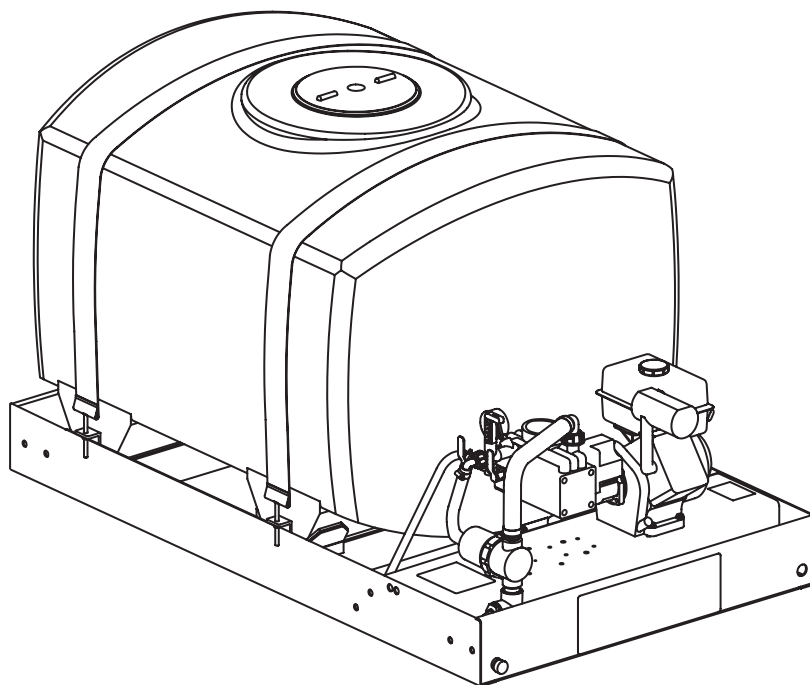




OPERATOR'S MANUAL



Commercial Tank Sprayers

WARNING

**READ AND FOLLOW ALL SAFETY RULES AND INSTRUCTIONS IN THIS MANUAL
BEFORE ATTEMPTING TO OPERATE THIS MACHINE.
FAILURE TO COMPLY WITH THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.**

CUB CADET LLC, P.O. BOX 361131 CLEVELAND, OHIO 44136-0019

Thank You

Thank you for purchasing your Sprayer manufactured by Cub Cadet LLC. The Sprayer is designed to provide professional turf grass managers with reliable spray equipment. The sprayer includes a polyethylene tank, 4.0 HP Kawasaki gasoline powered engine and can output a maximum of 6 gallons per minute. It was carefully engineered to provide excellent performance when properly operated and maintained.

Please read this entire manual prior to operating the equipment. It instructs you how to safely and easily set up, operate and maintain your machine. Please be sure that you, and any other persons who will operate the machine, carefully follow the recommended safety practices at all times. Failure to do so could result in personal injury or property damage.

All information in this manual is relative to the most recent product information available at the time of printing. Review this manual frequently to familiarize yourself with the machine, its features and operation. Please be aware that this Operator's

Manual may cover a range of product specifications for various models. Characteristics and features discussed and/or illustrated in this manual may not be applicable to all models. Cub Cadet LLC reserves the right to change product specifications, designs and equipment without notice and without incurring obligation.

If you have any problems or questions concerning the machine, phone your local Cub Cadet dealer or contact us directly. Cub Cadet's Dealer Locator telephone number, web site address and mailing address can be found on this page. We want to ensure your complete satisfaction at all times.

Throughout this manual, all references to *right* and *left* side of the machine are observed from the operating position.

The engine manufacturer is responsible for all engine-related issues with regards to performance, power-rating, specifications, warranty and service. Please refer to the engine manufacturer's Owner's/Operator's Manual, packed separately with your machine, for more information.

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Record Product Information

Before setting up and operating your new equipment, please locate the model plate on the equipment and record the information in the provided area to the right. You can locate the model plate by looking on the frame just below the engine. This information will be necessary, should you seek technical support via our web site or with your local Cub Cadet dealer.

MODEL NUMBER

--	--	--	--	--	--	--	--	--	--	--

SERIAL NUMBER

--	--	--	--	--	--	--	--	--	--	--

Customer Support

If you have difficulty assembling this product or have any questions regarding the controls, operation, or maintenance of this machine, you can seek help from the experts. Choose from the options below:

- ◇ Visit us on the web at www.cubcadet.com
- ◇ Locate your nearest Cub Cadet Dealer at (877) 282-8684
- ◇ Write us at Cub Cadet LLC • P.O. Box 361131 • Cleveland, OH • 44136-0019



WARNING: This symbol points out important safety instructions which, if not followed, could endanger the personal safety and/or property of yourself and others. Read and follow all instructions in this manual before attempting to operate this machine. Failure to comply with these instructions may result in personal injury. When you see this symbol. **HEED ITS WARNING!**

CALIFORNIA PROPOSITION 65



WARNING: Engine Exhaust, some of its constituents, and certain vehicle components contain or emit chemicals known to State of California to cause cancer and birth defects or other reproductive harm.



WARNING: Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. *Wash hands after handling.*



DANGER: This machine was built to be operated according to the safe operation practices in this manual. As with any type of power equipment, carelessness or error on the part of the operator can result in serious injury. This machine is capable of amputating fingers, hands, toes and feet and throwing objects. Failure to observe the following safety instructions could result in serious injury or death.



WARNING - FOR THE STATE OF CALIFORNIA: A person shall not sell, offer for sale, lease, or rent to a person any equipment that is powered by an internal combustion engine subject to Section 4442 or 4443, and not subject to Section 13005 of Health and Safety Code, unless that equipment has a permanent writing label attached that is in plain view to the operator that states, 'WARNING-Operation of This Equipment May Create Sparks That Can Start Fires Around Dry Vegetation. A Spark Arrestor May be Required. The Operator Should Contact Local Fire Agencies For Laws or Regulations Relating to Fire Prevention Requirements.'

General Operation

1. Read this Operator's Manual completely before starting the machine. Study the controls and learn the proper sequence of operation. Retain Operator's Manual in a safe place for future reference.
2. Do not allow anyone to operate or maintain this machine who has not read the manual.
3. Always have your feet and hands clear of the controls when starting the engine.
4. Do not remove any shields, guards, decals or safety devices. If a shield, guard, decal or safety device is damaged or does not function, repair or replace it before operating the machine.
5. If truck or trailer mounted, make certain the sprayer is securely bolted to the frame of the truck or trailer.
6. When spraying pesticides:
 - a. ALWAYS FOLLOW THE DIRECTIONS ON THE LABEL
 - b. Avoid breathing vapors.
 - c. Avoid contact with skin, eyes or clothing.
 - d. Wear rubber boots or rubberized shoes.
 - e. Wear work clothes with long-sleeved shirts and long-legged pants.
 - f. Change to clean clothing daily.
 - g. Wash hands and face before eating or smoking.
 - h. Bathe thoroughly as soon after spraying as possible.
7. Wear a face shield and rubber gloves when handling concentrates.

8. Always wear safety glasses, long pants and safety shoes when operating or maintaining this unit. Do not wear loose-fitting clothing.
9. Never run the engine indoors without adequate ventilation. Exhaust fumes are deadly.
10. To avoid serious burns, do not touch the engine or muffler while the engine is running or until it has cooled for at least 30 minutes after it has been shut off.
11. Keep adults, children and pets away from the sprayer and the area to be sprayed.
12. Spray only in daylight.
13. Always check the area to be sprayed and remove debris and other objects prior to spraying.
14. Always disconnect the spark plug wire to prevent the engine from accidentally starting before performing any maintenance on this machine.
15. Keep the machine and especially the engine/pump area clean and free of grease, grass and leaves to reduce the potential for over heating and fire.

General Requirements

Personal Protective Equipment (PPE):

OSHA Standard 1910.132 through 1910.139

16. OSHA standard 1910.132 states in relevant part:
 - a. Protective equipment, including personal protective equipment or PPE, for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, shall be provided, used, and maintained in a sanitary and reliable condition where ever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.

This standard is subject to change. Please check www.osha.gov for the latest regulatory updates

General

Sometimes, it is not possible to reduce a hazard by eliminating it, substituting a less hazardous process or product, making changes to equipment, or even by changing how you do the job. That is when you need personal protection.

PPE includes items like gloves, goggles, boots, hearing protection and respirators. Respirators filter out particles or block gases and vapors that can harm the respiratory system. With a surface area well supplied with blood vessels and equal in size to a tennis court, the lungs are the quickest and most direct route for absorbing harmful substance into your body.

NOTE: PPE does not prevent accidents, but it does prevent or reduce injury and even fatalities when used properly.

Equipment (PPE)

Protective equipment must be selected carefully. Always test fit the protective equipment to be sure it fits properly and comfortably. If it is not comfortable — it will not be worn; if it is not worn — it will not protect. PPE includes:

- Respirators
- Chemical-resistant clothing
- Hearing protectors
- Gloves
- Safety goggles and glasses
- Hard hats
- Sensors to detect hazardous substance
- Communication devices used for safe deployment of workers

Inhaling pesticide fumes and mists is a very common entry route of pesticides into the body. Absorption through the lungs is great and the sensitivity is high.

The National Institute for Occupational Safety and Health (NIOSH), under authority of the Federal Mine Safety and Health Act of 1977 and the Occupational Safety and Health Act of 1970, tests, approves, and certifies respiratory equipment as being safe for its intended purpose.

NOTE: Always be certain that the NIOSH compliance number is on the product before purchasing respiratory equipment.

Two systems of respiratory protection are available, depending on the type of respiratory risk involved: air-purification (filtering) and air-supplying. For most pesticide work, the air-purifying equipment is adequate and safe.

Protective equipment is usually required by the pesticide label in one form or another and is integral to safe pesticide application. Chemical-protective clothing consists of multi-layered garments made out of various materials that protect against a variety of hazards. Because no single material can protect against all chemicals, multiple layers of various materials usually are used to increase the degree of protection. Protection is maximized by total encapsulation (completely covering the wearer). An assortment of types of chemical-protective hats, hoods, gloves, and boot covers are used with the garments.

There are many brands and models of protective equipment available for use in pesticide application. Price is not always an indicator of quality, so shop carefully.

NOTE: Select equipment that is NIOSH tested and approved.

Protective equipment, appropriate for the task and hazards that an employee could be potentially exposed to, shall be provided by the employer. Since comfort and proper fit must be considered, the person who is going to use it must select the proper size to ensure correct fit and function. Unused protective equipment does not help anyone.

NOTE: Many supply centers, hardware stores, chemical retailers, and equipment/machinery dealers keep protective equipment in stock.

Training

Written procedures shall be developed for PPE use. These procedures shall include all information and guidance necessary for their proper selection, use and care. The employer shall provide fitting instructions including demonstrations and practice in how the PPE should be worn. It is essential that both supervisors and workers be properly instructed in PPE selection, use, and maintenance. Training shall provide the workers an opportunity to handle PPE, and have it fitted properly.

When to replace PPE

All PPE shall be inspected routinely before and after each use. A program for maintenance and care of PPE shall be initiated and be adjusted to the type of work place, working conditions, and hazards. It shall include the following:

- Inspection for defects and damage
- Cleaning and disinfecting
- Repair
- Storage

Many factors influence how long PPE (especially respirators) remains effective. As well as hours of use, an air-purifying respirator's service life is affected by the concentration of dust and other contaminants in the environment; the user's body size; how strenuously the user works while the respirator is worn; and how the respirator is stored.

NOTE: As a result, it's not possible to specify a length of time after which a respirator should be replaced.

In general, replace a mask or filter when it is visibly dirty or damaged, or when you experience difficulty breathing through it. Replace respirator cartridges when you can smell or taste chemical while or after using the respirator, or according to the manufacturer's recommendations. Replacement or repairs shall be done only by experienced person with parts designed for the PPE. No attempts shall be made to replace components or to make adjustments or repairs beyond the manufacturer's recommendations.

Service

Safe Handling of Gasoline:

1. To avoid personal injury or property damage use extreme care in handling gasoline. **Gasoline is extremely flammable and the vapors are explosive.** Serious personal injury can occur when gasoline is spilled on yourself or your clothes which can ignite. Wash your skin and change clothes immediately.
 - a. Use only an approved gasoline container.
 - b. Never fill containers inside a vehicle or on a truck or trailer bed with a plastic liner. Always place containers on the ground away from your vehicle before filling.
 - c. When practical, remove gas-powered equipment from the truck or trailer and refuel it on the ground. If this is not possible, then refuel such equipment on a trailer with a portable container, rather than from a gasoline dispenser nozzle.

- d. Keep the nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete. Do not use a nozzle lock-open device.
- e. Extinguish all cigarettes, cigars, pipes and other sources of ignition.
- f. Never fuel machine indoors.
- g. Never remove gas cap or add fuel while the engine is hot or running. Allow engine to cool at least two minutes before refueling.
- h. Never over fill fuel tank. Fill tank to no more than ½ inch below bottom of filler neck to allow space for fuel expansion.
- i. Replace gasoline cap and tighten securely.
- j. If gasoline is spilled, wipe it off the engine and equipment. Move machine to another area. Wait 5 minutes before starting the engine.
- k. To reduce fire hazards, keep machine free of grass, leaves, or other debris build-up. Clean up oil or fuel spillage and remove any fuel soaked debris.
- l. Never store the machine or fuel container inside where there is an open flame, spark or pilot light as on a water heater, space heater, furnace, clothes dryer or other gas appliances.
- m. Allow a machine to cool at least five minutes before storing.

