



L.T. Rich Products, Inc.

OWNERS MANUAL **Z-Spray**

(Z-Max, Intermediate, Junior and Junior36)

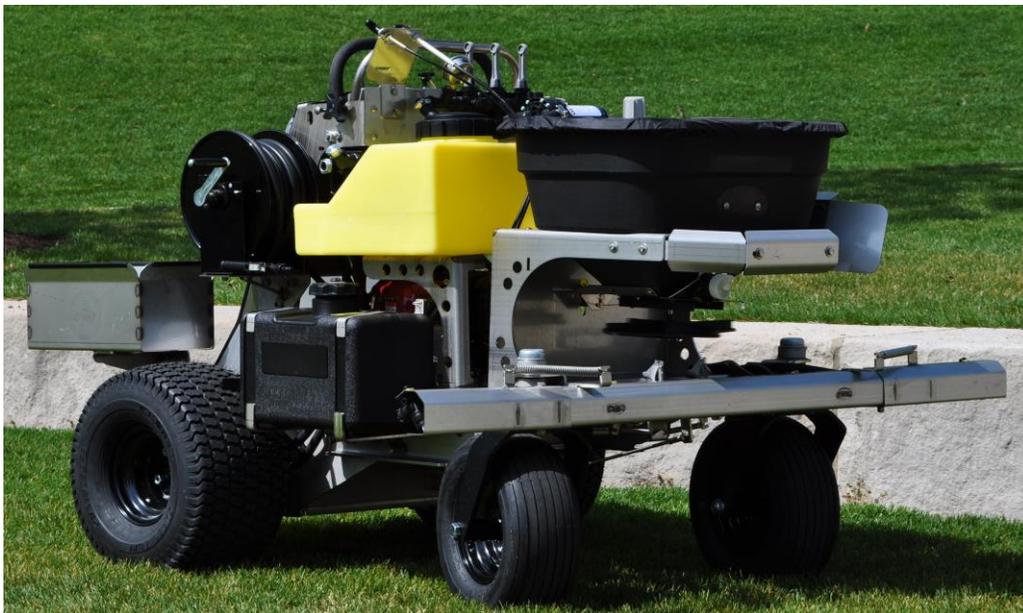


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L. T. Rich Products Inc.

Warranty Registration Card

Serial #: _____	Company Name: _____
Company Address: _____	City / State / Zip: _____
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. Not having this registration card in our database will VOID any warranty filed

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

SECTION 1

TO THE OWNER

1.1 Read this manual entirely **BEFORE** operating the Z-Spray

The information presented herein will prepare you to operate the L.T. Rich Z-Spray in a safe and knowledgeable manner. Operating the Z-Spray 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 Z-Spray is dependent upon its operations within the guidelines and limitations outlined in this manual. Operating the Z-Spray 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 Z-Spray in the spaces below. These numbers can be found 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 Z-Spray are warranted by their respective manufactures. These parts are:

Hydro-Gear Pumps/Motors
Parker Wheel Motors
Vanguard Commercial Engines
Delevan Pump/REMCO Pumps

The complete manufactures' warranty information for these components is located in the back of this manual. 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 or modifications not authorized by L. T. Rich Products, Inc
- Has been subject to abuse, improper maintenance, or improper applications
- Has had engine repair work done by "*unauthorized*" service dealer

1.6 Warranty Exceptions

This warranty shall not apply to the following items:

- Wear items including 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 Z-Spray. Read and understand this entire manual before attempting to set-up, operate, adjust, perform maintenance on, or store the Z-Spray. This manual provides essential information and instructions, which will help you enjoy years of dependable performance from the Z-Spray.

The designed and tested safety of the Z-Spray 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 Z-Spray, 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 Z-Spray may vary slightly due to ongoing engineering changes. L. T. Rich Products, Inc reserves the right to implement engineering and design changes to the Z-Spray 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 Z-Spray, hazard control and accidents prevention are also dependent upon the awareness, condition, maintenance, and storage of the Z-Spray. **THE BEST SAFETY PRACTICE IS AN INFORMED, CAREFUL OPERATOR!!**

Safety guards are mounted on the backside of the Hydro-Gear Pumps (at the shin level of the operator). These guards are designed to cover the hydraulic belt under the base and protect the operator. Removing this guard could cause injury to an operator and could void the Z-Spray's warranty. Remove this guard **ONLY** when unit is turned off to do preventative maintenance.

2.3 Operational Safety Rules

Never operate the Z-Spray without all covers, shields, and safety devices installed and secured.

Never permit any person other than the operator to ride or board the Z-Spray 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.

Operate only in daylight or good artificial light (min 200 lux).

Never allow anyone near the Z-Spray 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 exceeding 15 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 Z-Spray when children are present.

Never allow anyone near the operation controls while performing service or maintenance to the Z-Spray.

Keep the Z-Spray 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 Z-Spray is in safe operating condition.

Never perform maintenance on the Z-Spray while parking brake is disengaged.

2.5 Storage Safety Rules

Never store the Z-Spray in any area accessible by children.

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

Allow the Z-Spray engine to cool before storing in an enclosed area.

Lubricate all moving parts of the Z-Spray to prevent rust during storage.

Remove all accumulated debris from the Z-Spray and attachments before storing.

SECTION 3 MAINTENANCE (Maintenance Chart in the back of manual)

3.1 Engine Maintenance (Vanguard 16HP or 18HP)

****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

Oil Recommendations: Briggs & Stratton recommends the use of certified oils for best performance. Other high-quality detergent oil are acceptable if classified for service SF, SG, SH, SJ or higher. Do not use special additives.

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 run for a few seconds. Turn engine off and check dipstick for proper fill level.



(oil drain hose located on right 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).
- Gasoline with up to 10% ethanol (gasohol) or up to 15% MTBE (methyl tertiary butyl ether) is acceptable

Full Maintenance Information Can Be Located In The Engine Manual Provided

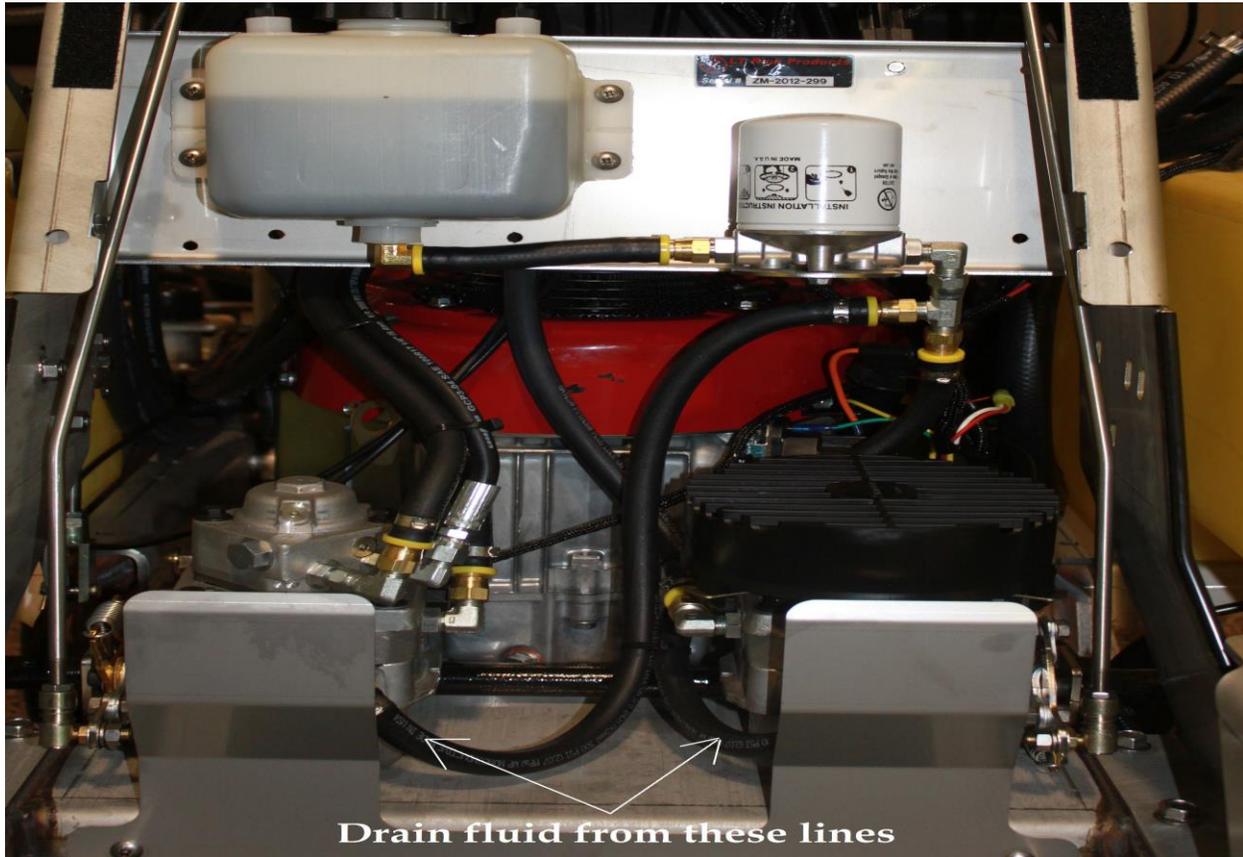
3.2 Hydraulic System Maintenance

****USE COMPRESSED AIR (NOT WATER) WHEN CLEANING HYDRAULIC SYSTEM****

Hydro-Gear recommends that the fluid and filter(s) be changed every 500 hours. Use **5W-40 Synthetic Oil** when replacing the oil in your system

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

Check for hydraulic leaks daily to ensure proper fluid levels.



