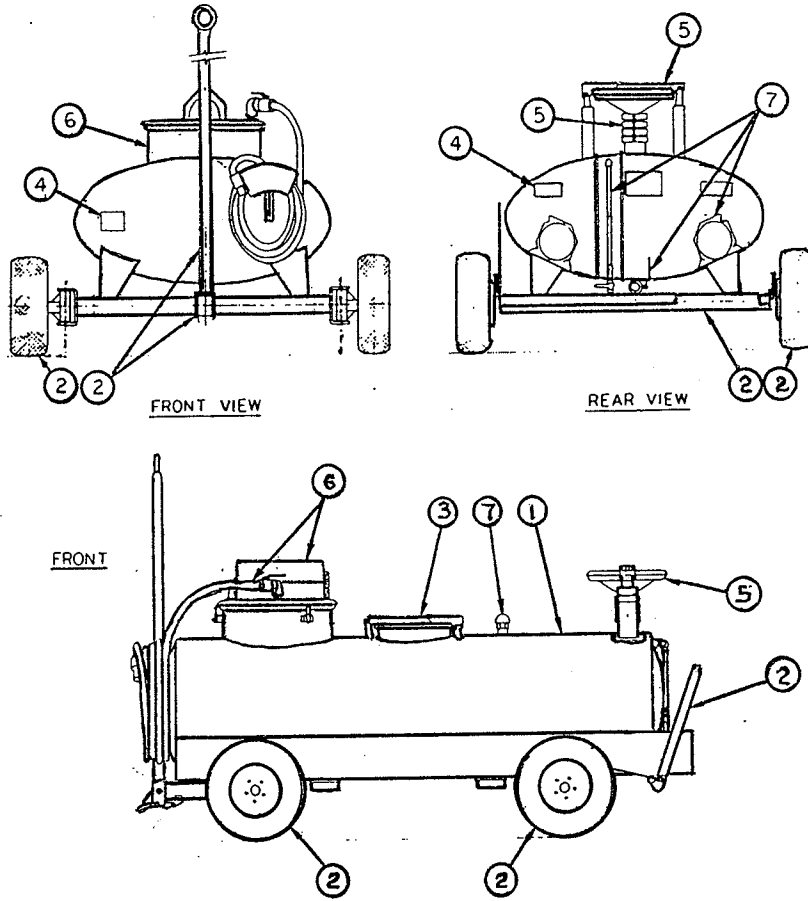
<u>SYMPTOM</u>	<u>PROBABLE CAUSE</u>	<u>PROBABLE CORRECTIONS</u>
Telescoping Drain won,t stay up	Loose clamp handles	Tighten handles a little tighter
Telescoping Drain is over flowing	Bowser tank is full	Empty main Bowser tank
	Clogged screen or strainer, see section 4.7 and or 5.5	Remove and clean as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

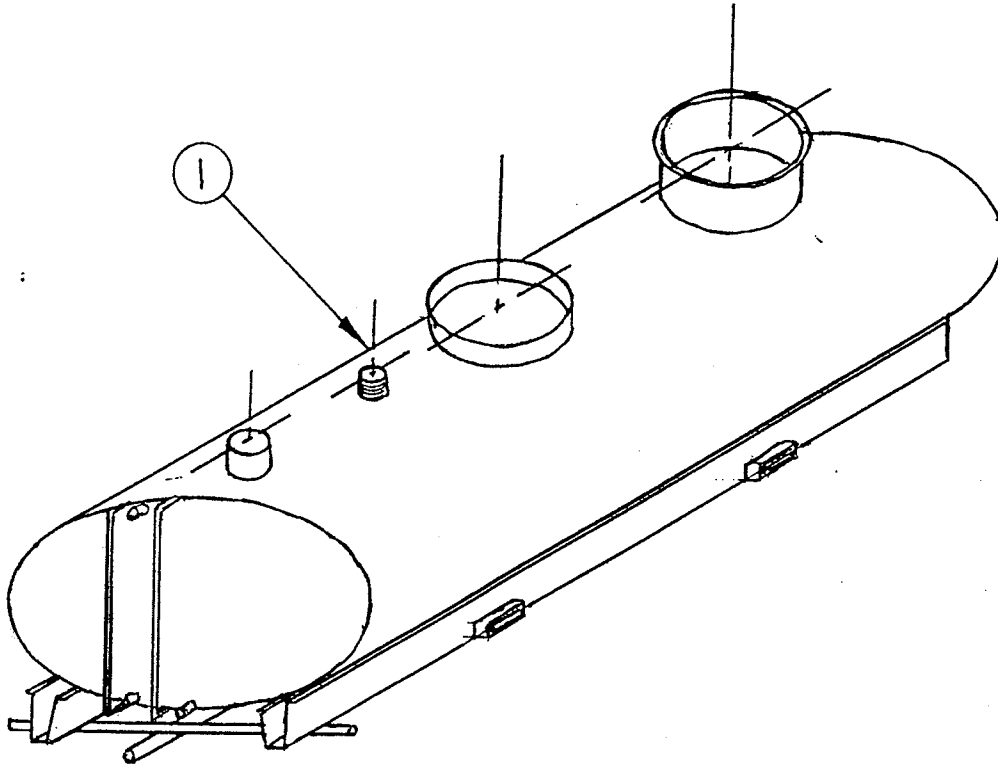
CONFIDENTIAL PROPRIETARY INFORMATION
 Reproduction of this data or the manufacturing of products from
 this data by anyone other than Spokane Metal Products of
 Spokane, WA is strictly prohibited without written consent.



<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

CONFIDENTIAL PROPRIETARY INFORMATION
 Reproduction of this data or the manufacturing of products from
 this data by anyone other than Spokane Metal Products of
 Spokane, WA is strictly prohibited without written consent.