General Service

1. Never run an engine indoors or in a poorly ventilated area. Engine exhaust contains carbon monoxide, an odorless, and deadly gas.
2. Before cleaning, repairing, or inspecting, make certain all moving parts have stopped. Disconnect the spark plug wire and ground against the engine to prevent unintended starting.
3. Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.
4. Never attempt to make adjustments or repairs to the machine while the engine is running.
5. For safety protection, frequently check components and replace immediately with original equipment manufacturer's (O.E.M.) parts only, listed in this manual. "Use of parts which do not meet the original equipment specifications may lead to improper performance and compromise safety!"
6. Do not change the engine governor settings or over-speed the engine. The governor controls the maximum safe operating speed of the engine.
7. Maintain or replace safety and instruction labels, as necessary.
8. Observe proper disposal laws and regulations for gas, oil, etc. to protect the environment.

Do not modify engine

To avoid serious injury or death, do not modify engine in any way. Tampering with the governor setting can lead to a runaway engine and cause it to operate at unsafe speeds. Never tamper with factory setting of engine governor.

Notice Regarding Emissions

Engines which are certified to comply with California and federal EPA emission regulations for SORE (Small Off Road Equipment) are certified to operate on regular unleaded gasoline, and may include the following emission control systems: Engine Modification (EM), Oxidizing Catalyst (OC), Secondary Air Injection (SAI) and Three Way Catalyst (TWC) if so equipped.

Spark Arrestor



WARNING! This machine is equipped with an internal combustion engine and should not be used on or near any unimproved forest-covered, brush covered or grass-covered land unless the engine's exhaust system is equipped with a spark arrestor meeting applicable local or state laws (if any).

If a spark arrestor is used, it should be maintained in effective working order by the operator. In the State of California the above is required by law (Section 4442 of the California Public Resources Code). Other states may have similar laws. Federal laws apply on federal lands.
A spark arrestor for the muffler is available through your nearest engine authorized service dealer or contact the service department, P.O. Box 361131 Cleveland, Ohio 44136-0019.

Safety Symbols

This page depicts and describes safety symbols that may appear on this product. Read, understand, and follow all instructions on the machine before attempting to assemble and operate.

Symbol	Description
	READ THE OPERATOR'S MANUAL(S) Read, understand, and follow all instructions in the manual(s) before attempting to assemble and operate
	DANGER — ROTATING BLADES To reduce the risk of injury, keep hands and feet away. Do not operate unless discharge cover or grass catcher is in its proper place. If damaged, replace immediately.
	WARNING—GASOLINE IS FLAMMABLE Allow the engine to cool at least two minutes before refueling.
	WARNING— CARBON MONOXIDE Never run an engine indoors or in a poorly ventilated area. Engine exhaust contains carbon monoxide, an odorless and deadly gas.
	WARNING— HOT SURFACE Engine parts, especially the muffler, become extremely hot during operation. Allow engine and muffler to cool before touching.



WARNING: Your Responsibility—Restrict the use of this power machine to persons who read, understand and follow the warnings and instructions in this manual and on the machine.

SAVE THESE INSTRUCTIONS!

Set-Up

Installing on a Vehicle

Once the sprayer is in the desired position in your van or pickup truck, it should be securely bolted through the truck bed to the vehicle's frame. Bolts should be used at each corner of the sprayer's frame and should be either cap screws placed through the holes punched in the frame for this purpose or large U-bolts or J-bolts over the sprayer's steel frame and down through the truck bed to the vehicle's frame. Bolts of at least $\frac{3}{8}$ " diameter should be used for a 50 gallon sprayer, $\frac{1}{2}$ " diameter for a 100 gallon sprayer, $\frac{5}{8}$ " diameter for a 200 gallon sprayer and $\frac{7}{8}$ " for a 300 gallon sprayer. Mounting hardware is not supplied for the sprayer because the installation will vary with each vehicle.

Wiring

Materials furnished if sprayer is equipped with an electric hose reel:

- 40 amp. Circuit Breaker (1)
- Cable Ties (5)
- Insulated Ring Terminals #8 Wire x $\frac{5}{16}$ " Stud (2)
- Insulated Ring Terminals #8 Wire x # 10 Stud (2)
- #8 Insulated Wire (14')

Tools Needed:

- Wire Cutter
- Crimping Tool
- Screwdriver
- Adjustable Wrench
- Electric Drill.

The following instructions are for providing electrical power to the electric hose reel if your sprayer is so equipped. The vehicle or sprayer's battery should be a 12-volt DC automotive-type. The vehicle can have either a positive or negative ground system and therefore polarity is not shown on the wiring diagram. See Fig. 3-1.

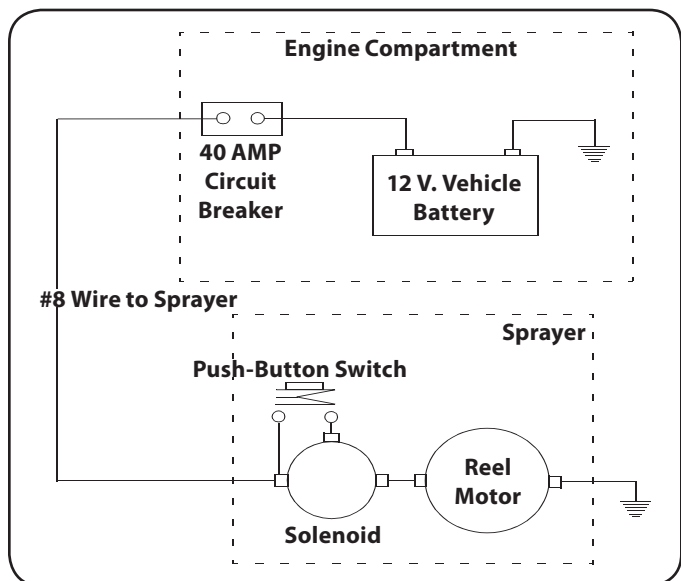


Figure 3-1

1. Disconnect the ground cable from the vehicle's battery.
2. Install the circuit breaker in the engine compartment near the vehicle's battery but away from sources of heat or humidity.
3. Cut the required length of #8 wire to reach from the ungrounded terminal of the battery to the terminal marked "BAT" on the circuit breaker.
4. Attach a $\frac{5}{16}$ " ring terminal on one end and a #10 ring terminal on the other end. Connect this wire to the ungrounded terminal of the battery and the terminal marked "BAT" on the circuit breaker.
5. Attach a #10 ring terminal to one end of the remaining #8 wire and connect it to the terminal marked "AUX" on the circuit breaker.
6. Work the loose end of the #8 wire either under the vehicle or through the fire wall (depending on your vehicle) to reach the sprayer. Take advantage of any existing cable ties or clamps along the way to support the wire and use the enclosed cable ties where needed.
7. Bring the wire to the solenoid mounted on the reel frame and cut it off at the proper length. Attach a $\frac{5}{16}$ " ring terminal to the wire and connect it to the large solenoid terminal opposite the one to which the reel motor lead is connected.
8. Ground the frame of the sprayer to the vehicle body as follows:

NOTE: If the sprayer has been properly bolted to the frame of the vehicle with bolts passing through or over the sprayer's frame and the vehicle's frame, the sprayer is grounded and this step may be omitted.

- a. Locate a vehicle body bolt near or under the sprayer's frame that can be easily removed and replaced.
- b. Place a bolt through the nearest punched hole in the sprayer's frame.
- c. Cut the remaining #8 wire to the proper length to reach between these two bolts. Strip approximately one inch of insulation from each end of the wire.
- d. Remove the bolts or nuts and scratch off any paint that would prevent making metal to metal contact.
- e. Wrap the stripped end of the wire around each bolt and replace the bolts or nuts.
9. Reconnect the ground cable removed from the battery in Step 1.
10. Test the circuit by pulling some hose from the reel and then pushing the reel switch located on the reel mounting frame. The reel should retrieve the hose. If your vehicle has a positive ground system, the reel will run in reverse and spill out hose. To make the reel rotate in the proper direction, reverse the reel motor leads. Take the motor lead that goes to the solenoid and interchange it with the lead that is grounded to the motor mounting.

Gas and Oil Fill-up



WARNING! Use extreme care when handling gasoline. Gasoline is extremely flammable and the vapors are explosive. Never fuel machine indoors or while the engine is hot or running. Extinguish cigarettes, cigars, pipes, and other sources of ignition.

NOTE: Your sprayer is shipped with motor oil in the engine. However, you **MUST** check the oil level before operating. Be careful not to overfill.

1. Check the engine oil level. Fill to the proper level with the oil recommended in the Engine Operator's manual.
2. Check the engine gasoline level and fill according to the instructions in the Engine Operator's manual.

Engine Controls

See the separate Engine Operator's Manual for information and functions of the engine controls.

Tank

Sturdy, rotationally molded, rectangular shaped, polyethylene tanks in 50, 100, 200 or 300 gallon capacities. The 200 gallon tank has a 10 inch fillwell. The fillwell is equipped with a strainer basket and a screw-on, leak proof lid. The 50, 100 and 300 gallon tanks have 10 inch fillwells equipped with strainer baskets and splash-guard covers. All of the tanks have gallonage markers molded into the plastic.

Frame

50 Gallon frames are constructed of eleven gauge steel. 100, 200 And 300 gallon frames are constructed of ten gauge steel while engine and pump bases are formed into channels from seven gauge steel and then electric-welded to the frames to form a rigid, unitized assembly. All frames have punched holes to accept optional accessories.

Engine/Pump

Electric 12-volt permanent magnet motor driven four-diaphragm pump, 4.8 Gpm at 40 psi.

Gas-powered polyethylene

50 gallon: 4.0-Hp Kawasaki, 4-cycle, air-cooled, recoil-start engine which is directly coupled through a gear reduction to a twin-diaphragm pump (6.0-Gpm max. Or 275-psi max.)

100, 200 & 300 gallon: 5.5-HP Kawasaki, 4-cycle, air-cooled, recoil-start, engine which drives a twin-diaphragm pump (9.5-Gpm max. Or 550-psi max.) Through a gear reduction.

200 gallon compact: 5.5-HP Kawasaki air cooled engine drives a triple-diaphragm pump through a gear reduction.

In-Line Strainer

All sprayers have a suction strainer with a 30-mesh stainless steel screen located on the inlet side of the pump.

Agitation

Electric & 50 gallon: bypass, triple-jet agitation.

100, 200 & 300 gallon: pressurized, triple-jet agitation.

Valves

There are several ball valves used on the sprayers. They serve as pump outlets and are mounted under the pressure regulator. Ball valves operate with a quarter turn movement of the handle. When the handle lines up with the direction of flow, the valve is open. When the handle is at a 90° angle to the direction of flow, the valve is closed. There is a gate valve in the suction line at the front of the engine plate near the drain fitting. The handle should be turned all the way counterclockwise to open the valve and all the way clockwise to close the valve. To drain the tank, the cap must be removed from the drain fitting and the gate valve must be opened.

Pressure Gauge

Mounted in the pressure regulator housing, the pressure gauge indicates the pressure in the output line to the spray gun, wand or boom and the line to the hydraulic agitator, if used. The gauge is graduated in pounds per square inch (psi) and kilopascals (kPa).

Pressure Regulator (Gas powered only)

Located on the side of the pump opposite the drive shaft. There are different styles of regulators, but they all function in the same way. A spring-loaded plunger rests against a valve seat which forces the pump flow to the outlets. The springs are opposed by the hydraulic pressure generated by the pump. If this pressure exceeds the spring pressure, the plunger is lifted off of its seat and part or all of the flow goes to bypass. All of the pressure regulators have operating levers which in one position, remove the spring pressure from the plunger and permit the pump's flow to dump to bypass and in the other position, apply the spring pressure to the plunger and force the pump's flow to the outlets. One valve has a toggle-type operating lever with a ball which can be hooked in different notches for adjustment. Another regulator has a knob that turns about 90° from "OFF" to "ON". Still another has a hinged part of the plunger shaft work as the operating lever. All of the regulators also have a means for adjusting the operating pressure. This is a threaded knob, a ring or a brass adjustment nut which when threaded down toward the base of the pressure regulator, increases the spring pressure.

Normally, the regulator should be set to provide about 100 psi with both output ball valves closed. Then the output ball valve to the application device is opened completely and with bypass or pressurized jet agitation, the output ball valve to the agitator line is adjusted to provide the desired flow rate and with the mechanical agitation, the pressure regulator is adjusted to provide the desired flow rate.