3.3 Traction Unit Maintenance

The Z-Spray has 5 grease fittings that require periodic greasing. These locations can be found on the wheel assembly (1 on each front wheel assembly), on the caster assembly (1 on each front caster assembly), and the drive belt idler (1 on idler arm).



Inspect wheel and caster assembly every 25 hours for bearing wear, damage, debris, and proper installation.

Inspect idler arm bushing every 50 hours for wear. These bushings are a wear items and will have to be replaced periodically.

Inspect all bolts, washers, nuts, pins and other mounting hardware of Z-Spray once a week to ensure that hardware pieces are properly tightened.

3.4 Spray System Maintenance

The Z-Spray has both a granular spreader system as well as a liquid spray system. Maintaining these two systems will ensure you years of use, proper calibration and limit premature wear.

The spray system contains liquid storage tanks (Z-Max comes standard with 2-25-gallon tanks, Intermediate and Junior has a single 18-gallon tank. Additional tanks can be mounted upon request to either increase units liquid capacity, or allow a unit to have a separate system for different liquid products) 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(s), 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, creates 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 Z-Spray dry can create algae build up).

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

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

Check 5 psi check ball screens daily. Build up on screen will create clogging and inaccurate spray rates.

Check spray system In-line filter gasket weekly. Improper gasket placement, missing gasket or filter not tightened down can create loss in pump pressure.

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

Clean out tank on daily basis for proper storing.

3.5 Spreader Maintenance

The Z-Spray come equipped with either a 120 lb spreader (Junior) or a 220 lb spreader (Z-Max and Intermediate). Both spreaders require the same amount of attention and maintenance.

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

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

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

Keep hydraulic hose fittings tight and free of leaks.

Be sure that the 4ea **Rate Gate & Diffuser Guides** (ref # 29 on page 17) 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.

3.6 Attachment Maintenance

The Z-Spray can be equipped with a few of the L T Rich Products attachments. These available attachments include a 7 gallon Specialty Tank (part # 80906-36), 7 gallon Isolated Tank (part # 80904) or a 1 gallon Foam Marking Kit (part # 80907-kit). Individually or all together, these attachments can be mounted on to your unit for a combination of different uses. Like the spray system, these attachments will need maintenance from time to time.

~ 7 Gallon, 18 Gallon or 25 Gallon Auxiliary Tank – This attachment is a separate tank that uses the pump provided on the existing unit. Since it is cycled through the same system as the standard tank(s), this tank should be treated the same when going through a maintenance routine. Flush all products out of the tank and related hoses on a daily basis. Storing product in system for an extended time may cause build up in hoses, premature cracking on hoses, creates 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 Z-Spray dry can create algae build up). Clean out tank on daily basis for proper storage. This tank is traditionally used to increase capacity size in the liquid system (18 gallon to 25 gallon liquid capacity on Intermediate, Junior or Junior 36 for example) and/or used to store and disperse higher end/special liquid products.

~ 7 Gallon Isolated Tank – This attachment is the 7-gallon Isolated Tank that has its own pump, In-line 50-mesh screen, pressure gauge, throttle valve and 25' coil hose (standard). The same maintenance practices should be applied as the 7-gallon Specialty Tank along with checking the 50-mesh In-Line filter on a daily basis. Make sure rubber gasket remains intact when taking filter housing off and on. Improper gasket placement, missing gasket or In-filter not tightened down can create loss in pump pressure. This attachment is used mostly for your NON-TURF friendly products such as Round Up and other total kill products, but can also be used for selective products.

~ Foam Marking Kit – This attachment allows a unit to mark the turf and make the operator aware of where the product was just applied. The foam marker drop nozzle is installed at the end of the spray booms and disperses foam droplets 12" in from the outer spray pattern (if spray pattern is 8', the foam droplets will be 6' wide). Important maintenance practice for this foam marker is to periodically run warm water through the system to dissolve any leftover residue. When storing unit or not using foam marker, store foam marker tank empty and without water to limit residue buildup.

SECTION 4

SPRAYER/SPREADER OPERATIONS

4.1 Overview

The L T Rich Products sprayer and spreader can be operated either together or individually (spray liquid and spread granular at the same time or separately). Regardless of your situation, make sure that unit is running at full throttle (this will create proper hydraulic pressure to the hopper motor and proper charge voltage back to the battery).

~ **Sprayer** – The spray system has the ability to spray in 3 sections of the boom. The wing booms (left and right) each have their own nozzles creating a 24” liquid path on either side. The middle boom is equipped with 2 nozzles covering a 48” (on Intermediate, Junior and Junior 36 units) or 72” (Z-Max unit) liquid path. The unit is equipped with 3 valves, which operate the left, right and middle boom sections. This allows a customer to spray 24” from the left (or right) nozzle individually with the other nozzles in the closed position. The other is true that a customer can close off the wing nozzles and open the middle nozzle to spray a 48” or 72” liquid path (depending on model).

Creating pressure to these nozzles is done through the Throttle Valve. Threading the Throttle Valve in (**picture below left**) will create pressure to either the boom nozzles or the hose reel. Threading the Throttle Valve out (**picture below middle**) will bring pressure to the tank(s) and create agitation. If threading the Throttle Valve in does not create the desired pressure, check your In-line filter housing and make sure that the gasket is present and the housing is screwed on tight. If desired pressure is still not achieved, pressure adjustments can be made at the pump (**pictured below right**). Clockwise turns create more pressure and counter-clockwise turns decrease pressure.



**Throttle Valve in
to prepare spray**



**Throttle Valve out
to create agitation**



**Pressure adjust on pump
(Allen Wrench)**

If optimum pressure is achieved but boom nozzles are dripping, look at either your gasket in your boom nozzles (may not be present or if present may not be seated properly) or the hose reel valve may be open. Leaving the hose reel valve in the open position will not allow the 5 psi check ball valves to close immediately when the pump is turned off. This will create the nozzles to leak and drip for a short period of time upon shutting the pump off, so make sure that your hose reel valve is turned to the off position if not in use.

Turning on the spray system can be done one of two ways. Your first option would be the On/Off switch located on the control panel. This would be located on the lower/right side of the control panel. The second way to turn the spray system on is the foot switch located on the left side on the Foot Pan. This is a good way to turn on the spray system because it allows the operator to keep both hands on the control arms and drive the unit.

By applying pressure on the foot switch with your left foot, the spray system is turned on. Releasing the foot switch will turn the spray system off.

~Spreader – The Z-Spray units are equipped with either a 120 lb spreader (Junior & Junior 36) or 220 lb spreader (Intermediate and Z-Max). The hydraulic hopper motor with the spreader control rate knob allows variable spread widths from 3 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 need. This allows you to spread and spray at the same time. A typical pattern is to overlap the fertilizer pattern back to the tire tracks and the spray pattern boom to boom. To spray and spread at the same time: Set the spread pattern for twice the width of the spray. For example; a Junior, Junior 36 and Intermediate models have a spray width of 8 feet. Set the spread width to 16 feet and spread back to the tire tracks. The spray pattern will match boom to boom. The spread thins or feathers at the outer edges, eliminating sharp “*edge of spread*” lines, which cause stripes and streaks. Determine a dial setting on the low side. 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.

4.2 Operations

Upon turning the key on to start the unit, apply full choke. Once unit has started, release first the choke and then the brake. Push Joy Sticks forward equally to move unit forward. Should you want the unit to backup 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 Joy Stick forward while keeping the left Joy Stick slightly back of the right thus allowing the right tire to turn more than the left. Push more on the left Joy Stick 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.

Like stated on page 8, turning the liquid pump on and off can be made from two different locations. The common on/off switch for the pump is located on the control panel. There is a foot switch located on the left side of the foot plate to allow the operator to turn the pump on or off upon request (press on foot switch when you want the pump to turn on and release the foot switch when wanting to shut off pump system).

Using the spreader system, there are 3 cables (2 cables for all units build before December 2010) to operate the hopper door (far left cable), the diffuser (middle cable) and the deflector shield (lower right cable). By pulling on the far left hopper door cable, this 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 Hopper Rate Dial (Ref # 37 on page 17). This limits how wide the door will open and how much granular product will be coming out. The diffuser cable (middle cable) controls the spray 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 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 in the deflector shield cable (standard on all 2011 and current models). 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. All Z-Spray units manufactured from mid-2008 to current are equipped with the Locking Caster System. This allows the operator to lock the front caster wheels in the forward position to create more side hill stability. The Locking Caster System is applied when the operator compresses the Locking Caster System foot pedal located on the right side of the footplate (**pictured below left**). When compressing the foot pedal, locking mechanism slides over the caster pin locking the wheel in the forward/straight position (**pictured below middle**). This system is spring loaded, so by releasing this pedal it will release the lock on the front caster wheels (**pictured below right**).



(Locking Caster Foot Pedal) (Locking mechanism in operation) (Locking mechanism released)

SECTION 5 SPRAY/SPREADER SYSTEM

5.1 Valving

The Z-Spray is equipped with an 18-gallon or 2-25 gallon liquid tanks for the spray system. The Z-Max is equipped with the 2-25 gallon tanks for the spray system and has more liquid capacity. The valving on this Z-Max unit is a little different from all other units. Pictured below are the valve controls on the Z-Max that allows a few different features.



