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Spokane Metal Products Division
Spokane, Washington

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**FUEL BOWSER
TECHNICAL MANUAL
PARTS, OPERATION AND MAINTENANCE**

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Section A INTRODUCTION

- A.1 To obtain optimum benefit from your fuel bowser unit, it is recommended that all operating personnel read and understand this manual prior to operation.
- A.2 Upon receipt of the fuel bowser unit, a visual inspection should be made to determine that it is complete and has not sustained any damage during transportation.
- A.3 Intended Use
The fuel bowser unit is intended for use in draining and collection of fuel from aircraft or storage area and then transportation to the storage area or disposal site. Any other use is prohibited and may void any and all warranties.

Section B SAFETY

- B.1 Potential Fire and Explosion
a. Due to the nature of fuel, care should be exercised to eliminate all sparks and open flame in the area of the fuel bowser unit.

b. A 50-foot radius area around the fuel bowser unit for no-smoking, sparks or open flames is usually a good practice. It is strongly recommended by all local or other regulations be consulted for further restrictions.
- B.2 CAUTION: The fuel bowser should never be used inside an enclosed area. Proper ventilation is required.
- B.3 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 as a safety watch for the person inside. It is strongly recommended that all local and/or other regulations be followed.
- B.4 Inspections
Inspections 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.
- B.5 Grounding
To eliminate static sparks, the bowser unit is equipped with two grounding reels. Connect prior to draining/filling operations.
- B.6 Insure the manway cover is provided with a "lock out" to prevent accidental closing of the manway while doing internal inspections and can be locked closed to prevent unwanted elements from being introduced to the fuel supply.

- B.7 Towing
- a. Make sure the tow bar is securely attached to the towing vehicle.
 - b. Before moving the bowser unit, check to assure the parking brake is released.
 - c. Maximum allowable towing speed is 15 MPH.
- B.8 Parking
Parking brake must be applied when filling, draining or when left unattended.
- B.9 Air Supply
CAUTION: Check the air pressure of supply lines to the vacuum generator to assure it is not in excess of 100 PSI.
- B.10 Telescoping Funnel
Care should be exercised in using the telescope to prevent injury to fingers between clamps by dropping sections.

Section C

REPLACEMENT PARTS

- C.1 This section provides information for identification of parts for ordering. To order, it is important to have the Model/Serial Number, Subassembly Number, Part Number and Description. Parts may be order by calling or writing to:

Spokane Industries, Inc.
Spokane Metal Products Division
P.O. Box 3303
Spokane, WA 99220-3303
Tel: 509-928-0720, Fax: 509-927-0826
Email: dyorke@spokaneindustries.com

Section 1
Main Tank

- 1.1 See Safety Note: Review Safety Section “B” prior to operating or maintaining fuel bowser.
- 1.2 **Maintenance**
Internal inspection will be necessary to insure structural integrity and cleanliness. It is recommended that interval inspections be performed at least every six- (6) months.

Section 2

Drain Valve / Drain Sump (12 ft. & 16 ft. Telescoping Funnels only)

- 2.1 Safety Note: Review Safety Section “B” prior to operating or maintaining fuel bowser.
- 2.2 The Telescoping Drain Strainer is located on the bottom of the stainless steel drain housing (400 gallon & larger units only).
- 2.3 Maintenance should consist of inspection and cleaning monthly.
- 2.4 **Drain Screen Removal & Maintenance**
(Note: Check interior to assure fuel has been thoroughly drained before servicing)
 - 2.4.1 Screen removal is accomplished by loosening the wing nut (Item #5) on the cross arm cover plate.
 - 2.4.2 Swing cross arm assembly out of the way.
 - 2.4.3 After noting screen orientation, use a screwdriver to pry screen out.
 - 2.4.4 Clean or replace as required.
 - 2.4.5 Reshape if needed then re-install and secure cross arm assembly.
 - 2.4.6 Tighten wing nut & check for leaks.

ASSEMBLY NO. 07-1035
 MAJOR ASSEMBLY – DRAIN, SUMP ASSEMBLY
 SECTION 2.0

SUB ASSY	ITEM	PART NO.	QTY	DESCRIPTION	WT. #'S
07-1035			1	DRAIN SUMP ASSY, 6"	12.4#
	1	04-10581	1	REPAIR KIT, INCLUDES 2,3,4 & 5	6.3
	2	04-125252	1	COVER	2.3
	3	06-1058	1	GASKET, BLACK NUNA N	.4
	4	04-12637	1	GASKET, RETAINER	1.4
	5	04-11162	1	PIVOTING WING NUT ASSEMBLY	2.1
	6	01-8223	1	SUMP STRAINER SCREEN	.1

Section 4

Sight Gauge/Sample Port

- 4.1 Safety Note: Review Safety Section “B” prior to operating or maintaining fuel bowser.