Net Weight (w/o reel or hose)

50 Gallon: 125 lbs.

100 Gallon: 237 lbs.

200 Gallon: 336 lbs.

200 Gallon Compact: 125 lbs.

300 Gallon: 422 lbs.

Dimensions

50 Gallon:

Length: 53-½" (Inc. 6" bumper)

Tank Width: 19"

Frame Width: 19" (21-¼" w/ hose reel)

Height: 26" (43" w/ hose reel)

100 Gallon:

Length: 48" (49" to drain cap)

Tank Width: 30"

Frame Width: 38"

Height (to top of tank): 34" (42" w/ hose reel)

200 Gallon:

Length: 65" (66" to drain cap)

Tank Width: 39"

Frame Width: 38"

Height (to top of tank): 40" (42" w/ hose reel)

200 Gallon Compact:

Length: 53-½" (Inc. 6" bumper)

Tank Width: 19"

Frame Width: 19" (21-¼" w/ hose reel)

Height: 26" (43" w/ hose reel)

300 Gallon:

Length: 88" (89" to drain cap)

Tank Width: 38"

Frame Width: 38"

Height (to top of tank): 47"

Starting the Sprayer

Gasoline powered

1. Check the fuel supply and engine oil level.
2. Check the level of the oil in the pump. It should be halfway up the sight tube.
3. Check the pressure in the pump's pulsation damper. The pressure should be 10% of the expected operating pressure.
4. Clean the in-line strainer if it is dirty.
5. Fill the tank one third full with clean water.
6. Make certain the gate valve in the suction line is open and the outlet ball valves are closed.
7. Open the operating lever on the pump's pressure regulator so there will be no load on the pump when you start the engine.
8. Start the engine.
9. Run the pump at zero pressure for one minute to remove any air from the system.
10. Close the operating lever on the pressure regulator and adjust the pressure to about 100 psi for a flow rate of 1-½ to 3 gallons per minute.
11. Open the ball valve in the hose to the application device. Check the flow rate out of the application device with a calibrated container. (See Calibration.)
12. Adjust the flow rate by adjusting the ball valve in the line to the agitator or by adjusting the pressure regulator. When the flow rate is correct, close the ball valve in the hose to the application device and note the pressure setting. You should be able to produce the same flow rate at any time by returning the pressure to this setting as long as no change has been made in the hose or application device.
13. You are now ready to add the product to the tank with the sprayer running under full agitation.
14. After the product is completely mixed, fill the tank to the proper level with clean water.

Electric powered

1. Check the battery connections.
2. Clean the in-line strainer if it is dirty.
3. Fill the tank one third full with clean water. Make certain the gate valve in the suction line is open.

Operation

Cub Cadet Commercial Electric Sprayers are designed to run in demand operation or constant operation.

Demand Operation

1. Close the ball valve which stops all flow to the agitator, push the handle on the directo valve down which permits flow to the spray wand and turn on the pump switch. See Fig. 5-1.

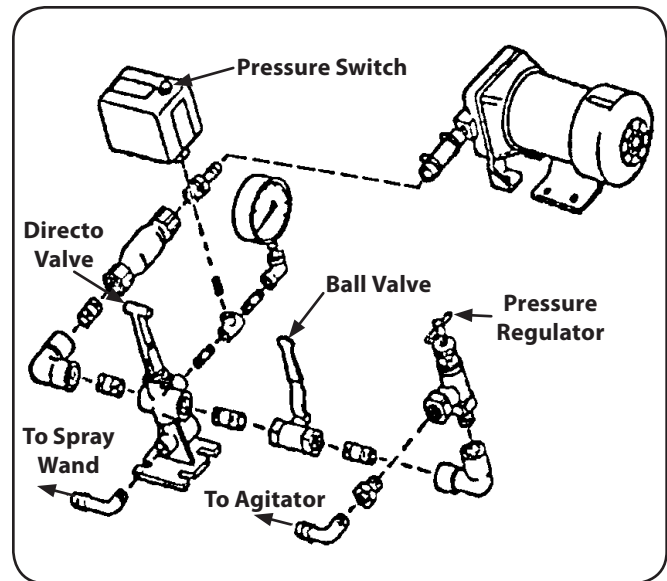


Figure 5-1

2. This will force all of the flow from the pump to go to the spray wand. The pump will operate for a short period to fill the hose to the spray wand and then will shut off. With the valves in this position, the pump will turn on when the spray wand is turned on and will shut off when the spray wand is turned off.

NOTE: If you are using a 1.5 GPM spray tip, the pump will turn on and off as you spray because the pump can output 4.8 GPM.

3. The pressure gauge should show no more than 45 psi when the spray wand is off. This is controlled by the pressure switch which is preset at the factory. See Fig. 5-1.
4. Pressure greater than 45 psi will activate an internal circuit breaker in the pump, stopping it but it will start again in about two minutes. If this repeats, you will have to adjust the pressure switch.
5. To adjust the pressure switch, remove the cover from the switch and adjust the nut holding the small spring on the right side up for a lower pump turnoff pressure (or down for a higher pump turnoff pressure). The pump should turn on when the pressure drops to 25 psi. Adjust the nut holding the large spring in the center up for a lower turn-on pressure or down for a higher turn-on pressure.

6. Replace the pressure switch cover.
7. After the pressure switch is properly adjusted, check the flow rate out of the spray wand with a calibrated container. (See Calibration.) This is the maximum flow rate possible. To reduce the flow rate, you must adjust the valves so that the pump runs constantly.

Constant Operation

Open the ball valve which permits flow to the agitator, push the handle on the direct valve down which permits flow to the spray wand and turn on the pump switch. Now adjust the pressure regulator until the desired flow rate out of the spray wand is achieved. See Fig. 5-1.

NOTE: Do not thread the "T" handle of the regulator too far clockwise or the pump will start to operate intermittently. For maximum agitation, open the ball valve which permits flow to the agitator, pull the handle on the direct valve up which shuts off flow to the spray wand and turn the pressure regulator handle counterclockwise to relieve all of the spring pressure in the regulator and provide maximum flow to the agitator.

Calibration

Hand Spraying

There are two keys to proper calibration of hand spraying. One is knowing your spraying pace, that is, the time it consistently takes you to spray an even application of product on each 1000 sq. ft. area. The other is always knowing the current flow rate out of the application device on your sprayer.

The first step is to set up your sprayer to spray two gallons per minute. This is a common flow rate that can be used to check your spraying pace. To do this, you need a graduated container.

1. Fill the sprayer tank one third full with clean water and start it up. Using the gun or wand that is mounted on your sprayer, spray into the graduated container for one minute.
2. Check how much water you collected.
3. Adjust the flow rate by adjusting the ball valve in the line to the agitator or the pressure regulator if necessary, until you can collect two gallons in one minute.

The next step is to determine how long it takes you to evenly spray 1000 sq. ft. Measure an area 20' by 50' on a paved surface.

1. Spray the area evenly with clean water. Use a stop watch to time your application. After the water evaporates, spray the area again.
2. Repeat this several times and average the application times. Spraying on asphalt or concrete will permit you to see the pattern you are applying and will give you a better conception of even application.
3. Check the spray pattern as the water evaporates. Spraying technique is just as important as volume sprayed.
4. If your sprayer is set at a flow rate of two gallons per minute and your spraying pace is .75 minutes per 1000 sq. ft., you are applying liquid at a rate of 1.5 gallons per 1000 sq. ft. which is your application rate. (2 gallons/minute x .75 minutes/1 000 sq. ft. = 1.5 gallons/ 1000 sq. ft.).

It is wise to check the flow rate out of the application device on your sprayer every working day. It is also wise to check your spraying pace and the spraying pace of anyone else who will be using the sprayer every month or so because as you can see, the amount of liquid you apply depends on the flow rate of your sprayer and your spraying pace. You can check your spraying pace on every lawn you spray if you have measured the lawn accurately.

The use of a Electronic Digital Flow Meter will permit you to very accurately measure the flow rate and the total gallons of liquid sprayed on each lawn. Your tank has gallonage markers which may also be used to approximate the gallons of liquid that you spray on each lawn. This figure should equal your application rate times the number of 1000 sq. ft. in the lawn.

Example: You have sprayed a 10,000 sq. ft. lawn at an application rate of 1.5 gallons/1000 sq. ft. you should have used 15 gallons. A flow meter should read 15 gallons. When you started there were 180 gallons of liquid in your tank. Now there should be 165 gallons left in the tank.

Adding Products to the Tank



CAUTION: avoid accidents. For safety, read the entire product label including precautionary statements. Use all products only as directed.

The product label will tell you how much product should be used per 1000 sq. ft. If the label says you are to use 1.4 ounces per 1000 sq. ft. you divide the number of gallons of water in the tank by your application rate (gallons per 1000 sq. ft.) and multiply by the number of ounces of product per 1000 sq. ft.

Example: 200 gallons divided by 1.5 gallons/1000 sq. ft. times 1.4 ounces/1000 sq. ft. 186.6 ounces = 11.6 pints.

You would fill the sprayer tank one third full with clean water and then add 11.6 pints of product to the tank through the strainer basket while the sprayer is running under full agitation. After the product is completely mixed, you would fill the tank to the proper level with clean water.

Boom Spraying

There are two keys to proper calibration of boom spraying. One is knowing and controlling the sprayers speed over the ground and the other is always knowing the flow rate of the spray tips on the boom. The following is a simplified procedure:

1. Measure and mark off a distance of 205 feet in an area that best represents the average topography for the area to be sprayed. Select a safe tractor (truckster) speed (usually three to six MPH) which can be maintained while spraying. Write down the engine's RPM and the gear selection so that this speed can be maintained during both calibration and actual spraying.
2. With the tractor (truckster) traveling at the selected speed and with the sprayer one half full of water, time and record the seconds taken to travel the 205 feet.

3. With the sprayer still half full of water, start the sprayer's engine and adjust the pump's pressure regulator to the desired liquid pressure (normally between 20 and 50 psi). Collect all the water from one nozzle for the same number of seconds taken to travel the 205 feet.

Example: If it took 35 seconds to travel the 205 feet, collect the discharge of one nozzle for 35 seconds.

- **Boom with 20" nozzle spacing**

The number of fluid ounces collected equals the gallons per acre (GPA) output.

- **Boom with 10" nozzle spacing**

Two times the number of fluid ounces collected equals the gallons per acre (GPA) output.

4. Repeat this procedure two more times, collecting water from a different nozzle each time. Use the average number of ounces collected from the three nozzles to determine the gallons per acre output of the boom at the set pressure and selected RPM and gear setting.

NOTE: If the ounces collected from any nozzle are 10% greater or less than the ounces collected from any other nozzle, it is a sign of wear and all the tips on the boom should be replaced.

5. To determine the amount of product to add to the spray tank, divide the capacity of the tank by the number of gallons of water per acre (GPA) to determine the area, in acres, that can be covered with a tankful of spray.

Example: 200 Gallon Tank divided by 20 GPA = 10 acres covered per tankful.

6. Multiply the application rate of the product per acre times the acres per tankful and add that amount of product to the tank through the strainer basket. The tank should be one third filled with clean water with the sprayer running under full agitation. After the product is completely mixed, you would fill the tank to the proper level with clean water.

Example: 2 quarts per acre x 10 acres per tankful = 20 quarts or 5 gallons of product to be added per tankful of clean water.

7. To decrease the output adjust the pressure regulator to a lower pressure that still maintains the spray pattern; or increase the speed of the tractor (truckster); or change the nozzle tips to a smaller size.
8. To increase the output adjust the pressure regulator to a higher pressure that still maintains the spray pattern; or decrease the speed of the tractor (truckster); or change the nozzle tips to a larger size.
9. After changing output, recalibrate the sprayer.

Spraying Tips

Mixing Dry-Bagged Products for Sprayer Use

Dry-bagged products should be pre-mixed with clean water in a five gallon container to form a slurry. The sprayer should be one third filled with clean water and running under full agitation. The slurry should be slowly poured into the sprayer through the strainer basket. After the product is completely mixed, you would fill the tank to the proper level with clean water.

Using the Gun

The flow rate is controlled by the nozzle selection, the trigger position and the sprayer's pump pressure. The gun's trigger is normally held full on and there is a trigger lock to hold it in this position. However, releasing the trigger slightly will narrow the pattern when spraying around trees and ornamentals. Each of the nozzles throws a full cone pattern about five feet in diameter with a droplet size large enough to help avoid drift yet small enough for good penetration and thorough coverage.

Determine the application rate in gallons per 1000 sq. ft. from the product label. Divide this figure by your spraying pace in minutes per 1000 sq. ft. to determine the proper flow rate for the gun in gallons per minute. Use this figure to select the proper nozzle and then calibrate the sprayer, to spray this flow rate. To use the gun, hold it in your right hand (if you are right handed) with the hose forming a loop, running under your right arm to your back, over your left shoulder, down across your chest and around and out from your right side and back to the sprayer. Holding the hose in this way takes the weight of the hose off of your right arm and allows you to pull the hose with your whole body and not just your arm.

If you are left handed, the above would be reversed. Swing the gun with your wrist so that the pattern is in constant motion and covers a swath about eight feet wide. Start at the sprayer and work into the lawn. Walk in parallel paths about eight feet apart and make sure your spray pattern slightly overlaps the previous pass. Keep the spray pattern away from ornamentals, trees and gardens.

Using the Spray Wand

The Spray Wand consists of a ball valve which controls the width of the pattern, a handle, a trigger valve which turns the flow on and off, an extension, a screen strainer, a hex chamber which controls the flow to the tip, one of two brass tips and a nut to hold the tip in place. The low volume tip discharges about 1-¼ gallons per minute and the high volume tip discharges about 1-½ gallons per minute. The tips throw the best pattern at a pump pressure of about 40 psi. Both tips throw a fan shaped pattern about eight feet wide with a droplet size large enough to help avoid drift.

Determine the application rate in gallons per 1000 sq. ft. from the product label. Divide this figure by your spraying pace in minutes per 1000 sq. ft. to determine the proper flow rate for the wand in gallons per minute. Use this figure to select the proper tip and then calibrate the sprayer to spray this flow rate.

To use the wand, hold it in your hand with the hose running around your body as described in the section on the Gun. Hold the wand so that the tip is 18 to 24 inches above the ground and the spray pattern covers a swath about eight feet wide. Hold the wand steady and lock the trigger on. Start at the sprayer and work into the lawn. Walk in parallel paths about eight feet apart and make sure your spray pattern slightly overlaps the previous pass. Use the ball valve to control the pattern width to keep the spray pattern away from ornamentals, trees and gardens.

