

ICE MASTER[®] U-SERIES

OWNER'S MANUAL




Product Codes:
IMU100

Version 1.9

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INTRODUCTION

Congratulations! You now own an Camion™ sprayer. Durable design and construction assure you a lifetime of extreme performance. No sprayer is tougher. No sprayer will last longer.

Take a look through this owner's manual to learn how the pros use their Camion™ sprayer.



Watch Instruction Videos:

www.youtube.com

Discover More Helpful Tips:

blog.enduraplas.com/ice-control

WARNINGS

1. Do not exceed vehicle manufacturers loading, towing or lifting specifications and regulations.
2. Ensure tank is firmly secured in an appropriate manner.
3. Use caution at all times, particularly when driving on rough terrain.
4. Comply with chemical manufacturers safety requirements and all relevant legislations.
5. ALWAYS keep tank tightly covered, to prevent children or animals from entering tank.
6. Tank is not fire resistant. NEVER expose it to open flame or heat.
7. Keep sharp objects from tank. Tank could be punctured and contents could escape and cause injury to persons or property.
8. This tank can be used only with polyethylene compatible liquids. If you are uncertain, ask chemical supplier if material can safely be stored in a polyethylene tank. **USE OF TANK WITH ANY OTHER MATERIAL COULD CAUSE TANK TO FAIL, RESULTING IN INJURY OR PROPERTY DAMAGE.**
9. **DO NOT MIX CHEMICALS. THIS CAN RESULT IN DAMAGE TO THE TANK OR NEARBY PERSONS OR PROPERTY.**
10. Clean out tank before changing chemicals **OTHERWISE A DANGEROUS MIXTURE OF CHEMICALS COULD CAUSE DAMAGE TO PERSONS, TANK OR PROPERTY.**
11. Regular service and maintenance is the Owner's responsibility and is a condition of your warranty.
12. **FAILURE TO COMPLY WITH ALL WARNINGS AND INSTALLATION INSTRUCTIONS WILL VOID WARRANTY.**

13. No modifications and/or alterations may be made to this sprayer. Any such modifications not only void the sprayer warranty but can make the unit dangerous to anyone operating the pump.
14. Always inspect hoses and piping to avoid burst injuries.
15. DO NOT turn suction valve off while pump is running.
NEVER RUN PUMP DRY.

COMPATIBLE LIQUIDS

Calcium Chloride Brine, Salt Brine and Premium Branded Liquids.

⚠ Caution: Brine that contain tacky substances or solid particles may clog pumps and nozzles. These are not recommended.

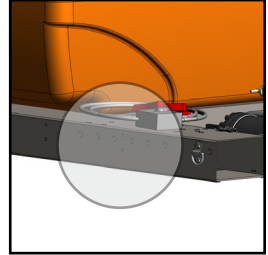
⚠ Warning: DO NOT USE any products that contain petroleum or petroleum by-products of any kind. These destroy seals and will void warranty.

Discover More Helpful Tips:
blog.enduraplas.com/ice-control

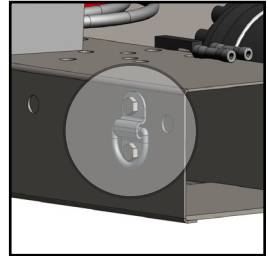
GETTING STARTED

Installing the Mounting System

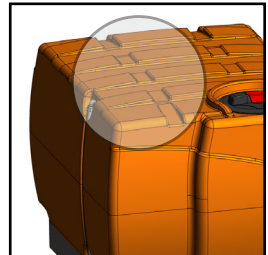
1) If you wish to use the d-ring tie-down system, select your desired mounting points on each side of the frame



2) Install 2 d-ring tie-downs on each side of the frame using the supplied nuts and bolts.

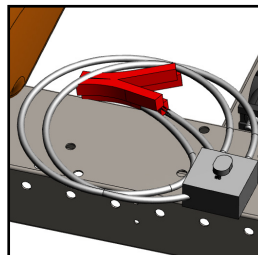


3) Another option of mounting the applicator to vehicle is to run straps over the poly tank, securing to sides of vehicle box.

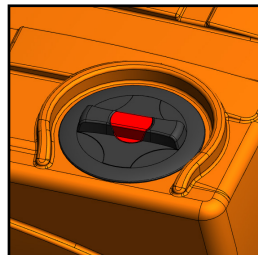


GETTING STARTED**Setting Up & Operating Sprayer**

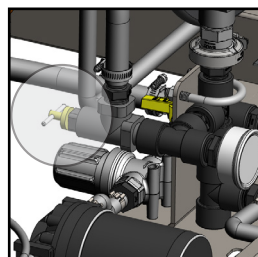
1) Route the cable to your vehicle battery and connect the battery clips to the battery.



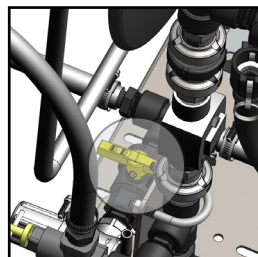
2) Take tank lid off and fill tank at least 1/4 full with water, enough to run through the system to check all components are functioning correctly.



3) Before turning your pump on, make sure the pressure regulator is fully open (counter clockwise) to avoid premature wear or damage to the pump. This will allow liquid to flow through return line back into tank.



