



L.T. Rich Products, Inc.

OWNERS MANUAL

Snowrator Zx4



TABLE OF CONTENTS

SECTION 1	TO THE OWNER	PAGE
1.1	Read this manual entirely BEFORE operating the Snowrator.....	1
1.2	Product / Warranty Registration.....	1
1.3	L T Rich Products Warranty.....	1
1.4	Component Manufactures' Warranties.....	2
1.5	Conditions Which Void Warranty.....	2
1.6	Warranty Exceptions.....	2
1.7	Registration Card.....	32
SECTION 2	SAFETY INFORMATION	PAGE
2.1	About this manual.....	2-3
2.2	Safety guards and covers.....	3
2.3	Operational Safety Rules.....	3
2.4	Maintenance Safety Rules.....	3-4
2.5	Storage Safety Rules.....	4
SECTION 3	MAINTENANCE	PAGE
3.1	Engine Maintenance.....	4
3.2	Hydraulic System Maintenance.....	5-10
3.3	Traction Unit Maintenance.....	11
3.4	Spray System Maintenance.....	11
3.5	Spreader System Maintenance (Optional).....	11-12
	Maintenance Chart.....	33
SECTION 4	SNOWRATOR OPERATIONS	PAGE
4.1	Operations.....	12-13
4.2	Spraying operations.....	14
4.3	Spreader Operation.....	15
4.4	Spreader Calibration.....	15
SECTION 5	PARTS	PAGE
5.1	Parts Breakdowns/Part Numbers.....	16-19
5.2	Parts List.....	20-24
SECTION 6	TROUBLESHOOTING	PAGE
6.1	Troubleshooting Snowrator	24-25
6.2	Troubleshooting Spreader.....	26-28
6.3	Schematics.....	29-31

SECTION 1

TO THE OWNER

1.1 Read this manual entirely **BEFORE** operating the Snowrator

The information presented herein will prepare you to operate the L.T. Rich Snowrator in a safe and knowledgeable manner. Operating the Snowrator in a proper manner will provide a safer working environment, create more efficient results and promote higher quality.

Keep this manual on hand at all times for ready reference. The tested safety and design(s) of the Snowrator is dependent upon its operations within the guidelines and limitations outlined in this manual. Operating the Snowrator outside of the stated safety guidelines presented in this manual run the risk of injury and a void in the warranty.

1.2 Product Registration

Immediately record the model and serial number of your Snowrator in the spaces below. These numbers can be found affixed to the inner portion of the left upright (under the kneepad of the unit). Providing this information to departments within L.T. Rich products will help assure that you get the correct parts, informed about any updates or product reviews.

Serial Number: _____

1.3 L.T. Rich Products, Inc Warranty

L.T. Rich Products, Inc warrants its line of equipment to be free of defects in material and factory workmanship for a period of 12 months of purchase. Any exception to this will be explicitly stated in an individual warranty agreement in the operator's manual of that stated piece of equipment. This statement does not limit engine warranties in which the engine manufactures carry extended time periods beyond the 12 months.

Replacement parts that carry 90-day warranty and are reimbursed to the dealer, net of prompt payment. All electrical and hydraulic parts are limited by this policy and will only be covered upon approval by L. T. Rich Products Service Department after inspection of part(s). The installation and removal of part will automatically place the part under the replacement parts warranty.

This guarantee is limited exclusively to equipment manufactured or supplied by L.T. Rich Products and is subject to the inspection and analysis by the company to conclusively identify or confirm the nature and cause of the failure.

L.T. Rich Products, Inc reserves the right to incorporate improvements in the material and design of its products without notice and is not obligated to make the same improvements to equipment previously manufactured.

L.T. Rich Products, Inc is not obligated under any warranty different from the warranty as published above.

1.4 Component Manufactures' Warranty

Some of the component parts of the Snowrator are warranted by their respective manufactures. These parts are:

Hydro-Gear Pump
Parker Wheel Motors
Honda Engine
Delevan Liquid Pump

The complete manufactures' warranty information for these components can be reviewed on their respective websites. Contact L. T. Rich Products, Inc if you have any questions concerning warranties on these component parts.

1.5 Conditions Which Void Warranty

This warranty shall not apply to equipment which:

- Has had repairs of modifications not authorized by L. T. Rich Products, Inc
- Has been subject to abuse, improper maintenance, or improper applications

1.6 Warranty Exceptions

This warranty shall not apply to the following items:

- Wear items including cutting edge, sparks plugs, points & condensers, fuses, batteries, belts, filters, bearings, tires, lubricants, fluids and hopper implements.
- Damages to engine/drive systems caused by a lack of/or improper lubricants and/or fluids.
- Damages to engine/drive system caused by improper operations and/or maintenance.

SECTION 2 SAFETY INFORMATION

2.1 About This Manual

The purpose of this manual is to assist you in properly and safely operating and maintaining the Snowrator. Read and understand this entire manual before attempting to set-up, operate, adjust, perform maintenance on, or store the Snowrator. This manual provides essential information and instructions, which will help you enjoy years of dependable performance from the Snowrator.

The designed and tested safety of the Snowrator is dependent upon its operations within the parameters and limitations explained in this manual. Be familiar with and follow all safety rules in this manual as well all safety rules for any related equipment.

Although these instructions have been compiled through extensive field experience and engineering data, some information presented herein may be generated in the nature due to unknown and/or varying operating conditions. However, these instructions, combined with your increased experience with the Snowrator, will enable you to develop procedures suitable to your particular application.

The illustrations and data used in the manual were current at the time of printing, but the Snowrator may vary slightly due to ongoing engineering changes. L. T. Rich Products, Inc reserves the right to implement engineering and design changes to the Snowrator as may be necessary without prior notification.

2.2 Safety Guards and Covers

Safety is a primary concern in the design and manufacturing of all L. T. Rich Products. Unfortunately, our extensive efforts to provide safe equipment can be negated by a single careless act of an operator. In addition to the design and configuration of the Snowrator, hazard control and accidents prevention are also dependent upon the awareness, condition, maintenance, and storage of the Snowrator. ***THE BEST SAFETY PRACTICE IS AN INFORMED, CAREFUL OPERATOR!!***

Safety guards are mounted around the engine and Hydro-Gear Pump coupler. These guards are designed to cover the hydro coupler and the engine to protect the operator. Removing these guards could cause injury to an operator and could void the Snowrator's warranty. Remove these guards **ONLY** when unit is turned off to do preventative maintenance.

2.3 Operational Safety Rules

Never operate the Snowrator without all covers, shields, and safety devices installed and secured.

Never permit any person other than the operator to ride or board the Snowrator at any time. ***NEVER ALLOW RIDERS!!!***

Use extreme care and maintain minimum ground speed when transporting on a hillside or over rough ground, and when operating close to ditches, fences, or water.

The owner/user can prevent and is responsible for accidents or injuries occurring to himself or herself, other people.

Never allow anyone within 25 feet of the Snowrator while in operation.

Only operate machine from the operator's platform (Foot Pan), ***never*** operate machine when standing on the ground.

Be alert for holes in the terrain as well as any other hidden hazards. Always drive slowly over rough ground.

Never operate this machine on slopes or grades exceeding 10 degrees in any direction. **NOTE: To operate on terrain that exceeds these limits constitutes misuse of the equipment and as such, any and all injuries as a result of said use are expressly disclaimed.**

2.4 Maintenance Safety Rules

Never perform maintenance on the Snowrator when children are present.

Never allow anyone near the operation controls while performing service or maintenance to the Snowrator.

Keep the Snowrator engine area free of accumulated debris, fuel, or excess grease and oil to prevent fire hazard.

Periodically tighten all nuts, bolts and screws and check that all fasteners are properly installed to ensure that the Snowrator is in safe operating condition.

2.5 Storage Safety Rules

Never store the Snowrator in any area accessible by children.

Never store the Snowrator with fuel in the tank inside a building where fumes could reach an open flame or spark.

Allow the Snowrator engine to cool before storing in an enclosed area.

Lubricate all moving parts of the Snowrator to prevent rust during storage.

Remove all accumulated debris from the Snowrator and attachments before storing.

Always shut the fuel “*OFF*” when not in use and storing

SECTION 3 MAINTENANCE

3.1 Engine Maintenance (11.7 HP electric and pull start engine)

****USE COMPRESSED AIR (NOT WATER) WHEN CLEANING ENGINE****

Use only original equipment replacement parts. Other parts may not perform as well, may damage unit, and may result in injury (Engine Manual)

Oil Recommendations: Manufacturer recommends the use of certified oils for best performance. Use 4-Stroke automotive detergent oil of API service class SE or higher grade

Outdoor temperatures determine the proper oil viscosity for the engine. Use the chart to select the best viscosity for the outdoor temperature range expected.

If the oil level is below the ADD mark, add oil until it reaches the FULL mark. Start the engine and check for proper pressure before continuing to operate.



(oil drain hose located on left side)



(pull drain plug to side of frame)

Fuel Recommendations: Fuel must meet these requirements

- Clean, fresh, unleaded gasoline.
- A minimum of 87 octane/87 AKI (91 RON).
- DO NOT FILL above the top of the fuel filter screen or the fuel may overflow when it heats up later and expands

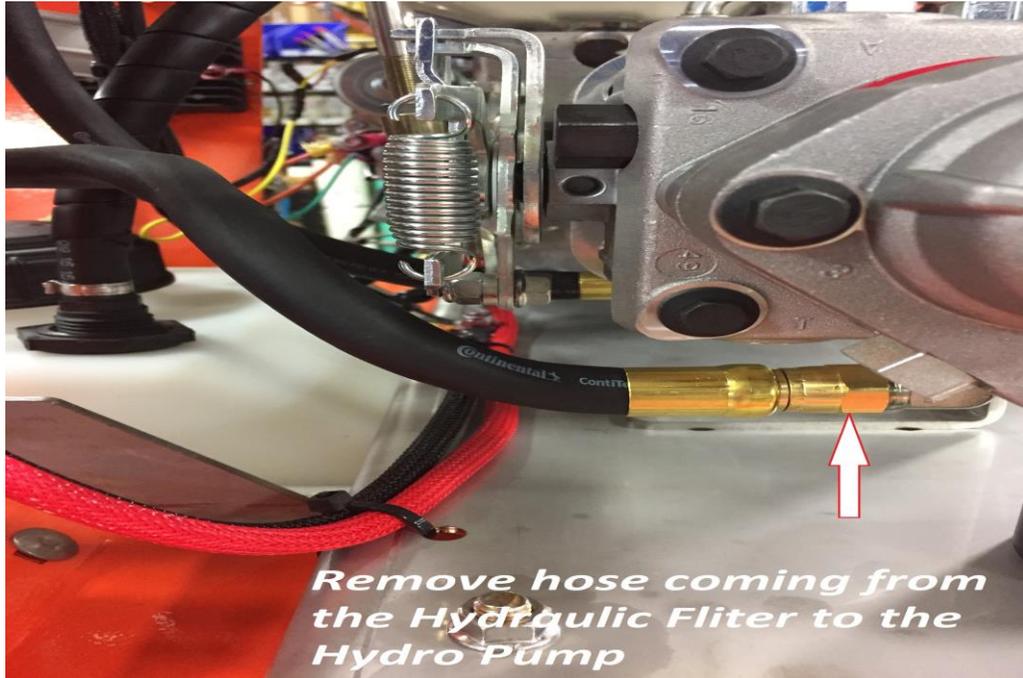
Full Maintenance Information Can Be Located In the Engine Manual Provided

3.2 Hydraulic System Maintenance

Hydro-Gear recommends that the fluid and filter(s) be changed every 500 hours. Use any type of motor oil in a **5W-40 Synthetic or equivalent**.

Hydraulic system requires 25 micron hydraulic filters (part # 80404) or equivalent to be used.

Check for hydraulic leaks daily to ensure proper fluid levels.