- 4.2 Operation/Maintenance
 - 4.2.0 Sight Gauge – This gauge should be inspected monthly for loose connections and weathering of clear tubing.

 - 4.2.1 Sample Port – The bowser is equipped with a ½” NPT valve for use as a sample port (See Item #6).

Section 5
Vent Overflow
400 gallon & larger units only

- 5.1 Safety Note: Review Safety Section “B” prior to operating or maintaining fuel bowser.
- 5.2 Operations
 - 5.2.0 The bowser unit is equipped with a float actuated vent to prevent fuel from flowing out the vent in the event the bowser is overfilled.
- 5.3 Maintenance
 - 5.3.0 The vent overflow assembly is located inside the tank directly under the vent.
 - 5.3.1 It consists of a caged float with an elastomer seal.
 - 5.3.2 Inspect float and elastomer seal (gasket) monthly and replace as needed.

ASSEMBLY NO. 08-10011
 MAJOR ASSEMBLY – VENT, OVERFLOW PREVENTOR
 SECTION 5.0

SUB ASSY	ITEM	PART NO.	QTY	DESCRIPTION	WT. #'S
08-1022			1	FLOAT ASSY	2.7
	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			1	GAUGE ASSY	
	5	07-1032	1	CAGE, WIRE	.9
	6	02-12140	4	NUT	.1

Section 6 Manway

6.1 Safety Note: Review Safety Section “B” prior to operating or maintaining fuel bowser.

6.2 Operation

6.2.0 The fuel bowser unit is equipped with a 16” quick opening manway assembly for internal inspections.

6.2.1 The manway is equipped with a flip locking cross arm assembly to insure sealing and securing the cover lid in place.

6.3 Maintenance

6.3.0 Inspect manway gasket weekly for cuts, cracks or galling. Replace as needed.

Section 7

Grounding/Bonding

- 7.1 Safety Note: Review Safety Section “B” prior to operating or maintaining fuel bowser.
- 7.2 Operation
 - 7.2.1 The bowser unit is supplied with two grounding reels with connectors.
 - 7.2.2 Before filling, draining, or vacuuming, the grounding reels must be attached between the aircraft or object being serviced and appropriate ground.
- 7.3 Maintenance
 - 7.3.1 Grounding reel cables should be pulled out, cleaned and inspected monthly.
 - 7.3.2 Cable clamps and ends should be cleaned and inspected for loose connections monthly.
 - 7.3.3 A Continuity test between the clamp and plug on the grounding reels should be performed monthly (replace as required).

ASSEMBLY NO. 08-1025
 MAJOR ASSEMBLY – 16” QUICK OPENING MANWAY
 SECTION 6.0

SUB ASSY	ITEM	PART NO.	QTY	DESCRIPTION	WT. #S
	1	07-1039S	1	CROSSARM, 19 ½”	2.5
	2	01-8222S	1	CROSSARM, 7”	1
	3	01-86001	1	LID, COVER, MANWAY	6
	4	06-25025	1	GASKET, MANWAY	1.5
	5	01-8700	1	RETAINER, GASKET	1
	6	02-1206	1	NUT, 5/8”-18 UNF, NYLOC	.2
	7	02-10014	1	BOLT, 3/8”-UNC X 3 ½”	.14
	8	02-10013	1	BOLT, 3/8”-UNC X 3”	.12
	9	02-1202	2	NUT, 3/8”-UNC, NYLOC	.2

Section 8

Telescoping Funnel

- 8.1 Safety Note: Review Safety Section “B” prior to operating or maintaining fuel bowser.
- 8.2 Operation
- 8.2.1 The fuel bowser may be equipped with a telescoping drain assembly. It is capable of being adjusted from 4’-2” to 8’-0”, 12’-0”, or 16’-0” high depending on model purchased.
- 8.2.2 To Raise
- a. Loosen top clamp if necessary.
 - b. Grasp top section with one hand and lift until the top clamp raises approximately 6 inches.
 - c. Tighten clamp securely with the other hand.
 - d. Reposition lifting hand by grasping tube below tightened clamp and lift until next clamp is raised approximately 6 inches.
 - e. Repeat steps 1-4 until desired height is obtained or assembly is fully extended.
- 8.2.3 To Lower
- a. Tightly grasp bottom extended tube with one hand and loosen the securing clamp.
 - b. Slowly lower tube, hand over hand, until the following clamp is resting on the loosened clamp.
 - c. Repeat steps 1 and 2 until all sections are lowered.
- 8.2.4 Funnel is equipped with a nitrile rubber seal around the top edge to allow placement against the underside of a wing.
- 8.2.5 When not in use, telescope should be collapsed and the cover closed to eliminate contamination.
- 8.3 Maintenance – Drain Assembly
- 8.3.1 The Telescoping Drain Assembly consists of stainless steel housing permanently attached to the tank and multiple aluminum tube sections.
- 8.3.2 The stainless tube and largest aluminum tubes are equipped with a clamp assembly.
- 8.3.3 Each aluminum tube is crimped on the lower end which acts as a stop to prevent the tube from sliding through the clamp.

