

# PAKBLAST 50 GALLON

## READ THIS MANUAL BEFORE OPERATING

06.11.2018



# Sprayer Safety: Operator Training

Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by a single careless act of an operator.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.

It has been said, *the best safety device is an informed, careful operator*. We ask you to be that kind of an operator. It is the operator's responsibility to read and understand all safety and operating instructions in the manual and to follow these. Accidents can be avoided.

Working with unfamiliar equipment can lead to careless injuries. *Read this manual and the manual for your tractor* before assembly or operation, to acquaint yourself with the machines. If this machine is used by any person other than the owner or is loaned or rented, it is the owner's responsibility to make certain that the operator has instruction for the safe and proper use of the machinery and that the operator reads and understands the operator's manuals.

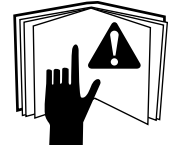
Know your controls and how to stop the tractor, engine, and implement quickly in an emergency. Read this manual and the one provided with the tractor.

Train all new personnel and review instructions frequently with existing workers. A person who has not read and understood all operating and safety instructions is not qualified to operate the machine. An untrained operator exposes himself and bystanders to possible serious injury or death.

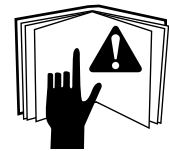
Do not allow children to operate this machine.



READ THE OPERATOR'S MANUAL



READ THE OPERATOR'S MANUAL



READ THE OPERATOR'S MANUAL

**Read this manual completely before operating: follow all safety instructions.**

# Sprayer Safety: Preparation

Never operate the tractor and implement until you read and completely understand this manual, the tractor operator's manual, and each of the safety messages found on the safety decals on the tractor and the implement.



Personal protection equipment, including a hard hat, safety glasses, safety shoes, and gloves are recommended during assembly, installation, operation, adjustment, maintenance, repair, removal, or transport of this implement. Do not allow long hair, loose fitting clothing or jewellery to be around moving parts.



Tractors, with or without implements, can often be noisy enough to cause permanent, partial hearing loss. We recommend that you wear hearing protection on a full-time basis if the noise in the operator's position exceeds 80db. Long-term exposure to noise over 85db can cause severe hearing loss. Long-term exposure to noise over 90db may cause permanent, total hearing loss. **NOTE: Hearing loss from loud noise (from tractors, chain saws, radio earphones) is cumulative over a lifetime without hope of natural recovery.**

Operate the implement only with a tractor equipped with an approved Roll-Over-Protection-System (ROPS). Always wear your seat belt. Serious injury or even death could result from falling off a tractor— particularly during a turnover, when the operator could be pinned under the tractor.

Operate only in daylight or good artificial light.

Ensure the implement is properly mounted and in good operating condition.

Safety shielding and safety decals must be properly installed and in good condition.

# Sprayer Safety: Starting & Stopping

Implement operating power is supplied from the tractor's PTO. Refer to your tractor manual for PTO engagement and disengagement instructions. Always operate the implement at its required PTO speed: either 540 or 1000 rpm. Know how to stop the tractor and implement quickly in case of an emergency. Keep children away at all times.

When engaging the PTO, the engine RPM should always be low. Once engaged, raise the PTO speed to the implement's required operating speed: either 540 or 1000 rpm.

Check the tractor master shield over the PTO stub shaft. Make sure it is in good condition and fastened securely to the tractor. Purchase a new shield if the old shield is damaged or missing. A tractor salvage yard is a good source for older tractors.

Tractors without a *live* PTO need to be equipped with an over-running PTO clutch attachment, available through most farm equipment suppliers. NOTE: the addition of an over-running PTO clutch attachment will change the length of the PTO driveline required. Pay extra attention to the instructions on PTO driveline installation.

# Sprayer Safety: Chemicals

Never provide agricultural chemicals to anyone unless that person has been properly trained or licensed.

Make certain the entire manufacturer's label appears on the chemical container. Always follow the manufacturer's instructions for storage, handling, and application.



Before a spraying operation is started the spray system should be rinsed and all nozzles, screens, and strainers cleaned. The best time to rinse and clean the spray system is at the END of daily operations, before storing the implement for the night. If cleaning is conscientiously included in day-end procedures, rinsate and the disposal of cleaning solution can easily be incorporated into your spray plan. Be careful if re-applying rinse solution to treated area: do not exceed the maximum rate for which the chemical is labeled.

Wear proper protective equipment when adding chemicals to the spray tank. The area where you are mixing must have adequate ventilation: powders, dust, and granuals can become airborne when adding to the spray tank; concentrated vapors can pose health or flammability hazards.

Mix only enough chemical for the particular job. Preventing chemical surplus is the best way to prevent a disposal problem.

Be aware of meteorological conditions and plan spray applications during opportune times. High winds and low humidity will increase drift and adversely affect your spray program.

Be alert for nozzle clogging and changes in nozzle patterns. Use strainers and nozzle screens appropriate for your water source and chemical use.

Use a brush or wood toothpick to clear nozzles- never a metal object. A metal object can damage the spray orifice and significantly alter your application rate. Never attempt to clear a spray tip by blowing through it. Operators should carry spare spray tips.

If nozzles clog or other troubles occur in the field, shut the sprayer off and move to an unsprayed area before dismounting from the sprayer to work on it.

The skin on various body parts does not absorb pesticides at the same rate. The figure, right, illustrates skin absorption rates based on a numerical scale in which the value of 1 for the forearm represents the lowest dermal absorption rate. That value forms the basis for the assignment of values to the other body parts.

If concentrated liquid chemical is spilled on your clothing (not including rubber gloves, boots, or aprons) immediately remove the clothing and throw away. Undiluted chemicals cannot be cleaned from clothing. Dispose of contaminated clothing as required by local regulations.

Always treat clothes worn when using agricultural chemicals as contaminated. Keep them separate from your other clothes or the family washload.

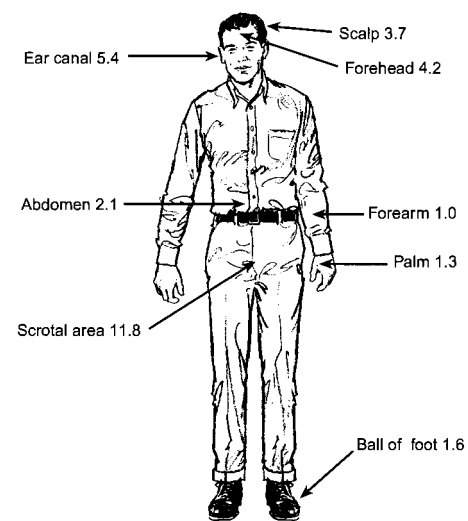
Contact your local extension service for instructions for cleaning work clothes contaminated by chemical handling. Most state agricultural universities and farm bureaus have detailed instructions for the decontamination of work clothes.

Line dry your work clothes to avoid contaminating your dryer.

Chemical resistant gloves make a big difference BUT don't rub contaminated gloves on your skin. **A good safety practice before eating, drinking, smoking, or using the bathroom: rinse your gloves thoroughly BEFORE removing them then take off your gloves and wash your hands.**

Trained personnel should thoroughly clean the inside and outside of mixing and application equipment immediately after use. Follow all chemical handling directions supplied by the manufacturer and wear recommended safety equipment. Clean and neutralize the pump system, spray manifolds, and spray tank as recommended by the chemical manufacturer. Cleaning between implement uses will reduce corrosion, extend pump life, and keep your chemical tools from reacting with residual incompatible mixes.

Always follow the chemical manufacturer's instructions and environmental regulations when disposing of chemical waste and empty chemical containers.



**Skin absorption rates**  
in relation to forearm (1.0)

The information included in this **Chemical Safety** section was compiled from the following government and community education programs:

*Oregon Occupational Safety & Health*

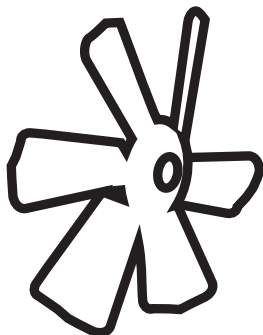
*Alliance for a Clean Rural Environment*

*University of Missouri Outreach & Extension*

*California Dept. of Pesticide Regulation*

All listed source organizations have more detailed information on the internet.

# Sprayer Safety: Pre-operation



Install and secure all guards and shields before starting or operating.

**Frequently check fan blades.** They should be free of nicks and cracks. The fan guard must be kept clean and in good repair.

The mechanical cabinet access guards, fan guard, sag chains, driveline shields, and gearbox shields should be used and maintained in good working condition. They should be inspected carefully, at least daily, for missing or broken cable, chain links, shields, or guards. Missing, broken or worn items must be replaced at once to reduce the possibility of injury from thrown objects or entanglement.

Check that all fasteners are tight.

Always follow the chemical manufacturer's instructions for storage, handling, and application of agricultural chemicals. When handling spray equipment, valves, nozzles, strainers: wear the safety equipment recommended by the chemical manufacturer.

Before a spraying operation is started, rinse out the sprayer; remove and clean all nozzles, nozzle screens and strainers. Make sure all spray orifices are sized correctly for your application and not worn. Use strainers and nozzle screens appropriate for your water source and chemical use.

Check all lines, valves and seals for leaks after filling with water and during calibration. Replace all weather cracked or worn hoses.

Wear proper protective equipment when adding chemicals to the spray tank. The area where you are mixing must have adequate ventilation: powders, dust, and granules can become airborne when adding to the spray tank; concentrated vapors can pose health or flammability hazards.

Always follow the chemical manufacturer's instructions and environmental regulations when disposing of chemical waste and empty chemical containers.

Mix only enough chemical for the particular job. Preventing chemical surplus is the best way to prevent a disposal problem.

Have a plan for application of end-of-day tank-mix and rinse water. In some cases small amounts of surplus chemical can be diluted and reapplied to the treated area. Always follow the manufacturer's application instructions. Do not exceed the maximum application rate for which the chemical is labelled.



Be aware of the meteorological conditions and plan spray applications during opportune times. High winds and low humidity will increase drift and adversely affect your spray program.

Avoid spraying near lakes, streams, pastures, population areas (houses, schools, playgrounds, hospitals) beehives or sensitive non-target crops. Always spray downwind from these sensitive areas and do not spray during adverse wind or low humidity conditions.

Follow your sprayer lubrication schedule.

# Sprayer Safety: Operation

The use of this equipment is subject to certain hazards which cannot be protected against by mechanical means or product design. All operators of this equipment must read and understand this entire manual, paying particular attention to safety and operating instructions, prior to use. If there is something in this manual you do not understand, ask your supervisor, dealer, or call the manufacturer.

Most accidents occur because of neglect or carelessness. Keep all helpers and bystanders at least several hundred feet away from the operating implement. Only properly trained people should operate this machine. Keep children away at all times.

The majority of accidents involve entanglement on a driveline, and operators being knocked off the tractor by low hanging limbs and run over. Accidents are most likely to occur with untrained operators or machines that are loaned or rented to someone who has not read the owner's manual and is not familiar with the implement.

Always stop the tractor, set the brake, shut off the engine, remove the ignition key before dismounting the tractor. **Never leave equipment unattended with the tractor running.**

Never place any part of your body in the mechanical compartment with tractor engine running or before you are sure all motion has stopped.  
Stay clear of all moving parts.

Do not reach or place yourself under equipment until it is blocked securely.

Engage the PTO at low RPM and then bring the PTO speed up to operating speed.

Do not engage the implement PTO with the tractor and implement at right angles. Lessen strain on drivetrain by starting PTO when tractor and implement are in-line.

PAKBLAST AND PULBLAST UNITS: Never engage the fan at high speed.

POWERBLAST UNITS: When engaging the fan clutch the engine speed should be 1000RPM. Engaging the clutch at this speed, not greater or less, will ensure long clutch life.

Do not disengage the PTO while turning.

Take all possible precautions when leaving unit unattended: disengage PTO, set parking brake, stop engine, and remove key from ignition.

Do not allow riders on the implement or tractor at any time. There is no safe place for any riders.

Disengage PTO and place transmission into neutral before attempting to start the engine.

Do not operate unless all personnel, livestock, and pets are out of your application area. Never direct discharge toward anyone. Keep children away at all times.

Inspect the entire machine periodically as indicated in the maintenance section of this manual. Look for loose fasteners, worn or broken parts, pinched hydraulic hoses, and leaky or loose fittings. Make sure all pins have cotter pins and washers. Serious injury may occur from not maintaining this machine in good working order. Install and secure all guards and shields before starting or operating.

Keep hands, feet, hair, and clothing away from all moving parts.

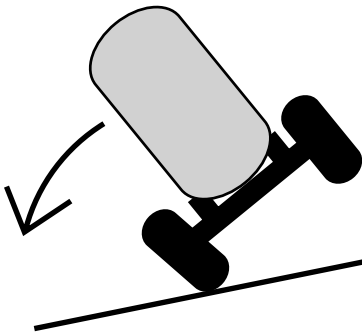
This implement is designed for use only on tractors with 540/1000 RPM power-take-off. **DO NOT EXCEED YOUR IMPLEMENT'S RATED PTO SPEED.**

If possible when applying chemical, work your way up-wind through your application area. By approaching the application such that drift goes into already treated rows the amount of chemical that will be blown onto the operator is reduced.

Be alert for nozzle clogging and changes in nozzle patterns. If nozzles clog or other troubles occur in the field, shut the sprayer off and move to an unsprayed area before dismounting from the tractor.

Never try to unclog a nozzle by blowing through it. Always carry extra spray tips.

Never operate tractor and implement under trees with low hanging limbs: the operator can be knocked off the tractor and run-over.



Stay alert for holes, rocks and roots in the terrain and other hidden hazards. Keep away from drop-offs.

Use extreme care and maintain minimum ground speed when transporting on hillside, over rough ground and when operating close to ditches or fences. Be careful when turning sharp corners.

Reduce speed on slopes and sharp turns to minimize tipping or loss of control. Be careful when changing directions on slopes. Do not start or stop suddenly on slopes. Avoid operation on steep slopes.

When using an implement, 20% of the combined tractor and implement weight (at a minimum!) must be on the tractor's front wheels. Without this weight, the tractor could tip over, causing personal injury or death. The weight may be attained with a front end loader, front wheel weights, ballast in the tires or front tractor weights. When attaining this minimum 20% front wheel weight, you must not exceed the ROPS weight rating. Weigh the tractor and the implement. Do not guess or estimate!

Be careful when operating the tractor and implement on uneven ground to avoid upsetting.

In extremely uneven terrain, front wheel weights, front tractor weights, and/or tire ballast should be used to improve stability.

Pass diagonally through sharp dips and avoid sharp drops to prevent *hanging up* the tractor and implement. Practice improves skills in maneuvering rough terrain.

Avoid sudden starts and stops while travelling up or downhill.

Always travel down slopes, never across the face. Avoid operation on steep slopes. Slow down on sharp turns and slopes to prevent tipping and/or loss of control.

# Sprayer Safety: Tires

Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion which may result in serious injury or death.

Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.

Inflating or servicing tires can be dangerous. Whenever possible, trained personnel should be called to service and/or mount tires.

Always order and install tires and wheels with appropriate capacity to meet or exceed the anticipated weight to be placed on them.

# Sprayer Safety: Maintenance

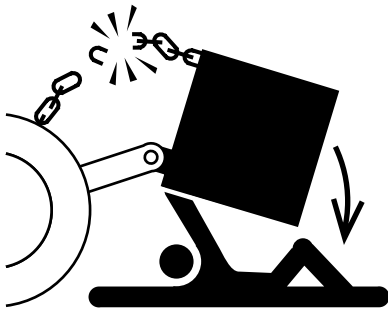
Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.

Follow good shop practice. Keep service area clean and dry. Be sure electrical outlets and tools are properly grounded. Use adequate light for the job at hand.

Make sure there is plenty of ventilation. Never operate gas/diesel engines in a closed building. The exhaust fumes may cause asphyxiation.

When handling spray equipment, pumps, valves, nozzles, strainers: wear the safety equipment recommended by the chemical manufacturer. Before working on the equipment, be certain the components are clean and neutralized as instructed by the chemical manufacturer.

Before working on this machine, disengage the PTO, shut off the engine, set the brakes and remove the key from the ignition.



Be certain all moving parts on tractor and implement have come to a complete stop before attempting to perform maintenance.

Never work under equipment unless it is blocked securely.

When performing any service or maintenance, always use personal protection devices such as eye, hand and hearing protection.

Trained personnel should thoroughly clean the inside and outside of equipment immediately after use. Follow all chemical handling directions supplied by the manufacturer and wear recommended safety equipment. Clean and neutralize the pump system, spray manifolds, and spray tank as recommended by the chemical manufacturer. Cleaning between implement uses will reduce corrosion, extend pump life, and keep your chemical tools from reacting with residual incompatible mixes.

Frequently check fan blades. They should be free of nicks or cracks and kept clean.

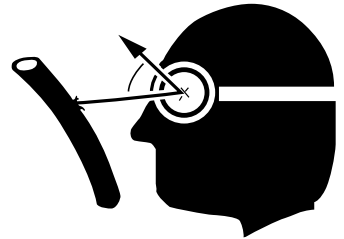
Periodically tighten all bolts, nuts and screws and check that all cotter pins are properly installed to insure unit is in a safe condition.

When completing a maintenance or service function, make sure all safety shields and devices are installed before placing the unit back in service.

Remove hydraulic pressure prior to doing any maintenance. Block the implement securely, disengage the PTO, and turn off the engine.



Never use your hands or any part of your body to locate a hydraulic leak. Use a piece of cardboard or wood to pass along the hydraulic line and determine the location of any leak. Wear protective gloves and glasses. Hydraulic fluid escaping under pressure can penetrate the skin. Openings in the skin and minor cuts are susceptible to infection from hydraulic fluid. If injured by escaping hydraulic fluid, see a doctor at once. Gangrene and death can result. Without immediate medical treatment, serious infection and reactions can occur.



When disconnecting hydraulic lines, shut off supply: relieve all hydraulic pressure.

Before pressurizing system, inspect all components. Make sure fittings are tight and lines are not worn, kinked or damaged.

After servicing, be sure all tools, parts and service equipment are removed.

Do not allow grease or oil build up on any deck or platform.

Never replace hex bolts with less than grade 5 bolts unless otherwise specified, i.e. shear bolts. Refer to bolt torque chart for head identification markings.

Where replacement parts are necessary for periodic maintenance and servicing, genuine factory replacement parts must be used to restore your equipment to original specifications. The manufacturer will not claim responsibility for use of unapproved parts and/or accessories and other damages as a result of their use.

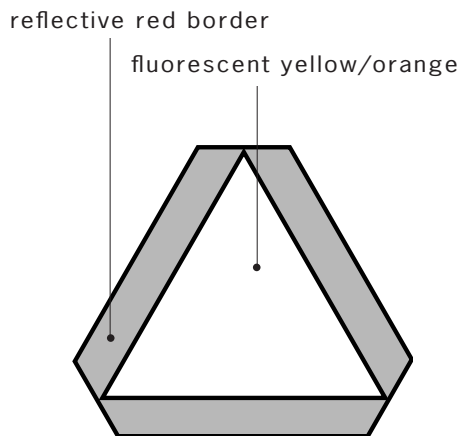
If equipment has been altered in any way from the original design, the manufacturer does not accept any liability for injury or warranty.

A fire extinguisher and first aid kit should be kept readily accessible while performing maintenance on this or any equipment.

**Read this manual completely before operating: follow all safety instructions.**

# Sprayer Safety: Transport

Comply with state and local laws governing highway safety and movement of farm machinery on public roads.



**slow moving vehicle emblem**

The use of flashing amber lights is acceptable in most localities. However, some localities prohibit their use. Local laws should be checked for all highway lighting and marking requirements.

When driving the tractor and equipment on the road or highway under 20mph (32kph) at night or during the day, use flashing amber warning lights and a slow moving vehicle identification emblem (SMV).

Plan your route to avoid heavy traffic.

Always install transport locks, pins or brackets before transporting.

Do not drink and drive.

Watch out for traffic when operating near or crossing roadways.

When driving hills or curves, slow down and make gentle turns. Make certain that at least 20% of the total weight of tractor and implement is on the front wheels to maintain safe steering. Slow down on rough or uneven surfaces.

Use extreme care and maintain minimum ground speed when transporting on hill-sides, rough ground, or when travelling close to ditches and fences. Be careful when steering around sharp corners.

Never allow riders on either the tractor or implement. Falling off can kill.

Be a safe and courteous driver. Always yield to oncoming traffic in all situations, including narrow bridges, intersections, etc.

Do not exceed 20mph (32kph). Reduce speed on rough roads and surfaces.

Use hardened hitch pins with retainers when attaching to pull-type machines.

Use a safety chain to prevent unexpected separation with pull-type models.



# Sprayer Safety: Storage

With pull-type units, never unhitch the implement without using the tongue jack. The tongue is very heavy. Attempting to lift the tongue without using the tongue jack could cause personal injury. Overloading the jack can cause failure with possible serious injury or even death.

Trained personnel should thoroughly clean the inside and outside of equipment immediately after use. Personnel should wear protective equipment as recommended by the chemical manufacturer.

Before storing the sprayer for an extended period flush the plumbing with a light weight oil mixture with water (approx. 1 gallon of oil for 40 gallons of water). When draining spray manifolds, remove the check-valve cap from the top-most nozzle assembly to release vacuum. Flush pump and system with RV antifreeze solution and leave solution in the pump for storage. Remove nozzle tips and screens and store in a can of light oil to prevent corrosion. Plug the nozzle openings with blanks.

Lubricate as instructed in the maintenance schedule.

Inspect all lines, hoses, valves before storing. Damage to pump and plumbing should be repaired before storage. Make a list of replacement parts needed and order early. For the best performance next season, have your dealer service the machine prior to storage.

Re-paint all parts where the paint has been worn.

Store the implement away from activity.

Do not park equipment where it will be exposed to livestock. Damage to equipment or injury to livestock could result.

Do not permit children to play on or around the implement.

Make sure the parked unit is on a hard, level surface with all safety devices in place and in good working condition. Block up frame to lighten load on tires. Do not deflate tires. Cover tires if exposed to sunlight, grease, or oil.

**Read this manual completely before operating: follow all safety instructions.**

# Sprayer Safety: Safety Decals



This is the SAFETY-ALERT symbol. This symbol is used to visibly mark operating hazards. YOU MUST FOLLOW THE DIRECTIONS POSTED BESIDE THE SAFETY-ALERT SYMBOL TO AVOID BODILY INJURY OR DEATH. Before you operate any machinery, read the operator's manual. A copy of every SAFETY-ALERT decal on your implement is included in your operator's manual with a map of each decal on your implement. With your operator's manual in hand, walk around the implement: find, read, and UNDERSTAND every SAFETY-ALERT decal.

**EVERY OPERATOR OF THIS IMPLEMENT MUST DO THIS FOR THEIR OWN SAFETY.**

On Safety Decals, there is often a signal word: DANGER, WARNING, CAUTION. These signal words indicate the level of hazard or degree of seriousness for the described hazard on the decal.



Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury.



Indicates a potentially hazardous situation that, if not avoided, may result in death or serious injury.