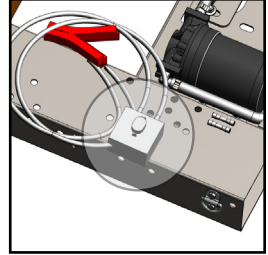
4) Ensure the valve between the tank and pump is in open position before you turn the pump on. This will ensure pump does not run dry. Handle should be parallel to hose for open position.



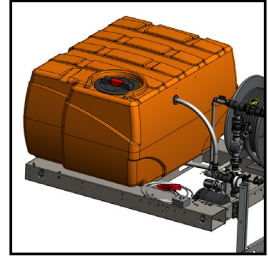
GETTING STARTED

Setting Up & Operating Sprayer

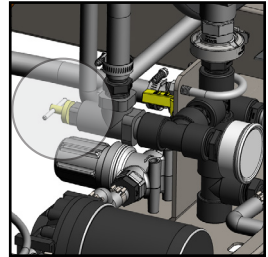
5) Turn on pump switch and run clean water through the entire unit before using salt brine to check for any unexpected leaks caused in shipping.



6) Unit is ready for use. Fill with desired liquid.

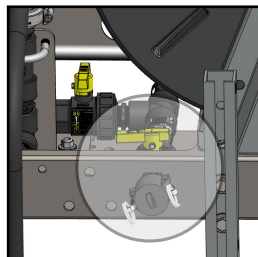


7) Turn on pump and adjust pressure regulator to desired pressure.

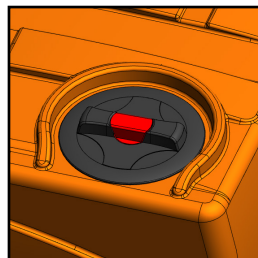


GETTING STARTED**Draining & Winterizing**

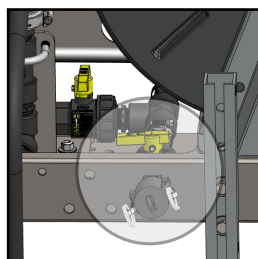
1) Completely drain liquid out of tank through the drain port on back of unit (in a safe environment) and close the drain valve when empty.



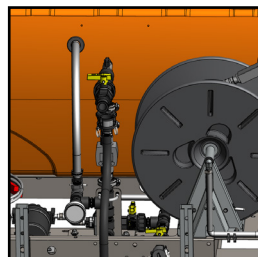
2) Fill the tank 1/4 with fresh water and run pump to recirculate through system for approximately 2 minutes.



3) Shut pump off and drain liquid out of back drain plug. Close valve and reinstall drain cap.



4) Put a couple gallons of RV antifreeze in tank and run pump to make sure the antifreeze is through all of the lines. Include running antifreeze through hose reel.



GETTING STARTED

Draining & Winterizing

5) Your applicator should now be safe to store in a dry protected area.



CALIBRATING

Note: Always double check your application rates.

NOZZLE COLOR	PSI	CAPACITY ONE NOZZLE IN GPM				8 GPM	10 MPH
		4 MPH	6 MPH	8 MPH	10 MPH		
White	20	0.56	42	28	21	16.6	
	30	0.72	53	36	27	21	
	40	0.80	59	40	30	24	
	50	0.88	65	44	33	26	
	15	0.092	68	46	34	27	
Green	20	1.06	79	52	39	31	
	30	1.30	97	64	48	39	
	40	1.50	111	74	56	45	

GPM = Gallons Per Minute

GPA = Gallons Per Acre

GAL/1000 FT = Gallons Per 1000 Square Feet

W = Nozzle spacing

Gallons Per Minute Formula:

$$\frac{\text{GPA} \times \text{MPH} \times \text{W (per nozzle)}}{5,940}$$

Gallons Per Minute Formula:

$$\frac{\text{GAL}/1000\text{FT} \times \text{MPH} \times \text{W (per nozzle)}}{136}$$

Gallons Per Acre Formula:

$$\frac{5,940 \times \text{GPM (per nozzle)}}{\text{MPH} \times \text{W}}$$

Gallons Per 1000 Square Feet:

$$\frac{136 \times \text{GPM (per nozzle)}}{\text{MPH} \times \text{W}}$$

Convert Acres to Lane Mile:

$$1.4545 = 1 \text{ Lane Mile}$$

MAINTAINING

Keeping your sprayer in good condition will help you lengthen the life of the sprayer. Everyone knows a well maintained piece of equipment ensures a longer life span. Sprayer maintenance can seem a huge task if you don't have the right tools.



Watch Instruction Videos:

www.youtube.com

Discover More Helpful Tips:

blog.enduraplas.com/ice-control

<p>The information applies in normal operating conditions. The specific intervals must be shortened accordingly for longer daily working hours. If the machine is only used occasionally, the intervals can be extended accordingly.</p>	Before starting work	X										
	At the end of work and/or daily		X	X	X	X						
	Weekly or every 40 operating hours											
	After the first 5 operating hours											
	Every 250 operating hours or once a year											
	If damaged									X		X
	If required							X	X		X	
	Visual inspection (condition, leaks)											
	Complete machine											
	Tank, hoses and fittings											
In-line filter												
Spray lance nozzle												
All accessible screws and nuts												
Safety labels												
Pump												
<p>Read and follow all maintenance and care instructions in the Pump manual.</p>												