SECTION 5.1



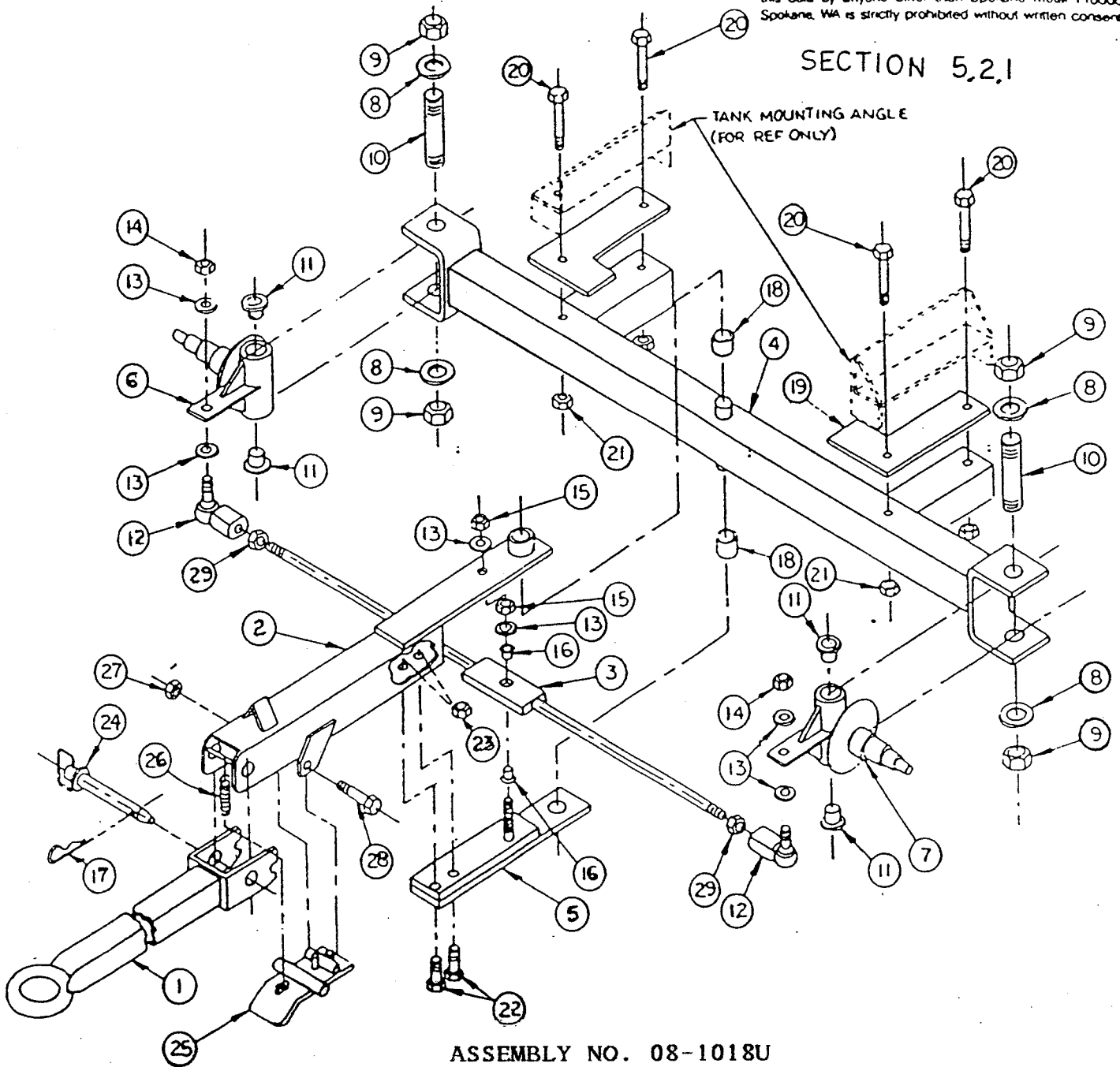
ASSEMBLY NO. 08-11009

MAJOR ASSEMBLY - TANK WELDMENT

Sub Assy.	Item	Part No.	Quantity	Description	Wt. #
	1	08-11009	1	Stainless Steel Tank Weldment, 600 Gallon Capacity Series BOW 600-06	1120

this data by anyone other than Spokane Metal Products of Spokane, WA is strictly prohibited without written consent.

SECTION 5.2.1



ASSEMBLY NO. 08-1018U
 MAJOR ASSEMBLY - AXLE ASSEMBLY

Sub Assy.	Item	Part No.	Quantity	Description	Wt.#
08-1018U				Axle, Assembly, Front	
	1	07-1103	1	Tow Bar	29
	2	07-1104	1	Arm, STEERING	16
	3	07-1005U	1	Tie Rod	7.3
	4	07-1107U	1	Axle, Front	53

ASSEMBLY NO 08-10180
 MAJOR ASSEMBLY - AXLE ASSEMBLY (CONTINUED)

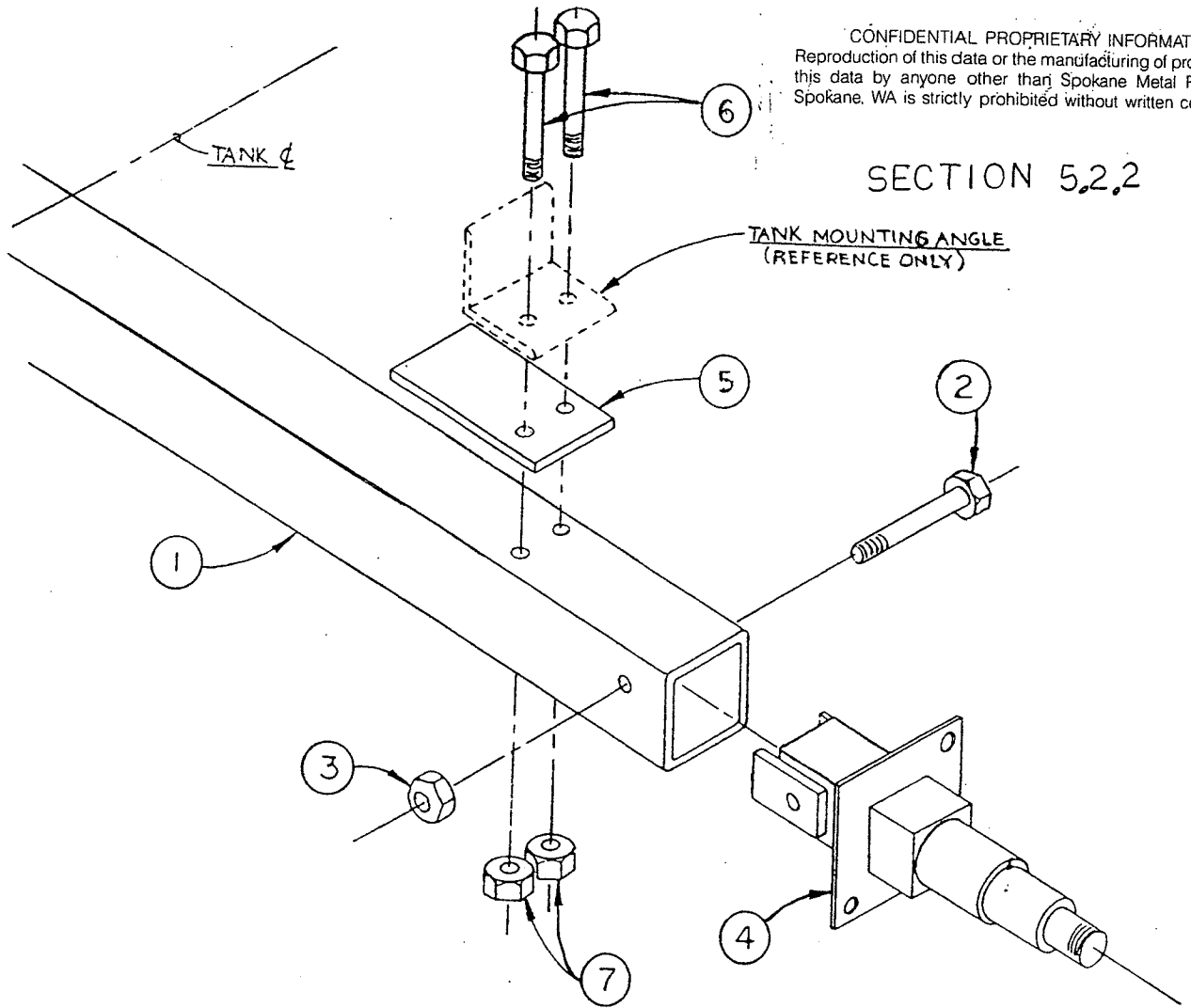
Sub Assy.	Item	Part No.	Quantity	Description	Wt.#
	5	07-1016	1	Steering Arm, Lower Plate	6.1
	6	05-1009	1	Sleeve, King Pin, Right	24
	7	05-1009	1	Sleeve, King Pin, Left	24
	8	02-11131	4	Washer, King Pin	1
	9	02-12131	4	Nut, King Pin	2
	10	05-1010	2	King Pin	11
	11	03-1013	4	Bushing, King Pin Sleeve	1
	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
	26	04-1054	1	Spring, Toe Latch	.5

ASSEMBLY NO 08-10180
 MAJOR ASSEMBLY - AXLE ASSEMBLY (CONTINUED)

	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

CONFIDENTIAL PROPRIETARY INFORMATION
 Reproduction of this data or the manufacturing of products from
 this data by anyone other than Spokane Metal Products of
 Spokane, WA is strictly prohibited without written consent.