****Remove line(s) coming from the filters (at hydro pump end) to drain fluids****

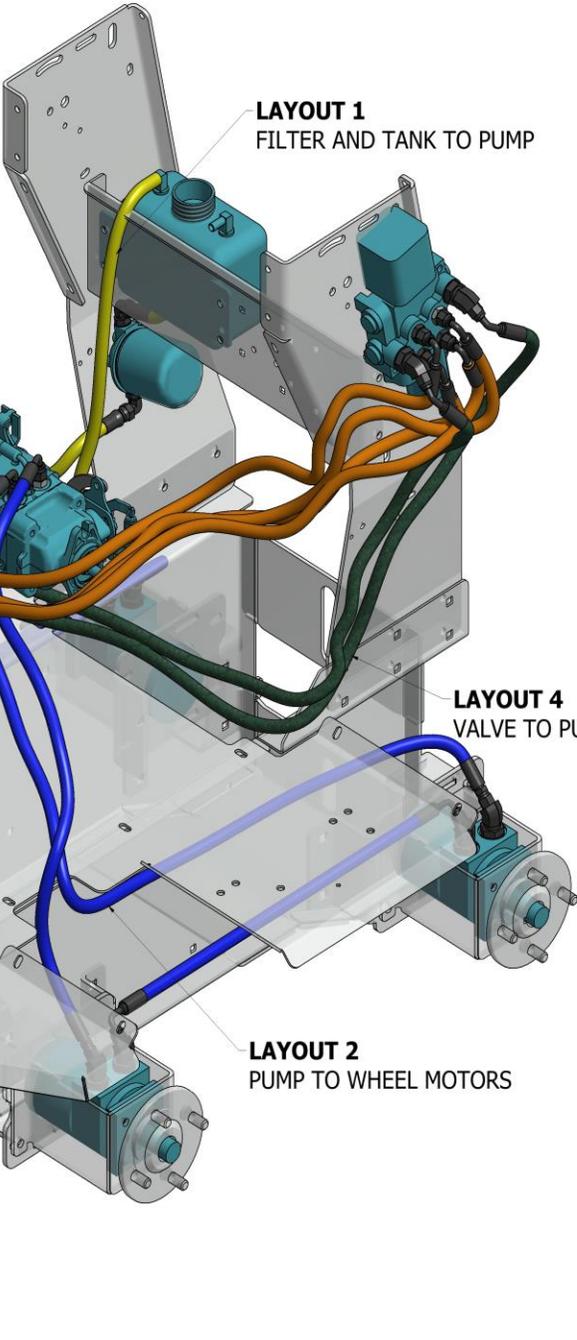
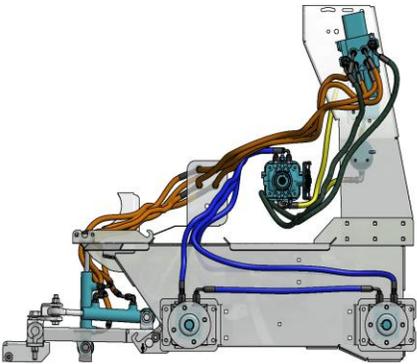
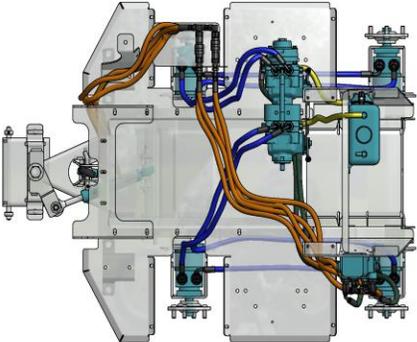
After draining fluids, re-install hydraulic lines and tighten. Remove Hydraulic Filter and replace with part # 80404 or equivalent. Tighten down and mark the hours the unit currently has on the filter (with permanent marker). Remove Hydraulic Tank cap and fill to mark (approximately 2/3rd to the top of tank) and re-install Tank Cap. Lift the unit completely (all 4 wheels) off the ground so that you can run the tires in the forward and reverse positions without the unit moving to bleed any air from the lines. Turn the unit on and slowly run the wheels forward and then backward (repeating this process a few times). This will purge any unwanted and unneeded air out of the system.



(unit wheels off the ground)

Turn off the unit and bring the unit back down to the ground. Turn unit on and move the unit forward and backward a few times. Hydraulic oil change completed.

SNOWRATOR HYDRAULICS

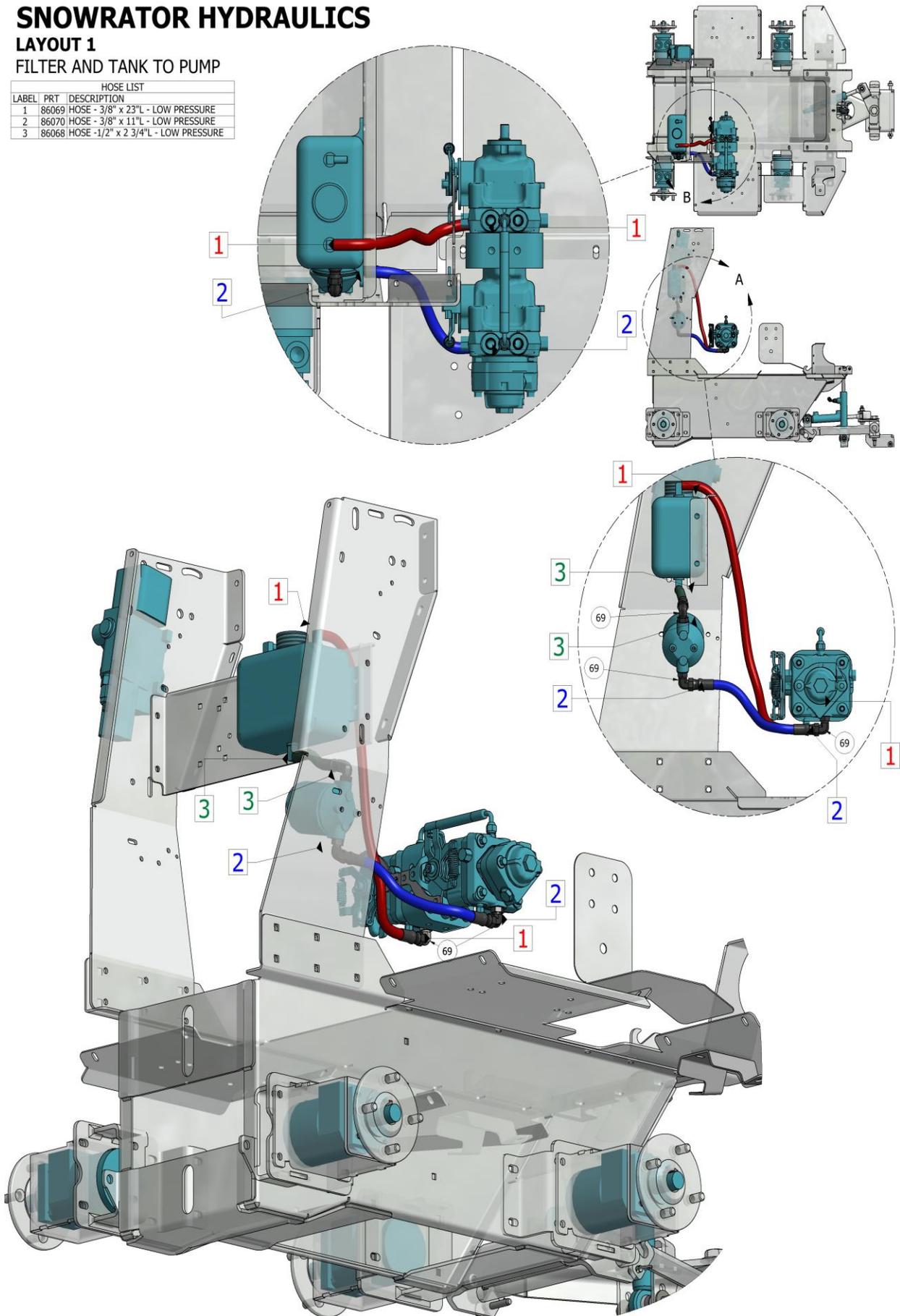


SNOWRATOR HYDRAULICS

LAYOUT 1

FILTER AND TANK TO PUMP

HOSE LIST		
LABEL	PRT	DESCRIPTION
1	86069	HOSE - 3/8" x 23"L - LOW PRESSURE
2	86070	HOSE - 3/8" x 11"L - LOW PRESSURE
3	86068	HOSE - 1/2" x 2 3/4"L - LOW PRESSURE

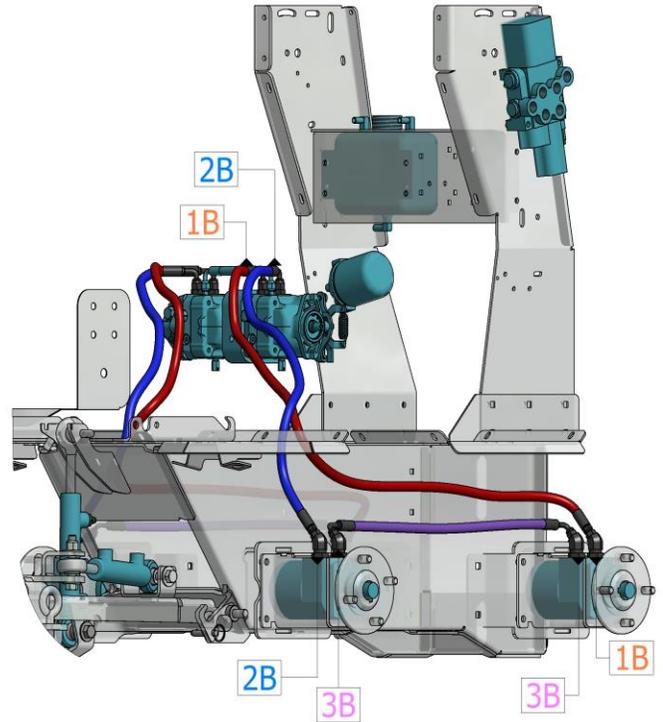
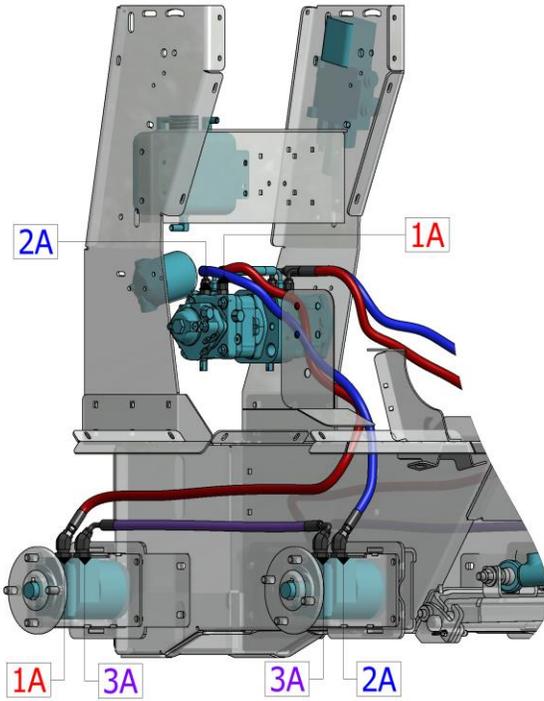
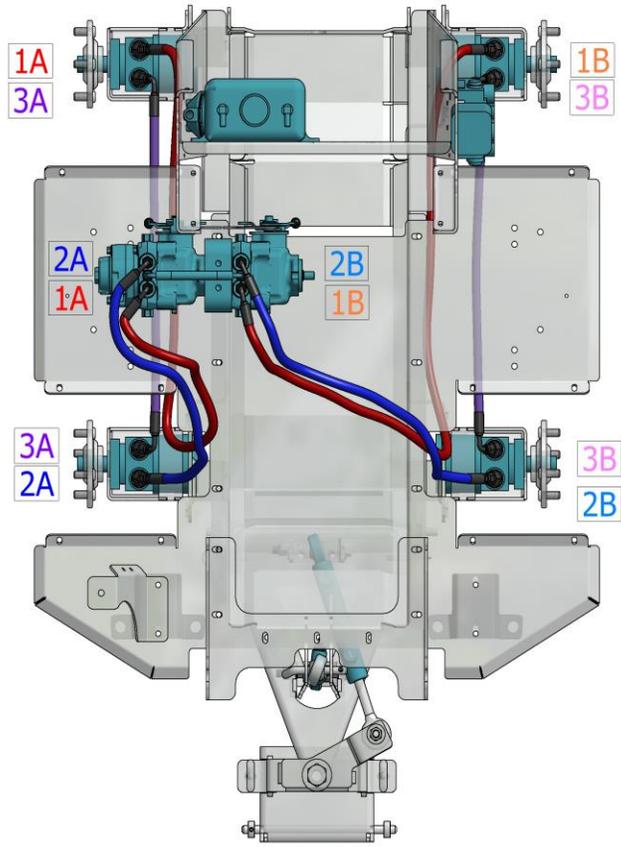


SNOWRATOR HYDRAULICS

LAYOUT 2

PUMP TO WHEEL MOTORS

HOSE LIST		
LABEL	PRT NO	DESCRIPTION
1A	86062	HOSE - 3/8" x 48" L - HIGH PRESSURE
2A	86061	HOSE - 3/8" x 26" L - HIGH PRESSURE
3A	86060	HOSE - 3/8" x 21" L - HIGH PRESSURE
1B	86064	HOSE - 3/8" x 50" L - HIGH PRESSURE
2B	86063	HOSE - 3/8" x 28" L - HIGH PRESSURE
3B	86060	HOSE - 3/8" x 21" L - HIGH PRESSURE

