



# POWERBLAST

READ THIS MANUAL BEFORE OPERATING

04.18.19



**Powerblast**

## Index

---

**Agitation** 41-47; jet 55

**Air doors** 50, 51, 100-103

**Air louver/vane** 50, 51

**Belts** 24-29

**Braglia valves** 80-85, 90, 91, 98

**Chemical safety** iv, v, 7

**Clutch, fan** 7, 15-23

**Constant velocity hitch** 32-38

**Controls, handset** 94-103

**Drivelines** ii, iii, viii, ix, 6-11, 32-37, 39, 48, 49

**Electric wiring** 94-103

**Fan** vi, xii, 7, 14-23

**Gearbox** 30, 31

**Hu valve** 52, 53, 74, 75, 86, 87, 98

**Hydraulic systems** xii, xiii, 77, 78

**Injector hopper** 5, 92, 93

**K Z valve** 76, 99

**Lee valve** 77

**Lubrication** 9, 31

**Manhole lid** 48, 49

**Manifold, spray** 48, 49

**Nozzles** 13

**Operation instructions** ii-x, 6-9

**Personal protective equipment** iv, v, 7

**Plumbing** 52-65, 74, 80, 81, 92, 93

diagram 52, 53

discharge 52, 53, 74

dump 52, 53, 80, 81

injector 92, 93

suction 55-65

troubleshooting 53

**Power Take Off (PTO)** iii, 6-11, 32-39

**Pump** iv, v, xii, xiii, xv, 7, 9, 24-29, 66-73

belt tension 24-29

chemical safety iv, v, 7

lubrication 7, 9

maintenance xii, xiii, 66-73

micro-v 28, 29

storage xv, 7

**S & R valve** 88, 89

**Safety instructions** i-xvi, 4-7

decals xvi, 4, 5

personal protective equipment iv, v, 7

**Set-up instructions** ii, vi, 6-11, 14, 15, 31

drivelines 6-11

fan 6, 7, 14, 15

hook-up 8

lubrication 9, 31

tractor ii, 6

**Storage** xv, 7

**Strainer** 56-65, 74

**Tires** xi

**Tower** 50, 51, 100-103

air doors 50, 51, 100-103

air louvers/vanes 50, 51

handset 100-103

**Transport** xiv

**Valve, spray control**

**electric:** Braglia 80-85, 90, 91, 98; Hu (ball) 73, 75, 96-98; Hu (solenoid) 86, 87; KZ 76, 96, 99

Hu-valve 52, 53, 74, 75, 86, 87, 98

**hydraulic:** Lee 77; R7 78

pressure regulator 80, 81, 83, 90, 91, 96

S & R 88, 89

**Warranty** 106

**Wheel and hub** 6, 7, 104, 105

**Please fill out the following-  
for support issues, this information is very helpful.**

MODEL NO \_\_\_\_\_

SERIAL NO \_\_\_\_\_

DEALER \_\_\_\_\_



# 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.

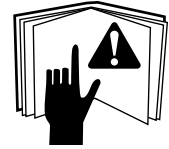
Know your controls and how to stop the tractor, engine, and implement quickly in an emergency. Read this manual and the one provided with the tractor.

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.

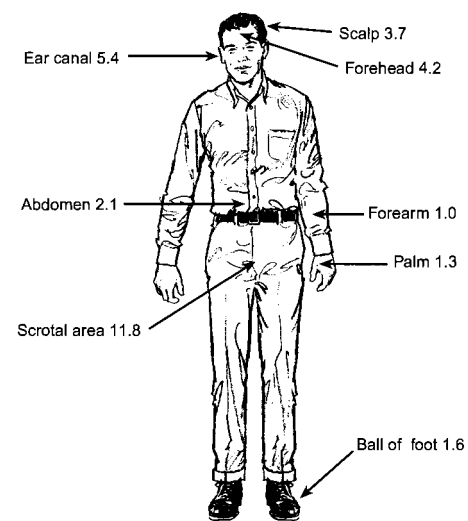
Contact your local extension service for instructions for cleaning work clothes contaminated by chemical handling. Most state agricultural universities and farm bureaus have detailed instructions for the decontamination of work clothes.

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*

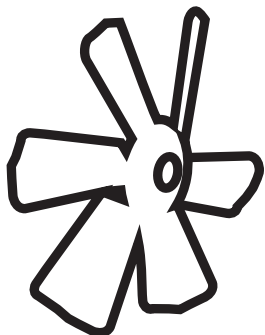
*Alliance for a Clean Rural Environment*

*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.

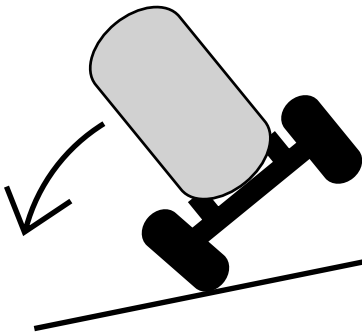
This implement is designed for use only on tractors with 540/1000 RPM power-take-off. **DO NOT EXCEED YOUR IMPLEMENT'S RATED PTO SPEED.**

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

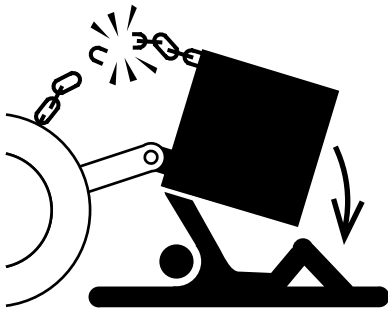
Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.

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.

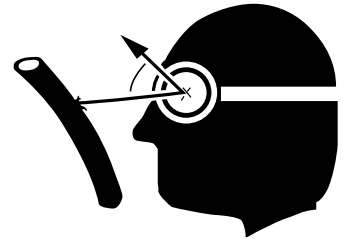


When completing a maintenance or service function, make sure all safety shields and devices are installed before placing the unit back in service.

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.

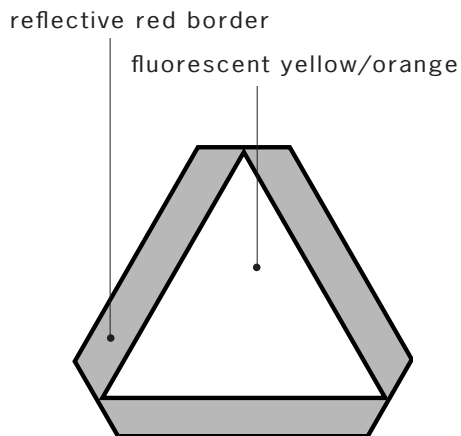
If equipment has been altered in any way from the original design, the manufacturer does not accept any liability for injury or warranty.

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.**

10

**+ 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**

**SHIELD MISSING DO NOT OPERATE**

**DANGER**

**SHIELD MISSING DO NOT OPERATE**

**DANGER**

88

**DANGER**

**- ROTATING DRIVELINE -**

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

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

DECAL 89

89

**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.

REAR'S MANUFACTURING  
 EUGENE, OREGON

111

**WARNING**

**HIGH-PRESSURE FLUID HAZARD**

- Relieve pressure on system before repairing or adjusting.
- Wear proper hand & eye protection when searching for leaks, use wood or cardboard not hands.

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

DECAL 91

91

**THIS UNIT NOT INTENDED FOR HIGHWAY USE**

DECAL15

15

**STAINLESS STEEL TANK AND MECHANICAL AGITATION**

16

**POWERBLAST MAINTENANCE**

every 4 hours grease all u-joints. use a good all-purpose lubricant.

**daily**

- 1 check gearbox & maintain oil level.
- 2 grease agitator bearings.
- 3 check strainers often & keep clean.
- 4 flush tank and system with water.
- 5 visually check agitator chain and fan blades- keep clean.

**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.

\*when draining manifolds, remove check valve cap from the top-most nozzle assembly

**!WARNING!**

**DO NOT** operate Powerblast without hitch support chains.  
**DO NOT** tamper with tractor hydraulic controls once set.  
**DO NOT** accelerate rapidly when coming out of turns.

**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** engage electric fan clutch at high PTO RPM.

**DO NOT** operate the pump without liquid.  
**DO NOT** engage PTO before tank is one quarter (1/4) full.

**NOTE:** pressure and volume will drop if strainers begin to clog or the pump drive belt begins to slip.

115

**WARNING**

**DO NOT PLACE ANY PART OF BODY UNDER RAISED IMPLEMENT.**

102

**CAUTION**

**DO NOT EXCEED 540 RPM**

**NO EXCEDA DE 540 RPM**

100SAF

DECAL100AM

100SAF

**DANGER**

**DO NOT ENTER TANK!**

ATMOSPHERIC AND PHYSICAL HAZARDS MAY BE PRESENT. FOLLOW ALL CONFINED SPACE REGULATIONS

DECAL105

105

**CAUTION**

**AGRICULTURAL CHEMICALS CAN BE DANGEROUS**

IMPROPER SELECTION OR USE CAN SERIOUSLY INJURE PERSONS, ANIMALS, PLANTS, SOIL OR OTHER PROPERTY. BE SAFE: SELECT THE RIGHT CHEMICAL FOR YOUR APPLICATION. HANDLE CHEMICALS WITH CARE. FOLLOW ALL INSTRUCTIONS FROM CHEMICAL AND EQUIPMENT MANUFACTURER.

DECAL96

196

**ATTENTION!**

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

129

**DANGER**

**NO RIDERS NO PASAJEROS**

DECAL195

195

**FAN SPEED TRANSMISSION**

LOW SPEED HIGH SPEED

TO TANK TO FAN

**WARNING**

DO NOT SHIFT TRANSMISSION WITH PTO ENGAGED.

62 fl. oz. capacity

14 fl. oz. capacity

FAN GEARBOX OIL LEVEL PUMP GEARBOX OIL LEVEL centrifugal pump units only

FREQUENCY	GEARBOX MAINTENANCE	AGITATOR BELT	PUMP BELT
Daily	Check the oil level (the location of oil level sight gauges are indicated on the diagrams, above). Top off with an AGMA No. 2EP rated gear lubricant, such as Mobilgear 626.		
200 HRS or Seasonally whichever comes first	Gearbox oil change. Drain the gearbox while warm and refill with AGMA No. 2EP rated gear lubricant, such as Mobilgear 626.		
	For gearbox oil capacity see diagrams, above.		

114

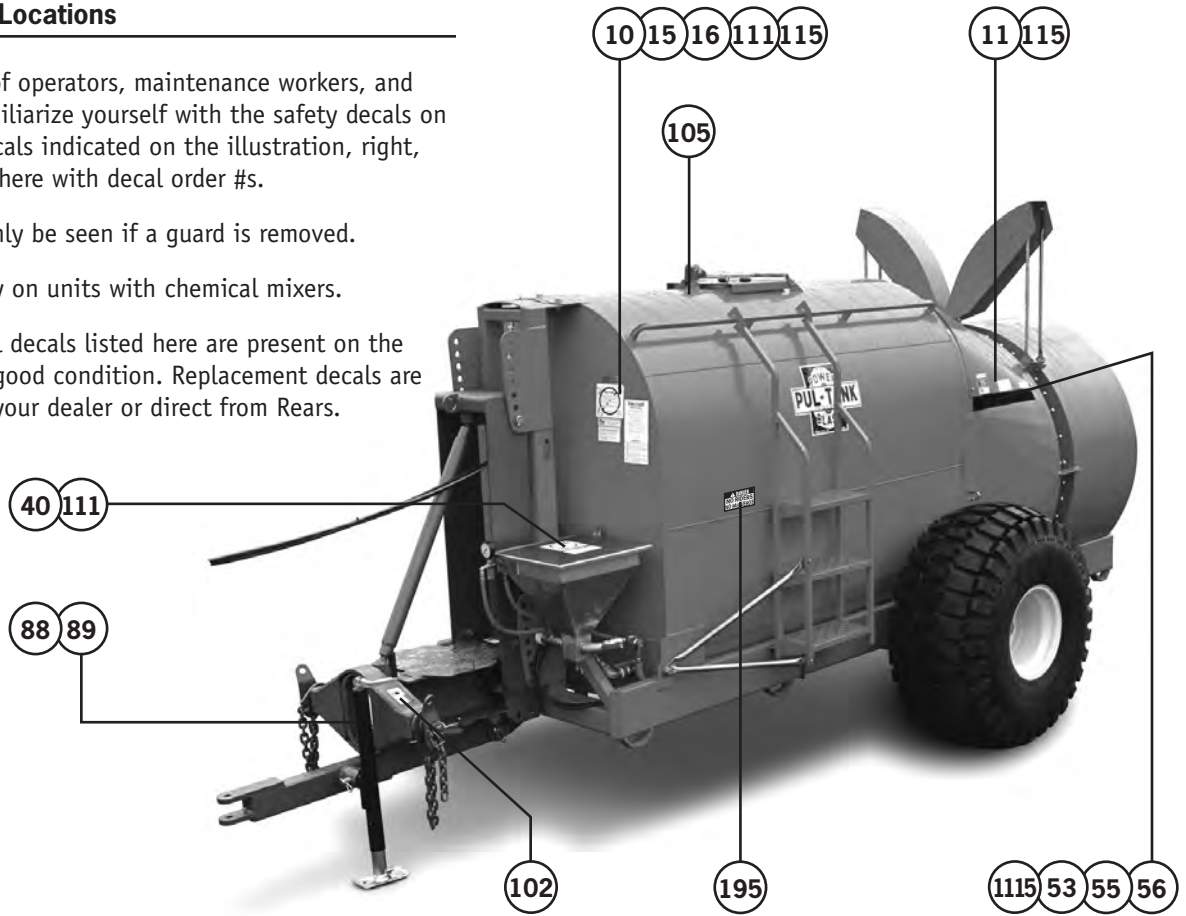
**Safety Decal Locations**

For the safety of operators, maintenance workers, and bystanders, familiarize yourself with the safety decals on the sprayer. Decals indicated on the illustration, right, are reproduced here with decal order #s.

Decal 88 can only be seen if a guard is removed.

Decal 40 is only on units with chemical mixers.

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.



	<b>WARNING</b>
	<p>DO NOT OPEN FLOW VALVES WITH MIXER LID OPEN.</p> <p>FOLLOW CHEMICAL HANDLING PROCEDURES AS INSTRUCTED BY THE CHEMICAL MANUFACTURER.</p>
<span style="border: 1px solid black; border-radius: 50%; padding: 2px;">40</span>	

<b>ATTENTION!</b>	
<p>CHECK GEARBOX OIL LEVEL DAILY</p> <p><b>OIL</b> Mobil 600 XP 68 or equivalent, see manual</p> <p>CHANGE OIL EVERY 200 HOURS OR SEASONALLY, WHICHEVER COMES FIRST</p> <p>DRAIN WHEN UNIT IS WARM</p>	
<span style="border: 1px solid black; border-radius: 50%; padding: 2px;">55</span>	

<p><b>Step Pulley:</b> (on pump)</p> <p><b>HIGH PRESSURE</b> (SMALL DIAMETER GROOVE)</p> <p><b>LOW PRESSURE</b> (LARGE DIAMETER GROOVE)</p>
<span style="border: 1px solid black; border-radius: 50%; padding: 2px;">56</span>

<p><b>Dump Valve:</b></p> <p><b>KEEP CLOSED</b></p> <p>WHEN SPRAYING</p> <p>NEVER USE TO REGULATE PRESSURE</p>
<span style="border: 1px solid black; border-radius: 50%; padding: 2px;">53</span>

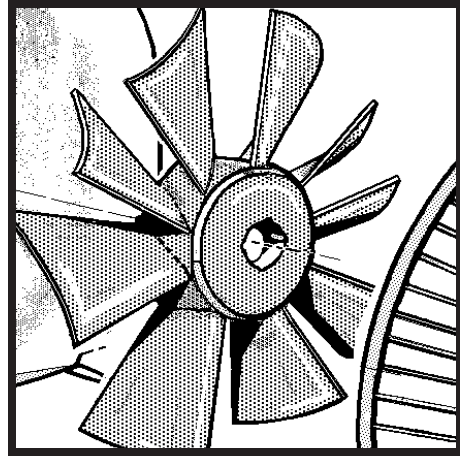
Read this manual completely before operating: follow all safety instructions.

## 6 Powerblast

### Pre-operation check list

---

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 chain and fan blades- keep clean.
3. Properly lubricate all grease points.
4. Check all fasteners - tighten as required.
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. Check tire pressure.

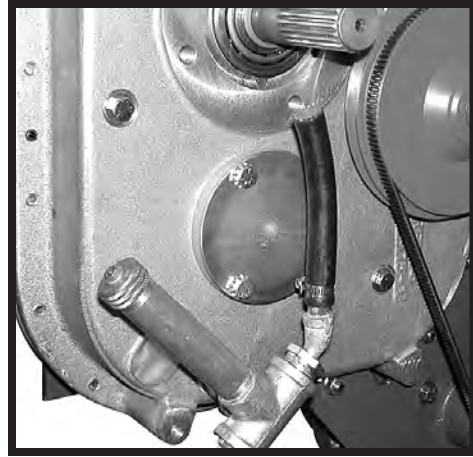


fan selection on p. 12

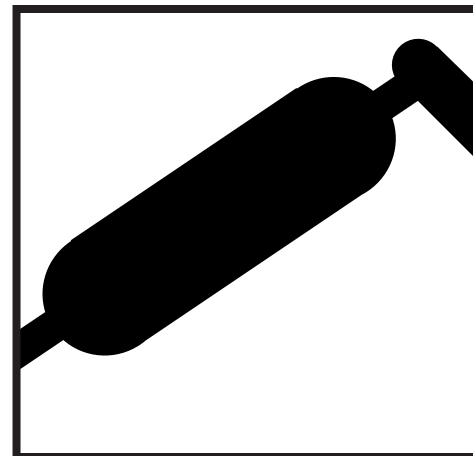
### Selecting and preparing the tractor

---

1. **Tractor size:** consider ground speed, terrain, and fan pitch when selecting a tractor. There is a chart of suggested horsepower requirements for fan blade pitches on page 12.
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.



gearbox lubrication on p. 21



lubrication schedule on p. 9



**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.  
  
The Centrifugal Pump will increase/decrease flow with ground speed changes, maintaining your application rate *so long as the tractor remains in the same gear.*  
  
Tractors with hydrostatic drive will not adjust pump flow to accommodate ground speed changes. Calibrated ground speed must but must maintained.
- 3. Never run pump dry.** Be sure tank is filled above the level of the pump *BEFORE* engaging the pump.
- 4. Clean your suction and discharge screens regularly.** Starving the pump suction will cause pump damage. Check strainers when re-filling the tank.
- 5. DO NOT ENGAGE PTO WITH FAN ON.**
- 6. Engage PTO at low speed, with fan OFF; tractor & implement must be in-line.**
- 7. Engage fan clutch at 1000RPM ENGINE SPEED:** for long fan clutch life switch on the fan before increasing PTO RPM to operating speed..
- 8. DO NOT shut off and re-engage PTO when turning at each row end.** Your CV Hitch is designed to power through turns without reducing PTO speed.
- 9. DO NOT turn off your fan at each row end:** for long clutch life turn ON the fan as instructed, item 7, and turn OFF the fan when spraying operations end.
- 10. Lubricate your sprayer regularly.** A lubrication schedule is provided in this manual. Clean grease fittings before injecting lubricant. Replace any lost or broken fittings immediately.
- 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.

**Operation tips, cont'd**

---

- 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.
- 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.

**Beginning of season**

---

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

**End of season and storage**

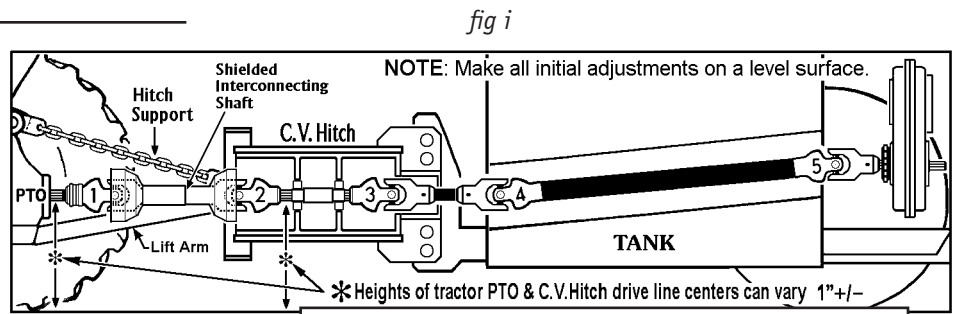
---

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 lighten load on tires. Do not deflate tires. Cover tires if exposed to sunlight, grease, or oil.
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. Position tractor and implement on a level surface. Check air pressure in all tires.
3. Set axle offset in desired position. See axle section for more information.



4. Align PTO shaft and Powerblast hitch center-link shaft.

- Measure tractor PTO shaft center height.
- With Powerblast frame parallel to the ground, measure hitch center-link shaft center height. If the center-link shaft height is within 1" (+/-) of the PTO shaft height, *fig. i*, continue to the next step. If the difference is greater than 1", adjust the hitch height as follows.
- To safely adjust the CVHitch height: block the sprayer wheels and block up the CV Hitch assembly.
- Make a note of the shaft-height difference BEFORE you remove the mast mount bolts. Remove the 4 bolts that mount the hitch to the frame mast.
- Using the sprayer jack, adjust the height of the hitch: to LOWER the hitch height, raise the sprayer height; to RAISE the hitch, lower the sprayer.
- Re-use the mount fasteners to bolt the hitch to the mast holes closest to your desired height.

It is important that all drive train **u-joints 1-5** are *in-phase*, or aligned as shown. As delivered from the factory, all shafts and drivelines are indexed for proper alignment. If an unindexed interconnecting shaft is ever used, or if any part of the drive train is disassembled, **be certain u-joints 1-5 align as shown.**

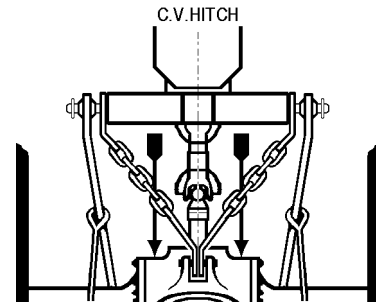
5. With the towing tongue secured out of the way, install the CVHitch half of the driveline with the roll pin in place.

6. As illustrated in *fig ii*, slide check chains onto CVHitch mount pins. Tractor lift arms slide onto CVHitch mount pins next, secured with klick-pins. Quick hitch systems may require a longer mount pin, provided by Rears.

7. Attach check chains to their respective keyhole brackets and adjust as illustrated in *fig i & ii*. Chains should be equal length to center the hitch behind the tractor. Tractors with an offset PTO shaft may require that chains be adjusted unequally to achieve the required alignment.

8. Lower 3-point mount arms until all slack is out of check chains. The weight should be carried by the lift arms, not the chains.

Check alignment and adjust chains as needed. Viewed from above and the side, the tractor PTO shaft and the hitch center-link shaft should be in-line and level.



9. Install the tractor half of the driveline. The telescoping shafts are indexed- the male half will only slide in if aligned properly.

Slide the driveline onto the tractor PTO shaft: the spline-lock must snap into shaft-groove.

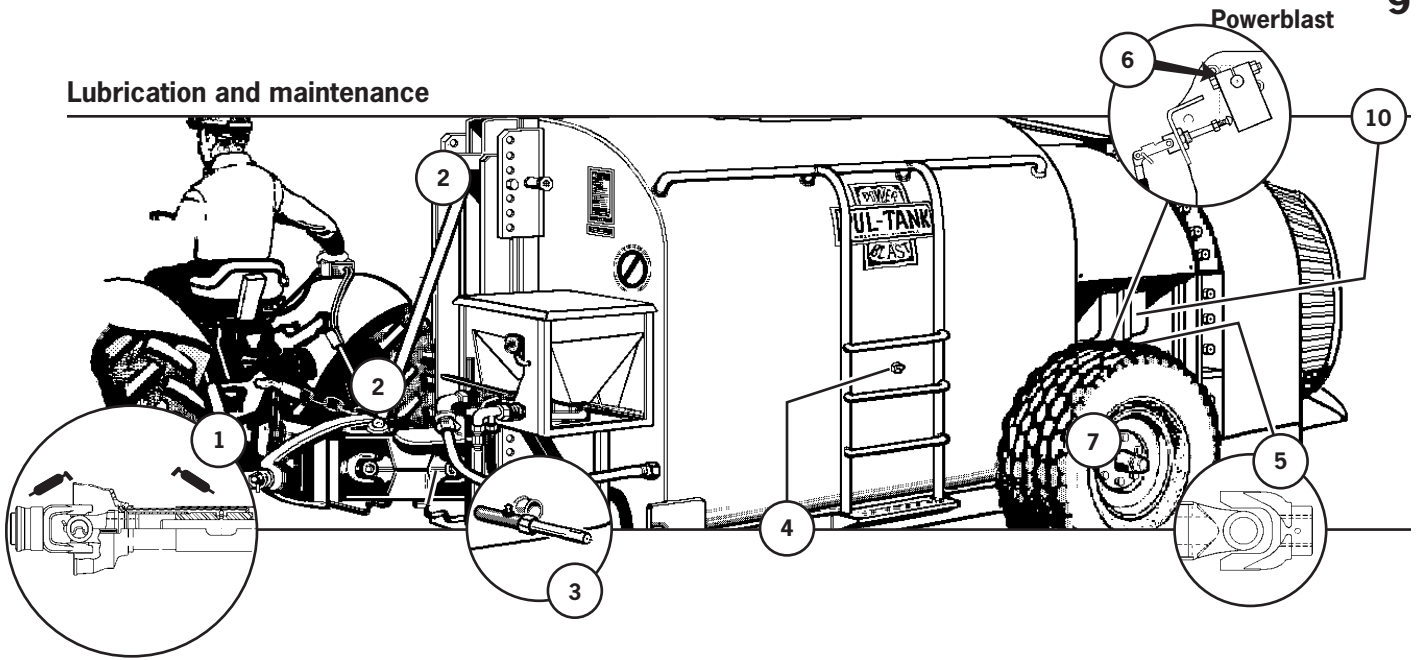
10. Attach hydraulics- keep hoses clear of driveline.

11. Rotate lift-jack or remove to storage point.

12. Connect handset controls. Take care when connecting wires to tractor battery.

**NEVER ENGAGE PTO WITH TRACTOR & POWERBLAST AT RIGHT ANGLES.**  
**NEVER ENGAGE PTO WITH FAN ON.**  
**NEVER ENGAGE PTO AT HIGH SPEED.**  
**NEVER DIS-ENGAGE PTO WHEN TURNING.**  
**NEVER OPERATE WITHOUT SAG-CHAINS.**  
**NEVER ENGAGE FAN CLUTCH AT HIGH SPEED.**  
**NEVER RUN THE PUMP DRY.**

**Lubrication and maintenance**



For first time use, grease all lube points as instructed on the lubrication schedule, below.



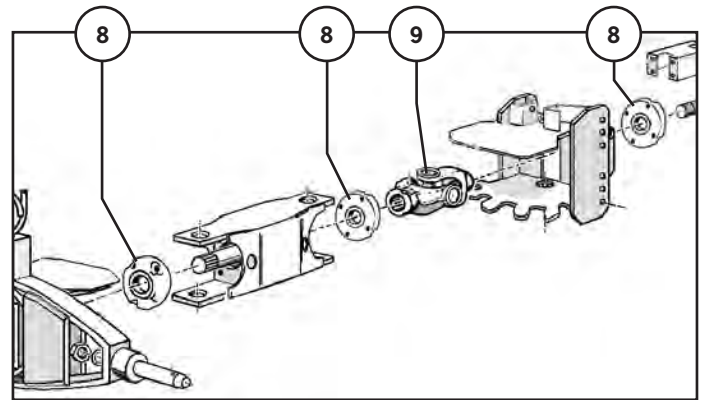
All lube points have been made accessible. Lubrication does not require disassembly.



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 gearbox- see the parts page for your gearbox in this manual.



No	Description	Special Instructions	Hours	Pump
1	Tractor driveline	Both crosses and telescoping slip collar	4	1-2
2	CVHitch support arm	1 point each end, 1000 gallon units only	40	1-2
3	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
	Agitator bearing extension	Only on models with access limitation, 1 point	16	1-2
4	Agitator shaft, center bearing	no lubrication required for current units	16	1-2
5	Thru-tank driveline crosses	Lube point at cross, each end	4	1-2
6	Belt tension pulley bearing**	1 point on bearing housing	16	1-2
7	Wheel hub	1 point each wheel, purge vents at seal	40	purge*
8	CVHitch center link bearings CVHitch output shaft bearing	51 series hitch with sealed bearings	<b>do not grease</b>	
		51 series hitch with ball bearings, purge vents at seal	8	purge*
		71 series hitch with ball bearings, purge vents at seal	8	purge*
		71 series hitch with roller bearings, purge at vent opposite zerk	8	purge*
9	CVHitch rear U-Joint	Lube point at cross	4	1-2
10	Gearbox	Check daily- see gearbox parts page	-	-

\* Purge: As you pump, watch for grease to vent: stop pumping as the grease emerges at the vent site.

\*\* Micro-V drives with auto-tensioner requires no lubrication

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

**Your PTO driveline**

A telescoping implement driveline is shipped with your sprayer to mount between your tractor and the CVHitch.

Rears has a wide selection of implement drivelines to accommodate your tractor. To determine the right telescoping driveline for your tractor, you need to have the following information:

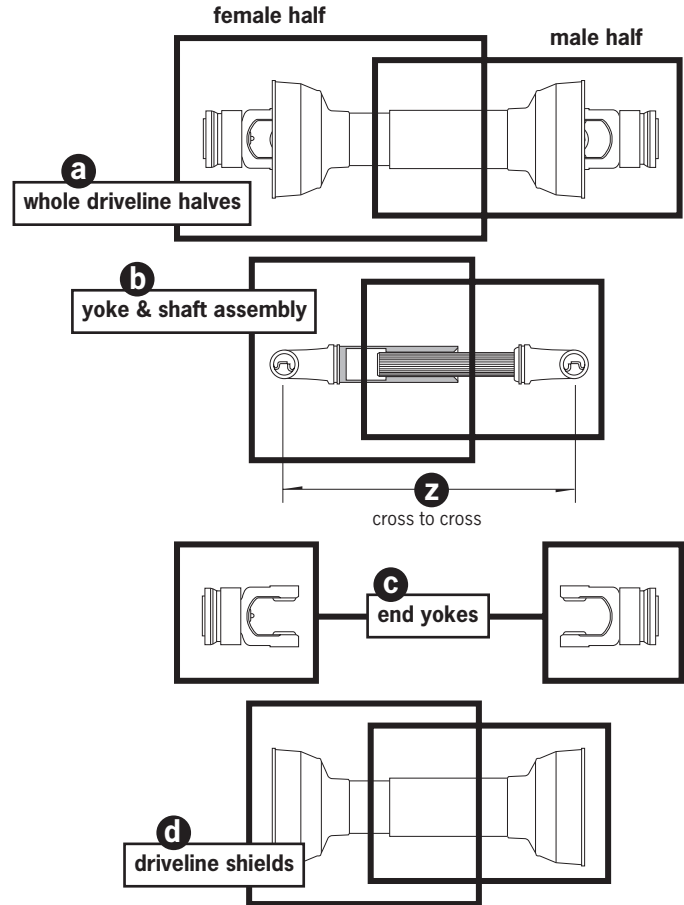
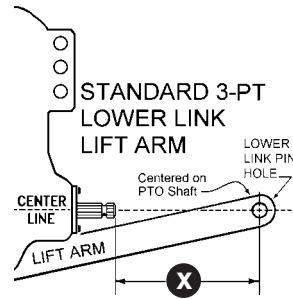
your tractor PTO shaft size and spline

the distance between the end of your tractor's PTO output shaft and the center of the lifting balls **x** as illustrated, above right. This distance must be measured when the lift balls and shaft are in-line.

Using *chart b*, page over: find the available drivelines for your lift balls distance, **x**, and select the female driveline spline that matches your tractor's output shaft.

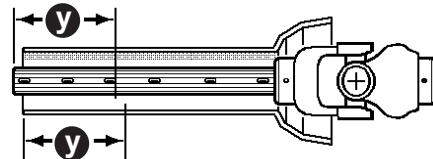
The provided telescoping driveline will match most tractors within the range for **x** indicated in *chart b*. Some tractors may require driveline length modification: see *chart a*.

For your **x** value in *chart a*, find what **y** modification is required. If modification is needed, shorten the driveline shield and the male shaft of the driveline by the **y** listed amount. As illustrated, the shield and the shaft must be measured and cut independently. The final modified cross-to-cross distance of your driveline, **z** (measured when collapsed) is given for reference. Do not cut more than 2-1/2" off the driveline half.



<b>x</b>	<b>y</b>	<b>z</b>
18"	2 1/2"	15"
18 1/2"	2"	15 1/2"
19"	1 1/2"	16"
19 1/2"	1"	16 1/2"
20"	1/2"	17"
20 1/2 - 23"	0"	17 1/2"
23 1/2"	1/2"	20 1/4"
24 - 28"	0"	20 3/4"
28 1/2 - 32 1/2"	0"	24 3/4"

chart b

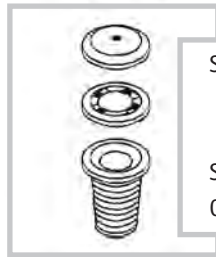
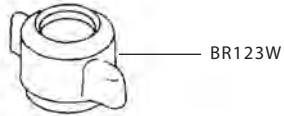


**Implement driveline**

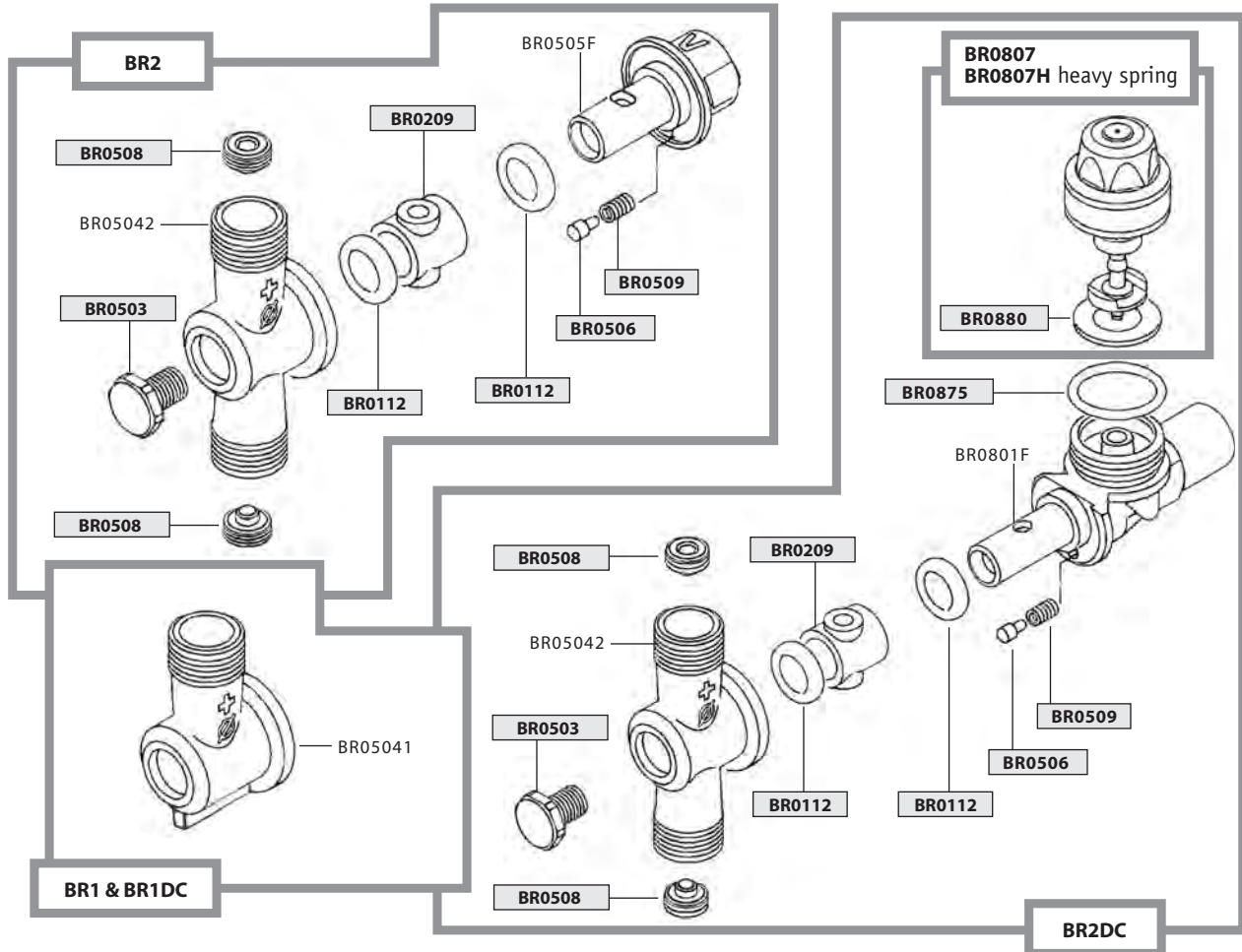
(X)	whole driveline part #	ptospeed		(a)	(b)	(c)	(d)	cross kit	collar kit
18-23"	order by halves see column a	540	female 1.375" 6 spline	DLF511S6	Y585	Y501	DLS510M	CPL55E	SSLK0621
			male 1.5" 17 spline rollpin secured	DL510MC	Y586	Y514	DLS510F	CPL55E	-
			male 1.75" 20 spline bolt secured	DL535MC	Y591	Y553	DLS510F	CPL55E	-
23.5-28"	order by halves see column a	540	female 1.375" 6 spline	DLF517S6	Y582	Y501	DLS501M	CPL55E	SSLK0621
			male 1.5" 17 spline rollpin secured	DL510MC	Y586	Y514	DLS510F	CPL55E	-
			male 1.75" 20 spline bolt secured	DL535MC	Y591	Y553	DLS510F	CPL55E	-
28.5-32.5"	order by halves see column a	540	female 1.375" 6 spline	DLF521S6	Y580	Y501	DLS502M	CPL55E	SSLK0621
			male 1.5" 17 spline rollpin secured	DL510MC	Y586	Y514	DLS510F	CPL55E	-
			male 1.75" 20 spline bolt secured	DL535MC	Y591	Y553	DLS510F	CPL55E	-

chart a





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 kits listed, right</b>		
<b>PART NUMBER</b>		<b>PART NUMBER</b>	
		<b>BR2DCKIT</b>	<i>parts kit for BR1DC &amp; BR2DC</i>
		<b>BR2KIT</b>	<i>parts kit for BR1 &amp; BR2</i>

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

**Fan Selection**

Match the fan size and blade pitch to your tractor's available horsepower and the needs of your application. All 33" diameter fans are interchangeable. All 38" diameter fans are interchangeable.

Available tractor horsepower is affected by terrain, tractor weight, PTO speed and application rate. The tractor horsepower recommendations given are adequate for most applications; use your experience with your operations to modify these horsepower recommendations to accommodate your needs.

**Fan Removal**

Remove the snap ring and set aside.

Remove both set screws from the taper-lock in the fan hub. Oil points and threads of both set screws. Set one set screw aside. Thread one into the removal hole as illustrated, right. As the set-screw bottoms out, the taper-lock will be displaced from the fan hub. If the taper lock resists removal from the hub, tap the hub face.

**Fan Installation**

Clean and de-grease the fan shaft, the fan hub bore and the taper-lock internal and external surfaces. Mating surfaces should be clean and smooth.

Place taper-lock in fan hub, matching threaded halves on mating surfaces. Oil points and threads of set screws and thread loosely into installation holes, illustrated at right. Before sliding hub/lock assembly onto the fan shaft, be certain the taper-lock is loose within the hub.

Slide the hub/lock assembly completely onto the fan shaft, aligning the taper-lock with the fan shaft key. Tighten the set-screws alternately and evenly until both are pulled up tightly.

Using a block or sleeve to avoid hub damage, strike the face of the taper-lock. Tighten the screws further: 35ft-lbs is the target torque for the installation set-screws.

Repeat striking the face of the taper-lock and tightening the install screws until you cannot tighten further.

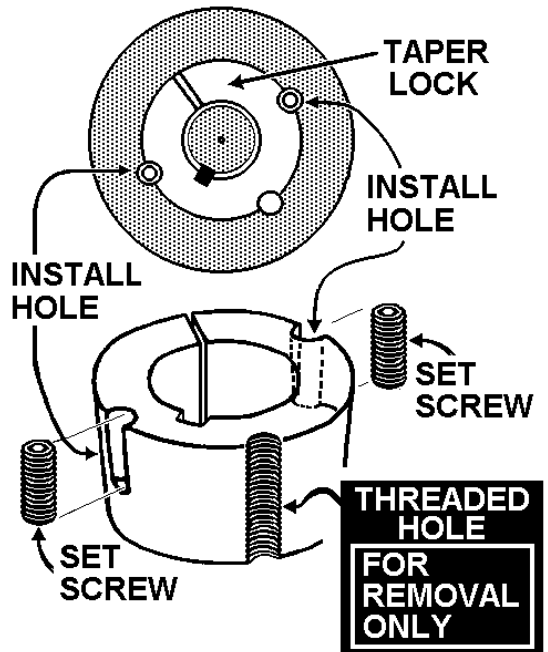
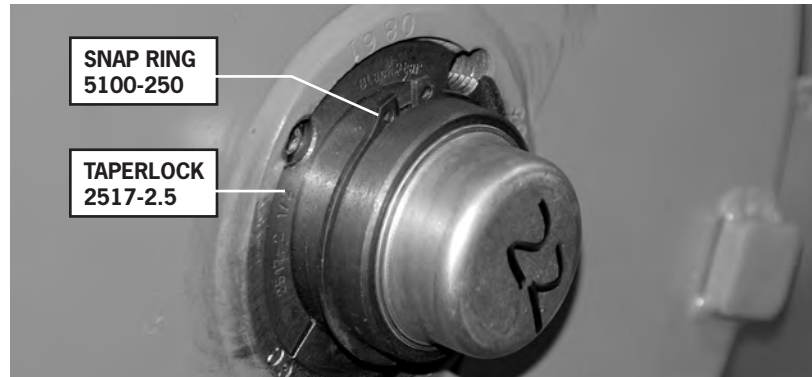
Re-install the snap ring into the fan shaft groove.

Re-install the fan guard. **Never operate without guard.**

When the fan has been operating for a short period (1/2 to 1 hour) check screws for proper tightness.

Fill empty holes with grease to prevent dirt build-up.

Fan Size	Pitch	Blade Count	Recommended PTO HP @540RPM	Product Stamp stamped on fan hub	Part Number
33"	18°	7	35 HP	7-18-33	PBF71833NT
	20°	7	40 HP	7-20-33	PBF72033NT
	22°	7	50 HP	7-22-33	PBF72233NT
	25°	7	55 HP	7-25-33	PBF72533NT
	27°	9	60 HP	9-27-33	PBF92733NT
	28°	9	70 HP	9-28-33	PBF92833NT
	30°	9	75 HP	9-30-33	PBF93033NT
	32°	9	80 HP	9-32-33	PBF93233NT
38"	20°	9	75 HP	9-20-38	PBF92038NT
	22°	9	80 HP	9-22-38	PBF92238NT
	25°	9	85 HP	9-25-38	PBF92538NT
	28°	9	90 HP	9-28-38	PBF92838NT
	30°	9	95 HP	9-30-38	PBF93038NT





**Troubleshooting: fan will not engage**

---

Check the clutch wiring for broken or loose connections.

Check the hand set circuit breakers and fan switch.

Remove the fan and inspect mating surfaces for excessive wear, warping, or foreign material.

**Troubleshooting: fan clutch slips/over heats**

---

Check the clutch wiring for corrosion or broken/loose connections.

Check for low voltage: should read about 14 volts.

Remove the fan and inspect wiring and clutch surfaces for excessive wear. Check for a burned drive plate. Engaging the fan frequently at engine speeds above 1000RPM will cause plate damage.

**Operating fan without clutch electrical power**

---

Remove the fan and align the clutch pulling holes of the driven half with the threaded holes in the driving half.

You will need (2) 3/8"-16 x 2" Grade 5 bolts to fasten the halves together. Tighten bolts to 33 foot-lbs.

With halves bolted together, the fan will be ON when the PTO is engaged.

Engage PTO at low RPM and increase to operating speed.

**RULES FOR FAN OPERATION.**

**ALWAYS ENGAGE PTO AT LOW SPEED WITH THE FAN OFF. THE TRACTOR AND IMPLEMENT SHOULD BE IN-LINE. PAGE 8.**

**ALWAYS ENGAGE FAN CLUTCH AT AN ENGINE SPEED OF 1000RPM: SWITCH ON THE FAN, THEN INCREASE PTO RPM TO OPERATING SPEED.**

**DO NOT DISENGAGE AND RE-ENGAGE PTO WHEN TURNING AT EACH ROW END. THE CV-HITCH CAN POWER THROUGH TURNS WITHOUT REDUCING PTO SPEED.**

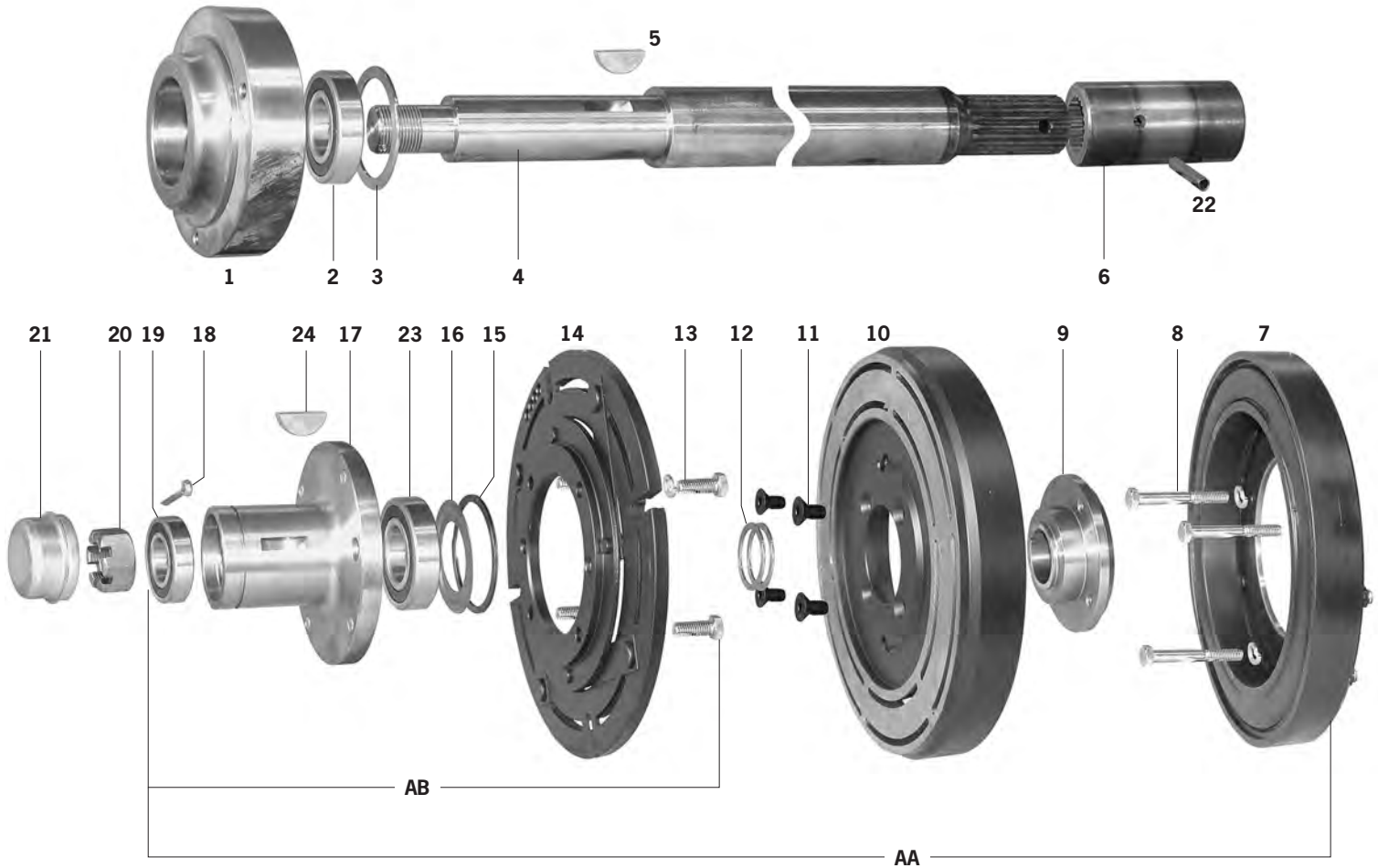
**NEVER ENGAGE THE PTO WITH THE FAN ON.**

**DO NOT TURN OFF FAN AT EACH ROW END. FOR LONG FAN CLUTCH LIFE: TURN ON THE FAN AS INSTRUCTED, ABOVE; TURN OFF THE FAN WHEN SPRAYING OPERATION ENDS.**

**DO NOT ENGAGE PTO WITHOUT WATER IN THE TANK. NEVER RUN THE PUMP DRY.**

**DO NOT OPERATE POWERBLAST WITHOUT THE FAN GUARD INSTALLED.**

# 16 Powerblast



## fan clutch assembly for 33" fan, PBG027A shaft with castle nut

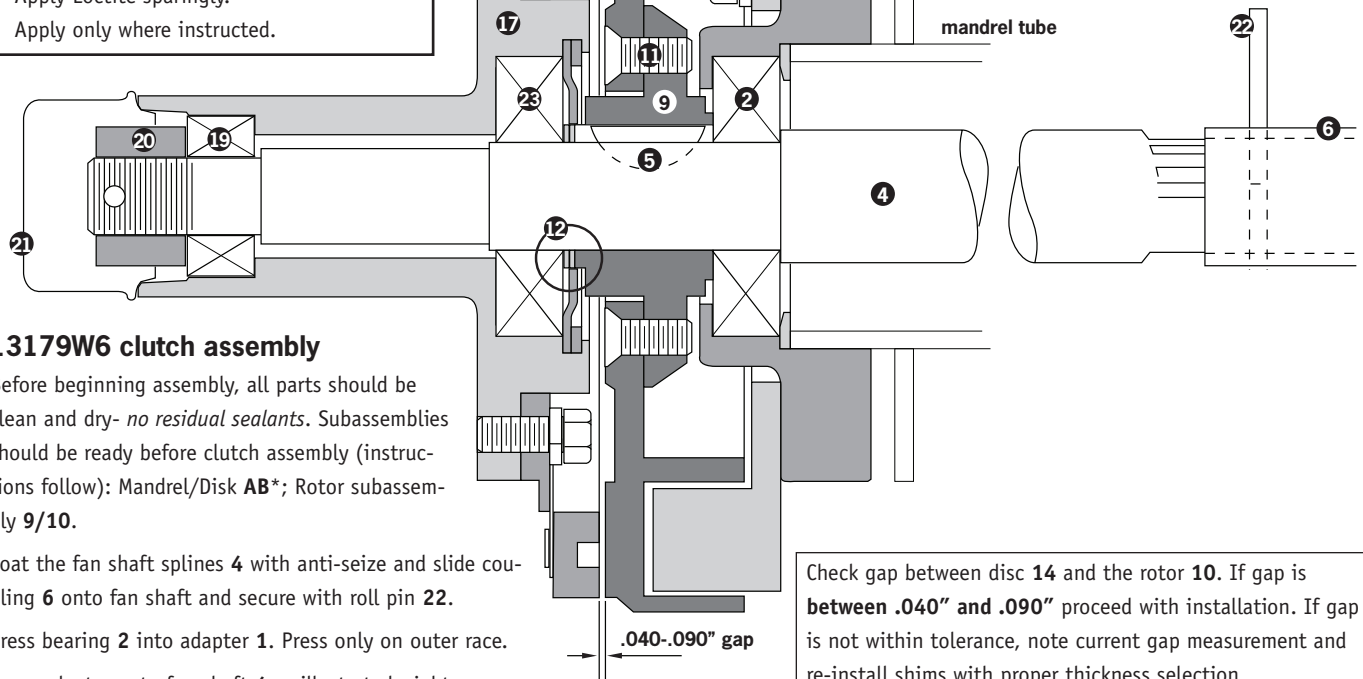
**NOTE:** This assembly is not for fan shafts with spring clip retainer groove.  
 This assembly is only for units with 33" fan.  
 This assembly is not for clutch mandrel assemblies with eccentric lock collar.

No.	Part #	Description	Qty	No.	Part #	Description	Qty
1	PB500X	clutch adapter	1	14	PB6803	clutch disc	1
2	6207-2RS	bearing	1	15	RRT283	spiral lock ring	1
3	PB503	bearing retainer	1	16	SPGR27-45	grease retainer	1
4	PBG027A	fan shaft, 33" fan	1	17	PB6	clutch mandrel	1
5	KW0310125	machine key	1	18	0180175CP	3/16" x 1-3/4" cotter pin	1
6	M2145	21 spline coupling	1	19	6205-2RS	bearing	1
7	PB6801	clutch coil	1	20	101NSL	1"NF castle nut	1
8	0310250CH5	5/16"-18 x 2-1/2" gr.5 bolt (see AA)	3	21	PB188	dust cap	1
	031WS	5/16" lock washer	3	22	0310200RP	5/16" x 2" roll pin	1
9	PB501	rotor hub	1	23	6207-2RS	bearing	1
10	PB6802	clutch rotor	1	24	KW0310125	woodruff key	1
11	03750075FHA5	3/8"-16 x 3/4" flat head allen screw	4	AA	13179W6	complete clutch assy less bolts 8	1
12	SHIMPK	shims- qty as required		AB	PB6C	complete clutch mandrel & disc assy	1
13	0370100CH5	3/8"-16 x 1" gr.5 bolt	4				
	037WS	3/8" lockwasher	4				

## Loctite application

Where instructed, **Red Loctite (271)** or equivalent should be used.  
All application surfaces should be cleaned first with **Loctite Primer** or equivalent.  
Apply Loctite sparingly.  
Apply only where instructed.

coil resistance	1.68/1.86 $\Omega$ @ 20°C
amperage draw	6.79A @ 12VDC



## 13179W6 clutch assembly

Before beginning assembly, all parts should be clean and dry- *no residual sealants*. Subassemblies should be ready before clutch assembly (instructions follow): Mandrel/Disk **AB\***; Rotor subassembly **9/10**.