Indicates an area of extreme danger- machine components and hazardous operations that, for functional purposes, cannot be guarded and, if not avoided, could result in death or serious injury.



Warns the operator of potential machine damage if indicated procedure is not followed.

## decals won't help if you can't read them

Keep safety decals clean and legible at all times and replace safety decals that are missing or have become illegible.

When parts that bear safety decals are replaced, the replacement parts must have a current safety decal. Safety decals are available from your dealer or direct from the manufacturer.

## install the decals properly and they'll stick around

When applying a safety decal, be sure the application surface is clean (free of dirt and grease) and dry. The surface you are applying the decal to should be above 50°F (10°C).



**KEEP ALL FASTENERS TIGHT**

WHEEL BOLTS, CLAMPS, TANK MOUNTS, BLADE HANGERS, GEARBOX MOUNT GUARDS, VALVE BRACKETS, MOTOR SHAFT SET SCREWS, PUMP HOSE CLAMP COTTER PINS, BOOM CYLINDERS, TENSION JAM NUT, ETC., ETC. ...

**CHECK ALL FASTENERS REGULARLY AS A PART OF YOUR MAINTENANCE SCHEDULE. IF YOU FIND LOOSE BOLTS CHECK MORE OFTEN!**

**ONLY REPLACE WITH EQUAL GRADE FASTENER OR BETTER. USE LOCKWASHERS OR LOCTITE WHERE NEEDED.**

**DAMAGE TO EQUIPMENT DUE TO LOOSE FASTENERS IS THE RESPONSIBILITY OF THE OPERATOR AND NOT COVERED BY WARRANTY.**

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**+ CAUTION**

Keep shields and guards in place.

Before making adjustments or servicing machine:

- Disengage Power
- Shut Off Engine
- Be Sure ALL MOVING PARTS HAVE STOPPED

**DO NOT STAND NEAR MACHINE when in operation.**

DECAL11

rears mfg

(800) 547 8925  
www.rearsmfg.com

11

**! DANGER !**

**- ROTATING DRIVELINE -**

KEEP ALL SHIELDS AND GUARDS SERVICED AND IN PLACE. INJURY OR DEATH CAN RESULT FROM WRAPPING OR ENTANGLEMENT.

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**CAUTION**

BEFORE MIXING SPRAYS OR SPRAYING BE SURE YOUR PROTECTIVE CLOTHING, GLOVES, FACE SHIELD AND RESPIRATOR ARE ALL IN PERFECT CONDITION.

READ AND OBSERVE ALL PRECAUTIONS ON LABELS OF MATERIALS BEING USED.

BE A GOOD NEIGHBOR; DO NOT SPRAY UNDER CONDITIONS THAT WILL CAUSE DRIFT FROM THE TARGET AREA.

REARS MANUFACTURING  
EUGENE, OREGON

DECAL111

111

**! WARNING**

**HIGH PRESSURE FLUID HAZARD**

- RELIEVE PRESSURE BEFORE REPAIRING OR ADJUSTING.
- WEAR PROPER PROTECTIVE EQUIPMENT.
- WHEN SEARCHING FOR LEAKS USE WOOD OR CARDBOARD; NEVER USE HANDS OR BODY.

FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN SERIOUS INJURY OR DEATH

DECAL91

91

**REARS MFG CO**

**THIS UNIT NOT INTENDED FOR HIGHWAY USE**

15

**STAINLESS STEEL TANK AND MECHANICAL AGITATION**

16

**ATTENTION!**

WHEN DRAINING MANIFOLD, REMOVE CHECK VALVE CAP FROM THE TOP MANIFOLD NOZZLE ASSEMBLY.

129

129

**! DANGER**

**NO RIDERS NO PASAJEROS**

195

**SPRAYER OPERATION**

DO NOT RUN PUMP WITH SUCTION VALVE CLOSED

HYPRO nylon roller pumps	Do not run dry
HYPRO piston pumps	Grease daily Do not run with leaky piston cups
REARS centrifugal pumps HYPRO centrifugal pumps	Do not run dry
WANNER pumps	Grease daily when bearings are warm If weep hole leaks, replace cups
A/R pumps	Maintain oil level (30wt) on fill neck.

Diaphragm and piston pumps use an air dome to reduce PUMP PULSATION. When pump is not operating, charge air dome to 1/10 working pressure. Start pump to check pulsation. Minor pressure increase or decrease can make significant changes: adjust for smoothest performance.

If PRESSURE DROPS during operation, check the following, in the order listed: ① Plugged suction line or strainer.

- ② Check belt tension on belt driven pumps.
- ③ Worn relief valve- repair if tightening valve does not prevent excessive return flow to tank. ④ Worn pump valves.
- ⑤ Worn nozzles.

**MAINTENANCE**

- daily**
- ① visually check belts and keep adjusted.
  - ② check strainers often and keep clean.
  - ③ visually check agitator chain- keep clean.
  - ④ grease u-joint and agitator lube points.
  - ⑤ flush tank and system to prevent chemical build-up.

- winterizing**
- ① flush tank & system with water.
  - ② flush pump & system with RV antifreeze solution.
  - ③ leave antifreeze solution in pump for storage.
  - ④ lubricate all u-joints & agitator bearings.

**! WARNING!**

**DO NOT** engage PTO with tractor and implement at right angles  
**DO NOT** engage PTO suddenly.  
**DO NOT** engage PTO at high engine RPM.

DO NOT RUN PUMP WITH SUCTION VALVE CLOSED

DECAL05

5

**! WARNING**

DO NOT PLACE ANY PART OF BODY UNDER RAISED IMPLEMENT.

102

**! DANGER**

**SHIELD MISSING DO NOT OPERATE!**

DECAL93

93

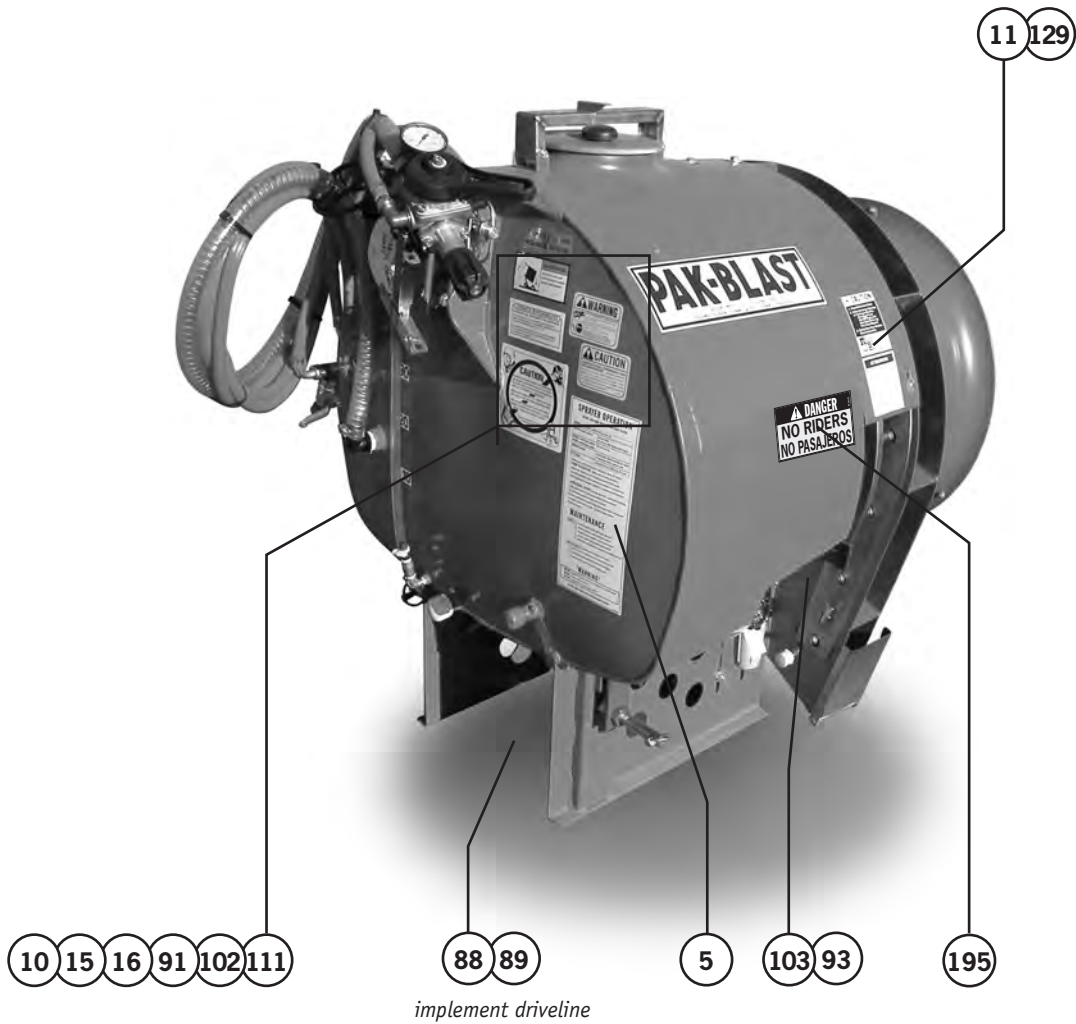
**! DANGER!**

**DO NOT OPERATE WITHOUT GUARD!**

TO PREVENT SERIOUS INJURY OR DEATH ALWAYS REPLACE GUARD AND KEEP FASTENERS TIGHT.

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DECAL103



### Safety Decal Locations

For the safety of operators, maintenance workers, and bystanders, familiarize yourself with the safety decals on the sprayer. Decals indicated on the illustration, above, are reproduced on the previous page.

Decal 88 and 89 are on the implement driveline. Decal 88 can only be seen if a guard is removed.

Decal 91 is only present on units with hydraulic controls.

Make certain all decals listed here are present on the sprayer and in good condition. Replacement decals are available from your dealer or direct from Rears.

**Read this manual completely before operating: follow all safety instructions.**

### Pre-operation check list

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1. Top off the gearbox oil if needed. You will find instruction for how to check the oil level in your gearbox and a list of recommended lubricants included on the parts page for your gearbox in this manual.
2. Check your agitator belt and fan blades- keep clean.
3. Properly lubricate all grease points. Replace all lost or broken fittings immediately.
4. Check all fasteners - tighten as required. Damage due to loose fasteners is not covered by warranty. If you find that particular fasteners are loose each time you conduct your pre-operation check, tighten those fasteners more often.
5. When connecting PTO drivelines: make sure spline locks snap into the shaft groove; make sure all roll pins are properly installed.
6. The fan guard should be free of debris.
7. All guards must be in good working order.
8. Check that all hoses and connectors are in good working order.

### Selecting and preparing the tractor

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1. **Tractor size:** consider ground speed, terrain, and fan pitch when selecting a tractor.
2. **Tire pressure:** inflate tractor tires as recommended in your tractor's operator manual.
3. **Front end weighting:** add weights to the tractor front if needed for stability. Pulling heavy rear-mounted implements tends to lift the front wheels. Add enough weights to maintain steering control.
4. **Rear wheel weighting:** rear wheel weights may be required to eliminate excessive wheel slippage. Refer to your tractor's operator manual for maximum recommended weighting.
5. **Wheel tread:** increase wheel tread to maintain tractor stability when working on inclines or rough ground. Refer to your tractor's operator manual for instruction.
6. **Brakes:** Do not transport implements unless tractor brakes are in good condition.



## Operation tips

---

- 1 Operate the tractor at the rated PTO speed.** 540RPM unless otherwise specified. Never overload the sprayer- lugging down the tractor creates excessive torque in the drive train.
- 2 Maximum ground speed** will vary depending on foliage density, ground condition, target distance, application rate, and tractor horsepower. Use the *Calibration Instructions for Rears Airblast Sprayers* to select an operating gear and speed for your application.
- 3 Take care when driving over rough ground-** protect the sprayer from excessive shocks when bouncing.
- 4 Never run pump dry.** Be sure tank is filled above the level of the pump *BEFORE* engaging the pump.
- 5 Clean your suction strainer screen regularly.** Starving the pump suction will cause pump damage. Check strainer when re-filling the tank.
- 6 Shift fan drive into gear before you engage PTO.**
- 7 Only engage PTO with PTO shaft and pump shaft in-line: the driveline should be level.**
- 8 DO NOT turn your PTO off at each row end:** for long clutch life engage the PTO as instructed, item 7, and turn OFF the PTO when spraying operations end.
- 9 Open your relief valve before engaging PTO** to prevent possible water hammer action that could damage your pressure gauge.
- 10 To accurately set your working pressure, the spray booms must be open and spraying.** Use your relief valve to set your working pressure with the spray booms ON. Turning off one or both manifolds will cause spray pressure to rise. Closing nozzles or changing spray tips will also affect spray pressure.
- 11 Always wear proper protective equipment-** read the labels of all materials being used and observe all handling instructions.
- 12 Flush tank and pump system** with water at the end of the day to keep plumbing clear.
- 13 Do not clean, lubricate, or adjust the implement while the PTO is rotating or the tractor is running.**
- 14 If excessive vibration develops, shut down immediately.** Possible causes: drive train bearings, drivelines, u-joint crosses, or fan have become damaged or worn.

## Operation tips, cont'd

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- 15 Check your spray pattern regularly.** To maintain target application rates spray nozzles need to be clean and spray tips need to be in good shape.
- 16 After one hour of initial operation, a major service or the first application of the season** recheck all fasteners, belts, and hose connections.

## Beginning of season

---

1. Follow the lubrication schedule.
2. Drain and refill gearbox to correct level.
3. Tighten all fasteners.
4. Replace worn spray tips.
5. Check pump belt tension.
6. Inspect fan blades- keep clean.
7. Review this operator's manual.

## End of season and storage

---

1. Shelter sprayer in a dry place.
2. Clean thoroughly, inside and out. Flush tank and pump system with water.
3. Flush pump & system with RV antifreeze solution.  
  
When draining spray manifolds, remove the check valve cap from the top-most nozzle assembly to release vacuum.  
  
Leave antifreeze solution in the pump for storage.
4. Lubricate as instructed in the schedule.
5. Remove fan and inspect welds and blades thoroughly for damage or cracks. Replace if needed.
6. Re-paint all parts where paint has been worn.
7. Block up frame to ease re-connecting the tractor.
8. Make a list of replacement parts needed and order early. For the best performance next season, have your dealer service the machine prior to storage.

**Read this manual completely before operating: follow all safety instructions.**

## Hook-up instructions

- 1 Read and understand all instructions before beginning.
- 2 For your safety, do not make adjustments to the 3-point connections with the tractor running.
- 3 Position tractor and implement on a level surface. Check air pressure in all tires.
- 4 The sprayer tank should be empty.
- 5 You may use the turnbuckle supplied with your tractor instead of the top link bars **1** and **2**. If you choose to use your turnbuckle, skip to step 7.
- 6 As illustrated at **C**, create a top link bar by connecting components **1** and **2**: with the 3/4" bolt holes oriented to the outside, align the bars to form your desired overall length, see **E**. You must use two 5/8" fasteners **5** to keep the top link bar rigid: space the fasteners as far apart as your desired spacing will allow.
- 7 As illustrated at **A**, pin your keyhole pads **4** and the top link bar/turnbuckle to the upper 3-point mount bracket on the tractor. Install pads and top link as illustrated.
- 8 As illustrated at **B**, install your sag chains **3** on the sprayer lower lift pins, orient as shown. Allow the chains to hang out of the way. Install the tractor lift arms to the outside of the sag chains; install snap pins.
- 9 Start the tractor and raise the lift arms enough to install the top link bar or turnbuckle as illustrated at **D**.
- 10 As illustrated in *fig 2*, lift the sprayer up to operating height: the pump shaft and the tractor PTO shaft are in-line. Note if the top link bar must be shorter or longer to level the sprayer.
- 11 Set the sprayer down to make adjustments to the top link or turnbuckle length. We recommend blocking up the sprayer when you set it down: this will aid leveling the sprayer. Many operators will set-up a stack of pallets for sprayer storage when not in use: this speeds hook-up and disconnect of the sprayer.

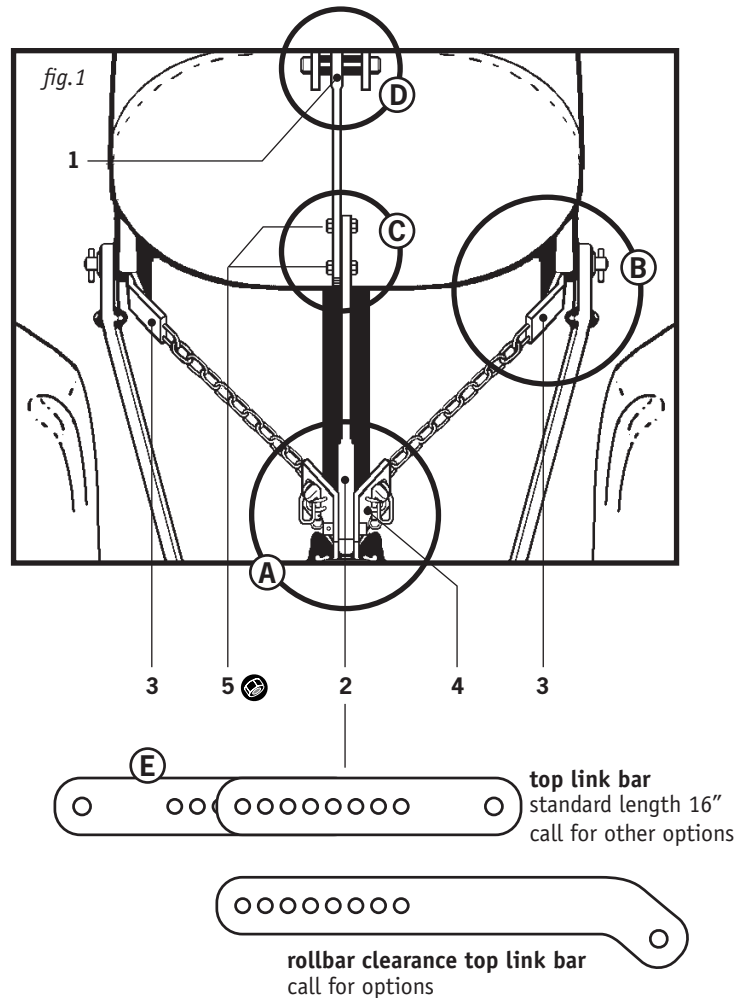
Set the top link length for proper operating height: level the sprayer and align the tractor PTO shaft and the pump shaft, *fig. 3*.

- 12 Raise the tractor lift arms above operating height to set the sag-chains **3**. Remove the snap pins from the keyhole pads **4** and feed the chain through the back of the keyhole pad opening.

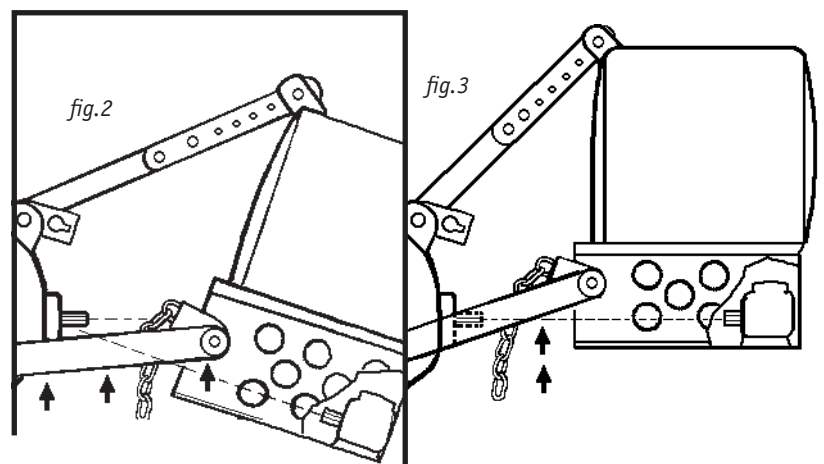
The number of chain links between the keyhole pad and the sprayer should be the same on both the left and right sag chain. Seat the chain in the keyhole slot and re-install the snap pins.

Lower the tractor lift arms: the sprayer should be supported by the sag chains at operating height.

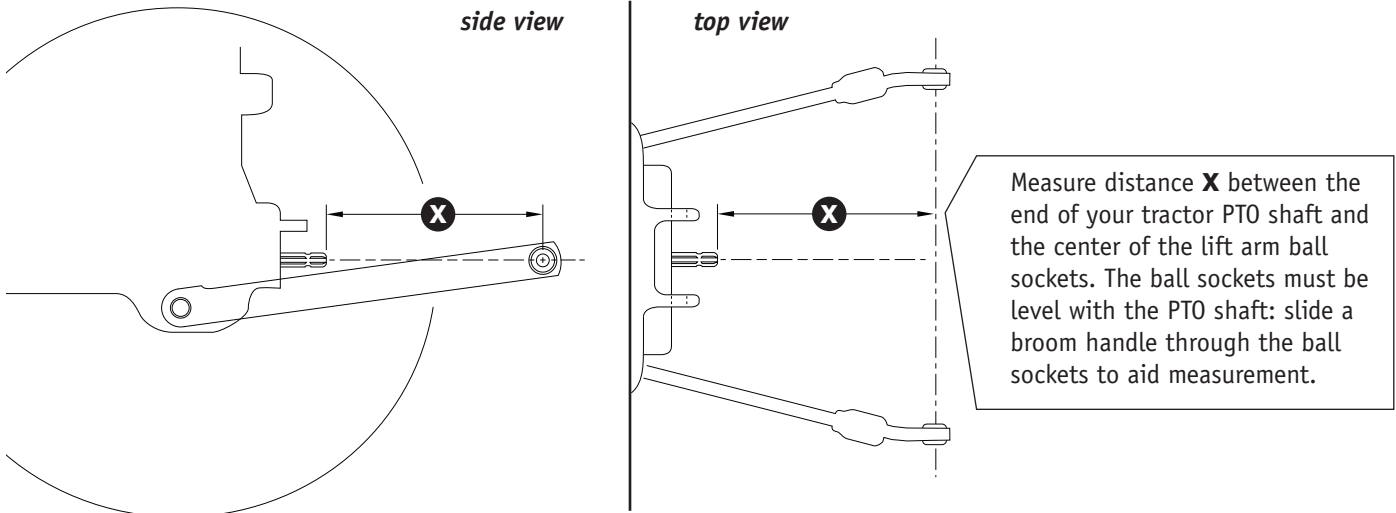
- 13 Check that all fasteners are tight.



No.	Part #	Description	Qty
1	KB2501	top link bar, standard length 16"	1
2	KB2501	top link bar, standard length 16"	1
	PK302	top link bar 26" long	
		call	rollbar clearance top link bar
3	SGC050	sag chain	2
4	SGC051	keyhole bracket for sag chain	2
	0620200CH5	5/8"-11 x 2" Gr.5 bolt	2
5	062WS	5/8" lockwasher	2
	062NF	5/8"-11 nut	2







**Your PTO driveline**

Compare your measurement **X** with the chart, below.