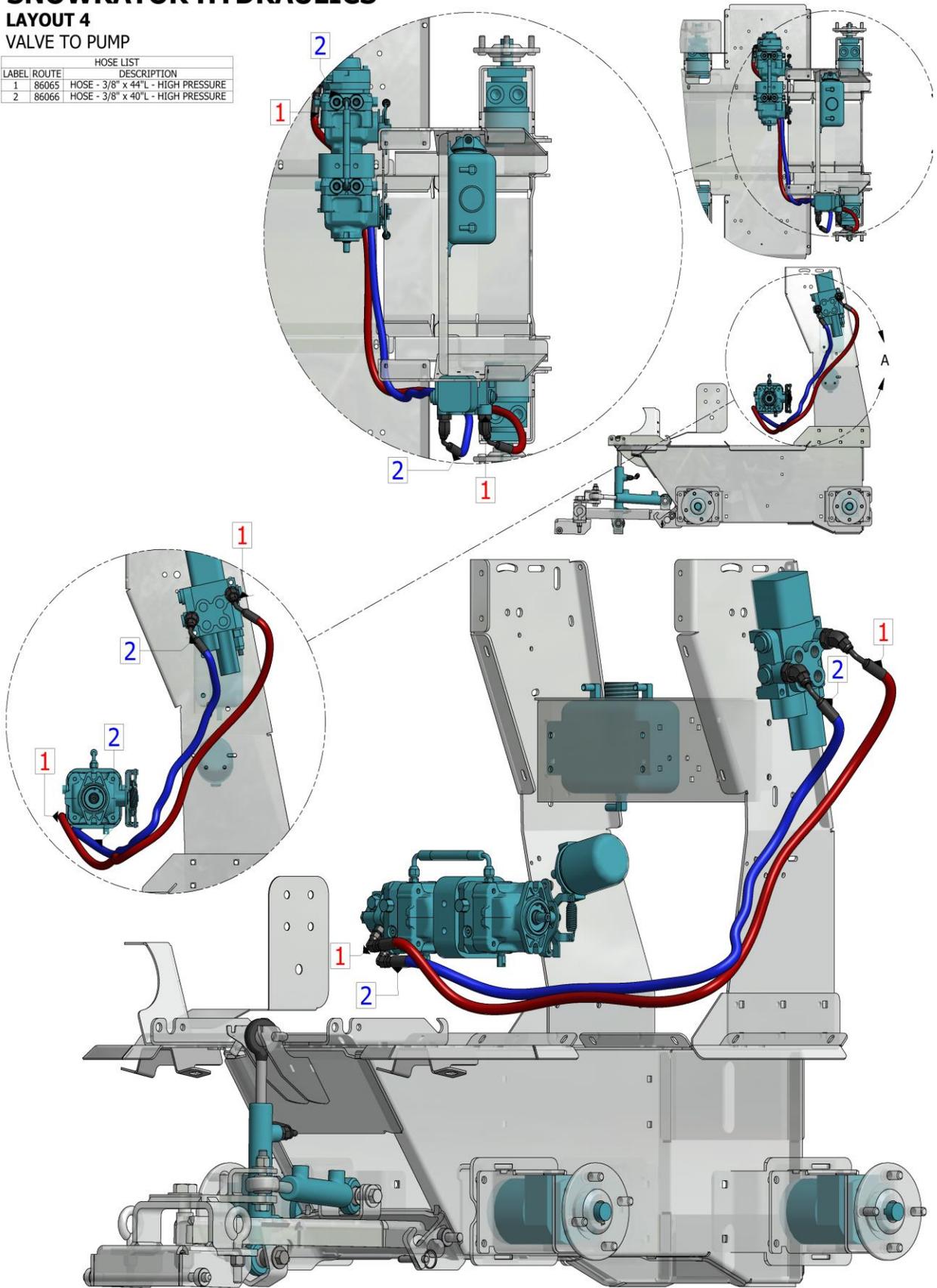


SNOWRATOR HYDRAULICS

LAYOUT 4

VALVE TO PUMP

HOSE LIST		
LABEL	ROUTE	DESCRIPTION
1	86065	HOSE - 3/8" x 44" L - HIGH PRESSURE
2	86066	HOSE - 3/8" x 40" L - HIGH PRESSURE

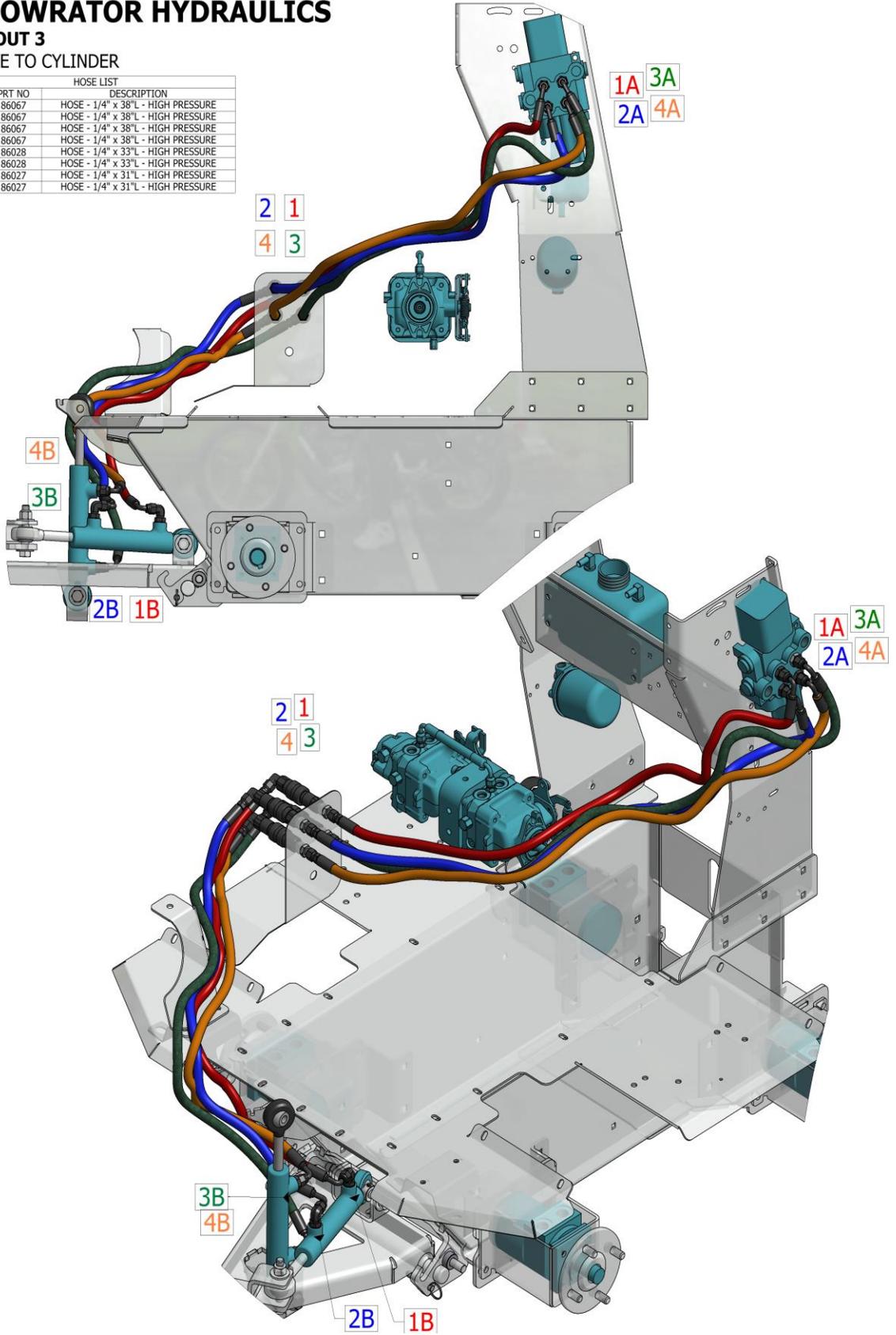


SNOWRATOR HYDRAULICS

LAYOUT 3

VALVE TO CYLINDER

HOSE LIST		
LABEL	PRT NO	DESCRIPTION
1A	86067	HOSE - 1/4" x 38"L - HIGH PRESSURE
2A	86067	HOSE - 1/4" x 38"L - HIGH PRESSURE
3A	86067	HOSE - 1/4" x 38"L - HIGH PRESSURE
4A	86067	HOSE - 1/4" x 38"L - HIGH PRESSURE
1B	86028	HOSE - 1/4" x 33"L - HIGH PRESSURE
2B	86028	HOSE - 1/4" x 33"L - HIGH PRESSURE
3B	86027	HOSE - 1/4" x 31"L - HIGH PRESSURE
4B	86027	HOSE - 1/4" x 31"L - HIGH PRESSURE



3.3 Traction Unit Maintenance

Inspect wheels every 25 hours for damage, debris, and proper installation.

Inspect all bolts, washers, nuts, pins and other mounting hardware on the Snowrator once a week to ensure that hardware pieces are properly tightened.

3.4 Snowrator System Maintenance

The Snowrator has a liquid spray system designed for both liquid de-icing and turf application. Maintaining this system properly will ensure you years of use, proper calibration and limit premature wear.

The spray system has a liquid storage tank of 20 gallons that can disperse a host of liquid and/or wettable powder. To get maximum life and performance out of the spray system, it is recommended that the tank, nozzles and hoses be flushed of all products after each use. Storing product in system for an extended time may cause build up in hoses, premature cracking on hoses, creating leaks in the hoses, clogged nozzles and filters, and a host of other potential liquid system challenges (depending on your water source, not draining the water out of the system and storing the Snowrator dry can create algae build up).

Make sure that both In-line filter screen and nozzle tip screens are checked daily and cleaned if needed. Clogged filters can lead to improper liquid dispersal and will create inaccurate spray rates.

Keep-valve in closed position when not in use. This will prevent the boom nozzles from dripping due to pressure build-up in the coil hose.

Check 5 psi check ball screens daily. Build up on screen will create clogging and inaccurate spray rates. Clogged screens can damage or hinder screens from working properly.

Check spray system In-line filter rubber seal daily. Improper seal placement, missing seal or filter not tightened down can create lose in pump pressure.

Check spray tips daily for any clogging of materials or foreign objects.

Clean out tank on daily basis for proper storing.

3.5 Spreader Maintenance (optional attachment)

****USE COMPRESSED AIR (NOT WATER) WHEN CLEANING HOPPER****

The *Snowrator Zx4* can be equipped with a granular/salt spreader. Recommended maintenance suggestions are as follows:

Lubricate (Silicone Spray) Hopper, Deflector and Diffuser cables weekly.

Clean debris and product from Hopper daily to eliminate build up.

Be sure that guides (4) are not damaged to allow the hopper door to slide freely

Check agitator wire on a daily basis. If wire is not present, product will run the risk of building up prior to reaching hopper door and not spreading evenly.

SECTION 4 SNOWRATOR OPERATIONS

4.1 Operations

Upon turning the key on to start the unit, apply full choke. The manual Choke is located just above the “Fuel Shut Off” on the engine (picture # 1). Push Choke lever away from the operator and toward the front of the machine. Once the unit is started, push the Choke lever back toward the operator to shut choke off (picture #2). Once unit has started, move the Throttle lever (***always turn down Throttle to the lowest position before starting and before turning off the unit***) to a desired position for operations.

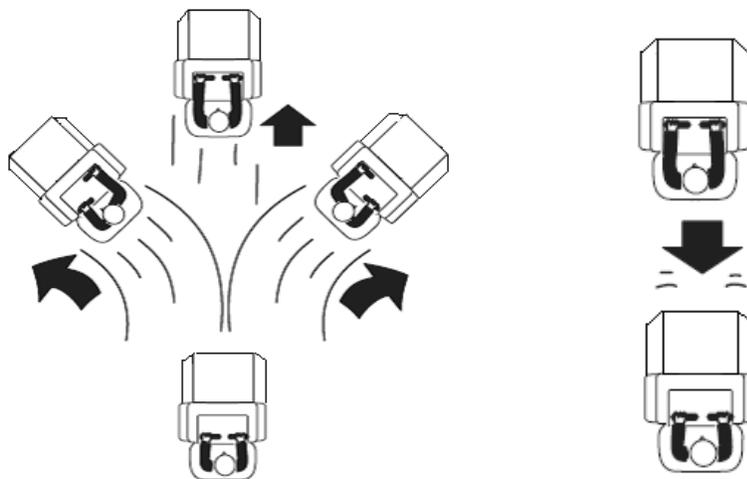


(picture #1)