TROUBLESHOOTING

CONDITION	CAUSE	REMEDY
Pump will not prime	1) Air leak on suction plumbing 2) Blocked/Restricted intake hose 3) Filter cap disengaged 4) Filter gasket damaged/missing 5) Tank is out of liquid	1) Tighten/replace fittings & hose clamps. Verify suction hoses are in good condition 2) Remove blockage from suction line, ensure line is not kinked 3) Lock filter cap into position 4) Replace filter gasket 5) Fill tank with liquid
Pressure drops/ fluctuates during standard operation	1) Restriction on suction line 2) Pump sucking air 3) Plugged filter 4) Damaged regulator	1) Inspect tank and suction lines and remove restriction 2) Tighten fittings 3) Remove and clean filter mesh and housing 4) Remove regulator stem and inspect for broken parts/pieces

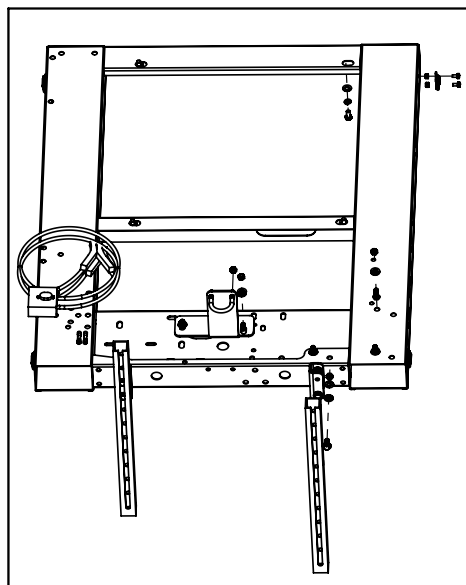
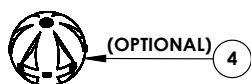
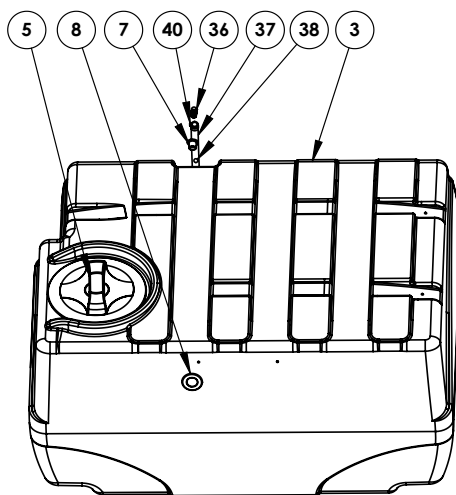
CONDITION	CAUSE	REMEDY
Pressure gauge not registering	1) Plugged with debris	1) Un-thread, check and clean pressure gauge
Hand gun loses pressure	1) Debris in hose or nozzle 2) Pump losing prime 3) Pump pressure dropping/fluctuating	1) Un-thread nozzle tip and clean 2) See Remedy for 'Pump will not prime or loses prime' 3) See Remedy for 'Pressure drops/ fluctuates during standard operation'



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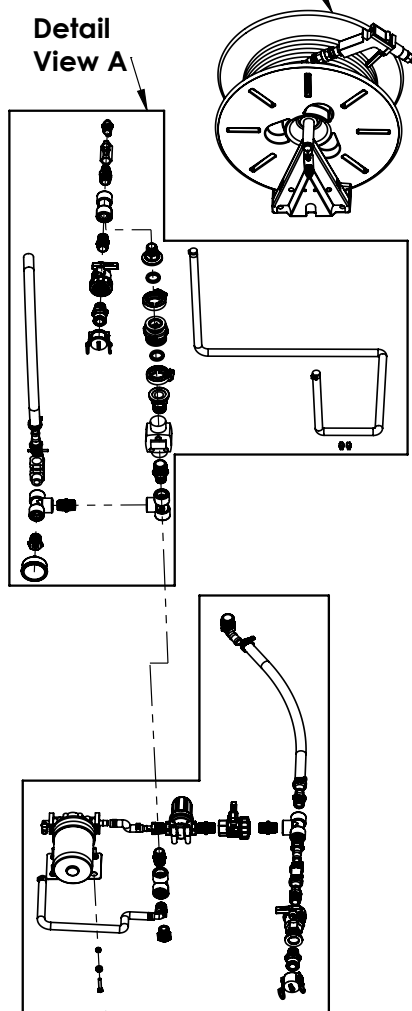
OVERVIEW