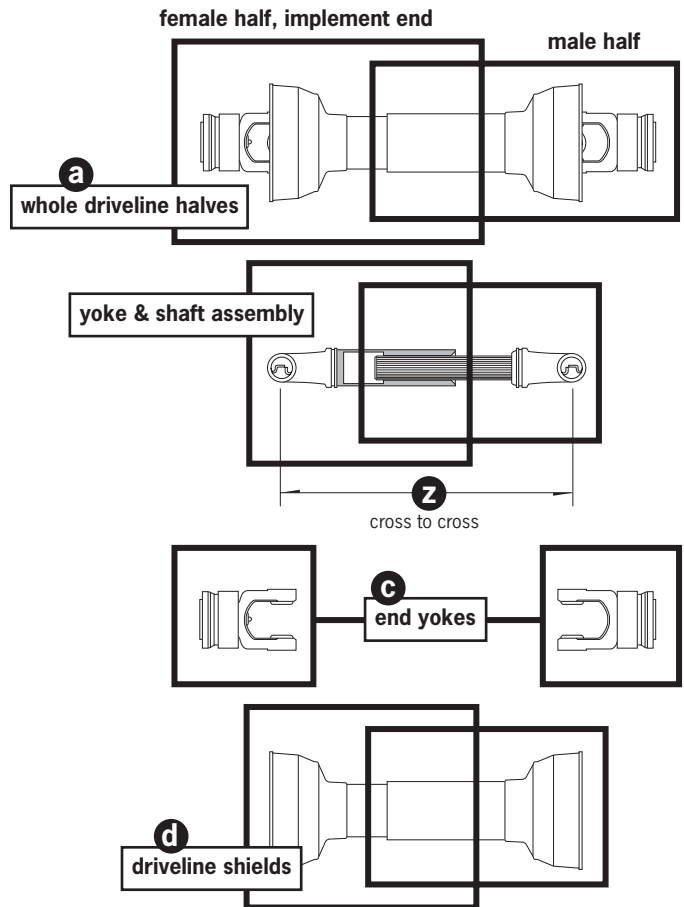
The driveline that ships with your sprayer will accommodate a wide range of tractor models.

Before operating, install the driveline and check lift-arms range of travel: **measure driveline length where the expansion is greatest.**

The maximum driveline expansion is provided in the chart, below. Measure the **cross to cross** distance as illustrated by **Z**, right. If the measured expansion of the installed driveline is *close to* or over this maximum length call your dealer to order a longer driveline.

**For long drive-component life**, operate the PTO with the tractor PTO shaft and the pump drive shaft in-line: the implement drive-line should be level.

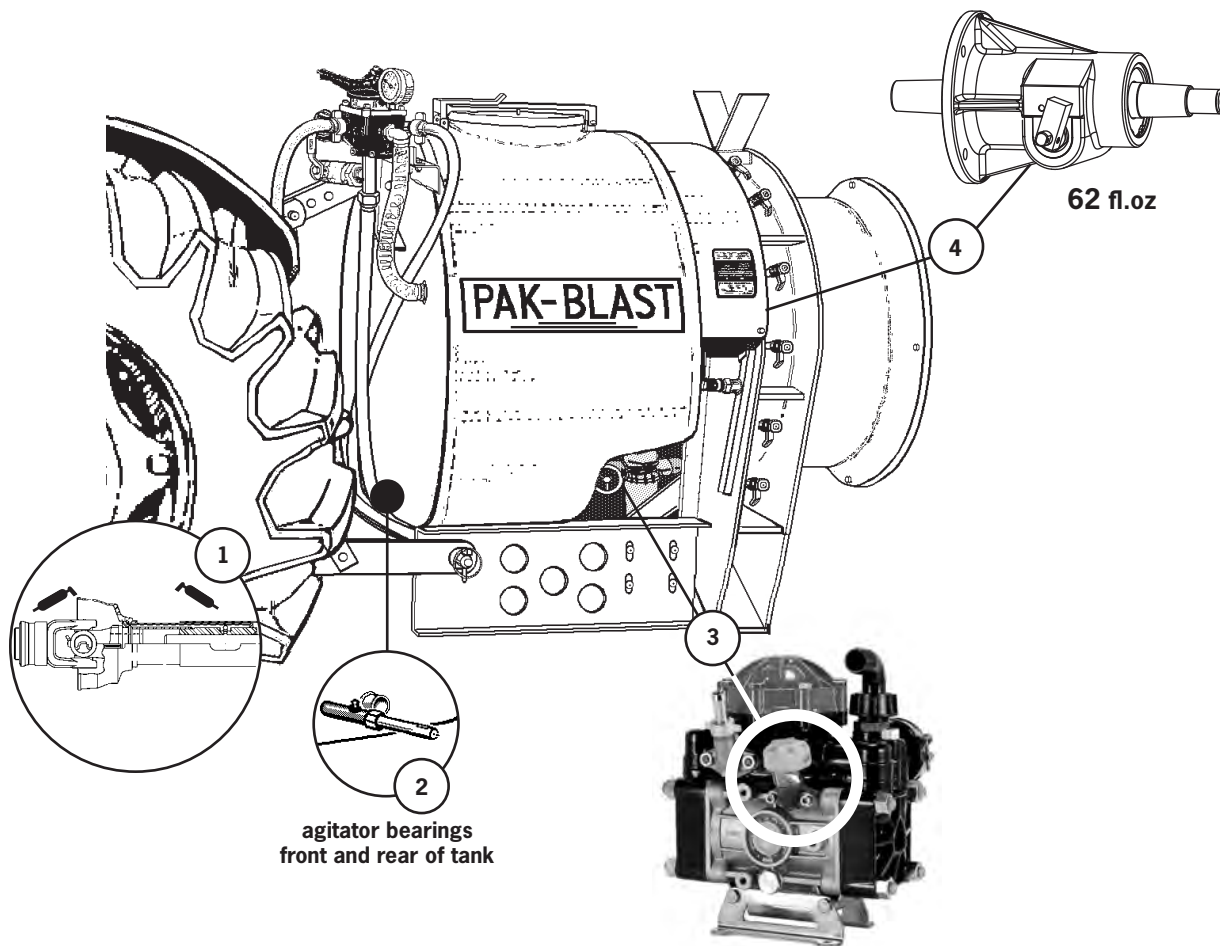
To simplify hook-up and disconnect procedures, store the Pak-Blast on a stable, raised platform.



**Driveline part numbers**

<b>(X)</b>	whole driveline	compressed	<b>(Z)</b> maximum		<b>(a)</b>	cross - shaft end	<b>(c)</b>	<b>(d)</b>	cross kit
<b>22" &amp; UNDER</b>	<b>DL201</b> 24"OAL	15 1/8"	<b>22 1/8"</b>	female 1.375" 6 spline	DL213	11 3/4"	Y201	DLS201M	CPL14N
				male 1.375" 6 spline	DL211	13 3/8"	Y201	DLS201F	CPL14N
<b>OVER 22"</b>	<b>CALL DEALER</b>								

**Read this manual completely before operating: follow all safety instructions.**



agitator bearings front and rear of tank

**Lubrication and maintenance**



All lube points have been made accessible. Lubrication does not require disassembly.



Always use a Lithium base NLGI Grade 2 EP grease. We recommend Texaco Multifak EP2, Shell Alvania 2EP, and Mobil Mobilux EP2.



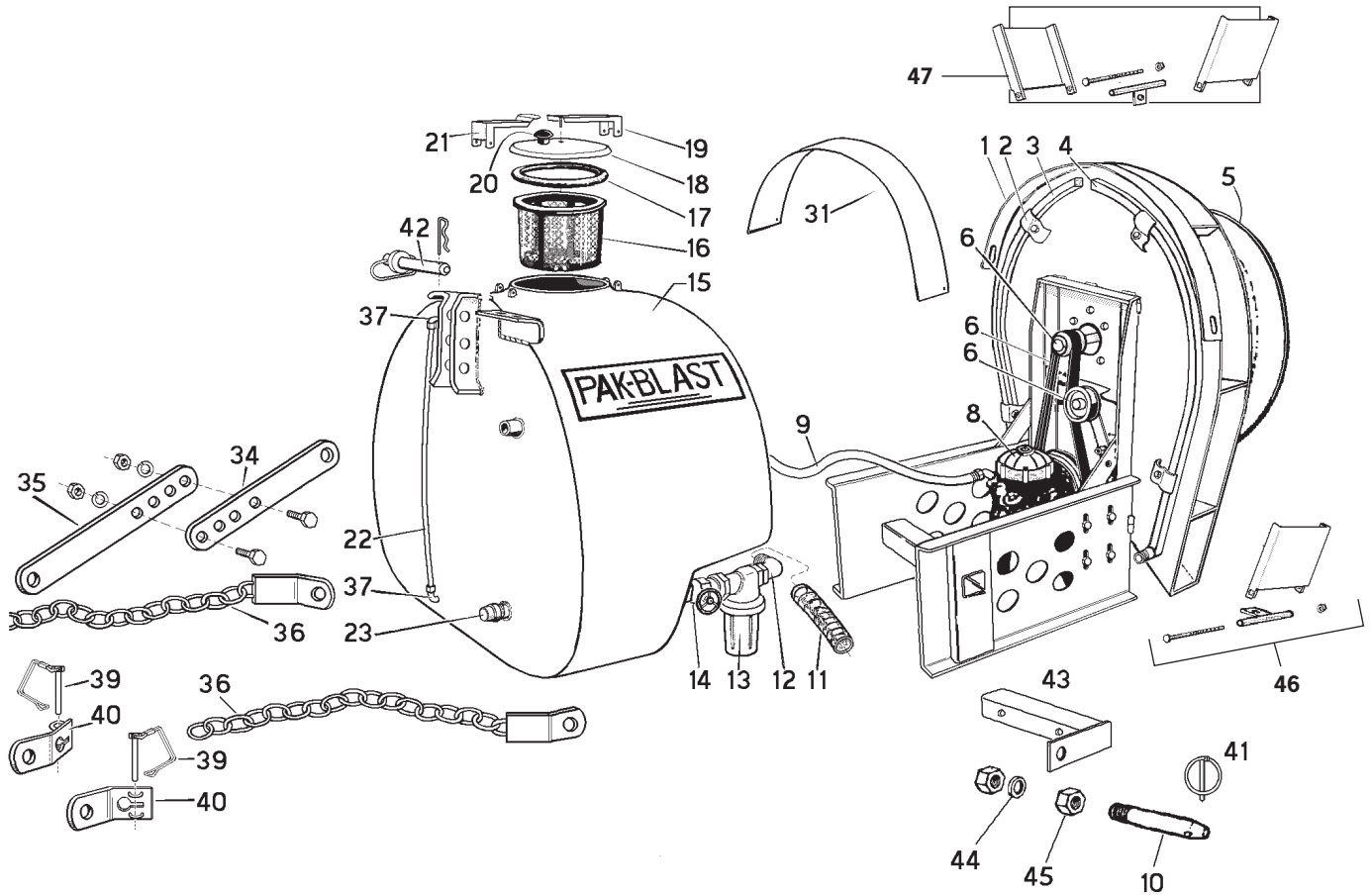
Use an oil compatible with your pump or gearbox- listed on the schedule, below.

For first time use, grease all lube points as instructed on the lubrication schedule, below (except agitator shaft bearings).

Write your Serial Number here.

<b>SERIAL NUMBER</b>	
----------------------	--

No	Description	Special Instructions	Hours	Pump
1	Tractor driveline	Both crosses and telescoping slip collar	4	1-2
2	Agitator bearing, front and rear	1 point each bearing- do not over grease, purges to tank: <b>Stop pumping when you feel restriction.</b>	16	1-2
3	Pump oil fill level- clear fill neck <i>A/R pump units only</i>	Oil level should be above the half mark on the neck Use a quality grade 30wt non-detergent motor oil.	daily	-
4	Fan gearbox	See Gearbox parts page	-	-



**pak blast.**

No.	Part #	Description	Qty
1	MB050F	50 gallon frame	1
2	WB4	manifold mount bracket	4
3	MBM22R	manifold, right	1
4	MBM22L	manifold, left	1
5	MBTG22	fan screen	1
6		see fan drive and gearbox page	
8		see pump page	
9	MBH012	supply hose 1/2" x 48"	1
10	CVH41-17-1	CATI hitch pin	2
11	MBH023	suction hose 1" x 8"	1
12	NYEL100100HB	nylon elbow 1"MPT x 1"HB	1
13	124A-1-NY	1" suction strainer, 50M screen	1
14	VG100	1" gate valve	1
15	MB050	50 gallon stainless steel tank	1
16	LD090STR	lid basket	1
17	LD090G	lid seal	1
18	LD090SS	lid	1
19	LD090H	lid hinge	1
20	LDMS	lid vent	1

No.	Part #	Description	Qty
21	LDLATCH	lid latch	1
22	SITE002P037	volume sight-gauge tubing	
23	AG06215	agitator bearing- <i>see bearing parts list</i>	
24	MB710	braglia control mount plate	1
31	KBHD050	hood	1
34		see hook-up instruction page	
35		see hook-up instruction page	
36	SGC050	anti-sag chain	2
37	NYEL025050HB	nylong elbow 1/4"MPT x 1/2"HB	2
39	28-02	snap pin	2
40	SGC051	anti-sag chain upper support	2
41	7624	klick pin	1
42	389-9760	hitch pin with cotter pin	1
43	NF1502	lower 3-point mount insert	2
	NF1502-1	NF1502 including pin assy (10,44,45)	
44	5410	7/8" lock washer	2
45	5411	7/8" nut	4
46	DEF	one complete lower deflector	2
47	DEF-2	one complete upper deflector	1

**Read this manual completely before operating: follow all safety instructions.**



**troubleshooting: excessive pressure drop**

---

Check the suction and discharge strainers- clean screens.

Check the pump oil level: see the pump maintenance section of this manual.

Check suction and discharge lines- all lines must be free of damage and fittings must be tight.

Spray system is not calibrated properly: the pump does not have the capacity to deliver the gallons per minute needed for your spray tip selection. Shut off nozzles; recalibrate your sprayer.

Excessive tank foam. Refill tank if foaming because of low volume. Move agitator paddle if too close to suction.

Additional troubleshooting instructions are available in the pump section of this manual.

**troubleshooting: spray manifold will not spray**

---

Check that there is liquid in the tank.

Check that pressure is adequate on pressure gauge. If not, refer to the pressure drop section, above.

Check the hand control pilot line (manual controls) for crimping. Bleed off air at the handgun hookup valve.

Check the hand control pilot line (manual controls) for blockage. Some chemicals can build up in the line or react with the hose lining. If this is a problem, replace the 3/8" lines with 1/2" hose.

**NOTE: Rinse spray system daily.**

Check the handset return line (manual controls) for crimping or blockage.

Check the handset valves (manual controls) for blockage.

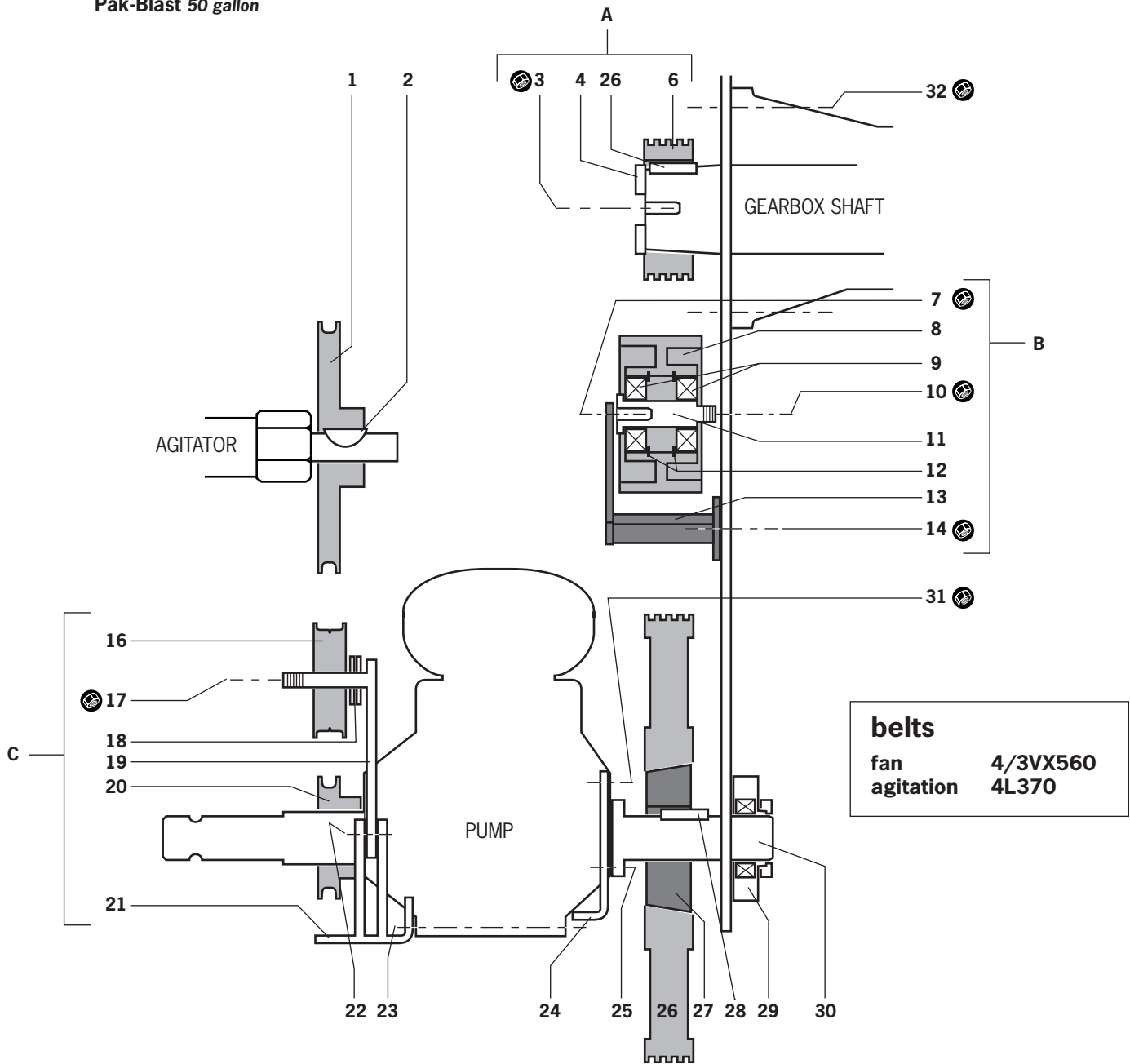
If you have electric controls, check the spool rotation (see appropriate parts page).

**troubleshooting: spray manifold will not shut off**

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If you have electric controls, check the spool rotation (see appropriate parts page).

# 12 Pak-Blast 50 gallon



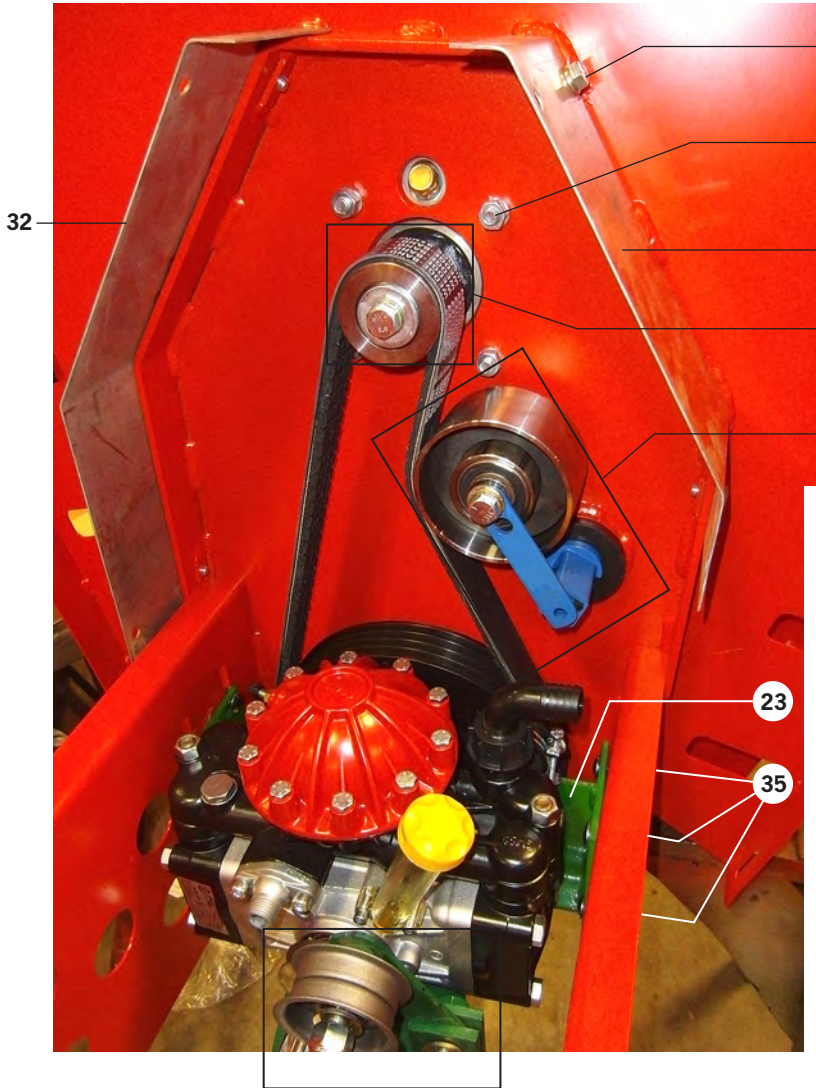
## 4/3V fan belt drive agitation belt drive *for A58 fan belt, see following section*

No.	Part #	Description	Qty
1	AGP06206	agitator pulley 5/8" bore x 6" dia	1
2	KW0180087	woodruff key, 3/16" x 7/8"	1
3	MGB0460	14M X 30M bolt	1
	MGB044	14M lockwasher	1
4	MGB0459	14M flatwasher	1
6	MBP4-3V	fan drive pulley	1
7	0500100CH5	1/2"-13 x 1" Gr.5 bolt	1
	050WSAE8	1/2" hardened flatwasher	1
	050WS	1/2" lockwasher	1
8	KB7024AL	idler pulley <i>includes bearings</i>	1
9	6205-2RS	bearing	2
10	063TLZ	5/8"-18 top locknut	1
	062WUSS	5/8" flatwasher	1

No.	Part #	Description	Qty
11	KB5043	idler spindle	1
12	N5000-206	retaining ring	2
13	SE18 ROSTA	tensioner arm	1
14	M10-1.50X40MM	8M x 40M bolt	1
	M10WS	10mm lockwasher	1
16	MB702	agitator idler pulley	1
17	062NYS	5/8"-11 nylock nut	1
	062WSAE	5/8" hardened flatwasher	1
18	062WUSS-PLAIN	5/8" flatwasher <i>quantity as needed</i>	-
19	KB201	idler arm	1
20	KB2101	6 spline 1" pump adapter w/pulley	1
21	KB205	agitator idler assembly mount bracket	1
22	062NYS	5/8"-11 nylock nut	1
	062WSAE	5/8" hardened flatwasher	1

**SHUT DOWN TRACTOR, SET BRAKE AND REMOVE KEY WHEN WORKING ON SPRAYER. NEVER OPERATE SPRAYER WITH GUARDS MISSING.**

**ALWAYS SUPPORT SPRAYER DURING MAINTENANCE: SET ON GROUND OR PLATFORM. NEVER WORK ON SUSPENDED IMPLEMENT.**



34  
31  
33  
previous page group A  
previous page group B

previous page group C

**installing replacement belt**

1. Loosen belt tension arm fastener **13**
2. Loosen lock collar on bearing **28**
3. Roll fan drive belt off of pulley **6**
4. Loosen pump bracket fasteners **35** and slide pump assembly out of bearing **28**
5. Loosen agitator belt idler pulley arm fastener **21** and let agitator belt hang off of agitator pulley.
6. You will need to remove pump bracket fasteners **35** to remove the old belt and install a replacement. Take care when supporting the pump assembly.
7. Hang new fan belt on pulley **25** and re-install pump assembly: align pump bracket **23** in frame mount slots and fasten loosely; insert pump adapter **29** into bearing **28**
8. Use a straightedge to align pulleys **6** and **25**
9. Tighten pump bracket mount bolts **35** and install bearing lock collar **28**
10. Roll belt onto pulley **6** and make sure the belt is seated properly. Go to belt tension instruction page.