8.3.4 Disassembling the telescoping 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.

ASSEMBLY NO. 08-1034U
 MAJOR ASSEMBLY – 16 FT TELESCOPING DRAIN ASSEMBLY
 SECTION 8.0

SUB ASSY	ITEM	PART NO.	QTY	DESCRIPTION	WT. #'S
07-1054I				DRAIN FUNNEL SECTION ASSY	
	1	01-8250	1	DRAIN, TOP (FUNNEL)	5
	2	06-1022T	1	GASKET	.7
	3	01-92402	1	TUBING, 2"O.D.	
	4	04-1039	1	SCREEN	.5
	4A	02-10002	1	BOLT, ¼"	.2
	4B	02-1200	1	NUT, ¼"	.1
08-1017U				DRAIN, TELESCOPING SECT ASSY, 2 ½"O.D.	
	5A	05-10271	1	CLAMP, 2"O.D.	
	5	01-9242	1	TUBING, 2 ½"O.D.	
	6	05-10051	1	WEDGE, 1" X 11/16" X 1 ¼"	.2
	7	05-10181	1	HANDLE, CLAMP	.3
	8	02-1005	1	SCREW, SET	.01
08-1027U				DRAIN, TELESCOPING SECT ASSY, 3"O.D.	
	9A	05-10281	1	CLAMP, 2 ½"O.D.	
	9	01-92452	1	TUBING, 3"O.D.	
	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 SECT ASSY, 3 ½"O.D.	
	13A	05-10291	1	CLAMP, 3"O.D.	
	13	01-9248	1	TUBING, 3 ½"O.D.	.5
	14	05-10031	1	WEDGE, 1" X 1-1/16" X 1-13/16"	.5
	15	05-10181	1	HANDLE, CLAMP	.3
	16	02-1005	1	SCREW, SET	.01
07-1014U				DRAIN, TELESCOPING SECT ASSY, 4"O.D.	
	17A	05-10301	1	CLAMP, 3 ½"O.D.	
	17	01-9259	1	TUBING, 4"O.D.	
	18	05-10041	1	WEDGE, 1" X 1-7/32" X 2-1/8"	.5
	19	05-10181	1	HANDLES, CLAMP	.3
	20	02-1005	1	SCREW, SET	.01
07-1041U				DRAIN, TELESCOPING SECT ASSY, 4 ½"O.D.	
	21A	01-92565S	1	TUBING, 4 ½"O.D.	
	21	05-10302	1	CLAMP, 4"O.D.	4.4

CONTINUED ASSEMBLY NO. 08-1034U
MAJOR ASSEMBLY – 16 FT TELESCOPING DRAIN ASSEMBLY
SECTION 8.0

	22	05-10051	1	WEDGE, 1" X 1" X 2 ½"	.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, ¼"-16 X ¾"	.2
	26	08-1026	1	COVER ASSEMBLY	5

ASSEMBLY NO. 08-1034W
 MAJOR ASSEMBLY – 12 FT TELESCOPING DRAIN ASSEMBLY
 SECTION 8.0

SUB ASSY	ITEM	PART NO.	QTY	DESCRIPTION	WT. #'S
07-1054W				DRAIN FUNNEL SECTION ASSY	
	1	01-8250	1	DRAIN, TOP (FUNNEL)	5
	2	06-1022T	1	GASKET	.7
	3	01-92402	1	TUBING, 2"O.D.	
	4	04-1039	1	SCREEN	.5
	4A	02-10002	1	BOLT, ¼"	.2
	4B	02-1200	1	NUT, ¼"	.1
08-1012W				DRAIN, TELESCOPING SECT ASSY, 2 ½"O.D.	
	5A	05-10271	1	CLAMP, 2"O.D.	
	5	01-9242	1	TUBING, 2 ½"O.D.	
	6	05-10051	1	WEDGE, 1" X 11/16" X 1 ¼"	.2
	7	05-10181	1	HANDLE, CLAMP	.3
	8	02-1005	1	SCREW, SET	.01
08-1013W				DRAIN, TELESCOPING SECT ASSY, 3"O.D.	
	9A	05-10281	1	CLAMP, 2 ½"O.D.	
	9	01-92452	1	TUBING, 3"O.D.	
	10	05-10121	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
08-1014W				DRAIN, TELESCOPING SECT ASSY, 3 ½"O.D.	
	13A	05-10291	1	CLAMP, 3"O.D.	
	13	01-924S	1	TUBING, 3 ½"O.D.	.5
	14	05-10031	1	WEDGE, 1" X 1-1/16" X 1-13/16	.5
	15	05-10181	1	HANDLE, CLAMP	.3
	16	02-1005	1	SCREW, SET	.01
07-1041				DRAIN, TELESCOPING SECT ASSY, 4"O.D.	
	17A	05-10301	1	CLAMP, 3 ½"O.D.	
	17	01-9259	1	TUBING, 4"O.D.	
	18	05-10041	1	WEDGE, 1" X 1-7/32" X 2-1/8	.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, ¼"- 16 X ¾"	.2
08-1026	26		1	COVER ASSY	5