(pull liquid from right tank ONLY)

(transferring product from right tank to left tank)

***NOTE: Liquid is pulled from the larger ¾” hose and returned to the ½” hose**

If you have a Z-Max unit, you have the option of pulling product from both tanks simultaneously or independently. The picture above left shows the right side valves **ON** and the left side valves **OFF**.

Periodically check the in-line filter for any debris in the screen. If debris is present, this can create erratic pressure spikes and/or not allow the proper flow through system. After clearing any debris, ensure that gasket remains intact and tighten in-line filter cap (if not installed properly, this will allow air to get in the system and system will lose or not create pressure).



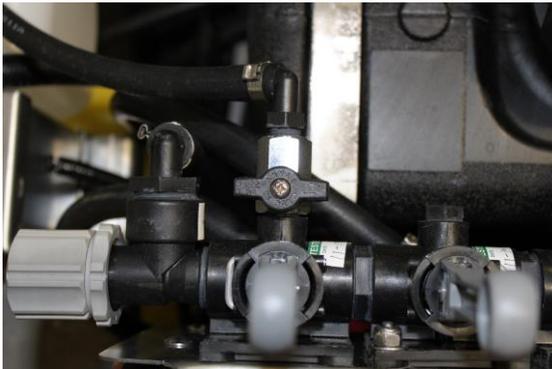
(In-line filter housing, screen & gasket)



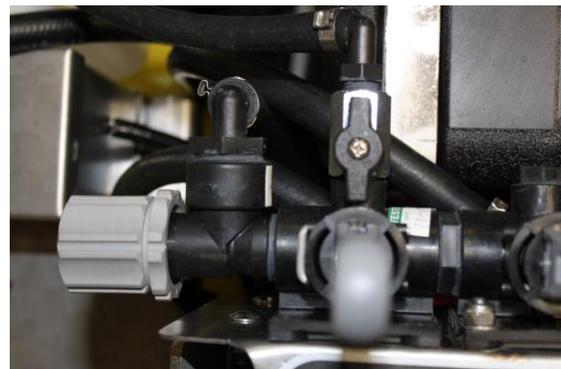
(In-line filter cap & gasket)

The pump switch located on the control panel turns on the spray system pump as well as the spot spray foot switch on the left side of the foot pan. Once the pump is turned on, the throttle valve is turned clockwise to increase pressure and/or counter-clockwise to release pressure (and create agitation if the pump is on). The pressure can be read on the gauge (decreasing pressure from gauge will increase agitation in the tank).

Opening the chrome valve allows liquid to the 50' (or 100' if that option was taken) Cox Hose Reel for spraying out of the hand spray gun. When Hose Reel is not in use, be sure to turn valve off to prevent boom tips from dripping.



(Hose reel Chrome Valve in closed position)



(Hose reel Chrome Valve in open position)

5.2 Spray Calibration/Tip Chart/Liquid Quantities

The Z-Spray liquid system comes standard with lavender colored Air Injected tips which will apply liquid material @ .34 (1/3) gallons per 1,000 sq. ft. @ 5 m.p.h and 40 psi. Each tip has a 5 psi shut-off screen to prevent drip.

Your machine is capable of using tips from ¼ to 1 gallon in size. See chart for your desired drop rate.

The following are some general guidelines for sprayer calibration (Note: this chart only applies if using Air Injected tips. Using other tips will require different calculations). Please refer to the spray chart provided for complete calibration (spray charts are now located on the backside of the knee pad for quick in the field reference).

Tip Color	MPH	Pressure	Gallons/1,000 sq. ft.
Yellow	5	40 psi	.27 (1/4) gallon
Lavender	5	40 psi	.34 (1/3) gallon
Red	5	40 psi	.54 (1/2) gallon
Brown	5	50 psi	.76 (3/4) gallon
Grey	4	40 psi	1 gallon

The throttle valve adjusts pressure. The throttle valve is located on the left side of the Manifold assembly (page 19). Turn clockwise to increase pressure, counter clockwise to decrease pressure. Pressure will be displayed on the **Pressure Gauge** (part # 60032 on page 19). Once the nozzles are opened, you will notice a slight decrease in pressure (adjust accordingly).

To determine liquid quantities per tank, understand what tips you have on your machine (factory set is 1/3 gallon per 1,000 sq. ft. through the Lavender tips). For instance some products call for 1.1 to 1.5 oz per 1,000 sq. ft. We would recommend using 1.3 (median value of 1.1 to 1.5). Since you are using a 1/3-gallon tip, you need to multiply by 3, and then multiply that number of gallons you need to put in your tank.

1.3 (median value of 1.1 to 1.5) X 3 (1/3 gallon tips) X gallons needed. If you were filling an 18-gallon tank your equation would look like this:

1.3 X 3 X 18 = 70.2 ounces in 18 gallons of water.

5.3 Spreader Calibration/Layout

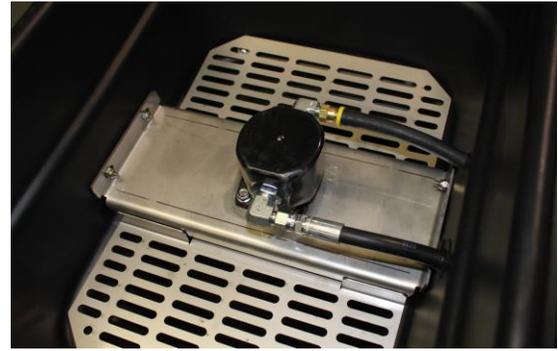
The Spreader Motor Control determines the speed of the impeller in the front on the machine. The control is numbered 1-10; these numbers are used for points of reference. Your machine is capable of varying its spread pattern from 3 – 25 feet with this control. Being hydraulically driven, the spread pattern is independent of the ground speed.

The hopper control cable opens and closes the door inside the base of the hopper. The maximum size of the opening will be determined by the rate adjustment on the Hopper Rate Dial. This will set your rate gate linkage bar to limit and stop the rate the door can open.

The Diffuser adjustment allows the user to adjust the intensity of the spread pattern. A small pull shifts the product placement on the impeller either to the edge of the impeller or the middle of the impeller. This in turn shifts the spread pattern heavier to the left (placing product to the edge of the impeller) or heavier to the right (placing product to the middle of the impeller). *FOR MORE DETAILED INFORMATION, GO TO www.spyker.com



(Hopper, Diffuser and Deflector Cables)



(Hydraulic hopper motor)



(Hopper Rate Dial)



(Diffuser shown on underside of opening)

Your machine is equipped with either a 120 lb or 220 lb Spyker model spreader. The hydraulic spreader motor with the spreader motor control has the ability to vary spread widths from 3 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. This allows you to spread and spray at the same time. A typical pattern is to overlap fertilizer pattern back to the tire tracks and the spray pattern boom to boom.

To spray and spread at the same time: Set the spread pattern to twice the width of the spray. For example a junior and intermediate model has a spray width of 8 feet. Set the spreader width to 16 feet and spread back to the tire tracks. The spray pattern will match boom to boom.

This feathers material at the outer edges, eliminating sharp “edge to spread” lines which cause stripes and streaks.

Determine a dial setting on the low side. 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.

Remember- Published dial settings are approximate only. Open the hopper door after the spreader is turned on at operating speed.

Spray/Spread Calibration Decal Charts are available from the parts department (units shipped from July 2010 and current have this decal installed on the backside of the knee pad). Part # is 30705

SECTION 6

PARTS

6.1 Part Number / Pictorial

Electric Parts

<i>Part #</i>	<i>Description</i>	<i>Qty</i>
80202	Pump on-off switch	1
80204-2010	Spot Spray Switch (foot switch only)	1
80205-ING	Wiring Harness (2011 to current)	1
80206	30 AMP Fuse	1
80207	Starter Solenoid	1
80208	Battery Box	1
80120-2010	12 Volt Battery (*cannot ship, local pickup only*)	1
80214-A	Tach/Hour Meter	1
80215	Key Switch	1



(up to 2010 wiring harness) (foot switch, tach/hour meter, etc) (2011 to current wiring harness)

Wheel Parts (front and rear)

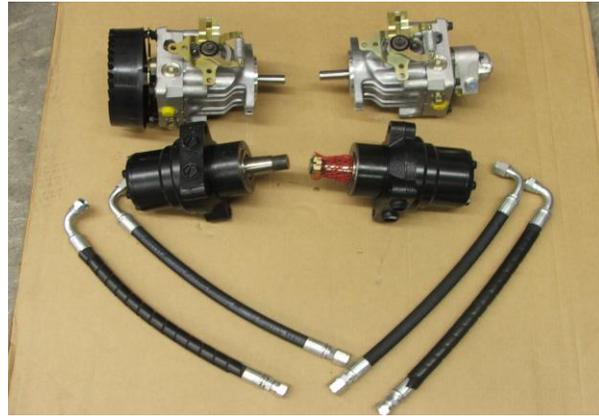
<i>Part #</i>	<i>Description</i>	<i>Qty</i>
80019-A	Front 16" Wheel Assembly	1
80019-B	Front Wheel Spacers	2
80309	Front Wheel Cone Bearings	2
80311	Front Wheel Bearing Cup (for replacement only)	2
80021	Rear Wheel Assembly (not pictured)	1
80020	Rear Junior or Junior 36 Wheel Assembly (not pictured)	1
80310	Rim Seal	2
HHCS5-3410	Front Wheel Bolt	1
NNC-34	Front Wheel Nut	1
FW-SAE-34	Front Wheel Washer	1