**micro-v fan belt drive  
agitation belt drive** for A58 fan belt, see following section

No.	Part #	Description	Qty
23	750060	12M X 65M pump mount bolt	2
24	KB111	pump mount bracket	1
25	M10X30SHC	10M X 30M bolt	6
26	TL4/3V10.60	taperlock sheave	1
27	2517-1.37	taper lock	1
	0500100SET	1/2"-13 x 1" set screw	1
28	KM0310150	5/16" x 1-1/2" square machine key	2
29	UCFL207-22	bearing	1
	0500225CH5	1/2"-13 x 2-1/4" Gr.5 bolt	2
	050WSAE8	1/2" hardened flatwasher	4
	050WS	1/2" lockwasher	2
	050NF	1/2" nut	2
30	S-RP3	pump adapter	1
31	M10X30SHC	10M X 30M bolt	4

No.	Part #	Description	Qty
32	0430150CH5	7/16"-14 x 1-1/2" Gr.5 bolt	4
	043NF	7/16" nut	4
	043WS	7/16" lockwasher	4
33	KBIN3002L	fan belt guard	1
34	KBIN3002S	fan belt guard	1
35	0370100CH5	3/8"-16 x 1"	4
	037WS	3/8" lockwasher	4
35	0370100CZ	3/8"-16 X 1" carriage bolt	8
	037WUSS	3/8" flatwasher	8
	037NYS	3/8" nylock nut	8
B	KB7024AL/SE15A	tensioner arm/idler pulley assembly	



fig i

**tension micro-v fan belt drive**  
for A58 fan belt, see following section

With a new belt installed, *instructions on previous page*, the idler pulley should be positioned as illustrated above.

Loosely tighten the idler tension assembly mount bolt **A**, accessible inside the fan housing.

Grip the tension assembly body **B** with a wrench and rotate counter clockwise to tension the idler arm.

Align the **15°** mark on the body **B** with the **INDEX POINT**, see *fig ii*. The **INDEX POINT** is the corner of the idler arm.

Hold this tension and tighten assembly mount bolt **A**.

Rotate belt in both directions to set properly. The belt should be nearly centered on the idler pulley. **The belt must not hang over the edge of the idler pulley.**

**CHECK NEW BELT TENSION AT 4 & 8 HOURS.**

**CHECK WEEKLY AFTER BREAK IN.**

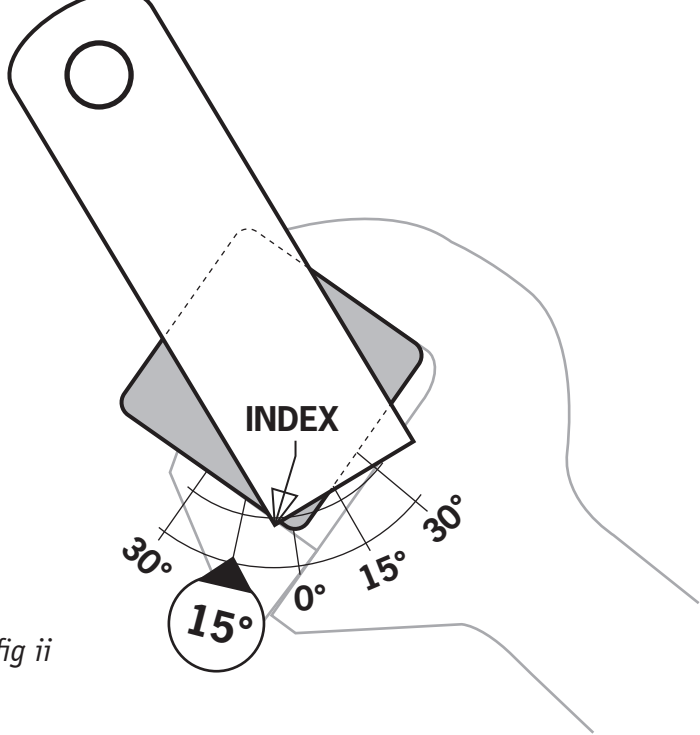


fig ii

**SHUT DOWN TRACTOR, SET BRAKE AND REMOVE KEY WHEN WORKING ON SPRAYER. NEVER OPERATE SPRAYER WITH GUARDS MISSING.**

**ALWAYS SUPPORT SPRAYER DURING MAINTENANCE: SET ON GROUND OR PLATFORM. NEVER WORK ON SUSPENDED IMPLEMENT.**

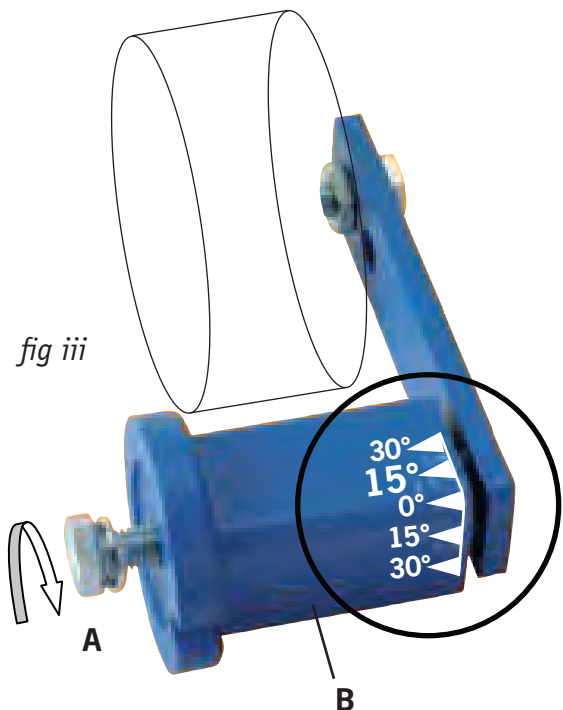


fig iii



**SHUT DOWN TRACTOR, SET BRAKE AND REMOVE KEY WHEN WORKING ON SPRAYER. NEVER OPERATE SPRAYER WITH GUARDS MISSING.**

**ALWAYS SUPPORT SPRAYER DURING MAINTENANCE: SET ON GROUND OR PLATFORM. NEVER WORK ON SUSPENDED IMPLEMENT.**

**tension A58 fan belt drive**

for micro-v fan belt, see previous section

**CHECK NEW BELT TENSION AT 4 & 8 HOURS.**

**CHECK WEEKLY AFTER BREAK IN.**

To properly measure the fan belt tension you will need a belt deflection gauge and a straight-edge. Read through these instructions before beginning.

Remove the belt guard panel next to the idler tension bolt. If your unit does not have a removable panel, you will need to remove the guard mount screws and lift the guard out of your way.

Set your belt deflection gauge for **4 ft-lbs.**

Lay your straight edge across the pump and fan pulley, *fig ii*. Measure the belt deflection at point **A**, mid-way between the fan pulley and the pump pulley. This area is also indicated by the circle in *fig i*.

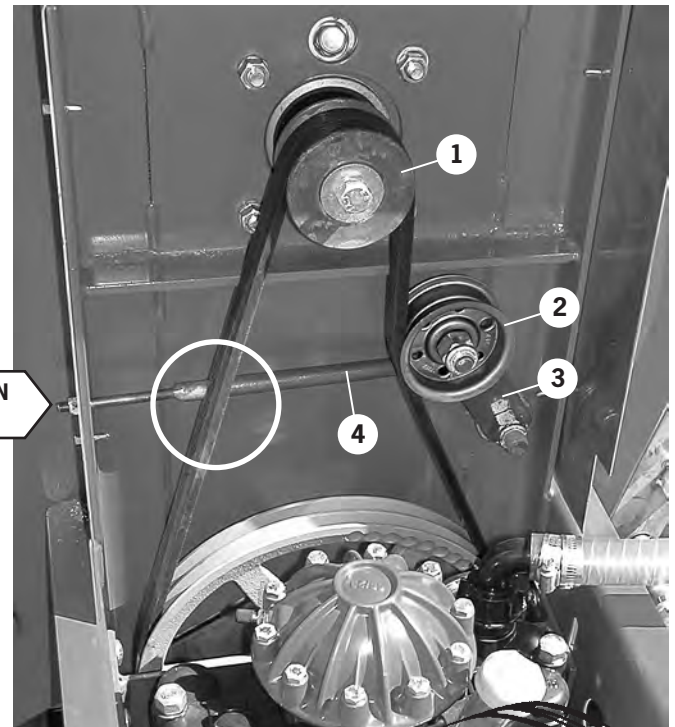
**The target deflection is 1/4" at 4 ft-lbs.**

If your measured belt deflection, distance **B**, is greater than 1/4" when 4 ft-lbs is applied you must tighten the nut on the tension bolt to increase tension. To decrease belt tension, loosen the nut on the tension bolt.

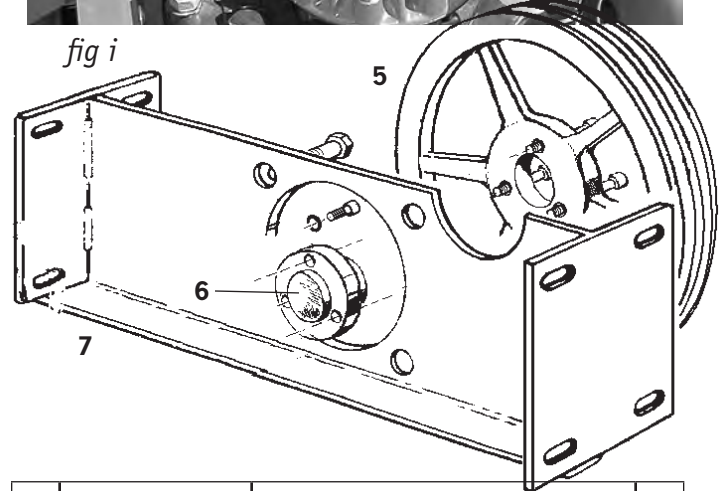
After making tension adjustments, rotate pump pulley both directions to equalize belt tension and measure belt deflection again. Repeat adjustments as necessary.

When desired tension is reached, re-install belt guard.

**NEVER OPERATE MACHINERY WITHOUT ALL GUARDS PROPERLY INSTALLED.**



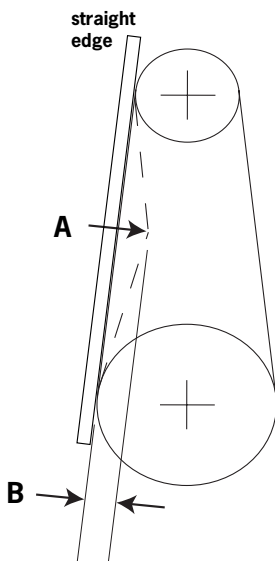
*fig i*



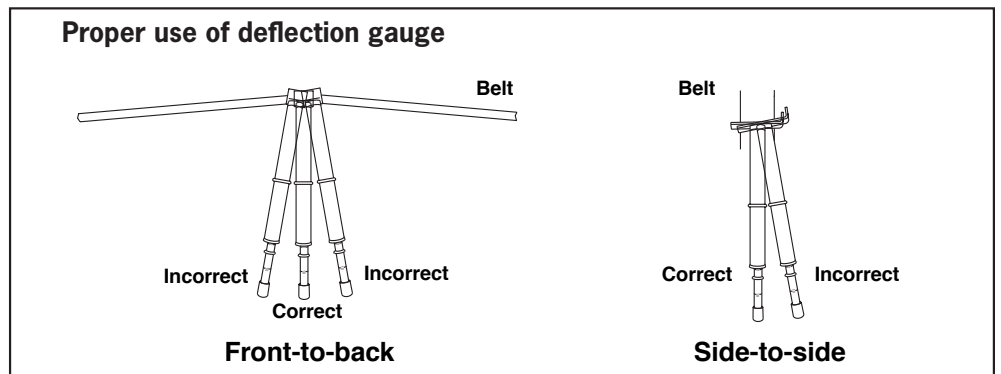
No.	Part #	Description	Qty
1	MGB0406	fan pulley	1
2	MB702	pulley	1
3	MB703	bracket	1
4	KBIN267	tension rod	1
5	MBP112	pulley	1
6	KB281	pulley adapter for pump	1
7	KB111	pump mount bracket	1

**belts**

fan            **A58**  
agitation    **4L360**



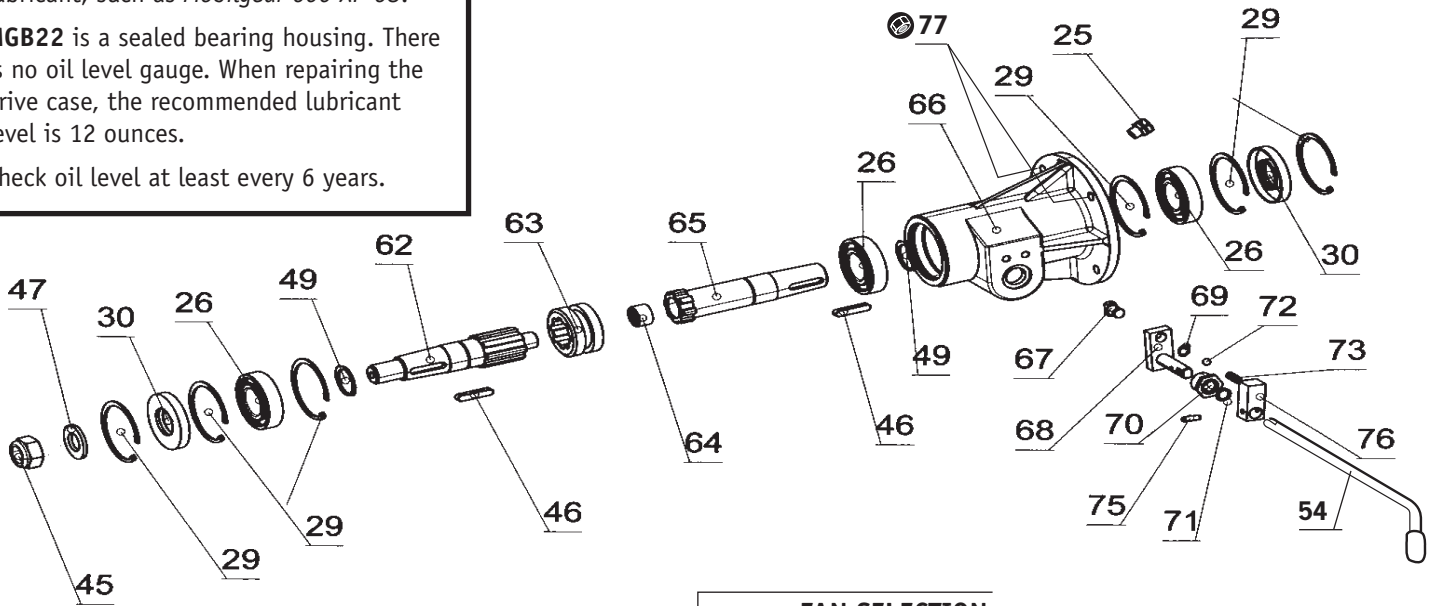
*fig ii*



Always use an **AGMA No.2 EP** rated gear lubricant, such as *Mobilgear 600 XP 68*.

**MGB22** is a sealed bearing housing. There is no oil level gauge. When repairing the drive case, the recommended lubricant level is 12 ounces.

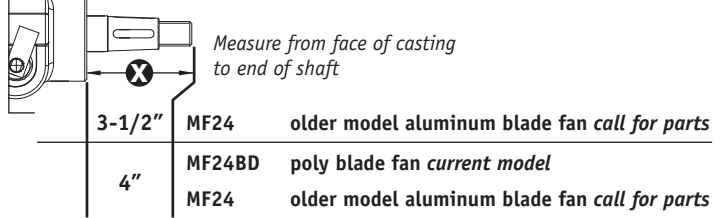
Check oil level at least every 6 years.



**Drive case MGB22 single speed with neutral**

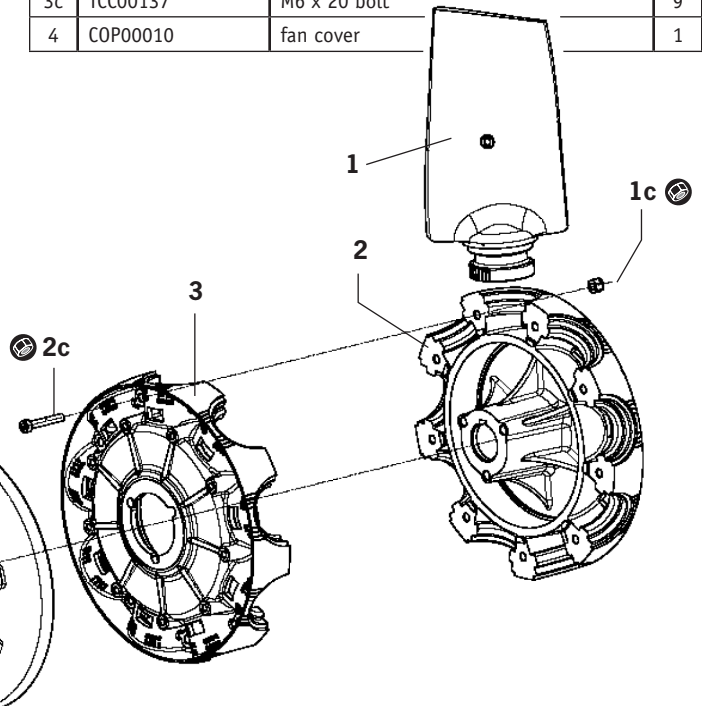
No.	Part #	Description	Qty
25	MGB0425	oil breather	1
26	6207	bearing	3
29	N5000-275	snap ring I-72	6
30	MGB0357210	seal 35 x 72 x 10	2
45	MGB0445	fan retaining nut, 24M x 2	1
46	MGB0446	key 8M x 7 x 40	2
47	MGB0447	24M flatwasher	1
54	MGB0454	shift handle	1
65	MGB0465	input shaft	1
66	MGB0466	case	1
67	MGB0467	tempered cube, shift assembly	1
68	MGB0468	internal shift lever	1
69	MGB0469	snap ring E-12	1
70	MGB0479	brass bushing, shift guide	1
71	MGB0471	o-ring	1
72	MGB0106	sphere	1
73	MGB0104	spring	1
75	MGB0452	bolt & nut, 5M x 25	1
76	MGB0476	shift guide	1
77	0430150CH5	7/16"-14 x 1-1/2" Gr.5 bolt	4
	043WS	7/16" lockwasher	4
	043NF	7/16"-14 nut	4

**FAN SELECTION**



**Fan MF24BD**

No.	Part #	Description	Qty
1	PAL00039	blade	9
1c	AUT00004	M6 locknut	9
2	FUS00187	hub case, inner half with friction lining	1
2c	TCC00008	M6 x 35 bolt	9
3	FUS00186	hub case, outer half with friction lining	1
3c	TCC00137	M6 x 20 bolt	9
4	COP00010	fan cover	1



**SEE FAN INSTALLATION INSTRUCTIONS FOR PARTS AND SAFETY INFORMATION!**

**Set blade pitch**

**SET BLADE PITCH WITHIN RECOMMENDED RANGE OR BELT DAMAGE WILL RESULT**

BELT TENSIONER	BLADE PITCH RANGE
micro-V <i>page 14</i>	<b>5-7</b>
A-58 <i>page 15</i>	<b>5-6</b>

When delivered, your blade pitch should be set at **6**. Follow these instructions to adjust your blade pitch.

**SET THE UNIT SECURELY ON BLOCKS, SHUT OFF THE TRACTOR AND REMOVE IGNITION KEY BEFORE WORKING ON THE MACHINE.**

**NEVER OPERATE MACHINE WITHOUT GUARDS PROPERLY INSTALLED. SERIOUS INJURY OR DEATH COULD RESULT.**

**DO NOT WORK ON MACHINE SUSPENDED FROM TRACTOR HITCH, SERIOUS INJURY OR DEATH COULD RESULT. ALWAYS BLOCK MACHINERY PROPERLY.**

Remove the bolts fixing the poly cover to the fan and set aside fasteners and cover.

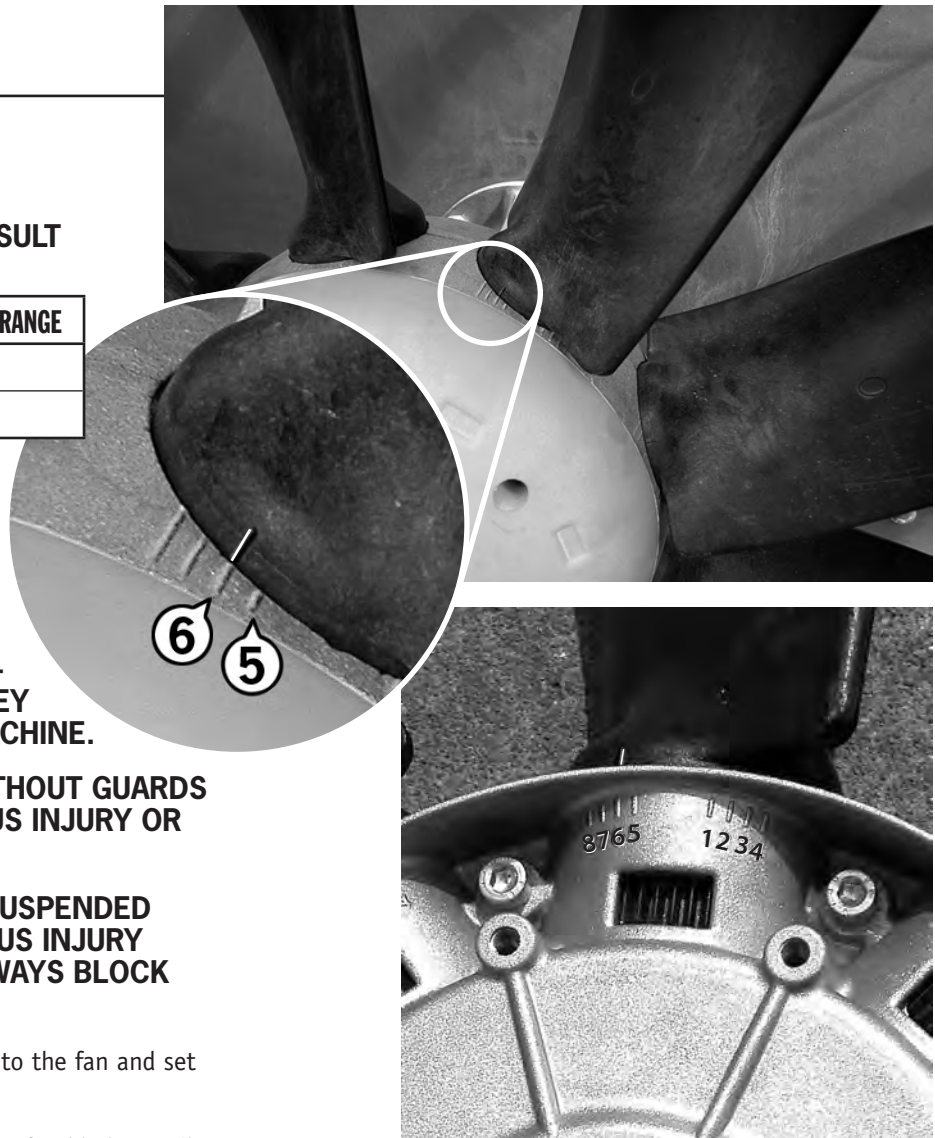
Loosen the allen head bolts between the fan blades until the fan blades can rotate. You will need a hex socket to hold the nylock nut on the back side of the fan housing.