Using High Pressure Guns

The 43H GunJets which will operate at pressures from 200-800 psi and are available in brass or aluminum are recommended. When equipped with an Orifice Disc No. D6, at 400 psi, they will spray 4.1 gallons per minute a maximum horizontal distance of 48'. They have a trigger handle control and as the trigger is drawn back, the valve moves from shut off position to initial wide angle cone spray to continuously narrower cone sprays to a final straight stream.

A ridged nut behind the trigger can be threaded in or out to stop the trigger at any desired position. There is also a trigger lock that can be used to hold the trigger in the "On" position.

- 43H-D6 Brass GunJet Spray Gun, 200-800 psi
- 43H-AL-D6 Aluminum GunJet Spray Gun, 200-800 psi

These spray guns are used for spraying small trees, orchard and nursery spraying and cleaning decks, patios, brick, aluminum siding, concrete driveways, vehicles and equipment.

When spraying small trees (up to 30') and shrubs, use a spreader-sticker except when applying a dormant oil. Use a pressure of 200-300 psi and spray only until the material starts dripping, no more is necessary. All runoff is wasted. Alternate insecticides when spraying during the growing season. Landscape (foliage) area can be measured in square footage. Spray volume necessary for coverage is usually around 10 gallons per 1000 sq. ft. of foliage.

Cleaning the Sprayer

After use, flush the sprayer tank, and the entire system, pump, plumbing, hoses and gun, wand or boom to neutralize chemicals and reduce pump problems. Follow the instructions on the label. Extra cleaning care should be taken after spraying herbicides to prevent possible damage to turf or plants when next spraying insecticides or fungicides. After the sprayer has been flushed, clean the in-line strainer. Hose off the outside of the sprayer to wash off dust and dirt. Do not spray water on the engine if it is hot.

Engine

Refer to the Engine Operators manual packed separately with your sprayer for maintenance and adjustment information for your engine.

Battery



DANGER! Always wear safety glasses and rubber gloves when working on the battery. Keep sparks and flames away at all times.

The battery used on electric sprayers and to operate the reel on other sprayers should be maintained as follows:

1. Remove the fillcaps and check the level of the liquid electrolyte in the battery every 50 operating hours. If the level in any of the six cells has dropped below the bottom of the split ring inside the fill hole, refill the cell with distilled water. **DO NOT OVERFILL THE BATTERY.**
2. To keep the outside of the battery clean, brush on a strong solution of bicarbonate of soda and water and rinse with clean water.
3. Keep the contacts and cable ends clean with a wire brush and make sure the connections are tight. Coat the terminals with petroleum jelly to prevent corrosion.

Pump

Diaphragm pumps require very little maintenance. The procedures that are required are listed in the pump Installation/Operation instructions furnished with the sprayer.

Daily Checks

- Check the oil level.
- Make certain there are no kinks in the suction line and that the suction line connections are tight.
- Check the air pressure in the pulsation damper. It should be at least 10-percent of the expected operating pressure.
- After use, flush out the pump. See the section on Cleaning the Sprayer.

Every 200-Hours and at the End of Each Spray Season:

- Change the oil.

At the End of Each Spray Season:

- Change the diaphragms. See the Service section.

Agitator

Most of the fiberglass sprayers have mechanical agitation and the agitator grease fittings on the front and rear of the tank should be greased after each 8 hours of operation. The two agitation packing gland nuts on the front of the tank, behind the belt guard, should be tightened as needed to eliminate dripping. Tighten the adjusting nuts equally, 90° at a time, to compress the packing evenly until the dripping is stopped. Replace the packing when dripping cannot be stopped.

Tank

The sprayer tank requires no scheduled maintenance. The inside of the tank should be flushed out after each use as described in the section on Cleaning the Sprayer. The outside of the tank should be hosed off after use and scrubbed occasionally with soapy water to remove ground-in dirt. If the tank is ever accidentally punctured, it can be repaired with a Poly Patch Kit.

In-Line Strainer

The in-line strainer should be cleaned each day after the sprayer has been flushed. Place a flat pan under the strainer bowl to catch the liquid and unscrew the bowl.

NOTE: There is a washer-like seal between the top lip of the bowl and the strainer body. This seal will sometimes come off on top of the bowl or will drop out of the strainer body when the bowl is unscrewed. **DO NOT LOSE THIS SEAL!** It must be installed or you won't be able to operate your sprayer.

Hose

If the hose on your sprayer is treated carefully, it will give long and trouble free service. When you have finished spraying a lawn, carry the application device and drag the hose back to the sprayer. This protects the application device from being damaged by being dragged through the turf and permits you to insure, as you walk back to the sprayer, that the hose is not snagged on something or wrapped around a tree. It also eases the load on your reel because the hose will be rewound from only half the distance. The hose should be flushed out daily as described in the section on Cleaning the Sprayer. Weekly, you should clean off the outside cover of the hose by rewinding it onto the reel while gripping it lightly with a rag dipped in soapy water.

Off-Season Storage

If the sprayer will not be used for 30 days or more it should be thoroughly flushed out and cleaned as described in the section on Cleaning the Sprayer.

1. Change the oil in the pump every 200 hours and at the end of the spraying season.
2. Change the pump's diaphragms at the end of each spraying season.
3. The sprayer should be stored in a clean, dry area which should be heated if freezing weather will occur during the time of storage. If storing in a heated room is not possible, winterize the sprayer.
 - a. Pour a gallon of antifreeze and a gallon of clean water into the sprayer.
 - b. Start the engine and agitate the mixture.
 - c. Then pump the antifreeze mixture through the plumbing and discharge it from the application device back into two one gallon containers.
 - d. Store the 50/50 antifreeze mixture for future use.
 - e. If a boom is your application device, spray a small amount of the antifreeze mixture from the boom and then shut it off and drain the rest of the mixture from the tank using the drain on the front of the sprayer.

Changing the Diaphragms

To change the diaphragms, you need a set of metric wrenches and a set of metric allen wrenches.

1. Drain the oil from the crankcase. The larger pumps have a drain plug for this purpose. The smaller pumps must be removed from the sprayer, the oil cap removed and the pump turned upside down to drain the oil. Rotate the shaft until all the oil is drained.
2. Remove the manifold nuts and the head nuts. Work on one head at a time. Remove the manifold and the head. Remove the diaphragm nut, the retaining washer and the diaphragm.
3. Turn the crankshaft to bring the piston to its downstroke and seat the new diaphragm into the sleeve groove.
4. Replace the retaining washer and tighten the diaphragm nut. Reinstall the head.
5. Replace the other head diaphragms and then replace the manifold.

Pulsation Damper Diaphragm

1. To replace the pulsation damper diaphragm, bleed the air from the damper.
2. Remove the bolts holding the damper assembly together.
3. Replace the diaphragm and replace the bolts.
4. Recharge the damper with air pressure to 10% of the expected operating pressure.
5. Remount the pump on the sprayer and refill the crankcase with oil.

Problem	Cause	Remedy
Pump does not draw water	1. The in-line strainer is clogged 2. The suction line is plugged or collapsed 3. Gate valve in suction line is closed 4. One or more valves are seating improperly	1. Clean the in-line strainer 2. Examine the suction line 3. Open gate valve 4. Examine the valve seatings and clean them or replace if scored or worn
Oil comes out of the discharge port	1. One or more diaphragms are split	1. Drain the pump of oil. Dismantle the heads and replace the diaphragms. Refill the pump with fresh oil
The pressure gauge fluctuates excessively	1. The pump is sucking in air somewhere in the suction line 2. Air has not been entirely evacuated from the pump	1. Examine the suction line and make certain all parts are firmly secured 2. Run the pump with the outlet hose open to evacuate air from the pump
The liquid flow is irregular	1. Incorrect charge in the pulsation damper 2. One or more valves are seating improperly	3. Check the charge in the pulsation damper. (10% of working pressure) 4. Examine the valve seatings and clean them or replace them if scored or worn
The output drops and the pump is noisy	1. The oil level is too low	1. Add oil to the correct level for the pump
No agitation	1. Fiberglass sprayer — The agitator belt is loose. 2. Poly sprayer — The ball valve to the agitator is shut off or the line is plugged.	1. Tighten the agitator belt. 2. Open the ball valve to the agitator. Check the line to the agitator.

The following attachments and accessories are compatible for Cub Cadet Commercial 50, 100, 200, 300 Gallon Sprayers and 200 Gallon Compact Sprayer. See your Cub Cadet Commercial dealer from which you purchased your sprayer for information regarding price and availability.

50 Gallon Sprayer

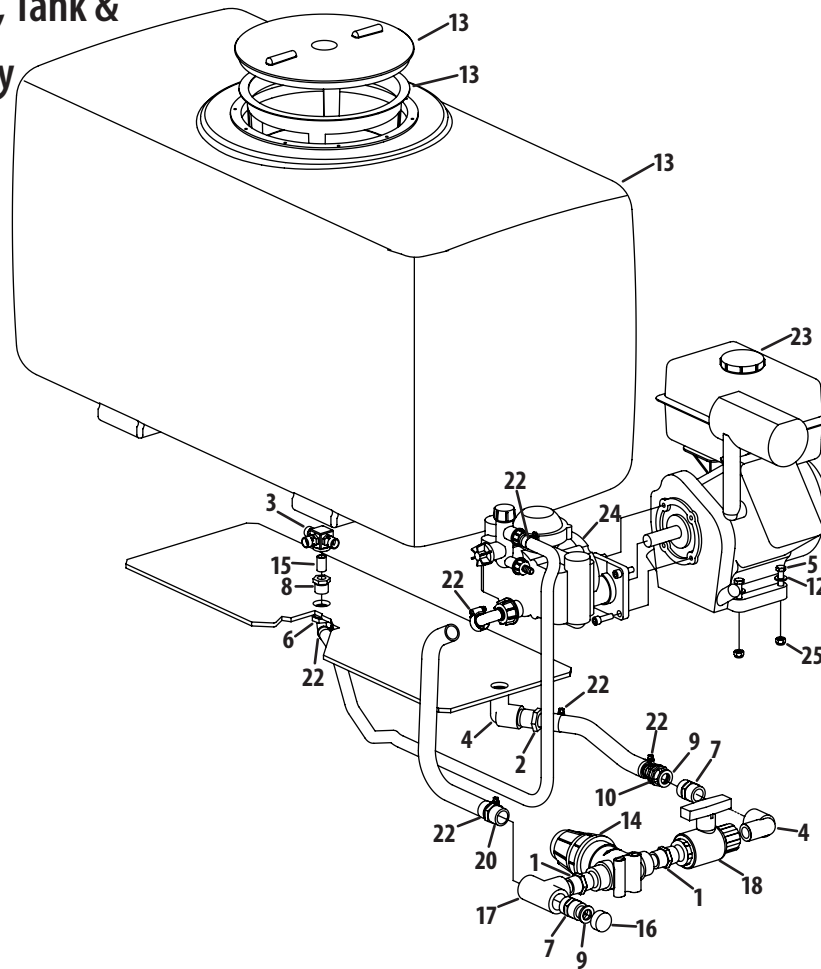
Part	Part No.
00024132	Hose Assembly, Pump-to-Hose Reel
00033030	100', 3/8" dia., 300-psi working pressure, PVC Spray Hose
00033040	200', 3/8" dia., 300-psi working pressure, PVC Spray Hose
00033050	300', 3/8" dia., 300-psi working pressure, PVC Spray Hose
00010856	Spray Wand, 5-quarts/minute
00005419	Spray Wand, 6-quarts/minute

100/200/300 Gallon Sprayer & 200 Gallon Compact Sprayer

Part	Part No.
00004600 *	Walking Boom, 8-8008 SS Nozzles on 10" Center
00017302	Hose Assembly, Pump-to-Reel
00020197	400'-3/8" I.D., 600 psi, 3/4" GHT Couplings
00020201	100'-1/2" I.D., 800 psi, 3/4" GHT Couplings
00020198	200'-1/2" I.D., 800 psi, 3/4" GHT Couplings
00020199	300'-1/2" I.D., 800 psi, 3/4" GHT Couplings
00009134	1" I.D., Spiraflex. (Sold per foot)
00005419	6 quarts/minute