Detail View B

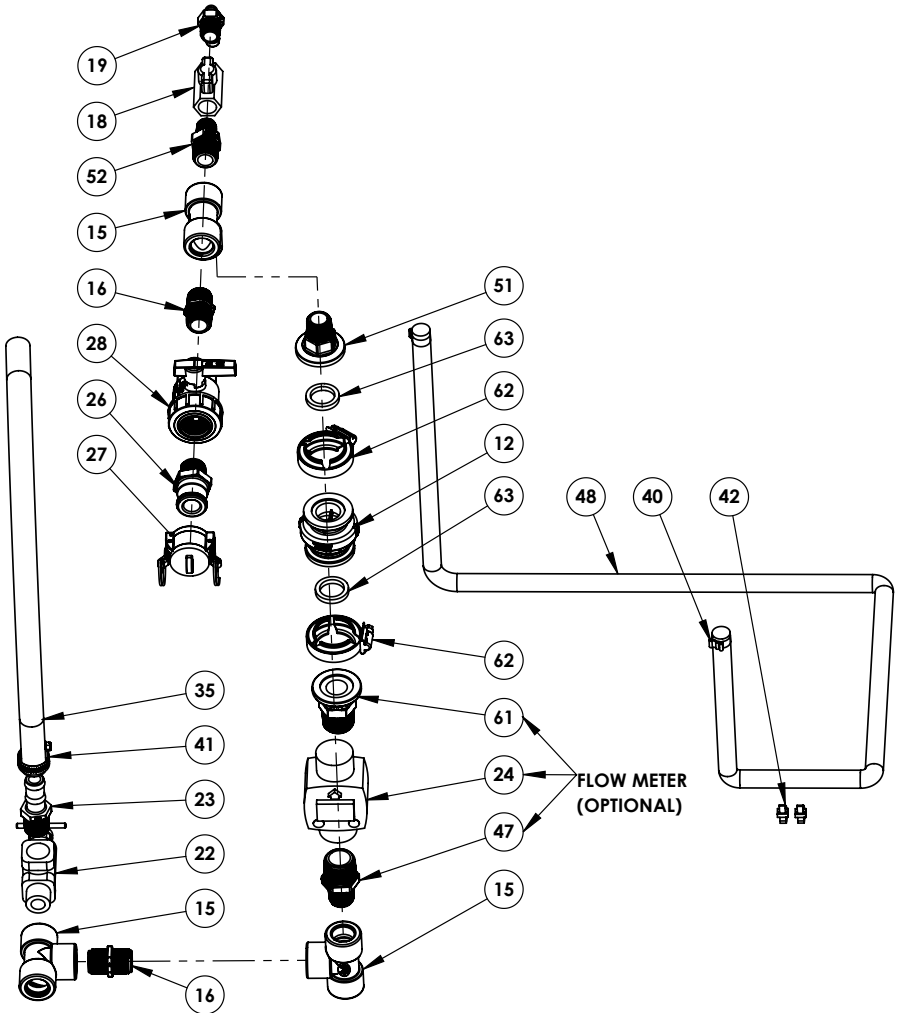
Deicing Hose Reel Detail

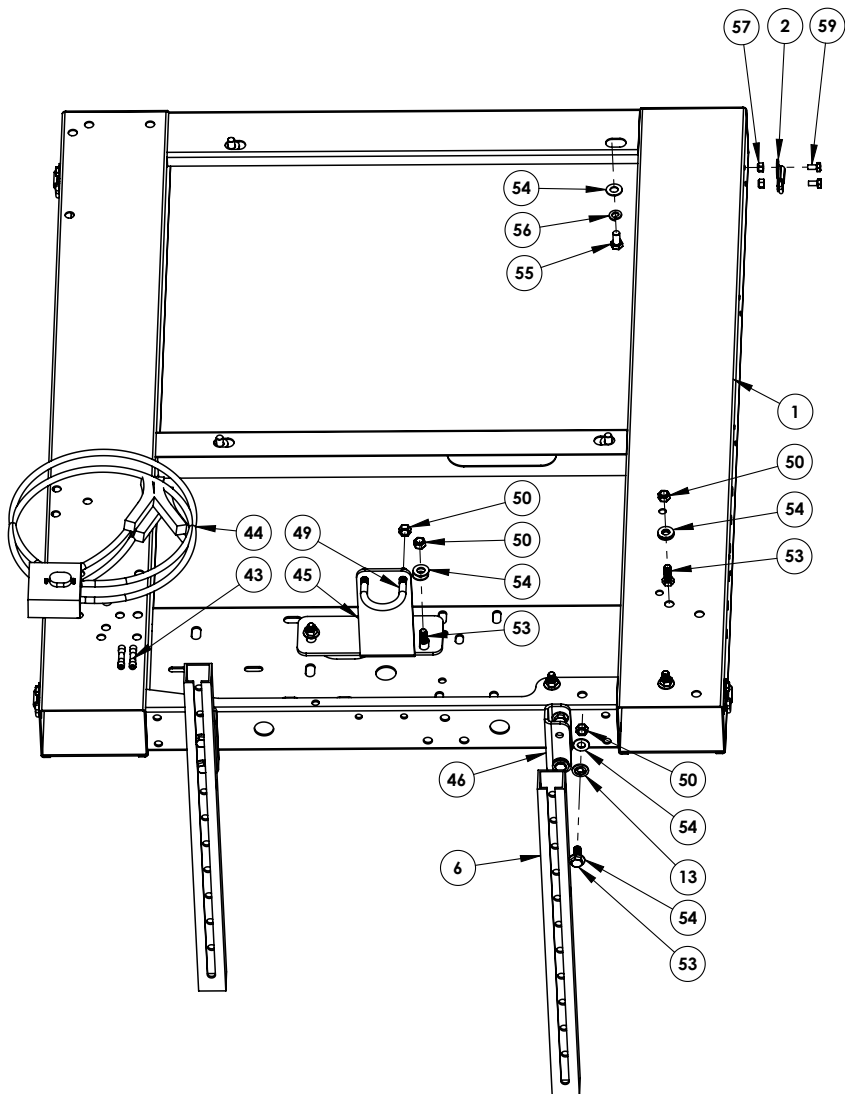
Detail View A



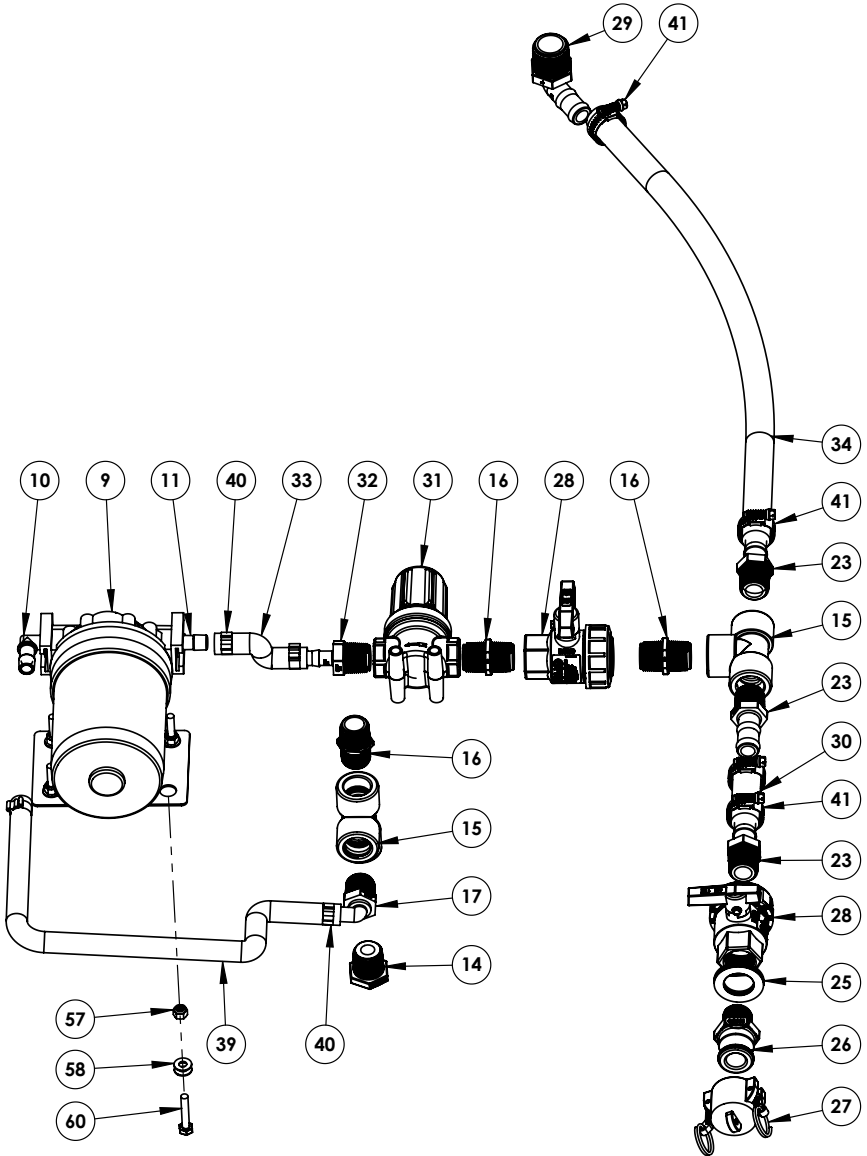
Detail View C

DETAIL VIEW A



DETAIL VIEW B

DETAIL VIEW C



PARTS LIST

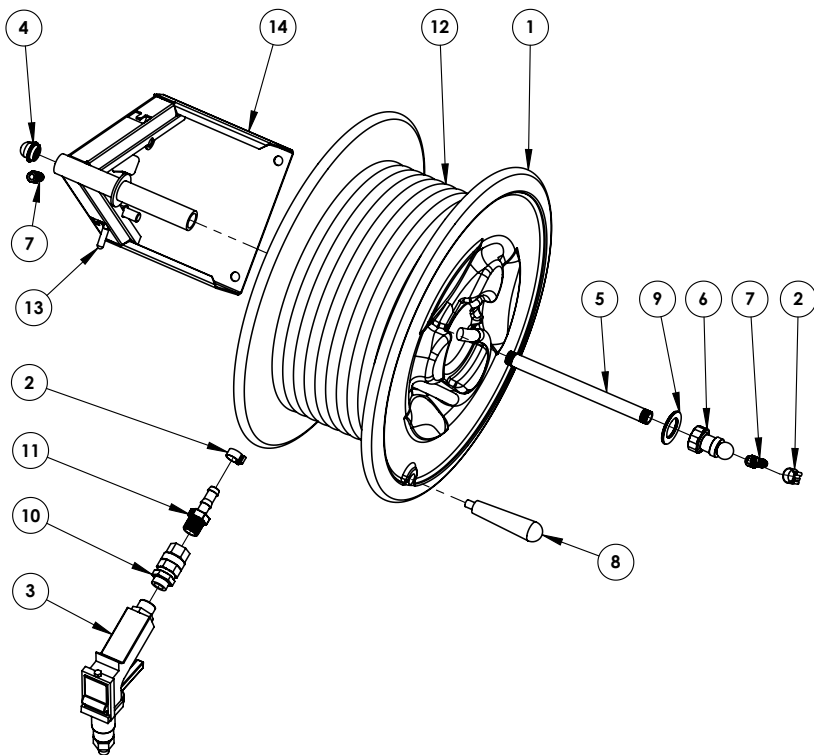
ITEM NO.	PART #	DESCRIPTION	QTY.
1	AZFB060BSS	Base Only for 60 100 Gal SS	1
2	AZFB060DSS	D Ring Stainless Steel	4
3	AMTHSFB100OE	100 Gallon FB tank	1
4	AVB195	Baffle Ball For 8"lid tanks	48
5	CA3511221	8 inch lid	1
6	AZKB0005SS	23.75" Stainless Steel Adj. Boom Bracket	2
7	CPFG10	5/8 Top hat grommet	2
8	CPFG15	3/4 Press fit hose grommet	1
9	APD07G060PQB	7GPM 60PSI, Bypass, .5 quick attach	1
10	CPPDD006	5900 Series 1/2" Elbow 90	1
11	CPPDD003	5900 Series 1/2" Straight	1
12	CBMVCV100	1 IN flanged check valve	1
13	CHWNR03	Self retaining washer for 3/8 and M9	4
14	CBPLUG075	3/4 Poly Pipe Plug	1
15	CBTEE075	3/4 Poly Pipe Tee	5
16	CFPN04M04M	3/4 Short Nipple	5
17	CFPE04M02B	3/4 MNPT x 1/2 Hose Barb 90	1