Coat the fan shaft splines **4** with anti-seize and slide coupling **6** onto fan shaft and secure with roll pin **22**.

Press bearing **2** into adapter **1**. Press only on outer race.

Press adapter onto fan shaft **4** as illustrated, right.

Slide bearing retainer **3\*** onto fan shaft with bevelled face toward the fan.

Coat the mandrel tube mating surface of the clutch adapter **1** with anti-seize. Pass the coupled end of the fan shaft assembly into the mandrel tube. Use a mallet to tap the clutch adapter **1** and bearing retainer **3\*** against the mandrel tube. Align adapter mounting holes with mandrel tube flange.

Align coil **7** bolt holes such that terminal connectors are accessible. Apply anti-seize to bolt threads and install with lockwashers **8**.

Tap woodruff key **5** into place on the fan shaft **4**.

Install rotor subassembly **9/10** on fan shaft **4**. Slide hub **9** onto key **5**.

Slide clutch mandrel subassembly **AB\*** onto fan shaft **4**.

If **19** is a roller bearing, install bearing cone into clutch mandrel subassembly **AB\***. Thread castle nut **20** onto fan shaft. Tighten the nut to seat bearings properly. Clutch mandrel subassembly should rotate freely without friction. **Applying excessive force to castle nut can damage bearings.**

With the clutch assembly properly seated, measure the gap between the clutch disc **14** and the rotor **10**. **Important:** For proper operation the gap must be **between .040" and .090"**. If the gap is too tight, note your current gap and select shims **12** to get your desired spacing.

Remove the castle nut **20**, (bearing cone **19** if used) and the clutch mandrel subassembly **AB\***. Apply Loctite to the inner surface of bearings in subassembly **AB\*** (**23** & **19** if ball bearing) as instructed in Loctite sidebar.

If you need to install shims **12** to widen the gap between disc and rotor, slide them onto the fan shaft now, against the hub **9**.

Reinstall clutch mandrel subassembly **AB\*** as before.

If **19** is a roller bearing, apply Loctite to the inner surface of bearing cone before re-installing. Thread castle nut **20** onto fan shaft as before. With nut tightened, clutch mandrel subassembly should spin freely without friction.

To complete assembly, back off castle nut a notch to align with hole in fan shaft. Install cotter pin **18**. Tap dust cap **21** into place with a mallet.

Check gap between disc **14** and the rotor **10**. If gap is **between .040" and .090"** proceed with installation. If gap is not within tolerance, note current gap measurement and re-install shims with proper thickness selection.

## mandrel/disc subassembly

Press bearing **19** into clutch mandrel **17**. Press only on outer race.

Press bearing **23** into clutch mandrel **17**. Press only on outer race.

Install grease retainer **16\*** with flanged inner diameter away from bearing surface. Install spiral locking ring **15\*** into groove.

Align disc and mandrel *removal access holes* before bolting together.

Apply Loctite to bolts **13** and use lockwashers to fasten disc to threaded holes in clutch mandrel.

## rotor/hub subassembly

To bolt rotor hub **9** to rotor **10**, use recessed allen head bolts **11** and apply Loctite to threads. Orient hub and rotor as illustrated, above.

## clutch burnishing

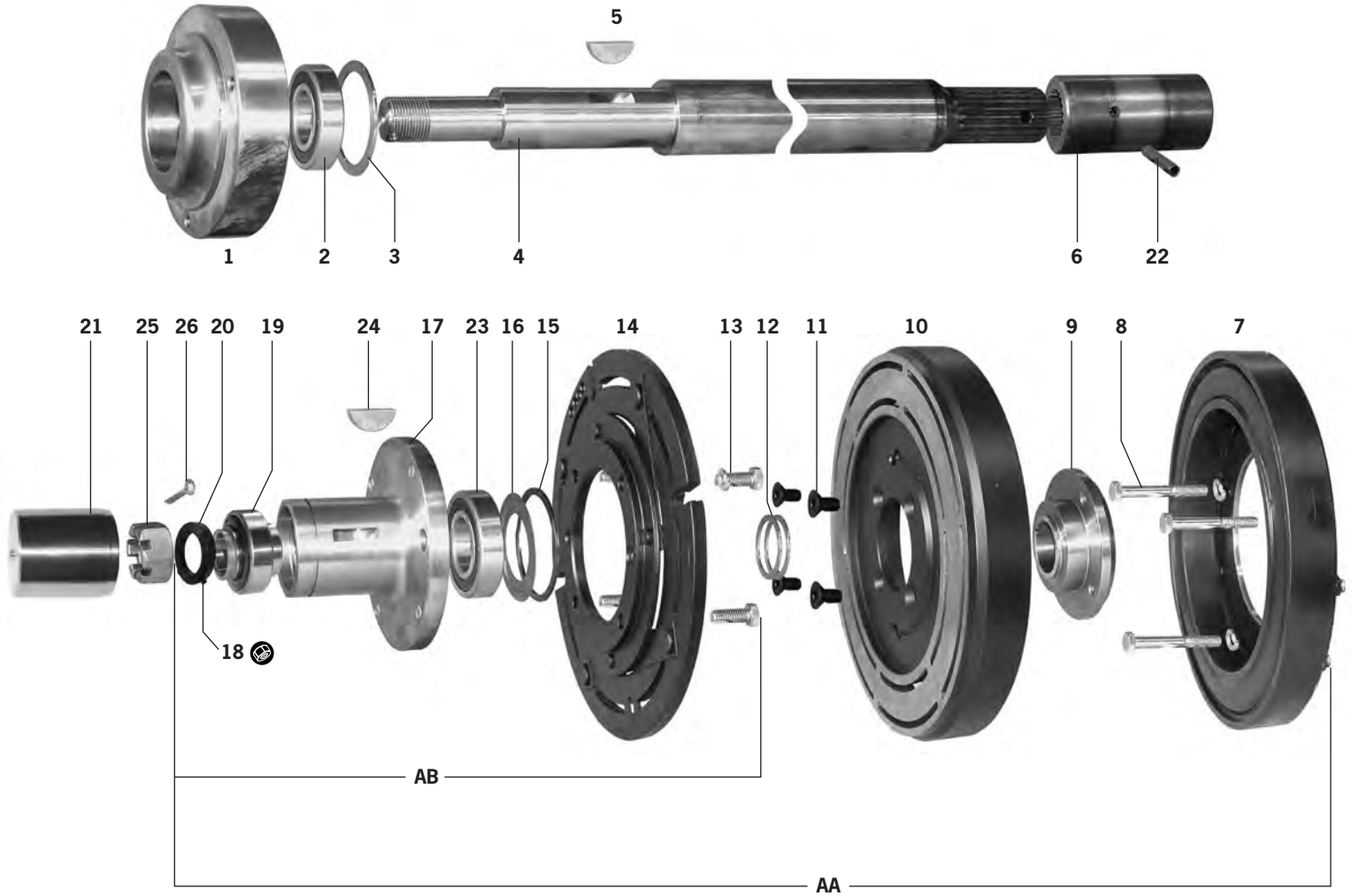
Factory clutch installations are followed with a burnishing step: a surface preparation necessary to provide the rated torque of the clutch. The blackened surfaces of disc and rotor are important to this process- do not remove this coating prior to burnishing.

With the fan installed and water in the tank (**DO NOT RUN PUMP DRY**), hook the Powerblast up to your tractor and engage PTO. Maintain an engine speed of 1000-1200RPM.

Cycle the fan clutch on and off 15-20 times over a one minute period (ON cycle is momentary- enough time to engage the clutch; OFF cycle for 2-3 seconds- enough time for deceleration).

\* *Items included in above illustration, but not numbered.*  
*Number matches item to facing parts breakdown.*

# 18 Powerblast



## fan clutch assembly for 33" fan, PBG027ASC shaft with castle nut

**NOTE:** This assembly is not for fan shafts with spring clip retainer groove.  
 This assembly is only for units with 33" fan.  
 This assembly is only for clutch mandrel assemblies with eccentric lock collar.

No.	Part #	Description	Qty	No.	Part #	Description	Qty
1	PB500X	clutch adapter	1	14	PB6803	clutch disc	1
2	6207-2RS	bearing	1	15	RRT283	spiral lock ring	1
3	PB503	bearing retainer	1	16	SPGR27-45	grease retainer	1
4	PBG027ASC	fan shaft: 33" fan for PBIN6EC mandrel 17	1	17	PBIN6EC	clutch mandrel	1
5	KW0310125	woodruff key	1	18	0260025SET	1/4"-28 x 1/4" set screw	1
6	M2145	21 spline coupling	1	19	HCR205-16	bearing with eccentric collar	1
7	PB6801	clutch coil	1	20		eccentric collar included with bearing 19	1
8	0310250CH5	5/16"-18 x 2-1/2" gr.5 bolt (see AA)	3	21	PBEXTDUSTCAP	dust cap	1
	031WS	5/16" lock washer	3	22	0310200RP	5/16" x 2" roll pin	1
9	PB501	rotor hub	1	23	6207-2RS	bearing	1
10	PB6802	clutch rotor	1	24	KW0310125	woodruff key	1
11	03750075FHA5	3/8"-16 x 3/4" flat head allen screw	4	25	101NSL	1"-14 castle nut	1
12	SHIMPK	shims- qty as required		26	0180175CP	cotter pin 3/16" x 1-3/4"	1
13	0370100CH5	3/8"-16 x 1" gr.5 bolt	4	AA	13179W6SC	complete clutch assy less bolts 8	1
	037WS	3/8" lockwasher	4	AB	PB6CEC	complete clutch mandrel & disc assy	1

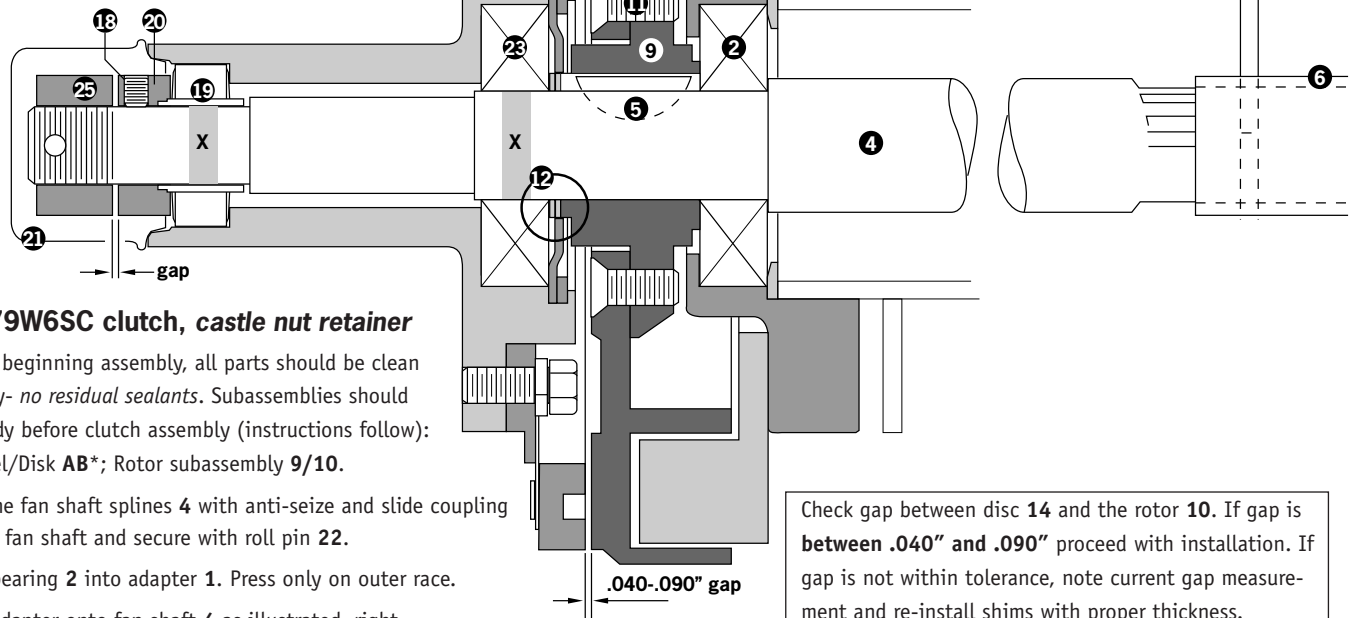
## Loctite application

Where instructed use the Loctite product recommended or the equivalent.

All application surfaces should be cleaned first with **Loctite Primer** or equivalent.

Apply Loctite sparingly.

Apply only where instructed.



## 13179W6SC clutch, castle nut retainer

Before beginning assembly, all parts should be clean and dry- *no residual sealants*. Subassemblies should be ready before clutch assembly (instructions follow): Mandrel/Disk **AB\***; Rotor subassembly **9/10**.

Coat the fan shaft splines **4** with anti-seize and slide coupling **6** onto fan shaft and secure with roll pin **22**.

Press bearing **2** into adapter **1**. Press only on outer race.

Press adapter onto fan shaft **4** as illustrated, right.

Slide bearing retainer **3\*** onto fan shaft with bevelled face toward the fan.

Coat the mandrel tube mating surface of the clutch adapter **1** with anti-seize. Pass the coupled end of the fan shaft assembly into the mandrel tube. Use a mallet to tap the clutch adapter **1** and bearing retainer **3\*** against the mandrel tube. Align adapter mounting holes with mandrel tube flange.

Align coil **7** bolt holes such that terminal connectors are accessible. Apply anti-seize to bolt threads and install with lockwashers **8**.

Tap woodruff key **5** into place on the fan shaft **4**.

Install rotor subassembly **9/10** on fan shaft **4**. Slide hub **9** onto key **5**.

Slide clutch mandrel subassembly **AB\*** onto fan shaft **4** until it presses against the hub **9**.

With the clutch mandrel assembly pressed against the hub, measure the gap between the clutch disc **14** and the rotor **10**. **Important:** For proper operation the gap must be **between .040" and .090"**. If the gap is too tight, note your current gap and select shims **12** to get your desired spacing. Install the shims on the fan shaft, press the clutch mandrel assembly onto the shaft and re-check the disc-rotor gap.

If the disk-rotor gap is correct, remove the clutch mandrel subassembly **AB\***. Apply **609 Loctite** to the fan shaft surfaces as illustrated by areas **X** on the above diagram: one bead of **609 Loctite** 3/4" from the face of the rotor **9** (or shims **12** if used); one bead centered on shaft mating surface for bearing **19**. Refer to the Loctite installation instructions inset, above.

Slide the eccentric lock collar **20** onto the bearing **19**.

Tighten **COUNTER-CLOCKWISE** by hand then tighten further with a drift. Tighten the setscrew **18**. The setscrew is provided with thread adhesive.

Thread castle nut **25** onto fan shaft. **THE NUT MUST NOT RUB AGAINST THE BEARING LOCK COLLAR DURING OPERATION!** Hand tighten the nut onto the fan shaft until the threads bottom out or the nut contacts the lock collar **20**. Back off nut a notch to align with hole in fan shaft. Spin clutch assembly to check gap between the castle nut and bearing set collar. Install cotter pin **26**. Tap dust cap **21** into place.

## mandrel/disc subassembly

Press bearing **19** into clutch mandrel **17**. Be certain the collar side of the bearing is on the outside of the mandrel.

Press only on outer race.

Press bearing **23** into clutch mandrel **17**. Press only on outer race.

Install grease retainer **16\*** with flanged inner diameter away from bearing surface. Install spiral locking ring **15\*** into groove.

Align disc and mandrel *removal access holes* before bolting together.

Apply **Loctite 271** to bolts **13** and use lockwashers to fasten disc to threaded holes in clutch mandrel.

## rotor/hub subassembly

To bolt rotor hub **9** to rotor **10**, use recessed allen head bolts **11** and apply **Loctite 271** to threads. Orient hub and rotor as illustrated.

## clutch burnishing

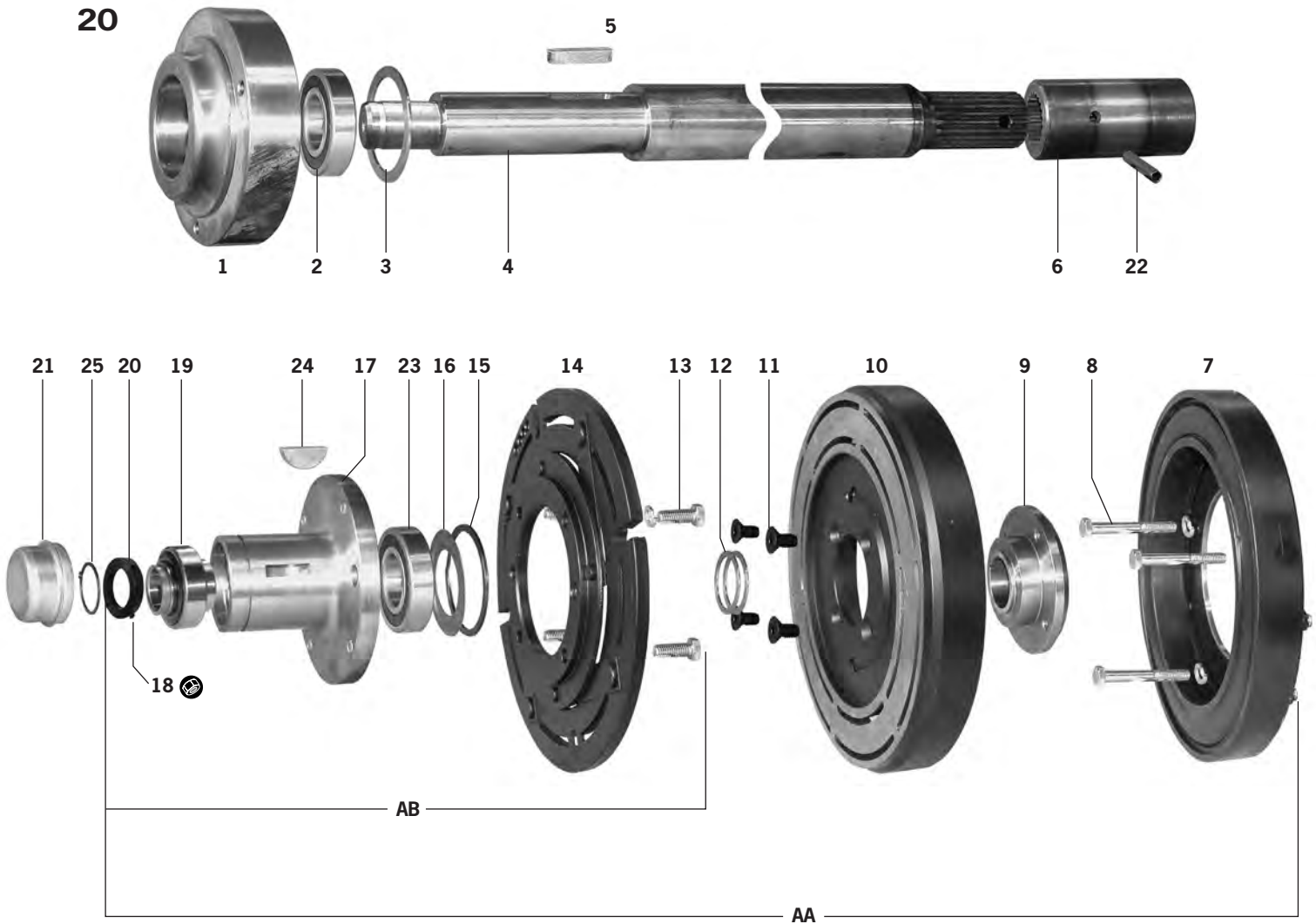
Factory clutch installations are followed with a burnishing step: a surface preparation necessary to provide the rated torque of the clutch. The blackened surfaces of disc and rotor are important to this process- do not remove this coating prior to burnishing.

With the fan installed and water in the tank (**DO NOT RUN PUMP DRY**), hook the Powerblast up to your tractor and engage PTO. Maintain an engine speed of 1000-1200RPM.

Cycle the fan clutch on and off 15-20 times over a one minute period (ON cycle is momentary- enough time to engage the clutch; OFF cycle for 2-3 seconds- enough time for deceleration).

\* Items included in above illustration, but not numbered.  
Number matches item to facing parts breakdown.

20



**fan clutch assembly for 38" fan, SC fan shaft: spring clip retainer**

**NOTE:** This assembly is not for fan shafts with 1" threaded end and castle nut retainer.  
 This assembly is only for fan shafts with spring clip groove.

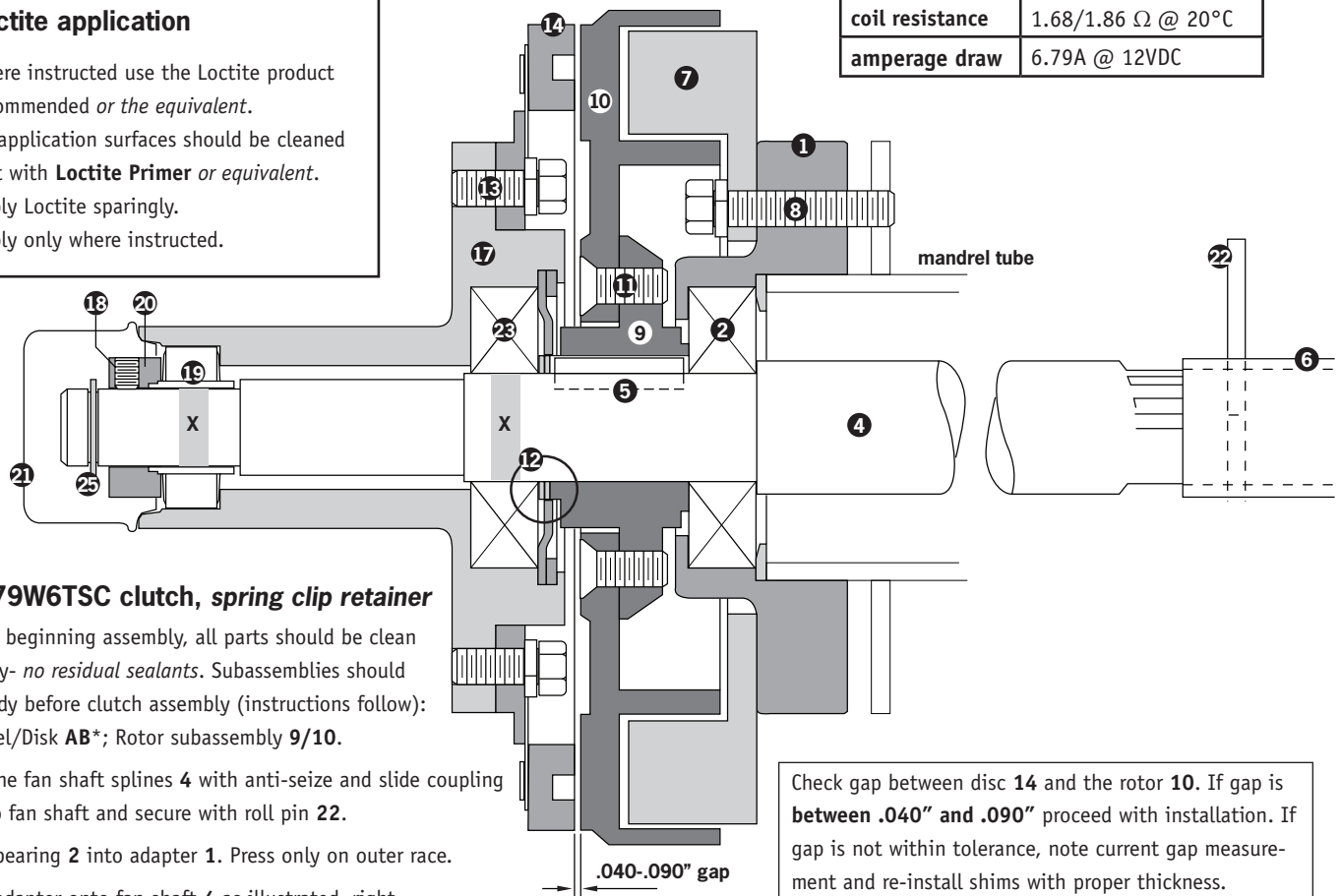
No.	Part #	Description	Qty	No.	Part #	Description	Qty
1	PB500XTW	clutch adapter	1	15	WH314	spiral lock ring	1
2	6208-2RS	bearing	1	16	PBGR208	grease retainer	1
3	PB503TW	bearing retainer	1	17	PBIN6TWEC	clutch mandrel	1
4	PBG027A38SC*	fan shaft, 38" fan*	1	18	0260025SET	1/4"-28 x 1/4" set screw	1
	PBG027TW1SC*	tower fan shaft, 38" fan*		19	HCR205-16	bearing with eccentric collar	1
	PBG027TW2SC*	tower fan shaft, 54-9/16" long, 38" fan*		20		eccentric collar <i>included with bearing 19</i>	1
5	KM0310150	machine key	1	21	PB188	dust cap	1
6	M2145	21 spline coupling	1	22	0310200RP	5/16" x 2" roll pin	1
7	PB6801	clutch coil	1	23	6208-2RS	bearing	1
8	0310250CH5	5/16"-18 x 2-1/2" gr.5 bolt (see AA)	3	24	KW0310125	woodruff key	1
	031WS	5/16" lock washer		25	7200-98	spring clip	1
9	PB501TW	rotor hub	1	AA	13179W6TSC	complete clutch assy <i>less bolts 8</i>	1
10	PB6802	clutch rotor	1	AB	PB6CTWSC	complete clutch mandrel & disc assy	1
11	03750075FHA5	3/8"-16 x 3/4" flat head allen screw	4				
12	SHIMPKTW	shims- qty as required					
	0370100CH5	3/8"-16 x 1" gr.5 bolt	4				
	037WS	3/8" lockwasher	4				
14	PB6803	clutch disc	1				

\* fan shaft with snap ring retainer (SC designation) have been replaced with threaded shaft (EC designation).  
 Parts for EC shafts on following page.

## Loctite application

Where instructed use the Loctite product recommended or the equivalent.  
All application surfaces should be cleaned first with **Loctite Primer** or equivalent.  
Apply Loctite sparingly.  
Apply only where instructed.

coil resistance	1.68/1.86 $\Omega$ @ 20°C
amperage draw	6.79A @ 12VDC



### 13179W6TSC clutch, spring clip retainer

Before beginning assembly, all parts should be clean and dry- *no residual sealants*. Subassemblies should be ready before clutch assembly (instructions follow): Mandrel/Disk **AB\***; Rotor subassembly **9/10**.

Coat the fan shaft splines **4** with anti-seize and slide coupling **6** onto fan shaft and secure with roll pin **22**.

Press bearing **2** into adapter **1**. Press only on outer race.

Press adapter onto fan shaft **4** as illustrated, right.

Slide bearing retainer **3\*** onto fan shaft with bevelled face toward the fan.

Coat the mandrel tube mating surface of the clutch adapter **1** with anti-seize. Pass the coupled end of the fan shaft assembly into the mandrel tube. Use a mallet to tap the clutch adapter **1** and bearing retainer **3\*** against the mandrel tube. Align adapter mounting holes with mandrel tube flange.

Align coil **7** bolt holes such that terminal connectors are accessible. Apply anti-seize to bolt threads and install with lockwashers **8**.

Tap machine key **5** into place on the fan shaft **4**.

Install rotor subassembly **9/10** on fan shaft **4**. Slide hub **9** onto key **5**.

Slide clutch mandrel subassembly **AB\*** onto fan shaft **4** until it presses against the hub **9**.

With the clutch mandrel assembly pressed against the hub, measure the gap between the clutch disc **14** and the rotor **10**. **Important:** For proper operation the gap must be **between .040" and .090"**. If the gap is too tight, note your current gap and select shims **12** to get your desired spacing. Install the shims on the fan shaft, press the clutch mandrel assembly onto the shaft and re-check the disc-rotor gap.

If the disk-rotor gap is correct, remove the clutch mandrel subassembly **AB\***. Apply **609 Loctite** to the fan shaft surfaces as illustrated by areas **X** on the above diagram: one bead of **609 Loctite** 3/4" from the face of the rotor **9** (or shims **12** if used); one bead centered on shaft mating surface for bearing **19**. Refer to the Loctite installation instructions inset, above.

Slide the eccentric lock collar **20** onto the bearing **19**.

Tighten **COUNTER-CLOCKWISE** by hand then tighten further with a drift.

Tighten the setscrew **18**. The setscrew is provided with thread adhesive.

Install spring clip **25**.

Check gap between disc **14** and the rotor **10**. If gap is **between .040" and .090"** proceed with installation. If gap is not within tolerance, note current gap measurement and re-install shims with proper thickness.

### mandrel/disc subassembly

Press bearing **19** into clutch mandrel **17**. Be certain the collar side of the bearing is on the outside of the mandrel.

Press only on outer race.

Press bearing **23** into clutch mandrel **17**. Press only on outer race.

Install grease retainer **16\*** with flanged inner diameter away from bearing surface. Install spiral locking ring **15\*** into groove.

Align disc and mandrel *removal access holes* before bolting together.

Apply **Loctite 271** to bolts **13** and use lockwashers to fasten disc to threaded holes in clutch mandrel.

### rotor/hub subassembly

To bolt rotor hub **9** to rotor **10**, use recessed allen head bolts **11** and apply **Loctite 271** to threads. Orient hub and rotor as illustrated.

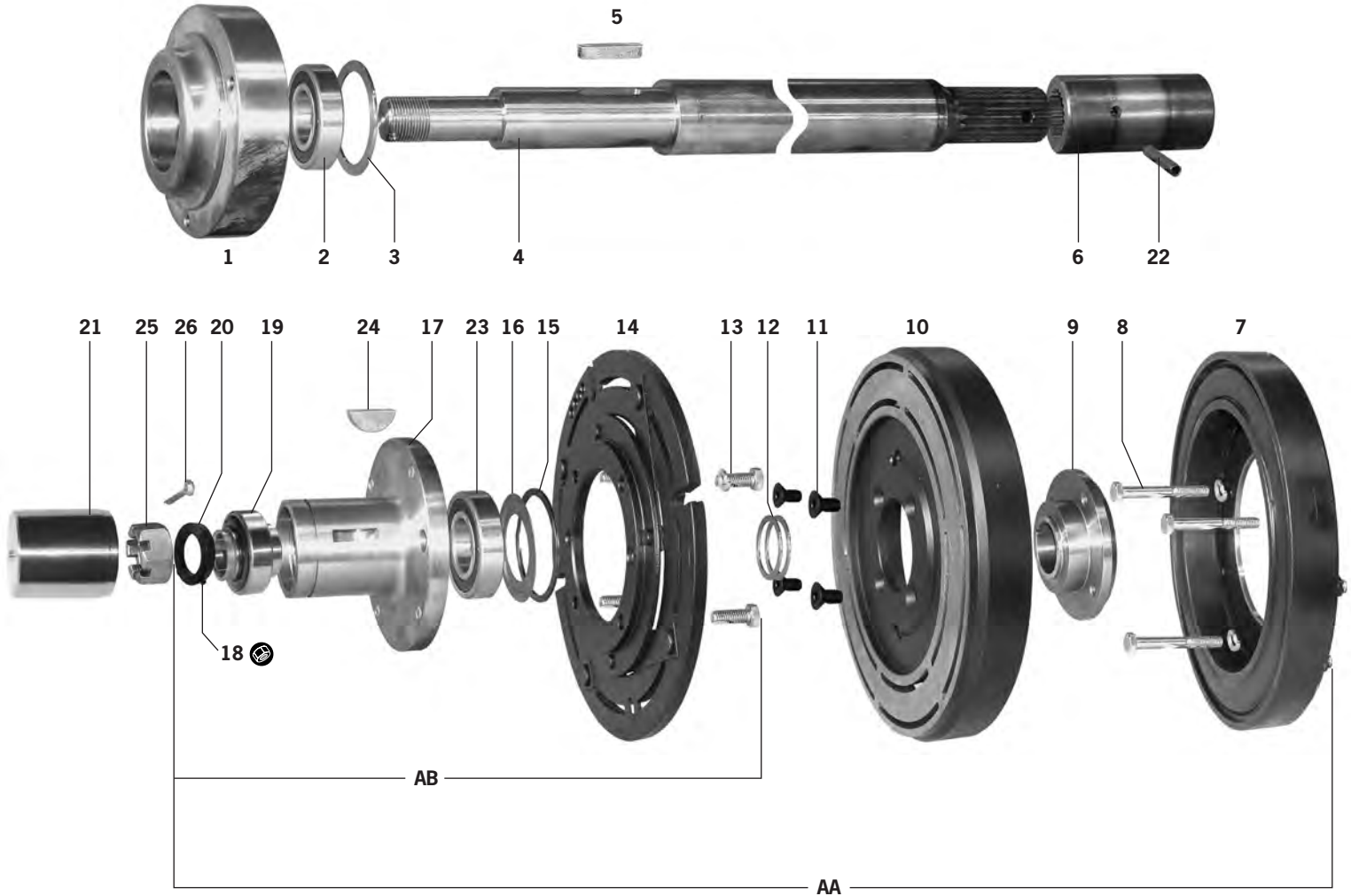
### clutch burnishing

Factory clutch installations are followed with a burnishing step: a surface preparation necessary to provide the rated torque of the clutch. The blackened surfaces of disc and rotor are important to this process- do not remove this coating prior to burnishing.

With the fan installed and water in the tank (**DO NOT RUN PUMP DRY**), hook the Powerblast up to your tractor and engage PTO. Maintain an engine speed of 1000-1200RPM.

Cycle the fan clutch on and off 15-20 times over a one minute period (ON cycle is momentary- enough time to engage the clutch; OFF cycle for 2-3 seconds- enough time for deceleration).

\* Items included in above illustration, but not numbered.  
Number matches item to facing parts breakdown.



**fan clutch assembly for 38" fan, 33" fan for tower, EC fan shaft: castle nut retainer**

**NOTE:** This assembly is not for fan shafts with spring clip retainer groove.  
 This assembly is only for units with 38" fan, 33" fan with tower cabinet.

No.	Part #	Description	Qty
1	PB500XTW	clutch adapter	1
2	6208-2RS	bearing	1
3	PB503TW	bearing retainer	1
4	PBG027A38EC	fan shaft, 38" fan w/standard fan housing	1
	PBG027TW1EC	tower fan shaft: 38" & 33" fan	
5	KM0310150	machine key	1
6	M2145	21 spline coupling	1
7	PB6801	clutch coil	1
8	0310250CH5	5/16"-18 x 2-1/2" gr.5 bolt (see AA)	3
	031WS	5/16" lock washer	3
9	PB501TW	rotor hub	1
10	PB6802	clutch rotor	1
11	03750075FHA5	3/8"-16 x 3/4" flat head allen screw	4
12	SHIMPKTW	shims- qty as required	
13	0370100CH5	3/8"-16 x 1" gr.5 bolt	4
	037WS	3/8" lockwasher	4
14	PB6803	clutch disc	1
15	WH314	spiral lock ring	1

No.	Part #	Description	Qty
16	PBGR208	grease retainer	1
17	PBIN6TWEC	clutch mandrel	1
18	0260025SET	1/4"-28 x 1/4" set screw	1
19	HCR205-16	bearing with eccentric collar	1
20		eccentric collar included with bearing 19	1
21	PBEXTDUSTCAP	dust cap	1
22	0310200RP	5/16" x 2" roll pin	1
23	6208-2RS	bearing	1
24	KW0310125	woodruff key	1
25	101NSL	1"-14 castle nut	1
26	0180175CP	cotter pin 3/16" x 1-3/4"	1
AA	13179W6TSC	complete clutch assy less bolts 8	1
AB	PB6CTWSC	complete clutch mandrel & disc assy	1



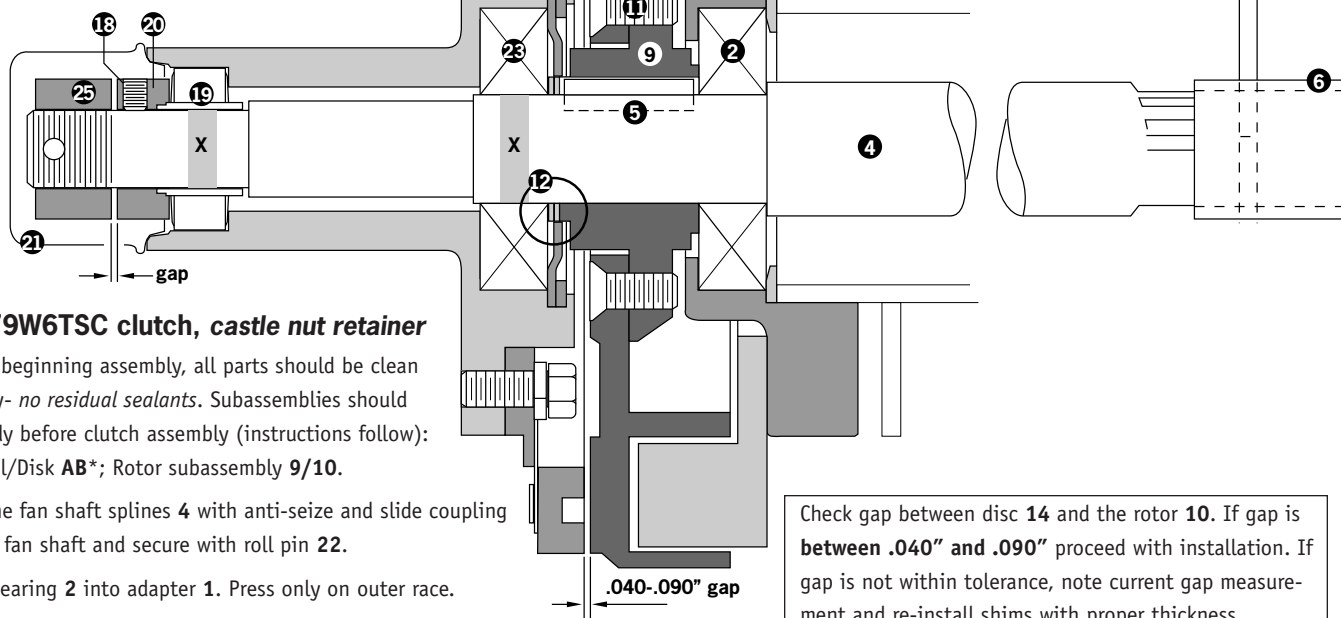
## Loctite application

Where instructed use the Loctite product recommended or the equivalent.

All application surfaces should be cleaned first with **Loctite Primer** or equivalent.

Apply Loctite sparingly.

Apply only where instructed.



## 13179W6TSC clutch, castle nut retainer

Before beginning assembly, all parts should be clean and dry- *no residual sealants*. Subassemblies should be ready before clutch assembly (instructions follow): Mandrel/Disk **AB\***; Rotor subassembly **9/10**.

Coat the fan shaft splines **4** with anti-seize and slide coupling **6** onto fan shaft and secure with roll pin **22**.

Press bearing **2** into adapter **1**. Press only on outer race.

Press adapter onto fan shaft **4** as illustrated, right.

Slide bearing retainer **3\*** onto fan shaft with bevelled face toward the fan.

Coat the mandrel tube mating surface of the clutch adapter **1** with anti-seize. Pass the coupled end of the fan shaft assembly into the mandrel tube. Use a mallet to tap the clutch adapter **1** and bearing retainer **3\*** against the mandrel tube. Align adapter mounting holes with mandrel tube flange.

Align coil **7** bolt holes such that terminal connectors are accessible. Apply anti-seize to bolt threads and install with lockwashers **8**.

Tap machine key **5** into place on the fan shaft **4**.

Install rotor subassembly **9/10** on fan shaft **4**. Slide hub **9** onto key **5**.

Slide clutch mandrel subassembly **AB\*** onto fan shaft **4** until it presses against the hub **9**.

With the clutch mandrel assembly pressed against the hub, measure the gap between the clutch disc **14** and the rotor **10**. **Important:** For proper operation the gap must be **between .040" and .090"**. If the gap is too tight, note your current gap and select shims **12** to get your desired spacing. Install the shims on the fan shaft, press the clutch mandrel assembly onto the shaft and re-check the disc-rotor gap.

If the disk-rotor gap is correct, remove the clutch mandrel subassembly **AB\***. Apply **609 Loctite** to the fan shaft surfaces as illustrated by areas **X** on the above diagram: one bead of **609 Loctite** 3/4" from the face of the rotor **9** (or shims **12** if used); one bead centered on shaft mating surface for bearing **19**. Refer to the Loctite installation instructions inset, above.

Slide the eccentric lock collar **20** onto the bearing **19**.

Tighten **COUNTER-CLOCKWISE** by hand then tighten further with a drift.

Tighten the setscrew **18**. The setscrew is provided with thread adhesive.

Thread castle nut **25** onto fan shaft. **THE NUT MUST NOT RUB AGAINST THE BEARING LOCK COLLAR DURING OPERATION!** Hand tighten the nut onto the fan shaft until the threads bottom out or the nut contacts the lock collar **20**. Back off nut a notch to align with hole in fan shaft. Spin clutch assembly to check gap between the castle nut and bearing set collar. Install cotter pin **26**. Tap dust cap **21** into place.

Check gap between disc **14** and the rotor **10**. If gap is **between .040" and .090"** proceed with installation. If gap is not within tolerance, note current gap measurement and re-install shims with proper thickness.

## mandrel/disc subassembly

Press bearing **19** into clutch mandrel **17**. Be certain the collar side of the bearing is on the outside of the mandrel.

Press only on outer race.

Press bearing **23** into clutch mandrel **17**. Press only on outer race.

Install grease retainer **16\*** with flanged inner diameter away from bearing surface. Install spiral locking ring **15\*** into groove.

Align disc and mandrel *removal access holes* before bolting together.

Apply **Loctite 271** to bolts **13** and use lockwashers to fasten disc to threaded holes in clutch mandrel.

## rotor/hub subassembly

To bolt rotor hub **9** to rotor **10**, use recessed allen head bolts **11** and apply **Loctite 271** to threads. Orient hub and rotor as illustrated.

## clutch burnishing

Factory clutch installations are followed with a burnishing step: a surface preparation necessary to provide the rated torque of the clutch. The blackened surfaces of disc and rotor are important to this process- do not remove this coating prior to burnishing.

With the fan installed and water in the tank (**DO NOT RUN PUMP DRY**), hook the Powerblast up to your tractor and engage PTO. Maintain an engine speed of 1000-1200RPM.

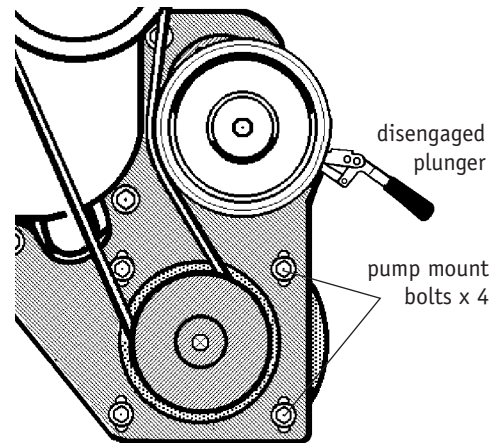
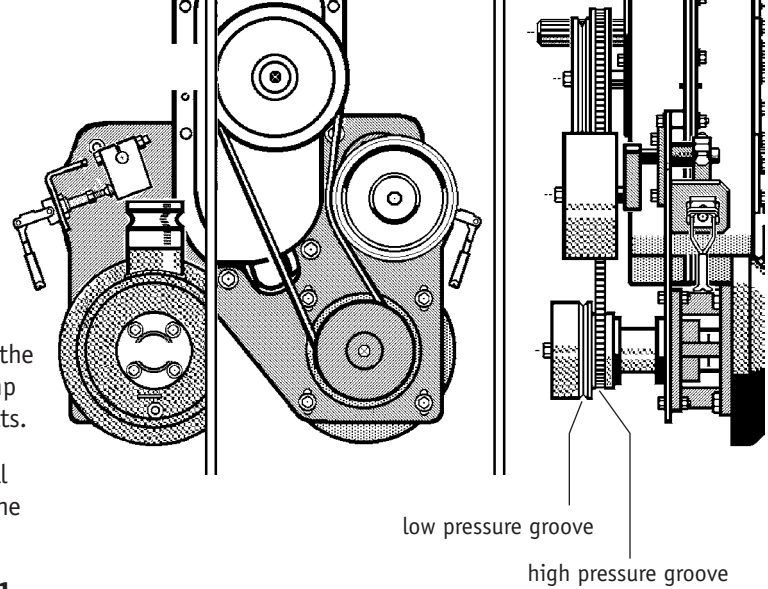
Cycle the fan clutch on and off 15-20 times over a one minute period (ON cycle is momentary- enough time to engage the clutch; OFF cycle for 2-3 seconds- enough time for deceleration).

\* *Items included in above illustration, but not numbered.*

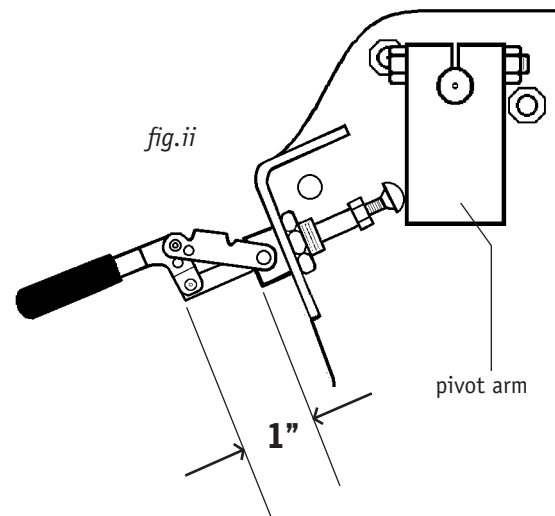
*Number matches item to facing parts breakdown.*

**Tensioning the PBSP7151 idler**

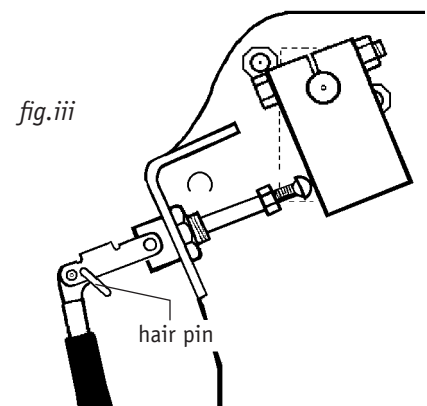
1. **Installing a new pump belt:** loosen the pump mount bolts **9** and allow the pump to slide to the bottom of the mount slots in the pump mount plate **7**. Press the pump against the pump mount plate and snug the mount bolts.
2. With the idler tension plunger disengaged, *fig. i*, install the belt loosely on the high pressure pulley grooves (the inner grooves) of the gearbox pulley and pump pulley.
3. **Using the fingers of one hand** rotate the pivot arm **11** until it is vertical as illustrated in *fig.ii*. If the belt tension prevents rotating the pivot arm to a vertical position, shift the pump: use a pry-bar to slide the pump upward in the pump plate mount slots. At the point you can swing the pivot arm to a vertical position with the fingers of one hand, tighten the pump mount bolts.
4. Hold the pivot arm in a vertical position and engage the idler tension plunger, *fig.ii*, **until the carriage bolt head touches the pivot arm**. As illustrated, there should be 1" of plunger rod exposed when the carriage bolt contacts the vertical pivot arm. **This is important.** If carriage bolt length needs to be adjusted, loosen the jam nut and adjust accordingly. Tighten the jam nut when complete.
5. Fully engage the idler tension plunger, *fig.iii*, and secure the plunger arm with hair pin.