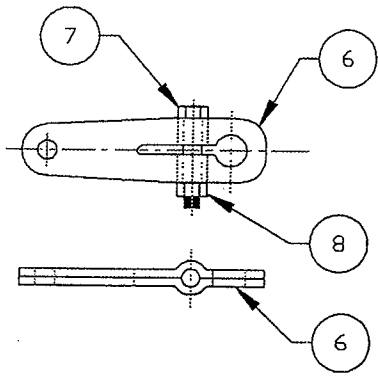
SECTION 5.2.2



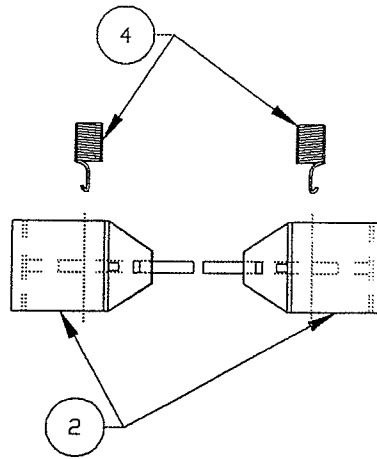
ASSEMBLY NO. 08-1010U

MAJOR ASSEMBLY - AXLE ASSEMBLY

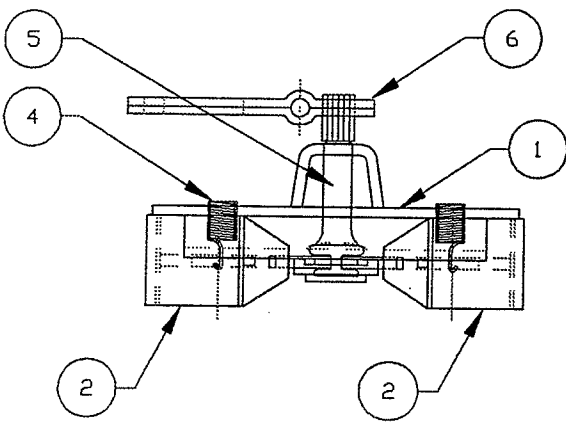
Sub Assy.	Item	Part No.	Quantity	Description	
08-1010U				Axle Assembly, Rear	
	1	05-1023U	1	Axle, Rear Weldment	40
	2	02-1505	2	Bolts, Mounting Spindle	.6
	3	02-12041	2	Nuts, Mounting Spindle	.5
	4	05-1022	2	Spindle, Rear	17
	5	06-1012	2	Mounting Pad, Tank	1
	6	02-1503	4	Bolt, Tank Mounting	1.3
	7	02-12041	4	Nuts, Tank Mounting	.5



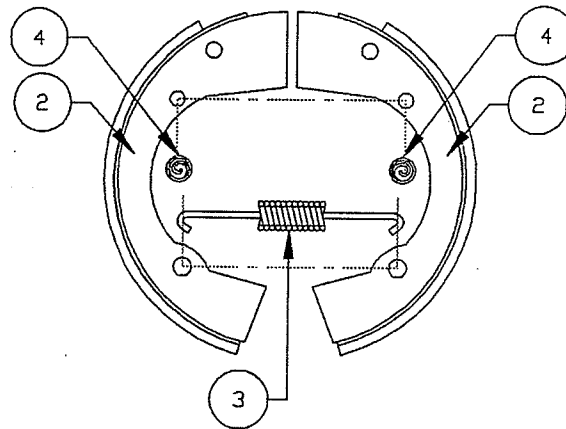
CAM LEVER OPERATOR DETAIL



BRAKE SHOE / HOLD DOWN SPRING DETAIL



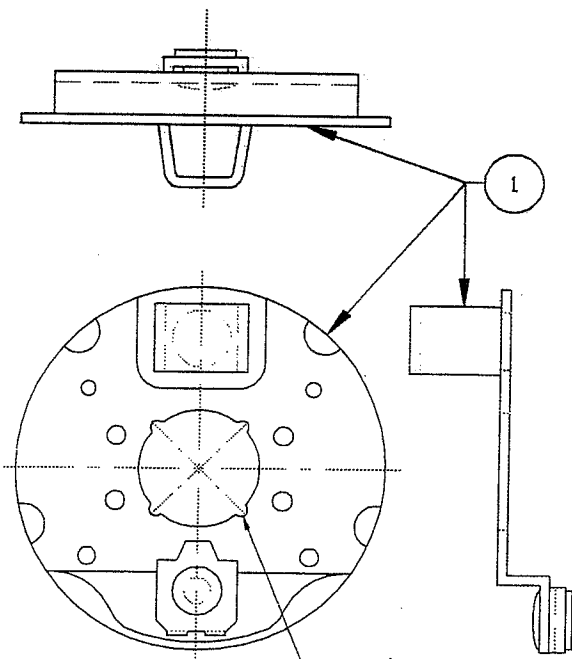
BRAKE/CAM/LEVER/BACKING PLATE ASSY



BRAKE SHOE / SPRING ORIENTATION
RETURN SPRING

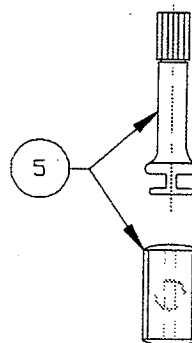
SECTION 5.2.3

CONFIDENTIAL-PROPRIETARY INFORMATION
REPRODUCTION OF THESE DRAWINGS OR THE MANUFACTURING OF PRODUCTS FROM THESE
DRAWINGS FOR USE BY ANYONE OTHER THAN SPOKANE INDUSTRIES INC. OF SPOKANE, WA
IS STRICTLY PROHIBITED WITHOUT WRITTEN CONSENT