18	CVS34DX1	1/2 FIP x 1/2 FIP T-Handle Ball Valve	1
19	CBHB05090	1/2 MNPT x 1/2 Hose Shank 90	1
20	CBRB075025	3/4 MNPT x 1/4 FNPT Reducing Bushing	1
21	CV2240GXB100	Pressure gauge 100psi Glycerin filled	1
22	CVRV20660158	3/4 Pressure Relief Valve	1
23	CFPS04M04B	3/4 MNPT To 3/4 Hose Shank	4
24	ARFD01	Digital Flow Meter	1
25	CHWZF105	1 SAE Flat Washer	2
26	CB075F	3/4 Male Adaptor x 3/4 MPT	2
27	CB075CAP	1/2 and 3/4 Camlock cap	2
28	CVPBV234	3/4 FPT Union Valve	3
29	CFPE05M04B	1 MPT x .75 Hose Barb 90	1
30	CLUESB020004	3/4 hose from tee to drain	1
31	CLBLSTM07550	3/4 T-Strainer with Mesh Screen	1
32	CFPS04M02B	3/4 MPT X 1/2 Hose Barb	1
33	CLUESB020002	1/2" hose from inline strainer to pump	1
34	CLUESB020004	.75 hose from Tank to Tee	1
35	CLUESB020004	.75 Hose Return to Tank	1
36	CV3EL12HB	1/2 X 1/2 hose barb 90 degree	2
37	CLUVGC02502	1/2" Site Glass Hose FG 100	1
38	CPSB01	10MM Site Glass Ball Level Indicator	1
39	CLUESB020002	.5 Hose Discharge Side Pump to outlet	1
40	CFCC003	Clamp for 1/2" Hose	8