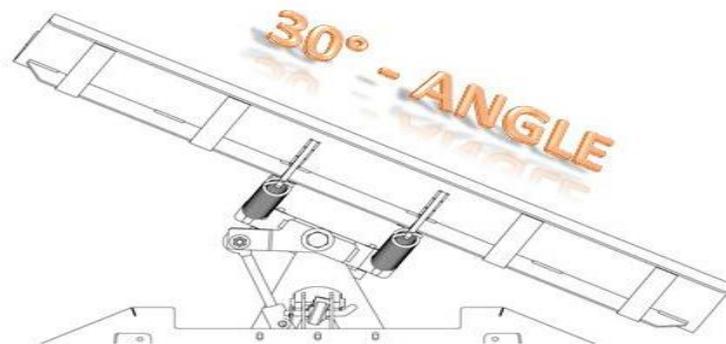
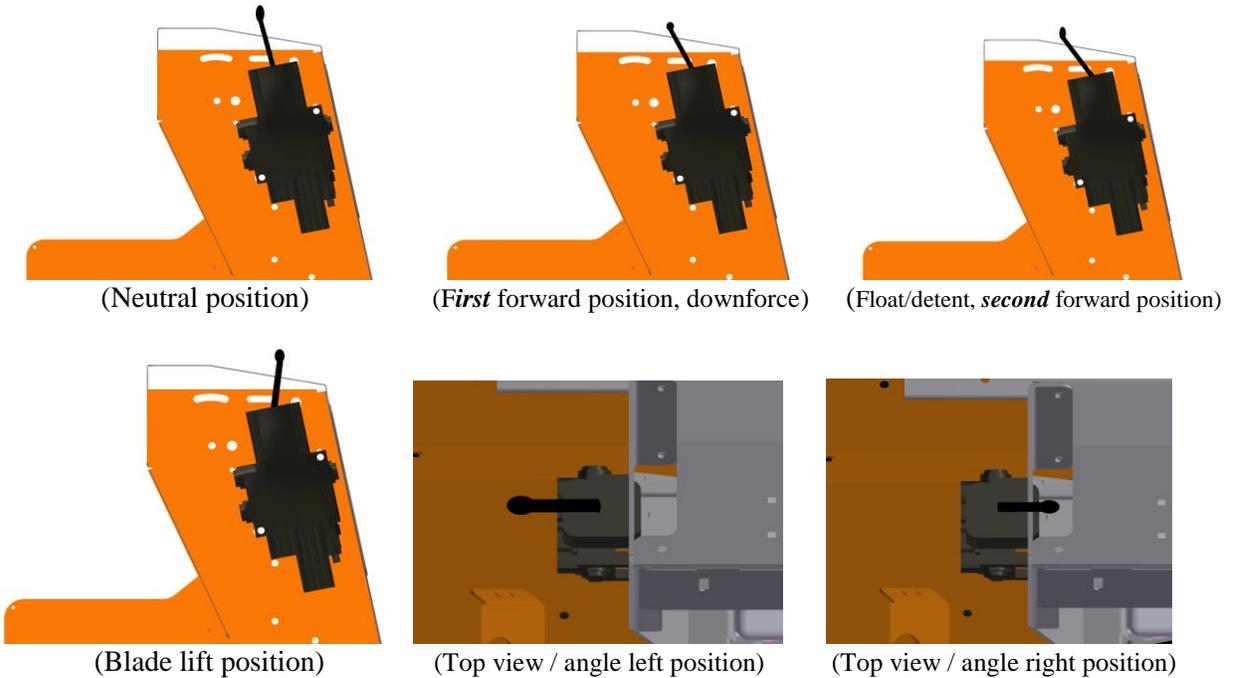


(picture #2)

Push Joy Sticks forward (equally) to have the unit move straight. Should you want to unit to back up in the reverse direction, pull back on the Joy Sticks. If a turn is desired, push opposite Joy Stick of the direction you want the unit to head forward (if wanting to turn left, push the right lever forward while keeping the left lever slightly back of the right thus allowing the right tire to turn more than the left. Push more on the left lever if you desire to turn the unit to the right). Be cautious as turn radiuses change with the speed you are going and the amount each Joy Stick is positioned forward or backward positions.



The blade control *Joystick Valve* has 5 positions of operation. Pulling back on the Joystick Valve will raise the blade to the up position (off the ground for transport of transition). Pulling the Joystick Valve to the left tilts the blade to the left allowing to angle the snow to the left. Pulling the Joystick Valve to the right tilts the blade to the right allowing to angle the snow to the right. Pushing the Joystick Valve forward to the *FIRST* forward position from center lowers the blade with down-force pressure for plowing. Pushing the Joystick Valve forward to the *SECOND* position gives *FLOAT* to the blade.



***ALWAYS** turn fuel "OFF" when *transporting* or *storing* Snowrator*



4.2 SPRAYING OPERATIONS

The *Snowrator* spray system has a liquid storage tank of 20 gallons that can disperse a host of liquid products. To get maximum life and performance out of the spray system, it is recommended that the tank, nozzles and hoses be flushed of all products after each use. Storing product in system for an extended time may cause build up in hoses, premature cracking on hoses, creating leaks in the hoses, clogged nozzles and filters, and a host of other potential liquid system challenges (depending on the liquid product, not draining the system completely before storing the Snowrator can create short and long term issues).

Make sure that both In-line filter screen and nozzle tip screens are checked daily and cleaned if needed. Clogged filters can lead to improper liquid dispersal and will create inaccurate spray rates.

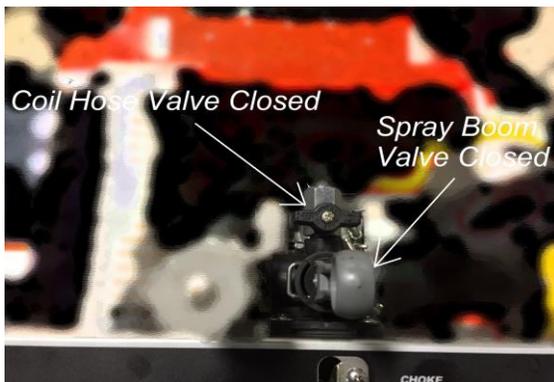
Keep coil hose valve in closed position when not in use. This will prevent the nozzles from dripping due to pressure build-up.

Check 5 psi check ball screens daily. Build up on screen will create clogging and inaccurate spray rates. Clogged screens can damage or hinder screens from working properly.

Check spray system In-line filter rubber seal daily. Improper seal placement, missing seal or filter not tightened down can create lose in pump pressure.

Check spray tips daily for any clogging of materials or foreign objects.

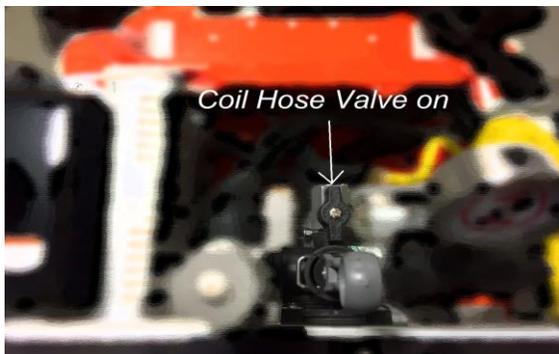
Clean out tank on daily basis for proper storing.



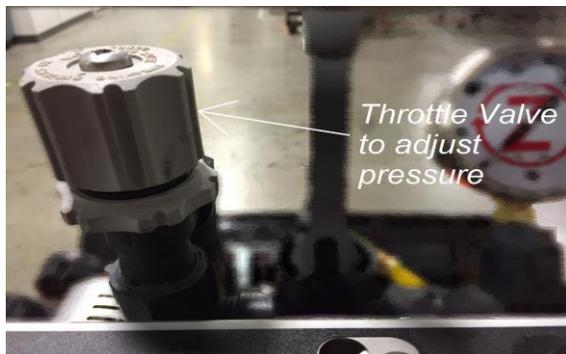
(Spray System shut off)



(Spray System Valve on)



(Coil Hose Valve ON)



(Throttle Valve to adjust pressure)

4.3 Spreader Operation (Optional)

The *Snowrator* unit has an optional 120 lb. or 135lb. (2017 or newer) spreader that can be mounted to the machine. This electric hopper motor with the spreader control rate knob allows variable spread widths from 6 to 25 feet. This depends on volume/density, particle size and rate of travel, and weather conditions. The pattern can be increased or decreased while spreading depending on needs. If setting is too low, cover the area more than one time. A higher setting can be used when a proven dial setting is established. Travel at a constant speed for consistent results. **Remember- Published dial settings are *approximate* only. Open the hopper door after the spreader is turned on at operating speed.**

Using the granular spreader system, there are 3 cables. The hopper door (far left cable), the diffuser (middle cable) and the deflector shield (lower right cable) are on machines from 2015 to late 2017. In the re-design of the 2017 hopper, cable mount bracket has 1 cable and one switch for the vibrator.

On ALL Snowrators, pulling on the far left hopper door cable will open the door and allow product to fall on the spinner.

Adjustments as to how wide the door opens are made on the front on the hopper with the white knob (Rate Dial). This limits how wide the door will open and how much granular product will be coming out. The 2015 & 2016 diffuser cable (middle cable) controls the spread pattern. Turning the cable knob counter-clockwise will loosen the cable lock and allow you to adjust (pull further out or push further in) this cable. Doing this will allow you to spread salt/granular product heavier to the left, consistent in the middle or heavier to the right. Once you have adjusted to your desired pattern, turn the knob clockwise to lock in position.

The lower cable on the far right hand side is the deflector shield cable. This cable allows you to lift and lower the deflector shield accordingly. During normal spreading applications, the deflector shield would stay in the up position and cable would be extended out all the way. When wanting to close off the left side and use the deflector shield, push in the cable and the shield will drop down blocking off granular product on the left side. This cable is identical to the middle diffuser cable so needs to be turned counter-clockwise to loosen and then clockwise to lock in position

4.4 Spreader Calibration/Layout

The Spreader Motor Control determines the speed of the impeller in the front on the machine. The spreader is capable of varying its spread pattern from 6 – 25 feet with this control. Being electrically driven, the spread pattern is *independent* of the ground speed.

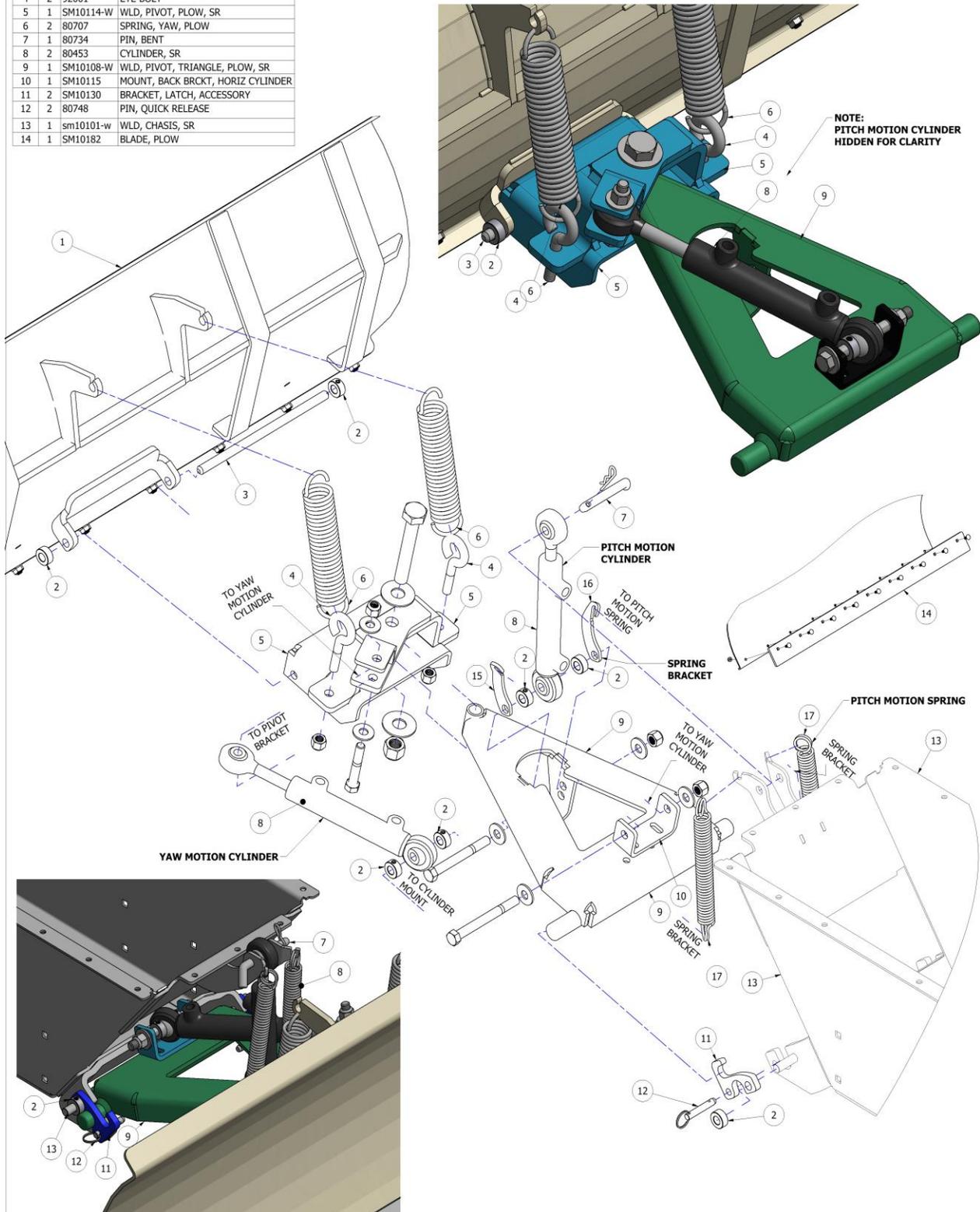
On the 2017 hopper spreader, the pattern can be adjusted by pulling in or out on the direction control doors.