BACKING PLATE DETAIL

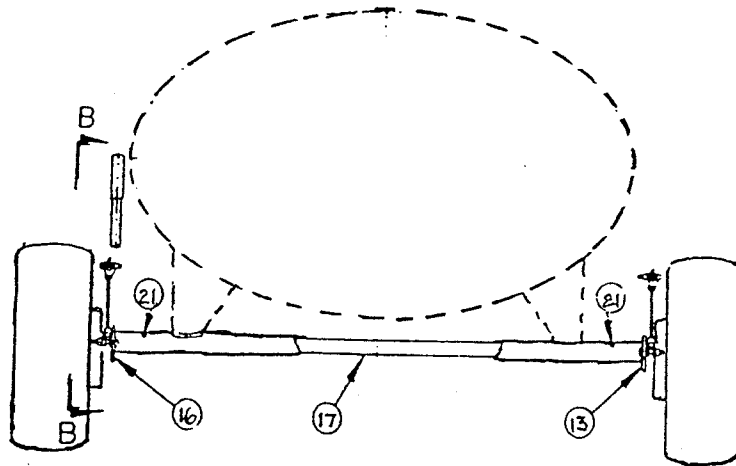
R₄ REF.
NOTCH TO
MATCH SPINDLE



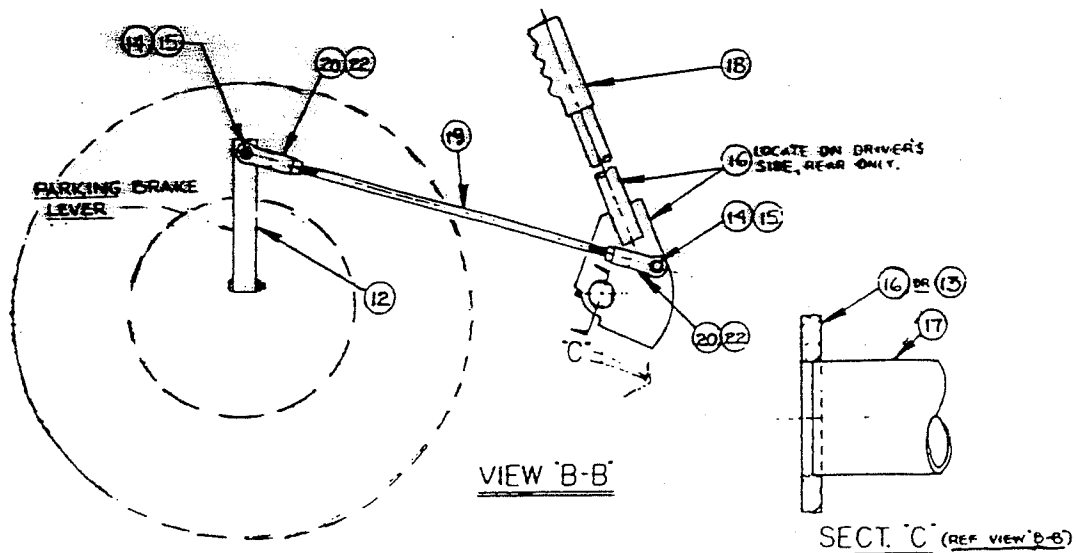
CAM DETAIL

SECTION 5.2.3

CONFIDENTIAL-PROPRIETARY INFORMATION
 REPRODUCTION OF THESE DRAWINGS OR THE MANUFACTURING OF PRODUCTS FROM THESE
 DRAWINGS FOR USE BY ANYONE OTHER THAN SPOKANE INDUSTRIES INC. OF SPOKANE, WA
 IS STRICTLY PROHIBITED WITHOUT WRITTEN CONSENT



REAR VIEW
 HTS



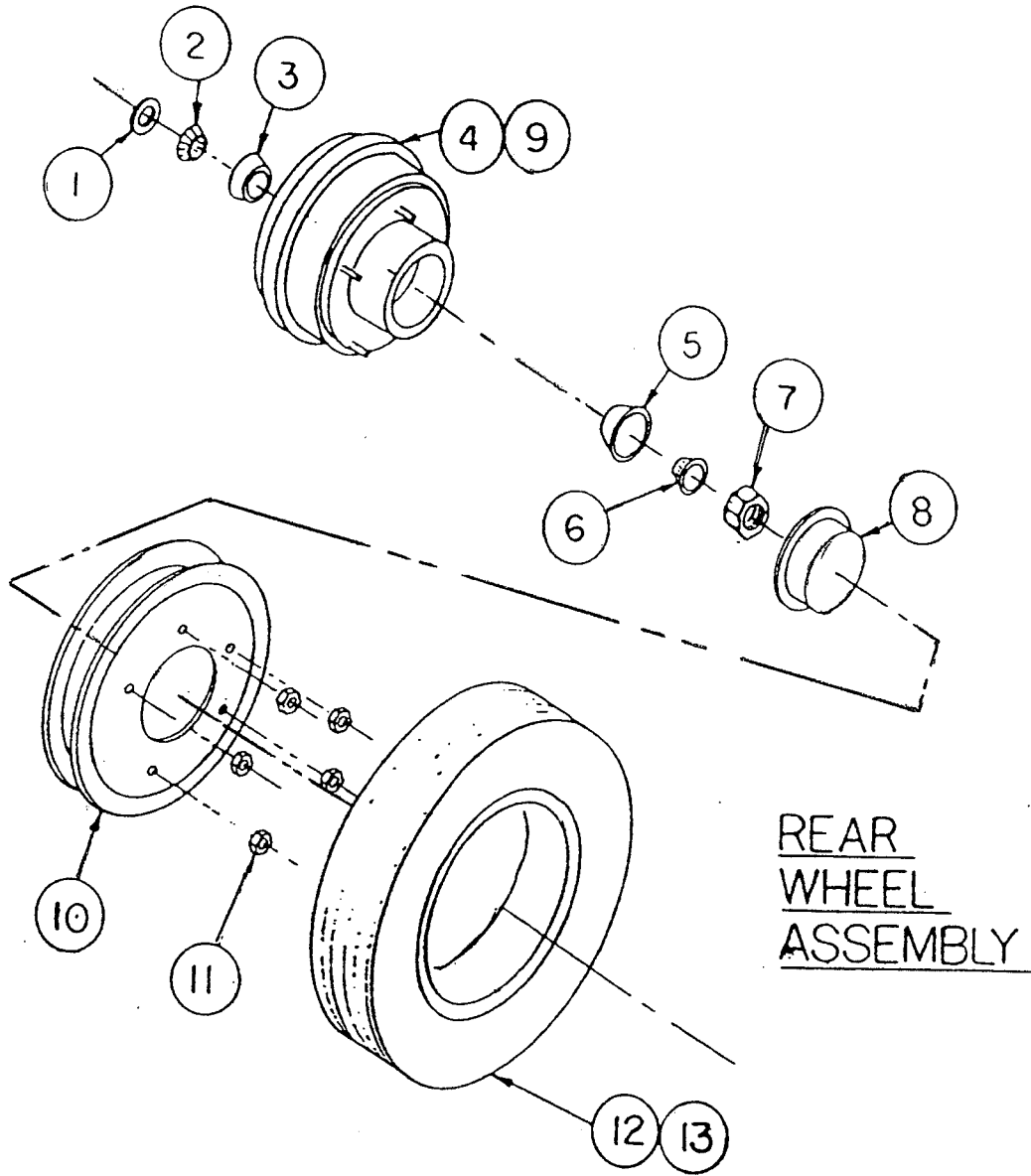
ASSEMBLY No. 10-100030R
MAJOR ASSEMBLY – BRAKE, PARKING