41	CFCW001	Clamp For 3/4" Hose	5
42	CXSC0002	Cable Tie 8"	2
43	CTEW029	Butt Connector Crimp	2

PARTS LIST

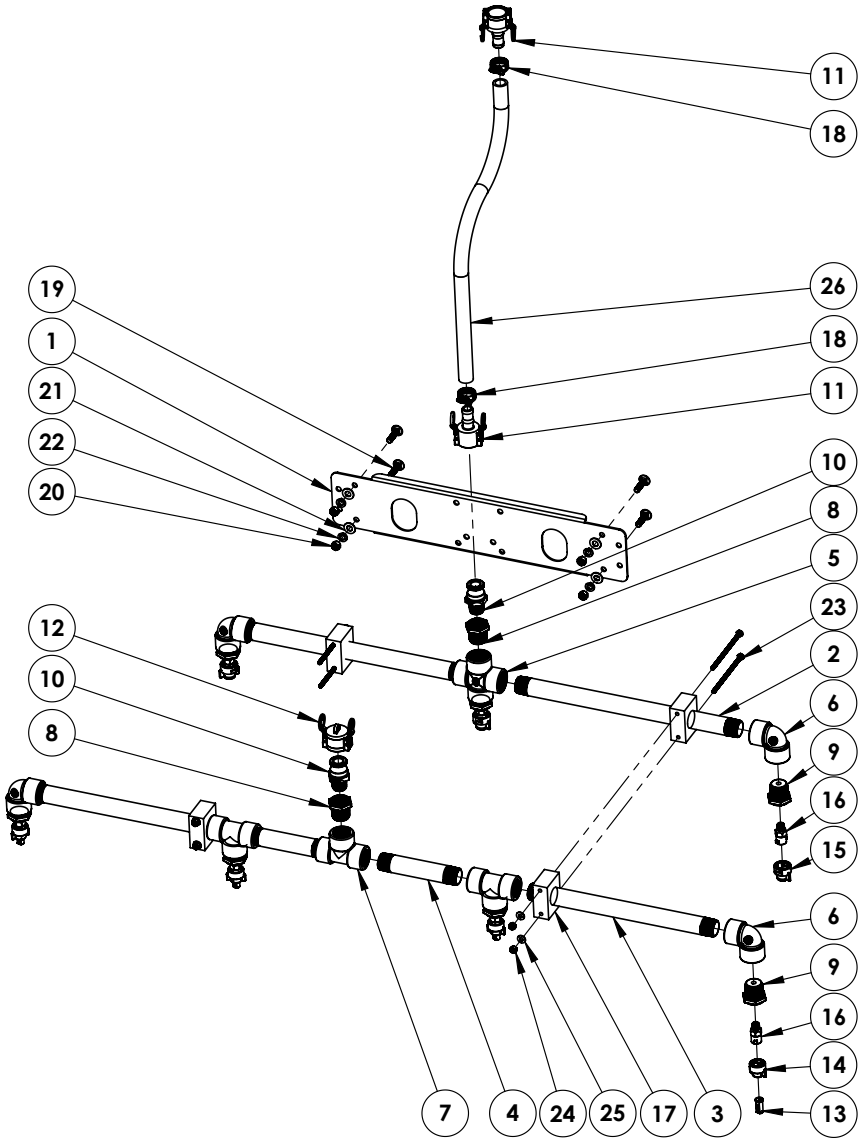
ITEM NO.	PART #	DESCRIPTION	QTY.
44	CEWCIM01	12 GA Ice Master Wire Harness	1
45	AZKF0018	Valve Holder for IM U-Series	1
46	AZFB060JSS	Stainless Field Boss Boom Mount Spacer	2
47	CBRN100075	1 x 3/4 Poly Reducing Nipple	1
48	CLUESB020002	.5 Hose from shutoff to Hose Reel	1
49	CHUS031234002	1.75 SS U-Bolt	1
50	CHNSN0323	3/8" SS Nylock Nut	15
51	CBM100075MPT	1 IN Flange x .75 IN Male Thread	1
52	CBRN075050	3/4 to 1/2 Reducing Nipple	1
53	CHBS030523	3-8" x 1" SS Hex Bolt	13
54	CHWSF033	3/8" SS Flat Washer	30
55	CHAS030323	3/8-16 inch x 3/4 inch Stainless Steel Bolt	4
56	CHWSL033	3/8" SS Lock Washer	4
57	CHNSN0123	1/4" Stainless Lock Nut	12
58	CHWSF013	1/4" SS Flat Washer	8
59	CHBS010223	1/4 X 1/2 Stainless Bolt	8
60	CHBS010723	1/4 X 1-1/2 SS Bolt	4
61	CBM100MPT	1" Flange x 1" MPT	1
62	CBFC100	1" Worm Screw Flange Clamp	2
63	CBM100G	1" Manifold Gasket	2