SECTION 5

PARTS

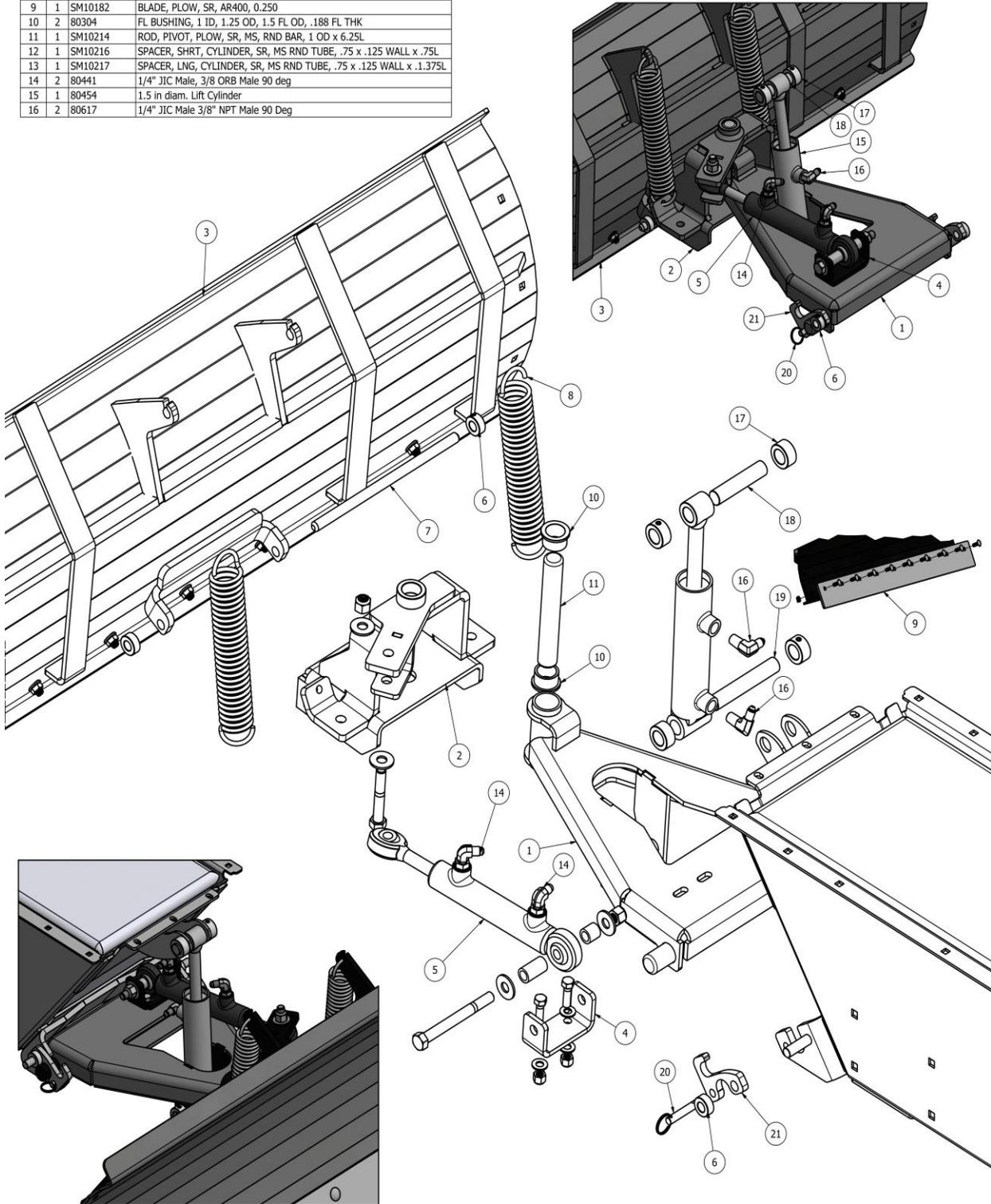
5.1 Part Number / Pictorial (Serial # SR4320-2015-001 to SR3620-2016-085)

SNOWRATOR PLOW - PARTS LIST				SNOWRATOR PLOW - PARTS LIST			
ITEM	QTY	PART NUMB	DESCRIPTION	ITEM	QTY	PART NUMB	DESCRIPTION
1	1	SM10180-W	PLOW, SR	15	1	SM10204	BRACKET, SPRING, SR, SS, 0.188
2	8	92002	COLLAR, SHAFT, 1"ID	16	1	SM10204-R	BRACKET, SPRING, SR, SS, 0.188
3	1	SM10200	ROD, PITCH PIVOT, PLOW	17	2	90416	SPRING, PITCH, PLOW
4	2	92001	EYE BOLT				
5	1	SM10114-W	WLD, PIVOT, PLOW, SR				
6	2	80707	SPRING, YAW, PLOW				
7	1	80734	PIN, BENT				
8	2	80453	CYLINDER, SR				
9	1	SM10108-W	WLD, PIVOT, TRIANGLE, PLOW, SR				
10	1	SM10115	MOUNT, BACK BRCKT, HORIZ CYLINDER				
11	2	SM10130	BRACKET, LATCH, ACCESSORY				
12	2	80748	PIN, QUICK RELEASE				
13	1	sm10101-w	WLD, CHASIS, SR				
14	1	SM10182	BLADE, PLOW				



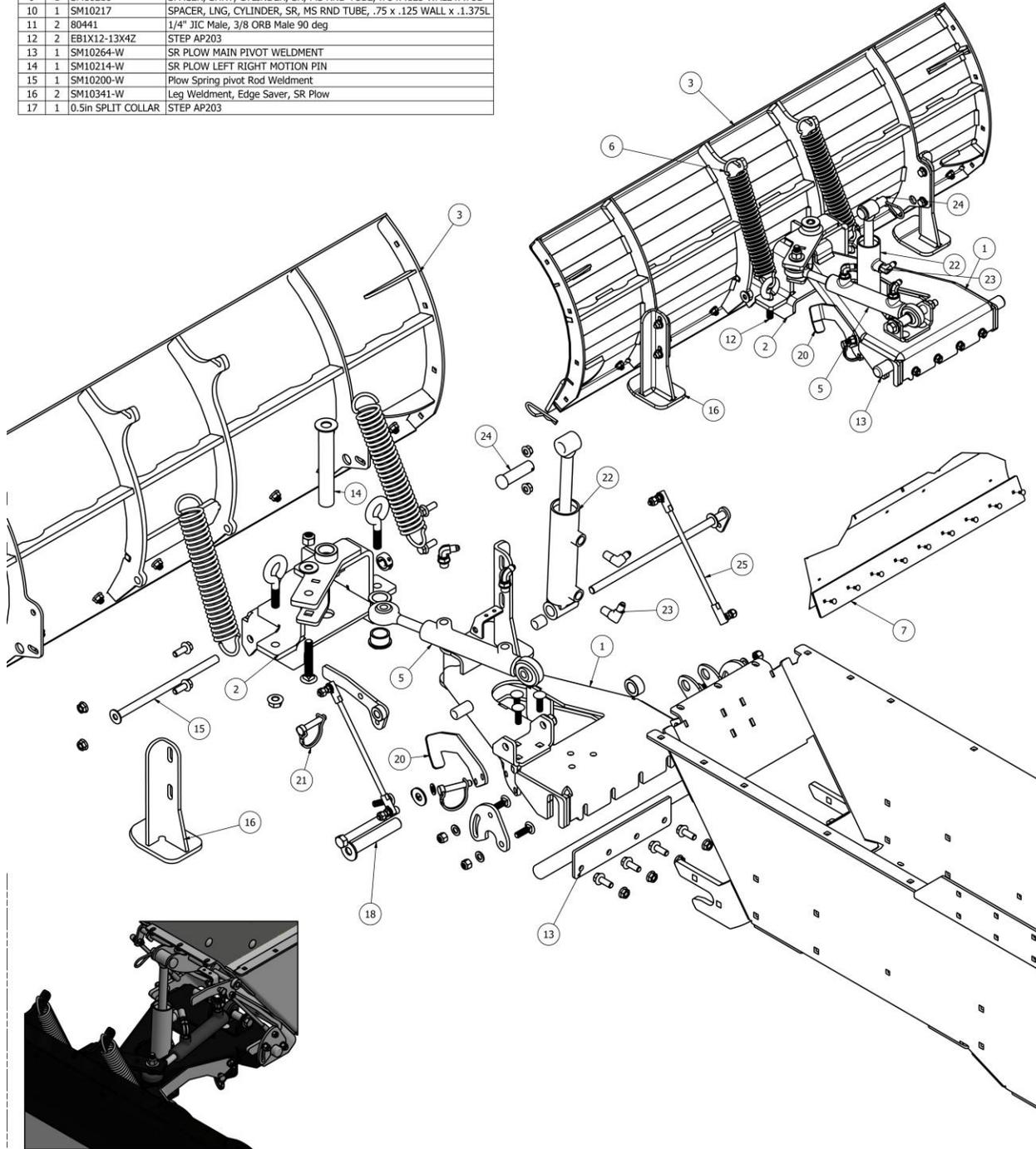
5.1 Part Number / Pictorial (Serial # SR3620-2016-086 to SR4320-2017-282)

PARTS LIST				PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION	ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	SM10108-W	WLD, PIVOT, TRIANGLE, PLOW, SR	17	4	.750 COLLAR	3/4"ID, SHAFT COLLAR
2	1	SM10114-W	WLD, PIVOT, PLOW, SR	18	1	SM10257	Lift Cylinder top rod 3/4" Diam. SS 3.5 in. L
3	1	SM10180-W	PLOW, SR, MS, 0.188	19	1	SM10258	Lift Cylinder bottom rod 3/4" Diam. SS 4.5 in. L
4	1	SM10115	MOUNT, BACK BRACKET, HORIZ CYLINDER, SR, MS, 0.25	20	2	80748	PIN, QUICK RELEASE
5	1	80453	1 in diam blade rotate cylinder	21	2	SM10130	BRACKET, LATCH, ACCESSORY, SR, MS, 0.375
6	4	92002	COLLAR, SHAFT, 1/2"ID				
7	1	SM10200	Plow Spring pivot Rod 1/2" Diam. 10.5" Long SS				
8	2	80707-Plow	SPRING, PLOW				
9	1	SM10182	BLADE, PLOW, SR, AR400, 0.250				
10	2	80304	FL BUSHING, 1 ID, 1.25 OD, 1.5 FL OD, .188 FL THK				
11	1	SM10214	ROD, PIVOT, PLOW, SR, MS, RND BAR, 1 OD x 6.25L				
12	1	SM10216	SPACER, SHRT, CYLINDER, SR, MS RND TUBE, .75 x .125 WALL x .75L				
13	1	SM10217	SPACER, LNG, CYLINDER, SR, MS RND TUBE, .75 x .125 WALL x .1.375L				
14	2	80441	1/4" JIC Male, 3/8 ORB Male 90 deg				
15	1	80454	1.5 in diam. Lift Cylinder				
16	2	80617	1/4" JIC Male 3/8" NPT Male 90 Deg				



5.1 Part Number / Pictorial (Serial # SR3620-2017-283 to SR4320-18511)

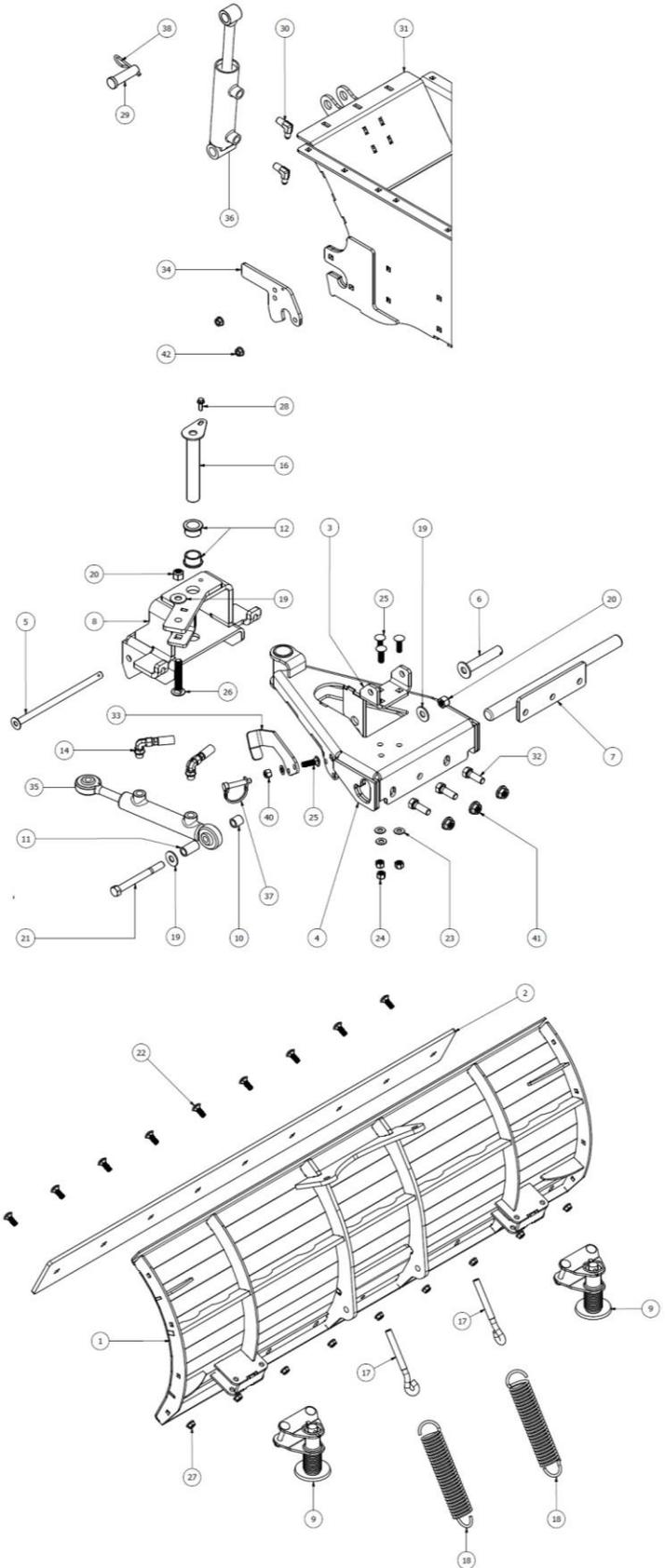
PARTS LIST				PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION	ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	SM10108-W	WLD, PIVOT, TRIANGLE, PLOW, SR	18	1	SM10276-W	SR PLOW UP AND DOWN BOTTOM CYLINDER PIN
2	1	SM10114-W	WLD, PIVOT, PLOW, SR	19	1	.750 COLLAR	3/4"ID, SHAFT COLLAR
3	1	SM10180-W	PLOW, SR, MS, 0.188	20	1	SM10304	Stand, SR Plow Assembly, 0.188 MS
4	1	SM10115	MOUNT, BACK BRACKET, HORIZ CYLINDER, SR, MS, 0.25	21	1	SNAPS 375 1750R	STEP AP203
5	1	80453	1 IN CYLINDER LEFT AND RIGHT MOTION	22	1	80454	1.5" CYLINDER UP AND DOWN MOTION
6	2	80707-Plow	SPRING, PLOW	23	2	80617	1/4" JIC Male 3/8" NPT Male 90 Deg
7	1	SM10297	BLADE, PLOW, SR, AR400, 0.3125	24	1	CLPZ-0750-2500	TOP UP AND DOWN CYLINDER MOTION PIN
8	2	80304	FL BUSHING, 1 ID, 1.25 OD, 1.5 FL OD, .188 FL THK	25	1	SM10308	PLOW QUICK RELEASE ADJUSTMENT ROD
9	1	SM10216	SPACER, SHRT, CYLINDER, SR, MS RND TUBE, .75 x .125 WALL x .75L				
10	1	SM10217	SPACER, LNG, CYLINDER, SR, MS RND TUBE, .75 x .125 WALL x .1.375L				
11	2	80441	1/4" JIC Male, 3/8 ORB Male 90 deg				
12	2	EB1X12-13X4Z	STEP AP203				
13	1	SM10264-W	SR PLOW MAIN PIVOT WELDMENT				
14	1	SM10214-W	SR PLOW LEFT RIGHT MOTION PIN				
15	1	SM10200-W	Plow Spring pivot Rod Weldment				
16	2	SM10341-W	Leg Weldment, Edge Saver, SR Plow				
17	1	0.5in SPLIT COLLAR	STEP AP203				