ASSEMBLY NO. 08-1034Z
 MAJOR ASSEMBLY – 8 FT TELESCOPING DRAIN ASSEMBLY
 SECTION 8.0

SUB ASSY	ITEM	PART NO.	QTY	DESCRIPTION	WT #
07-1051				DRAIN FUNNEL SECTION ASSY	
	1	01-8250	1	DRAIN, TOP (FUNNEL)	5
	2	06-1022T	1	GASKET	.7
	3	01-92402	1	TUBING, 2"O.D.	
	4	04-1039	1	SCREEN	.5
	4A	02-10002	1	BOLT, ¼"	.2
	4B	02-1200	1	NUT, ¼"	.1
07-1049				DRAIN, TELESCOPING SECT ASSY, 2 ½"O.D.	
	5A	05-10271	1	CLAMP, 2"	
	5	01-9242	1	TUBING, 2 ½"O.D.	
	6	05-10051	1	WEDGE, 1" X 11/16" X 1 ¼"	.2
	7	05-10181	1	HANDLE, CLAMP	.3
	8	02-1005	1	SCREW, SET	.01
07-1045				DRAIN, TELESCOPING SECT ASSY, 3"O.D.	
	9A	05-10281	1	CLAMP, 2 ½"O.D.	
	9	01-92452	1	TUBING, 3"O.D.	
	10	05-10121	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
07-1043				DRAIN, TELESCOPING SECT ASSY, 3 ½"O.D.	
	13A	05-10291	1	CLAMP, 3" TUBING	
	13	01-9254S	1	TUBING, 3 ½"O.D.	.5
	14	05-10031	1	WEDGE, CLAMP	.5
	15	05-10181	1	HANDLES, CLAMP	.3
	16	02-1005	1	SCREW, SET	.01
	17	04-10560	1	BASE FLANGE	
	18	02-100121	4	MOUNTING BOLTS, ¼"- 16 X ¾"	.2
08-1026	19		1	COVER ASSY	5

Section 9 Vacuum

- 9.1 Safety Note: Review Safety Section “B” prior to operating or maintaining fuel bowser.
- 9.2 Operation
 - 9.2.1 This assembly is equipped with an air powered vacuum generator.
 - 9.2.2 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.
 - 9.2.3 Vacuum is started by attaching a recommended air supply of 60CFM at 100 PSI and turning on the air supply valve.
 - 9.2.4 The vacuum chamber is equipped with an automatic drain valve that opens when vacuum is eliminated in the chamber. This valve opens directly into the main tank.
 - 9.2.5 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.
 - 9.2.6 The vacuum assembly is supplied with 50 feet of vacuum hose and a ball valve on the vacuum suction.
 - 9.2.7 The vacuum assembly is equipped with (4) four each ½” NPT openings for use with pencil drains. To use, the pipe caps must be removed and self-closing quick disconnects attached. To operate, close vacuum suction valve and turn air supply on and connect drain lines.
- 9.3 Maintenance
 - 9.3.1 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 (3) three tie down latches.
 - 9.3.2 The vacuum chamber is equipped with an automatic drain valve. This valve is pre-adjusted at the factory and should not need further adjustment.
 - 9.3.3 The vacuum cover is equipped with an overflow valve which should require no maintenance.