DETAIL VIEW HOSE REEL

ITEM NO.	PART #	DESCRIPTION	QTY.
1	AMAH01GY	HR030/050 REEL ONLY	1
2	CFCC003	Clamp for 1/2" Hose	2
3	CPLF01	Heavy Duty Spray Gun STAL16-viton seals	1
4	CFRB06	1/4-3/8 BSP FEMALE ELBOW	1
5	CFRB07	STAINLESS PIPE 3/8 THREAD BOTH ENDS	1
6	CFRB08	3/8 X 1/4 BALL BEARING SWIVEL	1
7	CFRB09	1/4 MALE THREAD X 1/2 HOSE BARB	2
8	CFRH03C	PHENOIC TAPERED HANDLE	1
9	CHWZF105	1 SAE Flat Washer	1
10	CFBW04M04FB	.5 M BSP - .5 F NPT Heavy Duty Swivel	1
11	CFPS02M02B	1-2 MPT x 1-2 Hose Barb	1
12	CLUESB020002	1/2 EPDM HOSE	1
13	AZKH0018	Lock for Small Hose Reel	1
14	AZKH0003SS	3ASR03B HR FRAME 304 SS	1



OVERVIEW



PARTS LIST

ITEM NO.	Part #	DESCRIPTION	QTY.
1	AZFPM005	IMS4-6 Stainless boom bracket	1
2	AZFPM020	1" x 17-3/4" Poly Pipe For Deicing Boom	2
3	AZFPM022	1" x 14-13/16" Poly Pipe For Deicing Boom	2
4	AZFPM021	1" x 6-1/4" Poly Pipe For Deicing Boom	2
5	CBCR100	1" Poly Pipe Cross	1
6	CBEL10090	1" Poly Pipe Elbow 90	4
7	CBTEE100	1" Pipe Tee	3
8	CV3RB10034	Reducer Bushing 1" MPT X 3/4" FPT	2
9	CBRB100025	1" MPT x 1/4" FPT Reducer Bushing	7
10	CB075F	3/4" Male Adaptor x 3/4" MPT	2
11	CB075C	3/4" Female Coupling X 3/4" Hose Shank	2
12	CB075CAP	1/2 and 3/4 Camlock cap	1
13	CNST002	3 Stream White Nozzle	4
14	CNST004	25598 REP. CAP CE White & Washer	4
15	CNST009	Teejet Tip/CAP XR 1-1/2 GPM	3
16	CNST017	TeeJet 1/4" NPT x BSPT Female Connection Adapter	7
17	AZFPM015	1" Pipe Clamp	4
18	CFCW001	Clamp For 3/4" Hose	2
19	CHBS030723C	3/8" x 1-1/2" SS Carriage Bolt	4
20	CHNSH0323	3/8" SS Hex Nut	4
21	CHWSF033	3/8" SS Flat Washer	4
22	CHWSL033	3/8" SS Lock Washer	4
23	CHBS012123	1/4" x 5" Long 18-8 Stainless Hex Head Bolt	4
24	CHNSN0123	1/4" Stainless Lock Nut	4
25	CHWSF013	1/4" SS Flat Washer	4
26	CLUESB020004	3/4" Hose (Center Boom Hose)	1

WARRANTY

CAMION® LIMITED WARRANTY:

Camion®, a division of Enduraplas, LLC ("Camion®") agrees to provide this non-transferable, non-assignable limited warranty ("Limited Warranty") to the original end-user purchaser ("Buyer") only of registered Camion® products ("Camion® Products") pursuant to the terms and conditions provided herein. By accepting delivery of Camion® Products the Buyer likewise agrees to the written terms and conditions of this Limited Warranty. This Limited Warranty give the Buyer specific legal rights and the Buyer may have other rights that vary from state to state.