Set the blade pitch between **5** (less air) and **7** (more air). Setting **1-4** are not recommended. Setting **7** is only available for the **micro-v belt drive** *page 14* (the maximum pitch setting for the **A-58 belt drive** system *page 15* is **6**). Using the pitch setting **8** will damage the belt drive.

As illustrated, set the pitch by aligning the index mark on the fan blade with the pitch number on the aluminum housing. When you have set the pitch of all fan blades, double-check that all blades are set to the same pitch number.

Tighten all fan adjustment bolts and re-install the poly fan cover.

Install the fan guard securely and be certain you have all tools before spinning up the fan.

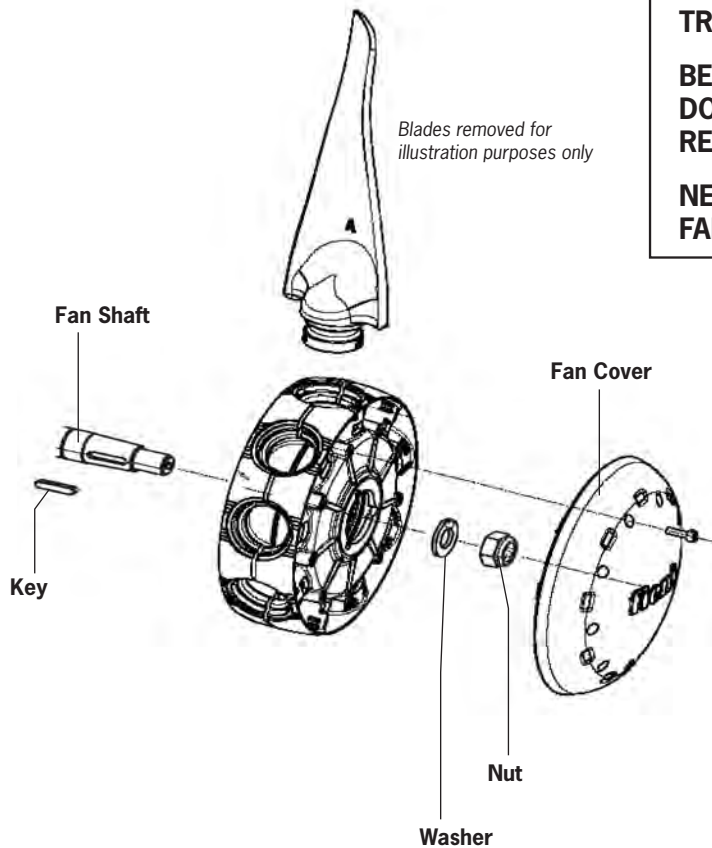


# DANGER!

DO NOT REMOVE FAN GUARD WITH TRACTOR RUNNING.

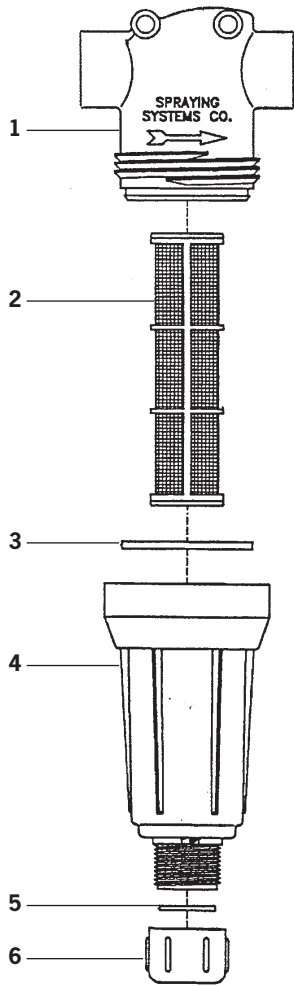
BEFORE REMOVING FAN GUARD SHUT DOWN TRACTOR, SET BRAKE AND REMOVE KEY.

NEVER OPERATE SPRAYER WITHOUT FAN GUARD INSTALLED.



## Fan Installation

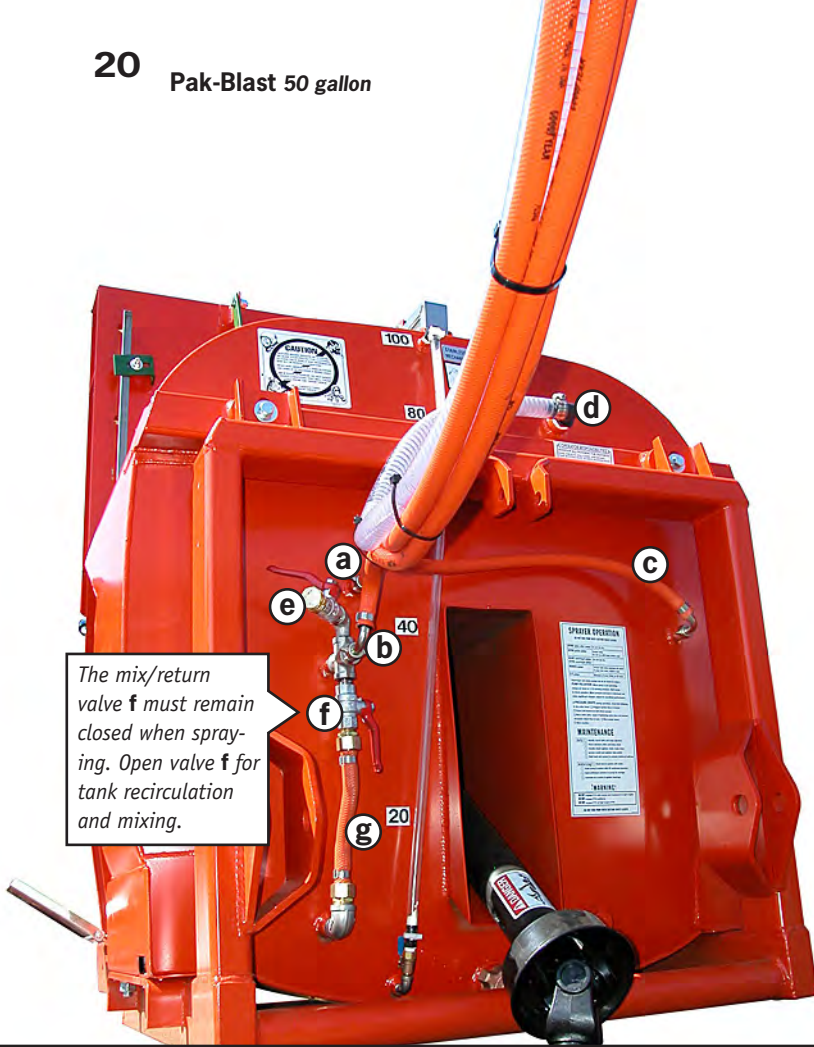
1. **Fan Shaft must be clean and smooth:** be certain key slot is clean. Apply a thin coat of *Never-Seez* (or equivalent extreme pressure lubricant) to fan shaft mating surfaces and threads.
2. **Install Key:** be certain it is evenly seated.
3. **Install Fan on Fan Shaft:** slide to shaft shoulder.
4. **Install Washer and Nut.** Do not over-tighten nut: tighten nut until you can no longer rotate the washer by hand.
5. **Install Fan Cover.**



**126 Line Strainer Assembly**

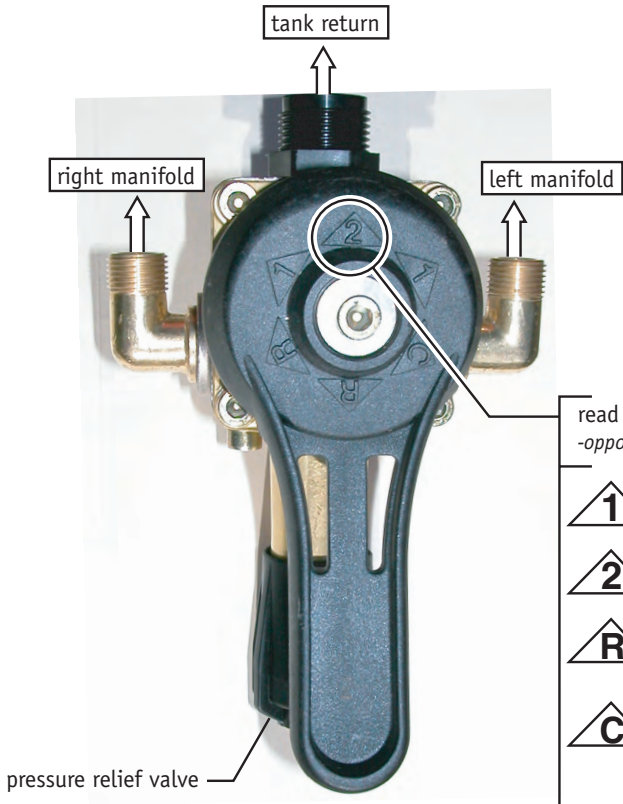
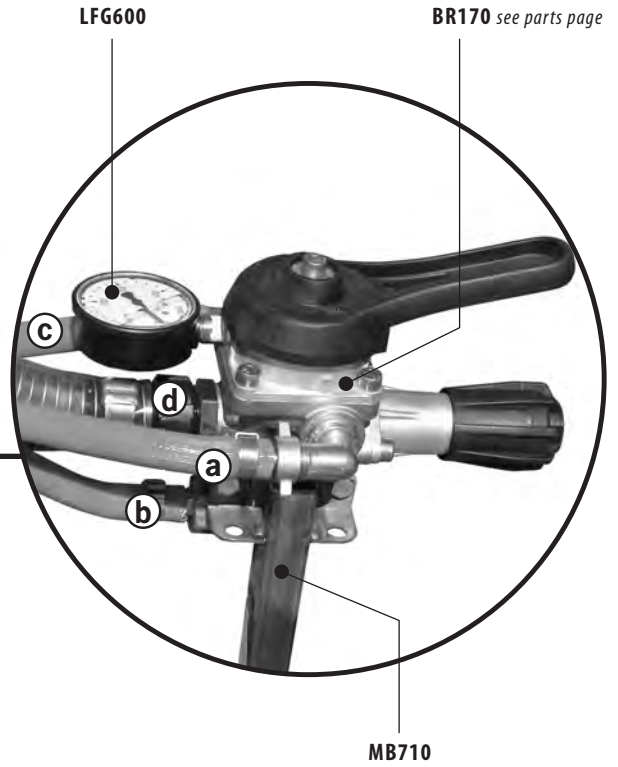
No.	1" inlet	1-1/4" inlet	1-1/2" inlet	Description	Qty
-	126ML-4- mesh #	126ML-5- mesh #	126ML-6- mesh #	complete strainer- include screen mesh	-
1	50492-1-PP	63065-1-1/4PP	63066-1-1/2PP	strainer head	1
2	16903-1-SSPP	15941-1-SSPP		16 mesh screen, gray	1
	16903-3-SSPP	15941-2-SSPP		30 mesh screen, yellow	
	16903-4-SSPP	15941-3-SSPP		50 mesh screen, red	
	16903-5-SSPP	15941-4-SSPP		80 mesh screen, blue	
	16903-6-SSPP	15941-5-SSPP		100 mesh screen, green	
3	50494-EPR	48656-EPR		large strainer gasket	1
4	50493-PP	48654-PP		strainer bowl, poly	1
5		63150-EPR		small strainer gasket	1
6		48655-PP		cap	1

20 Pak-Blast 50 gallon



- a right manifold line
- b pump pressure supply line
- c left manifold line
- d dump- tank return line
- e handgun valve
- f tank return/mix valve this valve
- g tank return/mix line

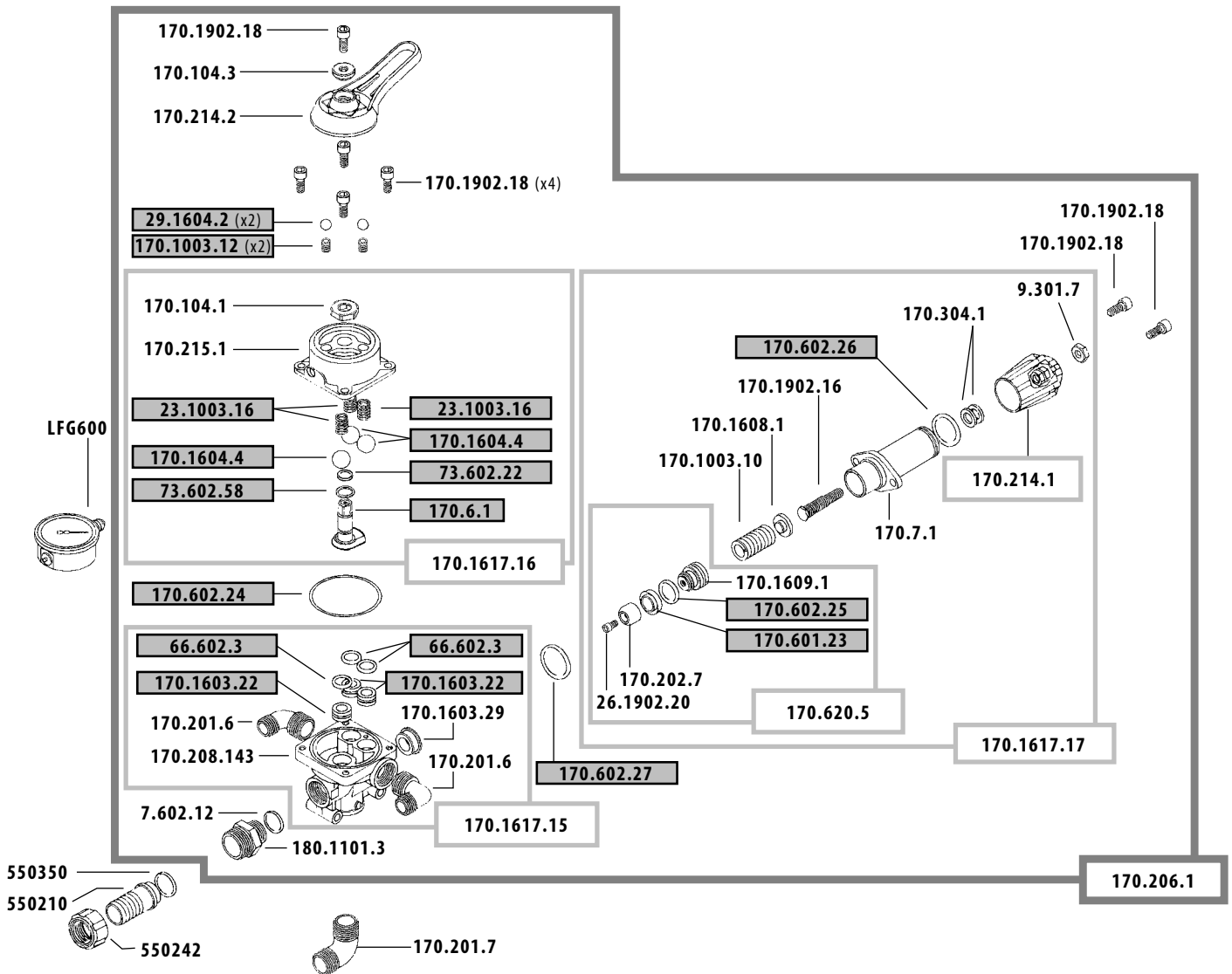
100 gallon unit with trellis fan housing shown, left.



read valve function indicator here.  
-opposite pressure relief valve.

- 1** Spray one side only: swing handle to the side you want to spray.
- 2** Spray both sides.
- R** Tank recirculate. Spray manifolds OFF.  
Tank return bypasses pressure relief valve.
- C** Tank return controlled by pressure relief valve.  
Spray manifolds OFF.  
Use this function to control handgun pressure.

# BR170 selector valve with pressure regulator



<b>PART NUMBER</b>	individual components	<b>AVAILABLE PARTS KITS</b>
<b>PART NUMBER</b>	subassembly order number	
<b>PART NUMBER</b>	basic assembly order number	
<b>PART NUMBER</b>	component included in a parts kit <i>parts kits listed, right</i>	

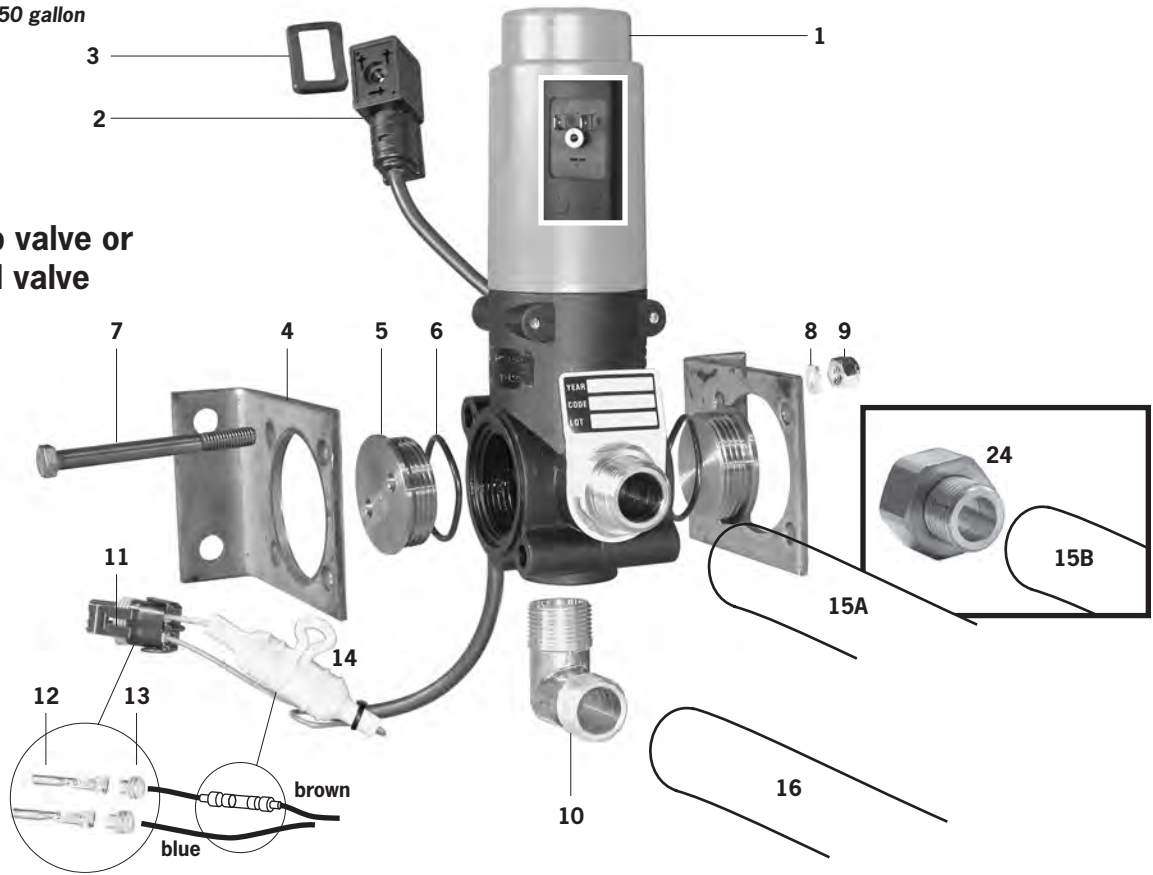
  

<b>170.302.30</b>	parts kit for 170.206.8
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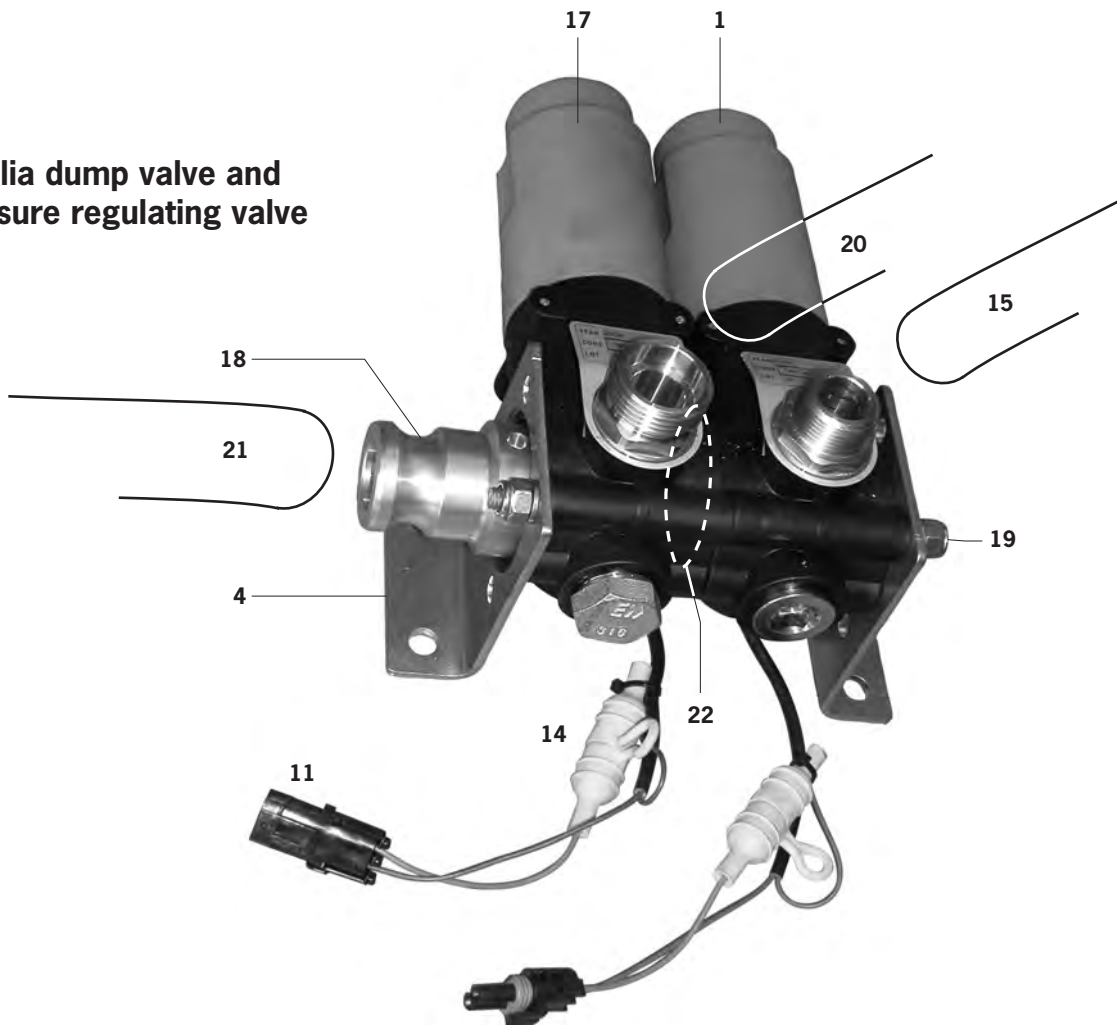
Read this manual completely before operating: follow all safety instructions.