- 9.3.3 The vacuum cover is equipped with an overflow valve which should require no maintenance.**
- 9.3.4 The vacuum generator is attached to the chamber cover. It is equipped with an exhaust silencer which should be cleaned at (6) six month intervals or more often depending on the amount of use and conditions.**
- 9.3.5 The vacuum hose should be inspected monthly for cracks. Any sudden loss of vacuum suction power may indicate a crack in the vacuum hose.**
- 9.3.6 The cover gasket should be inspected monthly for deterioration. This gasket should be pliable and free from weather checking.**

ASSEMBLY NO. 08-0002U
 MAJOR ASSEMBLY – VACUUM SYSTEM
 SECTION 9.0

SUB ASSY	ITEM	PART NO.	QTY	DESCRIPTION	WT. #'S
08-0002U			1	VACUUM SYSTEM ASSY	208.1
08-1000	1	07-1000	1	DRAIN STOP ARM	3.5
	2	04-1000	1	GASKET	.1
	3	02-10016	1	BOLT	.1
	4	02-10002	1	BOLT	.1
	5	02-1100	1	WASHER, FLAT	.1
	6A	02-1201	1	NUT	.1
	6B	02-1200	1	NUT	.1
08-1001				OVERFLOW STOP ASSY	
	7	07-1001	1	FLOAT ASSY	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 ASSY	29.6
	13	06-1022V	1	GASKET	3.5
08-1003			1	VACUUM GENERATOR ASSY	
	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	ACCESORIES	
	24	03-1001	1	ELBOW, 90 DEGREES	2
	25	03-02922S	1	NIPPLE	.5
	26	04-10321	1	VALVE, BALL	3
	27	03-1002	1	BUSHING	.2
	28	06-10162	50'	HOSE, AIRCRAFT DELIVERY	25
	29	--	--	--	--
	30	--	--	--	--

CONTINUED ASSEMBLY NO. 08-0002U
 MAJOR ASSEMBLY – VACUUM SYSTEM
 SECTION 9.0

	31	03-1021	3	CAP, PIPE	1
	32	--	--	--	--
	33A	07-1034	1	COVER, VACUUM GENERATOR	11
08-0520	33B		1	WATER SHROUD W/VENT	19.4
	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
OPTIONAL	41	02-100115	6	BOLT	1
	42	02-1202	6	NUT	.5
	43	07-1075	2	HANER, HOSE	3
	44	--	3	HOSE, AIRCRAFT DELIVERY	12
	45	04-2507	3	VALVE, BALL	6
	46	--	3	BUSHING	3.1
08-1009			1	VACUUM TANK FABRICATED AND ASSY	
	47	07-1032	1	TANK ASSY	65
	48	04-1062	1	FASTENER, HOOD	1.1
07-10341	49		1	VALVE, VACUUM CHECK ASSY	2.5

Section 11

Parking Brakes

11.1 **Safety Note:** Review Safety Section “B” prior to operating or maintaining fuel bowser.

11.2 Operation

12.1.1 The fuel 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, draining or when left unattended.

11.3 Maintenance

11.3.1 The fuel bowser unit is equipped with a parking brake assembly consisting of a 7” diameter brake drum with 1-3/4” wide brake shoes.

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

11.3.3 Adjustment may be necessary as the shoes wear

- a. Tightening is accomplished by removing the bolt through one yoke and screwing yoke in to shorten connecting rod.
- b. Do not over tighten as brakes may drag when released.

11.3.4 Brake Shoe Replacement

- a. Remove wheel.
- b. Remove nut retaining hub and drum assembly.
- c. Disconnect actuating rod
- d. Remove shoe retainers
- e. Install new shoes.
- f. Replace shoe retainers.
- g. Adjust actuator rod length.
- h. Replace wheel.

ASSEMBLY NO. 10-100052R
 MAJOR ASSEMBLY – WHEEL ASSEMBLY, REAR
 SECTION 12.0

SUB ASSY	ITEM	PART NO.	QTY	DESCRIPTION	WT. #'S
08-10111R		04-1062R		BEARING & HUB ASSY (2 REQUIRED)	
	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
	9	02-1017	5	STUDS, HUB	1
08-10061		04-10201		TIRE/WHEEL/TUBE ASSY (2 REQUIRED)	
	10	04-1020	1	WHEEL, SPLIT RIM	9.5
	11	04-1021	5	LUG NUTS, WHEEL	1
	12	04-10221	1	TIRE, 10" E-RANGE FOR 400 & UP B-RANGE FOR 200 & DOWN	4
	13	04-1045	1	TUBE ASSY	11

Section 13

Front Undercarriage

13.1 Safety Note: Review Safety Section “B” prior to operating or maintaining fuel bowser.

13.2 Operation

13.2.1 The Front Undercarriage is intended for use in trailering of fuel from aircraft or storage area to the aircraft, storage area or disposal site. Any other use is prohibited and may void any and all warranties.

13.2.2 The fuel bowser unit is equipped with steering front wheels controlled by the tow bar.

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

13.2.4 Before towing, check to see the brake is disengaged, grounding reel and hoses are disconnected, air lines and valves are closed, tow bar is securely attached to the towing vehicle and all manway and covers are closed and latched.