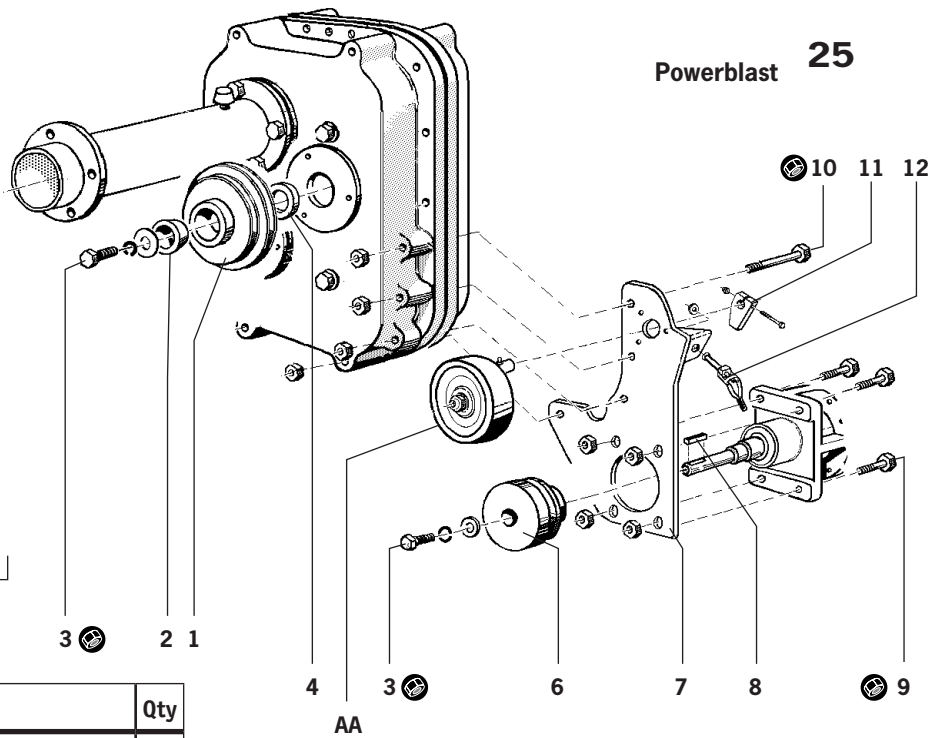
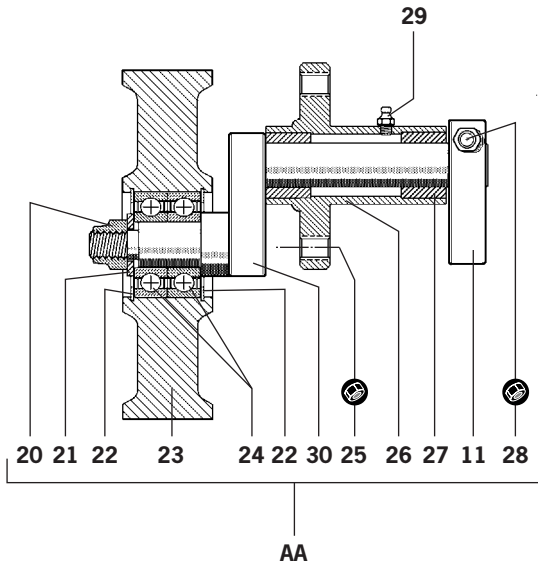
*fig.i*



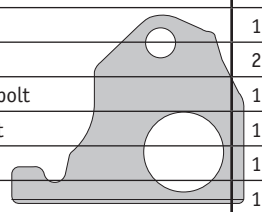
*fig.ii*



*fig.iii*



No.	Part #	Description	Qty
1		see chart A, this page	1
2	PBTL44A	taper hub	1
3	0260075CH5	1/4"-28 x 3/4" gr5 bolt <b>install with Loctite 242: follow Loctite installation instructions. Install wrench tight: target torque is 86 in-lbs.</b>	2
	025WS	1/4" lockwasher	2
	SPSW-F4	retaining washer, stainless steel	2
4	PB15AS	.355 spacer <i>inner bevel faces the gearbox</i>	1
6		see chart A, this page	1
7		see chart B, this page	1
8	KM0180175	square key 3/16" x 1"3/4	1
9	0370175CH5	3/8"-16 x 1"3/4 gr.5 bolt	4
	037WSAE	3/8" hardened flat washer	4
	037WS	3/8" lockwasher	4
	037NF	3/8" nut	4
10	0370250CH5	3/8"-16 x 2"1/2 gr.5 bolt	4
	037WS	3/8" lockwasher	4
	037NF	3/8" nut	4
11	PBSP7141	idler pivot arm	1
12	PBSP725	plunger assembly	1
20	050NYSS	1/2" ny-lock nut	1
21	050WSAE8	1/2" hardened flat washer	1
22	N5000-187	snap ring	2
23	PBSP7151	idler pulley	1
24	6204-2RS	bearing	2
25	037NF	3/8" nut	3
	037WUSS	3/8" lockwasher	3
	0370150CH5	3/8" x 1"1/2 gr.5 bolt	3
26	PBSP721	idler housing	1
27	AGBSH075112	bronze bushing	2
28	0310200CH5	5/16" x 2" gr.5 bolt	1
	031NY	5/16" ny-lok nut	1
29	1641-B	1/4"-28 zerk	1
30	PBSP716	idler pivot	1



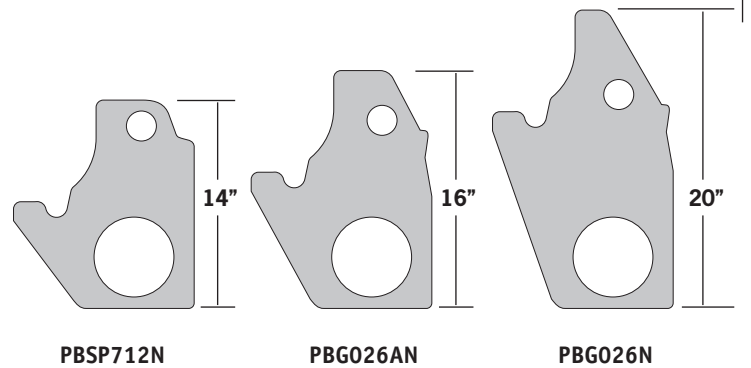
Pressure setting		Pulley color	1	6
High	Low		pulley part #	pulley part #
125	60	Yellow	PB15A12560	RPA-SP12560
200	-	Black*	PB15A200	RPA-SP200
250	125	Green	PB15A	RPA-SP
250	150	Orange	PB15A150	RPA-SP150

chart A

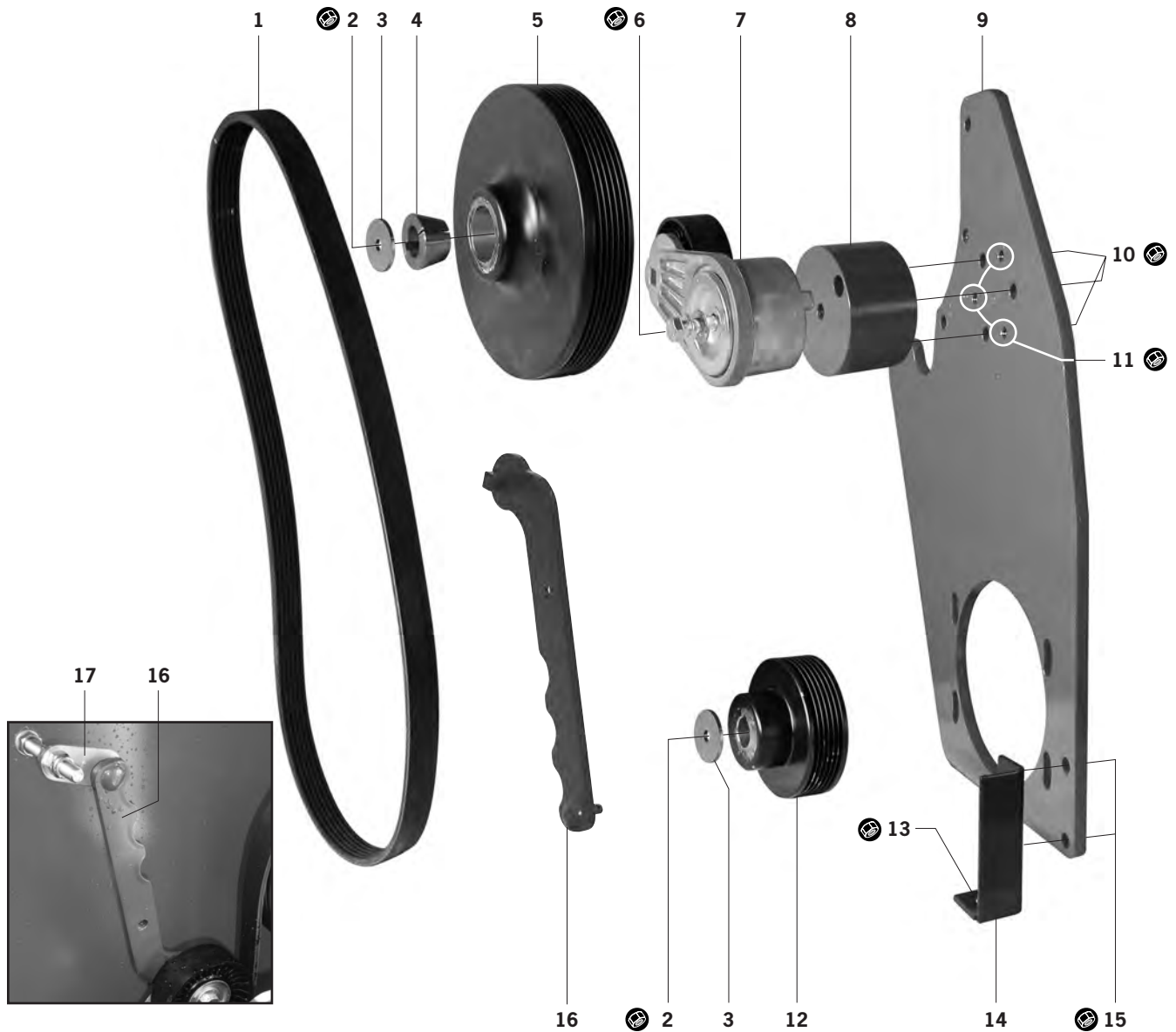
\* Black pulley sets require 2 belts

chart B

pump	pump plate	belt number
RPA	PBG026N	11M1400
RPA	PBG026AN	11M1220
RPA-SP	PBSP712N	11M1120
RPA-SP	PBSP722	11M1120



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



**Micro-V belt drive parts, single speed**

No.	Part #	Description	Qty
1	K060557	micro-v belt: RPA plate (9)	1
	K060445	micro-v belt: RPA-SP plate (9)	
	K060630	micro-v belt: narrow plate (9)	
2	0260075CH5	1/4"-28 x 3/4" gr5 bolt <b>install with Loctite 242: follow Loctite installation instructions. Install wrench tight: target torque is 86 in-lbs.</b>	2
	025WS	1/4" lockwasher	
3	SPSW-F4	stainless steel pulley retaining washer	2
4	PBTL44A	tapered hub	1
5	PB15AMV	micro-v drive pulley, black, 200psi	1
6	0380250CH5	3/8"-24 x 2-1/2" gr5 bolt	1
	037WSAE	3/8" hardened flat washer	1
	037WS	3/8" lock washer	1
7	38164	belt tensioner	1
8	PBG034	tensioner mount block	1

No.	Part #	Description	Qty
9	PBSP724	RPA pump plate	1
	PBSP723	RPA Self Priming pump plate	
	PBPM301	narrow pump plate	
10	0380100CH5	3/8"-24 x 1" gr5 bolt	3
	037WS	3/8" lock washer	3
11	0370050SET	3/8"-16 x 1/2" cup point setscrew	3
12	RPA-MV201	micro-v pump pulley, black, 200psi	1
13	0500150CH5	1/2"-13 x 1-1/2" gr5 bolt	1
	050WUSS	1/2" flat washer	1
	050WS	1/2" lock washer	1
14	PB197	pump plate mount bracket	1
15	0370125CH5	3/8"-16 x 1-1/4" gr5 bolt	2
	037WUSS	3/8" flat washer	2
	037WS	3/8" lock washer	2
	037NF	3/8" nut	2
16	PBIN640	pivot tool	1
17	PBIN640L	pivot latch	1

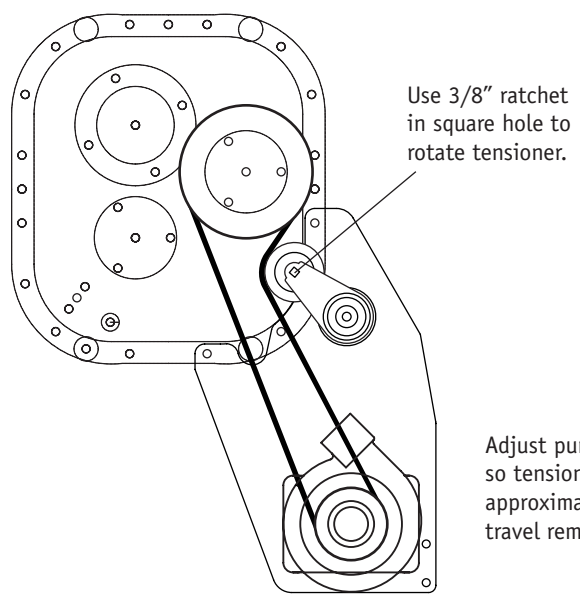


fig. i

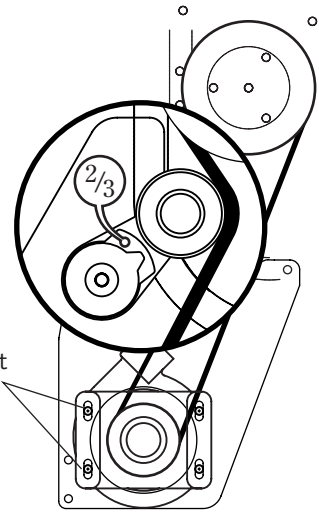


fig. ii

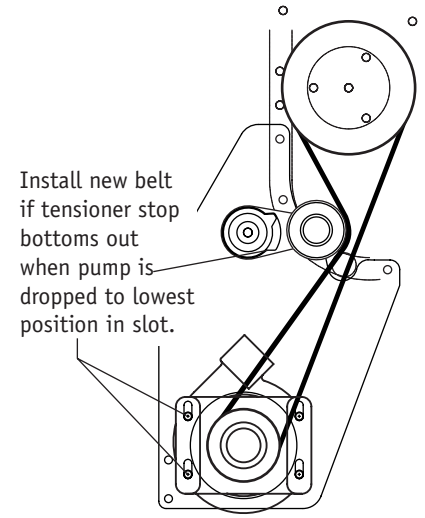


fig. iii

### Tensioning the micro-v pump belt

**DO NOT ADJUST BELT WITH TRACTOR RUNNING.**

**DISENGAGE PTO AND TURN OFF TRACTOR BEFORE PROCEEDING.**

The tensioning mechanism will not need adjustment for the life of a belt, but is designed to maintain tension as the belt stretches. The tensioner indicates when to replace the belt.

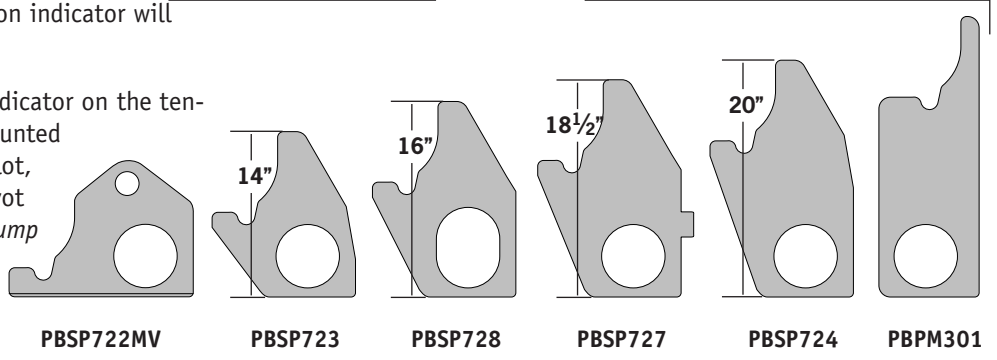
**Installing a new pump belt, fig. i:** Install the belt loosely on the gearbox pulley and pump pulley. Use the pivot tool\* or a 3/8" ratchet (mounted in the square hole indicated) to swing the tensioner arm out of the way and position the belt as illustrated.

Loosen the pump mount bolts that attach the pump assembly to the pump plate. Watch the belt tension indicator, fig. ii, as you slide the pump in the mount slots. Tighten the pump mount bolts when the tensioner registers approximately 2/3 travel remaining, as illustrated.

**Getting the most out of your belt.** As the pump belt stretches, the tension arm will rotate to maintain proper tension on the belt. The belt is exhausted when the tension indicator on the tensioner body *bottoms out* (see fig. iii).

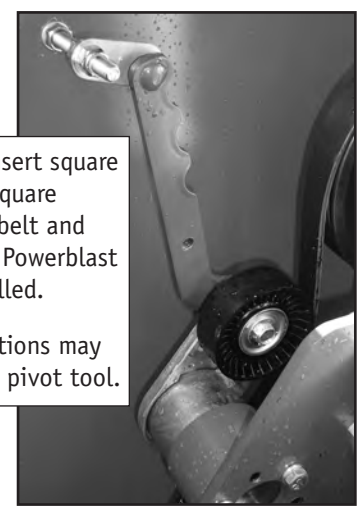
As the belt stretches and the indicator nears exhaustion, loosen the pump mount bolts that attach the pump assembly to the pump plate and lower the pump to the bottom of the mount slots on the pump plate. The tension indicator will register more belt life.

**Time to get a new belt.** If the tension indicator on the tension arm *bottoms out* and the pump is mounted at the bottom of the pump plate mount slot, the belt needs to be replaced. Use the pivot tool\* or a 3/8" ratchet, as described in *pump installation*, above, to swing the tension arm out of the way and remove the belt.



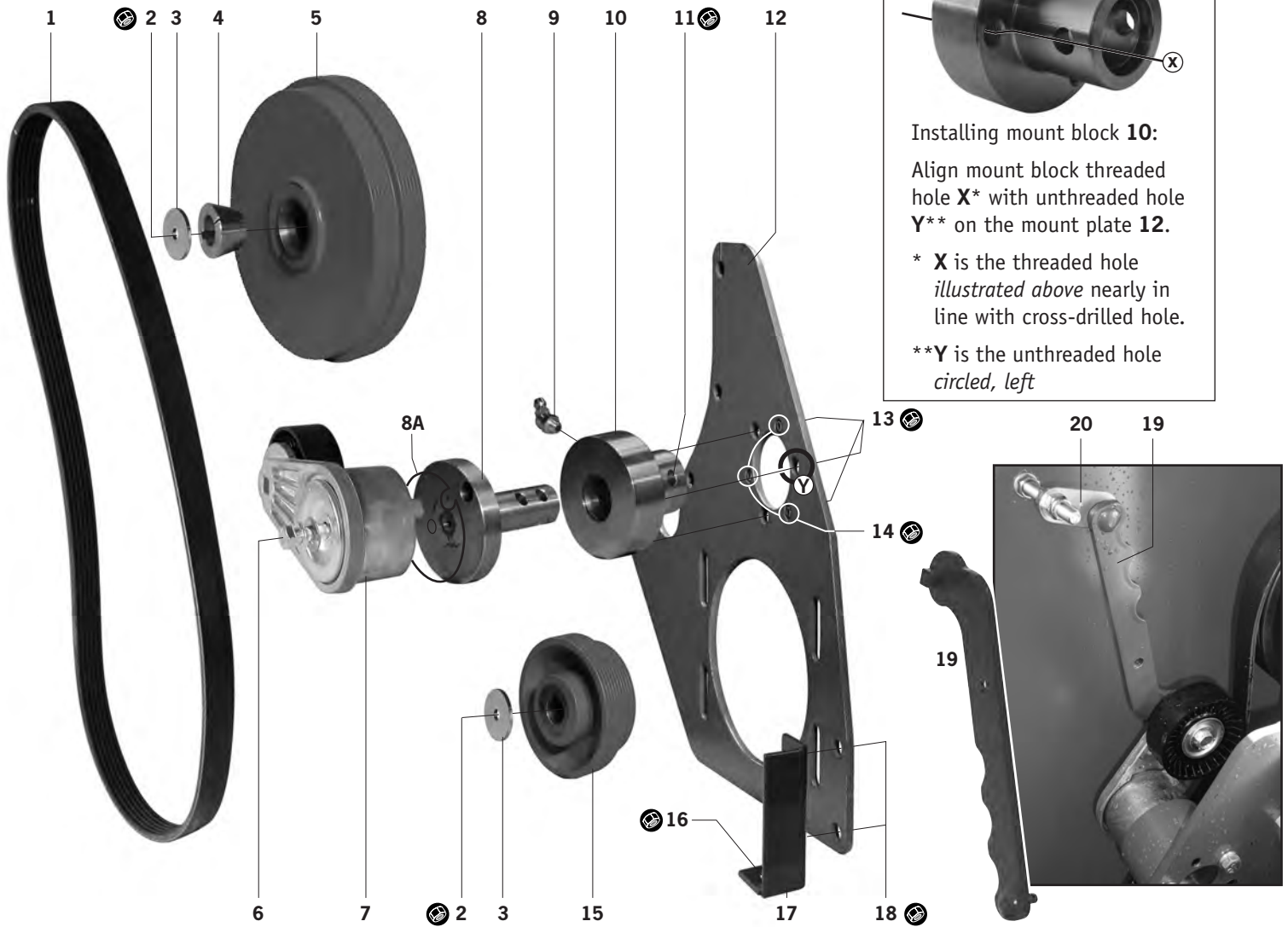
**\*Tensioner pivot tool:** insert square head into tensioner arm square socket, rotate away from belt and secure with latch. Not all Powerblast models have a latch installed.

Retrofit tensioner installations may not have clearance to use pivot tool.



pump plate	pump	belt number
PBSP722MV	RPA-SP	K060445
PBSP723	RPA	K060445
PBSP724	RPA	K060557
PBSP724	RPA-SP	K060557
PBSP723	RPA-SP	K060445
PBSP727	RPA-SP	K060525
PBSP728	RPA	K060478
PBPM301	RPA-SP	K060630

## 28 Powerblast



Installing mount block 10:  
Align mount block threaded hole X\* with unthreaded hole Y\*\* on the mount plate 12.

\* X is the threaded hole illustrated above nearly in line with cross-drilled hole.

\*\*Y is the unthreaded hole circled, left

### Micro-V belt drive parts, high/low range

No.	Part #	Description	Qty
1	K060557	micro-v belt: RPA plate (9)	1
	K060445	micro-v belt: RPA-SP plate (9)	
	K060630	micro-v belt: narrow plate (9)	
2	0260075CH5	1/4"-28 x 3/4" gr5 bolt install with <b>Loctite 242</b> : follow <b>Loctite</b> installation instructions. Install wrench tight: target torque is 86 in-lbs.	2
	025WS	1/4" lockwasher	
3	SPSW-F4	stainless steel pulley retaining washer	2
4	PBTL44A	tapered hub	1
5	micro-v drive step pulley	see facing chart	1
6	0380250CH5	3/8"-24 x 2-1/2" gr5 bolt	1
	037WSAE	3/8" hardened flat washer	1
	037WS	3/8" lock washer	1
7	38164	belt tensioner	1
8	PBMVT2	2 position mount rod	1
8A		shim- not required on all assemblies	-
9*	1/4-28/45	45° zerk	1
10	PBMVT	mount block	
11	0370225CH5	3/8"-16 x 2-1/4" gr5 bolt	1
	037NYS	3/8"-16 nylock nut	1

No.	Part #	Description	Qty
12	PBSP724	RPA pump plate	1
	PBSP723	RPA Self Priming pump plate	
	PBPM301	narrow pump plate	
13	0370100BHKSS	3/8"-16 x 1" SS hex socket button head	3
	037WS**	3/8" lock washer	3
14	0370050SET	3/8"-16 x 1/2" cup point setscrew	3
15	micro-v drive step pulley	see facing chart	1
16	0500150CH5	1/2"-13 x 1-1/2" gr5 bolt	1
	050WUSS	1/2" flat washer	1
	050WS	1/2" lock washer	1
17	PB197	pump plate mount bracket	1
18	0370125CH5	3/8"-16 x 1-1/4" gr5 bolt	2
	037WUSS	3/8" flat washer	2
	037WS	3/8" lock washer	2
	037NF	3/8" nut	2
19	PBIN640	pivot tool	1
20	PBIN640L	pivot latch	1

\* 1-2 pumps each season or as needed

\*\* If bolt head clearance does not allow installation of lockwasher, apply **Loctite 242** Threadlocker

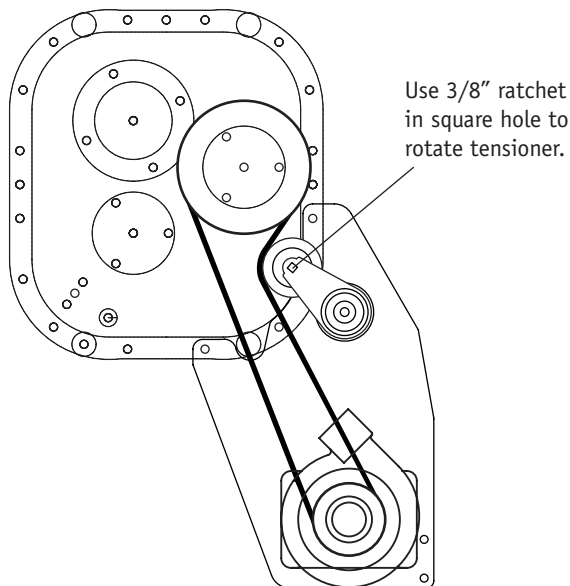


fig. i

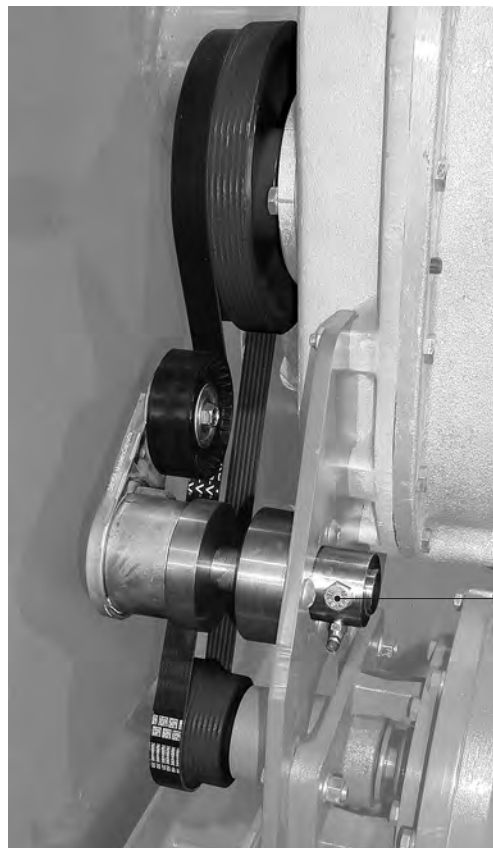


fig. ii

## 2 speed pulley: selecting pump speed

**DO NOT ADJUST PUMP SPEED WITH TRACTOR RUNNING.**

**DISENGAGE PTO AND TURN OFF TRACTOR BEFORE PROCEEDING.**

**Select between 2 speeds: High Range** with the belt closest to the gearbox; **Low Range** with the belt in the far position.

**Remove belt, fig. i:** Use the pivot tool\* or a 3/8" ratchet (mounted in the square hole indicated) to swing the tensioner arm out of the way and remove the belt.

**Position tensioner, fig. ii:** Remove fastener **A** and slide the tensioner assembly to the next open bolt hole. Replace fastener and secure.

**Install belt, fig. i:** Install the belt loosely on the desired gearbox pulley step. Use the pivot tool\* or a 3/8" ratchet (mounted in the square hole indicated) to swing the tensioner arm out of the way and allow positioning the belt on the corresponding pump pulley step. Fig.ii illustrates the Low Range installation.

Now would be a good time to **Check belt tension:** See the previous section for instructions.

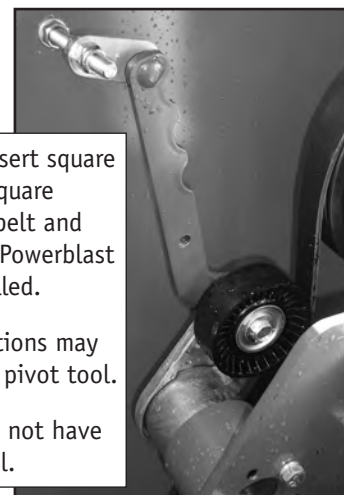
pulley color	pressure psi.		step diameter	part number
green	125/250	gearbox	6.2 "/7"	PB15AMV125
		pump	3.3"/4"	RPA-MV1
orange	150/250	gearbox	6.5"/7"	PB15AMV150
		pump	3.3"/4"	RPA-MV150
red	200/300	gearbox	6.56"/7"	PB15AMV300
		pump	3"/3.5"	RPA-MV300

**For belt and pump plate chart, see the previous *Tensioning the Micro-V Pump Belt* page**

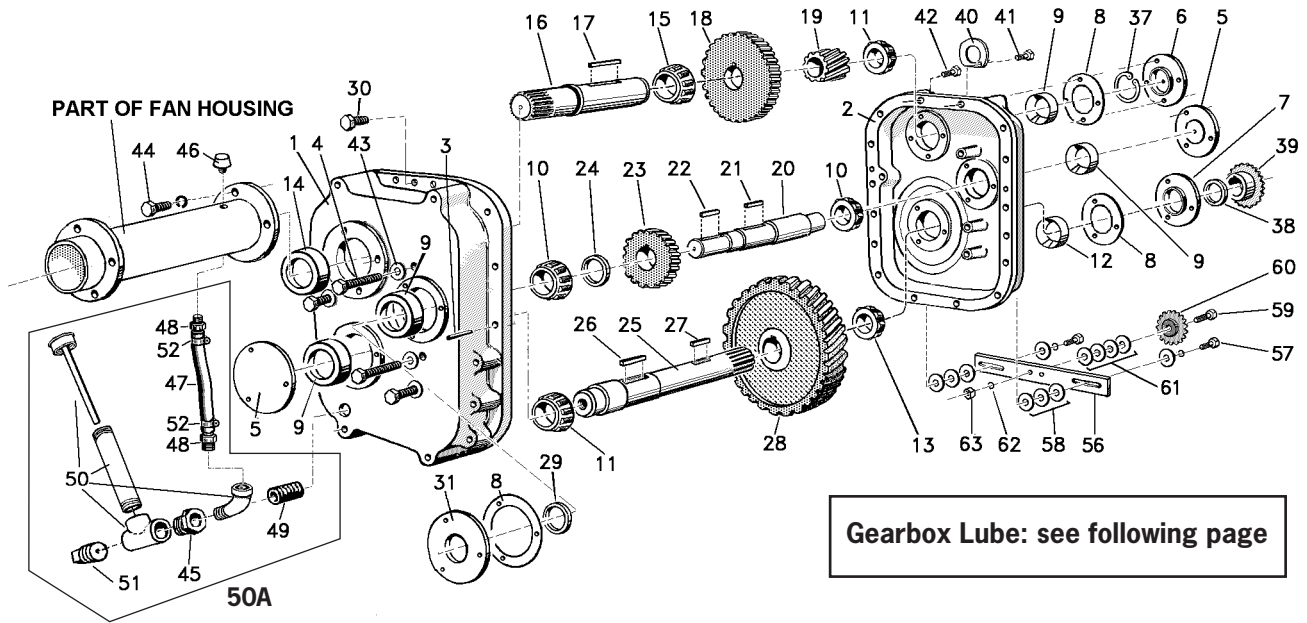
**\*Tensioner pivot tool:** insert square head into tensioner arm square socket, rotate away from belt and secure with latch. Not all Powerblast models have a latch installed.

Retrofit tensioner installations may not have clearance to use pivot tool.

Some 2 speed models may not have clearance to use pivot tool.



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



**Powerblast gearbox parts**

No.	Part #	Description	Qty
1	PBG008	rear half gear case	1
	PBG008A	PBG008 with all bearing races installed	
2	PBG009	front half gear case	1
	PBG009A	PBG009 with all bearing races installed	
3	0310125RP	5/16" x 1"1/4 roll pin	2
4	0370325CH5	3/8"-16 x 3"1/4 gr.5 bolt	4
	037WUSS	3/8" flatwasher	4
5	PBG001	cap follower install with <b>anaerobic</b> sealer	1
6	PBG003	output shaft follower	1
7	PBG004	input shaft follower	1
8	PBG007	shim set <i>use as needed to set bearing</i>	
9	02820	bearing cup, Timken	4
10	02875	bearing cone, Timken	2
11	02877	bearing cone, Timken	2
12	2735X	bearing cup, Timken	1
13	2788	bearing cone, Timken	1
14	3820	bearing cup, Timken	1
15	3872	bearing cone, Timken	1
16	PBG010B	output shaft, 1"3/8 21Z	1
17	KM0310312	5/16" x 3"1/8 bar key	1
18	PBG104	80Z gear, helical cut	1
19	PBG101	19Z gear, helical cut	1
20	PBG012	accessory shaft	1
21	KM0250125	1/4" x 1"1/4 bar key	1
22	KM0180175	3/16" x 1"3/4 bar key	2
23	PBG102	44Z gear, helical cut	1
24	PBG028	.230 spacer	1
25	PBG150	input shaft 17Z	1

No.	Part #	Description	Qty
26	KM0370175	3/8" x 1"3/4 bar key	1
27	KM0250075	1/4" x 3/4" bar key	1
28	PBG103	73Z gear, helical cut	1
29	9876	seal	1
30	0370100CH5	3/8"-16 x 1" gr.5 bolt	1
31	PBG002	accessory shaft follower	1
37	5100-137	inner snap ring	1
38	14807	seal	1
39	PB1B4021	21Z sprocket, 1"1/2 bore	1
40	PBGLIFT	lifting eye	1
41	0370125CH5	3/8" x 1"1/4 gr.5 bolt	1
42	0370100CH5	3/8" x 1" gr.5 bolt	13
43	037WUSS	3/8" flat washer	4
44	0500150CH5	1/2" x 1"1/2 gr.5 bolt	4
45	BSH075025	3/4"MPT x 1/4"FPT bushing	1
46	PBG006A	breather	1
47	PBH010	oil return hose	1
48	HFC025050	1/2" hose barb x 1/4"MPT	1
50	SSN0750200	3/4"x 2" stainless steel nipple	1
	PBG1716	dip stick in 3/4"FGHT cap	1
	ALN075500MPXMG	3/4" x 5" aluminum fill tube	1
	SOT075	3/4" side outlet tee	1
	STL45025	1/4" 45° street elbow	1
50A	PBG1700	oil fill/drain kit	
51	PLG075	oil drain plug, 3/4"MPT	1
52	WC6203	hose clamp	2
56-63		see agitation chain tensioner pages	

**set bearing preload:** shim followers for target results

shaft	item #	follower	target
input	25	7	rolling torque = 20 in-lb
output	16	6	rolling torque = 25 in-lb
accessory	20	5	set to 0.000" endplay



**gearbox oil change**

Change oil every 200 hours or seasonally, **whichever comes first**. Drain when unit is warm.

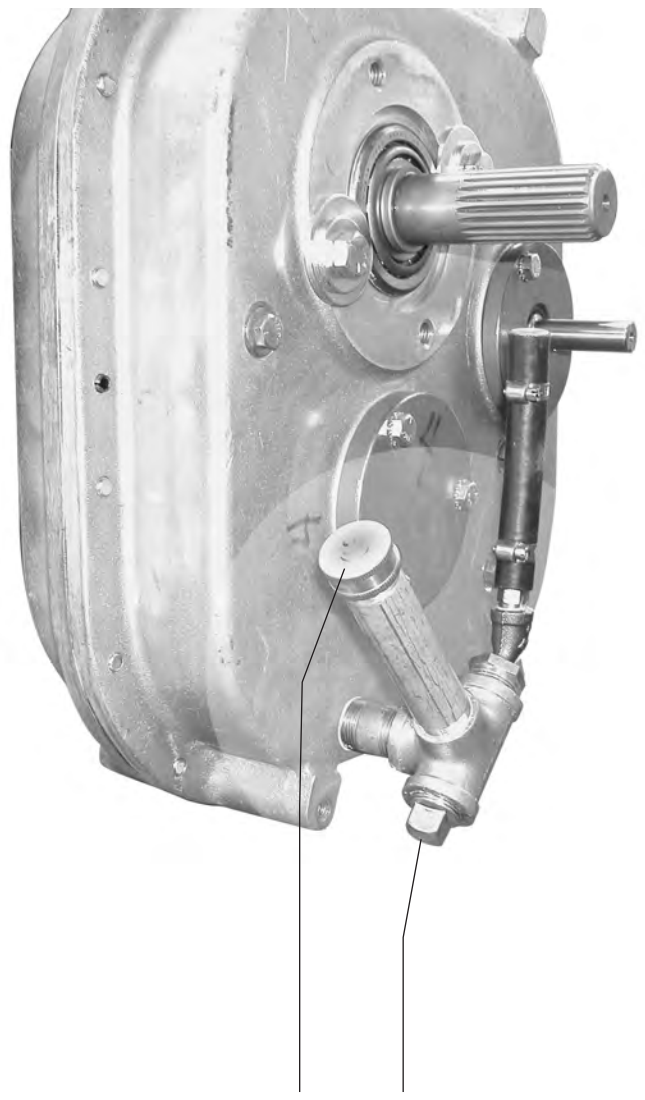
Gear case requires 2 quarts, check dip stick daily.

For long gearbox life **ALWAYS** use an AGMA EP2 grade ISO 68 gear lubricant.

Equivalent lubricants are listed, below. Formulations and product names will change: check with your supplier.

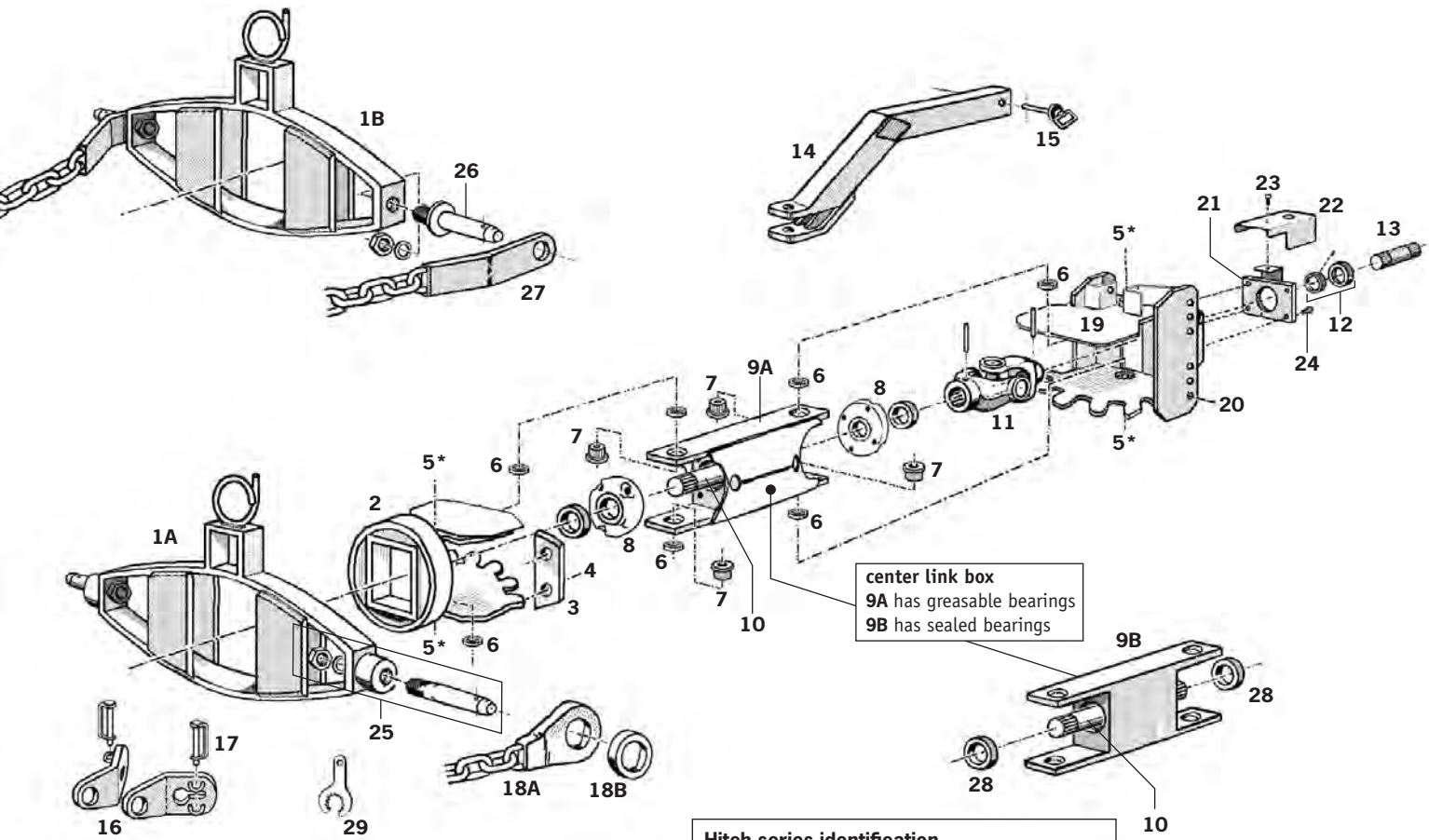
At the time of publishing the Mobil and Chevron products are recommended.

<b>Mobil</b>	<b>Mobilgear 600 XP 68 EP2</b>
<b>Chevron</b>	<b>Meropa EP ISO 68</b>
<b>76</b>	<b>Extra Duty 68 EP</b>
<b>Shell</b>	<b>Omala 68 EP</b>



dip stick & oil fill      oil drain: drain when warm

<b>ATTENTION!</b>			
<b>CHECK GEARBOX OIL LEVEL DAILY</b>			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;"><b>OIL</b></td> <td style="padding: 5px;"><b>Mobil 600 XP 68</b> <i>or equivalent, see manual</i></td> </tr> </table> <p style="text-align: center; padding: 5px;"><b>CHANGE OIL EVERY 200 HOURS OR SEASONALLY, WHICHEVER COMES FIRST</b></p> <p style="text-align: center; padding: 5px;"><b>DRAIN WHEN UNIT IS WARM</b></p>	<b>OIL</b>	<b>Mobil 600 XP 68</b> <i>or equivalent, see manual</i>	<p style="text-align: center;">Screw on cap to check oil level</p> <p style="text-align: center;">DECAL55</p>
<b>OIL</b>	<b>Mobil 600 XP 68</b> <i>or equivalent, see manual</i>		



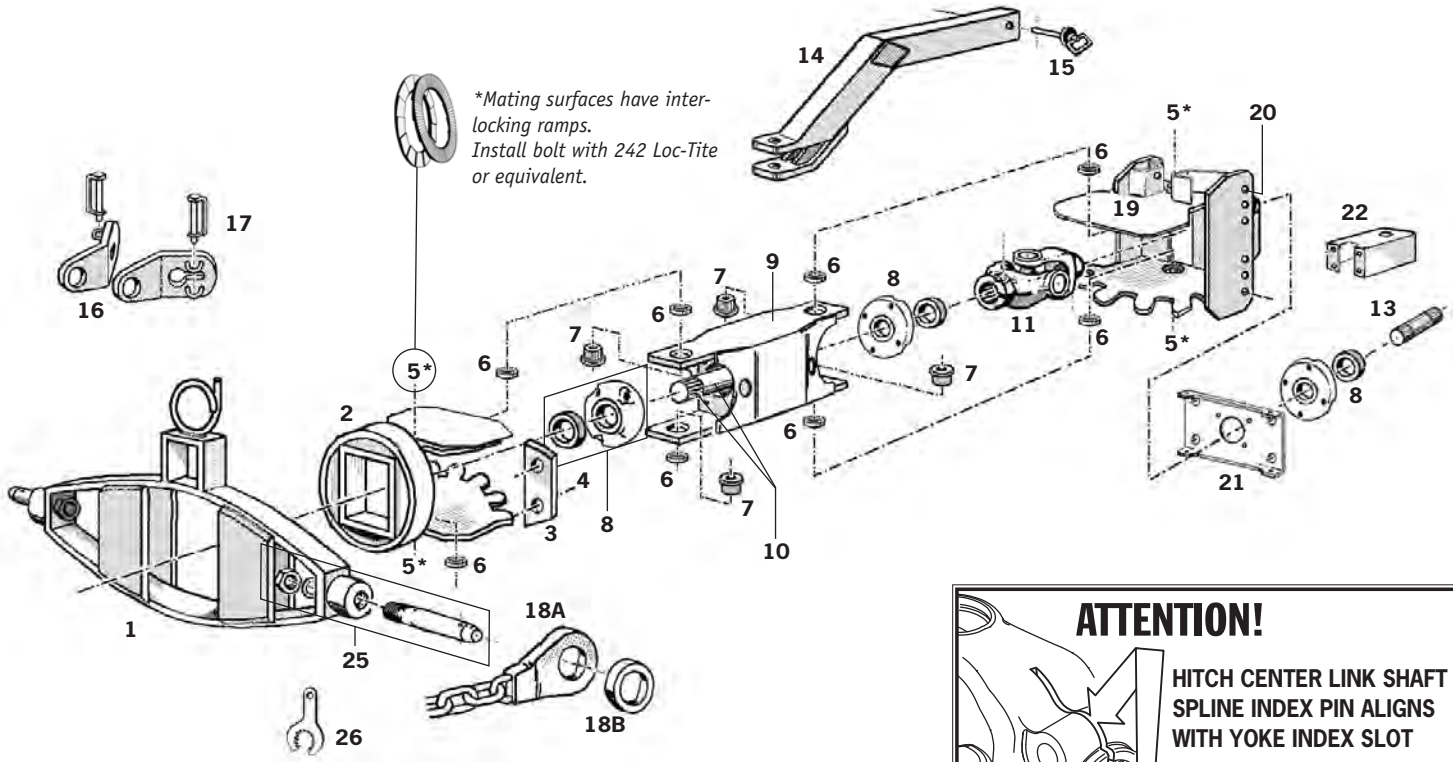
Hitch series identification	
51 series	input shaft 10 1-1/2" 17 spline
71 series	input shaft 10 1-3/4" 20 spline

**Parts list: 51 series constant velocity hitch**

No.	Part #	Description	Qty
1A	CVH71-TRN1	CAT I width trunion, no pins included	1
	CVH71-TRN2	CAT II width trunion, no pins included	
1B	CVH-TRN1AR	CAT I width trunion, no pins included	1
2	CVH51-15AR	hitch front half	1
3	CVH41-WP2AR	wear plate	2
4	0620150CH5	5/8" x 1-1/2" bolt gr.5	4
5	0620125CH5*	5/8" x 1-1/4" bolt gr.5	4
6	CVH51-5	outer bushing	8
7	CVH51-6	flanged inner bushing	4
8	CVH51-11B	1.5" ball bearing for center link 9A	2
9A	CVH51-13BA	center link includes bearings 8 & bushings 6	1
9B	CVH51-13ASSY	center link includes bearings 28 & bushings 6	1
10	CVH51-12	center link shaft	1
11	UJ514/514	complete 55 series u-joint	1
	UJ514	1.5" 17 spline 55 ser yoke only	2
	CPL55N	cross kit	1
	0310250RP	roll pin	2
12	CVH51-11COL	1.5" sealed bearing with collar	1
13	CVH51-8055	55mm splined shaft	1
14	CVH51-16	top mount towing tongue	1
15	0750500HP	hitch pin	1
16A	HS42L	cat. II left chain bracket	1
	HS42L-3	cat. III left chain bracket	
16B	HS42R	cat. II right chain bracket	1
	HS42R-3	cat. III right chain bracket	
17	0310275SNAP	5/16" x 2"3/4 snap pin	1

No.	Part #	Description	Qty
18A	HS43CH3	check chain for trunion 1A	2
18B	CVPIN1373	spacer for CAT II pin	2
19	CVH51-1401	hitch rear half	1
20	0870200CH5	7/8" x 2" gr.5 bolt	4
	087NF	7/8" nut	4
	087WS	7/8" lock washer	4
21	CVH51-19PB	bearing mount bracket	1
22	CVH51-18	output shaft shield	1
23	0250050STS	1/4" x 1/2" self tapping screw	1
24	0500175CH5	1/2" x 1"3/4 gr.5 bolt	4
	050NF	1/2" nut	4
	050WS	1/2" lock washer	4
25	CVH71117-2	CAT II pin for trunion 1A	2
	CVH51117-3	CAT III pin for trunion 1A	
	112WS	1"1/8 lock washer	2
	113NJ	1"1/8-12 half-nut	2
26	7524	click pin	2
	CVH51117-1	CAT I pin for trunion 1B	2
	CVH51117-2	CAT II pin for trunion 1B	
	112WS	1"1/8 lock washer	2
	112NF	1"1/8 nut	2
27	7524	click pin	2
	HS43CH1	cat. I/II check chain	2
28	CVH51-11	1.5" sealed bearing for center link 9B	2
29	CVH71TOOL	pin wrench	1

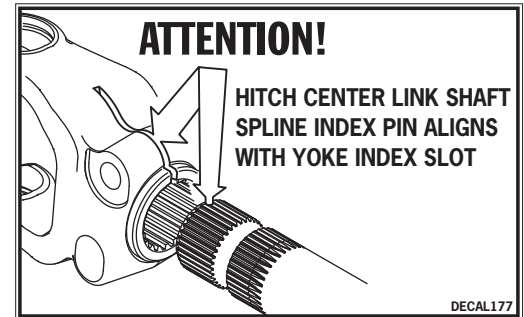
\*Install with 242 Loc-Tite or equivalent



**Hitch series identification**

**51 series** input shaft **10** 1-1/2" 17 spline

**71 series** input shaft **10** 1-3/4" 20 spline



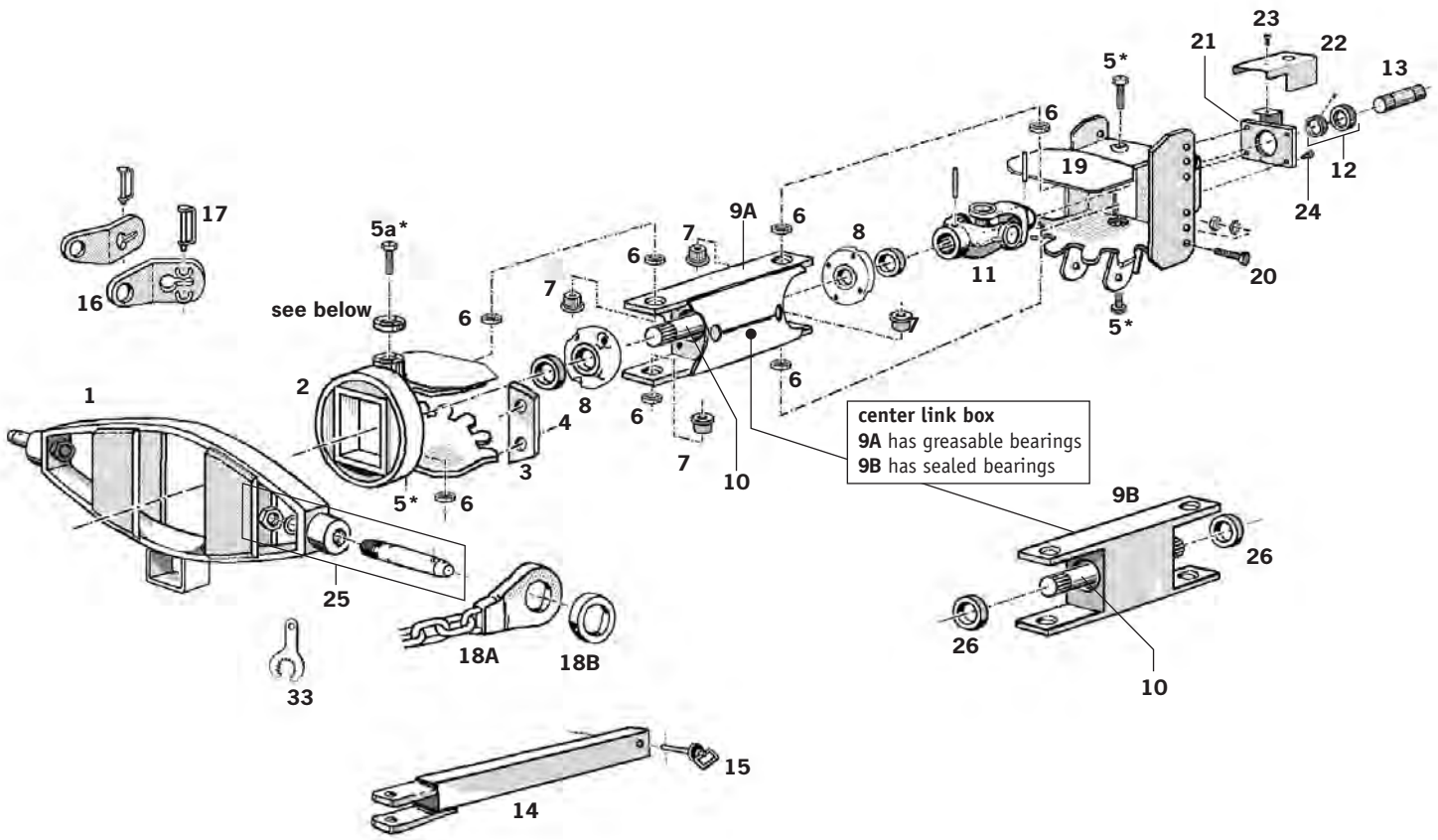
**Parts list: 71 series constant velocity hitch** see following pages for hitch with support strut

No.	Part #	Description	Qty
1	CVH71-TRN1	CAT I width trunion, no pins included	1
	CVH71-TRN2	CAT II width trunion, no pins included	
2	CVH71-15	hitch front half	1
3	CVH41-WP2AR	wear plate	2
4	0620150CH5	5/8" x 1-1/2" bolt gr.5	4
	0620125CH5*	5/8" x 1-1/4" bolt gr.5	
5	062WNL	5/8" nordlock washer	4
	CVH71-5	spring bushing 2" x 1.5" x .75"	
6	CVH71-6	shoulder pin	4
8	CVH71-11S	1.75" spherical roller bearing	3
	CVH71-11B	1.75" ball bearing	
9	CVH71-13AS	center link assy w/roller bearings & bushings	1
	CVH71-13AB	center link assy w/ball bearings & bushings	
10	CVH71-1220	center link shaft	1
		index roll pin	2
11	UJ553/553	complete u-joint w/(2)Y553 yokes	1
	Y553	1.75" 20 spline 55 ser yoke only	2
	CPL55E	cross kit	1
	0620350CH5	5/8"-11 x 3-1/2" bolt gr.5	2
	062NYS	5/8" nylock nut	2
13	CVH71-8055	output shaft	1
14	CVH71-16	top mount towing tongue	1

No.	Part #	Description	Qty
15	0750500HP	hitch pin	1
16A	HS42L	cat. II left chain bracket	1
	HS42L-3	cat. III left chain bracket	
16B	HS42R	cat. II right chain bracket	1
	HS42R-3	cat. III right chain bracket	
17	0310275SNAP	5/16" x 2"3/4 snap pin	1
18A	HS43CH1	cat. I/II check chain- right & left	1
	HS43CH3	cat. III check chain- right & left	
18B	CVPIN1373	spacer for cat. II	2
19	CVH71-1401	hitch rear half	1
20	0870200CH5	7/8" x 2" gr.5 bolt	4
	087NF	7/8" nut	4
	087WS	7/8" lock washer	4
21	CVH71-19	mount bracket for spherical roller bearing	1
	CVH71-19B	mount bracket for ball bearing	
22	CVH71-18	output shaft shield	1
25	CVH7117-2	CAT II pin	2
	CVH7117-3	CAT III pin	
	112WS	1"1/8 lock washer	2
	113NJ	1"1/8-12 half-nut	2
	7524	click pin	2
26	CVH71TOOL	pin wrench	1

\*Install with 242 Loc-Tite or equivalent

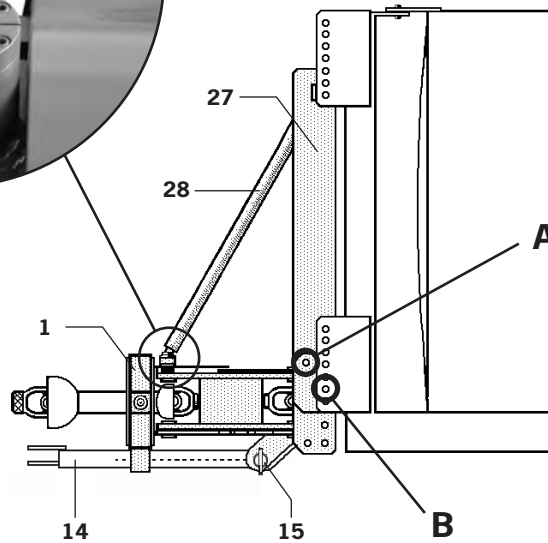
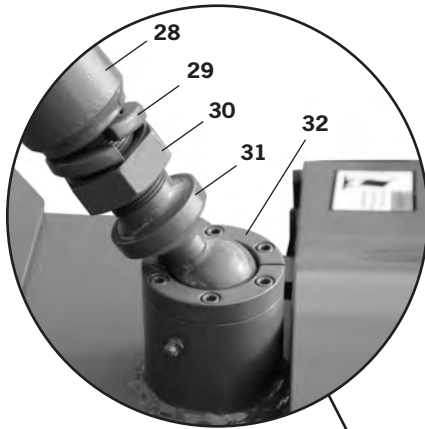
**Read this manual completely before operating: follow all safety instructions.**



**Hitch series identification**

**51 series** input shaft **10** 1-1/2" 17 spline

**71 series** input shaft **10** 1-3/4" 20 spline



**Parts list: 51 series constant velocity hitch with support strut**

No.	Part #	Description	Qty	No.	Part #	Description	Qty
1	CVH71-TRN3	CAT II width trunion, no pins included	1		0870200CH5	7/8" x 2" gr.5 bolt	4
2	CVH51-1510	hitch front half, w/support arm mount	1	20	087NF	7/8" nut	4
3	CVH41-WP2AR	wear plate	2		087WS	7/8" lock washer	4
4	0620150CH5	5/8"-11 x 1-1/2" bolt gr.5	4	21	CVH51-19PB	bearing mount bracket	1
5	0620125CH5*	5/8"-11 x 1-1/4" bolt gr.5	3	22	CVH51-18	output shaft shield	1
5a	0620125ASC*	5/8"-11 x 1-1/4" socket cap screw	1	23	0250050STS	1/4" x 1/2" self tapping screw	1
6	CVH51-5	outer bushing	8		0500175CH5	1/2" x 1 3/4 gr.5 bolt	4
7	CVH51-6	flanged inner bushing	4	24	050NF	1/2" nut	4
8	CVH51-11B	1.5" ball bearing for center link <b>9A</b>	2		050WS	1/2" lock washer	4
9A	CVH51-13BA	center link includes bearings <b>8</b> & bushings <b>6</b>	1		CVH7117-2	CAT II pin	2
9B	CVH51-13ASSY	center link includes bearings <b>28</b> & bushings <b>6</b>	1		CVH7117-3	CAT III pin	
10	CVH51-12	center link shaft	1	25	112WS	1 1/8 lock washer	2
	UJ514/514	complete 55 series u-joint	1		113NJ	1 1/8-12 half-nut	2
	UJ514	1.5" 17 spline 55 ser yoke only	2		7524	click pin	2
	CPL55N	cross kit	1	26	CVH51-11	1.5" sealed bearing	2
	0310250RP	roll pin	2	27	CVH51-144A	trunion mount for 1000 gal Powerblast	1
12	CVH51-11COL	1.5" sealed bearing with collar	1	28	PBST101	complete support arm includes <b>29 - 31</b>	1
13	CVH51-8055	55mm splined shaft	1	29	137WS	1 3/8 lock washer	1
14	CVH51-16H	towing tongue	1	30	138NJ	1 3/8-12 half nut	1
15	0750500HP	hitch pin	1	31	PBST7107T	threaded 2" ball	1
16A	HS42L	cat. II left chain bracket	1	32	PBST206	retaining ring	2
	HS42L-3	cat. III left chain bracket				0250075CK	1/4"-20 x 3/4" socket cap screw
16B	HS42R	cat. II right chain bracket	1	33	CVH71TOOL	pin wrench	1
	HS42R-3	cat. III right chain bracket				0750200CH5	3/4" x 2" gr.5 bolt
17	0310275SNAP	5/16" x 2 3/4 snap pin	1	A	075NYS	3/4" nylock nut	2
18A	HS43CH1	cat. I/II check chain- right & left	1		0870200CH5	7/8" x 2" gr.5 bolt	4
18B	HS43CH3	cat. III check chain- right & left			B	087NF	7/8" nut
18C	CVPIN1373	spacer for cat. II	2		087WS	7/8" lock washer	4
19	CVH51-1410	hitch rear half	1				

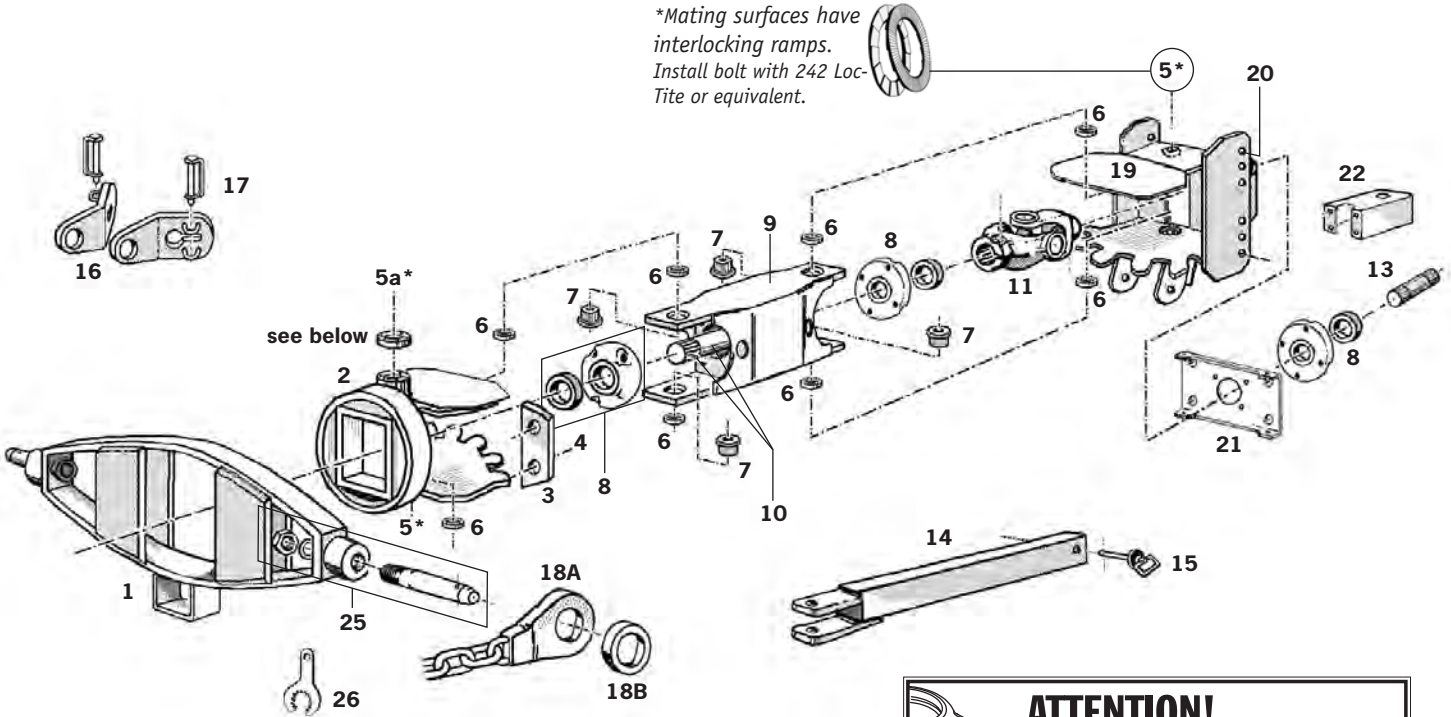
\*Install with 242 Loc-Tite or equivalent

**proper support arm tension**

- Loosen bolts **A** and **B** on both sides of the hitch.
- Remove **either** left or right bolt **A**. **Only remove one**.
- To set the support arm length, these steps will align the bolt holes you just exposed by removing bolt **A**: the rear hitch plate **19** and the trunion mount **27**.
- Utilize the tractor lift arms to lift the hitch, placing a load on the support arm. Check the exposed bolt holes **A**. If the holes are aligned, skip to step **8**.
- Back off jam nut **30** on the support arm assembly.
- Adjust support arm length to align the bolt holes for **A**: support arm length is adjusted by rotating the support tube **28**. It may be necessary to prevent the threaded ball **31** from rotating.
- Once bolt holes **A** are aligned, tighten jam nut **30**.
- Replace the fasteners to hole **A**.
- Tighten bolts **B**. Leave bolts **A** loose.