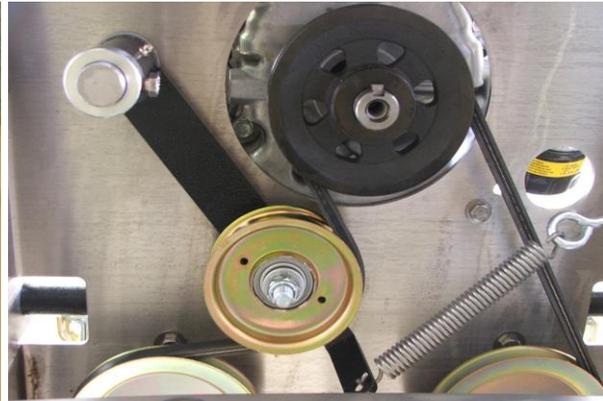
- | | |
|---------------|------------------------|
| 1. 80019-B | SPACER (2) |
| 2. 80310 | SEAL (2) |
| 3. 80309 | BEARING (2) |
| 4. 80311 | RACE/CUP (2) |
| 5. FW-SAE-34 | FLAT WASHER 3/4" (1) |
| 6. NNC-34 | NYLOK JAM NUT 3/4" (1) |
| 7. HHCS5-3410 | BOLT (1) |
| 8. 80019-A | TIRE ASSEMBLY |

Hydraulic Parts/Idler Bracket Parts

<i>Part #</i>	<i>Description</i>	<i>Qty</i>
80003	Idler Pulley	1
80004	Idler Pulley Bracket Weldment	1
80304	Idler Pulley Bracket Bushings	2
80112	Idler Spring	1
80413	Drive Belt (A51)	1
<i>80413-C</i>	<i>Junior 36 Drive Belt (A-48)</i>	<i>1</i>
HHESC5-12221	Idler Bracket Bolt	1
FW-SAE-12	Idler Bracket Washer	2
NNC-12	Idler Bracket Nylon Nut	1
80400-AE	Hydro Pump (left)	1
80400	Hydro Pump (right) w/fan	1
<i>80409-36R</i>	<i>Wheel Motor Junior 36 Right (5/11 to current)</i>	<i>1</i>
<i>80409-36L</i>	<i>Wheel Motor Junior 36 Left (5/11 to current)</i>	<i>1</i>
80401-Parker	Wheel Motor Large (left)	1
80402-Parker	Wheel Motor Large (right)	1



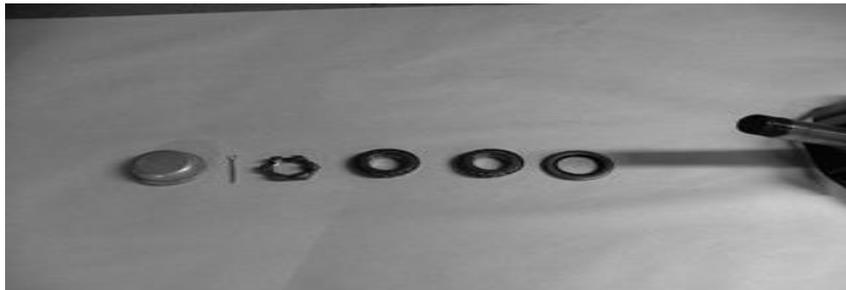
(hydraulic motors, pumps and hoses)



(idler bracket, idler pulley and drive belt)

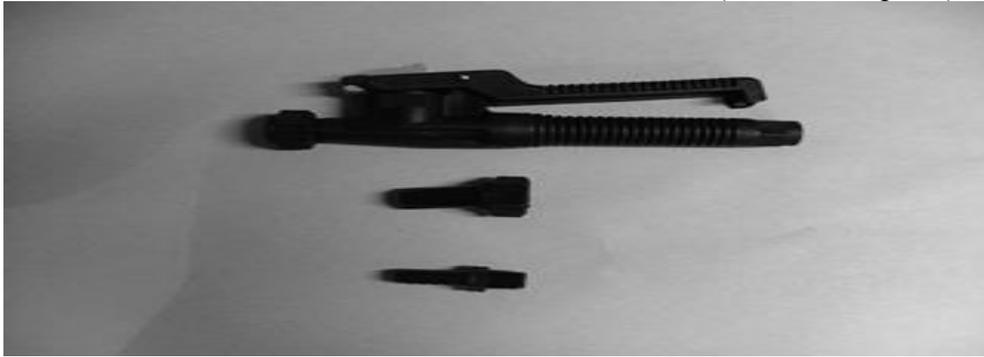
Caster Parts

<i>Part #</i>	<i>Description</i>	<i>Qty</i>
80013	Caster Yoke (2007 to 2009)	1
80013-L	Caster Yoke, Left Locking Caster (2009 to current)	1
80013-R	Caster Yoke, Right Locking Caster (2009 to current)	1
80306	Dust Cap (Steel)	1
80306-RUBBER	Dust Cap (Rubber)	1
80308	Caster Bearing	2
80009	Castle Nut	1
80302	Caster Bearing Seal	1
CP18x112	Cotter Pin	1



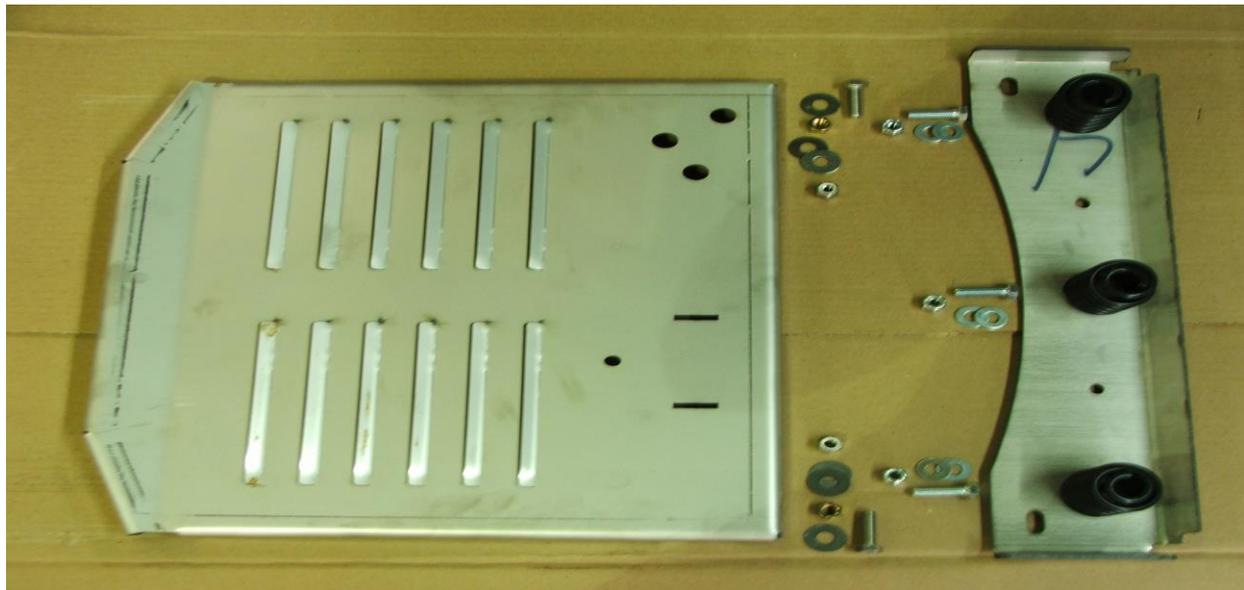
Spot Spray Gun

Part #	Qty	Description
60040	1 ea	Spot Spray Gun
60041	1 ea	Spot Spray Tip
60029	1 ea	¼" MPT X 3/8" Barb
60029-A	1 ea	¼" MPT X ¼" Barb (100' Hose option)



Foot Plate Parts

Part #	Description	Qty
83067	Compression Springs	3
HHCSC5-38114	Bolt	5
NNC-38	Nut	5
FW-SAE-38	Flat Washer	10
80181	Foot Pan Tray	1
80029-REV	Foot Plate	1
80029-36	Junior 36 Foot Plate	1