* — Not available for 300 gallon sprayer

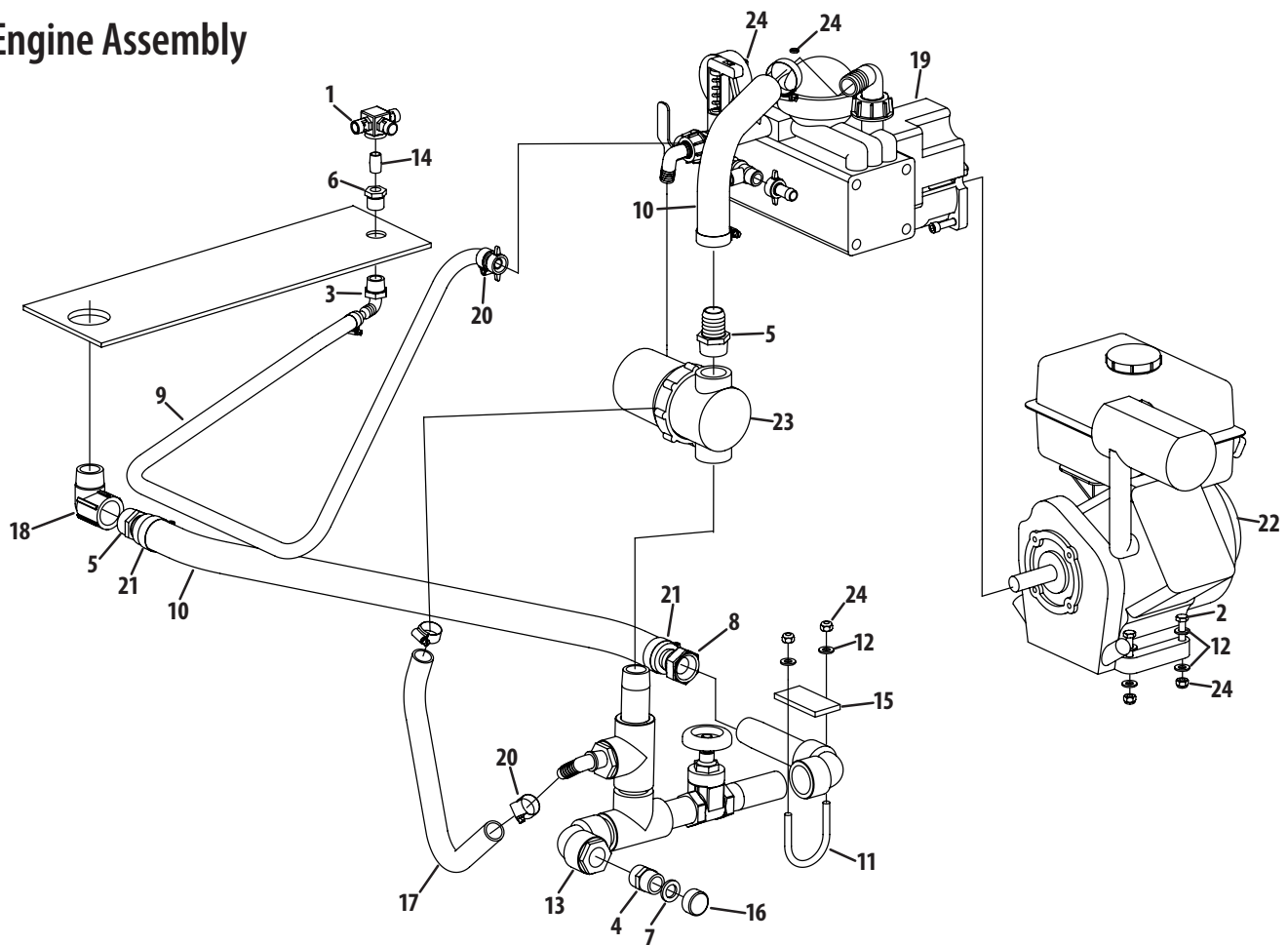
50 Gallon Pump, Tank & Engine Assembly



Ref.	Part Number	Description
1	00002406	Nipple, 3/4
2	00003011	Insulated Male Adapter, 3/4
3	00005610	Jet Agitator
4	00006017	Elbow, 3/4
5	00006129	Hex Screw, 5/16-18 x 1.75
6	00006145	90° Elbow, 1/2 x 1/2
7	00006303	Threaded Pipe Hose, 3/4 x 3/4
8	00006430	Reducer Bushing, 1/2 x 1/4
9	00007595	Hose Washer, 3/4
10	00007687	Brass Female Hose, 3/4
11	00008295	Hose, 1/2
12	00009812	Washer, .344 x .688 x .063
13	00010033	50 Gallon Poly Tank

Ref.	Part Number	Description
14	00011233	Strainer, 3/4
15	00011939	Brass Nipple, 1/4
16	00012664	Brass Hose Cap, 3/4
17	00016465	PVC Tee, 3/4
18	00019013	PVC Ball Valve, 3/4
19	00030918	Reinforced Hose, 5/8
20	00031785	Fitting, 3/4 x 5/8
21	00033300	Spiraflex Hose, 3/4
22	01000216	Hose Clamp
23	01001000	Kawasaki Engine
24	01005668	Hypro Pump
25	912-0429	Hex Lock Nut, 5/16-18
NS	01005577	Adapter, 3/4 x 3/4

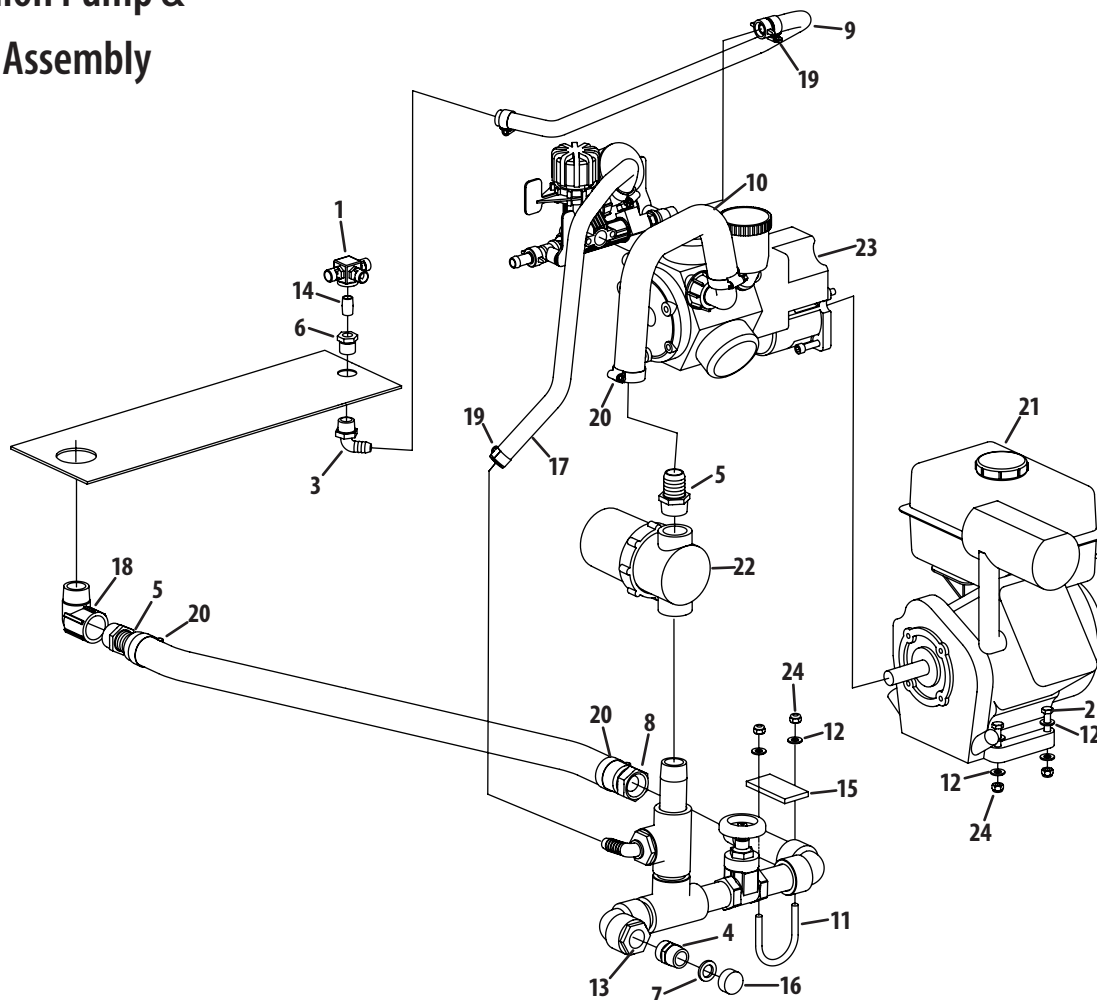
100/200 Gallon Pump & Engine Assembly



Ref.	Part Number	Description
1	00005610	Jet Agitator
2	00006129	Hex Screw, 5/16-18 x 1.75
3	00006145	90° Elbow, 1/2 x 1/2
4	00006303	Threaded Pipe Hose, 3/4 x 3/4
5	00006416	Insulated Male Hose, 1 x 1
6	00006430	Reducer Bushing, 1/2 x 1/4
7	00007595	Hose Washer, 3/4
8	00007713	Female Hose Repair End, 1
9	00008295	Hose, 1/2
10	00009134	Spiraflex Hose, 1
11	00009670	Carriage Bolt, 5/16-18 x 2.62 x 2.30
12	00009812	Washer, .344 x .688 x .063
13	00011021	Manifold Assembly, 100/200/300

Ref.	Part Number	Description
14	00011939	Brass Nipple, 1/4
15	00012038	Rubber Pad, 1/4 x 1-1/2 x 3
16	00012664	Brass Hose Cap, 3/4
17	00030918	Reinforced Hose, 5/8
18	00070471	Elbow, 1 x 90
19	01000210	Pump Assembly
20	01000216	Hose Clamp
21	01000217	Hose Clamp
22	01001001P	Kawasaki Engine
23	01004380	Mesh Bowl Strainer
24	912-0429	Hex Lock Nut, 5/16-18
NS	01005577	Adapter, 3/4 x 3/4

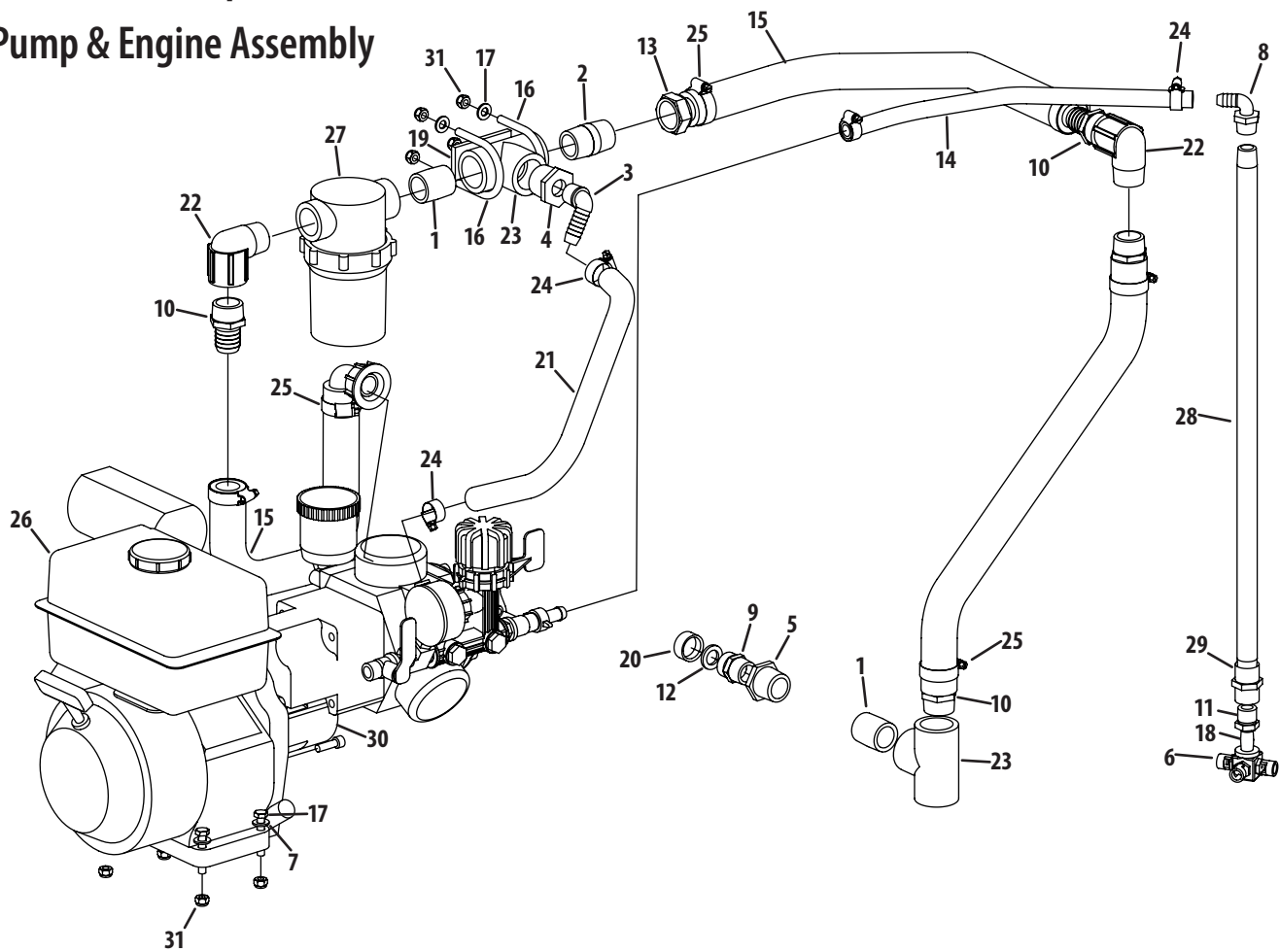
300 Gallon Pump & Engine Assembly



Ref.	Part Number	Description
1	00005610	Jet Agitator
2	00006129	Hex Screw, 5/16-18 x 1.75
3	00006145	90° Elbow, 1/2 x 1/2
4	00006303	Threaded Pipe Hose, 3/4 x 3/4
5	00006416	Insulated Male Hose, 1 x 1
6	00006430	Reducer Bushing, 1/2 x 1/4
7	00007595	Hose Washer, 3/4
8	00007713	Female Hose Repair End, 1
9	00008295	Hose, 1/2
10	00009134	Spiraflex Hose, 1
11	00009670	Carriage Bolt, 5/16-18 x 2.62 x 2.30
12	00009812	Washer, .344 x .688 x .063
13	00011021	Manifold Assembly, 100/200/300