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

ASSEMBLY NO. 10-100042
 MAJOR ASSEMBLY - WHEEL ASSEMBLY, FRONT

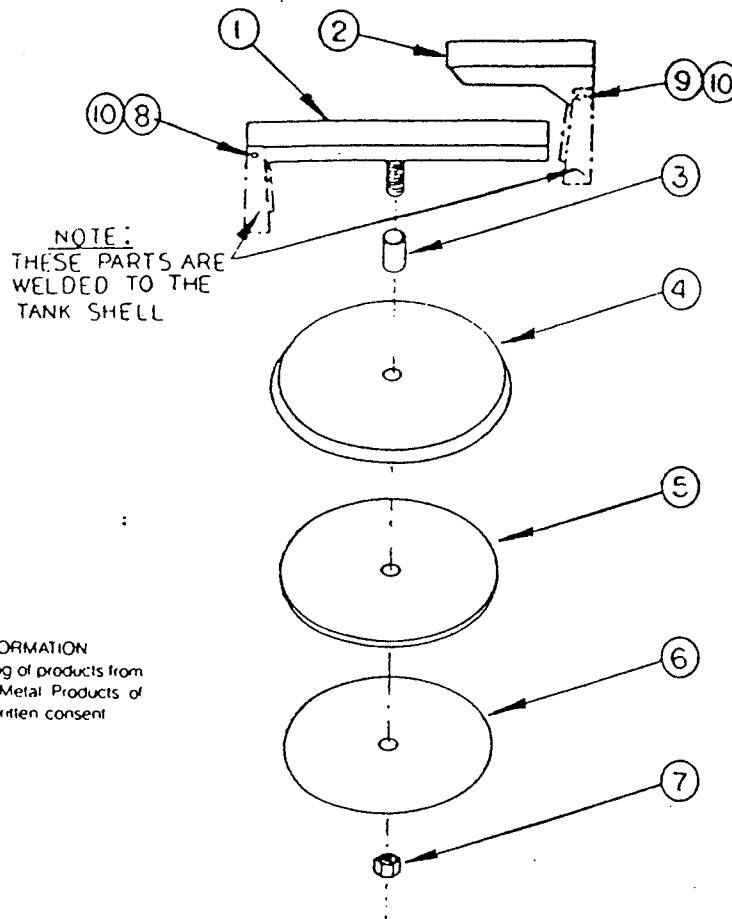
Sub Assy.	Item	Part No.	Quantity	Description	Wt.#
08-1011		04-1050		Bearing & Hub Assembly (2 Reqd)	
	1	04-1012	1	Seal, Bearing	1
	2	04-1013	1	Bearing, Inner	3
	3	04-1015	1	Cup, Inner	2
	4	04-1017	1	Hub, Wheel	7
	5	04-1016	1	Cup, Outer	4
	6	04-1014	1	Bearing, Outer	3
	7	02-1205	1	Spindle Nut	1
	8	04-1019	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

SECTION 5,2,5.



ASSEMBLY NO. 10-10002
 MAJOR ASSEMBLY - WHEEL ASSEMBLY, REAR

Sub Assy.	Item	Part No.	Quantity	Description	Wt.#
08-10111		04-1062		Bearing & Hub Assembly (2 Req'd)	
	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 Req'd)	
	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



CONFIDENTIAL PROPRIETARY INFORMATION
 Reproduction of this data or the manufacturing of products from
 this data by anyone other than Spokane Metal Products of
 Spokane WA is strictly prohibited without written consent

SECTION 5,3

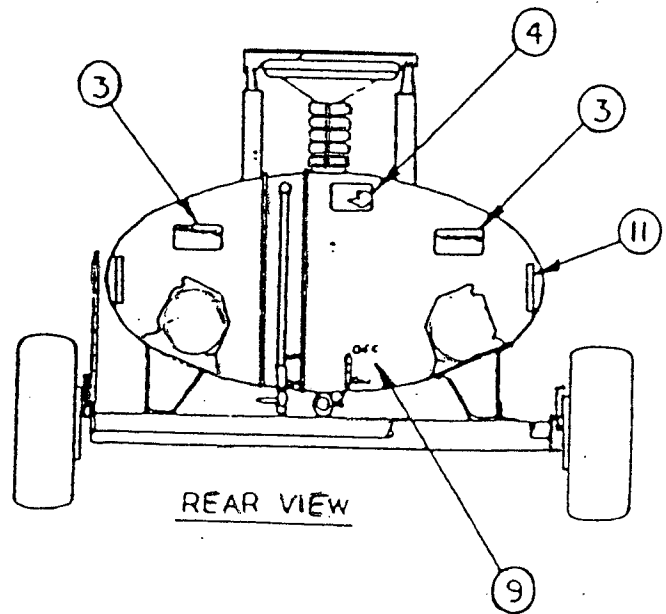
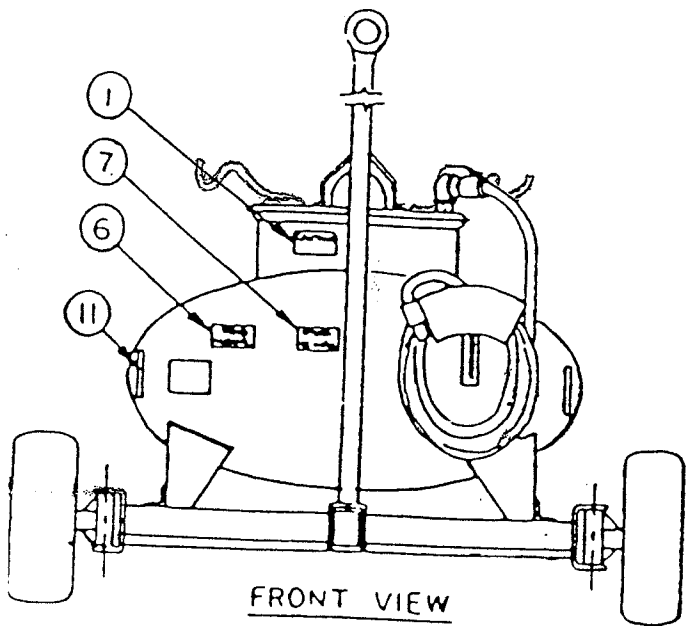
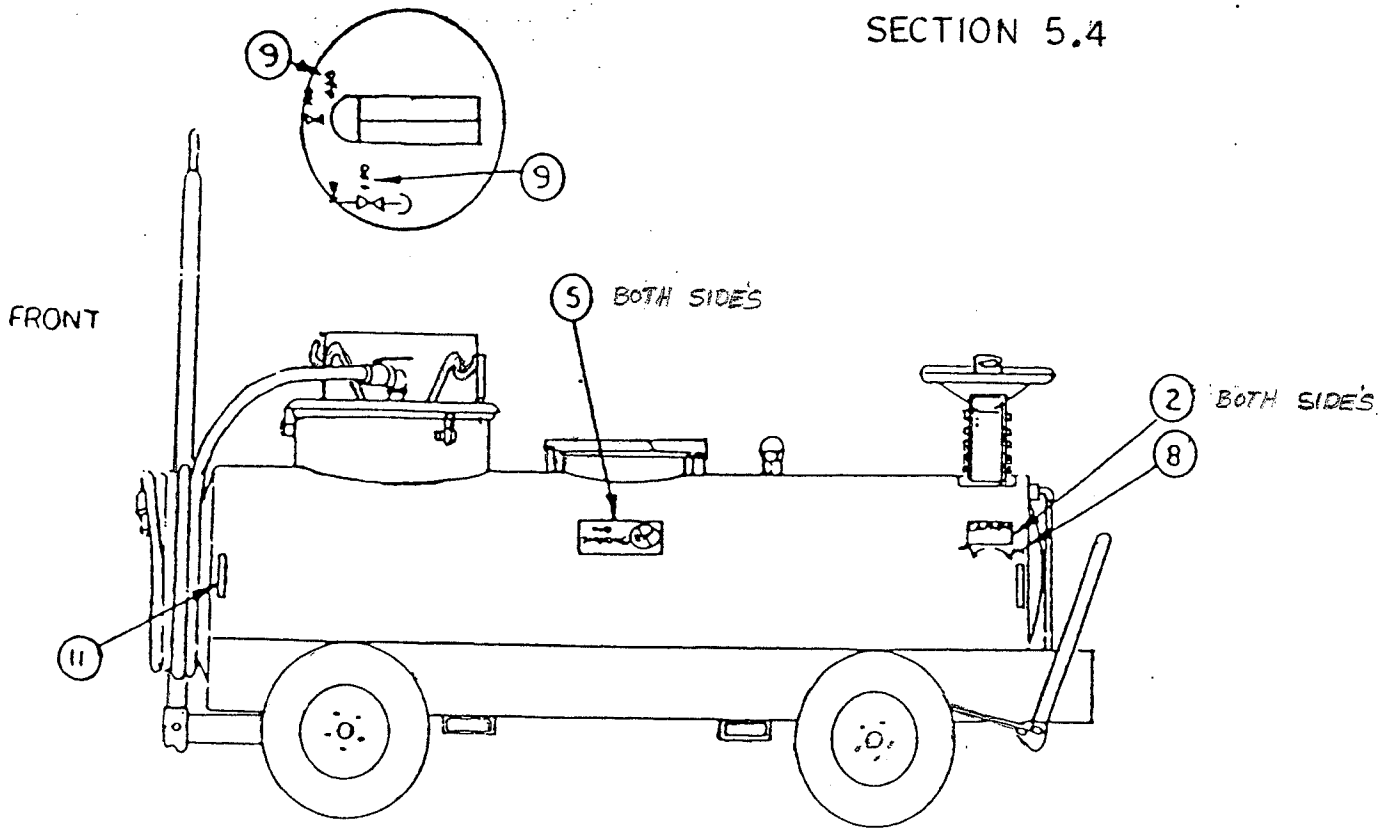
ASSEMBLY NO. 08-1025