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

13.3 Maintenance

13.3.1 The fuel bowser is equipped with steering front wheels, controlled by the tow bar and fixed rear wheels.

13.3.2 Maintenance should consist of the following:

- a. Kingpin bushing, turning bushings and tie rod ends are self-lubricating and need no additional maintenance.
- b. Inspect wheel bearings at (3) three month intervals. Repack and, or replace as needed.
- c. Check tire pressure weekly. Maintain pressure as per tire markings.

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

ASSEMBLY NO. 08-1029
MAJOR ASSEMBLY – FRONT UNDERCARRIAGE
SECTION 13.0

SUB ASSY	ITEM	PART NO.	QTY	DESCRIPTION	WT. #'S
08-1029			1	FRONT UNDERCARRIAGE	
	1	07-1103	1	BAR, TOW	20.4
	2	07-1020	1	LATCH, TOE	3.7
	3	07-1052	1	ARM, STEERING	10.4
	4	07-1045	1	PLATE, LOWER	6.7
	5	07-10371	1	ROD, TIE	6.2
	6	03-1016	2	ROD, END	5
	7	07-1009	2	HOUSING, KING PIN MACH.	23.8
	8	07-1053	1	AXLE, FRONT	53.9
	9	05-1010	2	PIN, KING 1-1/2" X 11"LG	5.5
	10	06-1023	2	PAD, MOUNTING, 1/2"THK	.32
	11	02-1304	1	PIN, HITCH	2
	12	02-1300	1	PIN, COTTER	.2
	13	04-1054	1	SPRING, PULL CENTURY #C-187	.5
	14	03-1013	4	BUSHING, OILITE	1
	15	03-1014	2	BUSHING, OILITE	1
	16	03-1015	2	BUSHING, OILITE	.8
	17	02-1503	4	BOLT, 1/2"-13NC X 5"LG	1.3
	18	02-1502	2	BOLT, 1/2"-13NC X 1-3/4"LG	.32
	19	02-1501	1	BOLT, 5/16"-18NC X 4-1/2"	.2
	20	02-12131	4	NUT, 1-1/2"-12NF	2
	21	02-12071	4	NUT, 3/4" – 16NF	1.1
	22	02-12041	4	NUT, 1/2" X 13NC	.8
	23	02-12012	1	NUT, 5/16"-18NC	.6
	24	02-11131	4	WASHER, FLAT 1-1/2"	.7
	25	02-11072	6	WASHER, FLAT 3/4"	.4
	26	02-12141	2	NUT, 3/4"-16NF	.55

ASSEMBLY NO. 08-1018
MAJOR ASSEMBLY – AXLE ASSEMBLY
SECTION 13.0
(FITS 300 GALLON & LARGER UNITS)

SUB ASSY	ITEM	PART NO.	QTY	DESCRIPTION	WT. #'S
08-1018			1	AXLE, ASSEMBLY, FRONT	
	1	07-1103	1	BAR, TOW	23
	2	07-1104	1	ARM, TURNING	16
	3	07-1005	1	TIE ROD	7.3
	4	07-11071	1	AXLE, FRONT	53
	5	07-1016	1	STEERING ARM, LOWER PLATE	6.7
	6	05-1009	1	SLEEVE, KING PIN, RIGHT	12
	7	05-1009	1	SLEEVE, KING PIN, LEFT	12
	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, KIN PIN SLEEVE	1
	12	03-1016	2	ENDS, TIE ROD	5
	13	02-11072	5	WASHERS, TIE ROD	.4
	14	02-12071	2	NUT, TIE ROD ENDS	.6
	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	.8
	21	02-12041	4	NUTS, TANK MOUNTING	.5
	22	02-1502	2	BOLTS, TURNING ARM CLAMP	.3
	23	02-12041	2	NUTS, TURNING ARM CLAMP	.4
	24	02-1304	1	HITCH PIN	2
	25	07-1020	1	TOE LATCH	3
	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

ASSEMBLY NO. 10-100042
MAJOR ASSEMBLY – FRONT WHEEL ASSEMBLY
SECTION 13.0

SUB ASSY	ITEM	PART NO.	QTY	DESCRIPTION	WT. #'S
10-100042	--	--	2	FRONT WHEEL ASSEMBLY	116
	1	08-1011	1	BEARING AND HUB ASSY, FRONT	23
	2	08-10061	1	TIRE/WHEEL/TUBE ASSY	35