Ref.	Part Number	Description
14	00011939	Brass Nipple, 1/4
15	00012038	Rubber Pad, 1/4 x 1-1/2 x 3
16	00012664	Brass Hose Cap, 3/4
17	00030918	Reinforced Hose, 5/8
18	00070471	Elbow, 1 x 90
19	01000216	Hose Clamp
20	01000217	Hose Clamp
21	01001001P	Kawasaki Engine
22	01004380	Mesh Bowl Strainer
23	01005827P	Hypro Pump
24	912-0429	Hex Lock Nut, 5/16-18
NS	01005577	Adapter, 3/4 x 3/4

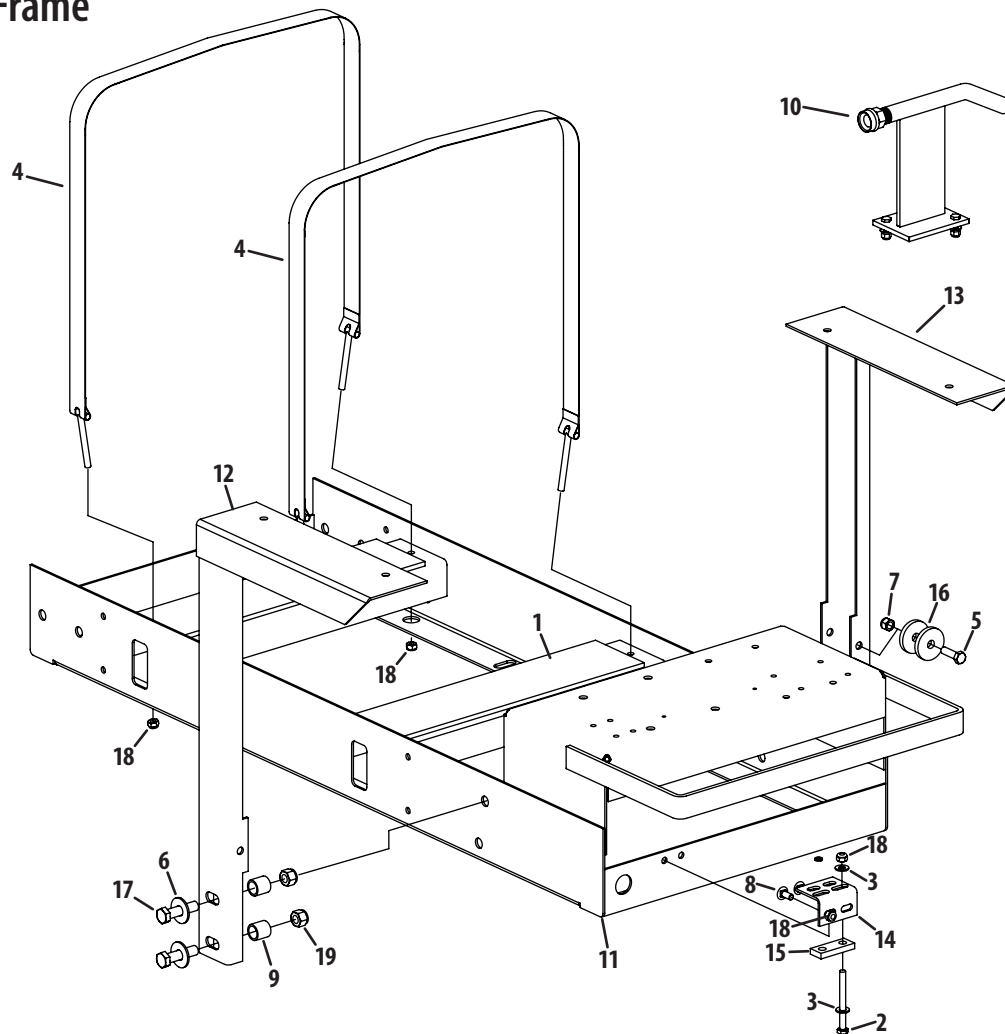
200 Gallon Compact Pump & Engine Assembly



Ref.	Part Number	Description
1	00002108	Nipple, 1"
2	00002121	Nipple, 1"
3	00002909	Insulated Elbow, ½
4	00003241	PVC Bushing, 1 x 1/2
5	00003254	PVC Bushing, 1 x ¾
6	00005610	Jet Agitator
7	00006129	Hex Screw, ⅝-18 x 1.75
8	00006145	90° Elbow, ½ x ½
9	00006303	Threaded Pip Hose, ¾ x ¾
10	00006416	Insulated Male Hose, 1 x 1
11	00006430	Reducer Bushing, ½ x ¼
12	00007595	Hose Washer, ¾
13	00007713	Female Hose Repair End, 1
14	00008295	Hose, ½
15	00009134	Spiraflex Hose, 1
16	00009670	Carriage Bolt, ⅝-18 x 2.62 x 2.30

Ref.	Part Number	Description
17	00009812	Washer, .344 x .688 x .063
18	00011939	Brass Nipple, ¼
19	00012038	Rubber Pad, ¼ x 1-½ x 3
20	00012664	Brass Hose Cap, ¾
21	00030918	Reinforced Hose, ⅝
22	00070471	Elbow, 1 x 90
23	00070485	PVC Tee, 1
24	01000216	Hose Clamp
25	01000217	Hose Clamp
26	01001001P	Kawasaki Engine
27	01004380	Mesh Bowl Strainer
28	01005199	Tank Pick-Up Agitator Tube
29	01005223	Coupling, ½
30	01005827P	Hypro Pump
31	912-0429	Hex Lock Nut, ⅝-18
NS	01005577	Adapter, ¾ x ¾

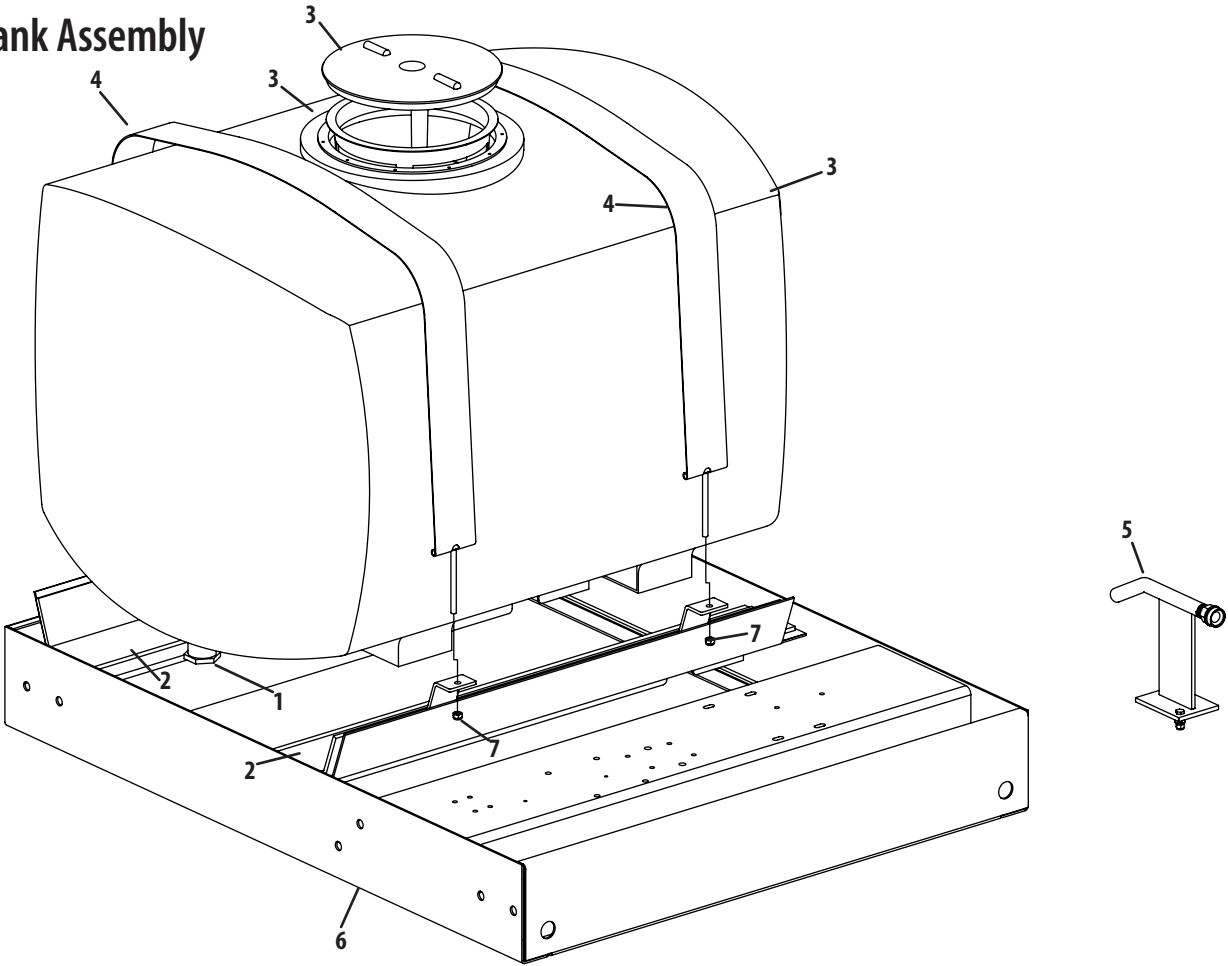
50 Gallon Frame Assembly



Ref.	Part Number	Description
1	00008382	Adhesive Backed Foam 4 x ¼
2	00009015	Hex Screw, ⅝-18 x 3.25
3	00009812	Washer, .344 x .688 x .063
4	00010836	Tank Strap
5	00011444	Hex Screw, ⅜-16 x 1.25
6	00011459	Washer, .563 x 1.38 x .109
7	712-04065	Lock Nut, ⅜-16
8	00020508	Carriage Bolt, ⅝-18 x .750
9	750-3065	Spacer, .635 x .875 x .860
10	01001047	Air Gap Filler

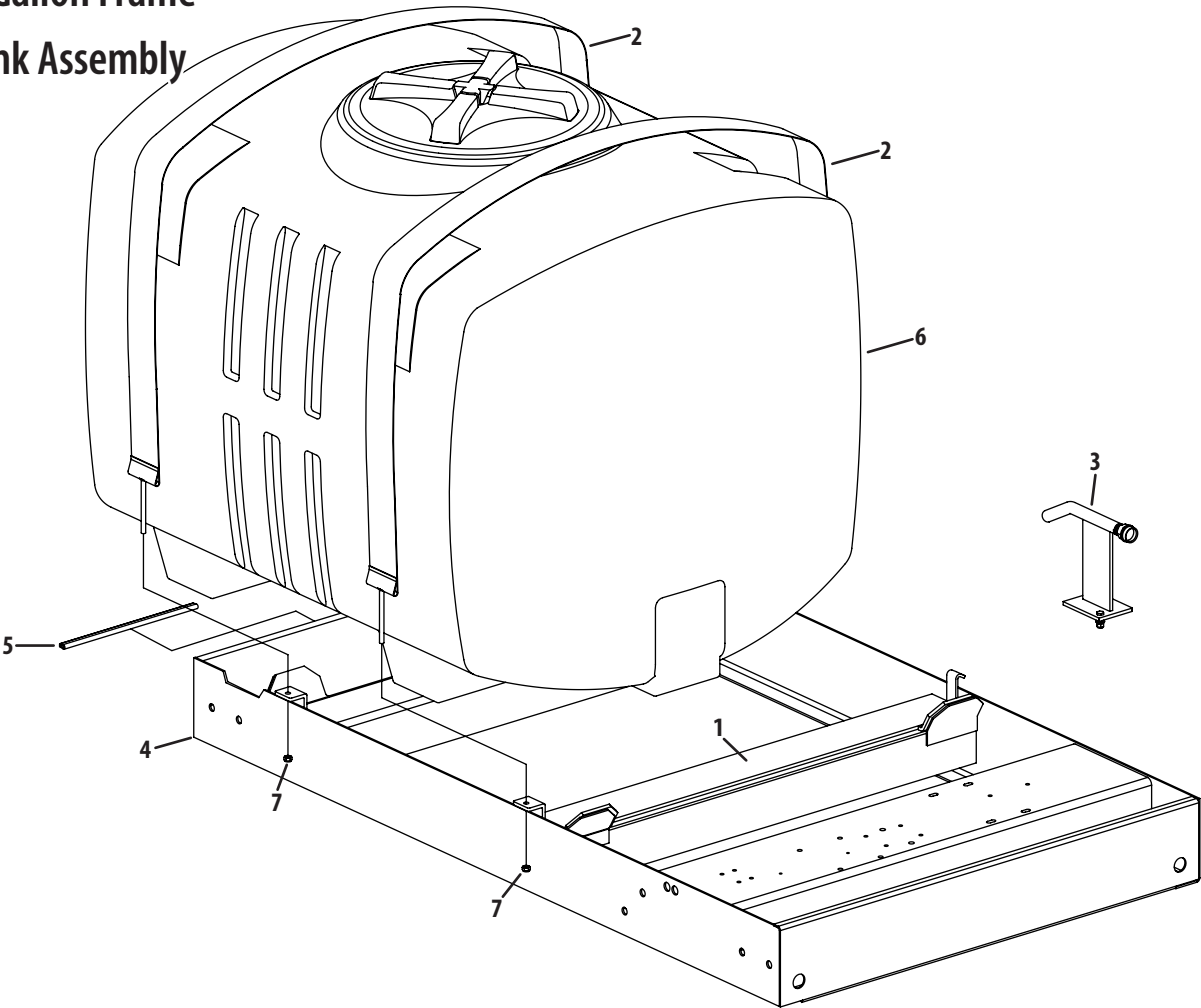
Ref.	Part Number	Description
11	01002009	Main Frame
12	01002028	LH Reel Support Assembly
13	01002029	RH Reel Support Assembly
14	01002641	Mounting Bracket
15	01003525	Strainer Block Spacer
16	736-04131	Washer, .438 x 1.745 x .250
17	710-0489	Hex Screw, ½-13 x 2.00
18	912-0429	Hex Lock Nut, ⅝-18
19	712-3083	Hex Lock Nut, ½-13