A. LIMITED WARRANTY COVERAGE

Camion® Products Complete Product Limited Warranty - Subject to the terms and conditions of this Limited Warranty, Camion® warrants to the Buyer of Camion® Products that it will be free from defects in workmanship for a period of one (1) Year after the date of the original purchase. At it's sole option, Camion® will repair or replace defective parts at no charge for parts and labor.

Camion® Products Proprietary Parts and Frames Limited Warranty - Notwithstanding the foregoing and subject to the terms and conditions of this Limited Warranty, Camion® warrants to the Buyer of Camion® Products that the parts and frames will be free from material defects in materials and workmanship for a period of one (1) Year after the date of original purchase. At its sole option, Camion® will repair or replace defective parts at no charge for parts, but labor shall be the responsibility of the Buyer.

Third Party Parts and Components - This Limited Warranty does not cover certain third party manufactured parts and components, as such parts and components are covered by separate limited warranties provided by such third party manufacturers. For information regarding said limited warranties, please see each individual third party limited warranty.

Camion® Products Polyethylene Tank Limited Warranty - This Limited Warranty does not cover Camion® Products Polyethylene Tanks(s), as such materials are covered by a separate limited warranty provided by Enduraplas®, LLC. For Information regarding said limited warranty, please see the Enduraplas® Limited Warranty.

B. WHAT THIS LIMITED WARRANTY DOES NOT COVER

Camion® does not provide any warranty coverage, not have any liability or responsibility for any defects, costs, expenses, or damages relating to any of the following:

- Expendable parts, such as nuts, bolts, etc. or any parts not furnished by Camion® or any damage caused by such parts.
- Airborne chemicals, road debris, salt, hail, floods, fire, windstorms, lightning or other acts of nature and other environmental conditions.
- Water contamination.
- Any part or product installed, repaired, or altered by anyone other than a Camion® Products authorized dealer or any damage caused by such parts or products.
- Normal maintenance services.
- Incidental or consequential damages, including but not limited to inconvenience, transportation, person injury, loss of property or loss of revenue.
- Parts or products that have been subject to abuse, negligence, accident, theft, tampering, misuse, neglect, corrosion, mishandling, improper maintenance, lack of or improper maintenance, care or storage.

WARRANTY

Installation of Camion® Products to a vehicle, including modification of Camion® Products or any such vehicle, is entirely at the Buyer's risk and expense, and compliance with motor vehicle regulations is the responsibility of the Buyer. Camion® is not responsible for any damage whatsoever to vehicles caused by installation or use of Camion® Products equipment.

Camion® Products are not intended for personal, family or household use and, as such, this Limited Warranty does not cover such use.

C. OTHER WARRANTIES DISCLAIMED AND EXCLUDED

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, WHICH EXTEND BEYOND THE LIMITED WARRANTY HEREIN STATED, AND EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, CAMION® EXPRESSLY DISCLAIMS AND EXCLUDES ANY AND ALL OTHER WARRANTIES INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE, INFRINGEMENT, CUSTOM OR USAGE OF TRADE, AND COURSE OF DEALING. NO AGENT, EMPLOYEE OR REPRESENTATIVE OF CAMION HAS AUTHORITY TO BIND CAMION® TO ANY REPRESENTATION OR WARRANTY EXCEPT AS STATED IN THIS LIMITED WARRANTY.

D. PROCEDURE FOR OBTAINING WARRANTY COVERAGE

To submit a Limited Warranty claim, the Buyer must notify Camion® of the claimed defect within ten (10) days that the defect becomes known, in writing, at: cs@camionsystems.com. The original invoice or other similar proof of purchase of the applicable product or part must be provided by the Buyer to Camion® when making a claim under this Limited Warranty. Warranty claims must be received in writing by Camion® within the Limited Warranty period. To obtain service pursuant to this Limited Warranty, the Buyer must return the defective product or part to any Camion® Products authorized dealer (preferably, the dealer from whom the product or part was purchased). The Buyer shall be responsible for all transportation expenses to and from said dealer and accepts all risk of any damage in transit. To locate the nearest Camion® Products authorized dealer, please see the dealer locator at www.camionsystems.com.

The Limited Warranty is given solely to the Buyer and may not be transferred or assigned to any other person.

If you have questions about this Limited Warranty, contact Camion® at: cs@camionsystems.com.

E. GOVERNING LAW

This Limited Warranty will be governed by the laws of the State of North Dakota, without giving effect to any choice of law rule that would cause the application of the laws to any other jurisdiction. Any disputes regarding matters relating to the Limited Warranty will be resolved exclusively in the State of North Dakota and all parties consent to such jurisdiction. RIGHTS TO A JURY TRIAL, CLASS ACTION AND CONSOLIDATED DISPUTE RESOLUTIONS PROCEEDINGS ARE HEREBY WAIVED TO THE FURTHEST EXTENT PERMITTED BY LAW.

F. DISCLAIMER OF EXPENSES AND DAMAGES

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