5.1 Part Number / Pictorial (Serial # SR4320-18512 to current)

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	SM10180-TSSR-W	PLOW, SR, MS, 0.188
2	1	SM10297	BLADE, PLOW, SR, AR400, 0.3125
3	1	SM10115	MOUNT, BRACKET, HORIZ CYL, SR, MS, 0.25
4	1	SM10108-TSSR-W	WLD, PIVOT, TRIANGLE, PLOW, SR
5	1	SM10200-W	WLD, ROD, PIVOT
6	1	SM10276-W	WLD, PIN, VERT CYL, PLOW SR
7	1	SM10264-TSSR-W	WLD, PIVOT, PLOW, SR
8	1	SM10114-TSSR-W-3	WLD, PIVOT, PLOW, SR
9	2	MSC13115	KIT, PLOW SHOE W/HARDWARE
10	1	SM10216	SPACER, 0.75 x 0.125 WALL x 0.75L
11	1	SM10217	SPACER, 0.75 x 0.125 WALL x 1.375L
12	2	80304	BUSHING, IDLER PULLEY BRACKET
13	1	FWSS-12LOD	WASHER, FLAT - SS, 1/2
14	2	80441	FITTING, 90 DEG, JIC, 1/4 x 3/8 MALE
15	1	CPSS-532 X 112	PIN, COTTER - SS, 5/32 x 1 1/2
16	1	SM10362-W	PIN, HORIZ CYL, PLOW SR
17	2	HDW02004	BOLT, EYE, 1/2-13 x 5-1/4
18	2	NDW 02004	SPRING, PLOW
19	3	ANSI B18.22.1 - 1/2 - Regular - Type B	WASHER, PLAIN, 1/2
20	2	NNC-12	NUT, LOCK, NYLON - ZINC, 1/2-13
21	1	ANSI/ASME B18.2.1 - 1/2-13 UNC - 5	BOLT, HEX, 1/2-13 x 5
22	9	CB-381S	BOLT, CARRIAGE-SS, 3/8-16 x 1
23	3	ANSI B18.22.1 - 3/8 - narrow - Type A	WASHER, PLAIN, 3/8
24	3	NNC-38	NUT, NYLOCK - ZINC, 3/8-16
25	4	.375-16 1.25 in caridge bolt	BOLT, CARRIAGE -SS, 3/8-16 x 1-1/4
26	1	.5-13 Carriage bolt 3in long	BOLT, CARRIAGE -SS, 1/2-13 x 3
27	9	IFI - I0.375 - 16	NUT, HEX FLANGE, 3/8-16
28	1	HFSSC-1434	SCREW, HEX, FLANGE - SS, 1/4-20 x 3/4
29	1	CLPZ-0750-2500	PIN, CYLINDER, 3/4 OD x 2-1/2 L
30	2	80617	FITTING, 90 DEG, JIC, 1/4 x 3/4 NPT
31	1	TSSR001-W-01	WLD, CHASIS, SR
32	3	ANSI/ASME B18.2.1 - 1/2-13 UNC - 1.5	BOLT, HEX, 1/2-13 x 1.5
33	1	SM10304	STAND, PLOW ASSY, 0.188 MS, SR
34	2	SM10282 TSSR-01	LATCH, DISCONNECT, PLOW, SR, SS, 0.25
35	1	80453	CYLINDER, HYDRAULIC, 1" BORE x 4" STROKE, SR
36	1	80454	CYLINDER, HYDRAULIC, 1-1/2" BORE x 4" STROKE, SR
37	1	SNAPS 375 1750R	PIN, QUICK DISCONNECT, 3/8" x 1-3/4
38	1	BP-210	PIN, COTTER, 1/2 TO 3/4
39	1	ANSI B18.22.1 - 3/8 - narrow - Type B	WASHER, PLAIN, 3/8
40	1	NNC-38	NUT, NYLOCK - ZINC, 3/8-16
41	3	HFNC5-12S	NUT, LOCK, FLANGE, SERRATED - SS, 1/2-13
42	4	HFNC5-38S	NUT, LOCK, FLANGE, SERRATED - SS, 3/8-16

Plow shoe kit (item 9) is optional



Spot Spray Gun

<i>Part #</i>	<i>Description</i>	<i>Qty</i>
60040	Spot Spray Gun	1
60041	Spot Spray Tip	1
60029	¼" MPT X 3/8" Barb	1



5.2 Parts List

Parts List

LTR P/N	Toro P/N	Description	Qty	Unit
80210	104-4657	12 VOLT BATTERY\nSS11U1L CCA350	1	Ea.
80214-A	135-5259	TACH/HOUR METER	1	Ea.
80352-36R	143-0048	JR 36R WHEEL HUB	4	Ea.
80404	135-5695	HYDRAULIC FILTER	1	Ea.
60010	135-5721	DIRECTO VALVE AA6B	1	Ea.
60012	135-5736	THROTTLE VALVE\n23520-3/4-PP	1	Ea.
60032	135-5740	GAUGE\nRICH 60-25	1	Ea.
60061	135-5765	INLINE STRAINER ASSEMBLY50 MESH\n122-3/4/PP-50	1	Ea.
60009	135-5737	1/4" CHROME VALVE\n90FMB14	1	Ea.
80303	135-5694	JOY STICK BUSHING\nKAMAN# EF 0812-12	4	Ea.
60050	135-5261	HOSE 3/8"	8.16	ft
30675	1-633257	JOY STICK GRIP	3	Ea.
30712	135-6424	STRAINER CAP DECAL	1	Ea.
30400	143-0005	ISOLATOR, VIBRATION	4	Ea.
80903	135-6612	COIL HOSE, 15FT	1	Ea.
30678	135-5689	SPEED BAR KNOB	2	Ea.
60058	135-5742	3/4' X 1/2'MPT RED. NIPPLE	1	Ea.
60027	120-8673	1/2'MPT X 1/2' HB 90\n3EL12	1	Ea.
60026	135-5744	3/4'MPT X 1/2' HB 90\n3EL3412	3	Ea.
60022	94-7100	1/2' FPT TEE\n3TT12	2	Ea.
60023	135-5743	1/2' TO 1/4' BUSHING\n3RB1214	2	Ea.
60040	135-5773	SPOT SPRAY GUN	1	Ea.
60041	135-5778	SPOT SPRAY TIP #12	1	Ea.
30711	135-6398	DECAL, HYDRO OIL	1	Ea.
30706	135-8149	SERIAL NUMBER DECAL	1	Ea.
80405	104-7836	HYDRAULIC FILTER HOUSING	1	Ea.
83067	135-5654	COMPRESSION FOOT PLATE SPRING W/HDWR	4	Ea.
60051	135-5262	HOSE 1/2"	7	ft
S5DFA12	143-0124	PUMP FITTING\n5DFA12 STRAIGHT	1	Ea.
S5DFE12	126-0961	PUMP FITTING\n5DFE12 90 DEGREE	1	Ea.
80421	103-1802	6MJIC-6MORB 90DEG	3	Ea.
30402	143-0006	LOVEJOY L095 1" COUPLER	1	Ea.
30403	143-0007	LOVEJOY L095 1/2" COUPLER	1	Ea.
10058	126-0400	BULKHEAD, 1/2" (HOLE REQUIREMENT 1 1/4")	2	Ea.

60078	143-0025	1/2 CPVC MIP Adapter	2	Ea.
EGB716-Black	135-5336	7/16 TRIM LOCK EDGING	7.6	ft
80620	143-0061	WHEEL MOTOR, R, 36R, SR	2	Ea.
80621	143-0062	WHEEL MOTOR, L, 36R, SR	2	Ea.
83390	143-0067	11HP HONDA ENGINE, 390CC ELECTRIC START	1	Ea.
70101	143-0032	1/2" CPVC Pipe	2.2	ft
LTBC-27B	143-0118	27" BLACK BATTERY CABLE	1	Ea.
60123	143-0027	TANK, WHITE, 20GAL, SR	1	Ea.
80018	143-0036	18X8.50-10 4X4 BOLT PATTERN RIM CENTERED - BLACK	4	Ea.
30677-Snowrator	143-0011	KNEE PAD -SNOWRATOR	1	Ea.
70100-BLACK	135-5661	TOOL HOLDER CLIP - BLACK VINYL COATED	2	Ea.
86063	143-0080	HOSE, WHEEL MOTOR, 3/8", OAL 31.5" WRAPPED, SR	2	Ea.
86064	143-0081	HOSE, WHEEL MOTOR, 3/8", OAL 53" WRAPPED, SR	2	Ea.
86065	143-0082	HOSE, VALVE, HIGH PRESSURE, 3/8", OAL 45.75" WRAPPED, SR	1	Ea.
86066	143-0083	HOSE, VALVE, HIGH PRESSURE, 3/8", OAL 43.5" WRAPPED, SR	1	Ea.
86067	143-0084	HOSE, VALVE, HIGH PRESSURE, 1/4", OAL 40.5" WRAPPED 30", SR	4	Ea.
86068	143-0085	HOSE, LOW PRESSURE, 1/2", 100R6, 8FJIC, OAL 3.875", SR, 36R	1	Ea.
86070	143-0086	HOSE, LOW PRESSURE, 3/8", 100R6, 6FJIC, 6FJIC, OAL 12.5", SR	1	Ea.
80611	143-0059	FEMALE FLAT FACE COUPLER #4 SIZE NPT THREADS	4	Ea.
80609	143-0058	MALE FLAT FACE COUPLER #4 NPT THREADS	4	Ea.
80707-P	143-0065	SPRING, SR, PLOW	2	Ea.
60062	110-5248	1/2' CROSS \nCR050	1	Ea.
S3M12	94-7103	NIPPLE 1/2'	1	Ea.
86060	143-0079	HOSE, WHEEL MOTOR, 3/8", OAL 25" WRAPPED	2	Ea.
86018	143-0076	HOSE, OIL DRAIN, 3/8"x 13" WRAPPED, SR	1	Ea.
SJ3-04-VP	143-0125	TIP, SJ3 STREAM JET RED	4	Ea.
SL025-90	143-0126	STREET ELBOW, 1/4"	1	Ea.
80432	353-545	4MJIC-4MORB	2	Ea.
80432-B	135-5680	6MJIC-4FJIC 90 DEG SWIVEL	2	Ea.
80489-45	143-0056	10MORB-6MJIC 45	8	Ea.
80616	143-0060	6MJIC-12MMx1.5 MALE METRIC ADJ ORING	1	Ea.
80437	135-9119	4MJIC-8MORB	4	Ea.
80441	340-134	4MJIC-6MORB 90 DEG	4	Ea.
80430	01-201-1950	6MJIC-6MJIC	4	Ea.
80435	143-0051	4MJIC-4MNPT 90	4	Ea.