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

CONFIDENTIAL PROPRIETARY INFORMATION
Reproduction of this data or the manufacturing of products from
this data by anyone other than Spokane Metal Products of
Spokane, WA is strictly prohibited without written consent

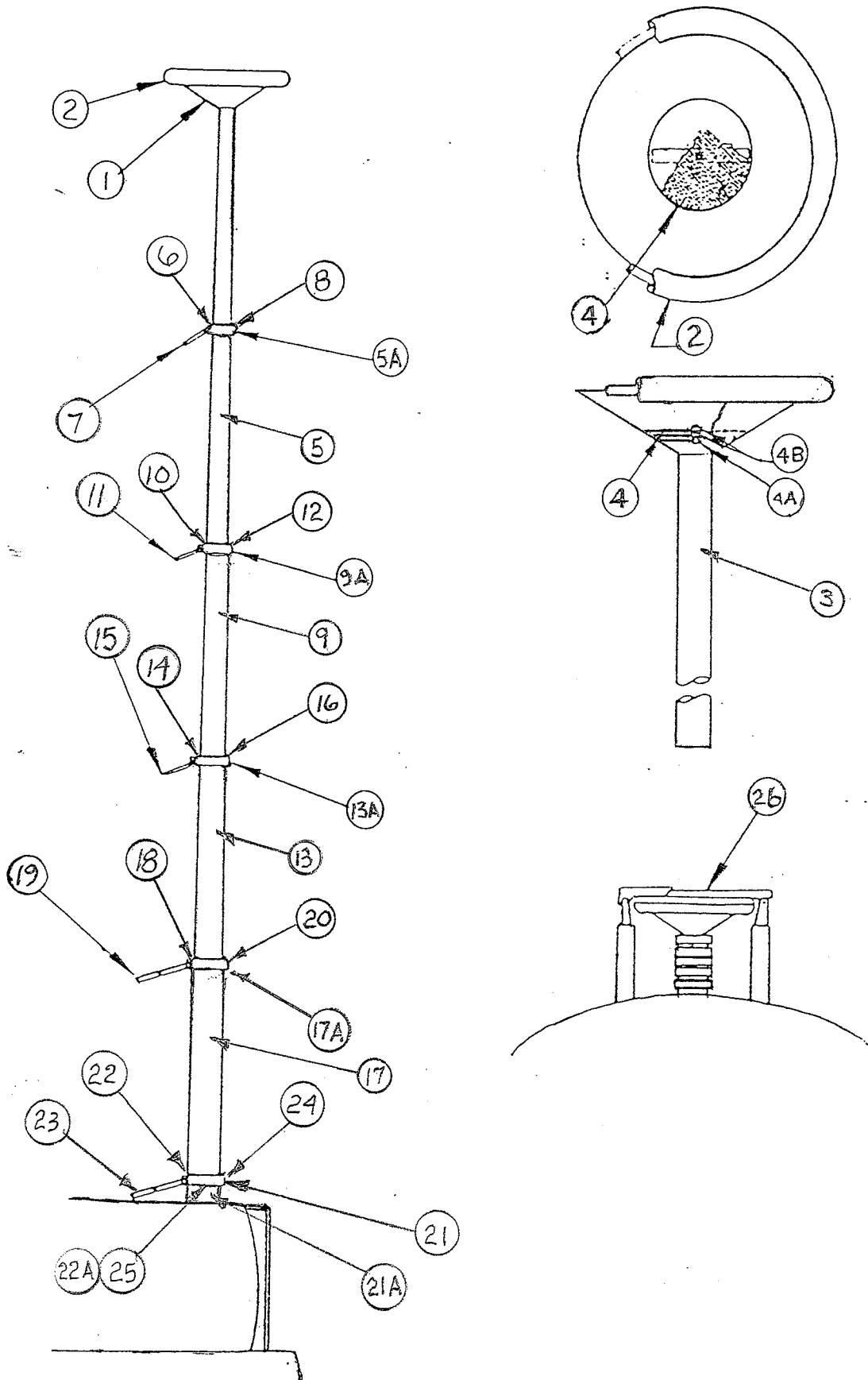
SECTION 5.4



ASSEMBLY NO 10-100070
 MAJOR ASSEMBLY - DECAL PACKAGE

Sub Assy.	Item	Part No.	Quantity	Description	Wt. #
				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