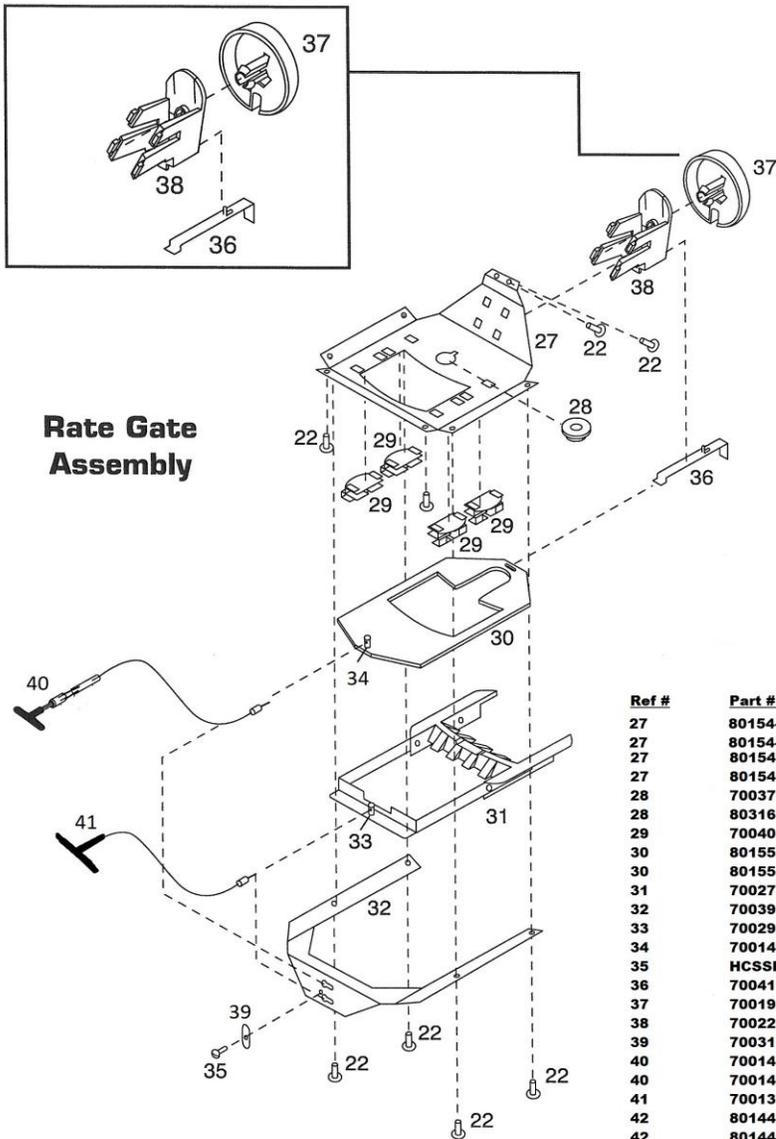


(*if parts needed for pivot point*)

Part #	Description	Qty
FW-SAE-38	Flat Washer	6
HHCSC5-38112	Bolt	2
HNC8-38	Nut	2
NNC-38	Nut	2

120 lb & 220 lb Hopper Parts

Exploded View



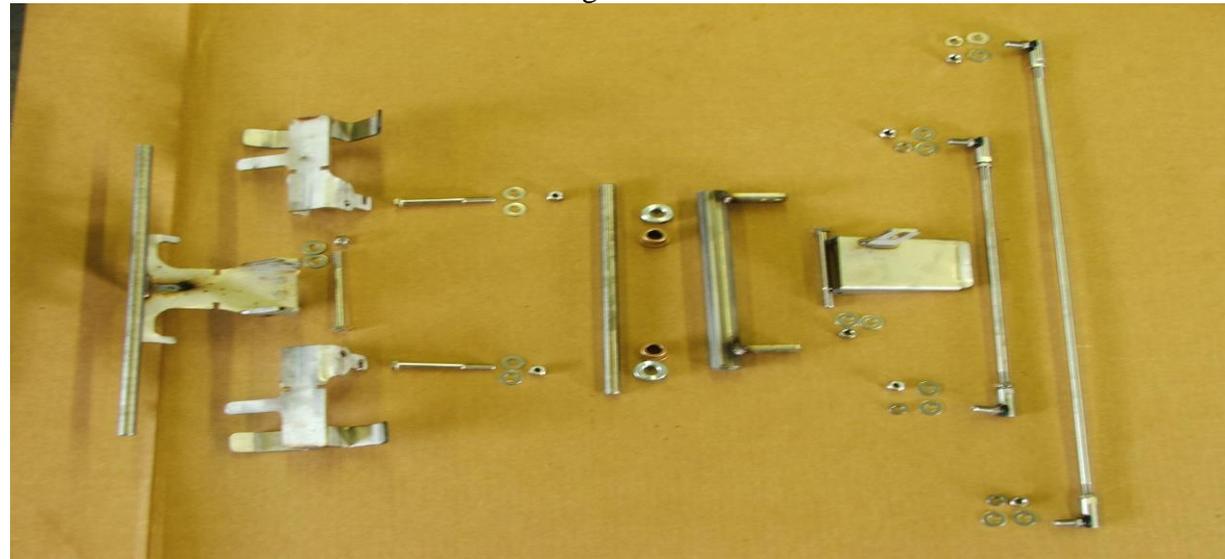
Rate Gate Assembly

Ref #	Part #	Description
27	80154-S	120lb Hopper Bottom
27	80154-120	120lb Hopper Bottom (April 2014 to current)
27	80154	220lb Hopper Bottom
27	80154-2014	200lb Hopper Bottom (April 2014 to current)
28	70037	Hopper Bushing
28	80316	Hopper Bushing (April 2014 to current)
29	70040	Rate Gate & Diffuser Guides
30	80155	Hopper Door
30	80155-2014	Hopper Door (April 2014 to current)
31	70027	Diffuser
32	70039	120lb Cable Mount Bracket
33	70029	Cable Wire Screw & Retainer
34	70014-B	SS Ball Joint
35	HCSSF-1034	Hex Bolt
36	70041	Rate Gate Linkage
37	70019	Hopper Rate Dial
38	70022	Rate Dial Holder
39	70031	Cable Retainer Plate
40	70014	220lb Premium Hopper Cable
40	70014-A	120lb Hopper Cable
41	70013	Diffuser Cable
42	80144	220lb Hopper Screen (not shown)
42	80144-2012	220lb Locking Hopper Screen (not shown)
42	80146-a	120lb Hopper Screen (not shown)
42	80146	120lb Locking Hopper Screen (not shown)

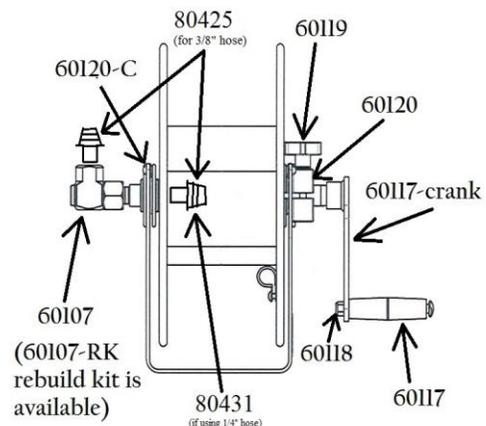
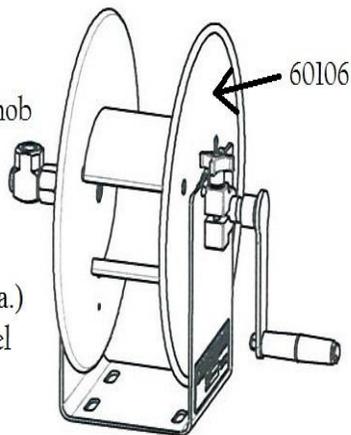


Locking Caster System Parts

<u>Part #</u>	<u>Description</u>	<u>Qty</u>
80022-13	13" Linkage Rod	1
80022-24.5	24.5 Linkage Rod (*NOTE IF NEEDING FOR JR36*)	2
80023-B	Ball Joint	4
NNC-516	Nylon Nut	4
FW-SAE-516	Flat Washer	14
HHCCSC5-38112	Stop Bolt	1
83049	Spring	4
LWSS-516	Lock Washer	4
ZHNFSS-516	Hex Nut	4
SC-0500-ZC	5/16" Collar	2
82027-PT	Upper Pivot Tube 7 3/4"	1
82023	Foot Control Pedal	1
HCSSC-5163	3" X 5/16" Bolt S/S	2
HHCCSC5-5164	4" X 5/16 Bolt	1
82018-L	Lock Arm (left)	1
82018-R	Lock arm (right)	1
82019	Locking front T	1
80303	Bronze Bushing	2



<u>Part #</u>	<u>Description</u>
60120-C	Plastic Bearing
60107	Swivel 3/8" NPT
60119	Hose Reel Brake Knob
60117-crank	Crank Arm
60118	Handle Bolt
60117	Hose Reel Handle
60120	Brake
80425	3/8 X 3/8 Barb (2ea.)
60106	Complete Hose Reel Assembly



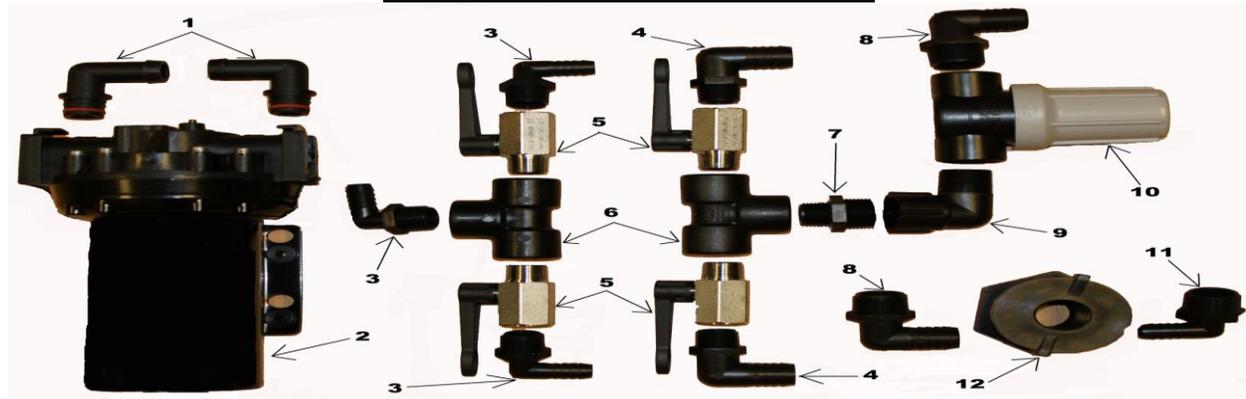
Manifold Assembly

Part #	Description	Qty
60049	1/2 MPT X 3/4 HOSE BARD 90 DEGREE	1
60023	1/2 TO 1/4 BUSHING	1
60022	1/2 FPT TEE	1
60058	3/4 MPT X 1/2 MPT REDUCING NIPPLE	1
60032	GAUGE, 60PSI	1
60010	DIRECTO VALVE \ AA6B	3
60027	1/2 MPT X 1/2 HB 90	3
60026	3/4 MPT X 1/2 HB 90	1
60012	THROTTLE VALVE	1
60042	1/4 TO 3/8 BARB 90	1
60009	1/4 CHROME VALVE	1
60020	3/4 MPT CLOSE NIPPLE	2