**22** Pak-Blast 50 gallon

**braglia dump valve or  
spray control valve**



**braglia dump valve and  
pressure regulating valve**

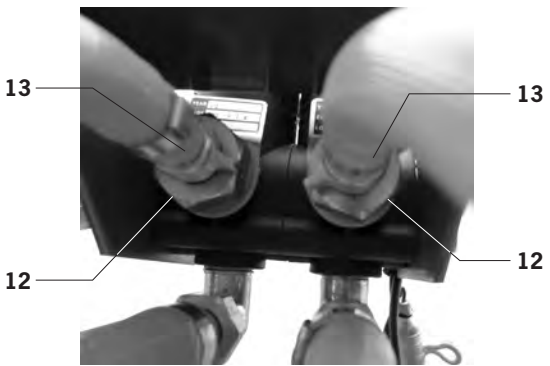
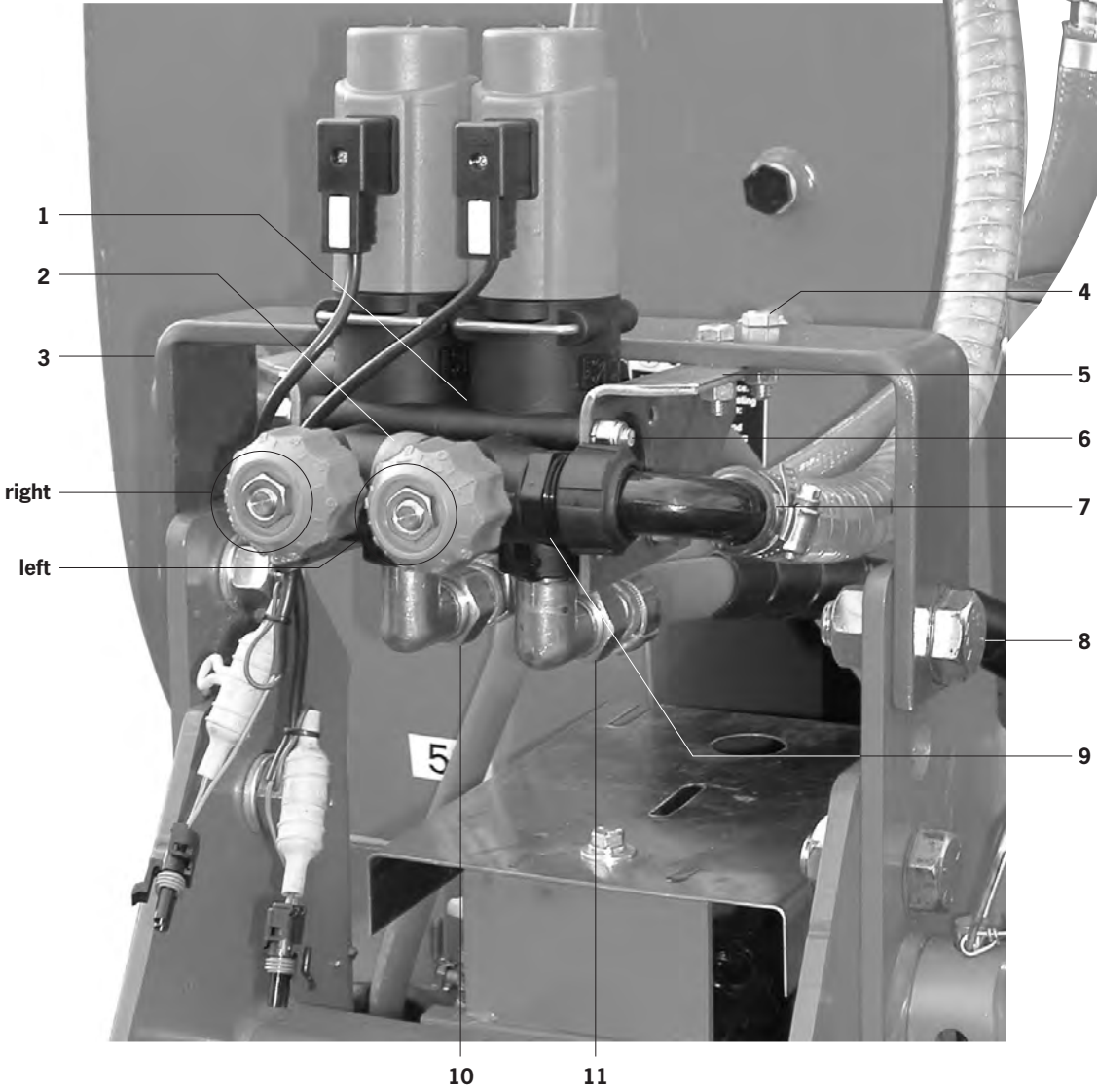
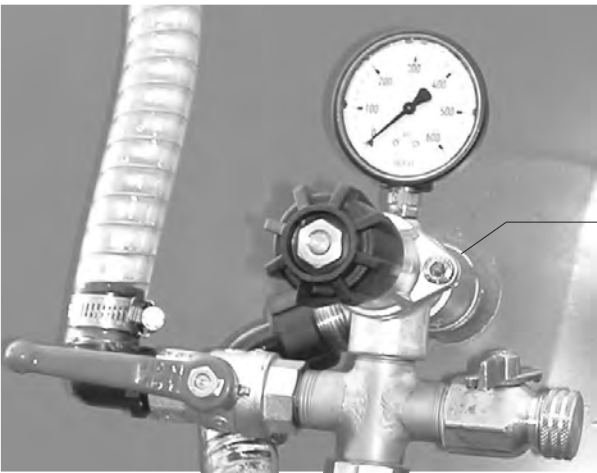




**Braglia valve assemblies**

No.	Part #	Description	Qty		
1*	180.1910.9HS	Dump valve, 1" port, <i>black cap</i>	1		
	180.1910.9	Dump valve, 1" port, <i>orange cap, obsolete</i>			
	180.1910.19HS	Dump valve, 3/4" port, <i>black cap</i>			
	180.1910.19	Dump valve, 3/4" port, <i>orange cap, obsolete</i>			
2	180.232.6	valve signal control cable	1		
3	call	cable connector gasket	1		
4	180.1610.2R	valve mount plate	2		
5	180.1702.27B	port plug	2		
6	2-127	port plug o-ring	2		
7	0310350CHSS	5/16" x 3"1/2 stainless steel bolt	2		
8	031WS	5/16" lock washer	2		
9	031NY	o-ring, viton	2		
10	170.201.7	brass elbow, 3/4"MBSP	1		
11	38043	waytek male quick connect	1		
	38042	waytek female quick connect			
12	31035	terminal for 38043 connector	2		
	31034	terminal for 38042 connector			
13	39000	connector grommet	2		
14	MDL1-1/4KIT	weathertite fuse casing with fuse	1		
	MDL1-1/4	1-1/4A time delay fuse	1		
15A	1"	call		DUMP VALVE PLUMBING	
		FBSP100100HB			
		HFC075100			
	3/4"	call	3/4" pvc hose, give length		1
		FBSP0750750HB	3/4"FBSP hose fitting		1
	HFD075075	3/4"FPT hose fitting	1		
15B	call	1/2" pvc hose, give length	1	SPRAY MANIFOLD PLUMBING	
	HFD050050	1/2"FPT wingnut x 1/2"straight hosebarb	1		
	EL050F050HB	1/2"FPT wingnut x 1/2"90° hosebarb	1		
16	call	3/4"pvc hose, give length	1		
	FBS0750750HB	3/4"FBSP hose fitting	1		
	HFD075075	3/4"FPT hose fitting	1		
17	180.1910.10	Braglia pressure regulator, <i>green cap</i>	1		
18	180.1702.27ETC	1"ETC x 1-1/4"BSP brass fitting	1		
19		5/16" threaded rod, 6"1/4 long	2		
	031NYS	5/16" nylock nut	4		
20	call	1" rubber hose, give length	1		
	FBSP100100HB	1"FBSP hose fitting	1		
	HFC100100	1"MPT hose fitting	1		
21	call	1" rubber hose, see chart, right	1	RPA PUMP ONLY	
	ETC100CAL	1" camlock hose fitting	2		
	ETC100CAL	1" camlock hose fitting	1		
	ETC125100KN	1"1/4MPT hose fitting	1		
	ETC125DAL	1"1/4FPT camlock hose fitting	1	SELF PRIMING PUMP ONLY	
22	180.602.48	valve body o-ring	1		
23	SSPLG075	3/4" stainless steel plug	2		
24	FBSP075050MPT	3/4"FBSP x 1/2"MPT adapter	1		

**Read this manual completely before operating: follow all safety instructions.**



## braglia metered bypass set-up

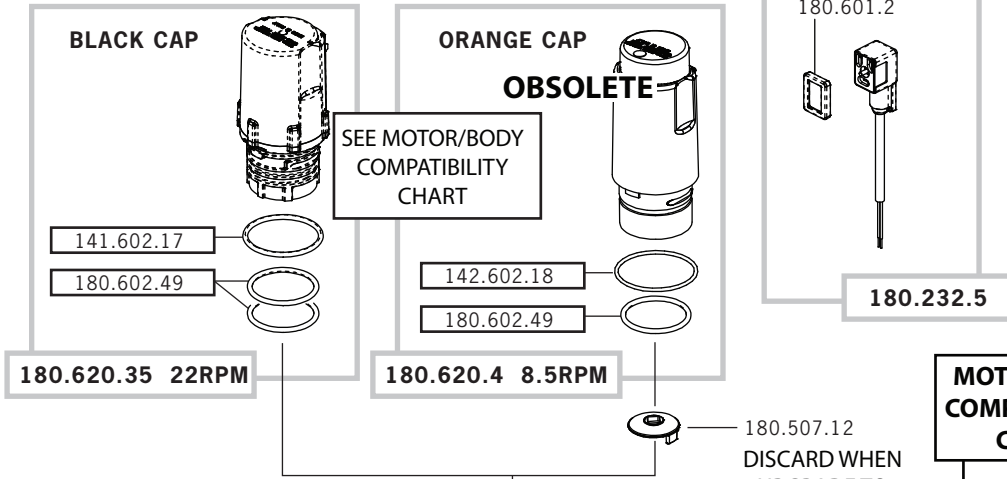
Before calibrating your metered bypass valves be sure you have water in your spray tank. The tank should be at least 1/4 full before engaging the PTO. Make sure the dump valve and handgun valve are closed. The spray tips installed should match your desired application rate. When you change your application rate, you will need to recalibrate your bypass valves.

1. Set the orange knobs of the **bypass valves** to NO bypass.
2. With the tractor running, engage the PTO to start pump.
3. Set your desired operating pressure on the **pressure regulator**.
4. Turn ON the left side spray manifold.
5. Adjust the **pressure regulator** to return to desired pressure.
6. Turn OFF the left side spray manifold.
7. OPEN the left side **bypass valve** until pressure returns to desired setting.
8. Turn ON the right side spray manifold.
9. Adjust the **pressure regulator** to return to desired pressure.
10. Turn OFF the right side spray manifold.
11. OPEN the right side **bypass valve** until pressure returns to desired setting.
12. The spray pressure should now remain constant with either or both spray manifolds on. Record your bypass valve settings for this application rate.

## braglia metered bypass assembly only parts unique to assembly are listed. see dump valve and pulblast plumbing for common parts.

#	Part NO	Description	Qty
1	180.602.48	Valve body o-ring	1
2	180.601.41	Bypass valve coupling seal	1
3		Hitch mount bracket	1
4	0370100CH5	Hex cap screw, 3/8" x 1" Gr5	4
	037NF	Nut, 3/8" NC	4
	037WS	Lock washer, 3/8"	4
5		Left valve mount plate	1
		Right valve mount plate	1
6	0310600CHSS	Hex cap screw, 5/16" x 6" stainless steel	2
	031NYSS	Nylon insert nut, 5/16"	2
	031WS	Lock washer, 5/16"	2
7	HNP100	1" x 16" armorvin hose	1 <i>bypass dump line</i>
	WC6816	Worm clamp, #16	2
	559242	Nut, 1"FBSP	2
	550370	90° elbow, 1"HB	2
8	0870200CH5	Hex cap screw, 7/8" x 2" Gr5	2
	087NF	Nut, 7/8" NC	2
	087WS	Lock washer, 7/8"	2
9	180.1101.3	3/4"MBSP x 1"MBSP adapter	1 <i>pressure out line</i>
10	call	3/4"x 16" pvc hose. 3/4"FBSP x 3/4"FGHT	1 <i>pressure in line</i>
11	call	3/4"x 17" pvc hose. 3/4"FBSP x 3/4"FGHT	1
12		3/4"FBSP x 1/2"MPT adapter	2 <i>manifold supply line</i>
13	call	1/2"x 10' pvc hose. 1/2"FPT wingnut (x2)	2
14	SSTEE100	Tee, 1" stainless steel	1
	SSN100CLOSE	Close nipple, 1" stainless steel	2

**26** Pak-Blast 50 gallon

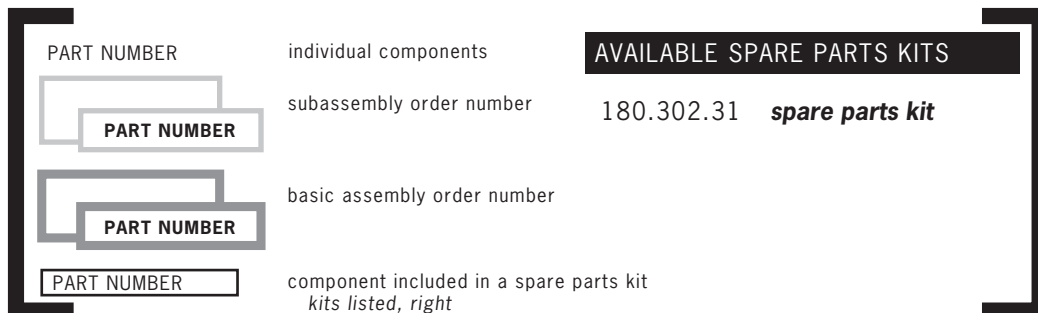
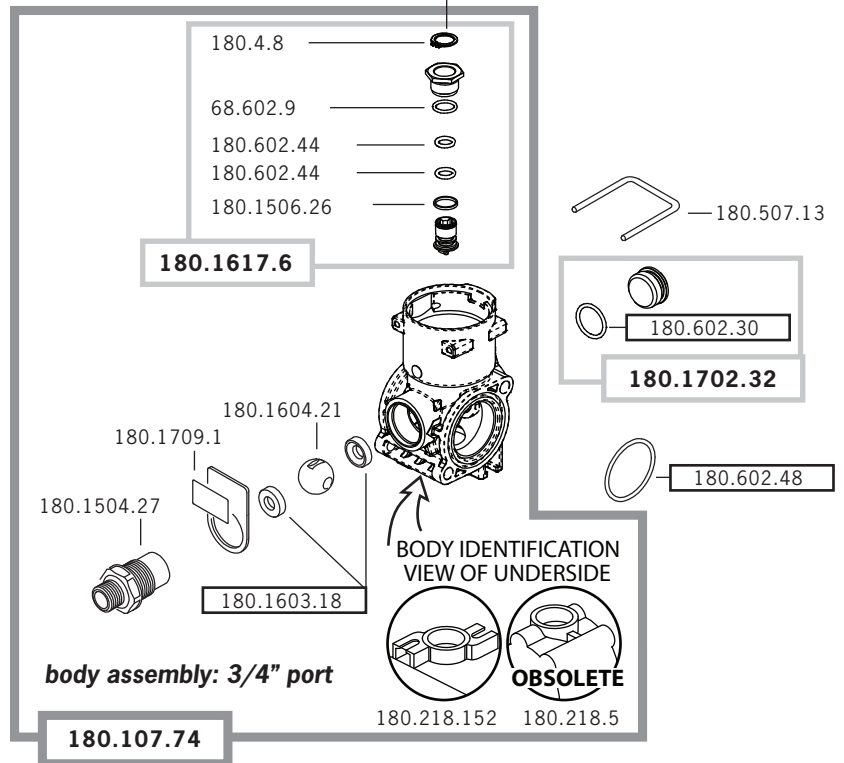
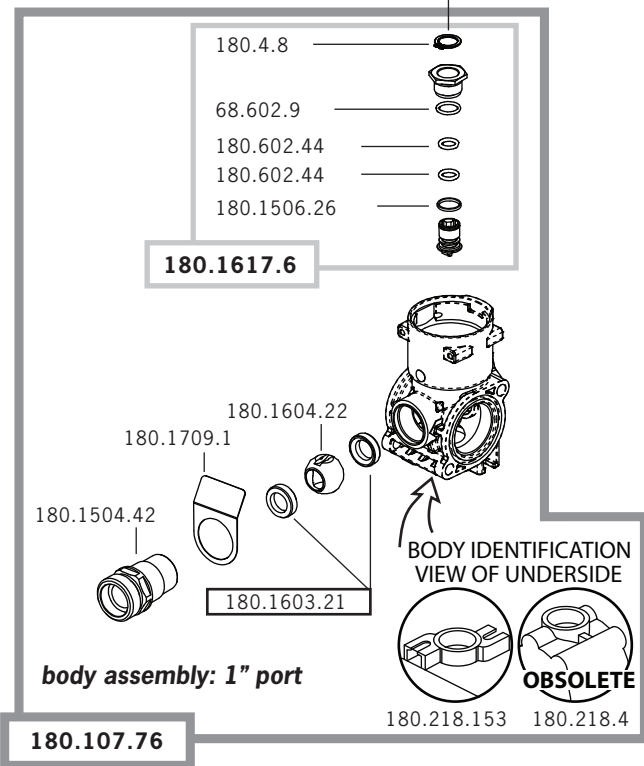


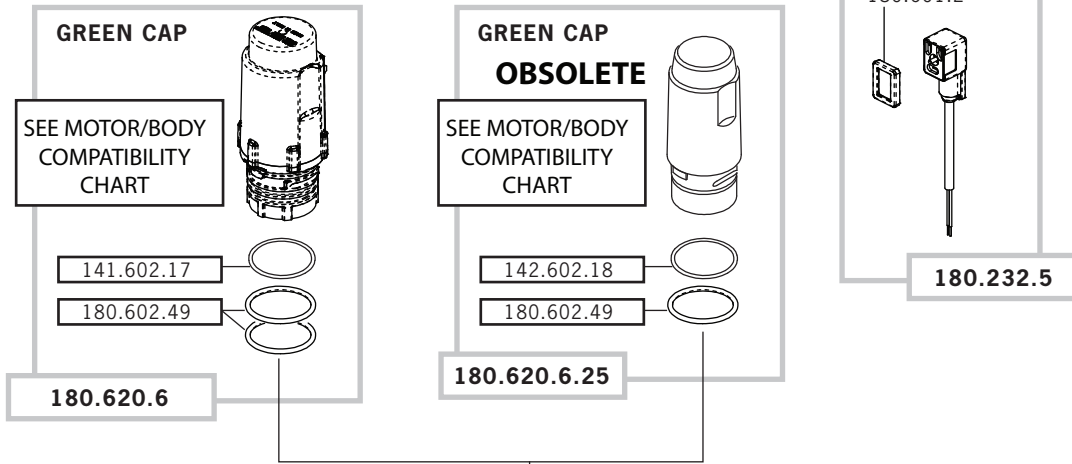
**180.1910.9HS**  
1" port valve parts

**180.1910.19HS**  
3/4" port valve parts

MOTOR/BODY COMPATIBILITY CHART		MOTOR	
		180.620.35 BLACK CAP	180.620.6* ORANGE CAP
BODY	180.218.153	<b>YES</b>	<b>NO</b>
	180.218.4*	<b>YES</b>	<b>YES</b>
	180.218.152	<b>YES</b>	<b>YES</b>
	180.218.5*	<b>YES</b>	<b>YES</b>

\*OBSOLETE PART, LIMITED AVAILABILITY

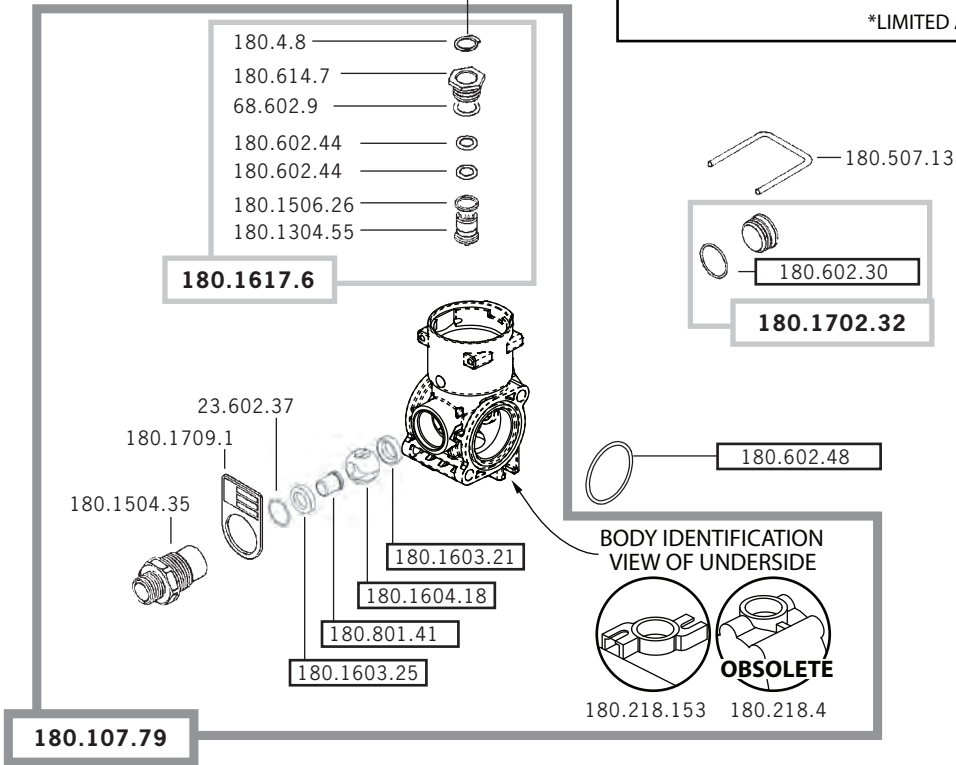




**180.1910.10**  
pressure regulating valve parts

MOTOR/BODY COMPATIBILITY CHART		MOTOR	
		180.620.6	180.620.6.25* OBSOLETE
BODY	180.218.153	<b>YES</b>	<b>NO</b>
	180.218.4* OBSOLETE	<b>YES</b>	<b>YES</b>

\*LIMITED AVAILABILITY



PART NUMBER	individual components	<b>AVAILABLE SPARE PARTS KITS</b>	
<b>PART NUMBER</b>	subassembly order number		180.302.33 <b>spare parts kit</b>
<b>PART NUMBER</b>	basic assembly order number		
<b>PART NUMBER</b>	component included in a spare parts kit kits listed, right		

**180.1910.9HS/180.1910.19HS**  
**180.1910.9/180.1910.19**  
**valve repair**

**valve troubleshooting**

**Valve doesn't activate.**

Check cable connections- look for oxidation and clean.