SECTION 5.5



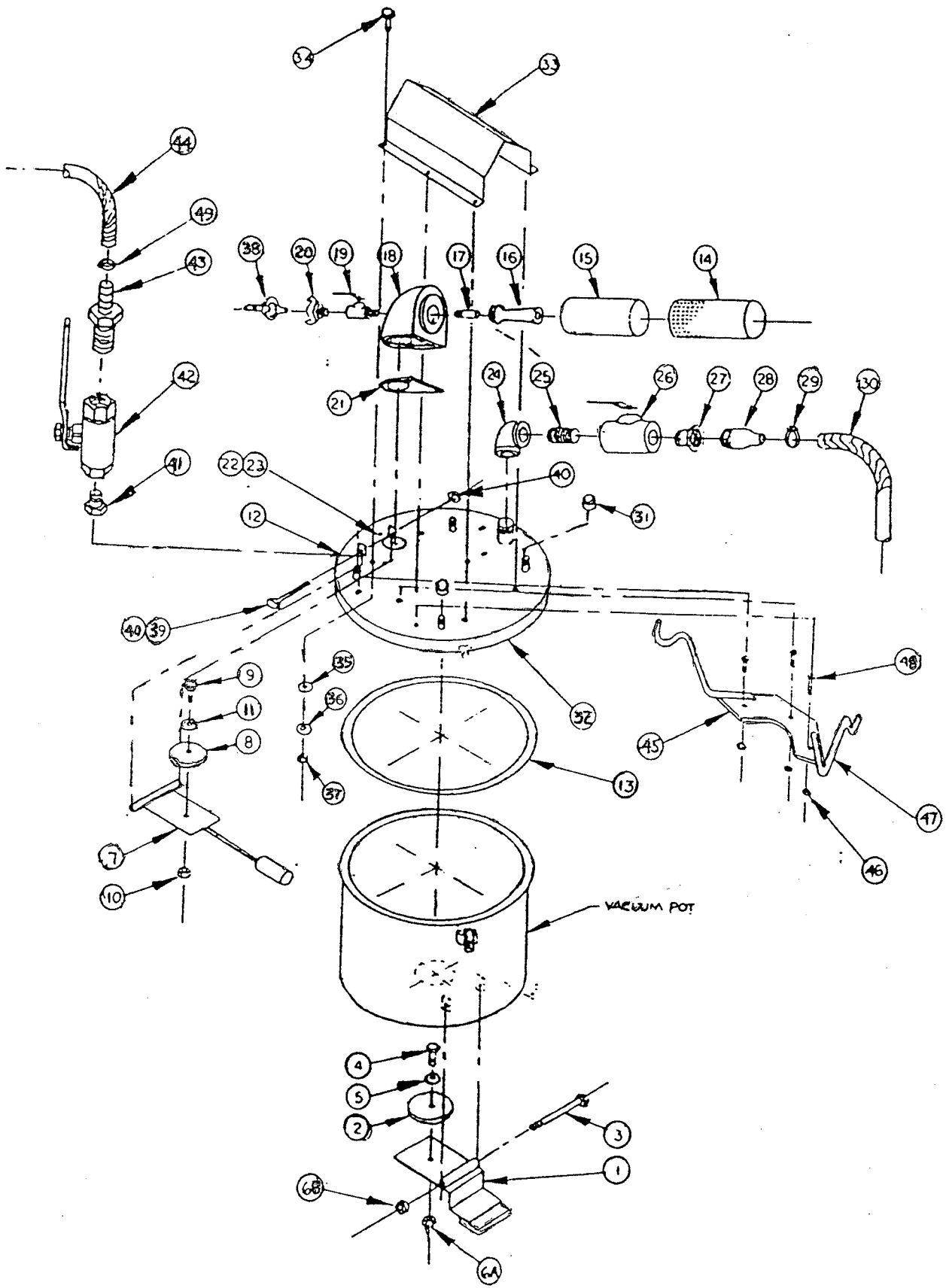
ASSEMBLY 08-1034U
 MAJOR ASSEMBLY - TELESCOPING DRAIN ASSEMBLY

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	2-10002	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"x11/16"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

MAJOR ASSEMBLY - TELESCOPING DRAIN ASSEMBLY

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
07-1014U				Drain, Telescoping Section Assembly, 4" 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
07-1041U				Drain, Telescoping Section Assembly, 4-1/2" O.D.	
	21A	01-92565S	1	Tube, 4-1/2" O.D.	
	21	05-10302	1	BASE CLAMP, 4"	4.4
	22	05-10051	1	WEDGE, 1"x1"x2 1/2"	.6
	22A	04-10561	1	Base Flange	
	23	05-10181	1	HANDLE, CLAMP	.3
	24	02-1005	1	SCREW, SET	.01
	25	02-100121	4	MOUNTING BOLTS, 1/4-16x3/4"	.2
	26	08-1026	1	COVER ASSEMBLY	5

SECTION 5.6



ASSEMBLY NO. 08-00010
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
08-1002				Cover Assembly	
	12	07-1022	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. 08-00010 (CONTINUED)
 VACUUM SYSTEM ASSEMBLY

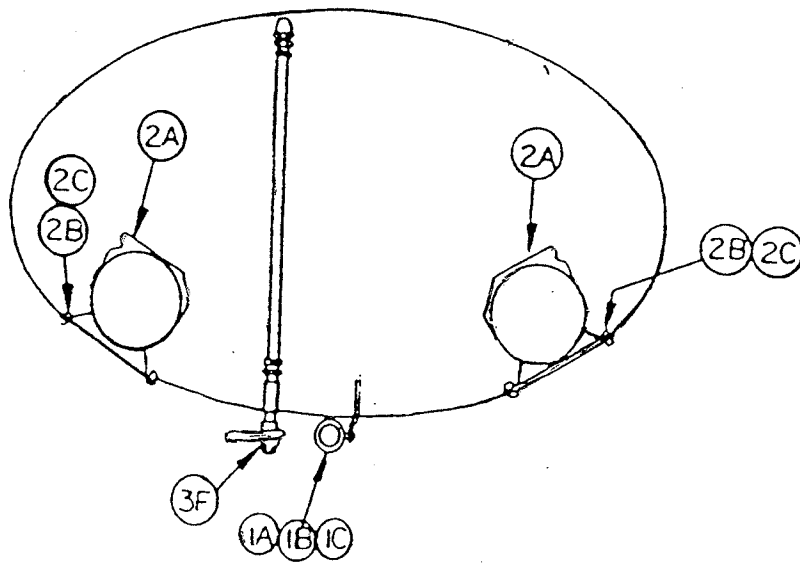
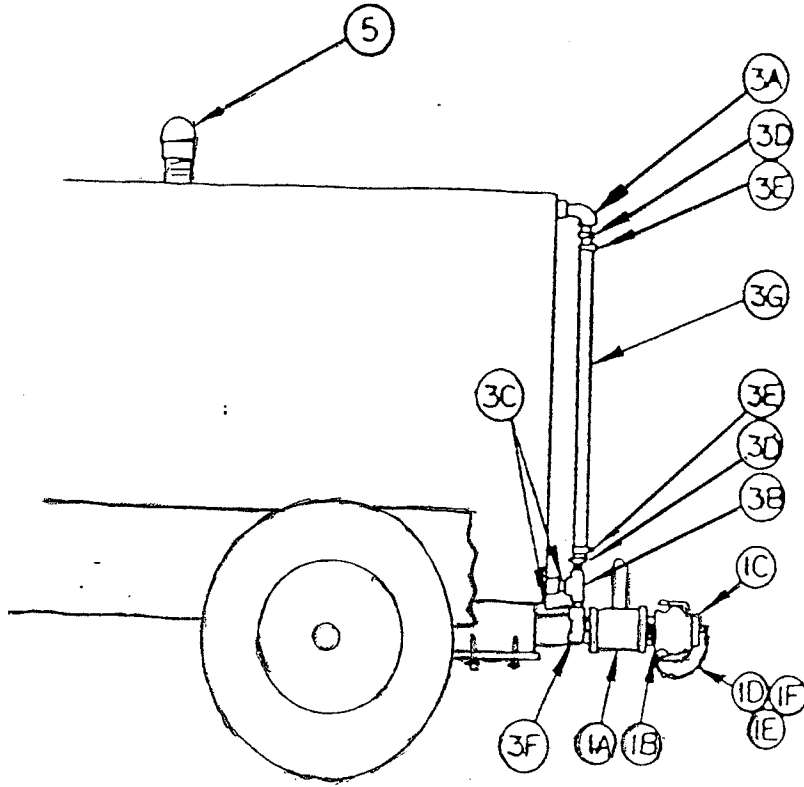
	17	04-1007	1	Air Jet	2.7
	18	04-1008	1	Venturi Box	2.7
	19	04-1032	1	Valve	5.8
	20	04-1056	1	Coupler	1.7
	21	04-1010	1	Gasket	.1
	22	02-10010	3	Bolt	.1
	23	02-11001	3	Washer	.1
08-1004				Accessories	
	24	03-1001	1	Elbow	2
	25	03-02922S	1	Nipple	.5
	26	04-10321	1	Valve	3
	27	03-1002	1	Hex Bushing	.2
	28	03-1003	1	Nipple	.1
	29	03-10101	1	Hose Clamp	.1
	30	06-1016	1	Hose	15
	31	03-1021	4	Pipe Cap (Optional)	1
	32	07-1019	1	Lid	24
	33	07-1034U	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. 08-00010 (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