80208	135-8940	BATTERY BOX \nPART#03188	1	Ea.
60038	135-8358	BOOM ELBOWS\n3NTL38	4	Ea.
86027	143-0077	HOSE, PLOW, 1/4", OAL 33.5" WRAPPED, ZP, ABI, SR	2	Ea.
86028	143-0078	HOSE, PLOW, 1/4", OAL 35.5" WRAPPED, ZP, ABI, SR	2	Ea.
60053	120-8672	1/2 MPT X 3/8 BARB\n3A1238\n SMALL UNIT	6	Ea.
80022-16	143-0038	ROD, 16", JOYSTICK, SR, J36R	2	Ea.
86038	135-9978	HOSE, LOW PRESSURE, 3/8", OAL 24", J36, SR, 36R	1	Ea.
80510-31	143-0057	CABLE, THROTTLE, SR	1	Ea.
30700-SNOW	143-0013	DASH PANEL DECAL - SNOWRATOR	1	Ea.
80454	143-0055	CYLINDER, 1-1/2 X 4, ROD AND BALL END, SR	1	Ea.
80403-B	143-0050	TANK, HYDRO, 2QT, 36R, SR	1	Ea.
80607	353-511	8MJIC-6MORB 90DEG	1	Ea.
86071	143-0087	BULKHEAD-4MJIC-4MNP	4	Ea.
80403-C	135-5713	2-1/4 VENTED HYDRO TANK CAP	1	Ea.
80402-Tandem-REVC	143-0049	PUMP, AXIAL TANDEM PISTON, W AUX PUMP, 6CC	1	Ea.
60035	126-3943	STRAINER 50mesh W/ CHECK VALVE	4	Ea.
90126	142-0153	LIGHT, LED, with HARNESS, SR	3	Ea.
60017	132-7706	3/4'MPT X 3/4'FPT 90 ST EL\n3SE34	1	Ea.
60013	135-5760	1/2" CHROME VALVE\n90FML12	1	Ea.
60069-A	143-0024	CAP, THREADED, SPRAY GUN	4	Ea.
80449-F	143-0053	LOADER VALVE - 4TH POSITION DETENT FLOAT IN 2ND SPOOL	1	Ea.
80019-B	135-5683	SPACER HSS-34	4	Ea.
80023	135-8630	LOWER LINKAGE ROD END, QUICK DISCONNECT	2	Ea.
30405	143-0008	RING, LOCK, STEEL, LOVEJOY, SR	1	Ea.
30406	143-0009	ELEMENT, LOVEJOY	1	Ea.
80240	143-0044	METER, VOLT, DIGITAL, SR	1	Ea.
80237	143-0042	HARNESS, LED, SR, 2017+	1	Ea.
80238	143-0043	HARNESS, PUMP, SR, 2017+	1	Ea.
60014-B	135-5759	5.0 GPM PUMP	1	Ea.
80245	143-0047	LENS, RED, SR	1	Ea.
80244	143-0046	LENS, BLUE, SR	1	Ea.
80243	143-0045	SWITCH, SR	2	Ea.
80038	143-0039	ROD, SR, PLOW	2	Ea.
90125	135-6121	SWITCH, OPERATOR PRESENCE	1	Ea.
86011	353-212	6MJIC-6MORB 45 DEG	2	Ea.

70060	135-6628	TERMINAL BLOCK	1	Ea.
80304	256-132	BUSHING, IDLER PULLEY BRACKET	2	Ea.
80468	135-9178	CYLINDER, 1-1/2 x 4, DOUBLE BALL END, SR	1	Ea.
LTBC-32R	142-0843	32" RED BATTERY CABLE	1	Ea.

SECTION 6

TROUBLE SHOOTING

6.1 Troubleshooting Snowrator

Engine:

- Not starting. There are a few reasons as to why your engine fails to start. If the engine does not turn over, then the battery could be dead, bad connection to the battery wires, key switch may be bad, 30 AMP fuse on the wiring harness (orange wire) may be blown or the starter solenoid may be bad (you will hear the starter solenoid trying to click on, but nothing is happening). Another common reason for a unit not starting is after unit has been washed. Water gets into the spark plug boot and gets the spark plug wet. Pull spark plug boot and dry (spray WD-40).
- Engine turns over but doesn't start. There are a few reasons as to why your engine will turn over but not start. If the fuel valve is turned off (under fuel tank), loose or bad spark plug, water in fuel, choke partially closed or wet and/or fouled plugs.
- Engine won't stay running. Few things to look for if your engine does not stay running are clogged fuel filter, clogged and/or dirty air filter, fuel valve partially closed or water in fuel.

Hydraulics:

- Hydraulic system making loud noise when running. This could be caused by a couple of things. The most common is if there is air in the system. This can be caused when changing out a hydro pump, replacing a hydraulic hose or having a loose fitting on the intake lines. If air is not present, check for low levels in the system. This happens when there is a leak in the hydraulic system somewhere or hydraulic fluids were just changed and did not get back to the proper fill level.
- Need to tow my unit; what do I need to do in order to not ruin my hydro pumps?? There are Tow Valves on each of the hydro pumps (hex head with hole running through it on the left side rear of the hydraulic pump) that needs to be turn at least 1 1/2 revolutions counter-clockwise to open the hydraulic system. Once the unit is brought to a desired location, remember to tighten the tow valves back tight (clockwise).

Tracking:

- Unit not tracking straight when pushing both control arms to the speed bar. This is caused when the linkage to the hydraulic pump is not even or a hydraulic pump is going bad. Traditionally the linkage needs to be adjusted so that they both have the same amount of pull. If it is pulling to the left, the left hydraulic pump linkage is longer than the right; you can either adjust the right to a longer linkage, or adjust the left to a shorter linkage to match the right.

Granular:

- There are numerous potential challenges that can happen on the granular side due to the amount of use this portion of the unit sees. If product is not spreading evenly or consistently, then look for a few things with your hopper impeller or hopper diffuser. If there is build up at the end of the Impeller tips or the tips are worn, this will cause an un-even and/or inconsistent spread pattern. Another factor in the spread pattern not being even is if your diffuser is not at factor position (in front of the hopper door opening so that the pattern is spreading evenly left to right).
- If granular product is leaking out from the hopper, determine where it is coming from and look at this repair options. If the granular product is leaking through the hopper shaft area, then your hopper bushing is worn. This will allow product to get in between the shaft and the hopper bushing. If granular product is leaking through the hopper door area, then door guides are loose or worn allowing a gap between the door and the hopper base. Also a potential factor is if the hopper cable is not completely closing the hopper door.
- When your hopper door cannot open, there are typically 3 things to look at. One is that your hopper cable may be frozen and locked up, the ball joint end may have broken off or there may be product jammed between the hopper door and the base (due to loose door guides).

Spray System:

- Liquid is dribbling from the tips. This affect is potentially caused by a few things. If the nozzle body O-Ring is missing, the O-Ring in the In-line filter is missing, In-line filter housing not tight or the hose reel valve is open.
- Pressure not staying consistent. This is normally caused due to air being introduced to the system. Air is introduced in a few ways through the system. Air can come through one of the hose connections, the In-line filter housing not being tight or not having an O-Ring to seal housing, sucking air from an auxiliary tank or liquid level is too low.

6.2 Troubleshooting Spreader

Wiring Harness: (Honda Engine)

Wire Colors and Description:

- Green Wire (Starter Solenoid)
- Yellow Wire (Engine Shut Off)
- White Wire (Fuel Solenoid / Accessories)
- Black Wire (Ground)
- Orange Wire (Key Switch Power)
- Red Wire (Charging System)

Controller Error	Light pattern - Flashing									
	1	2	3	4	5	6	7	8	9	10
Over Current	X	X								
Short Circuit	X	X	X							
Open Circuit	X	X	X	X						
Low Voltage - 9.5 V	X	X	X	X	X					
High Voltage - 14.8 V - 19V	X	X	X	X	X	X				
Over Temperature - 60°C (140°F)	X	X	X	X	X	X	X			

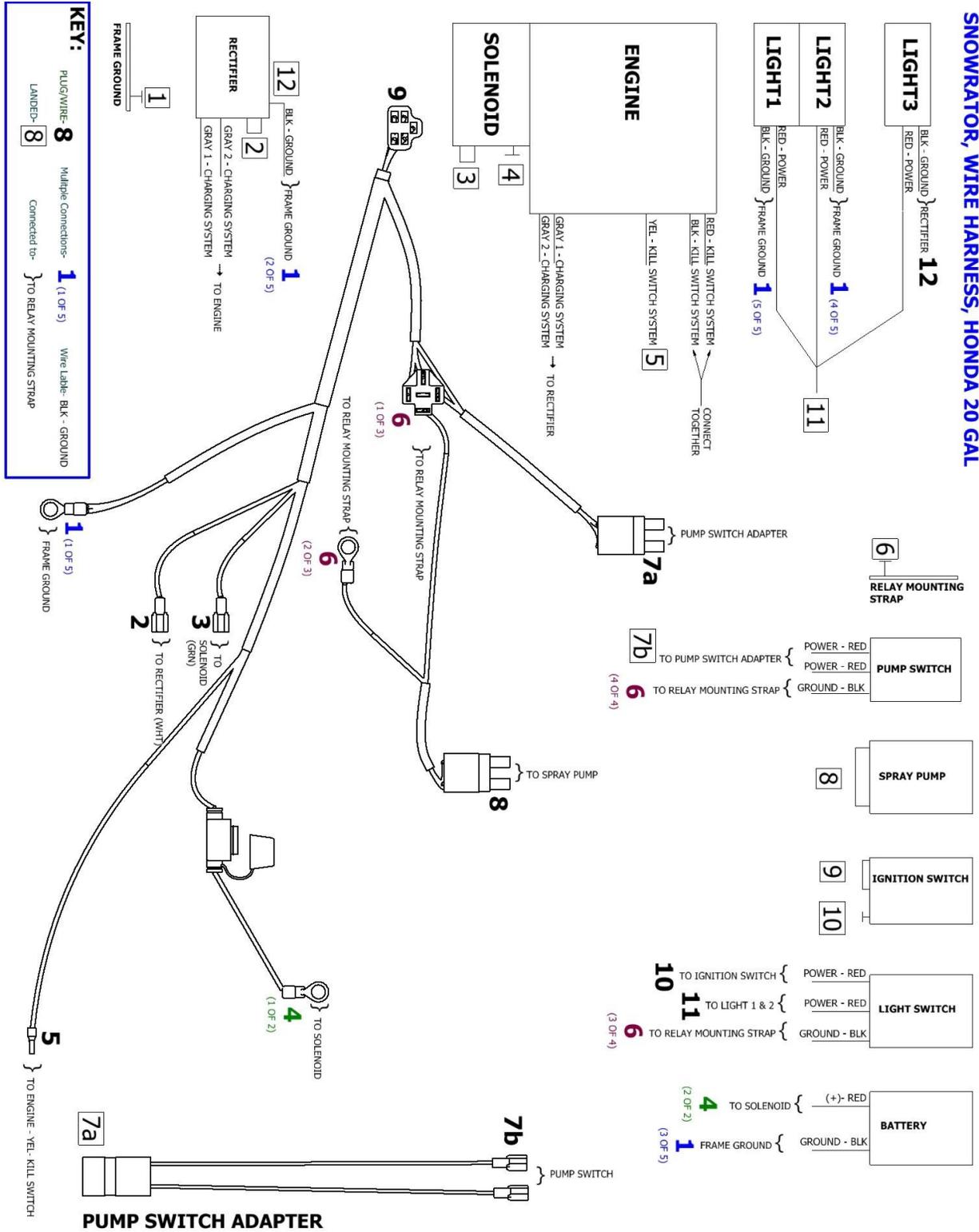
Problem	Possible Cause	Corrective Action
Controller will not turn on	<ol style="list-style-type: none"> 1. Controller is not connected to Power/Ground harness. 2. Bad Connection at Power/Ground harness. 3. Dead/Low Battery 4. Blown fuse in Controller Harness 5. Blown fuse in Power/Ground Harness. 	<ol style="list-style-type: none"> 1. Connect Controller to Power/Ground harness. 2. Disconnect controller from the Power/Ground harness. Clean terminals and re-connect controller. 3. Turn off all electrical equipment (Lights, Pump, Spreader, etc.). Start engine manually. Let the engine charge the battery then continue operation. 4. Check fuse in the controller harness between controller and connection to power/ground harness. Replace if blown. 5. Check for power and ground at connector. If there is no power check for power on the other connectors. If there is no power on the other connectors. Examine electrical and find where the short is, replace damaged component(s). Replace Power/Ground harness.

<p>First two lights on controller are flashing</p>	<ol style="list-style-type: none"> 1. Spinner disk is stuck 2. Spinner Shaft is bent 3. Spinner disk is dragging on material deflector 	<ol style="list-style-type: none"> 1. Turn controller off. Disconnect spinner motor and free the spinner. Reconnect spinner Motor. Turn Controller on again to reset. 2. Turn controller off. Disconnect spinner motor and inspect shaft for damage, replace if necessary. Reconnect spinner Motor. Turn controller on again to reset. 3. Turn controller off. Disconnect spinner motor and clean off material deflector. Reconnect spinner Motor. Turn controller on again to reset.
<p>First three lights on controller are flashing</p>	<ol style="list-style-type: none"> 1. A short circuit between the controller and the spinner motor 2. Motor has an internal short circuit. 	<ol style="list-style-type: none"> 1. Turn controller off. Check, repair, or replace the wiring between the controller and spinner motor. Turn controller on again to reset. 2. Turn controller off. Replace the spinner motor. Turn controller on again to reset.
<p>First four lights on controller are flashing</p>	<ol style="list-style-type: none"> 1. Spinner motor not connected 2. Bad connection between controller and spinner motor 3. Power connector and Motor connector connected to Power/Ground harness 	<ol style="list-style-type: none"> 1. Turn controller off. Connect spinner motor. Turn controller on again to reset. 2. Turn controller off. Clean connection between controller and spinner motor. Turn controller on again to reset. 3. Disconnect the Motor connector from the Power/Ground harness and connect it to the Spinner Motor. Turn controller off and then on to reset.
<p>First five lights on controller are flashing</p>	<ol style="list-style-type: none"> 1. Low battery voltage 	<ol style="list-style-type: none"> 1. Increase Engine RPM. Turn controller off then on again to reset. 2. Turn Pump, Lights, Vibrator and Spinner motor off, Increase Engine RPM and let run for a while, Check volt meter when volt meter is approximately 12V. Turn controller off then on again to reset.