Check fuse. ONLY USE 1.25A time delay fuse.

**Repeated fuse blow out.**

Disconnect power cable and remove lock 29 with screwdriver.

Remove unit 1 from valve body. Take care with O-ring 28.

Check the rotation of ball 23 using Ø10 flat screwdriver inserted in the square of stud 18. If the rotation is not smooth replace seals 16A, 16B and ball 23: instructions follow. After checking rotation align the notch on stud 18 as illustrated in *fig. i*, right.

If the rotation of ball 23 is smooth, check the motor unit 1 by connecting the blue and brown wires to a 12Vdc line: correct rotation is 90° between microswitches:

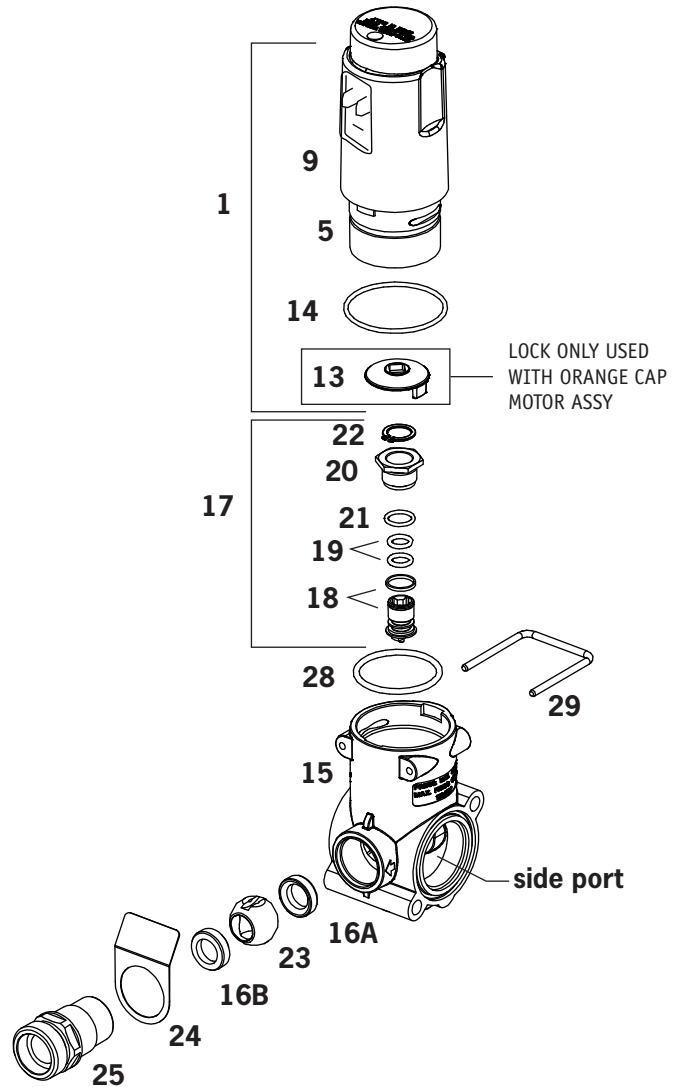
**Black cap motor:** with brown wire to (+) pole, gearmotor cam position is as illustrated in *fig. iii*, right.

**Orange cap motor:** with brown wire to (+) pole, gearmotor cam position is as illustrated in *fig. iv*, right.

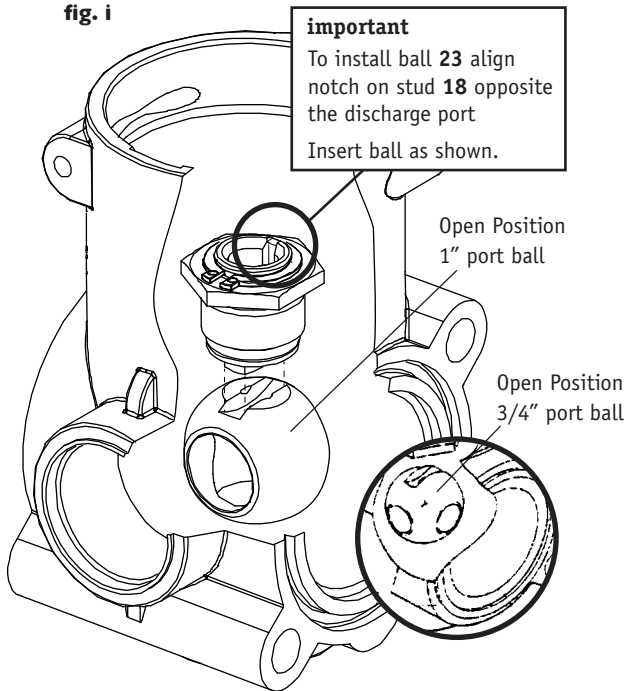
If unit 1 does not rotate correctly replace the whole unit.

**Leakage from seals.**

Replace seals using the repair kit 180.302.31. Follow assembly instructions, right.



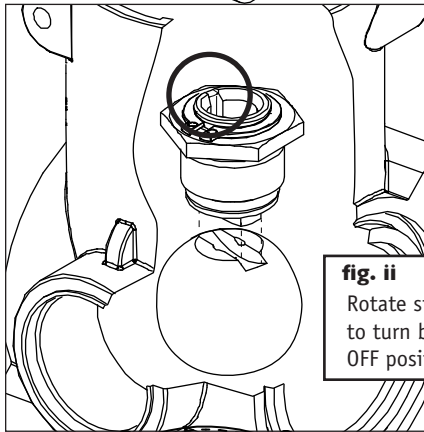
**fig. i**



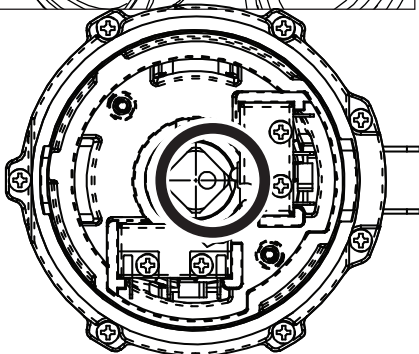
**important**  
To install ball 23 align notch on stud 18 opposite the discharge port  
Insert ball as shown.

Open Position  
1" port ball

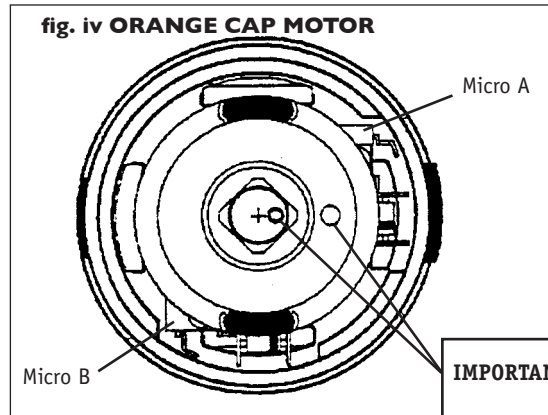
Open Position  
3/4" port ball



**fig. ii**  
Rotate stud 18 90° to turn ball 23 to OFF position.



**fig. iii BLACK CAP MOTOR**



**fig. iv ORANGE CAP MOTOR**

**IMPORTANT** Align notches on lock 13 and gearmotor cam for installation.

**valve disassembly**

Disconnect power supply and remove all lines from valve ports.

Hold the valve firmly, gripping the **side ports**, and remove nipple 25 from valve using a CH32 wrench. Take care of plate 24. *When gripping the valve body 15 protect the side port O-ring seats.*

Inspect seal 16B on nipple 25 and replace if necessary.

Remove ball 23 and replace seal 16A on the valve body.

Pull clamp 29 with Ø10 screwdriver.

Remove the gearmotor unit 1 from valve body. Inspect O-rings 14, 28 and replace if necessary.

Use CH24 socket wrench to remove the sub assembly 17.

Remove the lock ring 22 with pliers and pull the stud and washer 18. Check and replace O-rings 19, 21 and stud washer.

**valve assembly**

Before beginning assembly all parts should be clean and dry- *no residual sealants*. Lubricate all O-rings and sliding surfaces. Subassemblies should be ready before valve assembly: Nipple/seal 25/16B; Drive subassembly 17.

Assemble and lubricate seal 16A in valve body. Do not damage seal surface.

Apply thread sealant on guide 20 of subassembly 17 and screw the assembly onto the valve body. Using a CH24 wrench, tighten assembly until flush with housing.

Use a Ø10 flat screwdriver to position the notch on stud 18 as illustrated in fig. i, at left.

Insert ball 23 on stud 18 as illustrated in fig. i. This is the OPEN position: the ball orifice is visible when looking through the discharge port.

Using the screwdriver, rotate the stud and ball 90° as illustrated in fig. ii. The ball orifice is rotated to the OFF position and is not visible in the discharge port.

Lubricate seal 16B on nipple with waterproof grease. Apply thread sealant on nipple 25.

Position plate 24 and with a CH32 wrench thread nipple 25 with seal 16B into valve until flush with body. **Important: maximum torque 35Nm.**

Using the screwdriver, return the stud and ball to the starting position: align the notch on stud 18 as illustrated in fig. i.

Place O-ring 28 into valve body.

Before gearmotor operation, install 1.25A time delay fuse.

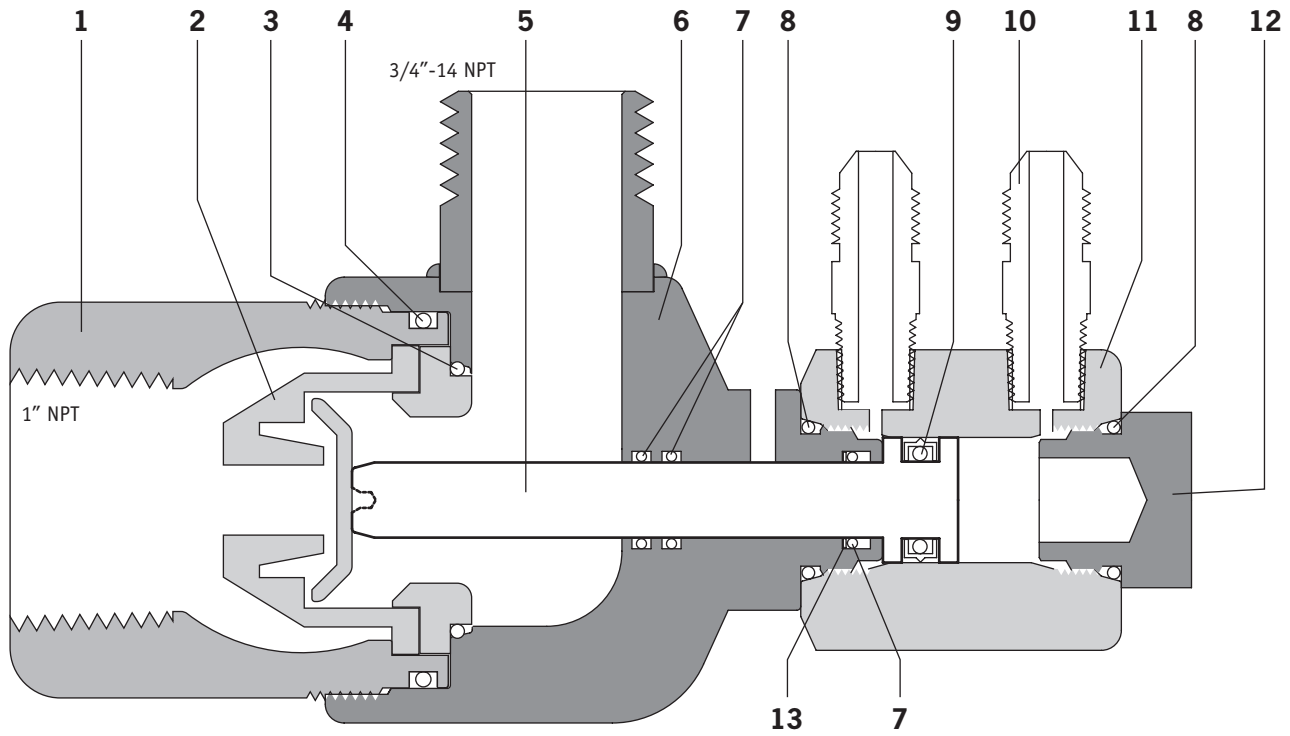
Check the gearmotor assembly:

**Black cap motors:** the mark on gearmotor cam must be aligned as illustrated in fig. iii. When assembling the gearmotor and the valve body, this mark should align with the notch on stud 18.

**Orange cap motors:** the mark on lock 13 and gearmotor cam must be aligned as illustrated in fig. iv. When assembling the gearmotor and the valve body, these marks should align with the notch on stud 18.

Lubricate O-ring 14. Insert unit 1 inside the valve body. the cap 9 must install flush against the valve body 15.

Install lock 29. Attach plumbing lines and electrical.



**R7 hydraulic spray valve**

No.	Part #	Description	Qty
	DAH2W075	R7 hydraulic actuated valve, complete	
	DAHV2WKIT	repair kit <i>includes all • items</i>	
1	DAH2WV13	valve body inlet	1
2	759051	valve assembly	1
3	V75-026	• o-ring, viton	1
4	V75-131	• o-ring, viton	1
5	DAH2WV20	piston rod	1
6	DAH2WV11	valve body	1
7	V90-012	• o-ring, viton	3
8	-908	• o-ring	2
9	CP-204	• piston seal	1
10		SAE J514,37deg flare -4 size	2
11	DAH2WV25	hydraulic cylinder	1
12	DAH2WV18	o-ring plug	1
13	T8-012	split backup ring	1



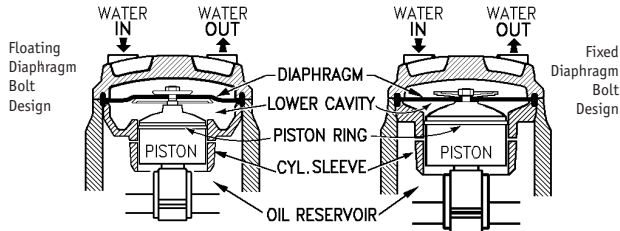


# PUMP OPERATION



## Maintain proper oil level

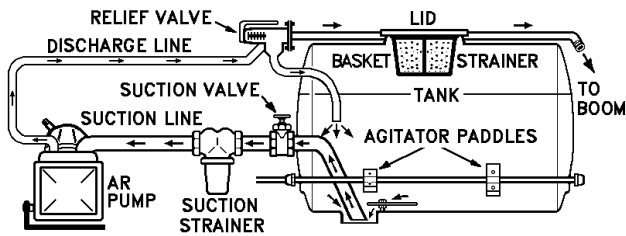
The crankcase oil serves two important functions. The oil lubricates all moving parts in the pump *and* affects the hydraulic action for optimal pump capacity. The pump diaphragms are supported by the crankcase oil during each pressure upstroke of the piston: to assure maximum performance of your pump and protect your pump diaphragms **maintain the oil level** marked on the transparent filler spout.



## How the AR diaphragm pump works

Each *downstroke* of the piston/diaphragm assembly draws spray material into the upper head cavity. Simultaneously, crankcase oil from the lower head cavity is expelled as the cycling piston ring passes a vent in the cylinder sleeve, *see above illustration*. Each upstroke of the piston injects a measured amount of oil back into the lower head cavity, expanding the diaphragm as the piston cycle tops-out and expelling the spray material from the upper chamber. **Low oil level lowers performance.**

For optimal hydraulic diaphragm actuation, piston assembly lubrication, diaphragm membrane support: check the oil level frequently- the transparent oil-fill makes level checks easy. Maintain the indicated level.



## Don't starve the suction

The pump will not suffer if run dry when the tank is empty. A **clogged suction strainer** or **closed suction valve**, however, will **starve the pump** and cause premature diaphragm failure.

**When mixing powders**, avoid clogging the suction strainer by *sluicing* heavy concentrations of wettable powders through the lid basket into an already half-filled tank. Agitator paddles will mix the powder into solution, preventing material deposits at the bottom of the tank which plug the suction strainer.

**The suction valve** is provided to shut off flow from the tank: for emergency plumbing repair or for strainer cleaning. **To prevent possible pump damage, SHUTDOWN SYSTEM before closing the suction valve.**

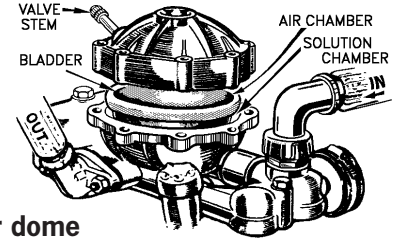
How clean is your water source? You may need to clean your suction strainer before each tank refill.

## Do not over-speed your pump

Refer to the performance chart for your specific pump to find the **maximum operating speed**. Your pump is designed to operate at or below this speed. Over-speeding will cause valves to prematurely fail and could cause other internal damage.

## Before pump operation

Check tightness of suction line fittings and strainer cap. Follow airdome pressurizing instructions, below.



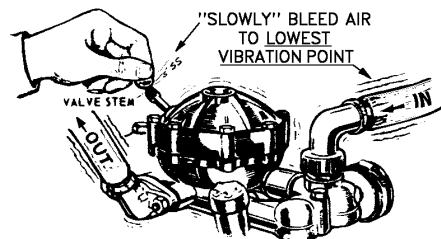
## Pressurizing the air dome

Piston and piston-like pumps (diaphragm pumps) will have pulsation vibration, *water hammer*, because of the rapid change in piston direction. The **air dome** pulsation dampener reduces vibration by providing a cushion of air to bump against: *inflate or deflate this cushion to reduce vibration*. The AR airdome uses a rubber bladder to separate the air cushion from the spray material. The bladder eliminates water-logging problems common in static-air type dampeners.

**If you have a pressure gauge** the basic rule is to charge the air dome to 10% of the system working pressure: for a handgun pressure of 100psi, we recommend an air dome pressure of 10psi. Always shut down pump before adding air to the airdome with either a compressor or manual pump. The air cushion is small, making pressure checks challenging. Take care applying the pressure gauge evenly on the air valve to prevent air from leaking out of the air dome. It is not uncommon to lose 5-10 psi checking the pressure.

**If you do not have a pressure gauge** charge the air dome *with the pump shut down* to 70-80 psi: sufficient for 700 psi working pressure. Start up the pump (expect pump vibration) and adjust the relief valve to your desired working pressure. Slowly bleed off air dome pressure while watching the vibration of the pump discharge hose. Continue bleeding until vibration is eliminated or minimized. Replace stem cap tightly. *It may take a couple attempts to get the feel for* minimum vibration.

*Too much air in the air dome is as bad as too little.*



# PUMP MAINTENANCE



**HANDLE AGRICULTURAL CHEMICALS WITH CARE**

**USE THE PERSONAL PROTECTIVE EQUIPMENT  
RECOMMENDED BY THE CHEMICAL MANUFACTURER  
WHEN MAINTAINING SPRAY EQUIPMENT!**

## After each use

Run pump for five minutes with *clean* water. These few minutes of flushing are well spent: extend diaphragm life, minimize chemical buildup throughout your spray system.

## After every 200 hours AND at season's end

Inspect diaphragms for wear marks, swelling, and stretching. See the *diaphragm replacement instructions, below*. Check valves for spring fatigue and seat wear. Change the oil- the crankcase oil capacity is in your pump manual. Use a **30W non-detergent oil**. Rotate the pump shaft by hand while filling to evacuate air pockets. With pump level, the crankcase is full when oil level reaches the indicator on the transparent fill neck. Run pump for 10 minutes under **no load** conditions to evacuate remaining air pockets. Recheck oil level. During first field run, **check oil color closely**. If it should turn milky, the diaphragms were not correctly seated.

## Winter storage

Run pump for five minutes with *clean* water. Then, with suction and discharge valves *open* and the tank empty, run pump five minutes to ensure complete drainage of pump heads and lines. A gallon of anti-freeze recirculated through the system and left in place after shut down completes your winterizing. Allow anti-freeze to replace any possible water in hoses and booms. If a handgun is in the system, run anti-freeze through the hose and handgun, returning the spray into the tank through the lid. Two gallons of anti-freeze may be required to winterize systems with handgun lines.

## Replacing diaphragms

**Drain the crankcase.** Slowly turn pump shaft by hand until all oil is drained. Older AR30/50 pumps without a drain plug require a head and diaphragm to be removed to empty oil.

**Remove the manifold:** take care not to lose or damage input/output port o-rings.

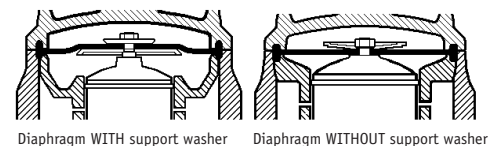
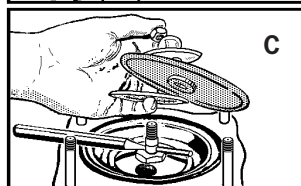
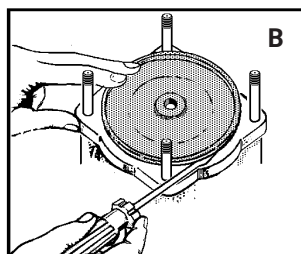
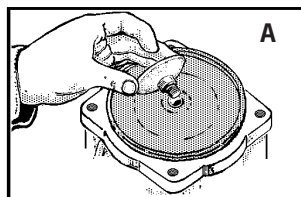
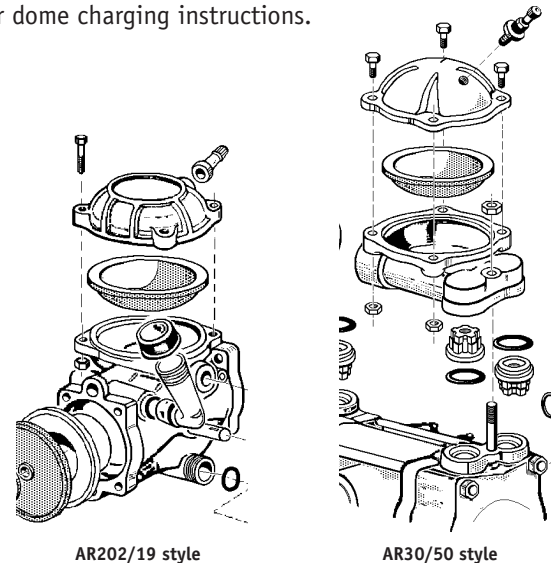
**Head removal- repair one head at a time.** Remove fasteners securing head to body- some pumps use bolts (*fig. A*) others have nuts on mount studs (*fig. B*). You may need to lightly pry the head cover with a flathead screwdriver to loosen.