ASSEMBLY NO. 08-10061
 MAJOR ASSEMBLY – FRONT WHEEL ASSEMBLY
 SECTION 13.0

SUB ASSY	ITEM	PART NO.	QTY	DESCRIPTION	WT. #'S
08-10061			1	TIRE/WHEEL/TUBE ASSY	35
	1	04-1020	1	WHEEL, SPLIT RIM	19
	2	04-1021	5	NUTS, LUG	1
	3	04-10221	1	TIRE, 10" E-RANGE FOR 400 & UP B-RANGE FOR 200 & DOWN	4
	4	04-1045	1	TUBE ASSY	11

ASSEMBLY NO. 08-1011
 MAJOR ASSEMBLY – FRONT WHEEL ASSEMBLY
 SECTION 14.0

SUB ASSY	ITEM	PART NO.	QTY	DESCRIPTION	WT. #'S
08-1011		04-1050	1	BEARING AND HUB ASSY, FRONT	23
	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		1
	8	04-1019	1	CAP, DUST	1
	9	02-1017	5	STUDS, HUB	1

ASSEMBLY NO. 10-100110
 MAJOR ASSEMBLY – MISC. FIXTURES
 SECTION 16.0

SUB ASSY	ITEM	PART NO.	QTY	DESCRIPTION	WT. #'S
10-100110			1	DRAIN ASSY	
	1	04-10321	1	VALVE, BALL LOCKING	6
	2	04-1033	1	COUPLER, CAMLOCK	1.5
	3	04-10331	1	PLUG, CAMLOCK	.5
	4	04-1034	1	CHAIN	.2
	5	04-1035	1	LINK	.1
	6	04-10351	1	HOOK, S-TYPE	.1
08-1013			1	GROUNDING REEL ASSEMBLIES	
	7	04-1036	1	REEL, GROUNDING CLAMP TYPE	12
	8	04-10361	1	REEL, GROUNDING PLUG TYPE	12
	9	02-10040	4	BOLT	.3
	10	02-100115	4	NUT	.1
08-1014			1	SIGHT GAUGE ASSY	
	11	03-0017S	2	ELBOW	.3
	12	03-1007	1	TEE	.3
	13	03-1008	2	NIPPLE	.3
	14	03-11130	2	HOSE BARB	.3
	15	03-1010	2	HOSE CLAMP	.3
	16	04-1032	1	VALVE, BALL	.3
	17	06-2527	1	TUBING	.3
	18				
	19				
04-1037	20	04-1037	1	VENT, MORRISON	1

ASSEMBLY NO. 10-100070
 MAJOR ASSEMBLY – DECAL PACKAGE
 SECTION 17.0

SUB ASSY	ITEM	PART NO.	QTY	DESCRIPTION	WT. #'S
10-100070			1	DECAL PACKAGE	2.7
	1	06-1002	1	CAUTION, VACUUM SYSTEM	.1
	2	06-1003	1	CAUTION – PARK BRAKE	.1
	3	06-1004	2	WARNING,- GROUNDING REELS	.1
	4				
	5	06-1006	2	DANGER – NO SMOKING	.2
	6	06-1007	1	NOTICE – READ MANUAL	.1
	7	06-1008	1	MAXIMUM TOW SPEED	.1
	8	06-1010	1	ON/OFF – PARK BRAKE	.1
	9	06-1010	1	ON/OFF – PARK BRAKE	.1
	10	06-1011	8	ON/OFF DRAIN VALVE	.8
	11		8	REFLECTOR TAPE, 6”LG	.8
	12				

ASSEMBLY NO. 07-0700
 MAJOR ASSEMBLY – UNIVERSAL SUMPING ASSEMBLY
 SECTION 18.0

SUB ASSY	ITEM	PART NO.	QTY	DESCRIPTION	WT. #'S
07-0700			1	UNIVERSAL SUMPING ASSY	
	1	07-0700-1	2	COUPLER, MALE	
	2	07-0700-2	1	COUPLER, FEMALE	
	3	03-11130	4	BARB, HOSE	
	4	03-101005	4	CLAMP	
	5	07-0700-5	1	HOSE, BRAIDED	
	6	07-0700-6	1	HOSE, BRAIDED	
	7	03-10155	1	BUSHING	
	8	08-0100	1	PROBE TIP SET	
	9	08-0100	1	VACUUM PLUG W/ O-RINGS	
	10	08-0200	1	SUMPING CUP	
	11	03-11133	1	HOSE BARB	
	12	07-0700-12	1	VALVE	
	13	03-1010	2	CLAMP	
	14	07-0700-14	1	HOSE, PVC CLEAR	
	15	07-0700-15	1	HOSE BARB	
	16	07-0700-16	1	CHECK VALVE	
	17	03-10821	1	NIPPLE	
	18	07-0700-18	1	COUPLER, FEMALE	

*This is not
 in this manual
 like Before??
 5/29/02*

Section 19

Remote Funnel

19.1 **Safety Note:** Review Safety Section “B” prior to operating or maintaining fuel bowser.