100 Gallon Frame & Tank Assembly



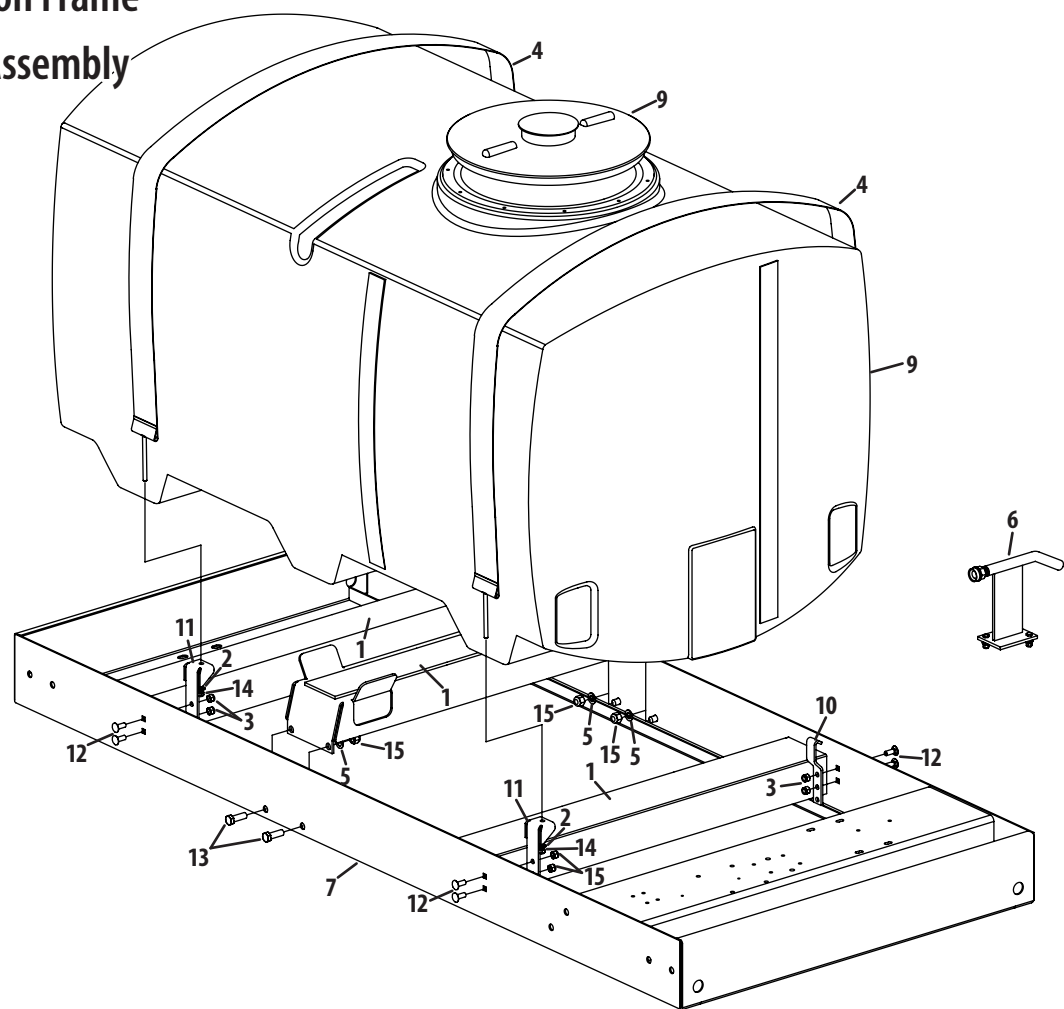
Ref.	Part Number	Description
1	00003293	PVC Adapter, 1.25 x 1
2	00008382	Adhesive Backed Foam, ¼ x 4
3	00009359	100 Gallon Poly Tank
4	00014205	Tank Strap
5	01001047	Air Gap Filler
6	01003070	Main Frame
7	912-0429	Hex Lock Nut, ⅝ -18
NS	00009134	Hose, 1-¼

200 Gallon Frame & Tank Assembly



Ref.	Part Number	Description
1	00008382	Adhesive Backed Foam
2	00013315	Tank Strap
3	01001047	Air Gap Filler
4	01002046	Main Frame
5	735-04130	Edge Trim
6	631-04467	Tank Assembly
7	912-0429	Hex Lock Nut, 5/16-18
NS	00009134	Hose, 1-1/4

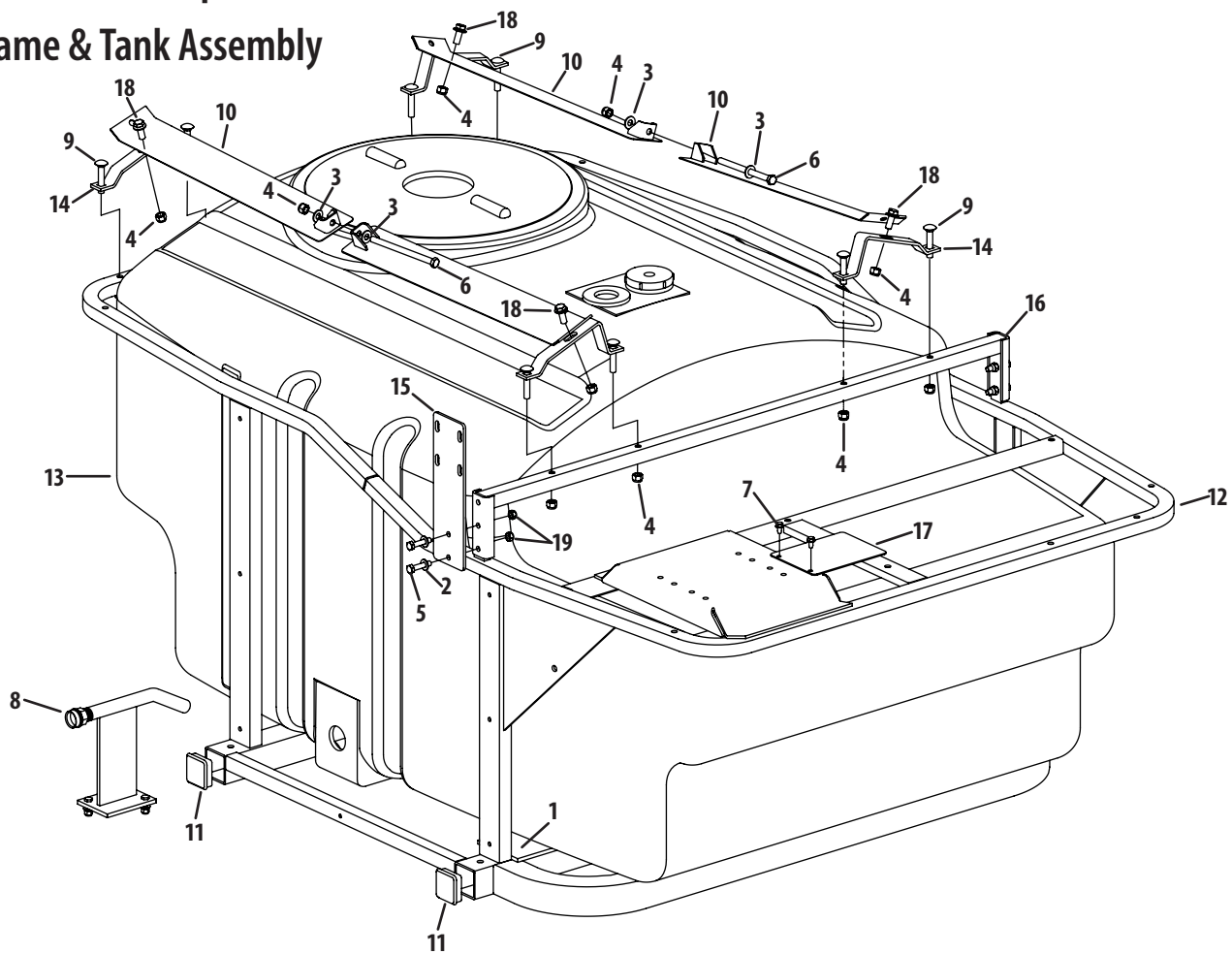
300 Gallon Frame & Tank Assembly



Ref.	Part Number	Description
1	00008382	Adhesive Backed Foam
2	00009812	Flat Washer, 5/16
3	712-04065	Lock Nut, 3/8-16
4	00013315	Tank Strap
5	936-0160	Flat Washer, .536 x .930 x .05
6	01001047	Air Gap Filler
7	01001178	Main Frame
8	01006605	Center Support Bracket

Ref.	Part Number	Description
9	01006622	300 Gallon Poly Tank
10	01006642	Strap Mounting Hook
11	01006653	Strap Mounting Bracket
12	710-3168	Carriage Bolt, 3/8-16 x 1.00
13	710-3181	Hex Screw, 1/2-13 x 1.50
14	912-0429	Hex Lock Nut, 5/16-18
15	712-3083	Hex Lock Nut, 1/2-13
NS	00009134	Hose, 1-1/4

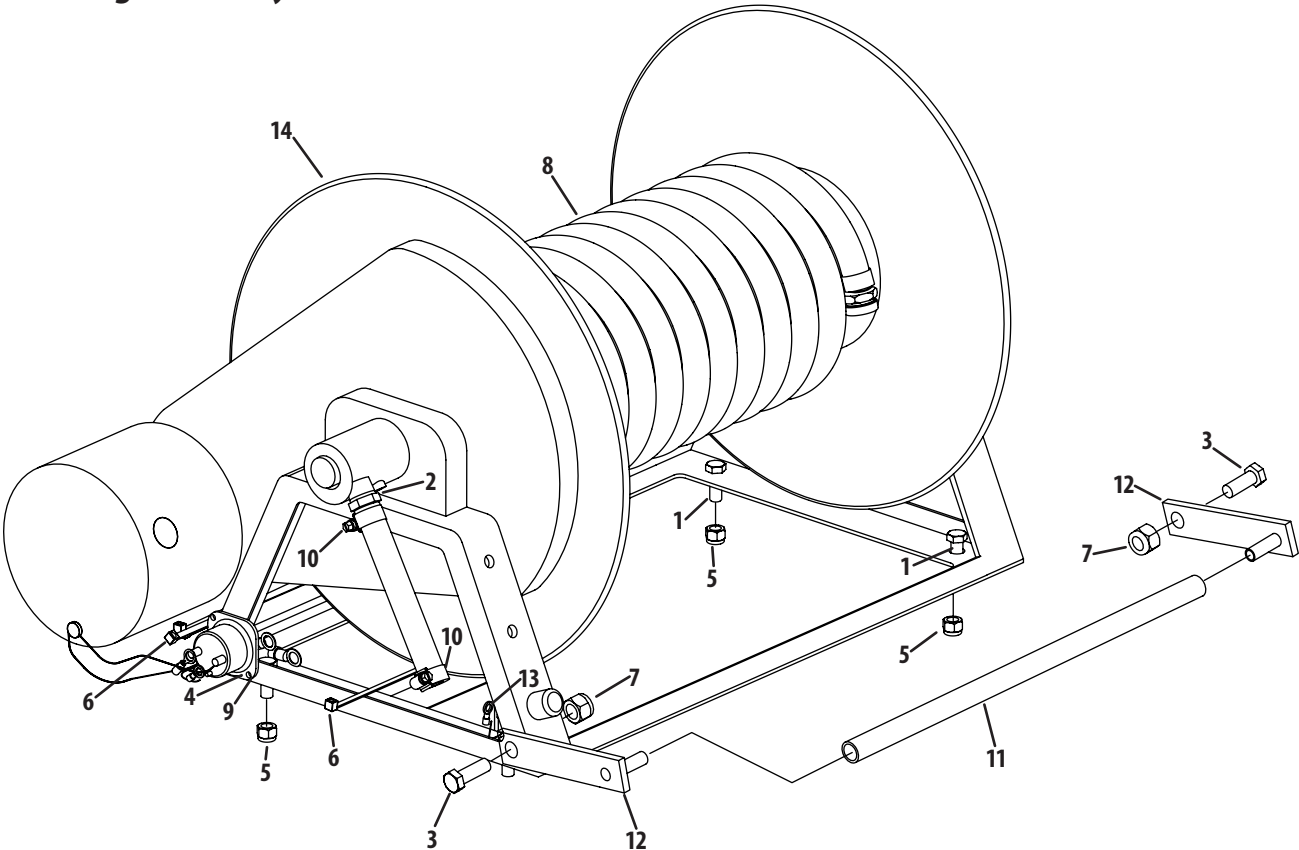
Frame & Tank Assembly



Ref.	Part Number	Description
1	00008382	Adhesive Backed Foam
2	00009812	Washer, .344 x .688 x .063
3	00012158	Washer, .406 x .813 x .063
4	712-04065	Lock Nut, 3/8-16
5	00012382	Hex Screw, 5/16-18 x 1.50
6	00035881	Hex Screw, 3/8-16 x 5.00
7	710-0599	Hex Flange Screw, 1/4-20 x .500
8	01001047	Air Gap Filler
9	01002011	Carriage Bolt, 3/8-16 x 2.0
10	01004536	Tank Strap