**Remove the old diaphragm.** Top out the piston/diaphragm assembly by turning the pump shaft. Remove the diaphragm retaining nut (*fig. A*) If the nut holds and the retaining bolt loosens from the piston head, this creates no problem. (*Some bolts have a hole (fig. C) to insert a 8" pin punch and hold bolt when removing nut & washer.*) Using a flathead screwdriver (*fig. B*) pry the diaphragm from its seat.

**Install the new diaphragm.** If your model uses a

## Replacing air dome diaphragm

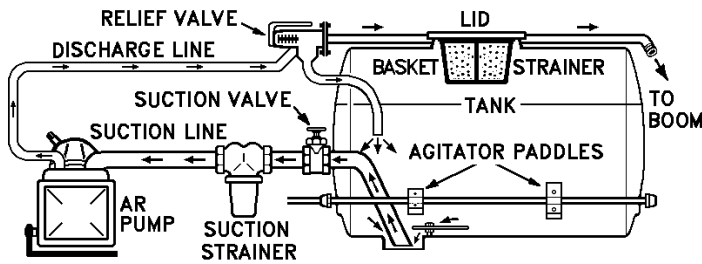
Bleed off air pressure in the air dome. Remove the 13mm bolts holding the assembly together. Use a flat head screwdriver to remove the old diaphragm. Install the new diaphragm and re-install air dome. See previous page for air dome charging instructions.



diaphragm support washer (see *washer installation diagram*, above) be certain it is installed as illustrated. Pour 2 Tbsp **30W non-detergent oil** into lower diaphragm cavity. Tap new diaphragm into seat groove with the handle of a screwdriver. Reassemble retaining washer and nut as illustrated and re-assemble head and manifold.

**Fill the crankcase with oil.** The crankcase oil capacity is in your pump manual. Use a **30W non-detergent oil**. Rotate the pump shaft by hand while filling to evacuate air pockets. With pump level, the crankcase is full when oil level reaches the indicator on the transparent fill neck. Run pump for 10 minutes under **no load** conditions to evacuate remaining air pockets. Recheck oil level. During first field run, **check oil color closely**. If it should turn milky, the diaphragms were not correctly seated.

# TROUBLESHOOTING

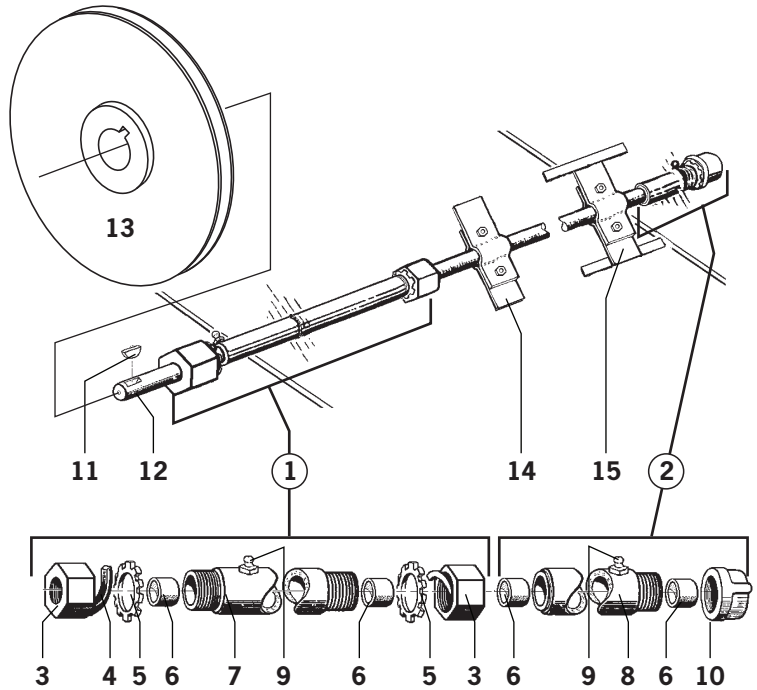


The AR diaphragm pump delivers volume determined by pump speed.  
Set pressure with your adjustable relief valve.

Problem	Source	Fix	
<b>No pressure</b>	Plugged strainer	Clean screen- see <i>suction care</i> on pump operation page.	
	Suction hose obstruction	Clear obstruction	
<b>Very little pressure</b>	Collapsed suction hose outside or inside tank	Replace collapsed hose	
	Pump sucking air	Hoses and unions should be tightly fitting and have no holes	
<b>Pressure drops below working range when relief valve is open to spray applicator</b>	Nozzle volume greater than pump capacity	Adjust relief valve Reduce nozzle orifice size Reduce number of nozzles in use	
	Excessive tank foam	Refill tank if foaming because of low volume Move agitator paddle if too close to suction	
	Pressure relief valve stuck or worn	Check relief valve for wear- repair or replace	
	Pump inlet/outlet check valve worn	Replace check valve(s)	
	<b>Pressure gauge fluctuates wildly</b>	Air dome pressure too low or high	See <i>pressurizing instructions</i> on pump operation page
		Pump sucking air	Hoses and unions should be tightly fitting and have no holes
		Faulty suction strainer	Check strainer and connections for suction leaks
Air in pump cavity		Run pump with open discharge to completely evacuate air	
<b>No pump suction</b>	Check valve seating improperly	Examine and clean all check valve seats in the pump	
<b>Milky pump oil</b>	Diaphragm rupture	Check diaphragms and replace where necessary	
<b>Transparent filler spout overflows</b>		See <i>diaphragm replacement</i> on pump maintenance page	
<b>Output drops</b>	Low oil level	Add oil to fill level indicated on fill neck	
<b>Pump noisy</b>		Use 30W non-detergent oil	
<b>Excessive pulsation</b>	Air dome pressure too low or high	See <i>pressurizing instructions</i> on pump operation page	

## Mechanical agitation

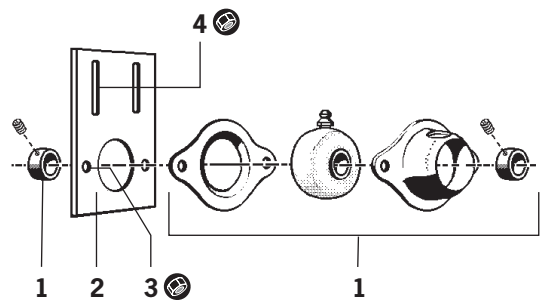
No.	Part #		Description	Qty
	5/8" shaft	3/4" shaft		
1	AG06210ASSY	AG07510ASSY	complete rear bearing	1
2	AG06203ASSY	AG07503ASSY	complete front bearing	1
3	AG062ESS	AG075ESS	packing nut w/packing	2
4	AG025 (6")	AG025 (11")	packing	-
5	AG062C	AG075C	locking ring	2
6	AGBSH062	AGBSH075112	bushing	4
7	AG06210	AG07510	rear housing w/busings	1
8	AG06203	AG07503	front housing w/busings	1
9	1641-B	1641-B	zerk fitting	2
10	BRCAP075	BRCAP100	cap	1
11	KW018087SS	KW018087SS	key	1
12	AG062	AG075	agitator shaft, <i>provide length</i>	1
13	AGP06206	AGP07506	agitator pulley	1
14	AG23		standard paddle <i>one comple set</i>	-
15	PB50		large paddle <i>one comple set</i>	-

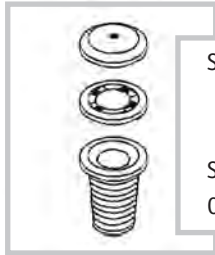
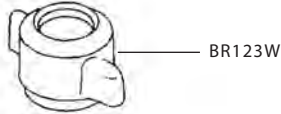


**AGITATION DRIVE BELT: SEE FAN & AGITATION DRIVE PARTS**

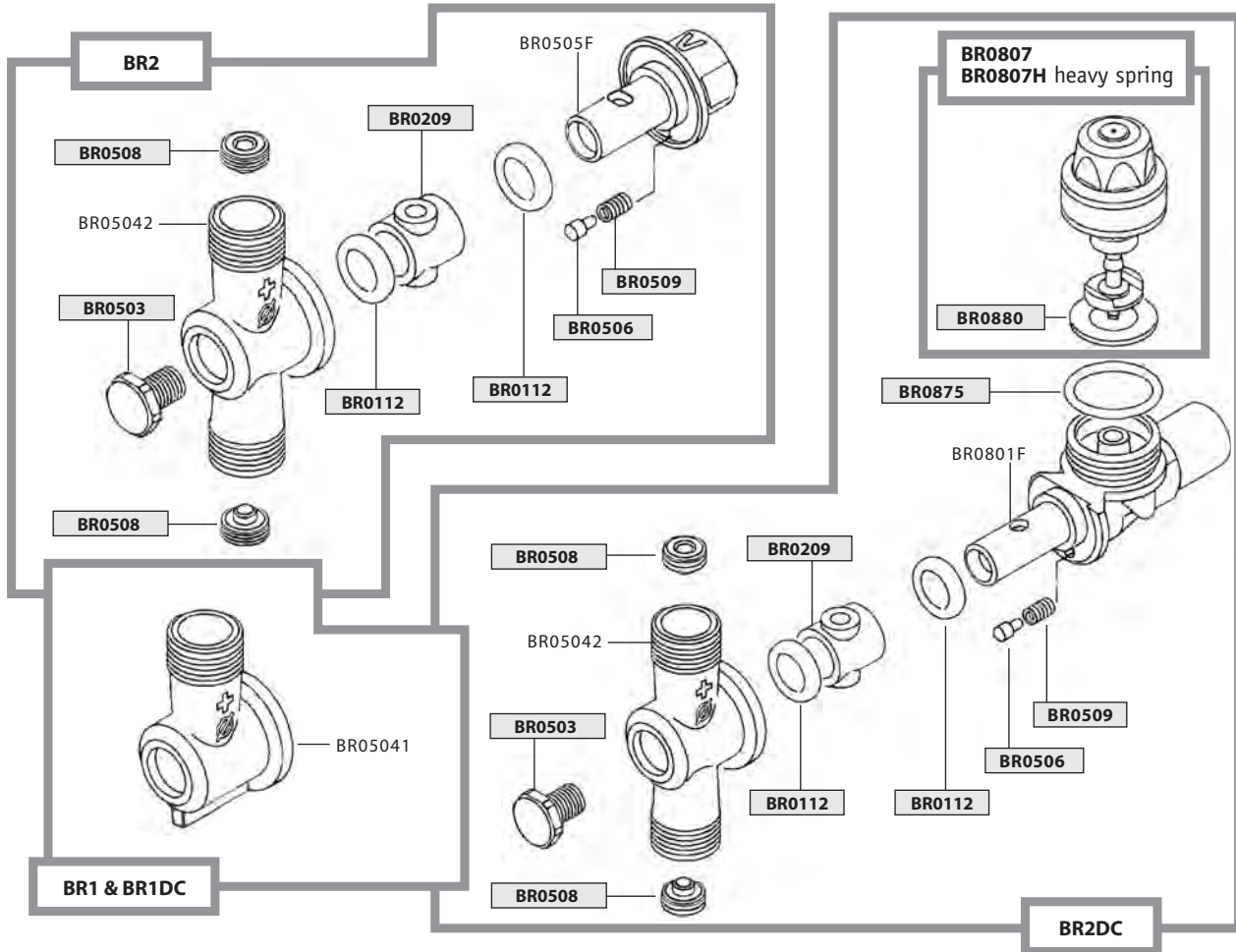
## Outboard bearing

No.	Part #	Description	Qty
1	AGOB062T	outboard bearing, 5/8" shaft	1
	AGOB075T	outboard bearing, 3/4" shaft	
2	AGPL062	5/8" bearing plate <i>provide plate height</i>	1
	AGPL075	3/4" bearing plate <i>provide plate height</i>	
3	0310075CP	5/16"-18 x 3/4" carriage bolt	2
	031WS	5/16" lockwasher	
	031NF	5/16"-18 nut	
4	0370100CP	3/8"-16 x 1" carriage bolt	2
	037WUSS	3/8" flatwasher	
	037WS	3/8" lockwasher	
	037NF	3/8"-16 nut	

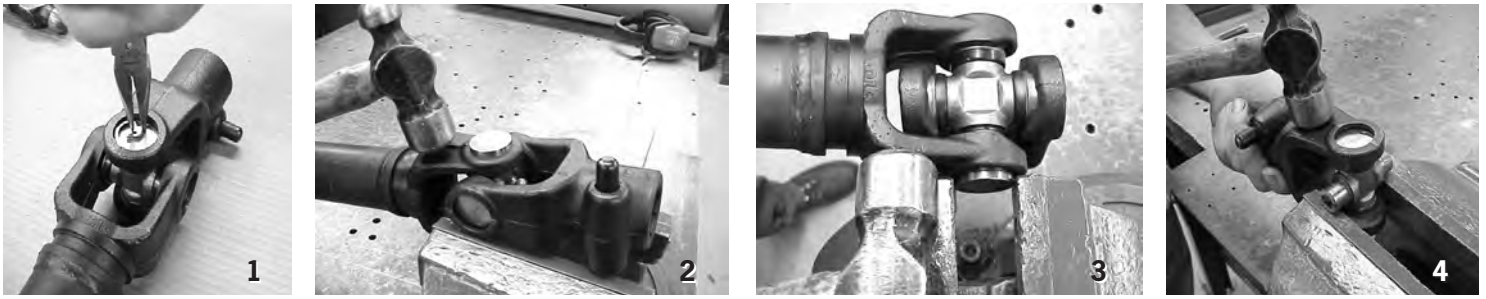




Standard **BR2/BR2DC** nozzle configuration:  
**A side-** ceramic orifice/core, nylon strainer  
**B side-** steel orifice, brass core, brass strainer  
 Specify sizes for orifice/core/strainer.  
 Complete Spraying Systems selection.



<b>PART NUMBER</b>	<b>individual components</b>	<b>AVAILABLE SPARE PARTS KITS</b>
<b>PART NUMBER</b>	<b>subassembly order number</b>	
<b>PART NUMBER</b>	<b>basic assembly order number</b>	
<b>PART NUMBER</b>	<b>component included in a spare parts kit</b> <i>kits listed, right</i>	
<b>PART NUMBER</b>		<b>BR2DCKIT</b> <b>BR2KIT</b>
		<i>parts kit for BR1DC &amp; BR2DC</i> <i>parts kit for BR1 &amp; BR2</i>

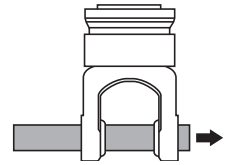


### universal joint disassembly

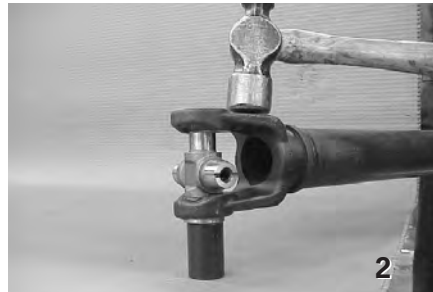
- Remove all (4) snap rings in cross assembly 1.
- Position joint in loose vice 2. Strike top arm of unsupported yoke to drive the top cup up. Repeat on the opposite side.
- Grip loosened cup in vice 3 and strike yoke arm to drive yoke off cup. Repeat on opposite cup.
- Support cross in loose vice 4 and strike yoke arm to drive the top cup up. Repeat on opposite side.
- Repeat step 3 to remove the remaining two cups.

*Note:* Yoke arms must be true. If a yoke arm is *sprung* by striking with excessive force, the cross will bind in operation.

*True yoke test-* slide a machined rod (a few thousandths under cup diameter) through the yoke arms. The yoke must be replaced if the yoke won't slide completely onto the rod.



55 series rod diameter	1.530"
35 series rod diameter	1.247



### universal joint reassembly

- Clean bearings 1 before assembling cross. Cups should be free from dirt- and be certain the seal from the previous cross does not remain in the cup. Smear grease in the clean bearing.
- Make certain all needle bearings are seated properly.
- Clean bearing seat in yoke arms. Check for burrs (in new yokes also). File out any burrs: bearing seat should be smooth and clean.
- Yoke arms must be true (see *true yoke test*, above).
- If a yoke arm is *sprung* by striking with excessive force, the cross will bind in operation.

Where a *spacer* is required, select a diameter that evenly distributes force around the outer edge of the bearing cup. Choosing a spacer of insufficient diameter or using no spacer at all will drive the bearings unevenly and cause the joint to bind in operation.

- You should assemble the joint in a clean area.
- Insert the cup and cross 2 and drive in with a spacer.
- Insert snap ring 3.
- Insert second cup 4 and hold cross in place to drive on cup. Drive cup down with spacer and insert snap ring.
- To loosen cross, strike yoke arm 5 and check cross for free rotation.
- Position second yoke on cross 6 and repeat steps 2 to 5.





## Pump and Sprayer Repair

Rears cannot accept any sprayer, pump system or storage tank for repair unless it is clean and free of chemicals.

Before returning any equipment for repair, you must complete a Spray Service Repair Order: available from Rears, this must be completed before transporting the equipment to Rears.

Inspect your equipment closely before sending it for repair. This checklist is included on the Spray Service Repair Order.

All actions on the Spray Service Repair Order must be complete or the repair will be refused.

1. Spray tanks, pumps, booms, and pump systems must be free from chemical residue. All units must be washed and flushed before delivery to Rears. Hardened buildup of chemical must be removed before delivery.
2. Drain all liquids and flush the unit with neutralizing liquid. Drain the pump and tag with a notice that this has been done. Please note that it is illegal to ship or transport any hazardous chemicals without a license from a regulating agency.
3. All rinsate must be drained from the equipment.
4. The most recent four chemicals must be specifically identified (ref. OSHA 1910.1200 (d)(e)(f)(g)(h)). Rears reserves the right to require submission of a Safety Data Sheet for any product Rears deems necessary.

Rears reserves the right to refuse any equipment that does not meet the requirements for repair. Costs incurred by repair refusal, shipping or other, are the responsibility of the entity submitting the equipment for repair. Disposal costs for refused equipment or components is strictly the responsibility of the entity submitting the equipment for repair, including costs for waste profiling, transportation, and disposal.

**Spray Service Request Form**

NAME (BILLING) \_\_\_\_\_  
 ADDRESS \_\_\_\_\_  
 CITY/STATE/ZIP \_\_\_\_\_  
 CONTACT NAME \_\_\_\_\_  
 PRODUCT DESCRIPTION, PLEASE INCLUDE SERIAL NUMBER WHEN AVAILABLE \_\_\_\_\_  
 PHONE \_\_\_\_\_

RETURN SHIPPING (UPS GROUND UNLESS OTHER REQUEST) \_\_\_\_\_  
 FREIGHT WILL BE ADDED TO INVOICE UNLESS COLLECTED \_\_\_\_\_

**DESCRIPTION OF EQUIPMENT PROBLEMS AND SERVICE NEEDED**

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Rears cannot accept any sprayer, pump system or storage tank for repair unless it is clean and free of chemicals. Before returning any spray equipment for repair, you must complete the following check-list.  
 Inspect your equipment closely. All actions on this checklist must be complete or the repair will be refused.

Spray tanks, pumps, booms, and pump systems must be free from chemical residue. All units must be washed and flushed before delivery to Rears. Hardened buildup of chemical must be removed before delivery.

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All rinsate must be drained from the equipment.

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Rears reserves the right to refuse any equipment that does not meet the requirements for repair. Costs incurred by repair refusal, shipping or other, are the responsibility of the entity submitting the equipment for repair. Disposal costs for refused equipment or components is strictly the responsibility of the entity submitting the equipment for repair, including costs for waste profiling, transportation, and disposal.

Units which, after acceptance, are discovered to be non-compliant with the terms of repair will be returned to the owner who is responsible for all labor and materials invested and shipping costs to return the items.

**CHEMICAL HISTORY** most recent first

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

I hereby acknowledge that I understand and have complied with all above conditions and authorize the above repair work to be done along with necessary materials. Rears Mfg. Co., Inc. (Rears), and your employees and authorized mechanics may operate the above unit for purpose of testing, inspection or delivery at my risk. An express amount of the repairs thereto. Rears will not be held responsible for loss or damage to unit or any items left with unit in case of fire, theft, accident or any other cause beyond Rears' control.

SIGNATURE \_\_\_\_\_  
 DATE \_\_\_\_\_



# LIMITED WARRANTY

Rears Manufacturing Company Incorporated, hereafter referred to as Rears, makes every effort to assure that its products meet high quality and durability standards subject to the provisions hereinafter set forth. Rears does hereby warrant to the original purchaser of each product manufactured by Rears for a period of ninety (90) days from the date of purchase or five hundred (500) hours of operation, which-ever occurs first, that such product will be free from defects in material and workmanship under normal use with normal maintenance service. This warranty does not cover component parts of products manufactured by Rears when such component parts are subject to a manufacturer's warranty. In addition, this warranty does not cover pressure gauges.

THE EXCLUSIVE REMEDY FOR ANY DEFECTS COVERED BY THIS WARRANTY SHALL BE THE OBLIGATION OF REARS TO REPAIR OR REPLACE ANY PARTS OF SAID PRODUCTS WHICH SHALL, WITHIN NINETY (90) DAYS FROM THE DATE OF PURCHASE OR FIVE HUNDRED (500) HOURS OF OPERATION, WHICHEVER OCCURS FIRST, BE DETERMINED TO THE SATISFACTION OF REARS UPON REARS' EXAMINATION, TO HAVE BEEN THUS DEFECTIVE.

In order to take advantage of this limited warranty the defective product must be returned for examination, freight pre-paid, to Rears or an authorized dealer designated by Rears. Proof of purchase date and explanation of the defect must accompany the returned product.

REARS MAKES NO EXPRESSED OR IMPLIED WARRANTIES OF ANY KIND, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR ANY PARTICULAR PURPOSE OTHER THAN STATED HEREIN.

The limited warranty contained herein shall not apply to any product if it shall have been repaired or altered by personnel not authorized by Rears or if the product shall have been subject to misuse, negligence or accident.

THE REMEDIES PROVIDED HEREIN ARE THE EXCLUSIVE REMEDIES TO THE PURCHASER AND REARS SHALL NOT BE LIABLE TO THE PURCHASER OR ANY OTHER PARTY FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OR ANY CAUSE, LOSS, ACTION, CLAIM OR DAMAGE WHATSOEVER FOR INJURY TO PERSON OR PROPERTY OR ANY CONSEQUENTIAL ECONOMIC OR INCIDENTAL LOSS RESULTING FROM ANY DEFECT IN MATERIALS OR WORKMANSHIP OF THE PRODUCT SOLD.

Rears will assign to the original purchaser upon request all warranties on component parts if permitted by the manufacturer of such component parts.

<b>Purchaser Name</b>		Purchase Date
Address	City	State/Zip
Model		Serial Number

<b>Dealer Name</b>	Sales person	Phone
Address	City	State/Zip