(Picture from the front of the unit. When standing on the unit, part # 60012 will be on the left side)

Z-Max Liquid Valve Parts List



1.	3/4" Aquatic Fitting 90 degree	(part # 60015-A)	2ea.
2.	4.0GPM Liquid 12V Pump	(part # 60014-A)	1ea.
3.	1/2" MPT X 1/2" 90 degree barb	(part # 60027)	3ea.
	<i>*1/2" X 1/2" straight barb also used*</i>	(part # 60019-12)	
4.	1/2" MPT X 3/4" 90 degree bard	(part # 60049)	2ea.
5.	1/2" Chrome Valve	(part # 60013)	4ea.
6.	1/2" Tee	(part # 60022)	2ea.
7.	3/4" X 1/2" reducer nipple	(part # 60058)	1ea.
8.	3/4" hose bard 90 degree	(part # 60018)	2ea.
9.	3/4" street elbow	(part # 60017)	1ea.
10.	3/4" strainer 50 mesh	(part # 60061)	1ea.
	<i>*strainer gasket can be sold separately*</i>	(part # 60061-G)	
	<i>*50 mesh screen can be sold separately*</i>	(part # 60060)	
11.	3/4" MPT X 1/2" barb 90 degree (1 on each tank)	(part # 60026)	1ea.
12.	Tank fitting (2 on each 25 gallon tank)	(part # 60113)	2ea.

Parts List

60010 - DIRECTO VALVE AA6B		3 ea
60012 - THROTTLE VALVE\n23520-3/4-PP		1 ea
60013 - 1/2' CHROME VALVE\n90FML12		4 ea
60014-A - DELAVAN PUMP\n5940-111C 4.0 GPM		1 ea
60058 - 3/4'MPT X 1/2'MPT\nREDUCING NIPPLE\n3M3412		2 ea
60018 - 3/4' MPT X 3/4' HB 90\n3EL34		3 ea
60020 - 3/4' MPT CLOSE NIPPLE\n3M34		2 ea
60022 - 1/2' FPT TEE\n3TT12		3 ea
60023 - 1/2' TO 1/4' BUSHING\n3RB1214		1 ea
60026 - 3/4'MPT X 1/2' HB 90\n3EL3412		3 ea
60027 - 1/2'MPT X 1/2' HB 90\n3EL12		6 ea
60028-A - 1/2" 3 WAY BARB TEE		1 ea
60061 - INLINE STRAINER 50 MESH\n122-3/4/PP-50		1 ea
60032 - GAUGE\nRICH 60-25		1 ea
80500-B - BRIGGS & STRATTON 16 HP LESS FUEL SOL.		1 ea
60069 - HYPRO BLACK CAP \n402990-1	4ea USED ON INTERMEDIATE/JUNIOR/JUNIOR36)	5 ea
60035 - STRAINER 50mesh W/ CHECK VALVE\n4193A-PP-50-5 SS	(4ea USED ON INTERMEDIATE/JUNIOR/JUNIOR36)	5 ea
60114 - QJ39685 TEEJET NOZZLE BODY\nQJ39685-1L-500-NYB	(Left)	2 ea
60115 - QJ39685 TEEJET NOZZLE BODY\nQJ39685-2-500-NYB	(NONE USED ON INTERMEDIATE/JUNIOR/JUNIOR36) CENTER	1 ea
60116 - QJ39685 TEEJET NOZZLE BODY\nQJ39685-1R-500-NYB	(Right)	2 ea
60040 - SPOT SPRAY GUN\n22650-PP-1/4'		1 ea
60029 - 1/4' MPT TO 3/8' BARB \n3A 1438		1 ea
60041 - SPOT SPRAY TIP #12\n5500-EPPB-X12		1 ea
60042 - 1/4' TO 3/8' BARB 90\n3EL1438	(HOSE REEL VALVE)	1 ea
60044 - 3/8' HOSE CLAMP\n6JM		20 ea
60045 - 3/4' HOSE CLAMP\n12-J		8 ea
60049 - 1/2 MPT * 3/4 HOSE BARB 90 DEG\n3EL1234		3 ea
60050 - 3/8' SINGLE BRAID HOSE\n000612		10 ft
60052 - 3/4' SINGLE BRAID HOSE\n0001212		8 ft
60009 - 1/4' CHROME VALVE\n90FMB14		1 ea
60110 - 25 GALLON SPRAY TANK	(Z-MAX UNIT ONLY)	2 ea
60106 - 112-3-50-KXXX\nHAND REEL LESS HOSE\nCOLOR BLACK		1 ea
80202 - PUMP ON-OFF SWITCH\nCH-M-58031-01		1 ea
30678 - SPEED BAR KNOB		2 ea
80019 - OLD STYLE/ 4 BOLT STYLE FRONT WHEEL	(16 X 6.5 X 8)	2 ea
80019-A - NEW STYLE (SINGLE BOLT) FRONT CASTER WHEEL ASSY	(16 X 6.5 X 8)	2 ea
80510 - Throttle Cable		1 ea
80025 - JOY STICK TO HYDRO LINKAGE ROD		2 ea
30700 - DECAL Z-SPRAY CONTROL PANEL		1 ea
80019-B - SPACER HSS-34	(FRONT WHEEL, SINGLE BOLT STYLE)	4 ea
80400 - HYDRO PUMP (RIGHT)\nPG-3KBB-NA1C-XXXX		1 ea
80400-AE - LEFT HYDRO PUMP WITH AUX.\nPG-2HBB-HB1X-XXX		1 ea
80404 - HYDRAULIC FILTER\nAA0513	(SINGLE FILTER FROM MAY 2011 TO PRESENT)	2 ea
80405 - HYDRAULIC FILTER HOUSING	(SINGLE FILTER FROM MAY 2011 TO PRESENT)	2 ea

80406 - HYDRAULIC TANK CAP\nAA2231		1	ea
80419 - WHEEL MOTOR FITTING (4)\n6801-08-10-4		4	ea
80421 - 3/8' 90 DEG HYDRO PUMP FITTING(6)\n6801-06-06-4		6	ea
80422 - 3/8 PUSH-ON SWIVEL (6)\n288-06-06		11	ea
80423 - 3/8 OIL FILTER SWIVEL ADAPTER (2)\n6402-06-06		2	ea
80003 - IDLER PULLEY\nW/ .50 BORE (4" X 1/14")		1	ea
60029-A - 1/4 MPT X 1/4 BARB (Used for 100' Hose Reel)		1	ea
80434 - TEE BRASS\nPRESSURE# 178T-06-06-06		1	ea
80112 - BOOM SPRING \nCENTURY# 80914-S (2 ON BOOM ASSEMBLY AND 1 ON IDLER)		3	ea
80432 - AUX PUMP FITTING (2)\n6400-04-04		2	ea
80220 - FUEL TANK W/ CAP\n067506CE		1	ea
80205 - WIRING HARNESS		1	ea
80207 - STARTER SOLENOID (F492)		1	ea
80208 - BATTERY BOX \nPART#03188		1	ea
80210 - 12 VOLT BATTERY\nSS10UL1		1	ea
80214-A - TACH/HOUR METER\n809D-100-022		1	ea
80215 - KEY SWITCH\n4F463		1	ea
80430-PV - HOPPER MOTOR FLOW CONTROL VALVE		1	ea
80429 - PROPORTIONAL VALVE FITTING\n6400-04-06		1	ea
80430 - PROPORTIONAL VALVE FITTING 2 (1)\n6400-06-06		2	ea
30675 - JOY STICK FOAM GRIP\nEEZER # 100130		2	ea
80308 - L44649 (CASTER BEARING)		4	ea
80301 - CASTER YOKE BEARING CUP\nL44610		4	ea
30676 - BRAKE HANDLE GRIP\nEZZER# 100095		1	ea
80303 - JOY STICK BUSHING\nKAMAN# EF 0812-12		6	ea
OPB22712-04-04 - 1/4" FEMALE SWIVEL		8	ea
R16-08 - SEA 100R16 1/2"		6.5	ft
OPB22712-04-04 - 1/4" FEMALE SWIVEL		6	ea
R1T-04 - SEA 100R1T MSHA 1/4"		10	ea
60051 - 1/2' SINGLE BRAID HOSE\n000812		30	ft
80020 - REAR WHEEL ASSEMBLY JUNIOR 36/JUNIOR \n#DM808	(20 X 8.0 X 8)	2	ea
80021 - REAR WHEEL ASSEMBLY Z-MAX\nCARLISE# 15-640-419GK	(20 X 10.5 X 8)	2	ea
80522-B16/18 - Briggs 16/18 HP Muffler		1	ea
80420 - 1/2' PUMP FITTING (4)\n6802-08-08-4		4	ea
80424 - HYDRO TANK 3/8' 90 DEG FEMALE(2)\n5504-06-06		2	ea
80432-B - AUX PUMP FITTING (1)\n6500-06-04-4		1	ea
80433 - AUX PUMP SWIVEL (2)\n6500-04-04-4		2	ea
60000-Lavender - AVI-110025 1/3 SPRAY TIP(4ea USED ON INTERMEDIATE/JUNIOR/JUNIOR36)		5	ea
80440-REV - Hydraulic Hopper Motor Haldex 1300098		1	ea
83067 - .225 Compression Spring Suspension Foot Plate		3	ea
80411-Split - Hydro Pulley-Split Steel Sprayer		2	ea
80412-Split - Engine Drive Pulley 1" Split Steel		1	ea
80304 - IDLER PULLEY BRACKET BUSHINGS\nKAMAN# EF 1620-12		2	ea
80064 - SS- FRONT CASTER TUBE		2	ea
80352-A - WHEEL HUB 2008 Z-MAX\n501053BP		2	ea
80511 - CHOKE CABLE\n52460002\nWRIGHT NO#		1	ea
80022-13 - 13" LOCKING CASTER LINKAGE ROD		1	ea
80022-24.5 - 24.5" LOCKING CASTER LINKAGE ROD		1	ea