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

\*Mating surfaces have interlocking ramps. Install bolt with 242 Loctite or equivalent.



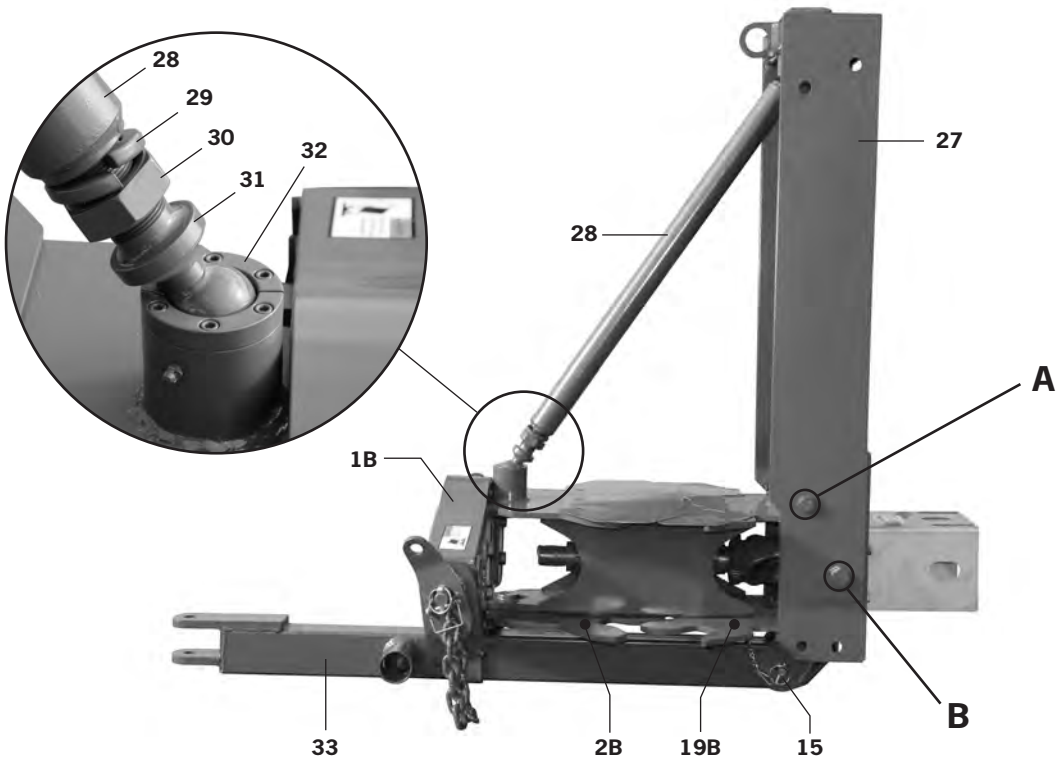
**Hitch series identification**

- 51 series** center link **9** is a square box input shaft **10** 1-1/2" 17 spline
- 71 series** center link **9** bulges in the center input shaft **10** 1-3/4" 20 spline

ATTENTION!

HITCH CENTER LINK SHAFT SPLINE INDEX PIN ALIGNS WITH YOKE INDEX SLOT

DECAL177



**Parts list: 71 series constant velocity hitch with support strut**

No.	Part #	Description	Qty
1	CVH71-TRN3	CAT II width trunion, no pins included	1
2	CVH71-1510	hitch front half, w/support arm mount	1
3	CVH41-WP2AR	wear plate	2
4	0620150CH5	5/8"-11 x 1-1/2" bolt gr.5	4
5	0620125CH5*	5/8"-11 x 1-1/4" bolt gr.5	3
	062WNL	5/8" nordlock washer	3
5a	0620125ASC*	5/8"-11 x 1-1/4" socket cap screw	1
6	CVH71-5	spring bushing 2" x 1.5" x .75"	4
7	CVH71-6	shoulder pin	8
8	CVH71-11S	1.75" spherical roller bearing	3
	CVH71-11B	1.75" ball bearing	
9	CVH71-13AS	center link assy w/roller bearings & bushings	1
	CVH71-13AB	center link assy w/ball bearings & bushings	
10	CVH71-1220	center link shaft	1
		index roll pin	2
11	UJ553/553	complete u-joint w/(2)Y553 yokes	1
	Y553	1.75" 20 spline 55 ser yoke only	2
	CPL55E	cross kit	1
	0620350CH5	5/8"-11 x 3-1/2" bolt gr.5	2
	062NYS	5/8" nylock nut	2
13	CVH71-8055	output shaft	1
14	CVH51-16H	towing tongue	1
15	0750500HP	hitch pin	1
16A	HS42L	cat. II left chain bracket	1
	HS42L-3	cat. III left chain bracket	
16B	HS42R	cat. II right chain bracket	1
	HS42R-3	cat. III right chain bracket	
17	0310275SNAP	5/16" x 2"3/4 snap pin	1

\*Install with 242 Loc-Tite or equivalent

No.	Part #	Description	Qty
18A	HS43CH1	cat. I/II check chain- right & left	1
	HS43CH3	cat. III check chain- right & left	
18B	CVPIN1373	spacer for cat. II	2
19	CVH71-1410	hitch rear half	1
20	0870200CH5	7/8" x 2" gr.5 bolt	4
	087NF	7/8" nut	4
	087WS	7/8" lock washer	4
21	CVH71-19	mount bracket, tapered roller bearing	1
	CVH71-19B	mount bracket, ball bearing	
22	CVH71-18	output shaft shield	1
25	CVH7117-2	CAT II pin	2
	CVH7117-3	CAT III pin	
	112WS	1"1/8 lock washer	2
	113NJ	1"1/8-12 half-nut	2
	7524	click pin	2
26	CVH71TOOL	pin wrench	1
27	CVH51-144A	trunion mount for 1000 gal Powerblast	1
28	PBST7135A	complete support arm <i>includes 28 - 31</i>	
	PBST7135	35-1/2" pipe with fixed ball	1
29	137WS	1"3/8 lock washer	1
30	138NJ	1"1/8-12 half nut	1
31	PBST7107T	threaded 2" ball	1
32	PBST206	retaining ring	2
	0250075CK	1/4"-20 x 3/4" socket cap screw	6
A	0750200CH5	3/4" x 2" gr.5 bolt	2
	075NYS	3/4" nylock nut	2
B	0870200CH5	7/8" x 2" gr.5 bolt	4
	087NF	7/8" nut	4
	087WS	7/8" lock washer	4

**proper support arm tension**

- Loosen bolts **A** and **B** on both sides of the hitch.
- Remove **either** left or right bolt **A**. **Only remove one.**
- To set the support arm length, these steps will align the bolt holes you just exposed by removing bolt **A**: the rear hitch plate **19** and the trunion mount **27**.
- Utilize the tractor lift arms to lift the hitch, placing a load on the support arm. Check the exposed bolt holes **A**. If the holes are aligned, skip to step **8**.
- Back off jam nut **30** on the support arm assembly.
- Adjust support arm length to align the bolt holes for **A**: support arm length is adjusted by rotating the support tube **28**. It may be necessary to prevent the threaded ball **31** from rotating.
- Once bolt holes **A** are aligned, tighten jam nut **30**.
- Replace the fasteners to hole **A**.
- Tighten bolts **B**. Leave bolts **A** loose.

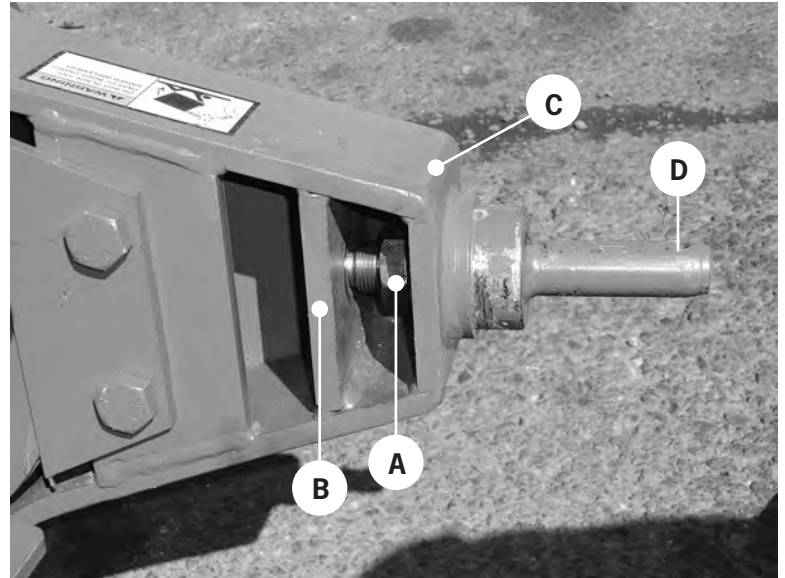
**Read this manual completely before operating: follow all safety instructions.**

### 77 series hitch pin removal

The hitch pin is a tapered fit in bushing.

1. Apply lube to threads.
2. Using the supplied crowfoot wrench\* (bolted to the hitch trunion) loosen nut **A** and thread to inside plate **B**.
3. Rotate nut to apply heavy force against the support plate **B**. To aid in separation, strike point **C** with a heavy steel hammer.

Use heat as needed.



### 77 series hitch pin installation

1. Parts should be clean prior to installation. Apply a light film of oil to taper and threads
2. With the pin partially inserted, install the lock washer and thread the nut **A** onto the pin.

The retainer pin hole **D** should be vertical as you finger tighten the nut.

3. Tap the end of the hitch pin to seat the pin and prevent pin rotation when tightening the nut **A**.
4. Using the supplied crowfoot wrench, tighten the hitch pin nut using a ratchet or breaker bar.
5. Using a torque wrench as shown, torque nut to 110 ft-lbs.

**Important:** the torque wrench and crowfoot wrench must be in-line as shown.



Pin wrench is installed on the torque wrench *in-line*



\* If your hitch does not have the 3/8" thick crowfoot wrench, please contact the factory to order an upgrade or replacement *part number CVH71TOOL*.





### 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.

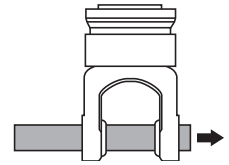
Grip loosened cup in vice 3 and strike yoke arm to drive yoke off cup. Repeat on opposite cup.

Support cross in loose vice 4 and strike yoke arm to drive the top cup up. Repeat on opposite side.

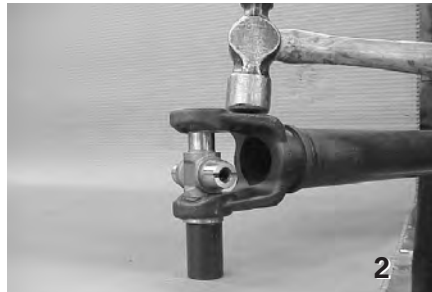
Repeat step 3 to remove the remaining two cups.

*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.

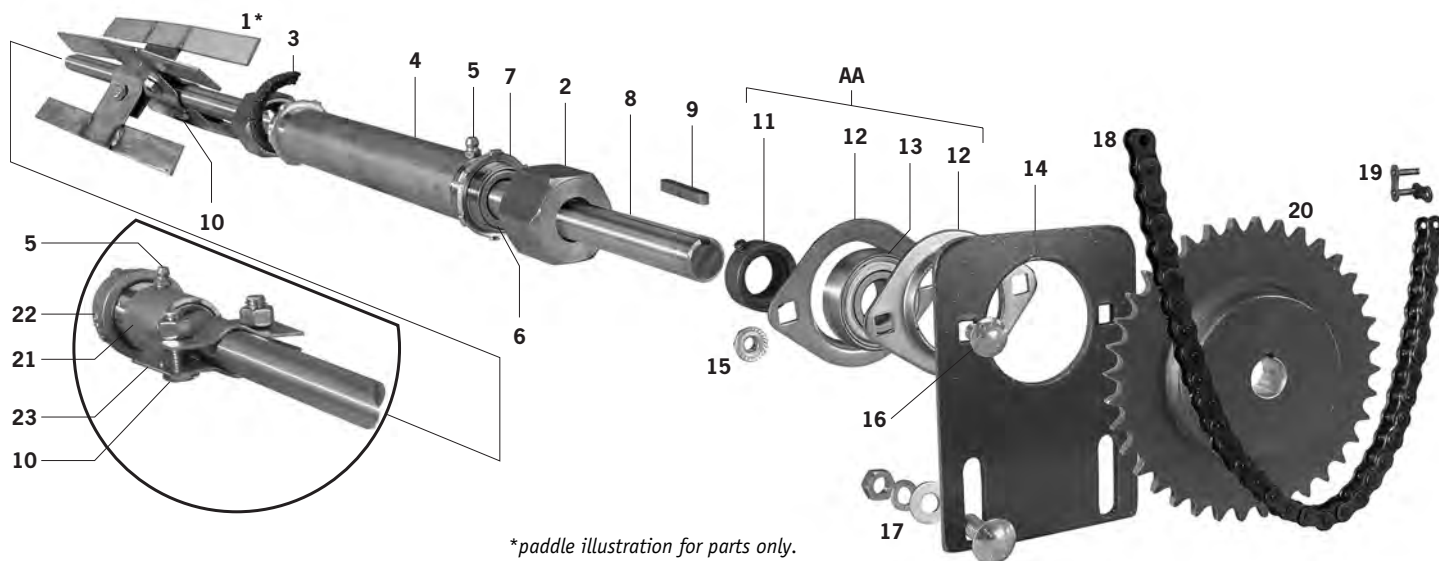
Insert snap ring 3.

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.

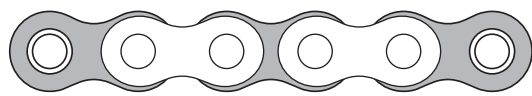




**mechanical agitation parts**

No.	Part #	Description	Qty
1	PB50	Large paddles, one complete set	4
2	AG075ESS	packing nut with packing	2
3	AG025	packing only, @ 11" each nut	-
4	AG07510	rear bearing with bushings	1
5	1641-B	1/4"-28 straight zerk	2
6	AGBSH075112	bronze buxhing	4
7	AG075C	3/4" locking ring	1*
8	AG07579	agitator shaft, common** length 79"	1
	AG07595	agitator shaft, TTN model length 95"	
	AG075102	agitator shaft, 1000 gal length 102"	
9	KM0180138	3/16" x 1"3/8 key	1
10	0370100CHSS	3/8" x 1" bolt, stainless steel	12
	037NSS	3/8" nut, stainless steel	12
11		see 13	-
12	52MST	agitator bearing mount flange	2
13	RA012RRB	agitator shaft bearing with collar	1
14	AGPL075500	bearing bracket, 5-1/2" plate length	1
	AGPL075501	bearing bracket, 7" plate length	
	AGPL075502	bearing bracket, 8-3/8" plate length	
15	031NFLANGE	5/16" serrated nut	2
16	0310075CP	5/16" x 3/4" carriage bolt	2
17	0370100CZ	3/8" x 1" carriage bolt	2
	037WUSS	3/8" flat washer	2
	037WS	3/8" lock washer	2
	037NSS	3/8" nut, stainless steel	2
18	PB40CH-BULK	#40 roller chain <i>see chart for length</i>	1
19	PB40CH-LINK	#40 roller chain master link	1
20	PB4036075	36 tooth sprocket	1
21	AG07503	front bearing with bushings	1
22	SSCAP075	bearing cap	1
23	AG23	small paddles, one complete set	2
AA	AG0B075F	complete agitator shaft outboard bearing	

When counting links (shaded gray) do not count the outside plates (white) or master-link (not shown here)



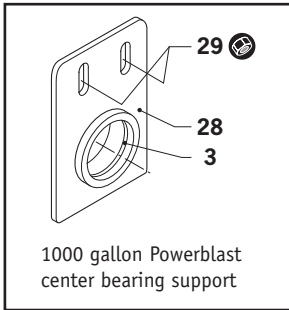
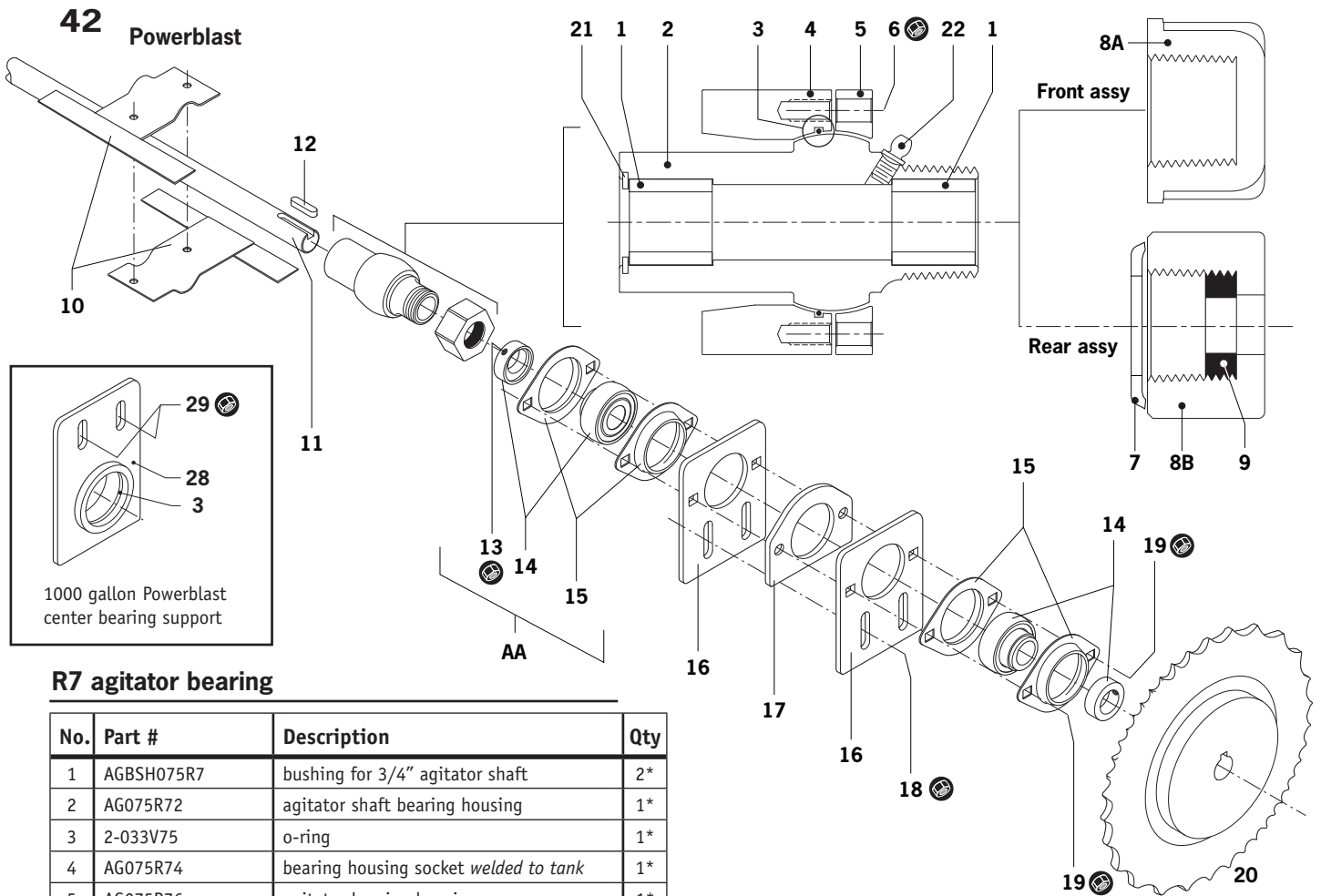
**ordering agitator chain**

MODEL	# LINKS*	LENGTH*
TT, Lo-Pro	38	38"
TTN	39	39"
Narrow	44	44"
STD, 33" fan	47	47"
STD, 38" fan	48	48"
Tower <i>common</i>	56	56"

\* Does not include master link.  
Length is given for new chain.  
For custom models and Towers, we recommend counting the links.

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

## 42 Powerblast



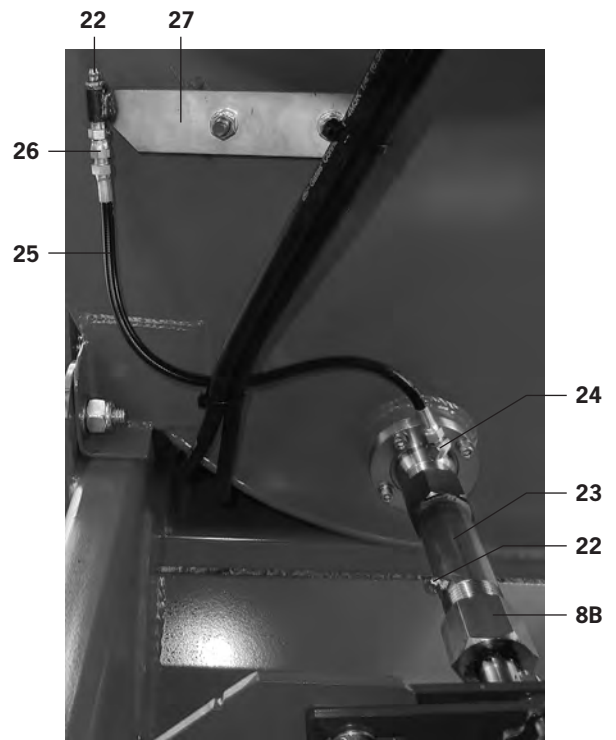
### R7 agitator bearing

No.	Part #	Description	Qty
1	AGBSH075R7	bushing for 3/4" agitator shaft	2*
2	AG075R72	agitator shaft bearing housing	1*
3	2-033V75	o-ring	1*
4	AG075R74	bearing housing socket <i>welded to tank</i>	1*
5	AG075R76	agitator bearing housing cap	1*
6	0250087CKSS	1/4"-20 x 7/8" stainless steel	4*
	025WSSS	1/4" lockwasher, stainless steel	4*
7	AG075C	3/4" locking ring	1*
8A	BRCAP075	brass cap <i>front assembly</i>	1
8B	AG075ESS	packing nut with packing <i>rear assembly</i>	1
9	AG025	packing only, @ 11" each nut	-
10	PB50	large paddles, one complete set	4
11	AG07579	agitator shaft, common** length 79"	1
	AG07595	agitator shaft, TTN model length 95"	
	AG075102	agitator shaft, 1000 gal length 102"	
12	KM0180138	3/16" x 1" 3/8 key	1
13		set screw	-
14	RA012RRB	outboard bearing, includes set collar	2
15	52MST	agitator bearing mount flange	4
16	AGPL075500	bearing bracket, 5-1/2" plate length	2
	AGPL075501	bearing bracket, 7" plate length	
	AGPL075502	bearing bracket, 8-3/8" plate length	
17	AGPL075600	center spacer	1
18		bearing brackets mount fasteners	2
19		bearing flange mount fasteners	2
20	PB4036075	36 tooth sprocket	1
	PB40CH-BULK	#40 roller chain <i>see chart for length</i>	1
	PB40CH-LINK	#40 roller chain master link	1
21	RR-100-S02	snap ring	1
22	1641B	zerk (not inside 1000 gallon tank)	1
23	AG075ESS-EXT	agitator bearing extension	1
24	310912	45° grease port, 1/4"-28 M x 1/8"NPT F	1

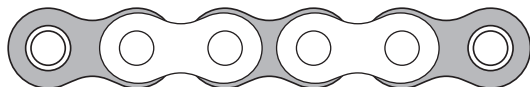
\* Listed quantities are per bearing assembly

\*\* Common includes all models not otherwise listed.

No.	Part #	Description	Qty
25	GREASEHSE	grease line, give length	1
26	1404-02-02	swivel	1
27		remote grease port bracket	1
28	AG075R74PL08	in-tank bearing support plate	1
29	0370075CHSS	3/8"-16 x 3/4" stainless steel bolt	2
	037WSS	3/8" stainless steel flat washer	4
	037NYSS	3/8"-16 nylock nut, stainless steel	2
AA	AGOB075F	complete outboard bearing set	2



When counting links (shaded gray) do not count the outside plates (white) or master-link (not shown here)



### ordering agitator chain

MODEL	# LINKS*	LENGTH*
TT, Lo-Pro	38	38"
TTN	39	39"
Narrow	44	44"
STD, 33" fan	47	47"
STD, 38" fan	48	48"
Tower <i>common</i>	56	56"

\* Does not include master link.  
Length is given for new chain.  
For custom models and Towers, we recommend counting the links.

### agitator shaft installation, R7 bearing

Clean and degrease agitator bearing sockets **4** on the tank and the outer surface of the bearing housing **2**.

Slide the agitator shaft into the tank and slide the R7 bearings onto each end of the agitator shaft.

Apply a bead of *Loctite 635 or 680* around the radius portion of bearing housing **2** and place in position with the housing cap **5** loosely installed.

Rotate the bearings in the tank sockets to spread the *Loctite*. Rotate agitator shaft to align bearings.

Tighten bearing retainer clamps **5** at each end.

Slide outboard bearing assembly **13-19** onto the agitator shaft. Stack bearing assemblies, mount plates, and center plate as illustrated. Brackets **16** straddle frame mount.

*Note: On some machines, the agitator sprockets may not align correctly with this assembly: if needed, replace the the spacer **17** with another bracket **16** and mount the whole assembly on the tank side of the frame mount.*

Lock both support collars **14** in the direction of rotation *CW as viewed from rear*. Tighten setscrews **13**.

Install the chain drive, agitator paddles. Tighten the rear packing nut as required to eliminate leakage.

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

**agitator idler sprocket assembly**

No.	Part #	Description	Qty
1	PBG7-40A	idler sprocket <i>Fafnir 010-4018S AG</i>	1
2	0620250CH5	5/8"-11 x 2-1/2 gr.5 bolt	1
3	062WUSS	5/8" flatwasher	1
3a	062WUSS	5/8" flatwasher: <i>stack to align sprocket</i>	
4	062WSAE	5/8" hardened flatwasher	1
5	062WS	5/8" lockwasher	1
6	062NF	5/8"-11 nut	1
7	0500150CH5	1/2"-13 x 1-1/2" gr.5 bolt	
8	050WUSS	1/2" flatwasher	2
9	050WSAE8	1/2" hardened flatwasher	6
10	PBG022	<b>RPA pump</b> idler sprocket bracket	1
	PBG022SP	<b>PBSP800 pump</b> idler sprocket bracket	

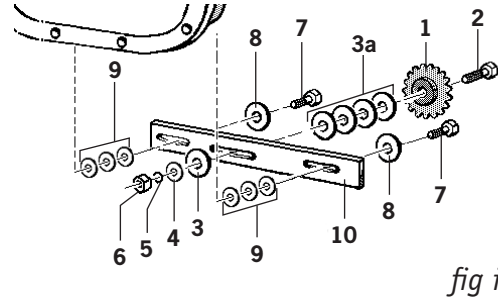


fig i

**agitator idler mount bracket assembly**

Loosely assemble the idler sprocket and fasteners: attach to the mount bracket as illustrated. It is possible to install the mount bracket backwards- see *fig ii* for proper orientation. You should use the quantity of spacers **3a** that were delivered with your sprayer. If you need to re-align the idler sprocket, see the following alignment instructions to figure out the number of spacers required.

Attach the idler mount bracket to the Powerblast gearbox: Install three spacers **5** between the gear case and the mount bracket.

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

**Align the idler sprocket with the drive sprocket**

Tighten the bracket fasteners and the idler sprocket fastener before checking alignment.

**fig ii.** Use a straight edge to check the alignment of the drive sprocket with the idler sprocket.

**fig iii.** Add or remove spacers behind the idler sprocket to set the alignment.

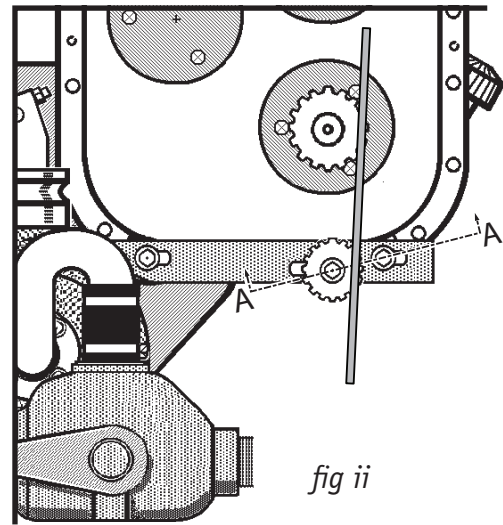


fig ii

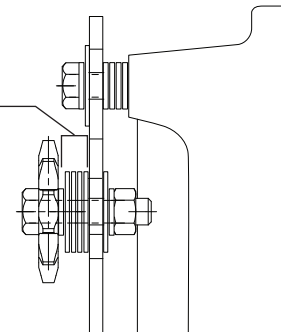


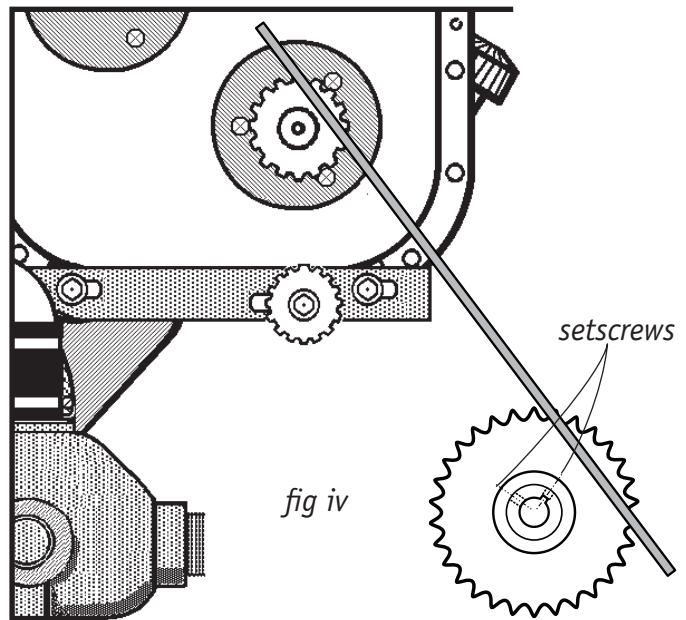
fig iii, section AA

**Align the drive sprocket with the agitator sprocket**

**fig iv.** Use a straight edge to check the alignment of the drive sprocket with the agitator sprocket.

To reposition the agitator sprocket, if needed, loosen the setscrews securing the agitator sprocket to the agitator shaft.

When properly aligned, tighten setscrews.

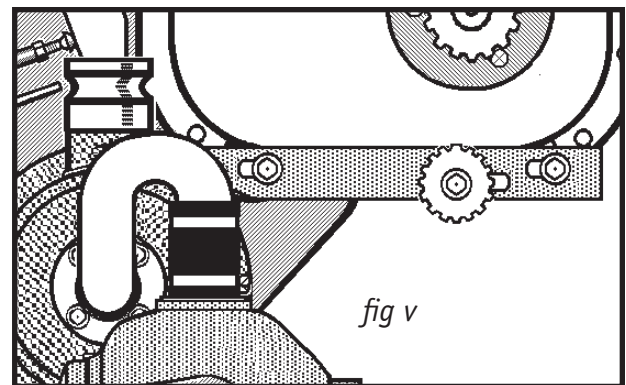


**Set the chain tension**

**fig v.** Loosen the idler mount bracket bolts 4 so the bracket 8 can slide completely to the pump side of the gearbox. Tighten the mount bolts.

Loosen the sprocket mount bolt 2 so the sprocket assembly is able to slide in the bracket slot.

The idler mount bracket and the idler sprocket mount bolt can be positioned separately to provide a wide range of sprocket positions.



**fig vi.** With the chain in place, rotate the agitator shaft sprocket C to take the slack out of the chain between the gearbox sprocket A and sprocket C. Target deflection is listed in fig vi. Hold sprocket C in this position.

*To find your chain deflection:* set a straight edge, as illustrated, to use as a reference. At the mid-point between sprocket A and C, measure the push deflection and the pull deflection. The combined push and pull deflection should be equal to the X deflection value listed for your Powerblast model.

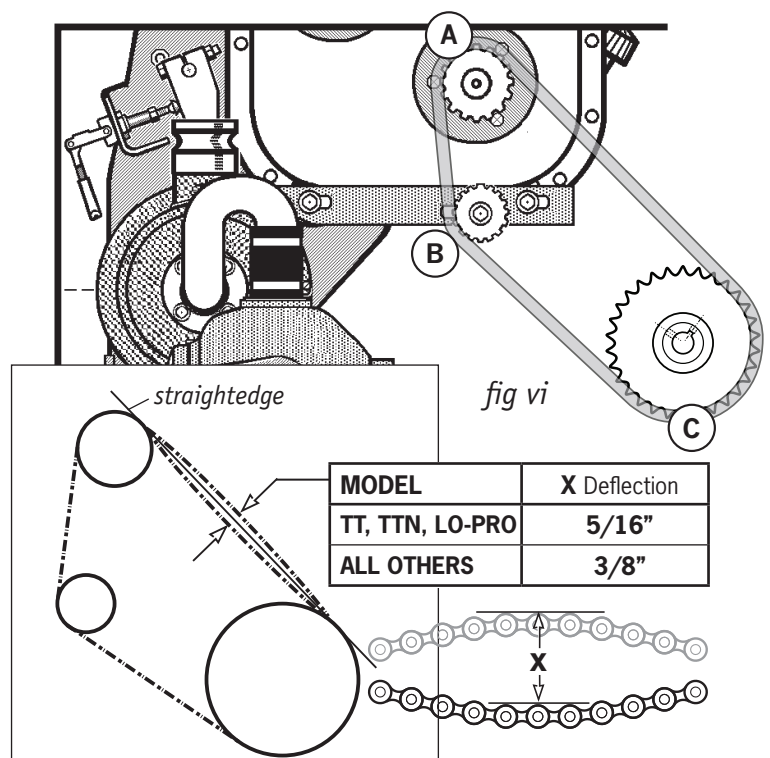
Slide the idler sprocket assembly B to engage the drive chain. Position sprocket B such that the slack is pulled from the chain. Tighten the idler sprocket mount bolt.

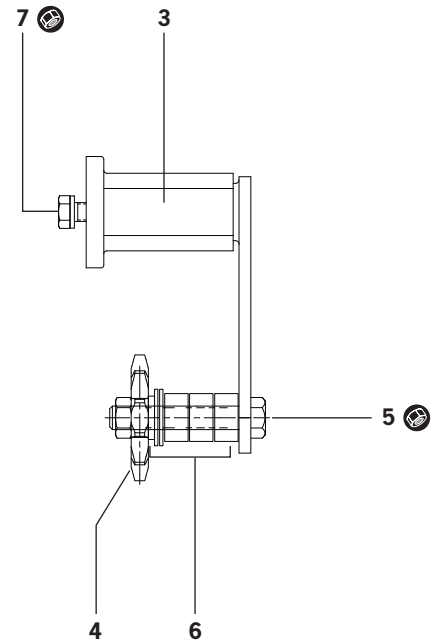
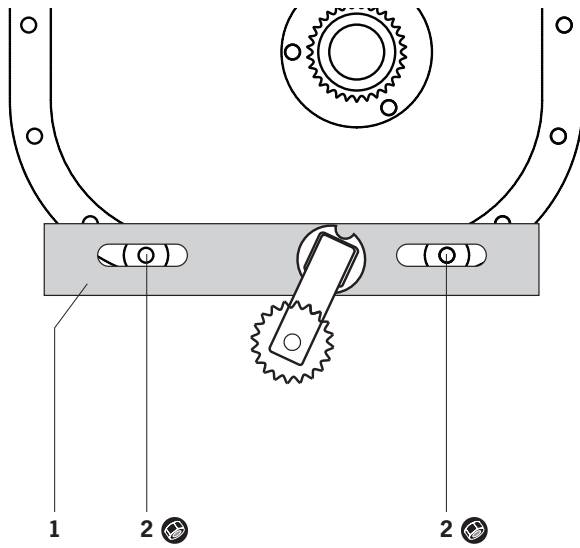
Check the deflection again as illustrated in fig vi: adjust the idler sprocket position as necessary.

Remove all tools and install guards. Be sure water level is above the pump intake port for adequate priming.

Start Tractor and engage PTO: run for a few minutes and then shut down. Recheck the chain tension and adjust if necessary.

After installing a new chain, check tension after 8 hours of operation.





**agitator chain auto-tension parts**

No.	Part #	Description	Qty
1	PBG022SE15	tensioner mount bracket	1
2	0500150CH5	1/2"-13 x 1-1/2" gr.5 bolt	2
	050WSAE8	1/2" hardened flatwasher <i>bracket spacer</i>	
	050WUSS	1/2" flatwasher	2
3	SE15 ROSTA	tensioner arm	1
4	PBG7-40A	idler sprocket <i>Fafnir 010-4018S AG</i>	1
5	0500350CH5	1/2"-13 x 3-1/2" gr.5 bolt	1
	050WSAE8	1/2" hardened flatwasher	1
	050NF	1/2" nut	1
6	SC050	1/2" collar spacer	
	050WUSS	1/2" washer spacer	
7	M8-1.25X40MM	8M x 40M bolt	1
	031WS	5/16" lockwasher	1

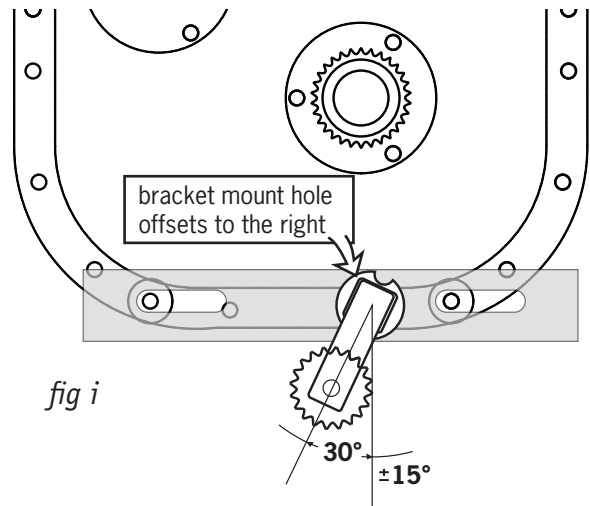
**DANGER!** **SHUT DOWN TRACTOR, SET BRAKE AND REMOVE KEY WHEN WORKING ON SPRAYER. NEVER OPERATE SPRAYER WITH GUARDS MISSING.**

**installing agitator chain auto-tension arm**

**fig i.** Bolt the tension arm assembly **3** to the tensioner mount bracket **1** before attaching the bracket to the gearbox mount holes. It is possible to mount the bracket backwards: look at the illustration. With proper orientation, the tensioner mount hole is offset to the right.

Position the tension assembly on the mount bracket as illustrated: the tension arm should be 30° from vertical. Finger tighten the tensioner assembly mount bolt.

Bolt the mount bracket to the gearbox mount holes as illustrated. Install a hardened flatwasher behind the mount bracket as a spacer.



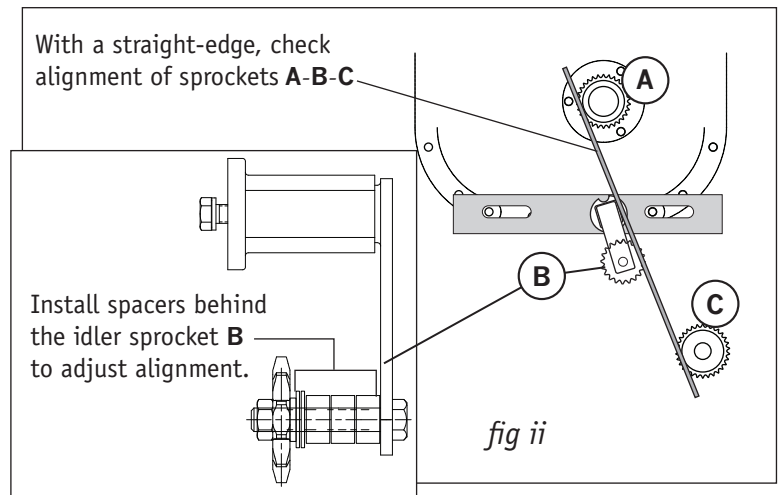


**fig ii.** Use a straight edge to check the alignment of the drive sprocket **A** with the agitator sprocket **C** and idler sprocket **B**.

To reposition the agitator sprocket **C**, if needed, loosen the setscrews securing the agitator sprocket to the agitator shaft.

When properly aligned, tighten setscrews.

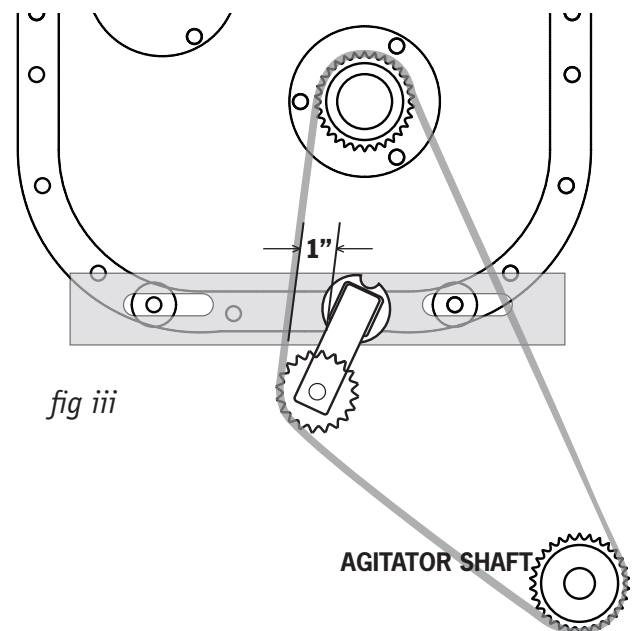
To change the idler sprocket **B** alignment, adjust the spacers behind the sprocket.



**fig iii.** Slide the tension arm mount bracket **1** to engage the agitation drive chain: as illustrated, position the bracket so the drive chain is not slack.

Note: The drive chain should be at least 1" from the tensioner body (to prevent rubbing) and the chain should not be within 1" of any fastener heads. If the chain angle must be adjusted to provide clearance, simply loosen the tension assembly mount bolt **7** and rotate the tensioner to provide adequate clearance.

Tighten the mount bracket gearbox fasteners **2**. Do not tighten the tension assembly bolt.



**fig iv.** Two wrenches are required to set the chain tension: to hold the tensioner assembly mount bolt **7**; to rotate the tensioner body **3**.

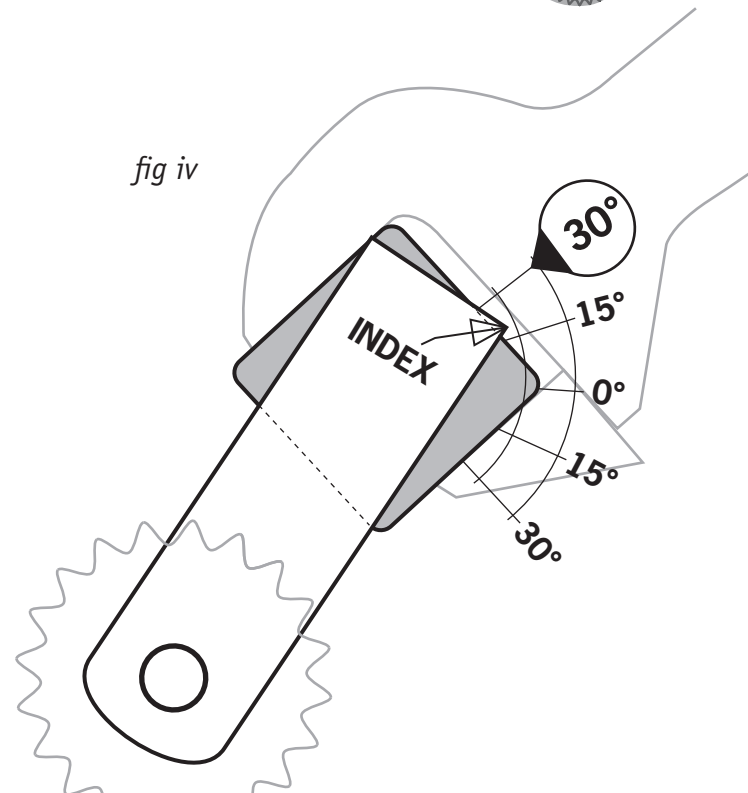
As illustrated, grip the tension assembly body with a wrench and rotate clockwise to tension the idler arm.

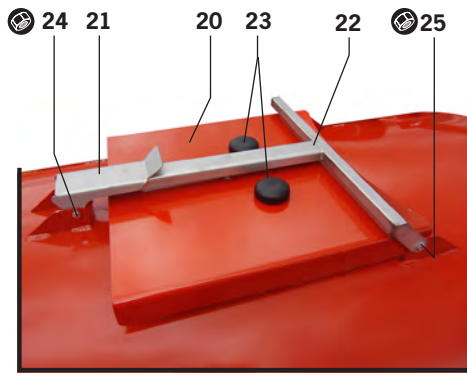
Align the 30° mark on the body with the **INDEX POINT**, see *fig iv*. The **INDEX POINT** is the corner of the idler arm.

Hold this tension and tighten the assembly mount bolt **7**.

**CHECK CHAIN TENSION WEEKLY.**

\*After installing a new chain, check tension after 8 hours of operation.