19.2 Operation

19.2.1 The Remote Funnel is intended for use in draining and collection of fuel from aircraft in conjunction with transportation via the vacuum system of a fuel bowser. Any other use is prohibited and may void any and all warranties.

19.2.2 The Remote Funnel is equipped with a telescoping drain assembly. It is capable of being adjusted from 21-1/2” to 51-1/2” high.

19.2.3 To Raise:

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

19.2.4 To Lower:

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

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

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

19.3 Maintenance

19.3.1 The Remote Funnel consists of a stainless steel base 3-1/2” in diameter provided with a tripod support and (2) two aluminum tube sections.

19.3.2 The stainless tube and (2) two aluminum tubes are equipped with a clamp assembly.

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

19.3.4 Disassembling of the telescope assembly is accomplished by rotating the (3) three 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.

ASSEMBLY NO. 07-1110U
 MAJOR ASSEMBLY – REMOTE FUNNEL
 SECTION 19.0

SUB ASSY	ITEM	PART NO.	QTY	DESCRIPTION	WT. #'S
07-11103			1	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	
	5	04-0093	1	HELICOIL	
	6	03-1003	1	HOSE ADAPTER	
	7	02-10010	3	CLAMP BOLT	
07-11104			1	REMOTE DRAIN FUNNEL, LOWER	2.5
	8	01-92452	1	TUBE, 3" O.D.	
	9	05-10022	1	CLAMP, LOWER	
	10	02-100181	1	SCREW, CLAMP	
	11	05-0037	1	PLASTIC	
	12	04-0093	1	HELICOIL	
07-11105			1	REMOTE DRAIN FUNNEL, MID	1.75
	13	01-9242	1	TUBE, 2-1/2" O.D.	
	14	05-10032	1	CLAMP, MID	
	15	02-10015	1	SCREW, CLAMP	
	16	05-0037	1	PLASTIC	
	17	04-0093	1	HELICOIL	
07-11106			1	REMOTE DRAIN FUNNEL, TOP	13
	18	01-82501	1	FUNNEL, CAST ALUM ASSY	
	19	04-1039	1	DEBRIS SCREEN	
	20	02-1200	1	LOCK NUT	
	21	06-1022	1	NYTRIL GASKET	
	22	04-1053	1	DRAW LATCH	
07-11107		07-1116	1	REMOBE FUNNEL LID ASSY	12
	23	01-9007	1	LID FABRICATION	
	24	01-91984S	1	ROD, THREADED	
	25	02-1200	2	LOCK NUT	
	26	02-1200S	2	WASHER	
	27	01-9233S	1	PIPE	

Section 21.0
Warranty INFORMATION

SPOKANE METAL PRODUCTS

Spokane Washington

FUEL BOWSER TANK

ONE YEAR LIMITED WARRANTY

Seller warrants its "Fuel Bowser 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. Our obligation under this Warranty shall be limited to the repair or exchange of equipment and parts which may prove defective within one year 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 prepaid.

This Warranty does not extend to damage caused by environmental factors varying from normal design conditions, whether natural or manmade, 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 the effect adversely it 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 OF SELLER. SELLER SHALL IN NO EVENT BE LIABLE FOR ANY CONSEQUENTIAL LOSS OR DAMAGE RESULTING FROM THE USE OF THE UNIT.

Section 20
Trouble Shooting

Not Revised yet
5/29/02

finish

SYMPTOM

PROBABLE CAUSE

PROBABLE CORRECTIONS

Bowser does not track or steer correctly or steer loosely

Bent King Pin Housing see Section 13.7

Replace King Pin Housing

Defective Tie Rod End see Section 13.8

Replace Tie Rod End

Loose or worn out Bushings see Section 13.0

Replace as Needed —
DEFECTIVE BUSHINGS

Tow Bar does not stay in the upright position

Broken or stretched spring see Section 13.0

Replace as Needed

Parking Brake does not work

Need adjustment
SEE SECTION 11.0

Adjust as per ~~instruction in~~ ^{NEEDED} Section

Needs Repairing see Section 11.0

Replace as Needed

Vacuum System does not have much suction

Defective lower drain stop gasket, see Section 9.0 ITEM # 2

Replace as Needed

Not enough air pressure to operate vacuum generator, see Section 9.0

Increase air pressure and volume (DO NOT EXCEED 60 CFM @ 100 PSI)

Plugged outlet Filter ^{SILENCER} see Section 9.0 ITEM 15

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 9.0 ITEM # 8

Replace or adjust as needed

Float on Vacuum shutoff is bent, see Section 9.0 ITEM # 7

Fix or repair as needed