83049 - Locking Caster/Brake Spring\n80706S	4	ea
HCSSC-5161 - 5/16-18 X 1 S/S HEX HEAD CAP SCREW	12	ea
HCSSC-1412 - 1/4-20 X 1/2 S/S HEX HEAD CAP SCREW	10	ea
HCSSC-516134 - 5/16-18 X 1-3/4 S/S HEX HEAD CAP SCREW	12	ea
SSNNF-38 - 3/8-24 S/S NYLOK NUT	2	ea
SSNNC-38 - 3/8-16 S/S NYLOK NUT	18	ea
SSNNC-12 - 1/2-13 S/S NYLOK NUT	15	ea
CB-141SS - 1/4-20 X 1 S/S CARRAIGE BOLT	6	ea
HFNS-38S - 3/8-16 S/S SERRATED HEX FLANGE NUT	7	ea
HFNS-38S - 3/8-16 S/S SERRATED HEX FLANGE NUT	2	ea
TRSC-141S - 1/4-20 X 1 S/S SLOTTED TRUSS MACH SCR.	10	ea
CB-5161SS - 5/16-18 X 1 S/S CARRAIGE BOLT	10	ea
LWSS-516 - 5/16 S/S LOCK WASHER	17	ea
HFNS-14S - 1/4-20 S/S SERRATED HEX FLANGE NUT	17	ea
SSNNC-516 - 5/16-18 S/S NYLOK NUT	39	ea
SSNNC-14 - 1/4-20 S/S NYLOK NUT	29	ea
HNFS-516SMD - 5/16-24 S/S HEX NUT	8	ea
LWSS-38 - 3/8 S/S LOCK WASHER	4	ea
HCSSC-51612 - 5/16-18 X 1/2 S/S HEX HEAD CAP SCREW	4	ea
HCSSC-516134 - 5/16-18 X 1-3/4 S/S HEX HEAD CAP SCREW	3	ea
HCSSC-14114 - 1/4-20 X 1-1/4 S/S HEX HEAD CAP SCREW	4	ea
HCSSC-1434 - 1/4-20 X 3/4 S/S HEX HEAD CAP SCREW	2	ea
HCSSC-381 - 3/8-16 X 1 S/S HEX HEAD CAP SCREW	13	ea
HCSSC-38112FT - 3/8-24 X 1-1/2 S/S HEX HEAD CAP SCREW	2	ea
HCSSC-38114 - 3/8-16 X 1-1/4 S/S HEX HEAD CAP SCREW	8	ea
HCSSC-5163 - 5/16-18 X 3 S/S HEX HEAD CAP SCREW	3	ea
HCSSC-38112 - 3/8-16 X 1-1/2 S/S HEX HEAD CAP SCREW	4	ea
HCSSC-516112 - 5/16-18 X 1-1/2 S/S HEX HEAD CAP SCREW	5	ea
FWSS-14 - 1/4 S/S FLAT WASHER	2	ea
FWSS-38LOD - 3/8 X 1 S/S FLAT WASHER	52	ea
FWSS-12 - 1/2 S/S FLAT WASHER	33	ea
CB-14312SS - 1/4-20 X 3-1/2 S/S CARRAIGE BOLT	4	ea
HCSSC-5164 - 5/16-18 X 4 S/S HEX HEAD CAP SCREW	1	ea
HCSSC-38412 - 3/8-16 X 4-1/2 S/S HEX HEAD CAP SCREW	2	ea
SSNNC-38 - 3/8-16 S/S NYLOK NUT	9	ea
CB-38212SS - 3/8-16 X 2-1/2 S/S CARRAIGE BOLT	2	ea
TRSC-141S - 1/4-20 X 1 S/S SLOTTED TRUSS MACH SCR.	15	ea
HCSSC-516114 - 5/16-18 X 1-1/4 S/S HEX HEAD CAP SCREW	10	ea
SSNNC-516 - 5/16-18 S/S NYLOK NUT	8	ea
FWSS-516LOD - 5/16 X 7/8 S/S FLAT WASHER	34	ea
HCSSC-12112 - 1/2 X 1-1/2 S/S HEX HEAD CAP SCREW	14	ea
SES-156-1420-14SS - 1/4-20 X 1-5/16 S/S SINGLE END STUD	1	ea
SES-200-1420-.95SS - 1/4-20 X 2 S/S SINGLE END STUD	2	ea
EB-58X516-18X6Z - 5/16-18 X 3 EYE BOLT W/ 5/8 EYE	1	ea
HCSSC-12112 - 1/2 X 1-1/2 S/S HEX HEAD CAP SCREW	1	ea
SHCS-1434 - 1/4-20 X 3/4 SOCKET HEAD CAP SCREW ZINC	4	ea
CP18X134SS - 1/8 X 1-3/4 S/S COTTER PIN	1	ea
FWSS-516 - 5/16 S/S FLAT WASHER	70	ea

LTBC-22B - 22" BLACK BATTERY CABLE	1	ea
LTBC-32R - 32" RED BATTERY CABLE	1	ea
LTBC-5R - 5" RED BATTERY CABLE	1	ea
NNC-38 - 3/8-16 NYLOK NUT ZINC	16	ea
FW-SAE-38 - 3/8 SAE FLAT WASHER ZINC	32	ea
HHSC5-12212 - 1/2-13 X 2-1/2 HEX CAP SCREW GR 5 ZINC	8	ea
SET-1024X112 - 10-24 X 1-1/2 S/S SET SCREW	2	ea
HHM-812520 - M8-1.25 X 20 HEX HEAD CAP SCREW ZINC	1	ea
HNC8-38 - 3/8-16 HEX NUT GR 8 YZ	2	ea
TNUT51618 - 5/16-18 T NUT	4	ea
FW-SAE-12 - 1/2 SAE F/W ZINC	4	ea
CP18X134SS - 1/8 X 1-3/4 S/S COTTER PIN	2	ea
NNC-12 - 1/2-13 NYLOK NUT ZINC	8	ea
FW-SAE-34 - 3/4 SAE FLAT WASHER ZINC	2	ea
HJNN-3410 - 3/4-10 HEX JAM NYLOK NUT ZINC	2	ea
TRSC-1034S - 1/4-20 X 3/4 S/S SLOTTED TRUSS AMCH. SCR.	2	ea
NFW-14 - 1/4 NYLON FLAT WASHER	8	ea
NFW-516 - 5/16 NYLON FLAT WASHER	2	ea
SC-1000-ZC - 1" SHAFT COLLAR ZINC	2	ea
SC-0500-ZC - 1/2" SHAFT COLLAR ZINC	4	ea
GF-316D - GREASE FITTING 3/16	3	ea
HFNCS-10S - 10-24 S/S HEX FLANGE NUT	2	ea
KS-316X316X1 - 3/16X 3/16 X 1 SQUARE KEY STOCK	2	ea
KS-14X14X1.5 - 1/4 X 1/4 X 1.5 SQUARE KEY STOCK	1	ea
HHSC5-38114 - 3/8-16-1-1/4 HEX CAP SCREW GR 5 ZINC	16	ea
80413 - A51 ENG. TO HYDRO BELT A51 SUPER II V-BELT	1	ea
80355 - WHEEL HUB NUT	8	ea
80024 - BRAKE LINKAGE ROD	1	ea
80204 - FOOT SWITCH FOR 2009 UNITS AND PAST	1	ea
80204-FOOT SWITCH ASSY. - FOOT SPOT SPRAY SWITCH ASSY.	1	ea
80204-RELAY KIT ASSY - RELAY KIT ASSY. 2010RK-01	1	ea
80402-PARKER - RIGHT HYDRO MOTOR SPRAYER	1	ea
80401-PARKER - LEFT HYDRO MOTOR SPRAYER TG0195US080AAAA	1	ea
70014-B - SS BALL JOINT\n367-SSE-187	1	ea
80430-PV-KNOB - HOPPER MOTOR CONTROL KNOB	1	ea
80306 - STEEL DUST CAPS	2	ea
80306-RUBBER - DUST CAP, RUBBER	2	ea
70014-B - SS BALL JOINT\n367-SSE-187	1	ea
80484 - 3/8 Bulkhead Union 90	2	ea
80489 - Straight Thread Elbow 3/8 x 5/8 n/6801-06-10-4	2	ea
80004 - IDLER PULLEY BRACKET WELDMENT	1	ea
80200-Striker - TRAIL TECH SPEEDOMETER	1	ea
80110 - 2010 CABLE OPERATED SIDE DEFLECTOR	1	ea
82082 - SIDE DEFLECTOR ADJUSTMENT PLATE	1	ea
82086 - SIDE DEFLECTOR MOUNTING PLATE	1	ea
70029 - CABLE RETAINER SCREW	2	ea
70013 - SPREADER CONTROL CABLE	2	ea
70049 - 220LB HOPPER TUB	1	ea