Powerblast model	Fan	# Nozzles	Part N <sup>o</sup>
Standard 400 - 1000G	33"	12	PB701M(L/R)
Standard 400 - 1000G	33"	13	PB70M(L/R)-BN
Standard 400 - 1000G	38"	13	PB7038(L/R)
Standard 400 - 1000G	38"	15	PB7038(L/R)-15
Standard 400 - 1000G	38"	16	PB7038(L/R)54
TT (low profile model)	33"	11	PB70LP(L/R)
TTN	33"	13	PB70TN (L/R)

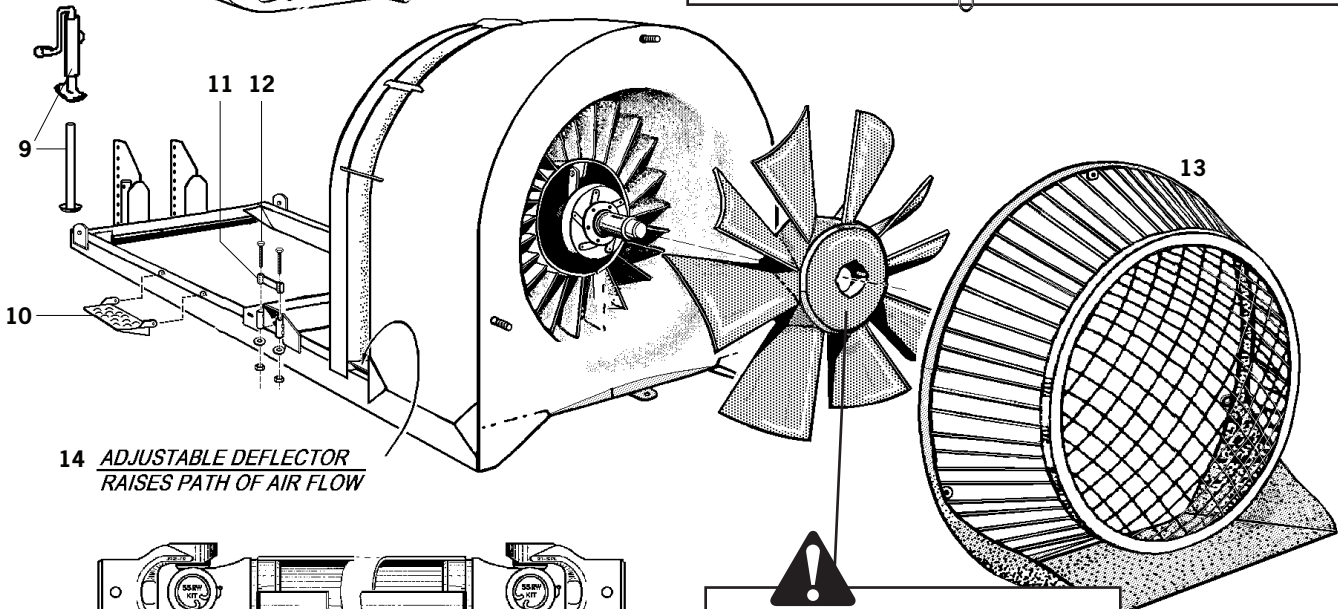
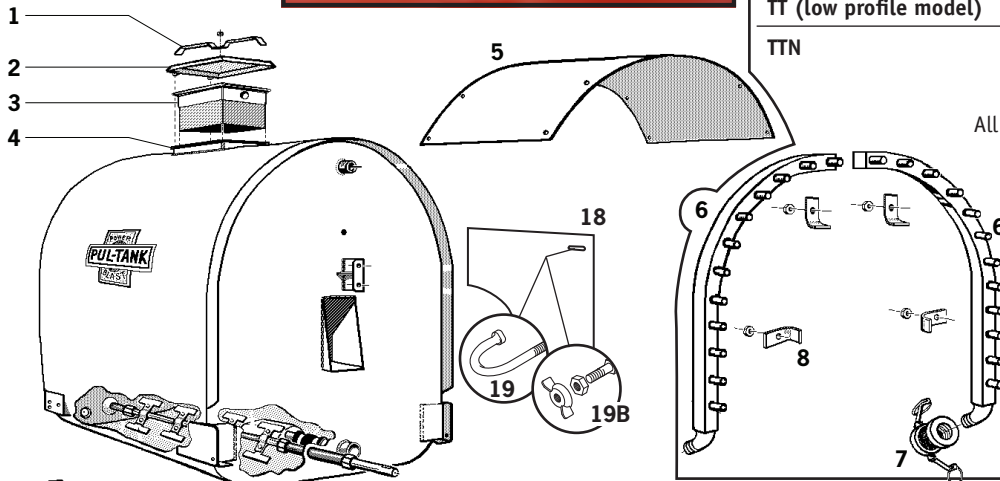
**MANIFOLD SELECTION CHART:**

All nozzle mounts are 1.0" male nipple.

If you need *female*, different length, or a nozzle count not listed here, please call your dealer to order.

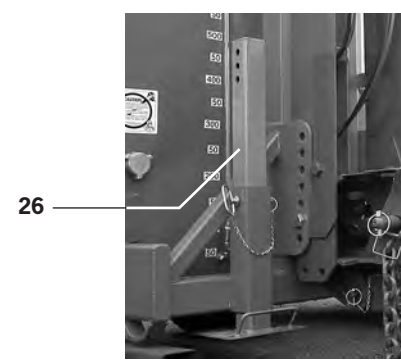
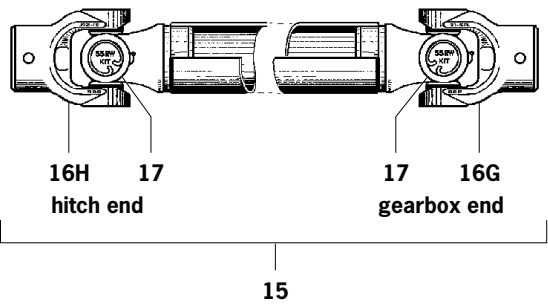
**TOWER MANIFOLD SELECTION:**

Call with Powerblast Serial No.



14 **ADJUSTABLE DEFLECTOR**  
RAISES PATH OF AIR FLOW

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



**powerblast parts**

No.	Part #	Description	Qty	No.	Part #	Description	Qty
1	PBLID-LA	lid latch, spring bar style	1	15		thru-tank driveline	1
2	PBLID	lid, hinged for spring bar latch	1	16H	<i>See Powerblast Model Chart, below</i>	driveline yoke, hitch end	1
3	PB49SS	fill basket, stainless steel	1	16G		driveline yoke, gearbox end	1
4	PBLID-GAS	lid gasket	1	17		CPL55E4BL	E series 55 cross kit
5	PBHOOD	common* hood	1	18	call with serial #	mud skirt, left/right	1
	PBHOODTT	TT model hood		19	PB602	skirt lock	4
6		see manifold chart previous page			0370100CH5	3/8"-16 x 1" Gr.5 bolt	4
7	ETC075DAL	quick coupler, 3/4" female	2	19B	037NF	3/8" nut	4
8	PBMC101	manifold clamp	4		037NW	3/8" wing nut	4
9	HB2000	sidewinder jack 2000lb	1		20	PBLID-OC	square lid for over center lid latch
	PBJ213	height adjustable stand	1	21	PBLID-OCLA	lid latch for PBLID-OC	1
10	PBSTEP	step	2	22	PBLID-CROSS	hinge	1
11	PL7BR	axle clamp	2	23	LDVENTM	lid vent, mushroom shape	2
12	0620650CH5	5/8"-11 x 6-1/2" Gr.5 bolt	4		504210PP	vent w/ball check: flat 8-sided plate	
	062NF	5/8" nut	4	24	0250300CH5	1/4"-20 x 3" bolt	1
	062WUSS	5/8" flat washer	4	025NYS	1/4"-20 nylock nut	1	
13	PB3FGTG	fan grill for 33" fan	1	25	0250075CHSS	1/4"-20 x 3/4" bolt, stainless steel	2
	PB38FGTG	fan grill for 38" fan			025WSS	1/4" flatwasher, stainless steel	2
	PB3FGTG1	fan grill for tower with 33" fan			025NYS	1/4"-20 nylock nut	2
	PB38FGTG1	fan grill for tower with 38" fan			26	PBJ21000	1000 gallon stand
14	PBDP4	adjustable air flow deflector	1	0750500HP		hitch pin	1

Model	CVHitch Series	15	X-X*	16H	16G
500 Gallon Lo-Pro	51 series	DL584	84"	Y514	Y514
	71 series	DL584-20B	84"	Y553	Y514
500 Gallon Narrow	51 series	DL592	91-7/8"	Y514	Y514
	71 series	DL592-20B	91-7/8"	Y553	Y514
TTN, all volumes	51 series	DL572	87"	Y514	Y514
	71 series	DL572-20B	87"	Y553	Y514
1000 Gallon	51 series	DL505	98"	Y514	Y514
	71 series	DL505-20B	98"	Y553	Y514
Common: <i>all models not otherwise listed</i>	51 series	DL504	71-3/4"	Y514	Y514
	71 series	DL504-20B	71-3/4"	Y553	Y514

*\*Driveline length measured between cross centers*

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

**towers with air vane louvers**

To adjust the angle of air discharge from the tower chimney, loosen the louver lock handle **4**. Slide the handle up or down to set your desired discharge angle. Tighten the handle to lock the air vanes into place.

Your tower air slot may be divided into sections that can be changed independently. Each section will have a louver lock handle **4**.

**towers with air doors: side air slots**

Open or close the tower air doors to adjust the volume of air discharged from the side air slots. Manual systems have a turnbuckle **9** to adjust the size of the air slot. Electric air door systems use a motor **12**.

Manual system: shorten the turnbuckle to close the air door and decrease the volume of air discharged. To open the air doors completely, expand the turnbuckle until you feel resistance. You will be able to see that the door is completely open by looking into the air slot.

Electric system: use the switches on your handset to open or close the air doors for each section of your tower air slot.

Your tower air slot may be divided into sections that can be adjusted independently.

**towers with air doors: top air slots**

Towers with air slots on the top of the tower chimney have gates installed to independently adjust air discharge.

Use care when adjusting the air gates. The access steps must be clean and free of slip hazards. Never adjust any air doors or air vane louvers when the tractor is running. Be certain the tractor brake is set before climbing onto the sprayer.

To open or close the air gates loosen the retaining nut on the gate swing arm **7** or **8**. Rotate the swing arm UP to close the gate. Rotate the swing arm DOWN to open the gate.

Tighten the retaining nut to lock the air gate in position.

**DO NOT MANUALLY ADJUST AIR DISCHARGE LOUVERS OR DOORS WHEN POWERBLAST IS OPERATING.**

**TRACTOR MUST BE SHUT OFF AND SET TRACTOR BRAKE BEFORE MAKING ADJUSTMENTS TO THE SPRAYER.**

**air doors and louvers common tower parts**

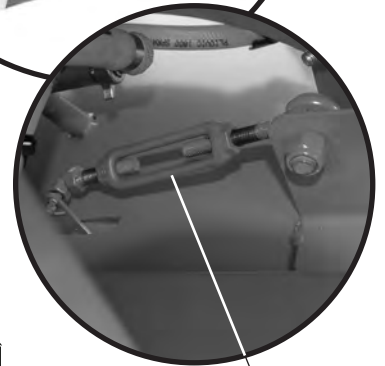
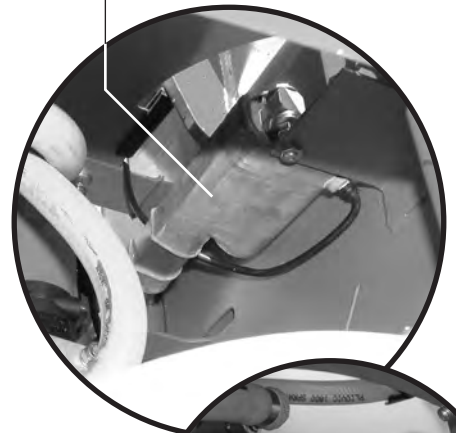
No.	Part #	Description	Qty
1	TWIN1671	12" long air vane	*
	TWIN1672	8"1/2 long air vane	*
2	TWR502	pivot pin for units with retain rod <b>6</b>	*
	TWR503	pivot pin for units without retain rod <b>6</b>	*
3	025WSS	1/4" flat washer, stainless steel	*
	0090187HCP	.091" x 1"7/8 hair cotter pin	*
4	TWR500	air vane adjustment handle/lock	*
5	call w/serial no.	louver tie bracket, measure length	*
6	call w/serial no.	retaining rod, measure length	*
7	TWR510	top air slot swing gate for canopy head	2
	TWR511	top air slot swing gate for non-canopy head	2
8	TWR512	top air slot swing gate, outside slot	2
9	TWR-TB	air door turnbuckle	*
	0500150CZ	1/2"-13 x 1"1/2 carriage bolt	1
	050NF	1/2"-13 nut	1
	050NYS	1/2"-13 nylock nut	1
10	call w/serial no.	air door- call with door size	*
11	call w/serial no.	air door- call with door size	*
12	TWAD201	electric air door actuator	*
	TWAD202	electric air door actuator with feedback**	*

\* quantity depends upon tower model

\*\* actuators with feedback for door control with door position display

air louver parts

air door parts



2

3

1

1

2

4

5

6

4

7

8

9

9

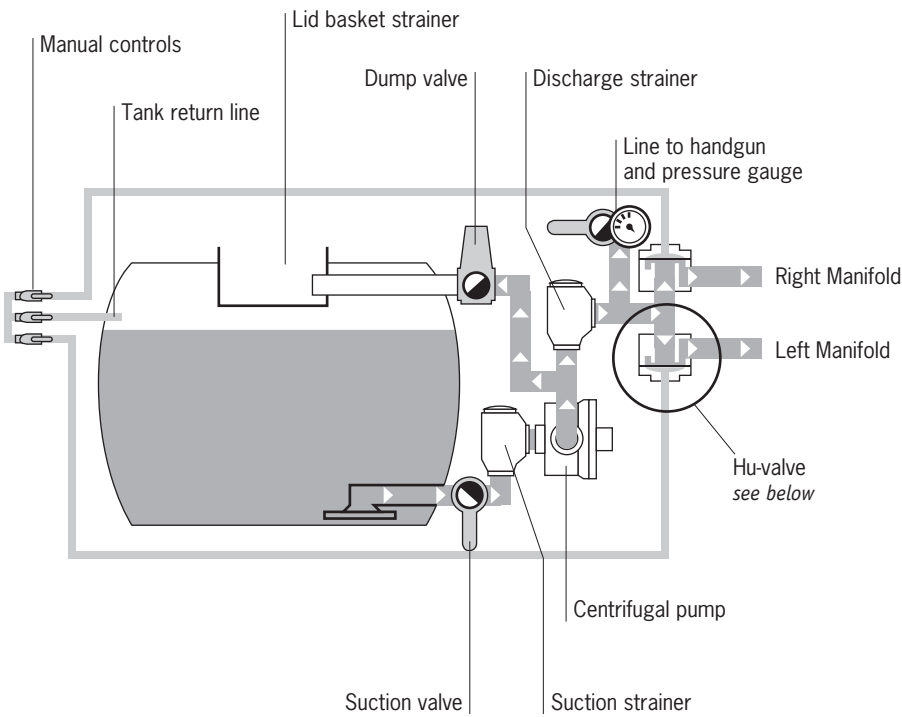
10

9

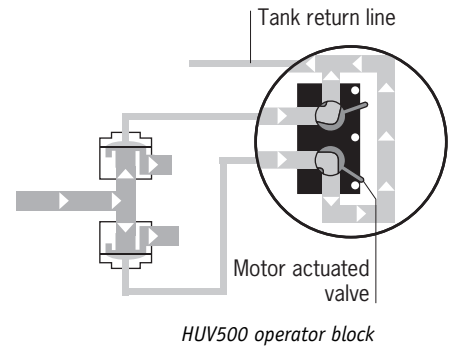
11

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

powerblast plumbing



powerblast electric spray controls



*fig i*

Orifice  
Diaphragm  
From Pump  
Return Line (closed)  
A  
D  
C

*fig ii*

Orifice  
Diaphragm  
From Pump  
Return Line (open)  
To manifold  
A  
D  
C  
B

In *fig i*, above, the Hu-Valve is closed. You have switched *off* your manifold using your handset (electric or manual controls) and what this does, quite simply, is close the return line from the Hu-Valve to the tank. When you switch your manifold *on*, *fig ii*, water from the pump flows into the Hu-Valve and splits into two channels: the majority flows through **A**, into **B**, and on to the manifold; a lesser amount through **C** to the return line. From **C** the water passes through an orifice and back to the tank. It is this return line that feeds chamber **D**. When the return line to the tank is open, the water pressure in chamber **D** is low- lower

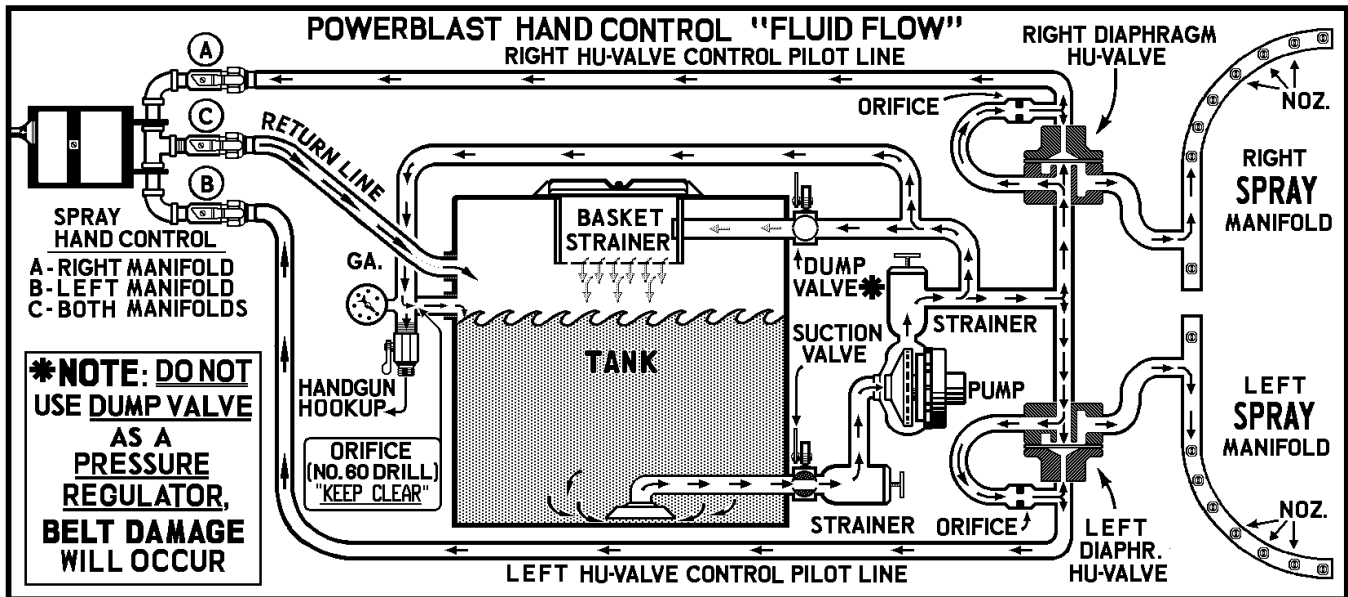
than the pressure in chamber **A**, the valve seat. The greater pressure in **A** displaces the diaphragm, *fig ii*, and opens the passage to the manifold: the valve is open. When you switch your manifold *off* the return line to the tank is closed, *fig i*, and water backs up into chamber **D**, equalizing the water pressure in **A** and **D**. The diaphragm will close the valve because chamber **D** has a mechanical advantage over **A**: the pressurized surface area of the diaphragm on side **D** is 10 times greater than that of side **A**.

### troubleshooting: excessive pressure drop

Check the dump valve. When spraying, the dump valve must be completely closed. Using the dump valve to control spray pressure will result in early belt failure.

Check the tension of the pump drive belt: see the pump maintenance section of this manual.

Check the suction and discharge strainers- clean screens.



### 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 Hu-valve electric controls, check the spool rotation (see appropriate parts page for HVC block assembly illustration). If the spool rotates easily by hand but not by the motor, check the wiring.

### troubleshooting: spray manifold will not shut off

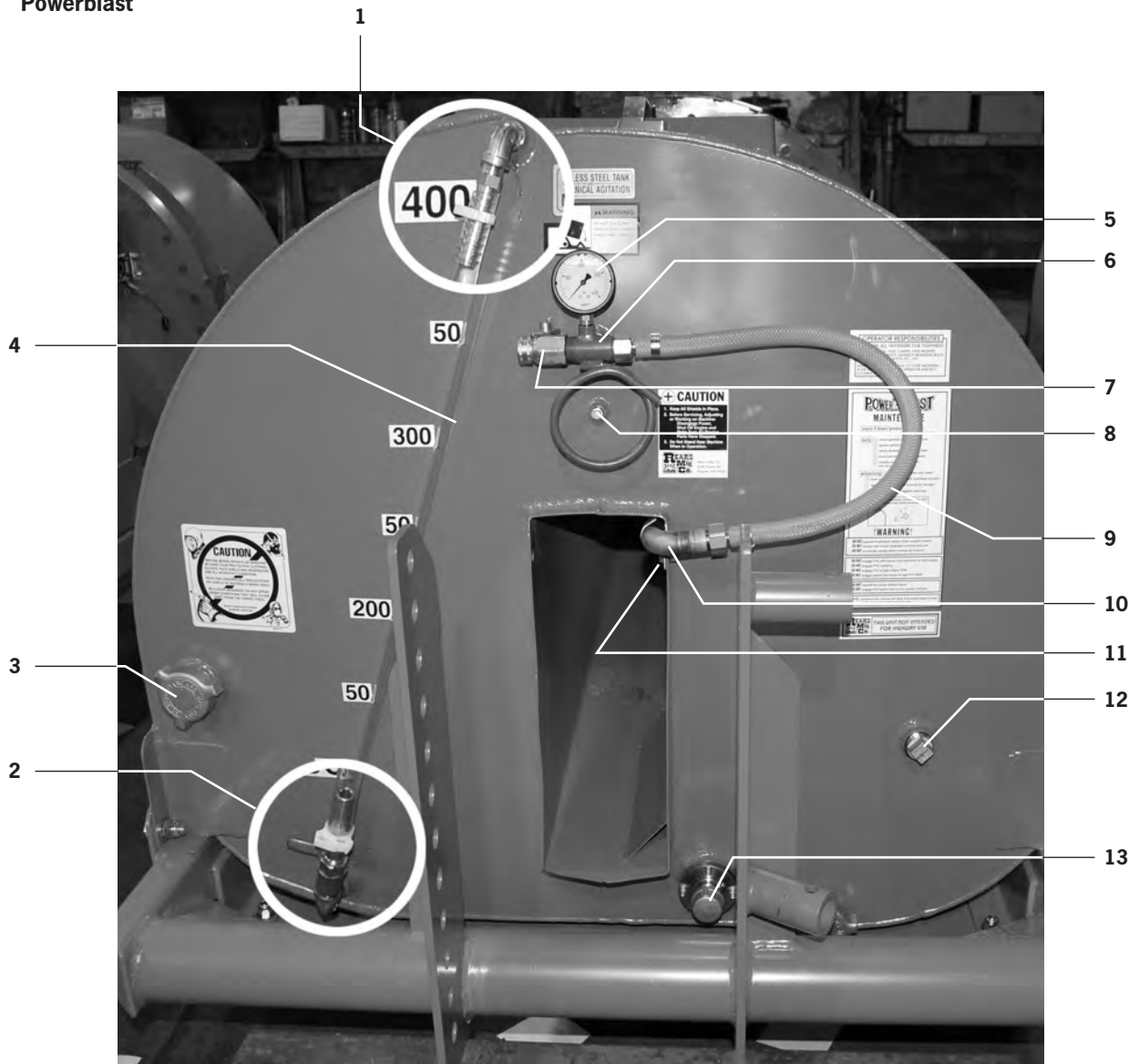
Check Hu-valve orifice and tube for blockage.

Check Hu-valve for ruptured diaphragm.

If you have Hu-valve electric controls, check the spool rotation (see appropriate parts page for HVC block assembly illustration). If the spool rotates easily by hand but not by the motor, check the wiring.

If you have Hu-valve electric controls and the unit continues to spray with HVC spools in the OFF position, a blockage caused the valve control to slip, see the HVC block parts page for repair instructions.

# 54 Powerblast



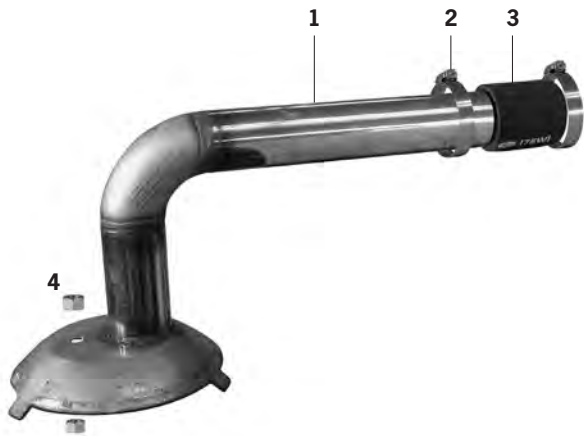
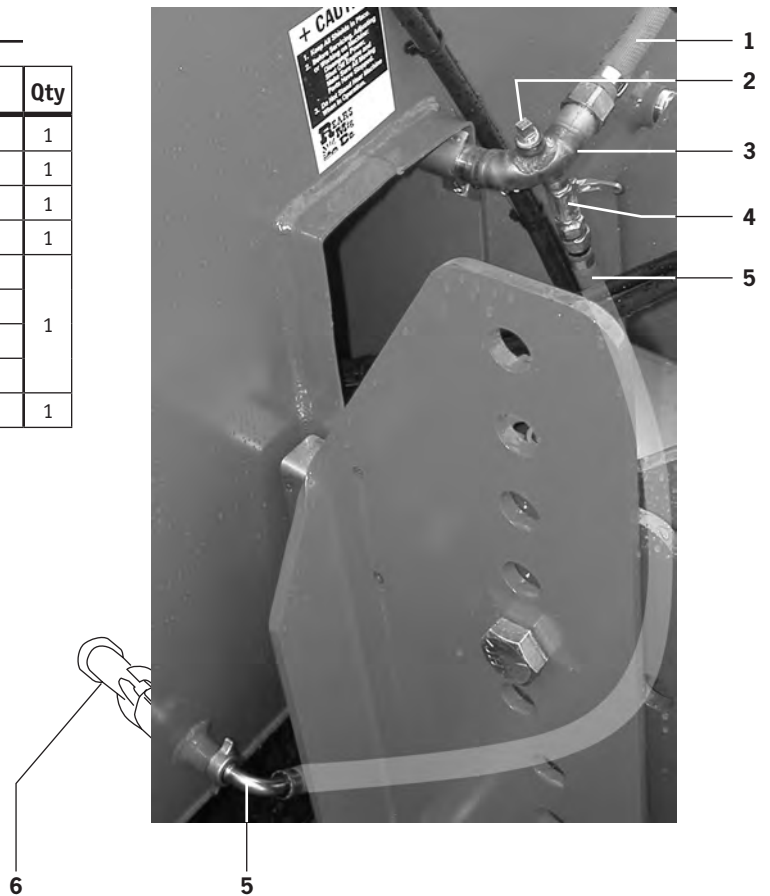
## powerblast tank head plumbing & fittings

No.	Part #	Description	Qty	No.	Part #	Description	Qty
1	SSSTL025	1/4" street elbow, stainless steel	1	9	PBH017	28" pvc hose, FGHT each end	1
	HFC025025	1/4" hosebarb x 1/4"MPT, long shank	1	10	PB725	supply tube for std/lo-pro/narrow tanks	1
	SNP-10	1/4" hose clamp	1		PB7251000	supply tube for 1000 gal. tank	
2	B025MF	1/4" ball valve	1		PB725TTN	supply tube for TTN	
	SSSTL025	1/4" street elbow, stainless steel	1	11	MBIN2131	tube clamp	2
	HFC025025	1/4" hosebarb x 1/4"MPT, long shank	1	12	SSPLG100	1" plug, stainless steel	1
	SNP-10	1/4" hose clamp	1	13		see agitator bearing pages	
3	PLDC2B	2" brass cap	1				
4	SITE025	1/4" clear vinyl tube, give length	-				
5	LFG400	400psi glycerine filled gauge	1				
6	PB720	handgun & pressure gauge manifold	1				
7	V58	ball valve, 3/4"MGHT x 3/4"FPT	1				
8	SSPLG025	1/4" plug, stainless steel	1				



**powerblast jet agitation option**

No.	Part #	Description	Qty
1	PBH017	28" pvc hose, FGHT each end	1
2	SSPLG025	1/4" plug, stainless steel	1
3	PB725JET	supply tube with jet outlet port	1
4	V19M	ball valve, 1/4"MIPT x male Teejet®	1
5	PBH018	39" 3/8" pvc hose	1
	1325	11/16-16UN cap	
	4251-375	3/8" hosebarb for 1325 cap	
	EL050F037HB	1/2" FPT, 3/8" elbow	
6	3371	jet agitation booster <i>mounted in tank</i>	1



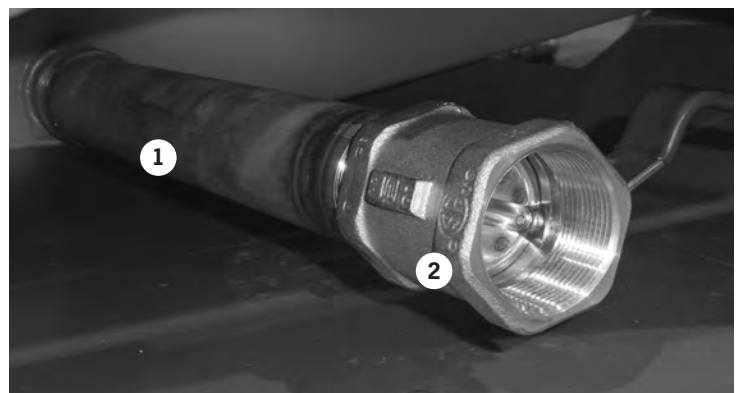
**tank suction parts *sump suction parts listed separately***

No.	Part #	Description	Qty
1	PB53M	common suction funnel*	1
	PBM10	1000 gallon tank suction funnel	
	PBMTN	TTN profile tank suction funnel	
2	WC6832	No. 32 worm clamp	2
3	PBH012	suction pipe coupling	1
4	037NSS	3/8" nut, stainless steel	2

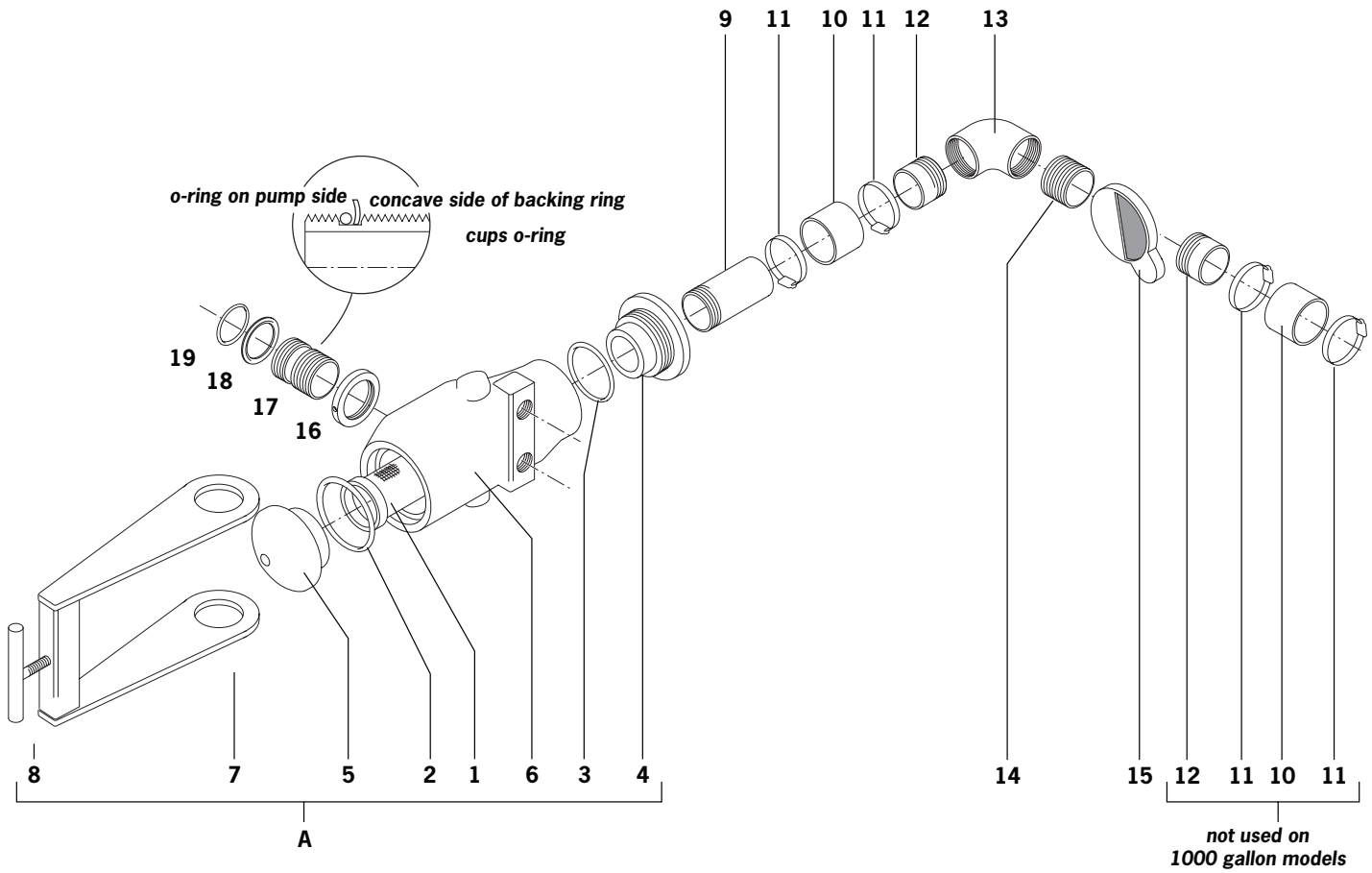
\*Common includes all models not otherwise listed.

**sump discharge parts *for units with belly pan***

No.	Part #	Description	Qty
1	PBDRAINEXT	discharge extension, 14" overall length	1
2	PBSV150	1-1/2" valve	1
	PBSV150HD	valve handle for restricted access	

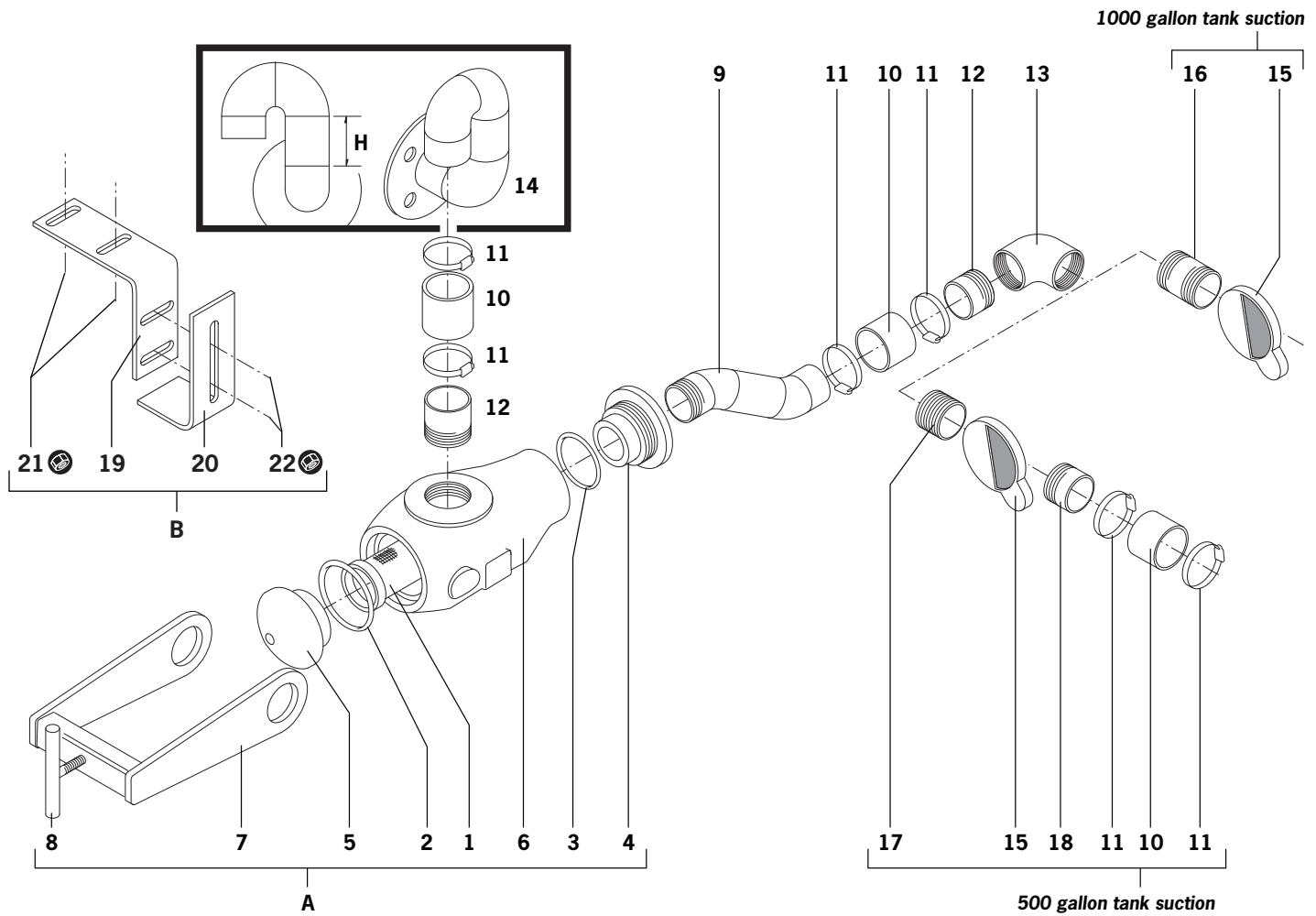


**Read this manual completely before operating: follow all safety instructions.**



**Suction at pump assembly: RPA pump**

No.	Part #	Description	Qty
1		see following screen selection chart	1
2	11-232	o-ring	1
3	STHP2-140	o-ring	1
4	STHP2150	strainer adapter, 1"1/2 inlet	1
5	STHP1010	line strainer cap	1
6	STHP3150	strainer body, 1"1/2 port	1
7	SPST7BL	strainer bale, complete with t-screw	1
	SPST7GM	strainer bale	
8	SPST7H	t-screw	1
9	SSTOE150400	1"1/2 x 4" SS nipple TOE	1
10	PBH011 (4")	1"7/8 water hose, 4" long	2
11	WC6832	worm clamp, 1"9/16 x 2"1/2	4
12	SSTOE150150	1"1/2 x 1"1/2 SS nipple TOE	2
13	SSEL150	1"1/2 elbow, stainless steel	1
14	SSN150CLOSE	1"1/2 x close nipple, stainless steel	1
15	PBSV150	1"1/2 valve, brass	1
16	RPA-JN	jam nut	1
17	RPA-CN	pump/strainer adapter	1
18	8-327	backing ring see installation illustration	1
19	11-224	o-ring	1
A	SPST7150	complete 1"1/2 strainer, includes #1-8	



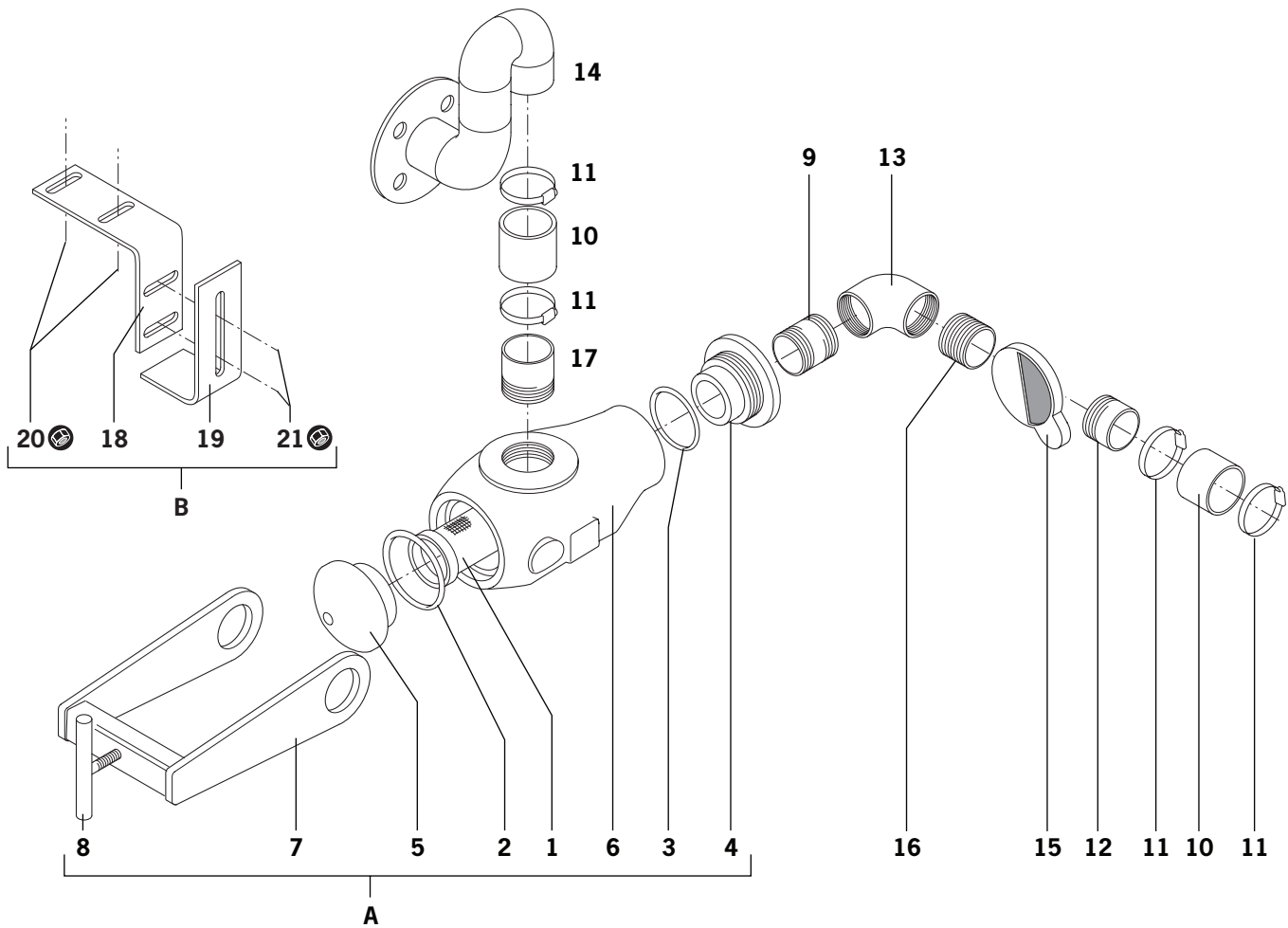
**Suction at pump assembly: PBSP800 pump  
500 & 1000 gallon standard models**

No.	Part #	Description	Qty
1		see following screen selection chart	1
2	11-232	o-ring	1
3	STHP2-140	o-ring	1
4	STHP2150	strainer adapter, 1"1/2 inlet	1
5	STHP1010	line strainer cap	1
6	STHP3150	strainer body, 1"1/2 port	1
7	SPST7BL	strainer bale, complete with t-screw	1
	SPST7GM	strainer bale	
8	SPST7H	t-screw	1
9	PBSP704NS	suction tube	1
10	PBH011 (4")	1"7/8 water hose, 4" long	3
11	WC6832	worm clamp, 1"9/16 x 2"1/2	6
12	SSTOE150150	1"1/2 x 1"1/2 SS nipple TOE	2
13	SSEL150	1"1/2 elbow, stainless steel	1
14		<b>H</b>	pump suction gooseneck
	PBSP705S	0"	
	PBSP705S-80021	1"5/8	

No.	Part #	Description	Qty
15	PBSV150	1-1/2" valve, brass	1
16	SSN1500300	1"1/2 x 3" nipple, stainless steel	1
17	SSN150CLOSE	1"1/2 x close nipple, stainless steel	1
18	SSTOE150200	1"1/2 x 2" SS nipple TOE	1
19	PBSP851	strainer mount, upper angle	1
20	PBSP850	strainer mount, lower angle	1
21	0370100CHSS	3/8"-16 x 1" stainless steel bolt	2
	037WSS	3/8" stainless steel flat washer	2
	037WS	3/8" lockwasher	2
	0370125CP	3/8"-16 x 1-1/4" carriage bolt	2
22	037NF	3/8" nut	2
	037WSS	3/8" stainless steel flat washer	2
	037WS	3/8" lockwasher	2

A	SPST7150	complete 1-1/2" strainer, includes #1-8	
B	PBSP850KIT	mount bracket kit, includes #18-21	

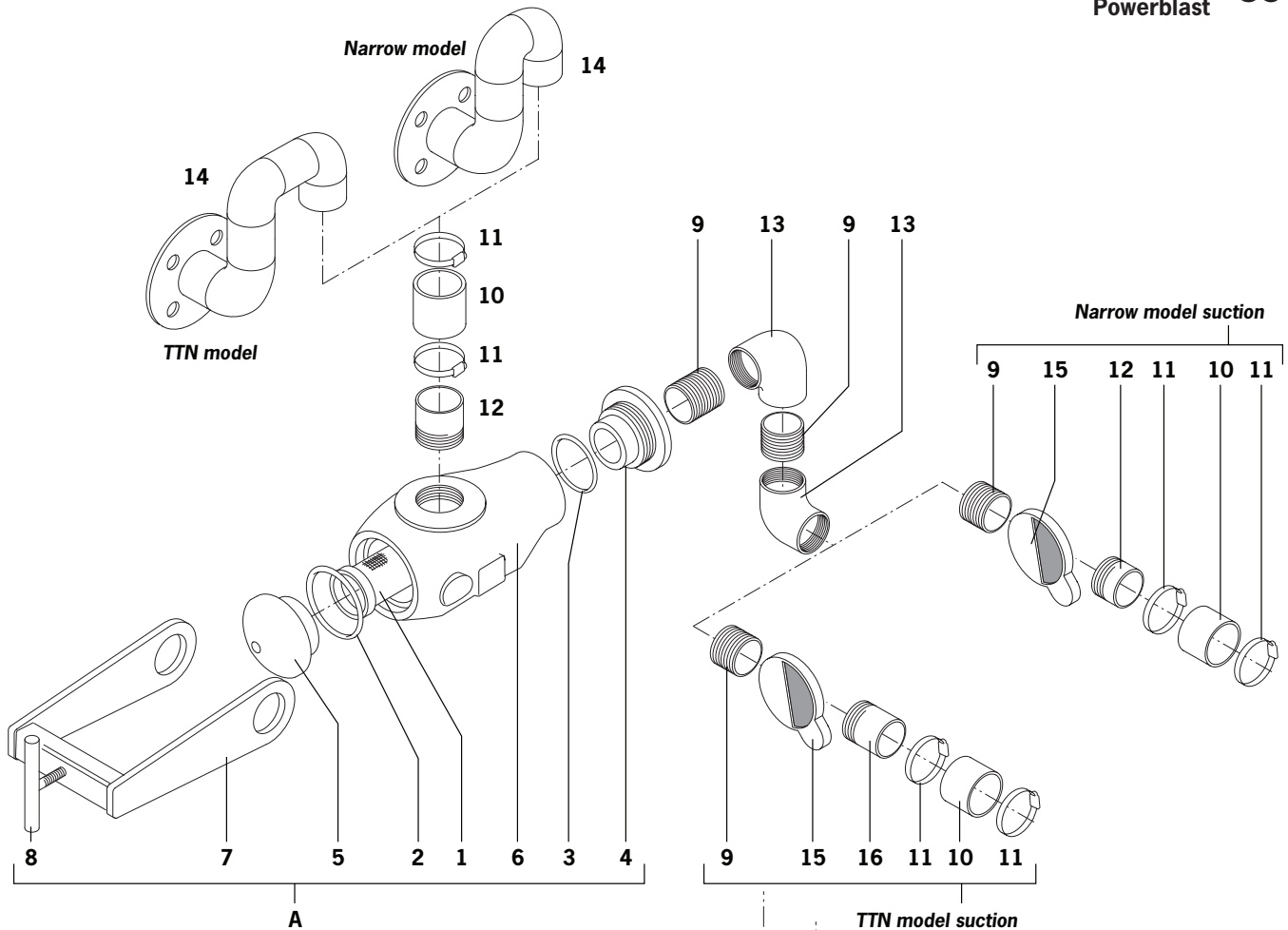
**Read this manual completely before operating: follow all safety instructions.**



**Suction at pump assembly: PBSP800 pump  
TT & LoPro models**

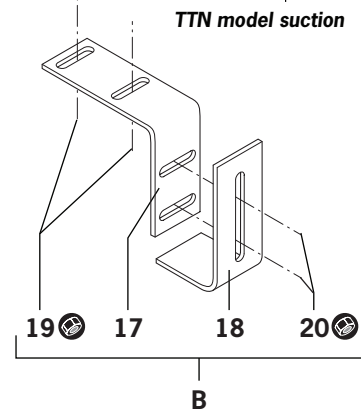
No.	Part #	Description	Qty
1		<i>see following screen selection chart</i>	1
2	11-232	o-ring	1
3	STHP2-140	o-ring	1
4	STHP2150	strainer adapter, 1"1/2 inlet	1
5	STHP1010	line strainer cap	1
6	STHP3150	strainer body, 1"1/2 port	1
7	SPST7BL SPST7GM	strainer bale, complete with t-screw strainer bale	1
8	SPST7H	t-screw	1
9	SSN1500200	1"1/2 x 2" nipple, stainless steel	1
10	PBH011 (4")	1"7/8 water hose, 4" long	3
11	WC6832	worm clamp, 1"9/16 x 2"1/2	6
12	SSTOE150150	1"1/2 x 1"1/2 SS nipple TOE	2
13	SSEL150	1"1/2 elbow, stainless steel	1
14	PBES107	pump suction gooseneck	1

No.	Part #	Description	Qty
15	PBSV150	1-1/2" valve, brass	1
16	SSN150CLOSE	1"1/2 x close nipple, stainless steel	1
17	SSTOE150200	1"1/2 x 2"SS nipple TOE	1
18	PBSP851	strainer mount, upper angle	1
19	PBSP850	strainer mount, lower angle	1
20	0370100CHSS	3/8"-16 x 1" stainless steel bolt	2
	037WSS	3/8" stainless steel flat washer	2
	037WS	3/8" lockwasher	2
21	0370125CP	3/8"-16 x 1-1/4" carriage bolt	2
	037NF	3/8" nut	2
	037WSS	3/8" stainless steel flat washer	2
	037WS	3/8" lockwasher	2
A	SPST7150	complete 1"1/2 strainer, includes #1-8	
B	PBSP850KIT	mount bracket kit, includes #18-21	



**Suction at pump assembly: PBSP800 pump  
TTN & Narrow models**

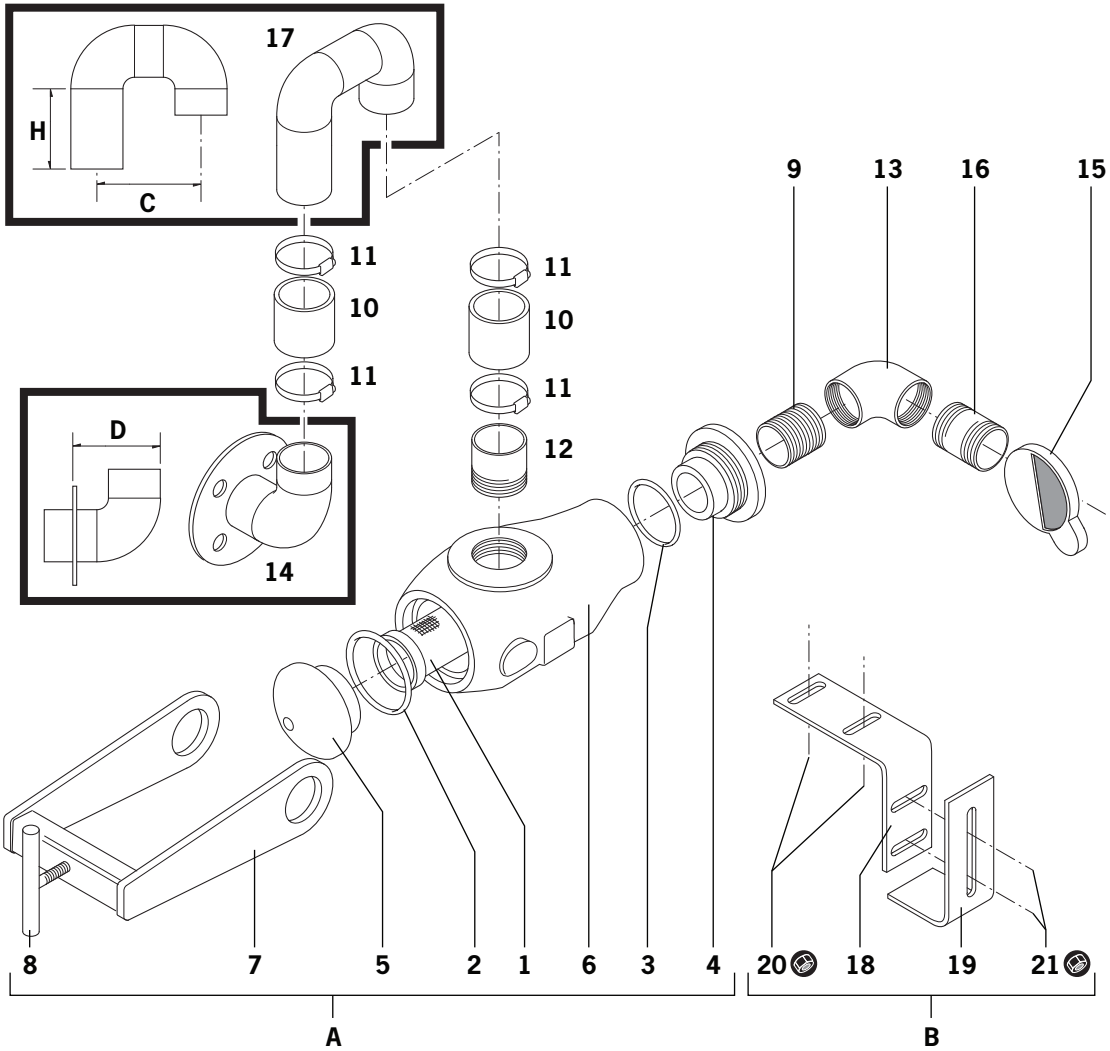
No.	Part #	Description	Qty
1		see following screen selection chart	1
2	11-232	o-ring	1
3	STHP2-140	o-ring	1
4	STHP2150	strainer adapter, 1"1/2 inlet	1
5	STHP1010	line strainer cap	1
6	STHP3150	strainer body, 1"1/2 port	1
7	SPST7BL	strainer bale, complete with t-screw	1
	SPST7GM	strainer bale	
8	SPST7H	t-screw	1
9	SSN150CLOSE	1"1/2 x close nipple, stainless steel	3
10	PBH011 (4")	1"7/8 water hose, 4" long	2
11	WC6832	worm clamp, 1"9/16 x 2"1/2	4
12	SSTOE150150	1"1/2 x 1"1/2 SS nipple TOE	2
13	SSEL150	1"1/2 elbow, stainless steel	1
14	PBES107	Narrow Model pump suction gooseneck	1
	PBES106	TTN Model pump suction gooseneck	
15	PBSV150	1-1/2" valve, brass	1
16	SSTOE150400	1"1/2 x 4"SS nipple TOE	1
17	PBSP851	strainer mount, upper angle	1