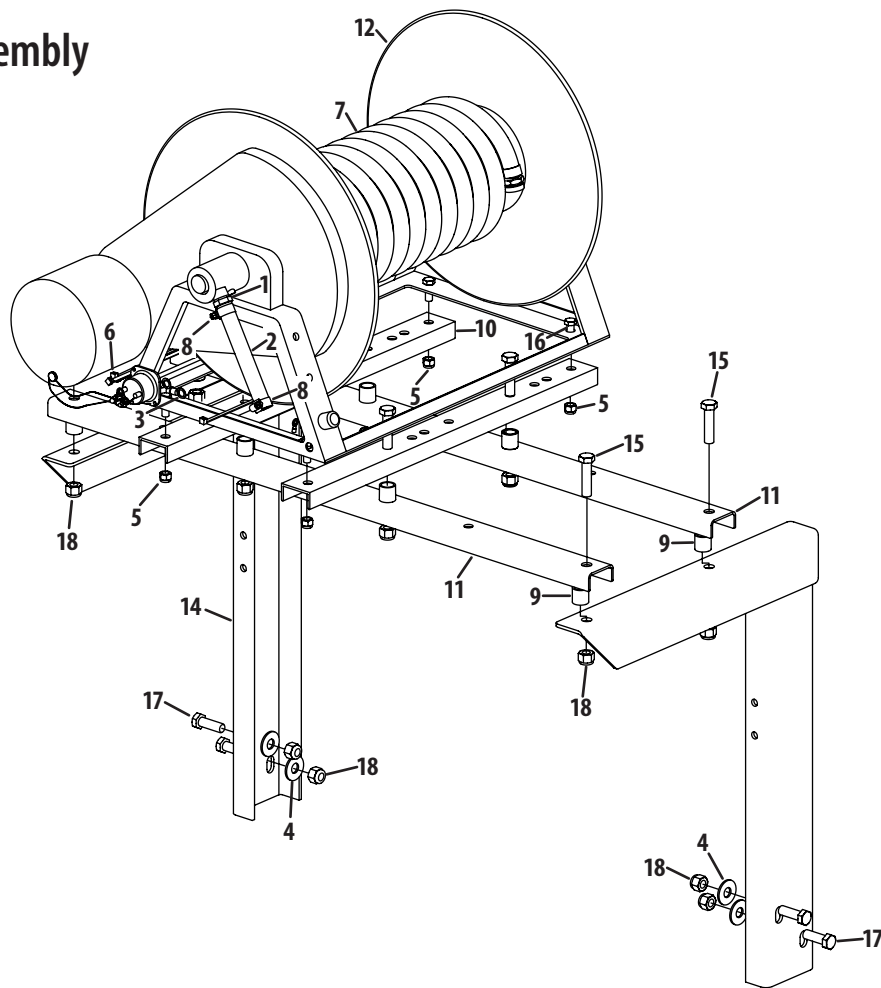
Ref.	Part Number	Description
11	01005160	Square Tube Plug
12	01005185	Main Frame
13	01005222	Tank Assembly
14	01005335	Tank Strap Mount
15	01005506	Strainer Mount Bracket
16	01005543	Tank Strap Mount
17	01006351	Decal Plate
18	710-0514	Hex Screw, 3/8-16 x 1.00
19	912-0429	Hex Lock Nut, 5/16-18

50 Gallon Hose Reel & Mounting Assembly



Ref.	Part Number	Description
1	00006144	Hex Screw, 3⁄8-16 x 1.00
2	00006442	Hose Barb, 1⁄2
3	00008724	Hex Screw, 7⁄16-14 x 1.00
4	00010628	Ring Terminal
5	712-04065	Lock Nut, 3⁄8-16
6	725-0157	Cable Tie
7	712-0290	Hex Lock Nut, 7⁄16-14
8	00033050	Hose Assembly, 3⁄8
9	00060033	Flat Washer, 1⁄4
10	01000215	Hose Clamp
11	02004733	Hose Guard
12	02004734	Hose Guard Mounting Assembly
13	01002319	Electric Wiring Harness
14	01002643	Hose Reel
NS	00010863	Electric Wiring Kit

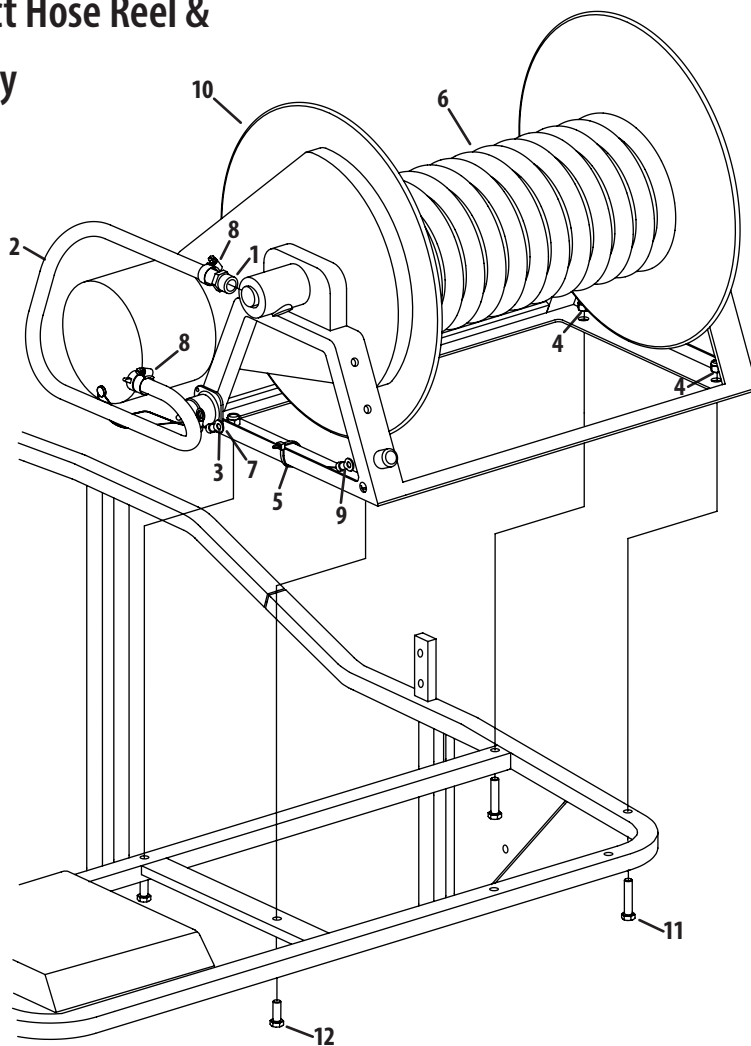
100/200/300 Gallon Hose Reel & Mounting Assembly



Ref.	Part Number	Description
1	00006417	Hose Barb, ½ x ½
2	00008295	Hose, ½
3	00010628	Ring Terminal, ¾
4	00011459	Washer, .563 x 1.38 x .109
5	712-04065	Lock Nut, ¾-16
6	725-0157	Cable Tie
7	00020199	Hose Assembly, ½ x 300
8	01000216	Hose Clamp
9	750-3065	Spacer, .635 x .875 x .860
10	01002287	Reel Mounting

Ref.	Part Number	Description
11	01003202	Reel Crossmember
12	01003359P	Reel
13	680-00172	RH Hose Reel Weldment
14	680-00173	RH Hose Reel Weldment
15	710-0489	Hex Screw, ½-13 x 2.00
16	710-0514	Hex Screw, ¾-16 x 1.00
17	710-3181	Hex Screw, ½-13 x 1.50
18	712-3083	Hex Lock Nut, ½-13
NS	00010863	Wiring Kit
NS	01002319	Wiring Harness

200 Gallon Compact Hose Reel & Mounting Assembly



Ref.	Part Number	Description
1	00006417	Hose Barb, 1/2 x 1/2
2	00008295	Hose, 1/2
3	00010628	Ring Terminal, 3/8
4	712-04065	Lock Nut, 3/8-16
5	725-0157	Cable Tie
6	00020199	Hose Assembly, 1/2 x 300
7	00060033	Flat Washer, 1/4
8	01000216	Hose Clamp
9	01002319	Wiring Harness
10	01003359P	Electric Hose Reel
11	710-0347	Hex Screw, 3/8-16 x 1.75
12	710-0514	Hex Screw, 3/8-16 x 1.00
NS	00010863	Wiring Kit

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CUB CADET LLC MANUFACTURER'S LIMITED WARRANTY FOR COMMERCIAL LAWN APPLICATION EQUIPMENT

IMPORTANT: To obtain warranty coverage owner must present an original proof of purchase and applicable maintenance records to the servicing dealer. Please see the operator's manual for information on required maintenance and service intervals.

The limited warranty set forth below is given by Cub Cadet LLC with respect to new merchandise purchased or leased and used in the United States and/or its territories and possessions, and by MTD Products Limited with respect to new merchandise purchased or leased and used in Canada and/or its territories and possessions (either entity respectively, "Cub Cadet").

Cub Cadet warrants this product (excluding its *Normal Wear Parts, Batteries and Attachments* as described below) against defects in material and workmanship for a period of one (1) year commencing on the date of original retail purchase or lease and will, at its option, repair or replace, free of charge, any part found to be defective in materials or workmanship.

Normal Wear Parts are warranted to be free from defects in material and workmanship for a period of thirty (30) days or one hundred (100) operation hours, whichever comes first, commencing on the date of original retail purchase or lease. Normal wear parts include, but are not limited to items such as: belts, blades, blade adapters, grass bags, rider deck wheels, seats, and tires.

Batteries have a one-year prorated limited warranty against defects in material and workmanship, with 100% replacement during the first three months. After three months, the battery replacement credit is based on the months remaining in the twelve (12) month period dating back to the original date of original sale or lease. Any replacement battery will be warranted only for the remainder of the original warranty period.

Attachments — Cub Cadet warrants attachments for this product against defects in material and workmanship for a period of one (1) year, commencing on the date of the attachment's original purchase or lease. Attachments include, but are not limited to items such as: grass collectors and mulch kits.

This limited warranty shall only apply if this product has been operated and maintained in accordance with the Operator's Manual furnished with the product, and has not been subject to misuse, abuse, neglect, accident, improper maintenance, alteration, vandalism, theft, fire, water, or damage because of other peril or natural disaster. Damage resulting from the installation or use of any part, accessory or attachment not approved by Cub Cadet for use with the product(s) covered by this manual will void your warranty as to any resulting damage. In addition, Cub Cadet may deny warranty coverage if the hour meter, or any part thereof, is altered, modified, disconnected or otherwise tampered with.

HOW TO OBTAIN SERVICE: Warranty service is available, WITH PROOF OF PURCHASE AND APPLICABLE MAINTENANCE RECORDS, through your local authorized service dealer. To locate the dealer in your area:

In the U.S.A.:

Check your Yellow Pages, or contact Cub Cadet LLC at P.O. Box 361131, Cleveland, Ohio 44136-0019, call 1-877-282- 8684 or log on to our website at www.cubcadet.com.

In Canada:

Contact MTD Products Limited, Kitchener, ON N2G 4J1, call 1-800-668-1238 or log on to our website at www.mtdcanada.com.

Without limiting the foregoing, this limited warranty does not provide coverage in the following cases:

- a. Routine maintenance items such as lubricants, filters, blade sharpening, tune-ups, brake adjustments, clutch adjustments, deck adjustments, and normal deterioration of the exterior finish due to use or exposure.
- b. Service completed by someone other than an authorized service dealer.
- c. Cub Cadet does not extend any warranty for products sold or exported outside of the United States and/or Canada, and their respective possessions and territories, except those sold through Cub Cadet's authorized channels of export distribution.
- d. Replacement parts and/or accessories that are not genuine Cub Cadet parts.
- e. Transportation charges and service calls.

There are no implied warranties, including without limitation any implied warranty of merchantability or fitness for a particular purpose. No warranties shall apply after the applicable period of express written warranty above. No other express warranties beyond those mentioned above, given by any person or entity, including a dealer or retailer, with respect to any product, shall bind Cub Cadet. The exclusive remedy is repair or replacement of the product as set forth above. The terms of this warranty provide the sole and exclusive remedy arising from the sale and/or lease of the products covered hereby. Cub Cadet shall not be liable for any incidental or consequential loss or damage including, without limitation, expenses incurred for substitute or replacement lawn care services or for rental expenses to temporarily replace a warranted product.

Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusions or limitations may not apply to you.

In no event shall recovery of any kind be greater than the amount of the purchase price of the product sold. **Alteration of safety features of the product shall void this warranty.** You assume the risk and liability for loss, damage, or injury to you and your property and/or to others and their property arising out of the misuse or inability to use the product.

This limited warranty shall not extend to anyone other than the original purchaser or to the person for whom it was purchased as a gift.

HOW LOCAL LAWS RELATE TO THIS WARRANTY: This limited warranty gives you specific legal rights, and you may also have other rights that vary in different jurisdictions.

**Cub Cadet LLC, P.O. BOX 361131 CLEVELAND, OHIO 44136-0019, Phone: 1-877-282-8684
MTD Products Limited, Kitchener, ON N2G 4J1, Phone: 1-800-668-1238**