(RUBBER BOOT)

(2010 AND CURRENT)

(2010 AND PAST UNITS)

(2011 AND CURRENT)

(LOCKING)

(INTERMEDIATE AND Z-MAX UNITS)

70042 - 120LB HOPPER TUB	(JUNIOR AND JUNIOR 36 UNITS)	1	ea
70019 - RATE DIAL		1	ea
70022 - RATE DIAL HOLDER		1	ea
70041 - RATE GATE LINKAGE		1	ea
70037 - HOPPER BOTTOM BEARING, PLASTIC		1	ea
70029 - CABLE WIRE SCREW AND RETAINER		1	ea
70040 - RATE GATE AND DIFFUSER GUIDE		4	ea
70027 - DIFFUSER		1	ea
70011-B - SPINNER, PLASTIC		1	ea
70025 - AGITATOR WIRE		1	ea
70008 - SMALL HOPPER COVER	(JUNIOR AND JUNIOR 36 UNITS)	1	ea
70009 - LARGE HOPPER COVER	(INTERMEDIATE AND Z-MAX UNITS)	1	ea
60111 - 18 GALLON LIQUID TANK	(INTERMEDIATE/JUNIOR AND JUNIOR 36)	1	ea



L. T. Rich Products Inc.

Warranty Registration Card

Serial #: _____	Company Name: _____
Company Address: _____	City / State / Zip: _____
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

920 Hendricks Drive Lebanon, IN 46052 (877) 482-2040 www.ZSPRAY.com

SECTION 7

TROUBLE SHOOTING

7.1 Troubleshooting

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 foul plugs. Check if no fuel or Fuel Tank lever is *partially* off.
- 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, water in fuel or low 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 ½ revolutions counter-clockwise to open the hydraulic system (but **NEVER** remove). 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 potential challenge is if the pattern is not even when the Accuway is not part of the picture. This is sometimes caused when granular product is moist and holding on longer than normal.
- 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 Diffuser 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 effect is potentially caused by a few things. If the Cap Gasket is missing, the 5 PSI Check Ball is stuck and not closing or Diaphragm (rear of Nozzle Body) is damaged. Also check to see if the Pressure Regulator is turned all the way up (no bypass).
- 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 a gasket to seal housing, sucking air from an auxiliary tank or liquid level is too low.

Wiring Harness:

- 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)

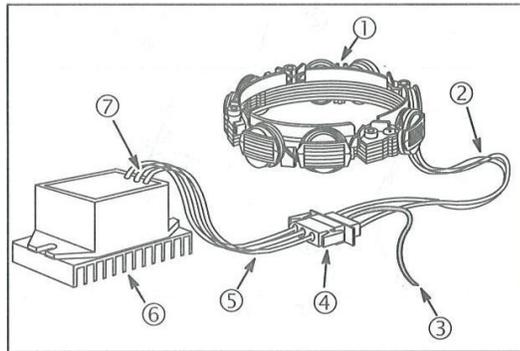
Charging Issues:

20 Amp Regulated Alternator

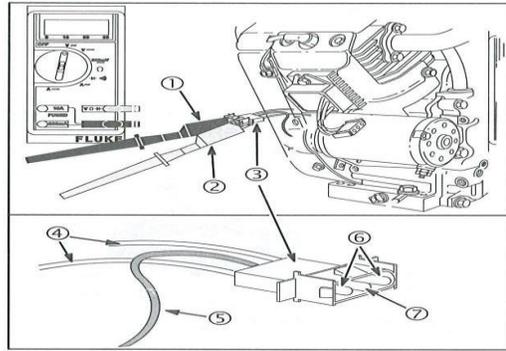
The 20 amp regulated alternator system provides AC current through two output leads to the regulator-rectifier. The regulator-rectifier converts the AC current to DC, and regulates current to the battery. The charging rate will vary with engine RPM and temperature.

1. Stator assembly (1) Figure 30.
2. Two YELLOW leads (2) from Stator.
3. RED DC output lead (3) from connector.
4. Connector (4).
5. Two YELLOW AC input leads (5).
6. Regulator-rectifier (6).
7. RED DC output lead (7) to connector

NOTE: Stator (1), regulator-rectifier (6) and fly-wheel are NOT INTERCHANGEABLE with any other charging system.



(Figure 30)



(Figure 31)

Output Test

WHEN CHECKING THE ALTERNATOR COMPONENTS, PERFORM THE TEST IN THE FOLLOWING SEQUENCE:

Temporarily disconnect stator wire harness from regulator-rectifier.

1. Insert RED test lead into **VΩ** receptacle in meter.
2. Insert BLACK test lead into **COM** receptacle.
3. Rotate selector to V~ (AC VOLTS) position.

CAUTION: Attach meter test leads to the AC output terminals (YELLOW wires) in the connector BEFORE starting the engine. If the stator is grounded (defective) and the meter test leads contact the center DC output pin (RED wire) in the connector, arcing could occur, damaging the wiring.

4. Attach RED (2) and BLACK (1) test lead probes to the YELLOW wire (4) AC output terminals (6), of the connector (3), as shown in Figure 31. (Meter test clip leads may be attached to either AC output terminal).
5. If **NO** or **LOW** output is found check for bare wires or other defects. If shorted leads are not visible, replace the stator.
6. With the engine running at **3600RPM** output should be **no less than 26 Volts**

DC Output Charging Wire Test

A simple test can be used to test the DC output charging wire circuit. If a wiring problem exists it can be corrected before testing regulator-rectifier.

Leave stator wire harness disconnected from regulator-rectifier. Equipment key switch must be in **OFF** position.

1. Insert RED test lead into V Ω receptacle in meter.
2. Insert BLACK test lead into COM receptacle.
3. Rotate selector to V= (DC volts) position.
4. Attach RED test lead probe (2) to the RED wire (5) DC output terminal (7), of the connector. (Figure 31).
5. Attach BLACK test lead probe (1) to negative battery terminal.
6. Turn equipment key switch to ON position. Meter should display **BATTERY VOLTAGE**.
7. If meter does not display voltage, check for blown fuse or broken or shorted wire.

Regulator-Rectifier Test

Tools Required:

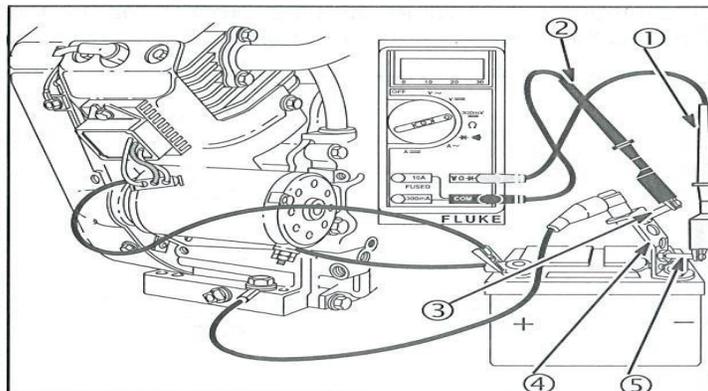
DC Shunt #19359

The DC Shunt **MUST** be installed on the **NEGATIVE (-)** terminal of the battery, Figure 32 to avoid blowing the fuse in the meter when testing the output of the 20 amp system. All connections must be clean and tight for correct readings.

1. Connect stator wire harness to regulator-rectifier.
2. Install DC Shunt #19359 (4) on NEGATIVE battery terminal.
3. Insert RED test lead into V Ω receptacle in meter and connect to RED post terminal on shunt (5), Figure 32.
4. Insert BLACK test lead in COM receptacle in meter. Connect to BLACK post terminal on shunt (3).
5. Rotate selector to **300mV** position.
6. With the engine running at **3600RPM**, the output should be **3-20 Amps**.

NOTE: Depending on battery voltage and/or current draw on system

If **NO** or **LOW** output is found, be sure that regulator-rectifier is grounded properly and all equipment connections are clean and secure. If there is still **NO** or **LOW** output, replace the regulator-rectifier.



Maintenance Chart

SERVICE ACTION(S)	Daily	Weekly	Bi-Weekly	Monthly	Yearly	Hours
Front Caster Wheels (grease)			X			
Front Caster Yokes (grease)			X			
Front Tire Pressure (22 PSI)		X				
Rear Tire Pressure (18 PSI)		X				
Rear Rim Nut Torque (75lbs)				X		
Rear Hub Castle Nut (check cotter pin)				X		
Idler Pulley Arm (grease)				X		
Belt Tension (1/2" deflection at 15lbs)			X			
Belt Wear (cracks, tears or missing material)			X			
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			
Engine Oil (check)	X					
Engine Oil Change						50 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 Valves (check)				X		
Spot Spray Gun (check)			X			
Spot Spray Gun Tip (check)			X			
BLOW OFF FERTILIZER DAILY	X					