No.	Part #	Description	Qty
18	PBSP850	strainer mount, lower angle	1
19	0370100CHSS	3/8"-16 x 1" stainless steel bolt	2
	037WSS	3/8" stainless steel flat washer	2
	037WS	3/8" lockwasher	2
20	0370125CP	3/8"-16 x 1-1/4" carriage bolt	2
	037NF	3/8" nut	2
	037WSS	3/8" stainless steel flat washer	2
	037WS	3/8" lockwasher	2
A	SPST7150	complete 1"1/2 strainer, includes #1-8	
B	PBSP850KIT	mount bracket kit, includes #18-21	

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

**60 Powerblast**



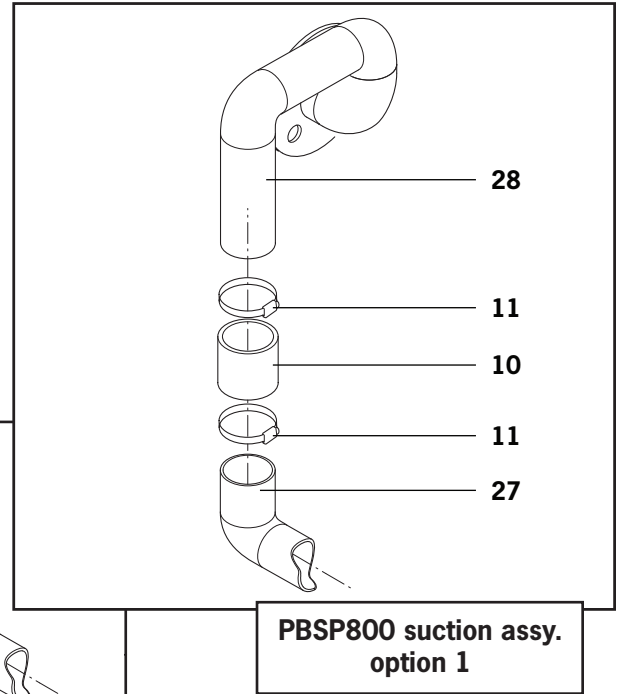
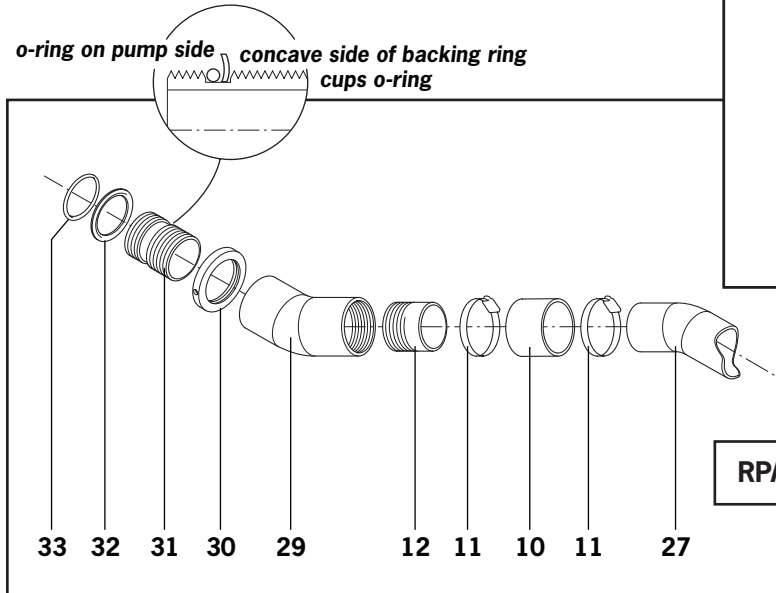
**Suction at pump assembly: PBSP800 pump  
Tower models, wheel well tanks**

No.	Part #	Description	Qty
1		see following screen selection chart	1
2	11-232	o-ring	1
3	STHP2-140	o-ring	1
4	STHP2150	strainer adapter, 1"1/2 inlet	1
5	STHP1010	line strainer cap	1
6	STHP3150	strainer body, 1"1/2 port	1
7	SPST7BL	strainer bale, complete with t-screw	1
	SPST7GM	strainer bale	
8	SPST7H	t-screw	1
9	SSN150CLOSE	1"1/2 x close nipple, stainless steel	3
10	PBH011 (4")	1"7/8 water hose, 4" long	2
11	WC6832	worm clamp, 1"9/16 x 2"1/2	4
12	SSTOE150150	1"1/2 x 1"1/2 SS nipple TOE	2
13	SSEL150	1"1/2 elbow, stainless steel	1
14		<b>D</b>	1
	PBES201	3"5/8	
	PBES201TW	3"	suction fitting
15	PBSV150	1"1/2 valve, brass	1
16	SSTOE150400	1"1/2 x 4"SS nipple TOE	1

No.	Part #	Description	Qty
17		<b>C</b> <b>H</b>	1
	PBES202S	6"1/2 2"1/2	
	PBES202	6"1/2 4"	
	PBES202L	6"1/2 6"	
	PBES203	3" 1"1/8	
	PBES204	4" 1"1/8	
	PBES205	4"3/4 1"1/8	
18	PBSP851	strainer mount, upper angle	1
19	PBSP850	strainer mount, lower angle	1
20	0370100CHSS	3/8"-16 x 1" stainless steel bolt	2
	037WSS	3/8" stainless steel flat washer	2
	037WS	3/8" lockwasher	2
21	0370125CP	3/8"-16 x 1-1/4" carriage bolt	2
	037NF	3/8" nut	2
	037WSS	3/8" stainless steel flat washer	2
	037WS	3/8" lockwasher	2
A	SPST7150	complete 1"1/2 strainer, includes #1-8	
B	PBSP850KIT	mount bracket kit, includes #18-21	

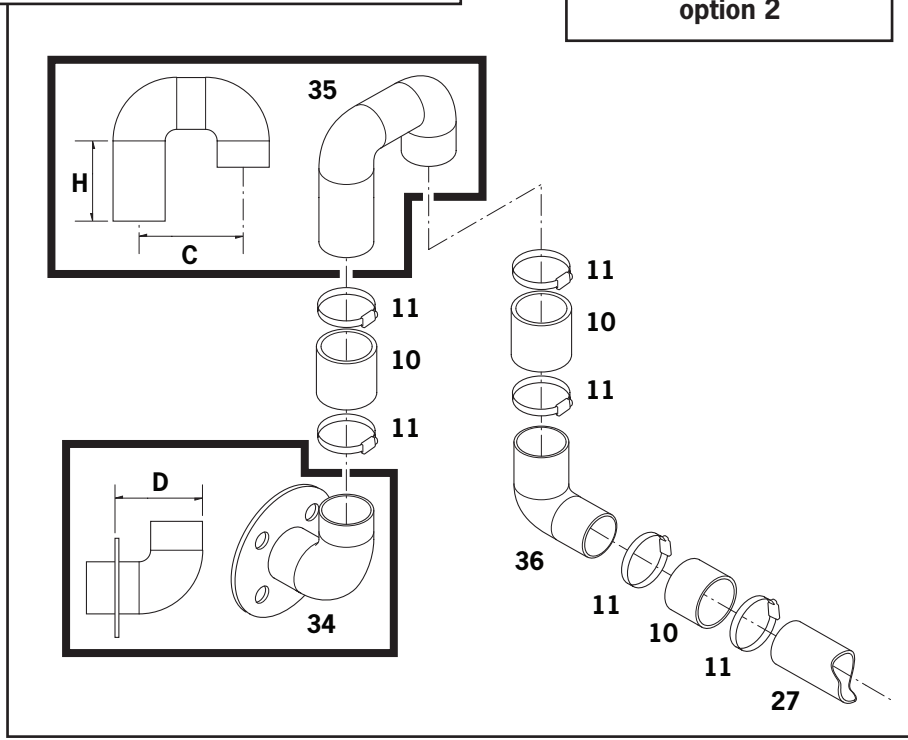


Suction-at-step assembly: RPA & PBSP800 pump

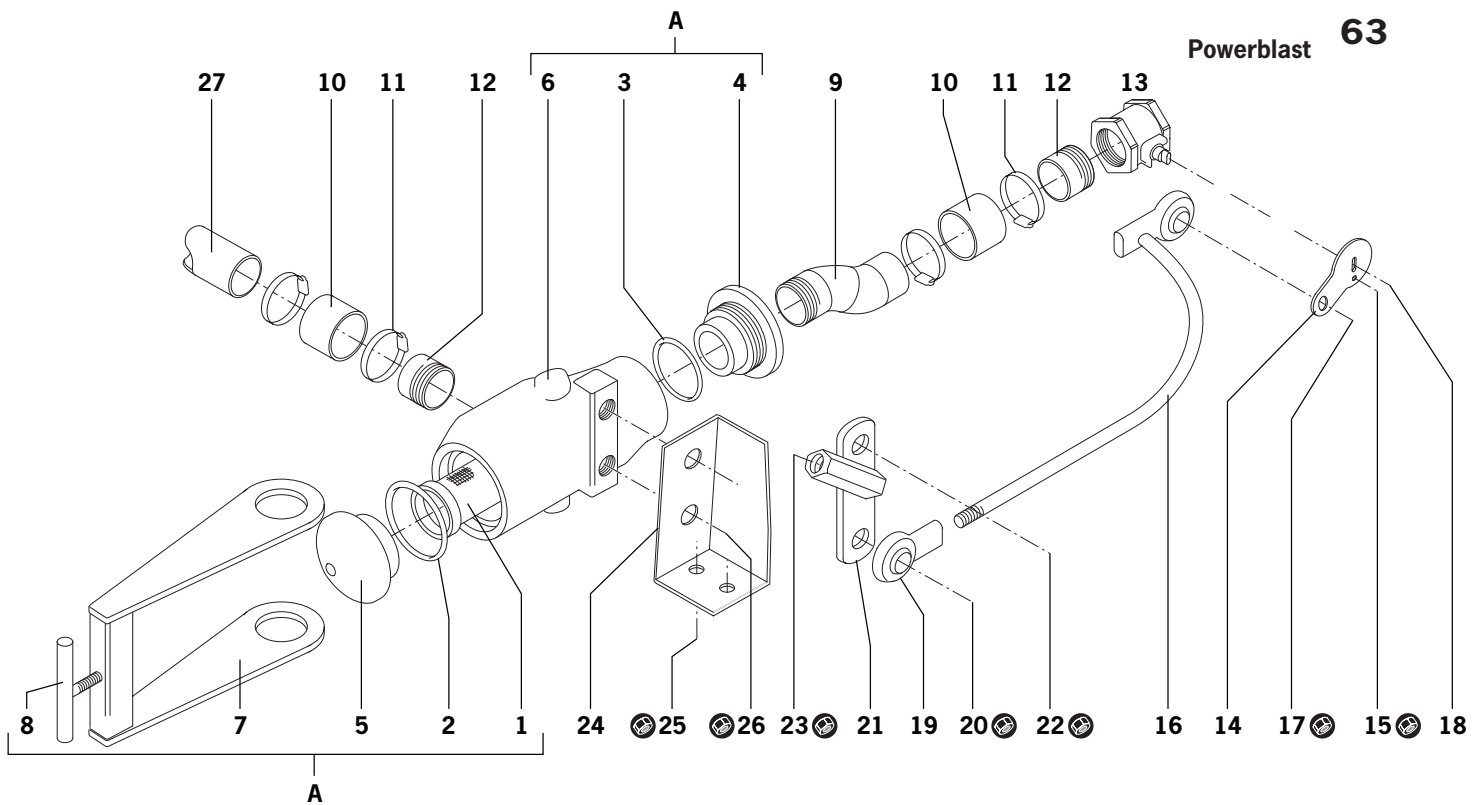


RPA suction assy.

PBSP800 suction assy. option 2





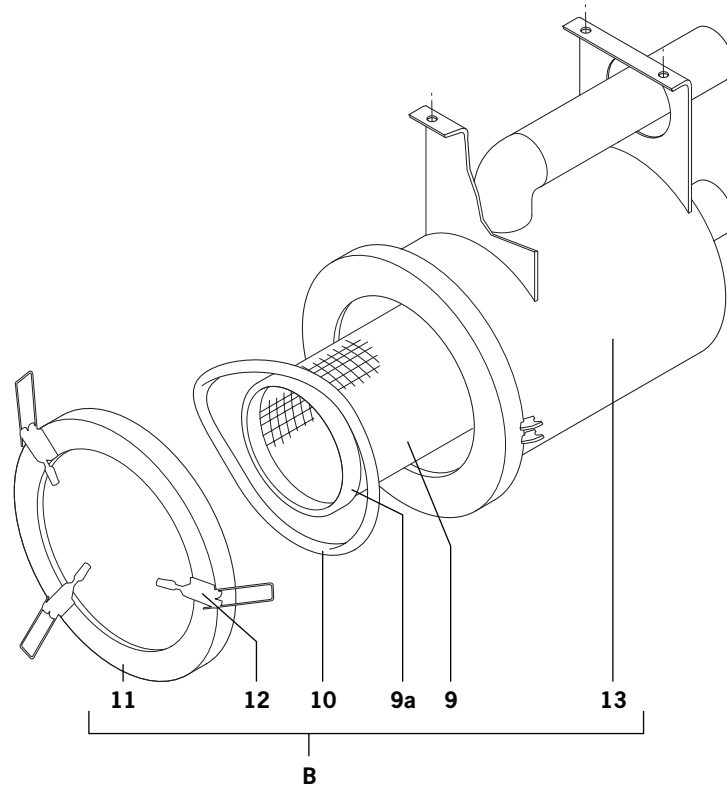


**Suction-at-step assembly: RPA & PBSP800 pump common parts**

No.	Part #	Description	Qty
1		see following screen selection chart	1
2	11-232	o-ring	1
3	STHP2-140	o-ring	1
4	STHP2150	strainer adapter, 1-1/2" inlet	1
5	STHP1010	line strainer cap	1
6	STHP3150	strainer body, 1-1/2" port	1
7	SPST7BL	strainer bale, complete with t-screw	1
	SPST7GM	strainer bale	1
8	SPST7H	t-screw	1
9	PBES102	strainer inlet drop fitting	1
10	PBH011 (4")	1-7/8" water hose, 4" long	2
11	WC6832	worm clamp, 1-9/16" x 2-1/2"	1
12	TOE 1-1/2X1-1/2	1-1/2" x 1-1/2" SS nipple TOE	2
13	PBSV150	1-1/2" valve, brass	1
14	PBES111	suction valve arm	1
15	0250087CKSS	1/4"-20 x 7/8" stainless steel bolt	1
	025NYSS	1/4" stainless steel nylock nut	2
16	PBES100	suction valve link arm	1
17	0370125CHSS	3/8"-16 x 1-1/4" stainless steel bolt	1
	037WSS	3/8" stainless steel flat washer	1
	037NYSS	3/8" stainless steel nylock nut	1
18		nut, specific to valve	1
19	375-24 ROD END	3/8" rod end	1
	037NSS	3/8" stainless steel nut	1
20	0370150CHSS	3/8"-16 x 1-1/4" stainless steel bolt	1
	037WSS	3/8" stainless steel flat washer	2
	037NYSS	3/8" stainless steel nylock nut	1
21	PBES101	suction valve shut-off handle	1
22	0500150CHSS	1/2"-13 x 1-1/2" stainless steel bolt	1
	050WSS	1/2" flat washer	2
	050NYSS	1/2" stainless steel nylock nut	1

No.	Part #	Description	Qty
23	0370500CH2	3/8" bolt for shut-off handle	1
	037NF	3/8" nut	2
24	PBES110	suction filter mount bracket	1
25	0370100CSS	3/8"-16 x 1" stainless steel carriage bolt	2
	037WS	3/8" lockwasher	2
	037NSS	3/8" stainless steel nut	2
26	0370100CHSS	3/8"-16 x 1" stainless steel bolt	2
	037WSS	3/8" stainless steel flat washer	2
	037WS	3/8" lockwasher	2
27	call	suction line to pump, call with serial #	1
28	PBES104	gooseneck for 500/1000 gal units	
29	SSEL45150	1"1/2 45° elbow, stainless steel	1
30	RPA-JN	jam nut	1
31	RPA-CN	pump/strainer adapter	1
32	8-327	backing ring see installation illustration	1
33	11-224	o-ring	1
34	PBES201	3"5/8" suction fitting	1
	PBES201TW	3" suction fitting	
35	PBES202S	6"1/2" x 2"1/2" suction u-bend	1
	PBES202	6"1/2" x 4" suction u-bend	
	PBES202L	6"1/2" x 6" suction u-bend	
	PBES203	3" x 1"1/8" suction u-bend	
	PBES204	4" x 1"1/8" suction u-bend	
36	PBES200	90° suction elbow	1

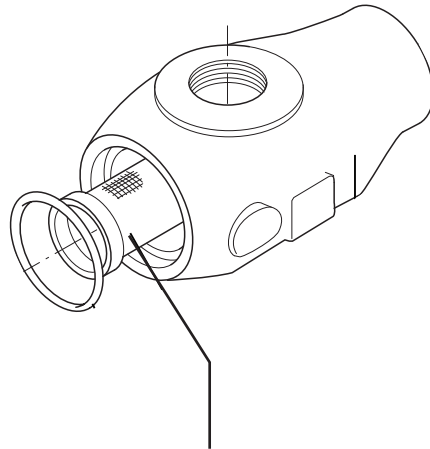
A	SPST7150	complete 1-1/2" strainer, includes #1-8	
---	----------	---	--



**6" suction strainer parts**

No.	Part #	Description	Qty
9	PB9032SC10	6" strainer screen, includes 9a	1
9a	PB9032SCG	screen gasket	1
10	PB9032G	gasket	1
11	PB903	6" strainer lid	1
12	FA130-2S	lid latch, complete	3
	480003-2S	replacement U-bar with nuts	-
13		6" strainer body top discharge (shown)	1
		6" strainer body side discharge	

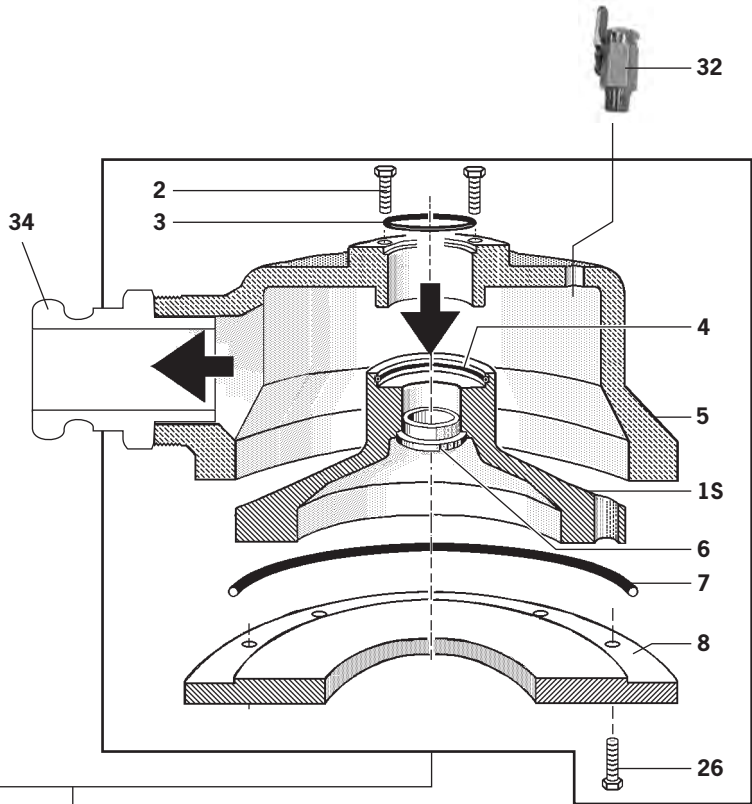
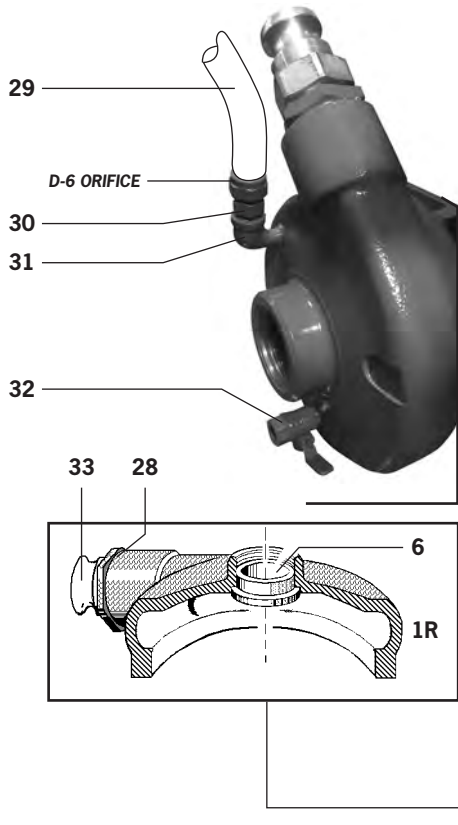
B		complete strainer: indicate side or top discharge
---	--	---



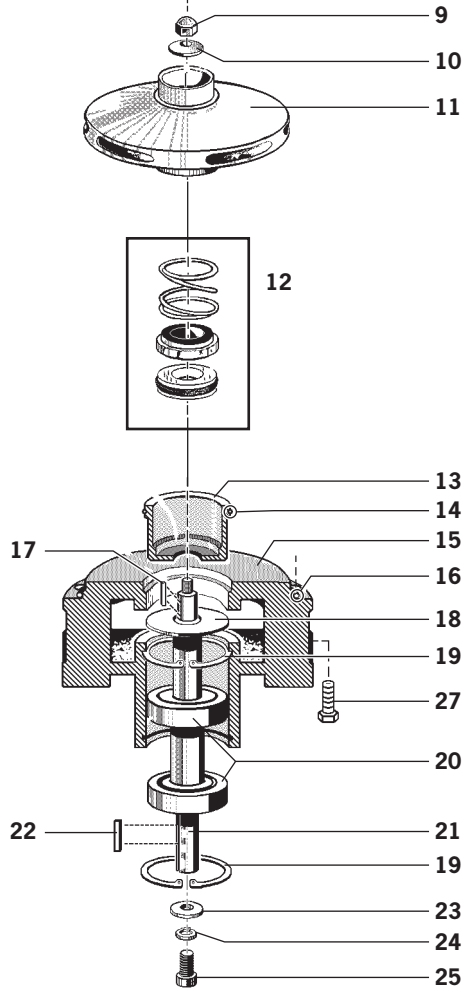
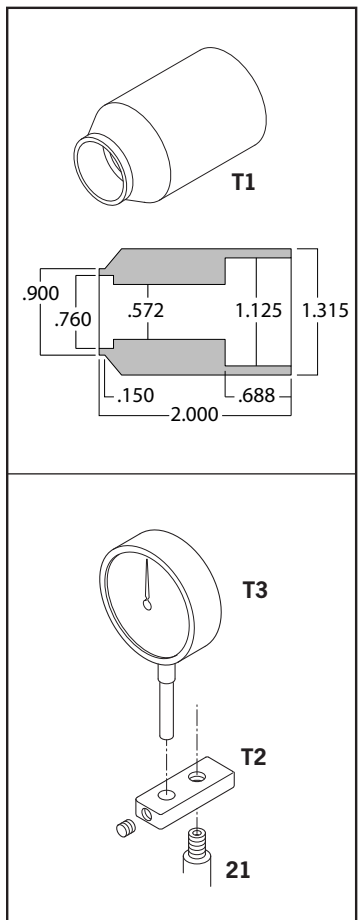
**Strainer screen options, SPST7 strainers**

Screen Mesh	Frame Color	Frame Material	Part #	
6M	Orange	Poly	SPST7D6	<i>standard for centrifugal pump suction strainer</i>
10M	Green	Poly	SPST7D10	
16M	Black	Poly	SPST7D16	<i>standard for diaphragm pump suction strainer</i>
24M	Yellow	Poly	SPST7D24	
	Stainless	Stainless Steel	SPST7D24SS	
50M	Blue	Poly	SPST7D50	<i>standard for discharge strainer</i>
	Stainless	Stainless Steel	SPST7D50SS	
80M	Red	Poly	SPST7D80	
	Stainless	Stainless Steel	SPST7D80SS	

**66 Powerblast**



**installation tools**



## Centrifugal Pump Parts

No.	Part #	Description	Qty
	RPA	complete centrifugal pump <i>not self priming</i>	
	PBSP800	complete self priming centrifugal pump	
1R	RPA-VT	volute <i>not for self priming pump, includes 6</i>	1
1S	PBSP802	volute <i>for self priming pump, includes 6</i>	
2	0310112CH2	5/16"-18 x 1"1/8 gr.2	4
3	11-328	o-ring	1
4	11-230	o-ring	1
5	PBSP801	reservoir <i>includes 34</i>	1
6	RP5	wear ring	1
7	2-266	o-ring	1
8	PBSP803	back plate	1
9	RPA-NUT	3/8-24 acorn nut, stainless steel	1
10	RPA-WA	washer, special	1
11	RPA-IM	impeller	1
12	1R309	complete seal	1
13	RPA-SE	seal cavity	1
14	11-137	o-ring	1
15	RPA-PD	pedestal	1
16	11-160	o-ring	1
17	SPK2-8	square key	1
18	RPA-WD	water deflector	1

No.	Part #	Description	Qty
19	N5000-187	inner snap ring	2
20	6204-2RS	bearing (204p)	2
21	RPA-SH	drive shaft	1
22	SPK3-20	square key	1
23	SPSW-F4	washer, special	1
24	025WS	1/4" lock washer	1
25	0260075CH5	1/4"-28 x 3/4" gr.5 bolt	1
26	0310137CH8	5/16"-18 x 1-3/8" gr.8 bolt	8
27	0310087CH8	5/16"-18 x 7/8" gr.8 bolt	8
28	BSH125100	bushing 1-1/4" x 1"	1
29		bleed line	1
30	1/4TT	adapter 1/4"MPT x TeeJet	1
31	SSSTL025	street elbow 1/4" stainless steel	1
32	B025MF	1/4" ball valve	1
33	ETC100FAL	1" male cam-lock fitting	1
34	ETC125FAL	1-1/4" male cam-lock fitting	
T1		seal installation tool	
T2		dial indicator	
T3		dial indicator mount block	

## Replace Seal & Pedestal Bearings

**NOTICE:** If seal **12** or either bearing **20** should fail, replace seal and both bearings at the same time.

### Removing seal and bearings:

- Pull the pump assembly and remove to a clean area. Remove bolts **27**, volute/reservoir, and o-ring **16**.
- Remove acorn nut **9** and washer **10**. With careful and even pressure, use two flat-head screwdrivers to pry the impeller **11** from the pump shaft.
- Clean all impeller orifices thoroughly.
- Remove rear snap ring **19** from pedestal and press the pump shaft and bearings out of the pedestal housing.
- Press bearings off of the shaft and discard. Examine the shaft for damage or wear. Discard the shaft if corroded or bearing seat wear is evident. Clean shaft of all burrs. Buff scratches with emery cloth. Press new bearings **20** onto prepared smooth shaft.

- Remove the seal **12** from the seal cavity **13** and discard. Clean the cavity thoroughly.
- If the seal cavity must be removed for cleaning, press from bottom side to remove. The o-ring **14** may be damaged when extracting the seal cavity: replace if necessary.

When re-installing the seal cavity we recommend using a press and not a mallet.

Install the o-ring in the groove on the seal cavity.

Press the seal cavity completely into the pedestal **15** for proper seal alignment.

**Instructions for repair continue on following page.**

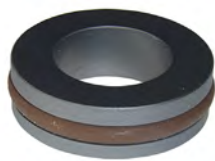
**Read this manual completely before operating: follow all safety instructions.**

**Replace Seal & Pedestal Bearings, continued**

**Install seal and bearings:**

1. Press prepared pump shaft, with bearings installed, into the pedestal housing **15**. Be certain the water deflector **18** is in place. Install rear snap ring **19**. Tap bearing housing lightly with a hammer to relieve bearing tension.
2. Using a vise equipped with soft jaws or pads, clamp the non-threaded end of the pump shaft: orient the shaft vertically. **Excessive force will damage the shaft.** The pedestal **15** should spin freely.
3. The seal cavity **13** must be clean and dry.
4. The pump seal **12** has three components: a seal seat, a seal ring, and a spring.

There are two seat designs- the installation instructions are the same for both styles.



Viton O-ring seat



Viton boot seat

5. Lubricate the outer diameter of the seal seat with a suitable lubricant, see lubrication instructions, *below*.

The top and bottom faces of the seal seat should be clean and dry.

**SEAL ASSEMBLY LUBRICANT:**

**Water is a suitable lubricant: where lubricated assembly is required, apply firm pressure to overcome surface friction.**

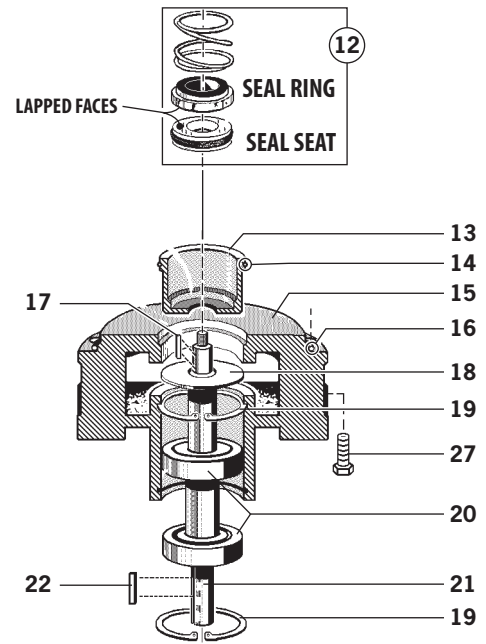
6. Install the seat in the seal cavity **13**.

**O-ring seat:** orient with the ungrooved face up.

**Boot seat:** install with viton boot down, into seal cavity.

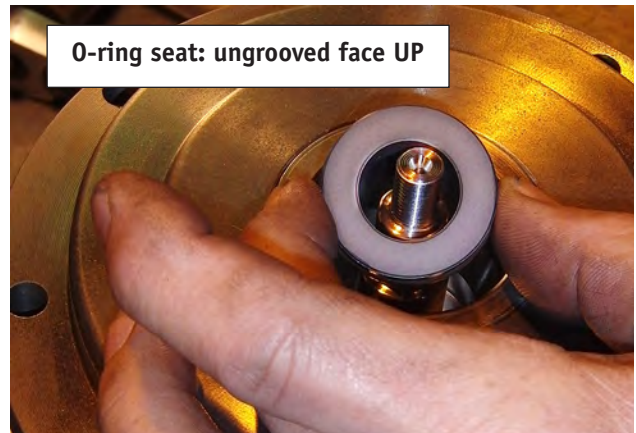
If you have an installation tool from Rears, proceed to **step 7**.

For installation without this tool, proceed to **step 8**.



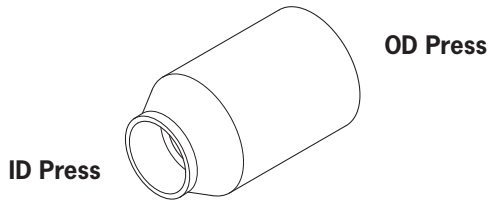
**IMPORTANT!**

**THE PRECISION CARBON/CERAMIC FACES ON THE MECHANICAL SEAL ARE EASILY DAMAGED. HANDLE YOUR REPAIR SEAL CAREFULLY. DO NOT TOUCH THE SEAL FACES.**



**Replace Seal & Pedestal Bearings, continued**

7. A seal installation tool is available from Rears: made from polyvinyl to prevent seal damage. The tool has



two applications: one end is an OD Press, the other end is an ID Press.

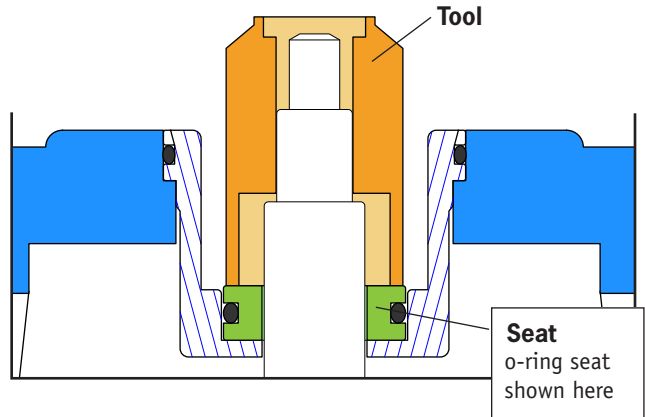
Make sure the installation tool is clean.

Center the **OD Press** end of the tool, as illustrated, on the face of the seat. Apply even pressure to press the seat into the seal cavity.

Proceed to **step 9**.

**8. Installing without an installation tool:** While wearing clean gloves or using a clean light rag, press seal seat squarely into seal cavity.

Proceed to **step 9**.



9. Check that the seat is properly installed:

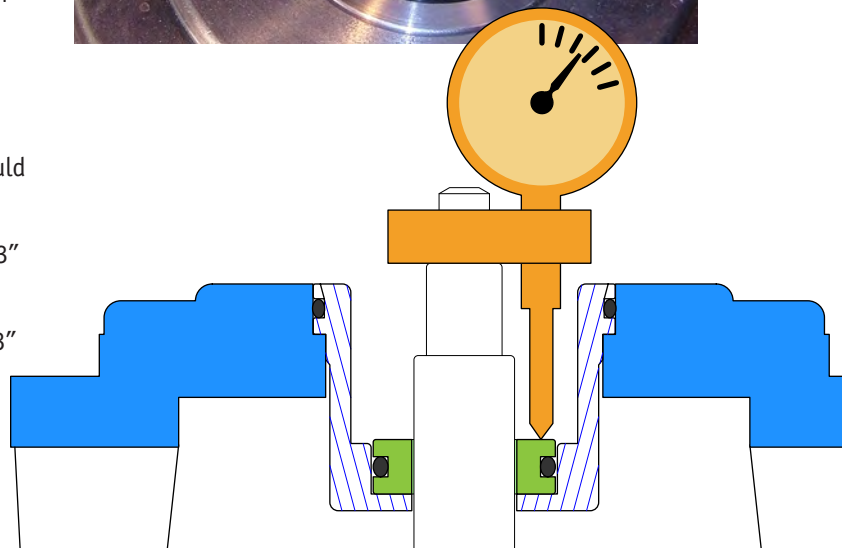
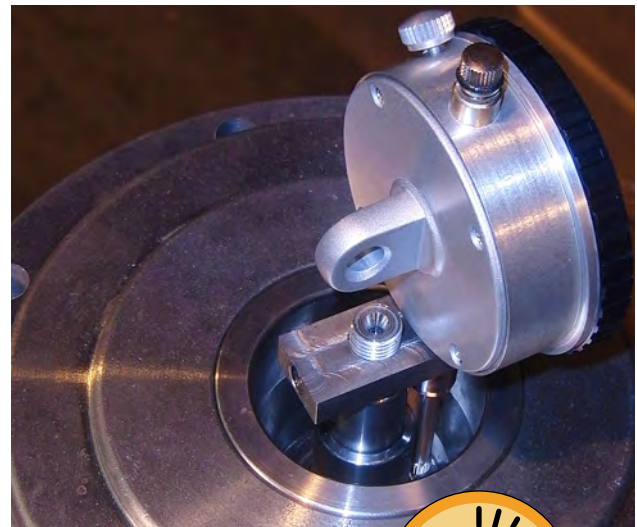
Mount a dial indicator on the pump shaft with the sensor against the face of the seat.

*This photo shows a dial indicator set-up on Rears test bench. To order these parts, contact Rears.*

Rotate the pump housing: variation in seal attitude should be no more than .003".

If the dial indicator measures variation greater than .003" repeat steps 6-8, pressing firmly.

Repeat step 9. If the variation remains greater than .003" go to the following section, **seal seat troubleshooting**.

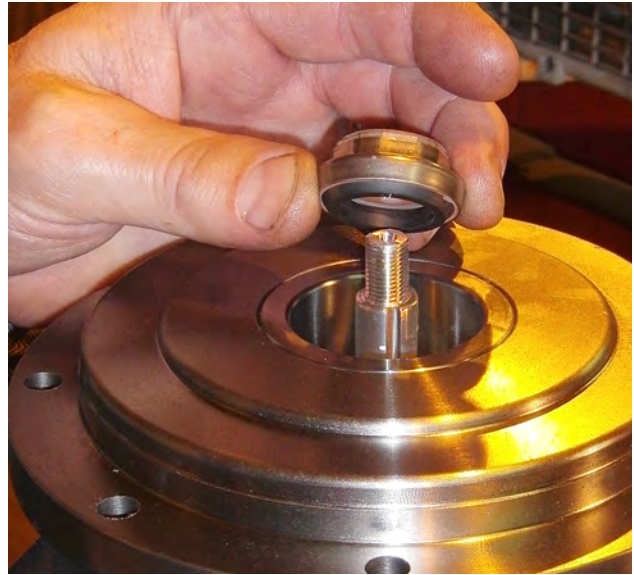


**Replace Seal & Pedestal Bearings, continued**

10. Following the lubrication instructions on the previous page, lubricate the internal rubber boot of the seal ring.

Take care that the lapped, or contact, faces of the seal ring and seal seat are clean and dry.

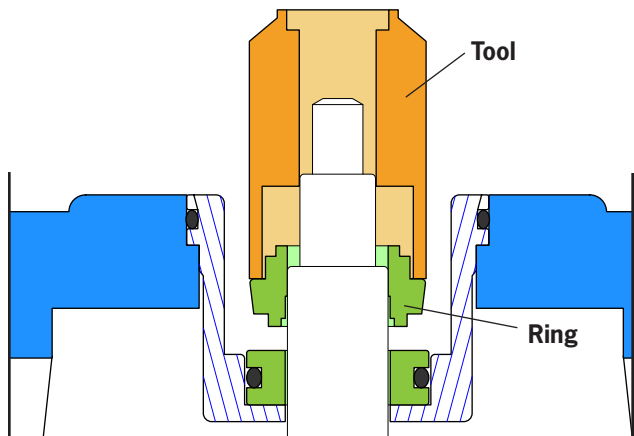
As illustrated, right, place the seal ring on the pump shaft.



11. Pressing the seal ring onto the pump shaft:

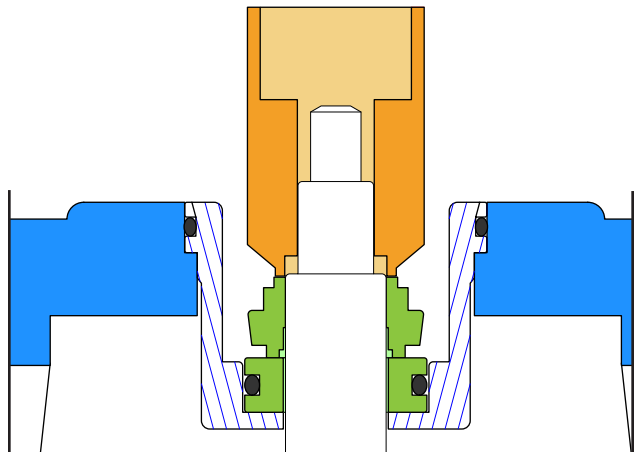
**If you have Rears Seal Installation Tool:**

Center the **OD Press** end of the tool on the seal ring and apply pressure to push the seal ring onto the shaft shoulder. Do not press completely onto shaft.



Use the **ID Press** end of the seal installation tool to press the seal ring completely onto the shaft. Apply even, steady pressure and drive the seal ring against the seal seat.

Stop pressing for a moment, then apply firm pressure again. The seal ring should be set firmly against the seal seat: the contact should feel solid.





## Replace Seal & Pedestal Bearings, continued

### 11. continued- seal ring installation

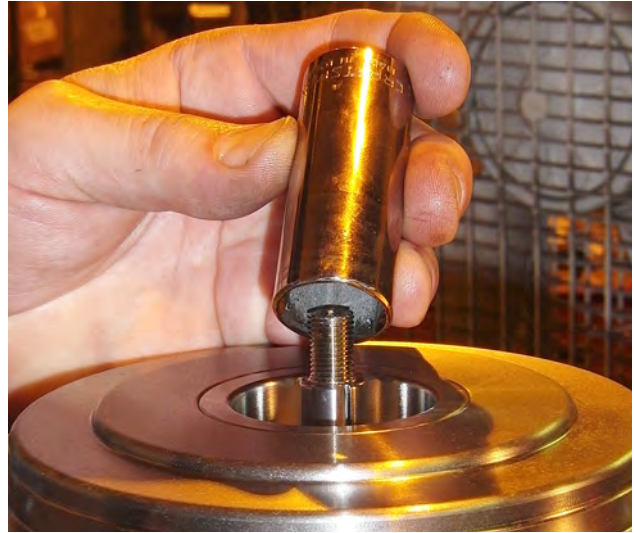
#### If you do not have Rears Seal Installation Tool:

A 3/4" deep socket is helpful when pressing the seal ring onto the pump shaft.

Using your fingers press the seal ring onto the pump shaft.

Center the 3/4" deep-socket on the face of the seal ring. Do not rock the socket from side to side when pressing. Apply even, steady pressure to the socket and drive the seal ring against the seal seat.

Stop pressing for a moment, then apply even pressure again. The seal ring should be set firmly against the seal seat: the contact should feel solid.



- 12.** Inspect the exposed rubber face of the seal ring. The pump shaft shoulder should be visible above the face. The face must be even and flat with no surface irregularities.

Any surface bulges indicate that the internal boot did not install properly. If necessary remove the seal ring and repeat steps **10-12**.



- 13.** Seat the new seal spring **12** on the shoulder of the seal ring and install key **17**. Be certain the spring remains properly seated as you install the cleaned impeller **11** and washer **10**. Secure the impeller with acorn nut **9**.

- 14.** Re-install o-ring on pedestal **16** and bolt pump assembly back together.



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

**Seal Seat Troubleshooting**

This section is for pump seal seat installation failure.

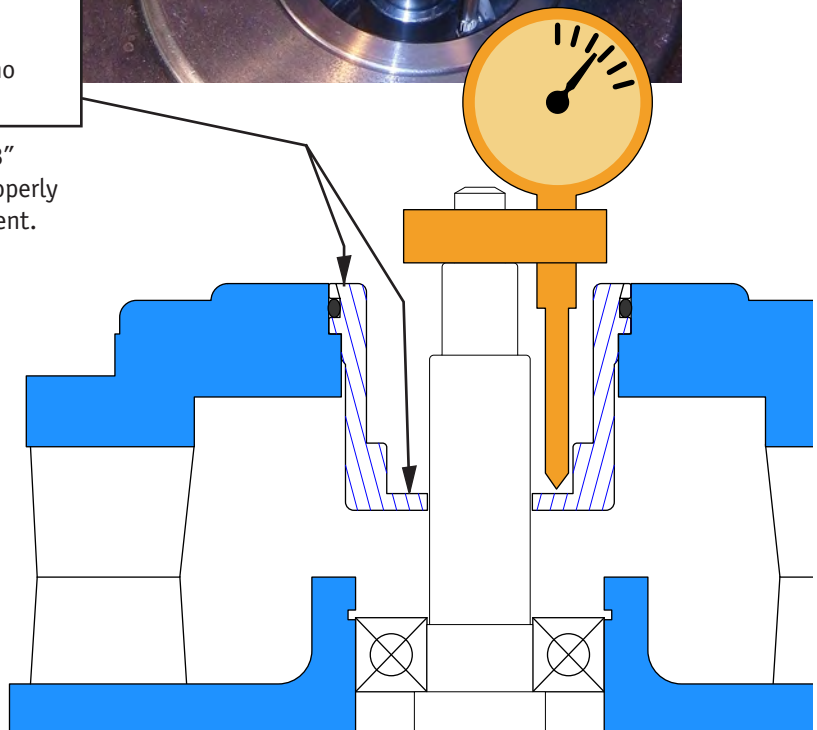
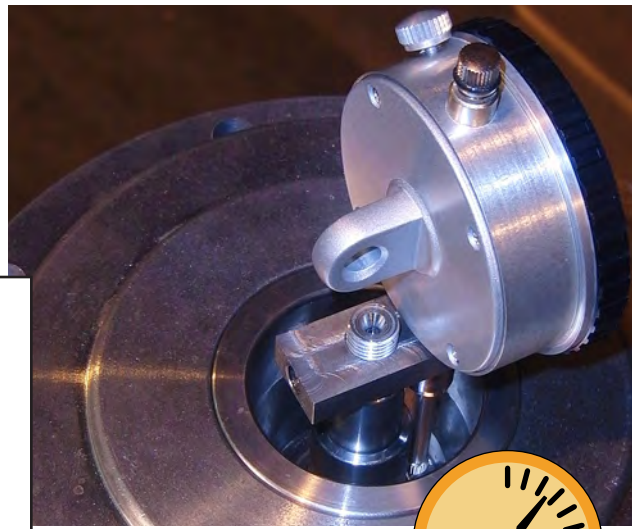
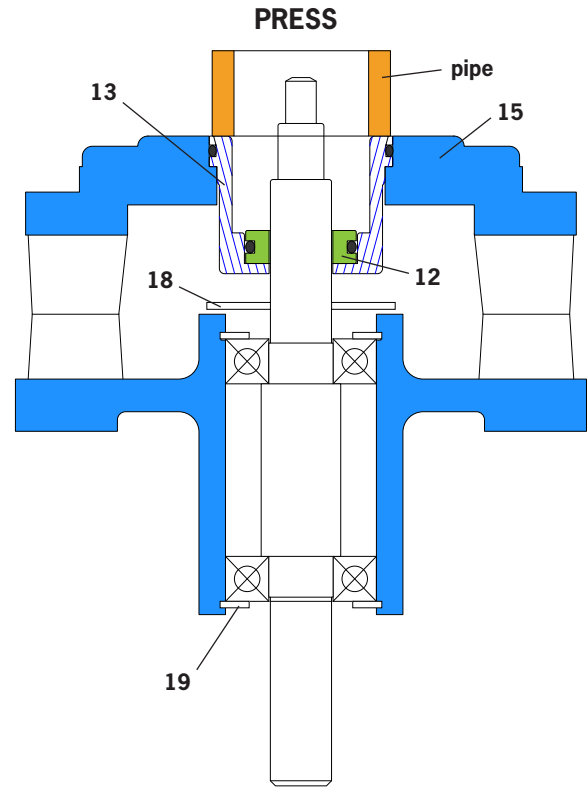
1. Use a press to be sure the seal cavity is seated properly: center a short section of pipe on the face of the seal cavity **13** and press the seal cavity into the pedestal housing.
2. Repeat steps **8 & 9** of the previous *Seal Replacement* section.  
If the seal seat still fails to install properly, continue with this section.
3. Remove rear snap ring **19** from pedestal and press the pump shaft/bearing assembly out of the pedestal housing. Set aside these parts and the water deflector **18**.
4. Pull the seal seat from the seal cavity **13**.
5. Inspect the seal cavity for contaminants that would prevent proper seat installation. Clean the cavity.
6. Use a micrometer to gauge the thickness of the seal seat. Measure at several points: variation in thickness should be less than .003". If seat thickness variation exceeds this amount contact your dealer to exchange seal.
7. Press the shaft/bearing into the pedestal housing **15**. Be certain the water deflector **18** is in place. Install rear snap ring **19**. Tap bearing housing lightly with a hammer to relieve bearing tension.
8. Using a vise equipped with soft jaws or pads, clamp the non-threaded end of the pump shaft: orient the shaft vertically. **Excessive force will damage the shaft.** The pedestal **15** should spin freely.

9. Mount a dial indicator on the pump shaft with the sensor against the top face of the seal cavity or the base, as illustrated.

*This photo shows a dial indicator set-up on Rears test bench. To order these parts, contact Rears.*

Rotate the pump housing: measured variation should be no more than .003".

10. If the dial indicator measures variation greater than .003" repeat step **1** and step **9**. If the seal cavity fails to sit properly within the pedestal housing call your dealer for replacement.



## **Winterizing Rears Centrifugal Pump**

---

Flush pump and plumbing fully with clean water. Flush again with an RV Antifreeze solution and recirculate. Shut down the pump and leave the solution in the tank and plumbing system.

## **Pump Operation Troubleshooting**

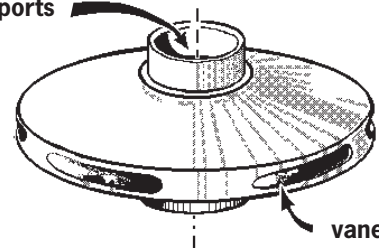
---

**Seal Failure-** running the pump dry will result in seal failure: excessive foam in tank, an empty tank, clogged suction strainer or closed suction valve will overheat pump seal. The dump valve in spray position during priming cycle will damage the pump seal.

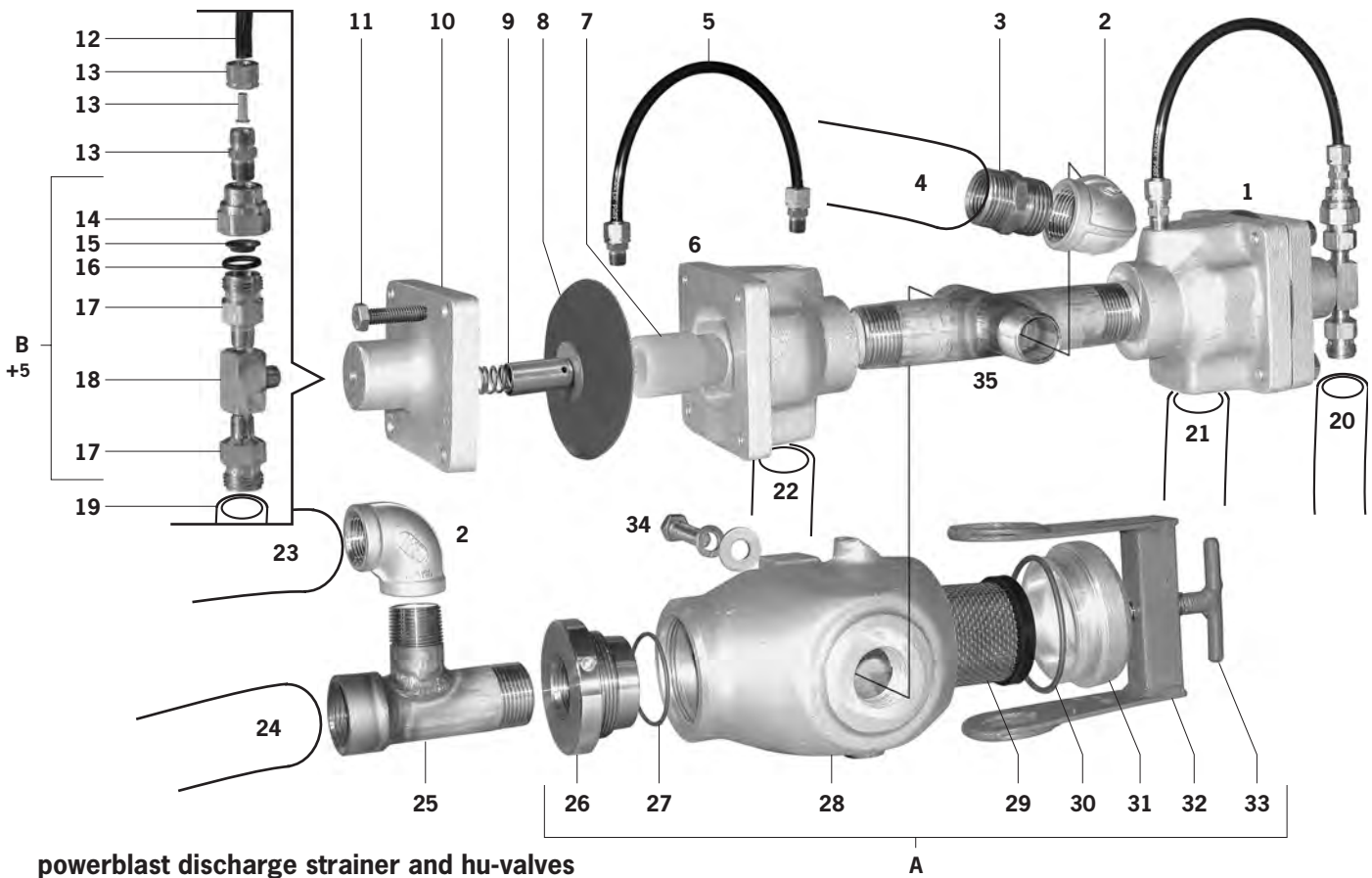
**Loose Pump Shaft-** worn bearing, replace.