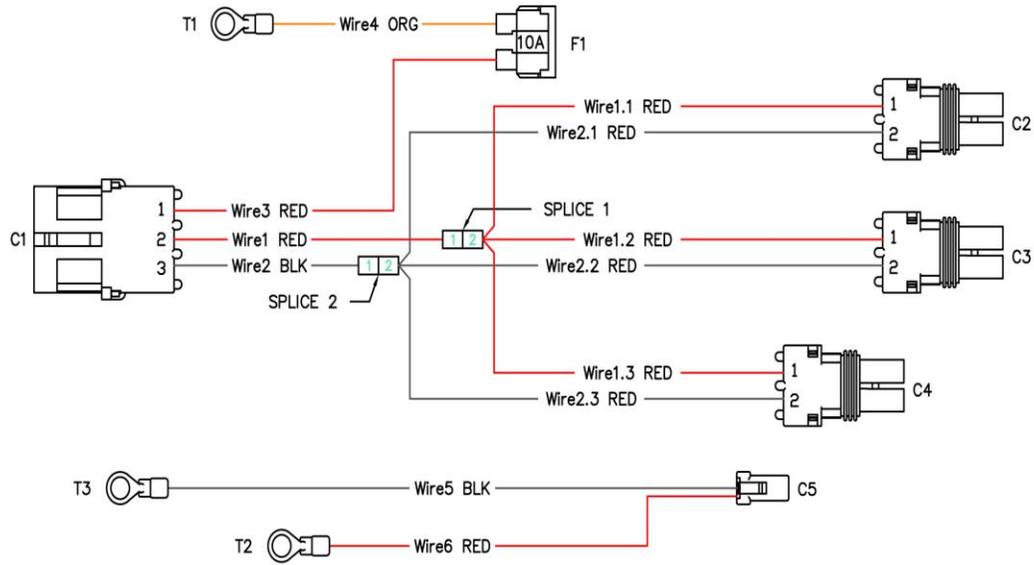
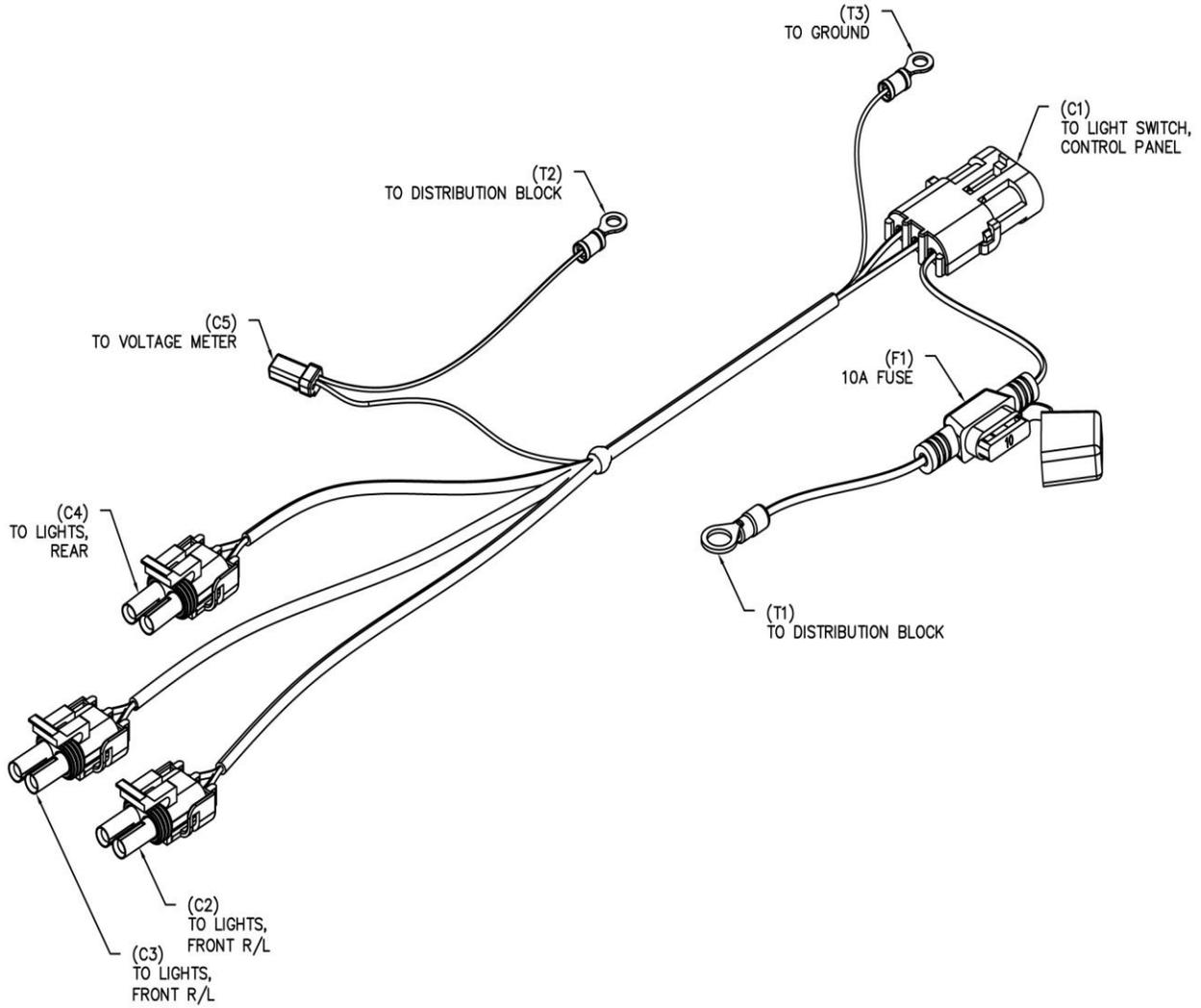
First six lights on controller are flashing	1. Voltage regulator is bad	1. Replace Voltage Regulator
First seven lights on controller are flashing	1. Controller is over heating	1. Let controller cool down. Circuit board needs to cool to below 60C before the controller will restart. Turn controller off then on again to reset.

6.3 Honda Engine Wiring Harness Schematics

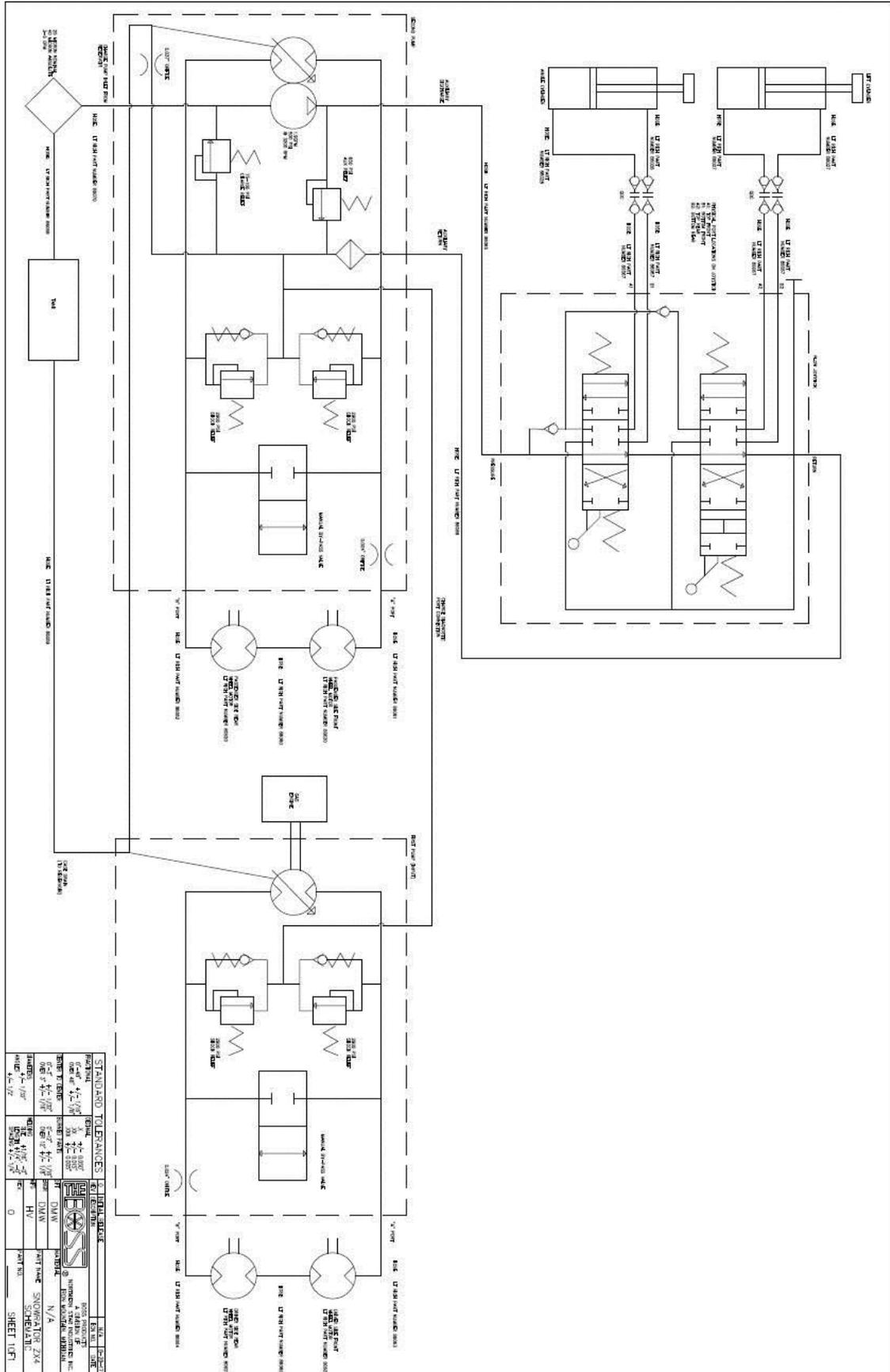
SNOWRATOR, WIRE HARNESS, HONDA 20 GAL



LED Harness



Hydraulic Schematic



L. T. Rich Products Inc.



Warranty Registration Card

Serial #: _____	Company Name: _____
Company Address: _____	City / State: _____
Company Phone: _____	Company Fax: _____
Company Contact: _____	Company Email: _____

Please circle what most accurately describes your business

Commercial Sports Complex School Municipal
Cemetery Home Owner Other

Dealer Name: _____	Dealer Address: _____
Dealer City / State: _____	Dealer Phone: _____
Dealer Salesman: _____	Date of Purchase: _____

L. T. Rich Products warrants its line of equipment to be free from defects in material and factory workmanship for a period of 12 months. Any exceptions to this will be explicitly stated in an individual warrant agreement in the operator's manual of that piece of equipment

Fax to: 765-680-0047 or email to sbell@z-spray.com

Maintenance Chart

SERVICE ACTION(S)	Daily	Weekly	Bi-Weekly	Monthly	Yearly	Hours
Tire Pressure (18 PSI)		X				
Rim Nut Torque (75lbs)				X		
Hub Castle Nut (check cotter pin)				X		
Engine Oil (check)	X					
Engine Oil Change						20 hrs
Engine Air Filter Check (change if needed)			X		replace	
Engine Air Pre-Filter Check (change if needed)						25 hrs
Engine Fuel Filter Check (change if needed)				X	replace	
Engine Spark Plugs						100 hrs
Hydraulic Oil (change)						500 hrs
Hydraulic Oil Filter (change)						500 hrs
Hydraulic Oil Level (check)	X					
Hydro System Fittings (check for leaks)		X				
Spray Nozzles (tip) (check)			X			
Spray Nozzle (tip) Screens (check)		X				
Spray Nozzle Gasket (check)			X			
Spray System Hoses (check)		X				
In-Line Filter (check)		X				
In-Line Filter Gasket (check)		X				
DIRECTO Valve (check)				X		
Spot Spray Gun (check)			X			
Spot Spray Gun Tip (check)			X			
OPTIONAL ATTACHMENT						
Hopper Cables (lubricate w/ Silicone Spray)		X				
Accuway Cable (lubricate w/ Silicone Spray)		X				
Deflector Shield Cable (if applicable) (lubricate w/ Silicone Spray)		X				
Bottom of Hopper Tub (wire brush cleaning)			X			
Hopper Bottom Bushing (change if needed)				X	replace	
Impeller (change if needed)			X			
Agitator wire (check)	X					
BLOW OFF SALT / FERT DAILY	X					
FLUSH OUT SPRAY SYSTEM DAILY	X					