CONFIDENTIAL PROPRIETARY INFORMATION
Reproduction of this data or the manufacturing of products from
this data by anyone other than Spokane Metal Products of
Spokane, WA is strictly prohibited without written consent

SECTION 5.7



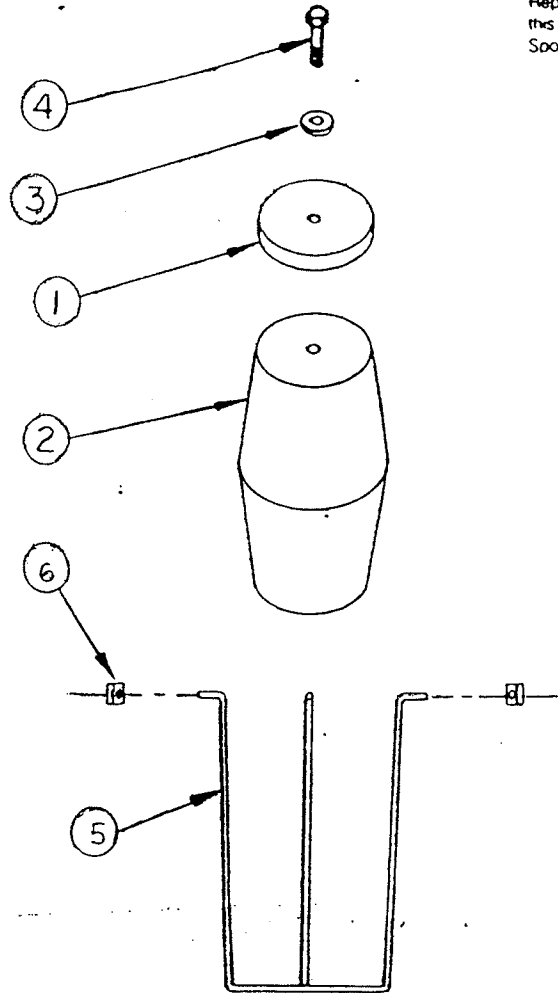
REAR VIEW

ASSEMBLY NO. 10-101110
 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	04-1035	1	S-Hook, Safety Link	.1
	1F	04-10351	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

CONFIDENTIAL PROPRIETARY INFORMATION
 Reproduction of this data or the manufacturing of products from
 this data by anyone other than Spokane Metal Products of
 Spokane WA is strictly prohibited without written consent

SECTION 5.8



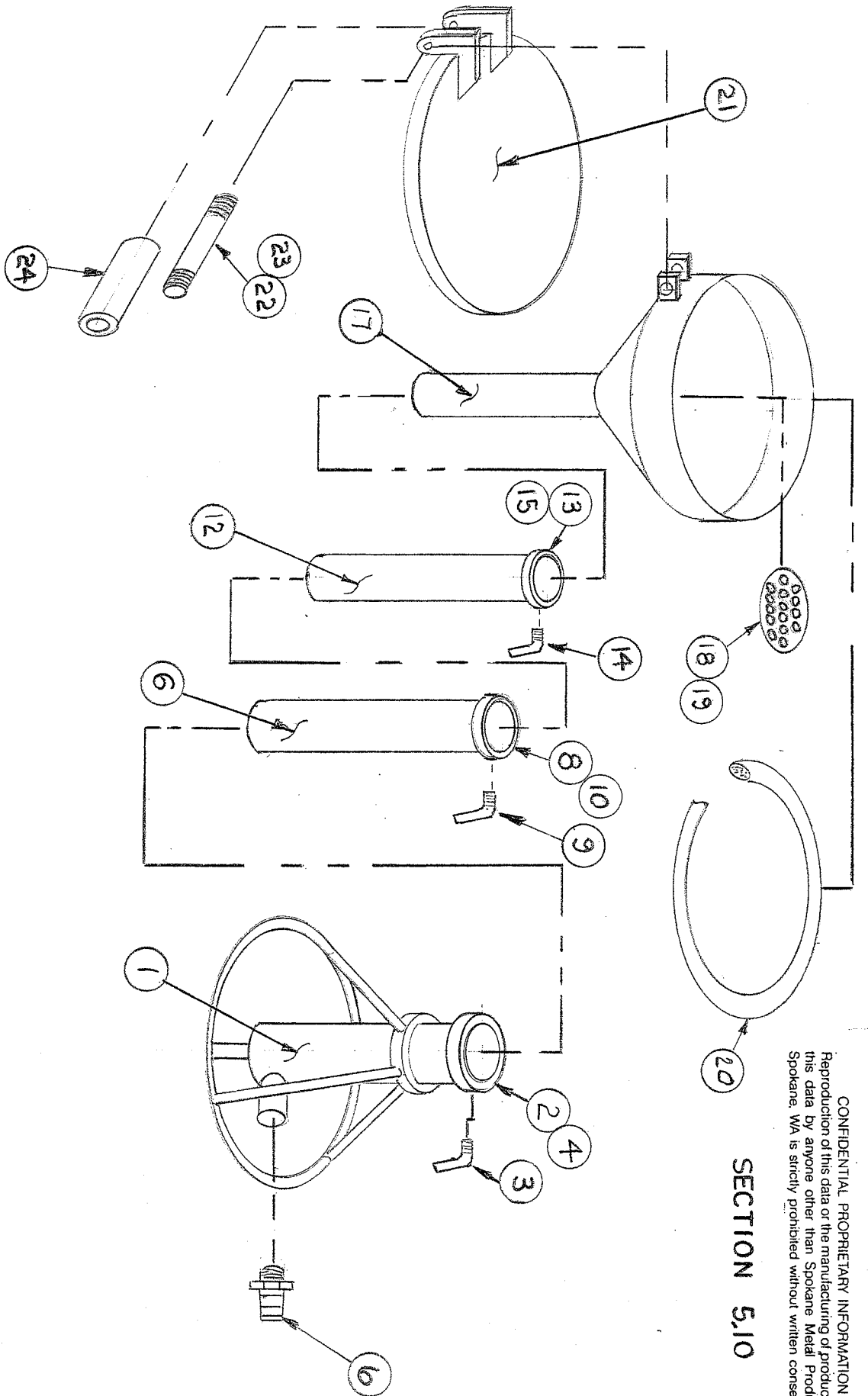
ASSEMBLY NO. 08-10011

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

CONFIDENTIAL PROPRIETARY INFORMATION
Reproduction of this data or the manufacturing of products from
this data by anyone other than Spokane Metall Products of
Spokane, WA is strictly prohibited without written consent.

SECTION 5.10



SECTION 5.10
MAJOR ASSEMBLY - REMOTE DRAIN FUNNEL

ASSEMBLY 07-1110U

Sub Assy.	Item	Part No.	Quantity	Description	Wt.#
08-1100				REMOTE DRAIN FUNNEL,BASE	17
	1	07-1100	1	BASE SECTION FAB S/S	
	2	05-10012	1	CLAMP, BASE	
	3	02-100181	1	SCREW, CLAMP	
	4	05-0037	1	PLASTIC	
08-1101				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	
08-1102				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	
08-1105				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

08-1116		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	