**Noisy/Unbalanced Impeller-** clogged impeller vane ports will unbalance the impeller. Clean impeller and clear ports with a hooked wire. Take care when cleaning: the machined brass impeller can be gouged easily.

pressure equalizing ports



vane ports



**powerblast discharge strainer and hu-valves**

No.	Part #	Description	Qty
1	HUV2100	complete hu-valve assembly	-
2	SSEL075	3/4" 90° elbow, stainless steel	2
3	MGXMP075	3/4"MGHT x 3/4"MIPT adapter	1
4	call	1/2"pvc hose- see chart, below	1
	HFB075050	3/4"FGHT x 3/4"HB brass	2
5	HUV-LOOP	diaphragm bypass loop	2
6	HUV101B	hu-valve body	2
7	HUV110	valve seat	2
8	HUV104DV	diaphragm, viton	2
9	HUV102G	plunger	2
	HUV105S	plunger spring	2
10	HUV100C	hu-valve cap	2
11	0310125CHSS	5/16"-18 x 1"1/4 hex cap screw, SS	8
12	HUVTUBE	1/4" x 9" nylon tube	2
13	HUV012CB	1/8"MPT brass compression fitting	2
14	4676-1/8	1/8"FPT x female TeeJet adapter	2
15	D6	D-6 orifice, install dish side down	2
16	12-2.5MMN70	o-ring	2
17	1/8"TT	TeeJet body	4
18	HUV012TB	1/8" tee	2
19	call	3/8"pvc hose- see chart, below	1
	1325	11/16"-16UN cap, brass	2
	4251-375	3/8" hose barb, brass	2
20	call	3/8"pvc hose- see chart, below	1
	1325	11/16"-16UN cap, brass	2
	4251-375	3/8" hose barb, brass	2
21	call	3/4"pvc hose- see chart, below	1
	HFC75075	3/4"MPT x 3/4"HB brass	1
	ETC075CAL	3/4" female camlock fitting	1

No.	Part #	Description	Qty
	call	3/4"pvc hose- see chart, below	1
22	HFC75075	3/4"MPT x 3/4"HB brass	1
	ETC075CAL	3/4" female camlock fitting	1
23	See Dump Valve parts page		
24	call	1" rubber hose from pump	1
25	MBW102	dump line manifold	1
26	STHP2100	strainer adapter, 1" inlet	1
27	STHP2-140	o-ring	1
28	STHP3100	strainer body, 1" port	1
29	SPST7D ____	see p. 63 for screen chart, 50 mesh standard	1
30	11-232	o-ring	1
31	STHP1010	line strainer cap	1
32	SPST7GM	strainer bale	1
33	SPST7H	T-screw	1
	0370100CH5	3/8"-16 x 1" Gr.5 hex cap screw	2
34	037WS	3/8" lock washer	2
	037WUSS	3/8" flat washer	2
35	MBW103	hu-valve strainer manifold	1

A	SPST7100	complete discharge strainer, specify mesh
B	HUV-EXT	complete hu-valve loop and tee assy kit

hose lengths	tunnel lines	models	4	19**	20**
	yes	All	28"	20"	4'
no	Common*	13'	19'6"	19'6"	
no	TTN	?	?	?	
no	1000 gal.	14'6"	23'	23'	
	models	21	22		
	Common*	36"	36"		
	Low profile	30"	30"		

\*Common includes all models not otherwise listed.

\*\*If electric valve controls are installed, find on spray controller parts page.

**electric hu-valve control- daily maintenance**

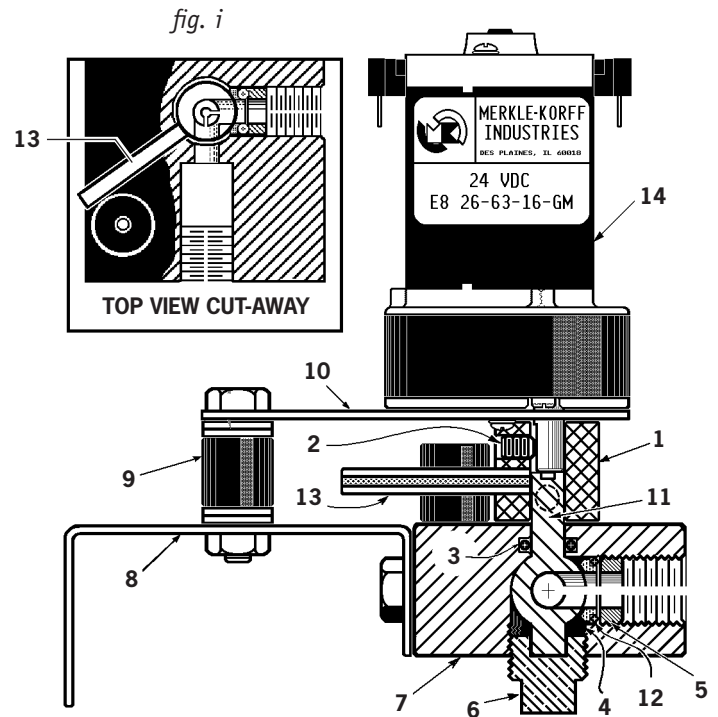
When flushing the plumbing at day's end, cycle fresh water through the spray lines, turning the spray ON and OFF several times.

**electric hu-valve control- seasonal storage**

Perform the line flush, as above.

Disconnect the vinyl lines and inject oil into the upper and lower chambers of the Hu-Valves and into the HVC block.

Re-connect the vinyl lines.



**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 in the spray troubleshooting section.

Check the spool rotation, **13**. If the spool rotates easily by hand but not by the motor, check the wiring.

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

Check Hu-valve orifice and tube for blockage.

Check Hu-valve for ruptured diaphragm.

Check the spool rotation, **13**. If the spool rotates easily by hand but not by the motor, check the wiring.

If the unit continues to spray with HVC spools in the OFF position, a blockage caused the coupler **1** to slip on the spool **11**. Remove the motor **14** and loosen set screws **2**. Align the roll pin **13** with the incised line of flow marks on the spool **11** as illustrated in *fig. i*, above. Tighten the set screws **2** and re-install the motor **14**.

**HVC block parts**

No.	Part #	Description	Qty
	HUV510	complete operator block, does not include motor or mount brackets	-
1	HUV5116	coupler	2
2	HUV5119	set screw	8
3	HUV5112	• o-ring	2
4	HUV5113	• teflon seat	2
5	HUV5115	• keeper	2
6	HUV5118	bushing	2
7	HUV512	HVC operator block	1
8	HUV525	block mount bracket	1
9	HUV515	• apex motor mount	3
10	HUV5202	torque bracket	2
11	HUV5111	spool	2
12	HUV5114	• o-ring seat	2
13	HUV5117	roll pin	2
14	HUV5201	motor	1
15	HUV529	shield (not pictured)	1
	HUV500KIT	repair kit includes all • parts	

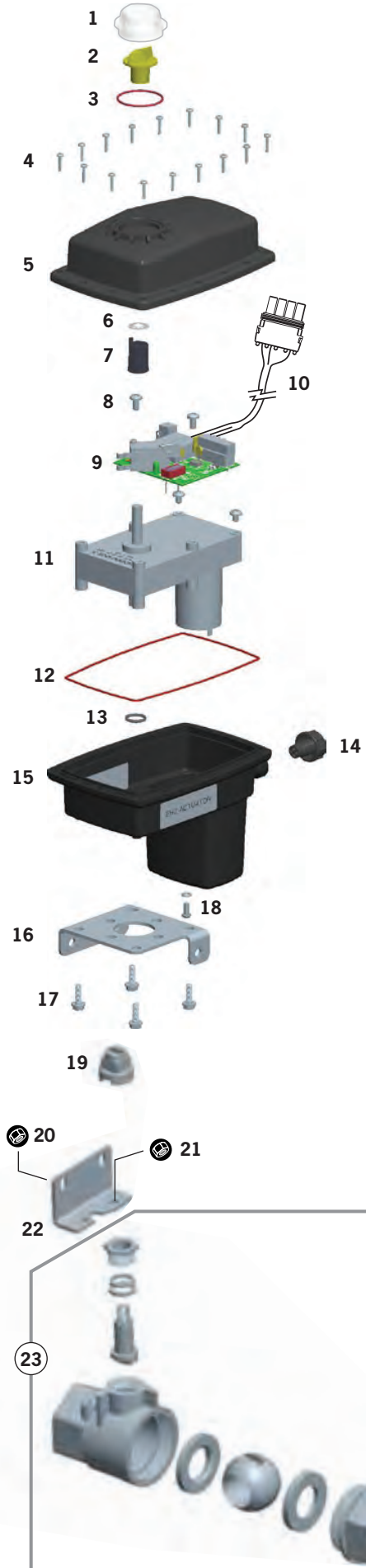
**KZ electric ball valve** DC 12 volt, 1.5A

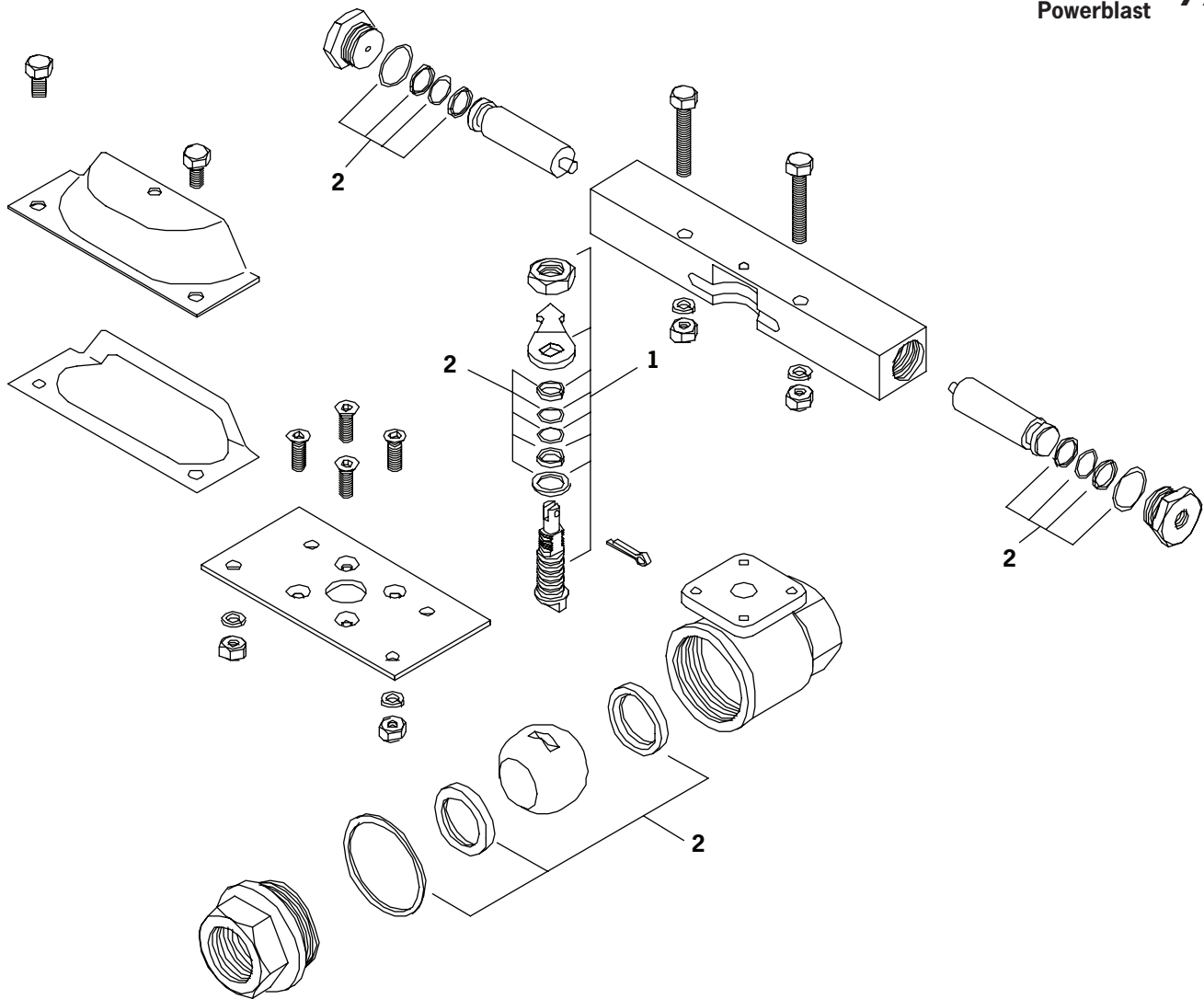
No.	Part #	Description	Qty
	KZ075	complete 3/4" ball valve	-
	KZ100	complete 1" ball valve	-
1	KZ114	dome	1
2	EH3-115Y	yellow flag	1
3	EH-130	o-ring, silicone, #027	1
4		screw #5 x 9/16"SS	16
5	EH2-1201	upper case half with dome	1
6	EH-104	retainer	1
7	EHPT-1144	cam	1
8		screw 10-32 x 3/8"SS	2
9	EH2-660B	circuit board	1
10	EH2-660CABLE	cable and tower connector	1
	38047	tower connector only	1
11	EH2-432	motor	1
12	EH2-1221	case o-ring, silicone	1
13	KZ140	o-ring, viton, #112	1
14		wire harness fitting	1
15	EH2-1200	lower case half	1
16	KZ160	bracket, SS	1
17		screw, #10-32 x 5/8" machine hex washer head	4
18	EH-139	o-ring, viton, #008	1
		screw, 8-18 x 3/8"SS	1
19	KZ-208-0050	coupler	1
20	KZ100204	screw, 1/4"-20 x 1/2" hex flange	2
	KZ101-1002	nut, 1/4"-20 flanged, serrated	2
21	KZEH-158	screw, #10-24 x 3/8"SS socket head	2
	KZEHPT-109	lockwasher .197IDx.334ODx.047, SS	2
	KZEHPT-150	flat washer, #10 18-8 SS	2
22	KZ161	mount bracket	1
23	KZ71-104	3/4" ball valve assembly, brass	1
	KZ71-105	1" ball valve assembly, brass	1

**Attention:** If valve requires repair before 1 year warranty expires, consult factory. Removing cover may void warranty.

**PARTS FOR OLDER UNITS:**

These parts are for EH2 control units. Some parts are compatible with older models. Call for more information.

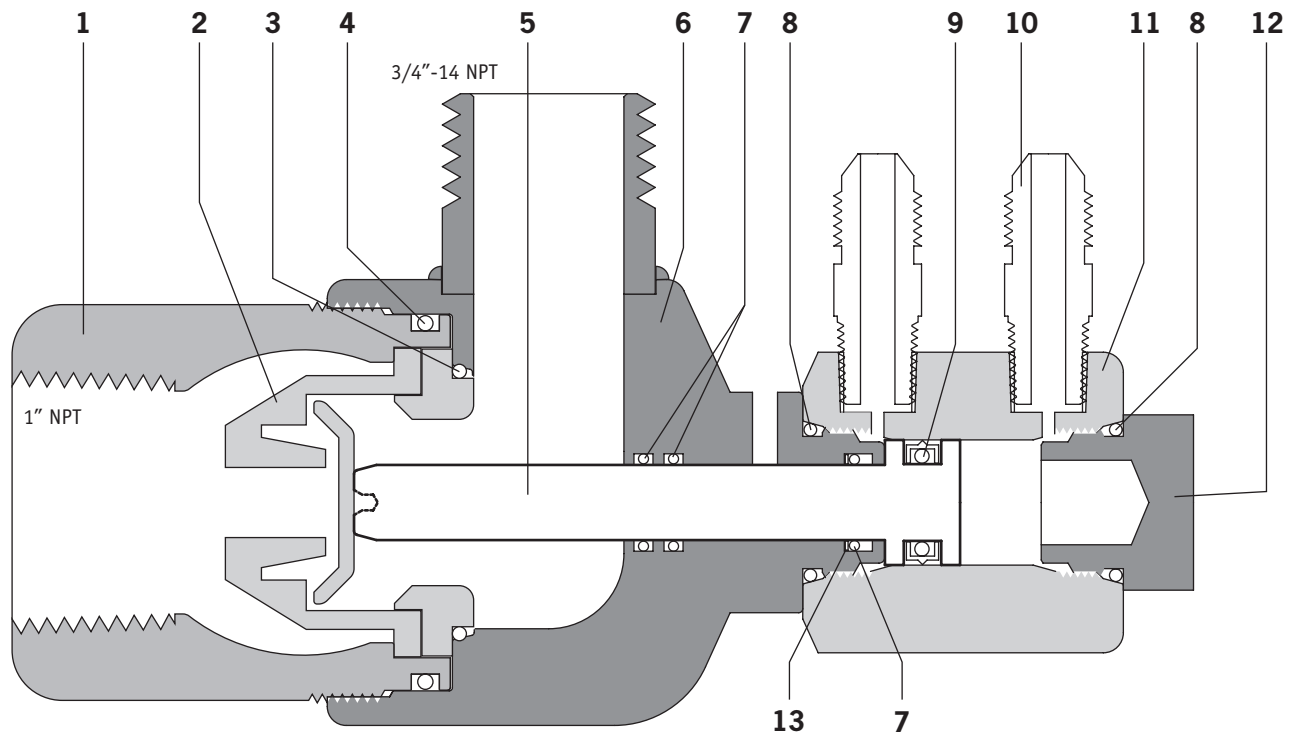




**Lee hydraulic ball valve**

No.	Part #	Description
	LEE100H	complete 1" hydraulic ball valve
1	K2-100	stem repair kit
2	K1-100L	seal repair kit

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



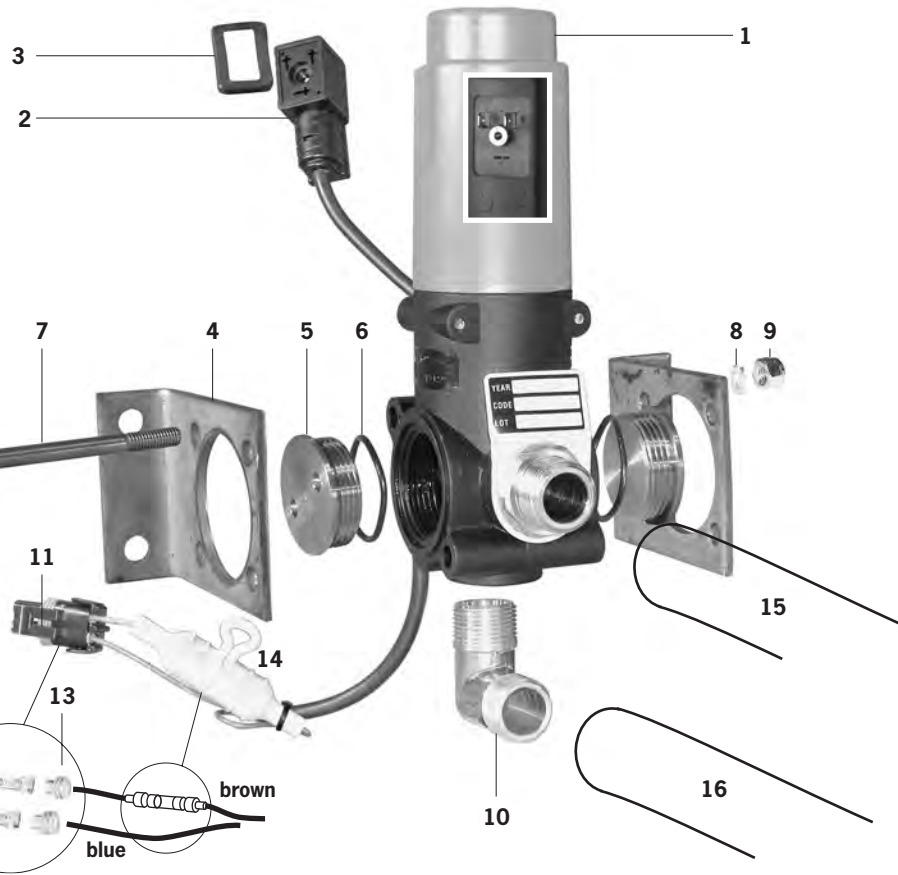
**R7 hydraulic spray valve**

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

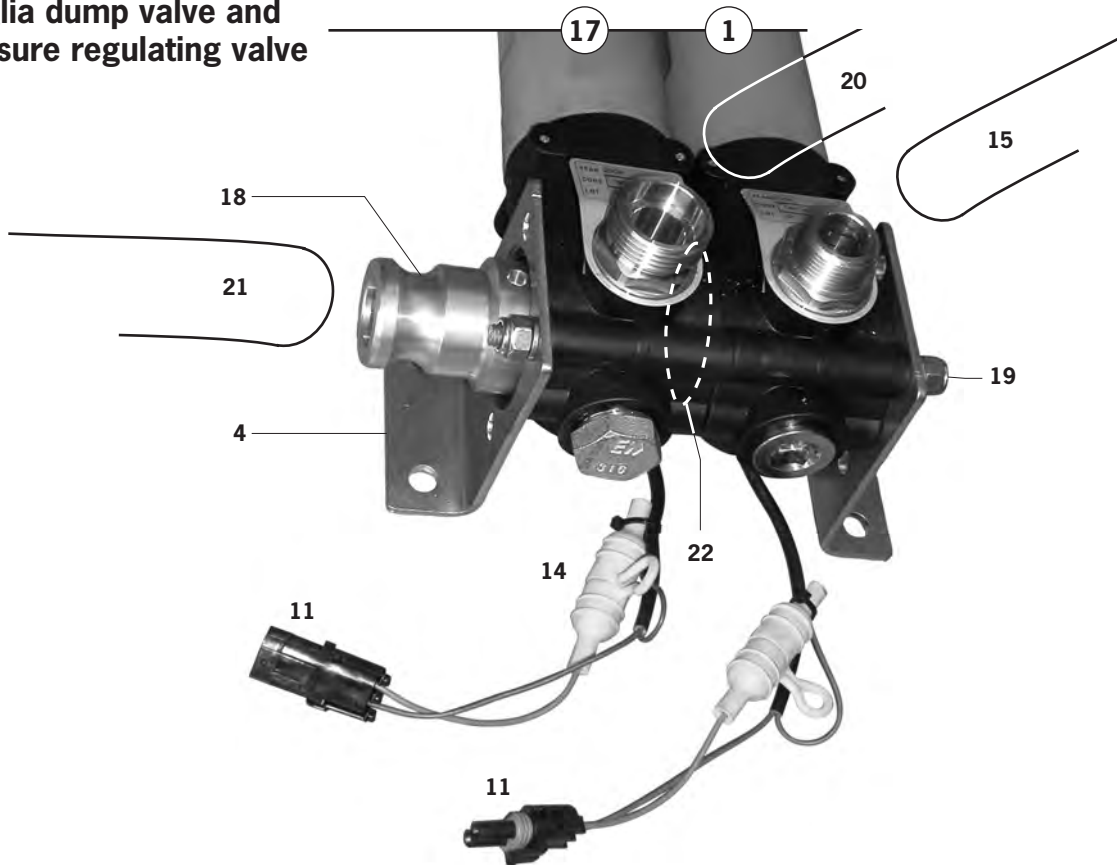




**80 Powerblast**



**braglia dump valve and pressure regulating valve**



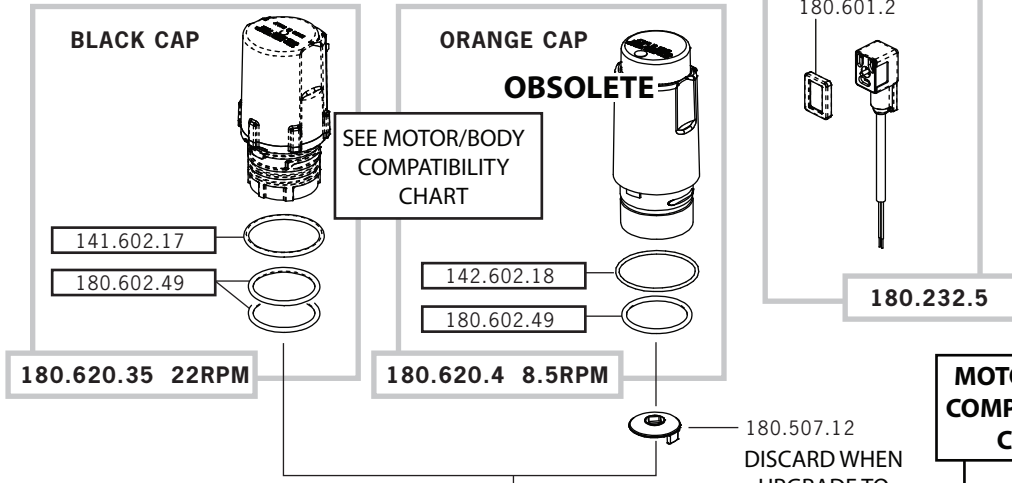
**Braglia valve assemblies**

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	5/16" nylock nut	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	
15*	1"	call	1" armorvin hose, give length	1
		FBSP100100HB	1"FBSP hose fitting	1
		HFC075100	3/4"MPT hose fitting	1
	3/4"	call	3/4" pvc hose, give length	1
		FBSP0750750HB	3/4"FBSP hose fitting	1
		HFD075075	3/4"FPT hose fitting	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	
	ETC100CAL	1" camlock hose fitting	2	RPA PUMP ONLY
	ETC100CAL	1" camlock hose fitting	1	SELF PRIMING PUMP ONLY
	ETC125100KN	1"1/4MPT hose fitting	1	
	ETC125DAL	1"1/4FPT camlock hose fitting	1	
22	180.602.48	valve body o-ring	1	
23	SSPLG075	3/4" stainless steel plug	2	

hose 21	std model	33" fan		38" fan		
		Pump >	RPA	S.Prime	RPA	S.Prime
		lo pro model	41"	30"	43"	33"

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

# 82 Powerblast

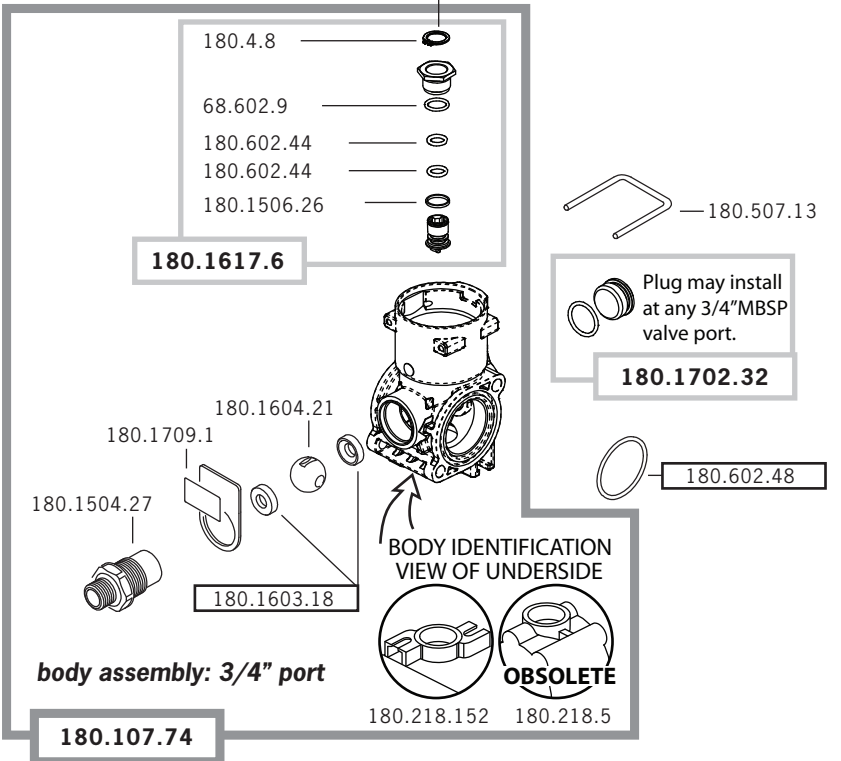
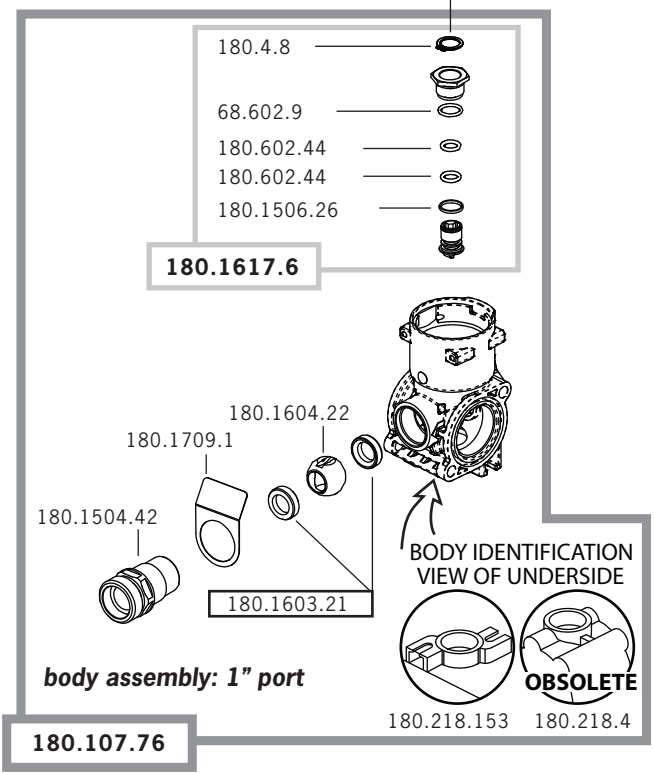


**180.1910.9HS**  
 1" port valve parts

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

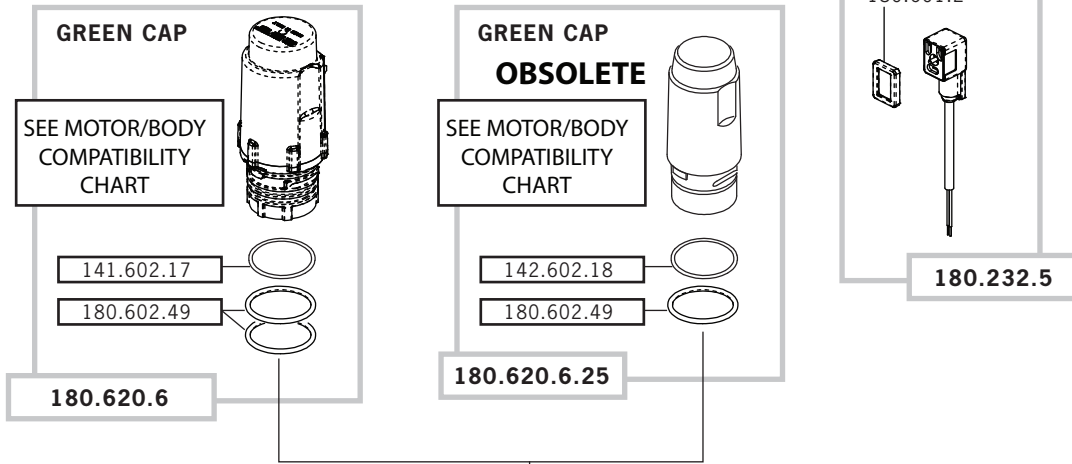
MOTOR/BODY COMPATIBILITY CHART		MOTOR	
		180.620.35 BLACK CAP	180.620.6* ORANGE CAP
BODY	180.218.153	YES	NO
	180.218.4*	YES	YES
	180.218.152	YES	YES
	180.218.5*	YES	YES

\*OBSOLETE PART, LIMITED AVAILABILITY



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

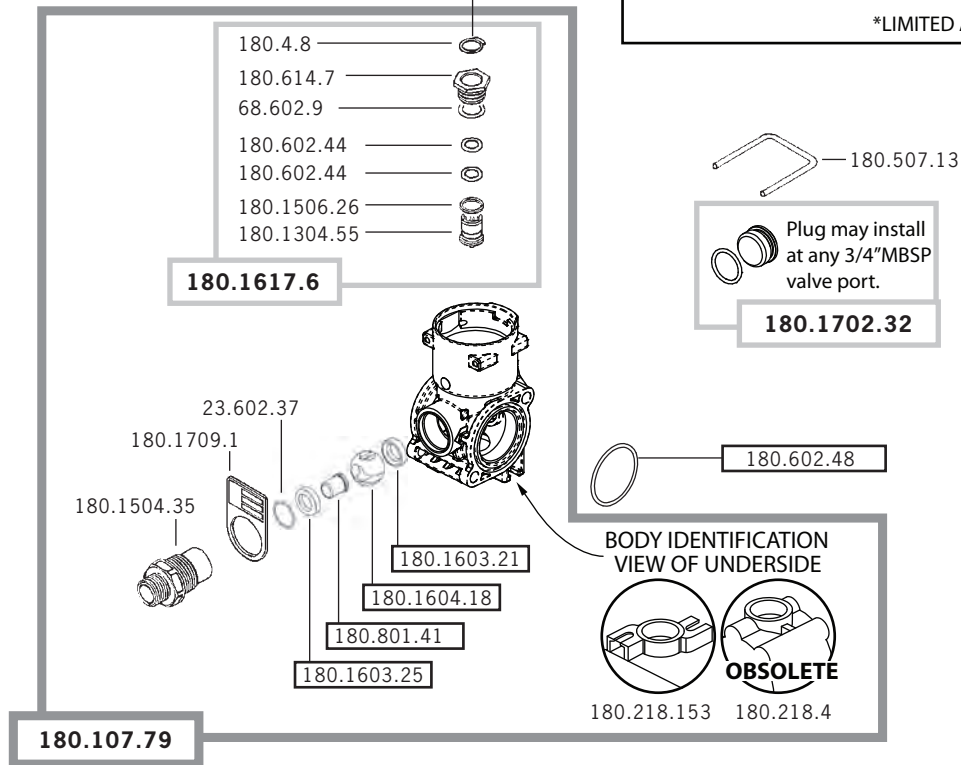
**180.302.31 spare parts kit**



**180.1910.10**  
pressure regulating valve parts

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

\*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.

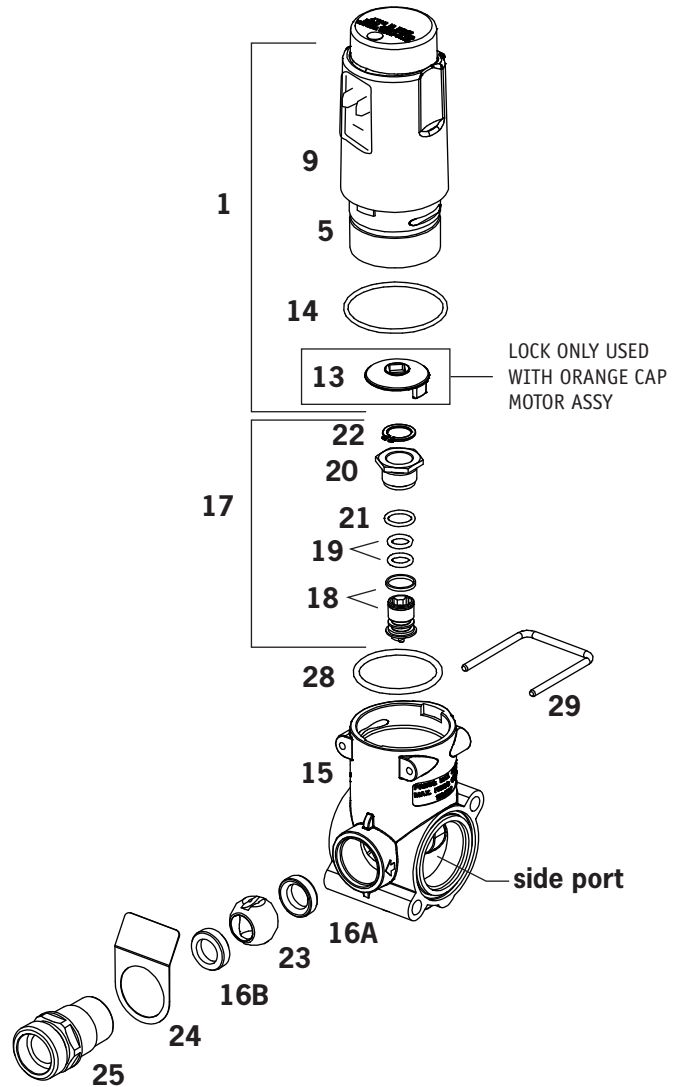


fig. i

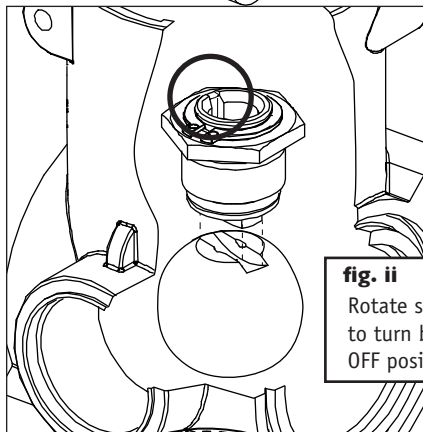
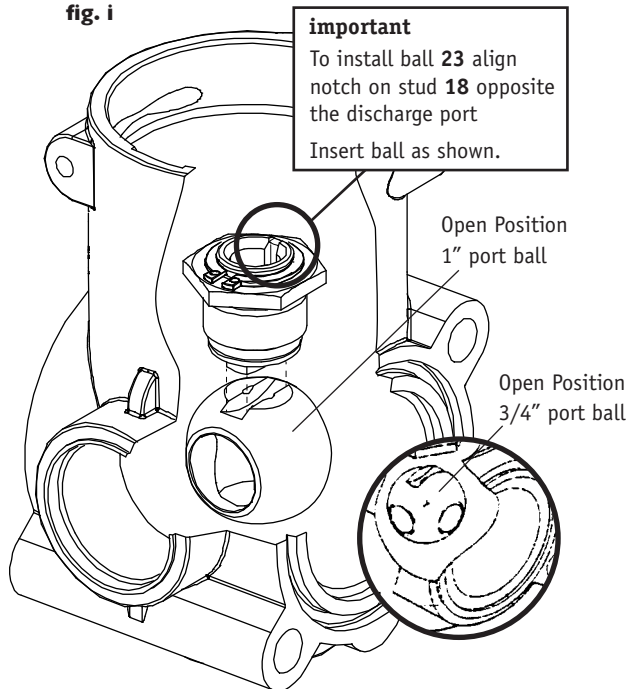


fig. ii  
Rotate stud 18 90° to turn ball 23 to OFF position.

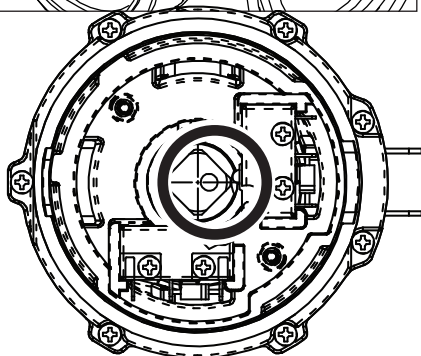


fig. iii BLACK CAP MOTOR

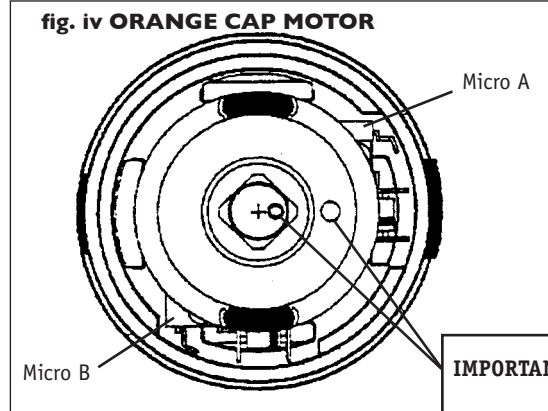


fig. iv ORANGE CAP MOTOR

**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.

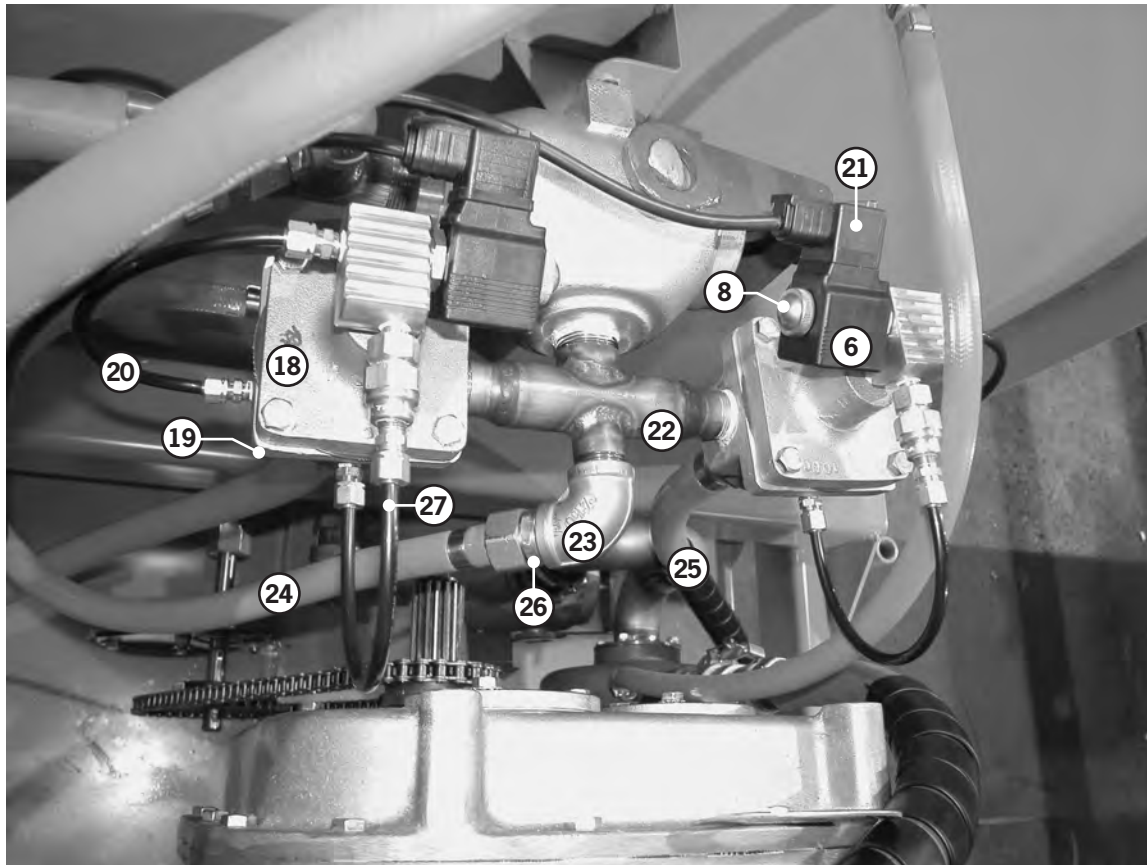
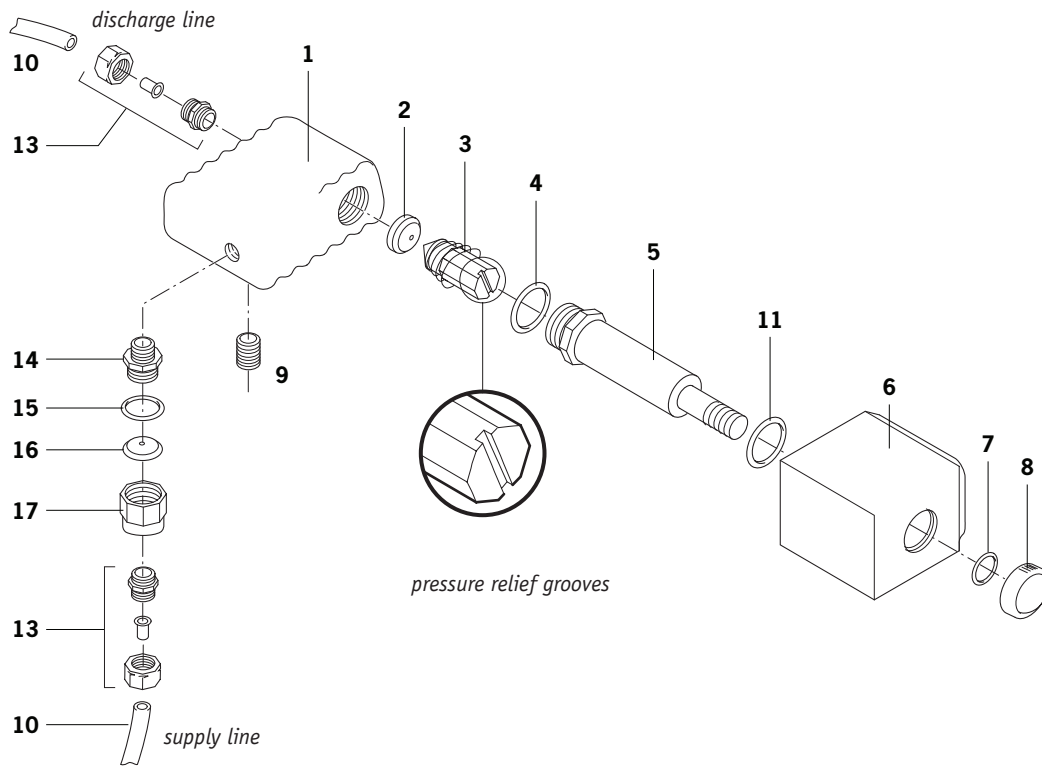
Check the gearmotor assembly:

**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.



\*Parts unique to the solenoid hu-valve assembly listed here.  
Standard hu-valve assembly found on Powerblast discharge strainer and hu-valves page.



## solenoid actuated hu-valve parts

#	Part N <sup>o</sup>	Description	Qty
1	HUV731L	Brass valve selector block, left (pictured)	1
	HUV731R	Brass valve selector block, right	1
2	DCER-8	Ceramic orifice insert, size 8	2
3	HUV740	Actuating needle, complete	2
	HUV7401S	Spring only	
4	HUV741	O-ring	2
5	HUV742	Stem	2
6	HUV72109	Coil	2
7	HUV743	O-ring	2
8	HUV744	Stem cap	2
9	SSN012CLOSE	1/8" x close nipple	2
10	HUVTUBE	1/4" X 9" nylon tube	4
11	HUV745	O-ring	2
13	HUV012CB	Brass compression fitting, 1/8"MPT	4
14	1/8TT	TeeJet body	2
15	12-2.5MMN70	O-ring	2
16	D6	Steel orifice insert, size 6. Install as illustrated.	2
17	4676-1/8	1/8"FPT x female TeeJet adapter	2
18	HUV100C	Hu-valve cap	2
19		Solenoid actuated Hu-valve body, left	1
		Solenoid actuated Hu-valve body, right	1
20	HUV-LOOP	Diaphragm bypass loop, discharge side	2
21	HUV72232	Valve signal control cable	2
22		Strainer manifold	1
23	SSEL075	3/4" 90° SS elbow	1
24		See powerblast discharge strainer and hu-valve parts page	1
25		See powerblast discharge strainer and hu-valve parts page	2
26	MGXMP075	3/4"MGHT X 3/4"MIPT adapter	1
27	HUV-LOOP	Diaphragm bypass loop, supply side	2

do not overtighten retaining screw  
seal screw head cavity with silicone

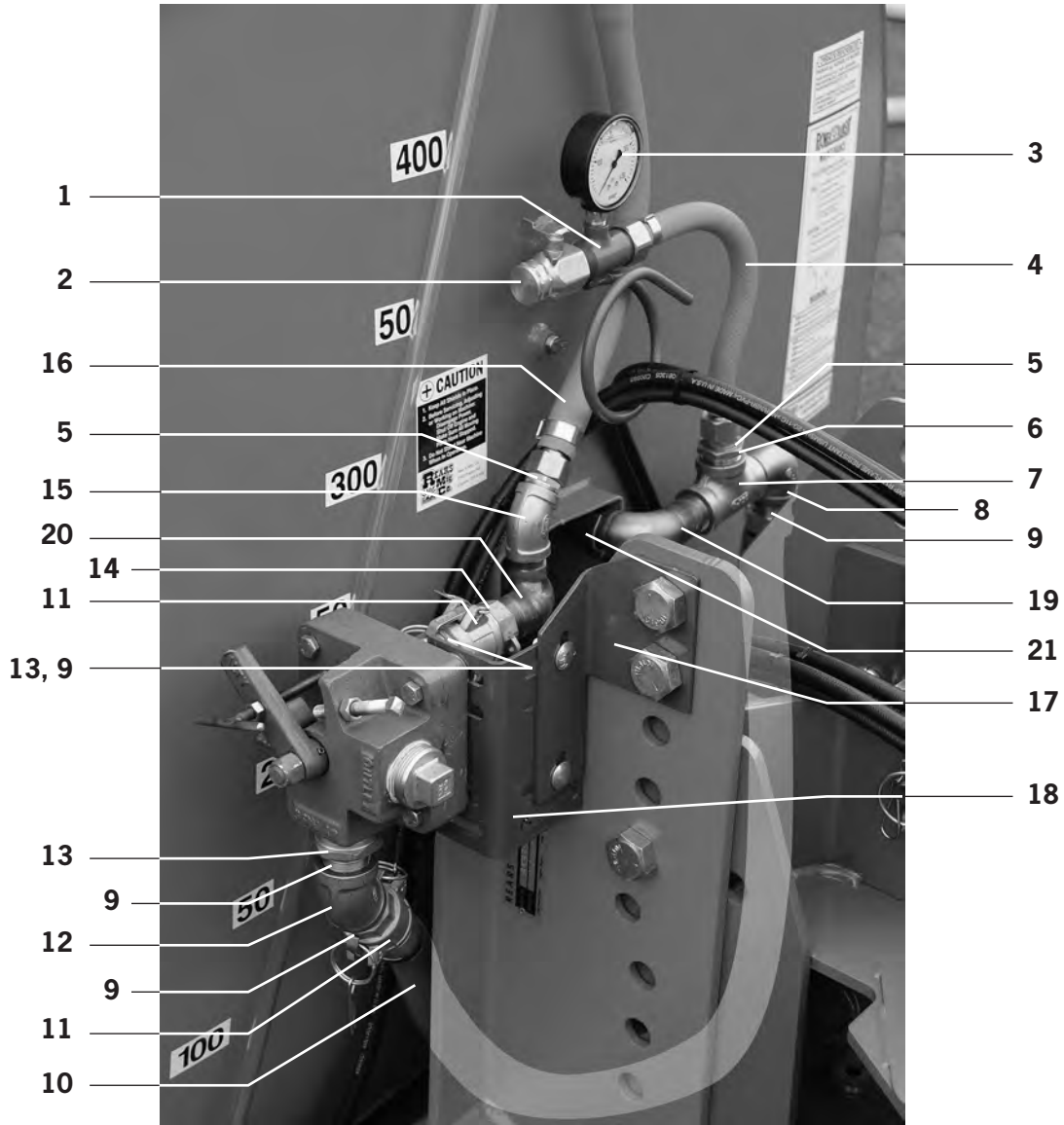
## valve troubleshooting

### Valve doesn't turn ON.

- 1 Check pump. The valve will not function without system pressure. Check and clean line strainers.
- 2 Check the coil plug **21**. The red light on the plug housing will glow if it is getting power. If the handset master switch is on and the light does not glow, check the wiring.
- 3 If the light on the plug glows, check the coil function **6**. With the tractor engine shut off, cycle the handset valve control switch on and off: listen for the audible *click* sound of the solenoid assembly. If you hear the clicking, skip to the next step. If the valve does not audibly respond, use a steel (not stainless) object to check for magnetism at the stem cap **8**. The stem should be magnetized when switched on- if not, check the wiring or replace the coil.
- 4 If the coil magnetizes properly, the needle **3** is probably stuck. Tapping the brass housing **1** may release the needle. If not, disassemble the coil and stem **5**. Clean the needle, stem cavity and brass housing cavity- all surfaces should be free of debris. Check the ceramic orifice **2**. The orifice should be unobstructed and installed as illustrated. Make certain the needle **3** is installed as illustrated.
- 5 Check the D6 orifice **16** in the bypass loop for wear. Replace if necessary.
- 6 Check if the discharge line **20** is blocked.
- 7 Check if the plunger in the Hu-valve cap **18** is stuck. An assembly diagram for the Hu-valve cap can be found on the *powerblast discharge strainer and hu-valves* parts page.

### Valve doesn't turn OFF.

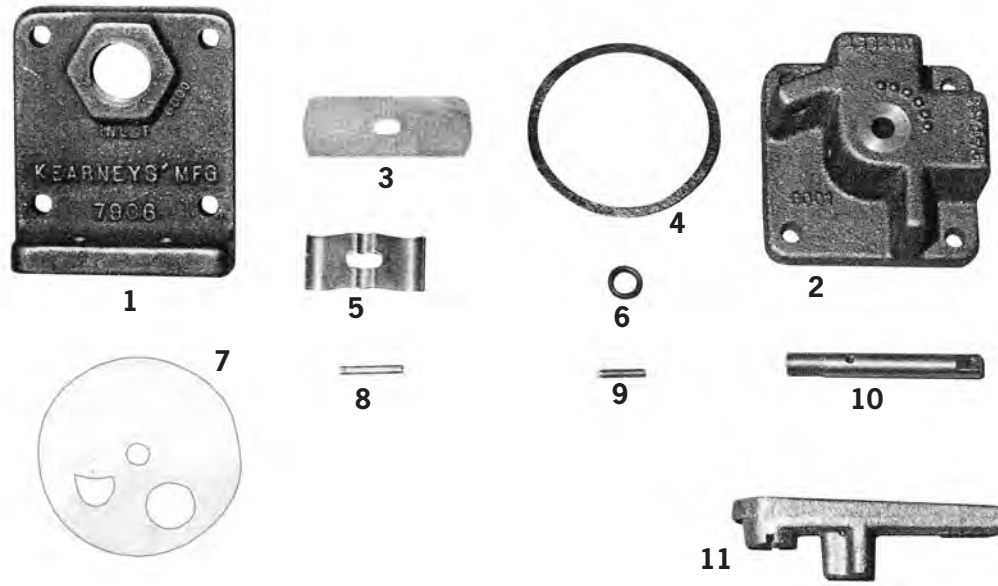
- 1 Check for blockage in supply line **27**. Clean as required.
- 2 Remove the Hu-valve cap **18** from the Hu-valve body **19**. For a list of internal parts for the Hu-valve, refer to the assembly diagram on the *powerblast discharge strainer and hu-valves* parts page. Check for a ruptured diaphragm **HUV104DV**, cracked valve seat **HUV110**, or stuck plunger.
- 3 Check the coil **6** function. With the tractor engine shut off, cycle the handset valve control switch on and off: listen for the audible *click* sound of the solenoid assembly. If you hear the clicking, skip to the next step. If the valve does not audibly respond, use a steel (not stainless) object to check for magnetism at the stem cap **8**. The stem should not be magnetized when switched off. Replace the handset switch if it will not de-magnetize.
- 4 If the coil de-magnetizes properly, the needle **3** is probably stuck. Tapping the brass housing **1** may release the needle. If not, disassemble the coil and stem **5**. Clean the needle, stem cavity and brass housing cavity- all surfaces should be free of debris. Check the ceramic orifice **2** for wear or damage; replace if necessary. Check the needle **3** and spring for wear or damage: the pressure relief grooves, *previous page*, must be unobstructed. Make certain the needle/spring is installed as illustrated. Replace if necessary.



**S&R valve plumbing**

No.	Part #	Description	Qty
1	PB720	handgun and pressure gauge manifold	1
2	V58	ball valve, 3/4"MGHT x 3/4"FPT	1
3	LFG400	400psi glycerine filled gauge	1
4	call	1/2" pvc hose	-
	HFB075050	3/4"FGHT hose fitting	2
5	MGXMP075	3/4"MPT x MGHT adapter	2
6	SSBSH075100	3/4"FPT X 1"MPT bushing, stainless steel	1
7	SSTEE100	1" tee, stainless steel	1
8	SSTL100	1" street elbow, stainless steel	1
9	SSN100CLOSE	1" close nipple, stainless steel	4
	call	1" rubber hose	-
	HFD100100	1"FPT hose fitting	1
10	ETC100EAL	1" male camlock hose fitting	1

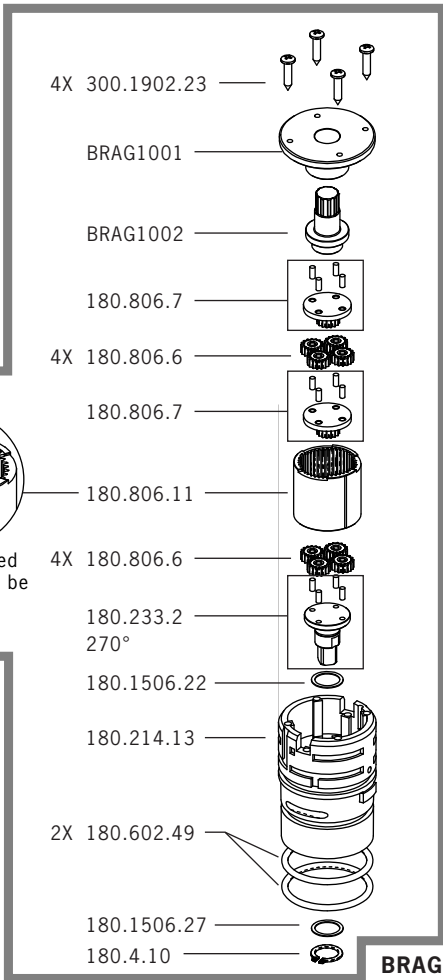
No.	Part #	Description	Qty
11	ETC100DAL	1"FPT x 1" female camlock	2
12	SSEL45100	1" 45° elbow, stainless steel	1
13	SSBSH125100	1"1/4MPT x 1"FPT bushing	2
14	ETC100AAL	1"FPT x 1" male camlock	1
15	SSEL45075	3/4" 45° elbow, stainless steel	1
	call	1/2" pvc hose	-
16	HFB075050	3/4"FGHT hose fitting	2
17	PBS&R100	mast mount bracket	1
18	PBSR1025	valve mount bracket	1
19	call	tunnel line to discharge strainer	1
20	call	tunnel line from pump	1
21	MBIN2131	tunnel line clamp	4



**S&R valve parts**

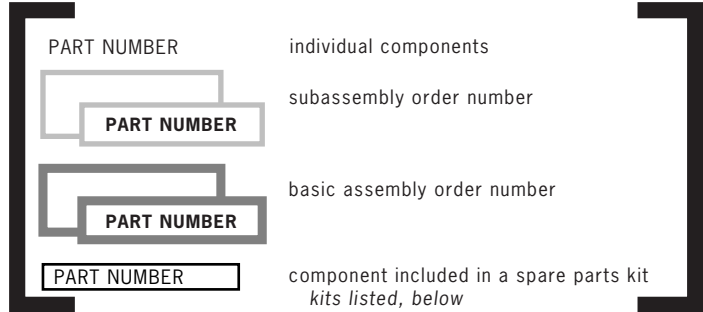
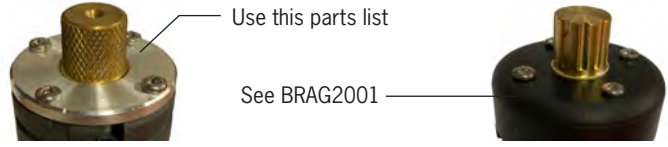
No.	Part #	Description	Qty
	SR1-1/4	1"1/4 port S&R valve, complete	
	S&R125KIT	repair kit <i>includes all • items</i>	
1	K-80-1000	inlet housing	1
2	K-80-1001	outlet housing	1
3	K-80-1006	main adjusting gate	1
4	K-80-1009	• housing gasket	1
5	K-80-1005	• gate tension spring	1
6	K-80-1010	• o-ring, viton	1
7	K-80-1004	• teflon valve disc	1
8	K-80-1007	• spring retainer pin	1
9	K-80-1008	• stem shear pin	1
10	K-80-1003	main valve stem	1
11	SRK80-1002	valve control handle, 7" long	1
	SRK80-1002M	valve control handle, 4" long	

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



**BRAG2000TS**

**BRAG2000 manual pressure regulating valve**



**AVAILABLE SPARE PARTS KITS**

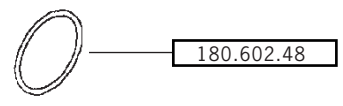
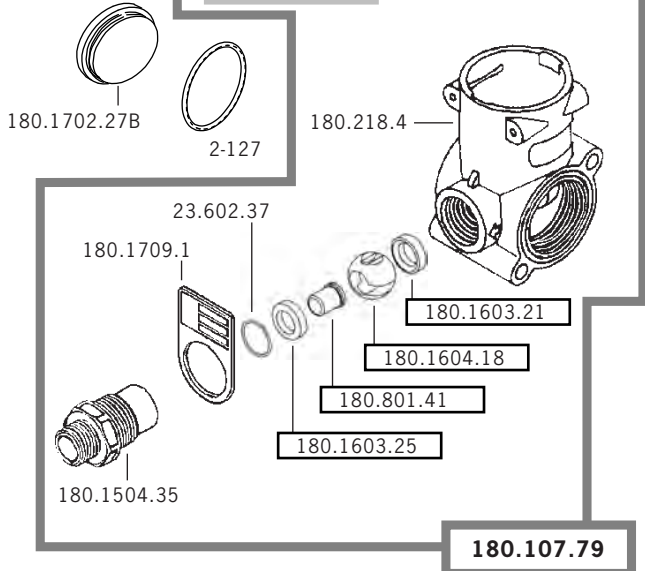
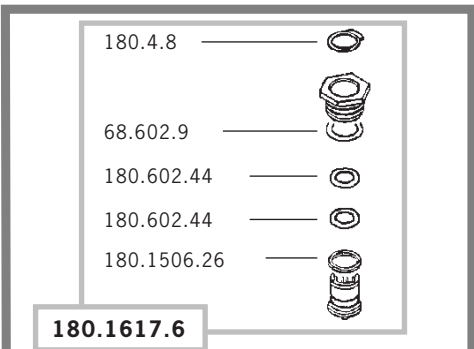
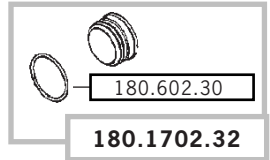
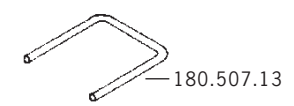
180.302.33 *spare parts kit*

**COMPLETE MOUNT ASSEMBLIES**

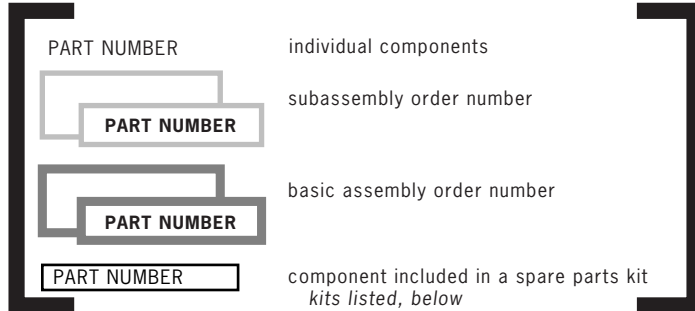
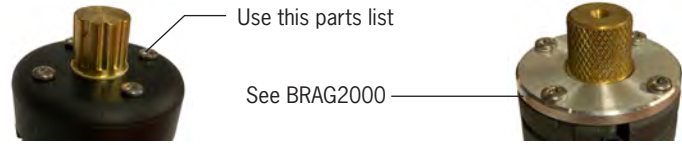
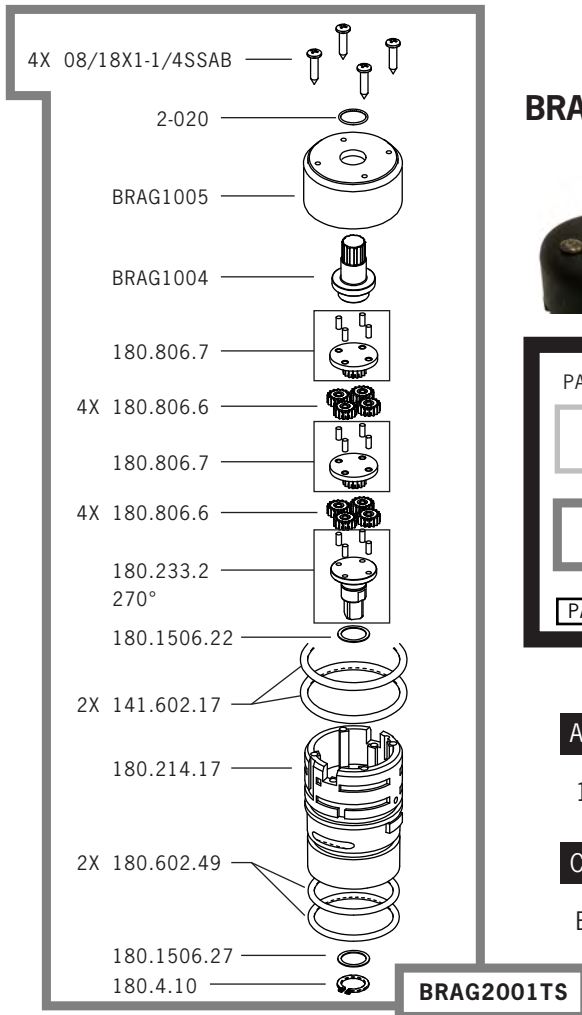
BRAG2000A **Powerblast assembly**  
 BRAG2000 valve  
 180.1702.27ETC cam lock discharge fitting  
 Mount bracket

**RETROFIT**

Call the factory with your Serial Number for information



## BRAG2001 manual pressure regulating valve



### AVAILABLE SPARE PARTS KITS

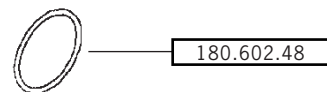
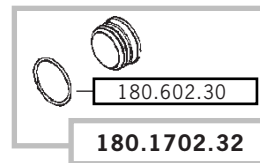
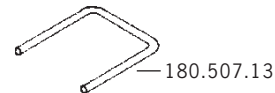
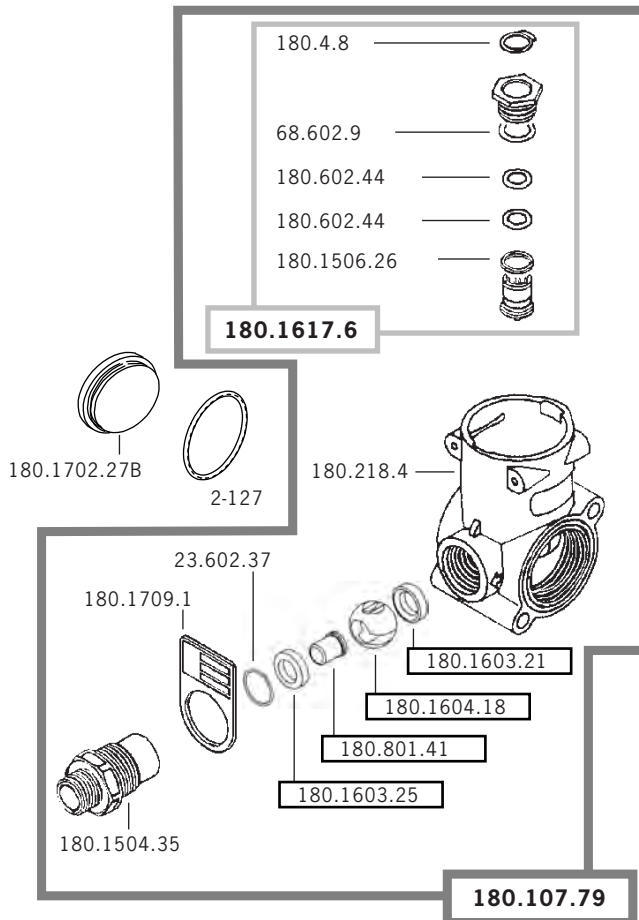
180.302.33 **spare parts kit**

### COMPLETE MOUNT ASSEMBLIES

BRAG2001A **Powerblast assembly**  
 BRAG2000 valve  
 180.1702.27ETC cam lock discharge fitting  
 Mount bracket

### RETROFIT

Call the factory with your Serial Number for information



### Injector hopper operation

The injection hopper is a standard component of 1000 gallon Powerblast sprayers and is available as an option for other models.

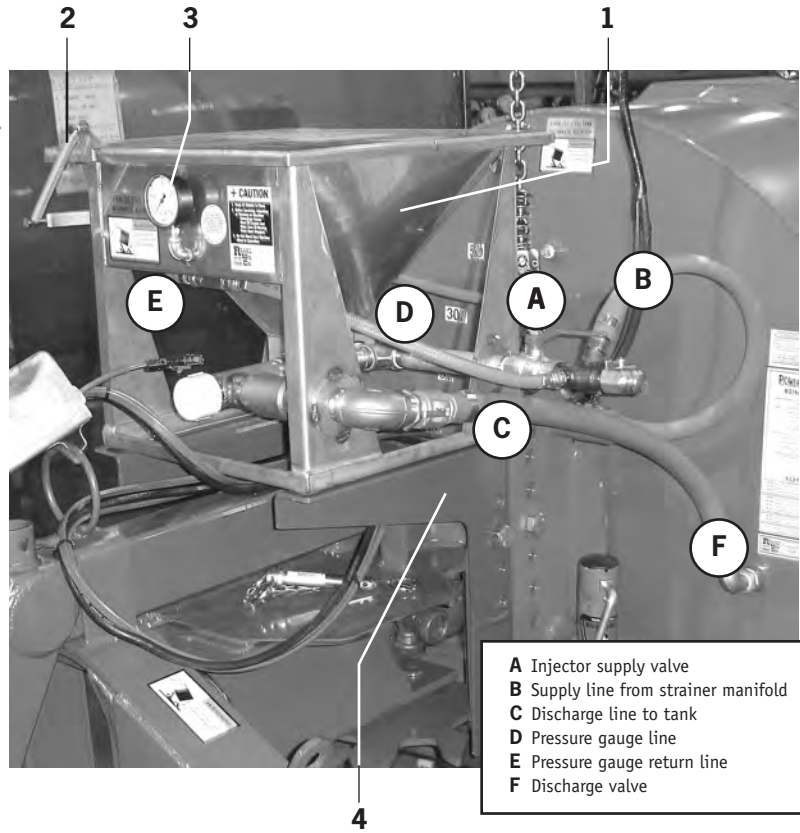
To use the injector, make certain the dump line valve at **F** is open.

With the lid closed open the supply valve **A**. You should hear the flow through the venturi nozzle.

Open the hopper lid and add the material to be mixed.

**You must always wear the protective equipment required by the chemical manufacturer when handling spray materials.**

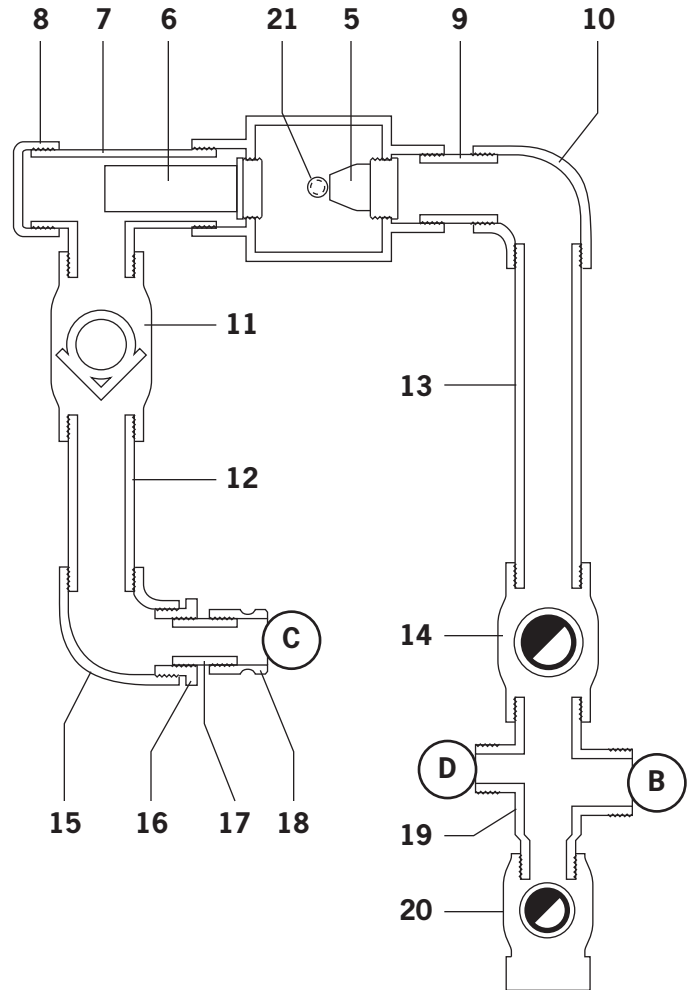
When you have completed adding materials, close the lid and shut off the supply valve **A**.

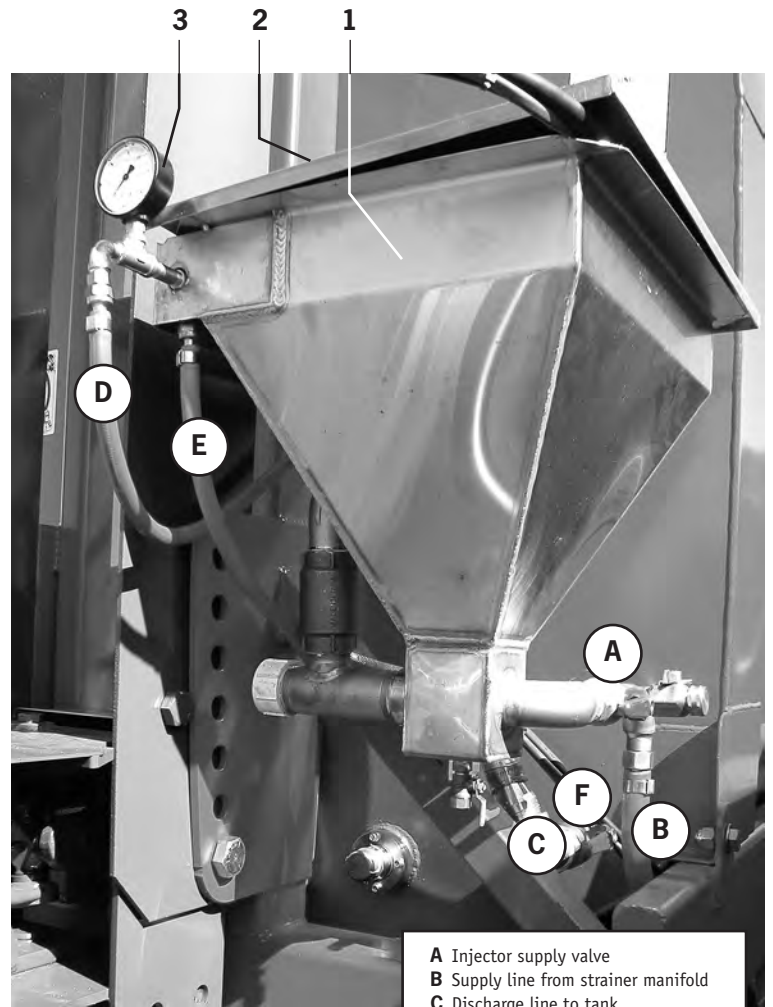


- A Injector supply valve
- B Supply line from strainer manifold
- C Discharge line to tank
- D Pressure gauge line
- E Pressure gauge return line
- F Discharge valve

### Injector hopper parts *not for 1000 gal. units*

No.	Part #	Description	Qty
1	PBMX5JH	hopper with lid, stand, N5A, T62	
2	S-595	lid spring	1
3	LFG600	600psi pressure gauge, glycerine filled	1
4	CH180L,R	mast mount brackets, left and right	1
5	N5A	nozzle	1
6	T62	venturi	1
7	PB724	discharge manifold	1
8	PVCCAP150	1 1/2 poly cap	1
9	SSN1000200	1" x 2" nipple, stainless steel	1
10	SSEL100	1" elbow, stainless steel	1
11	NTMX4032	1 1/4 check valve, brass	1
12	SSN1250400	1 1/4 x 4" nipple, stainless steel	1
13	SSN1000900	1" x 9" nipple, stainless steel	1
14	B100FP	1" ball valve, brass	1
15	SSEL125	1 1/4 elbow, stainless steel	1
16	SSBSH125100	1 1/4 x 1" bushing, stainless steel	1
17	SSN100CLOSE	1" close nipple, stainless steel	1
18	ETC100AAL	1" male camlock hose fitting	1
19	PB728	stainless steel manifold	1
20	V75	3/4" MGHT handgun ball valve	1
21	B025MF	1/4" ball valve	1

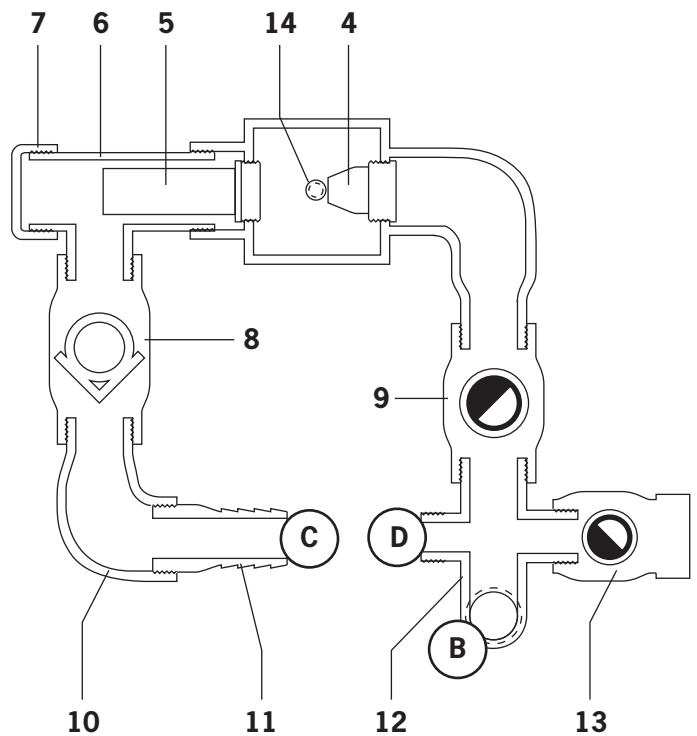




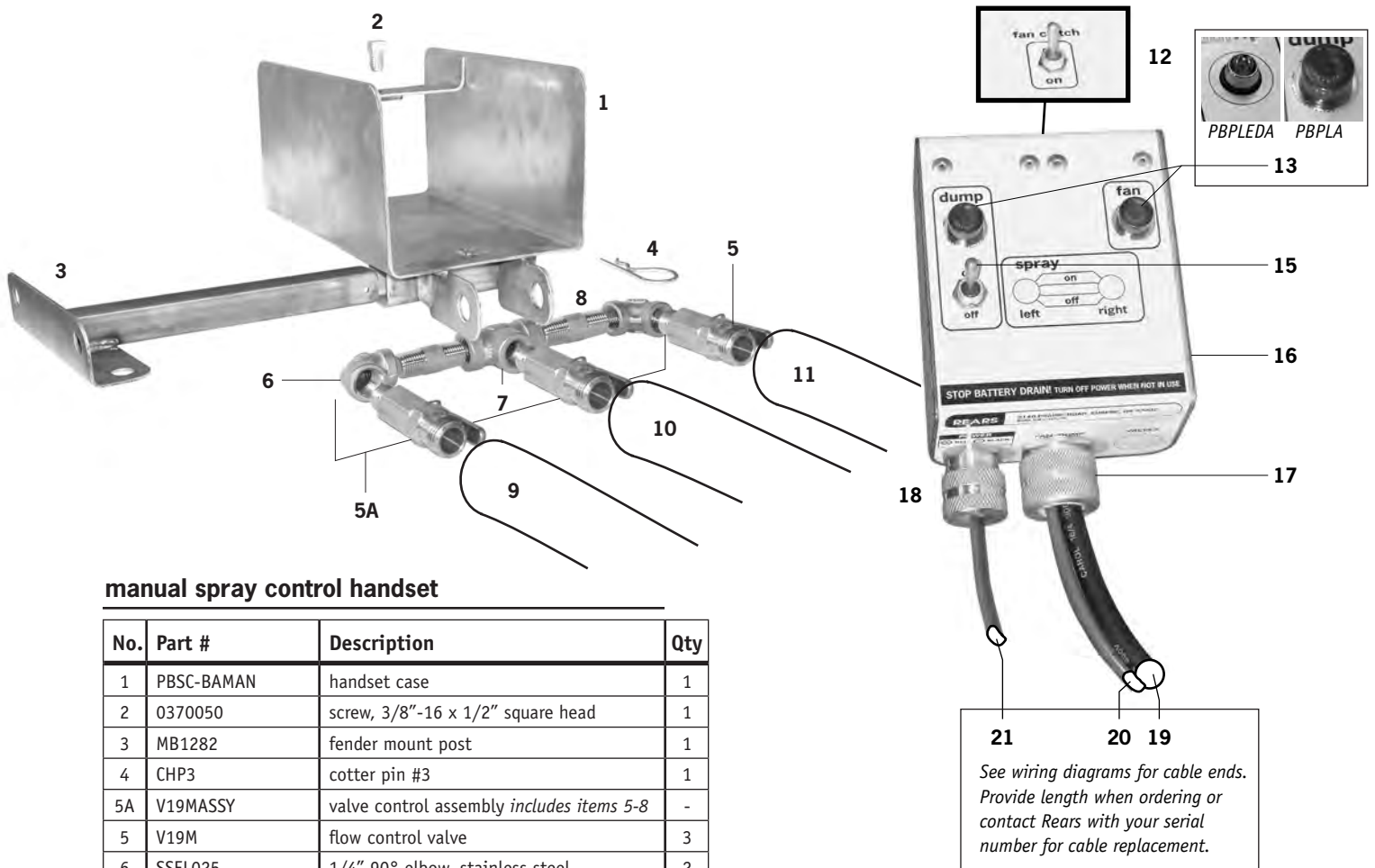
- A Injector supply valve
- B Supply line from strainer manifold
- C Discharge line to tank
- D Pressure gauge line
- E Pressure gauge return line
- F Discharge valve

**Injector hopper parts for 1000 gal. units**

No.	Part #	Description	Qty
1	PBMX510JH	hopper with lid, stand, N5A, T62	
2	S-595	lid spring	1
3	LFG600	600psi pressure gauge, glycerine filled	1
4	N5A	nozzle	1
5	T62	venturi	1
6	PB724	discharge manifold	1
7	PVCCAP150	1"1/2 poly cap	1
8	NTMX4032	1"1/4 check valve, brass	1
9	B100FP	1" ball valve, brass	1
10	SSSTL125	1"1/4 street elbow, stainless steel	1
11	ETC125KN	1"1/4 king nipple	1
12	PB723	stainless steel manifold	1
13	V75	3/4" MGHT handgun ball valve	1
14	B025MF	1/4" ball valve	1



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



### manual spray control handset

No.	Part #	Description	Qty
1	PBSC-BAMAN	handset case	1
2	0370050	screw, 3/8"-16 x 1/2" square head	1
3	MB1282	fender mount post	1
4	CHP3	cotter pin #3	1
5A	V19MASSY	valve control assembly <i>includes items 5-8</i>	-
5	V19M	flow control valve	3
6	SSEL025	1/4" 90° elbow, stainless steel	2
7	SSTEE025	1/4" tee, stainless steel	1
8	SSN025150	nipple 1/4" x 1-1/2", stainless steel	2
9	call	10' x 3/8" pvc hose <i>left manifold control</i>	1
	1325	11/16"-16UN cap, brass	1
	4251-375	3/8" hosebarb for 1325 cap, brass	1
	EL050F037HB	1/2"FBSP x 3/8"HB elbow, brass	1
10	call	9'5" x 1/2" pvc hose <i>master control</i>	1
	1325	11/16"-16UN cap, brass	1
	4251-500	1/2" hosebarb for 1325 cap, brass	1
	EL050F050HB	1/2"FBSP x 1/2"HP elbow, brass	1
11	call	9'10" x 3/8" pvc hose	1
	1325	11/16"-16UN cap, brass	1
	EL050F037HB	1/2"FBSP x 3/8"HB elbow, brass	1
12	1NT1-2	fan clutch power switch	1
13	PBPLA	mini automotive lamp <i>see illustration</i>	**
	PBPLEDA	LED lamp <i>see illustration</i>	**
15	2NT1-3	dump switch	1
16	PBSC-1A*	switch panel with decal <i>for PBPLA lamps</i>	1
	PBSC-1ALED	switch panel with decal <i>for PBPLEDA lamps</i>	2
17	SHC1027	cable strain relief fitting	1
18	SHC1022	cable strain relief fitting	1
19	see wiring diagram	16/4 cable <i>dump valve power</i>	1
20	see wiring diagram	12/2 cable <i>fan clutch power</i>	1
21	1294W	10" 12/2 cable complete with connectors	1
22	38043	Waytek tower connector	1

\* PBSC-1A is replaced by PBSC-1ALED.  
PBSC-1ALED requires PBPLEDA lamps, not included.

\*\*Lamp qty depends upon electric control functions

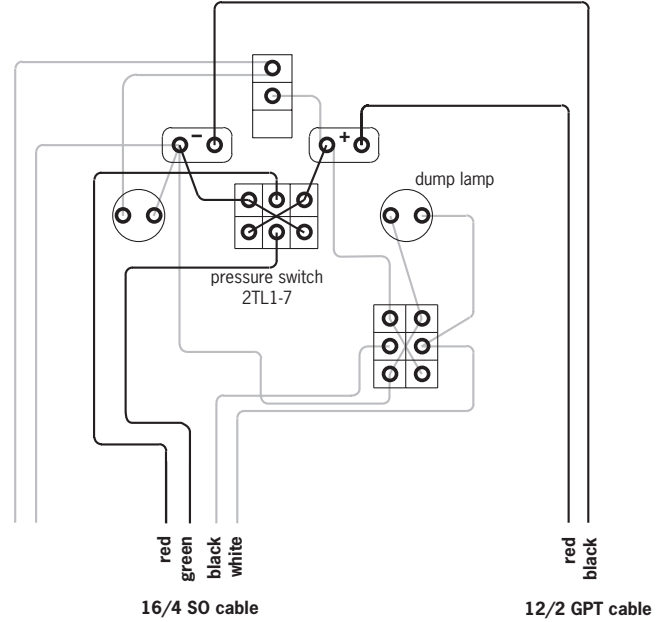
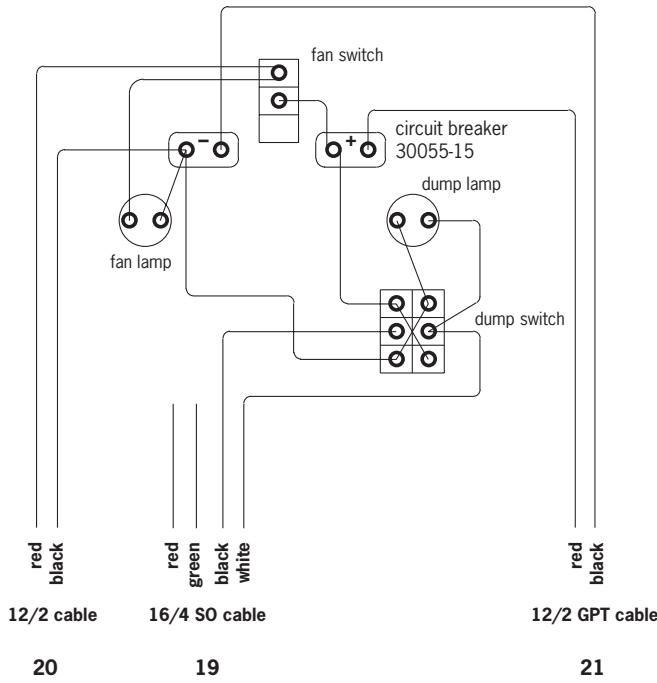
### cable jumpers

Part #	Description	Qty
1282W	11' 12/2 power cable jumper <i>all models</i>	1
PBC015	3' 9" 12/2 fan clutch jumper <i>not for tower</i>	1
PBC015TW	4' 9" 12/2 fan clutch jumper <i>for tower</i>	



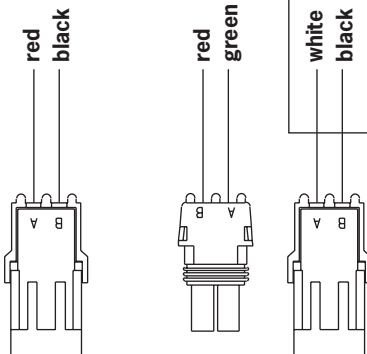
wiring diagram  
manual spray controls/electric dump

optional pressure adjust switch  
requires optional pressure valve kit with plumbing



cable end wiring

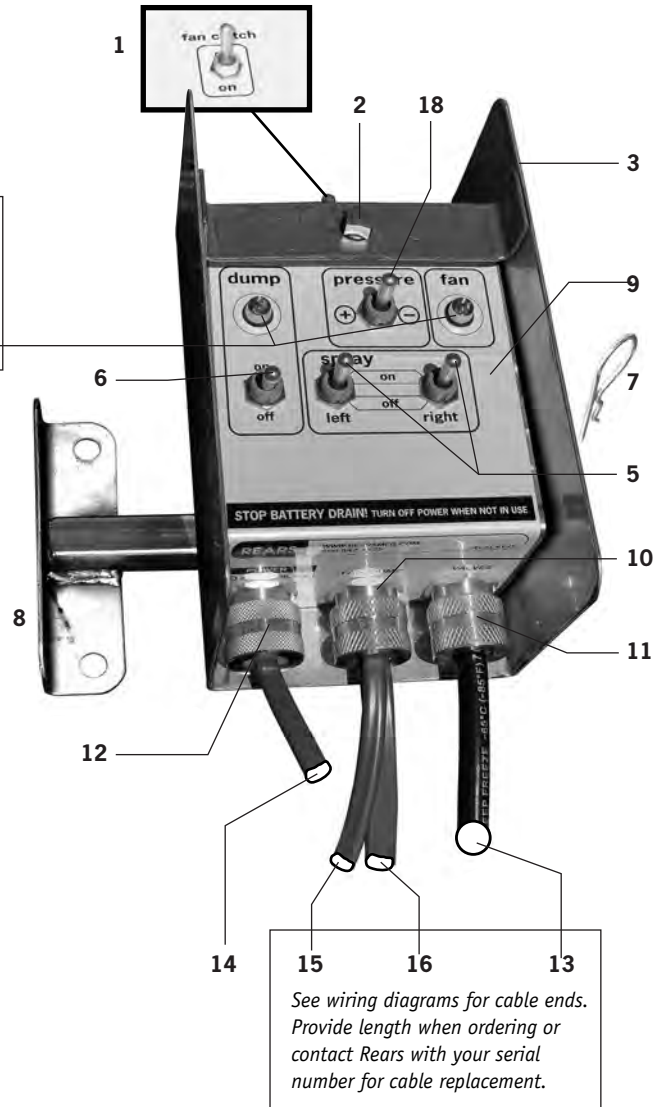
20, 21                      19  
12/2 GPT cable          16/4 SO cable



**cable 19 shroud connector to dump valve:**  
wiring for 1" Braglia dump valve (180.1910.9)  
for older Powerblast with 3/4" valves (180.1910.19)  
switch the black and white wires

- Waytek 2 pin shroud connector 38042
- Waytek 2 pin tower connector 38043
- Waytek 2 pin repair kit WY142KIT

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



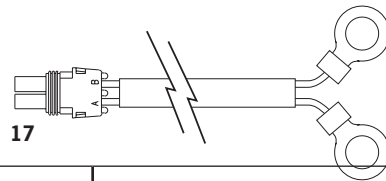
electric spray control handset

No.	Part #	Description	Qty
1	1NT1-2	fan clutch power switch	1
2	0370050	screw, 3/8"-16 x 1/2" square head	1
3	PBSC-BA	handset case	1
4	PBPLA	mini automotive lamp <i>see illustration</i>	**
	PBPLEDA	LED lamp <i>see illustration</i>	**
5	2NT1-7	switch <i>if using Hu-Valve control block</i>	1
	2NT1-3	switch <i>if using Braglia control valves</i>	
	1NT1-2	switch <i>if using KZ control valve</i>	
6	2NT1-3	switch <i>dump control</i>	1
7	CHP3	cotter pin #3	1
8	MB1282	fender mount post	1
9	PBSC-1A*	switch panel with decal <i>for PBPLA lamps</i>	1
	PBSC-1ALED	switch panel with decal <i>for PBPLEDA lamps</i>	2
10	SHC1027	cable strain relief fitting	1
11	SHC1023	cable strain relief fitting	1
12	SHC1022	cable strain relief fitting	1
13	see wiring diagram	16/6 cable <i>spray control</i>	1
14	1294W	10' 12/2 cable w/connectors <i>for power</i>	1
15	see wiring diagram	12/2 cable <i>fan clutch</i>	1
16	see wiring diagram	16/4 cable <i>dump valve</i>	1
17	38043	Waytek tower connector	1
18	2TL1-7	switch for pressure control	1

\* PBSC-1A is replaced by PBSC-1ALED.  
PBSC-1ALED requires PBPLEDA lamps, not included.

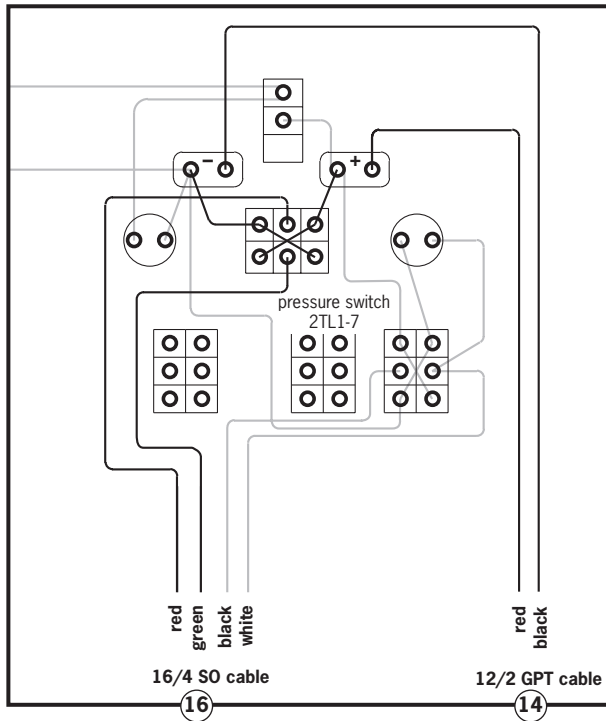
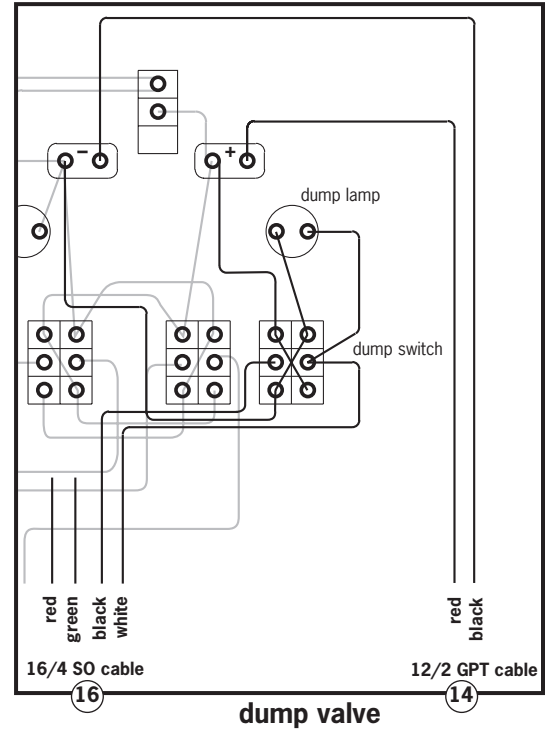
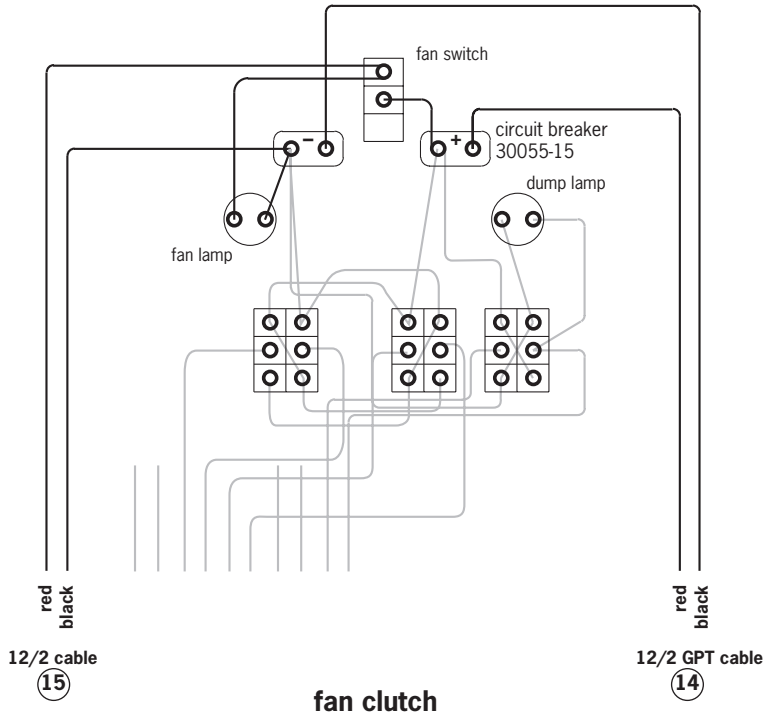
\*\*Lamp qty depends upon electric control functions

cable jumpers



Part #	Description	Qty
1282W	11' 12/2 power cable jumper <i>all models</i>	1
PBC015	3' 9" 12/2 fan clutch jumper <i>not for tower</i>	1
PBC015TW	4' 9" 12/2 fan clutch jumper <i>for tower</i>	

# wiring diagram electric fan clutch/electric dump

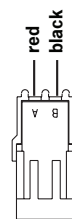
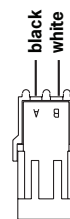
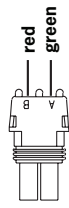


requires optional pressure valve kit with plumbing

## cable end wiring

16/4 SO cable

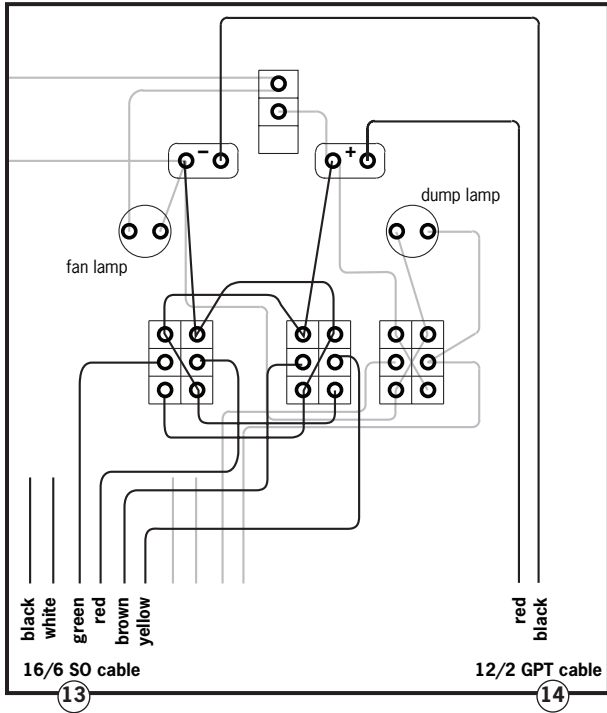
12/2 GPT cable



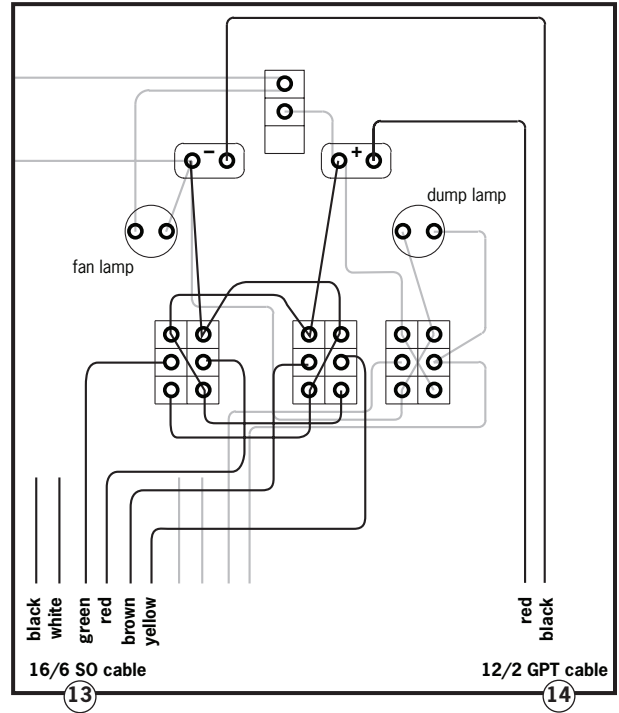
Waytek 2 pin shroud connector 38042  
Waytek 2 pin tower connector 38043  
Waytek 2 pin repair kit WY142KIT

wiring diagram, cont'd  
electric spray controls

hu-valve spray controls

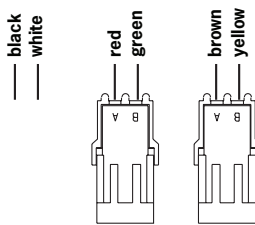


braglia valve spray controls



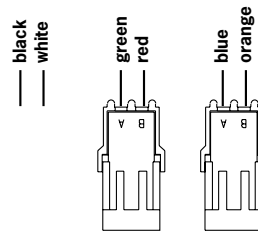
cable end wiring

16/6 SO cable



cable end wiring

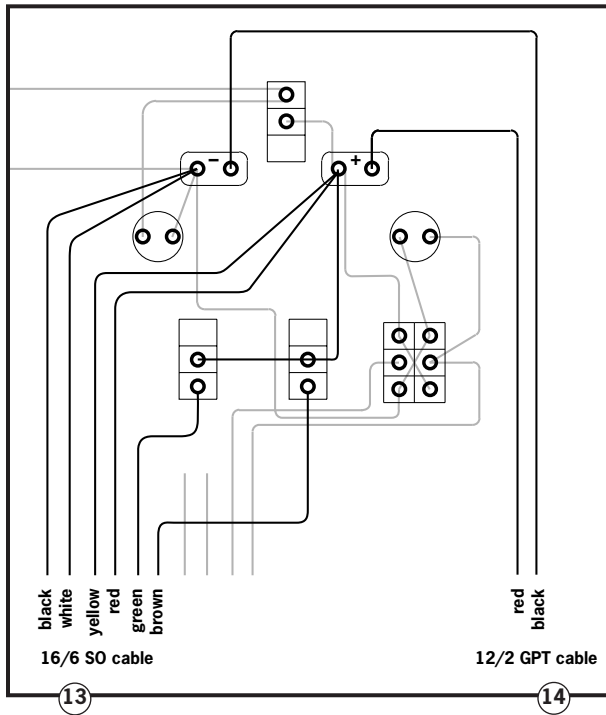
16/6 SO cable



Waytek 2 pin shroud connector 38042  
Waytek 2 pin tower connector 38043  
Waytek 2 pin repair kit WY142KIT

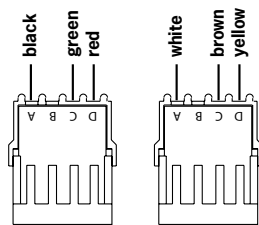
wiring diagram, cont'd  
electric spray controls

KZ valve spray controls



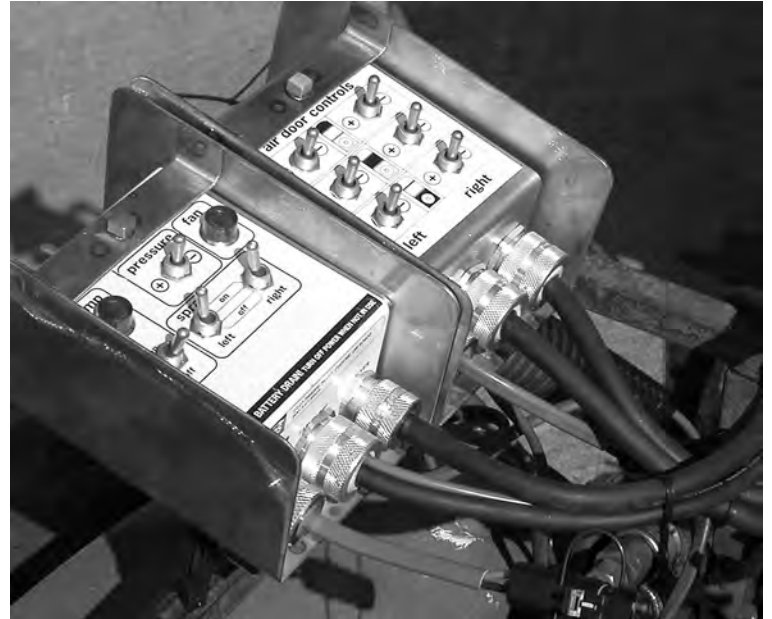
cable end wiring

16/6 SO cable



- Waytek 4 pin shroud connector 38046
- Waytek 4 pin tower connector 38047
- Waytek 4 pin repair kit WY1644KIT

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



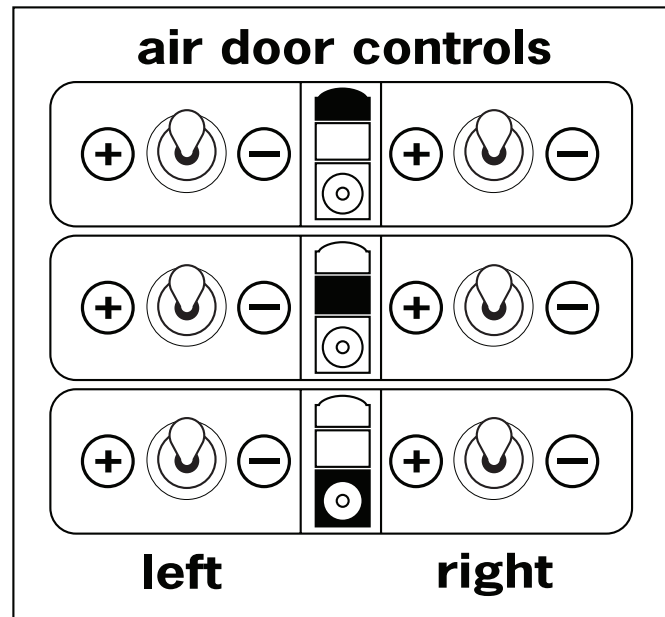
### adjusting air doors

Open or close the tower air doors to adjust the volume of air discharged from the side air slots. Electric air door systems use an actuator motor with a 3" stroke.

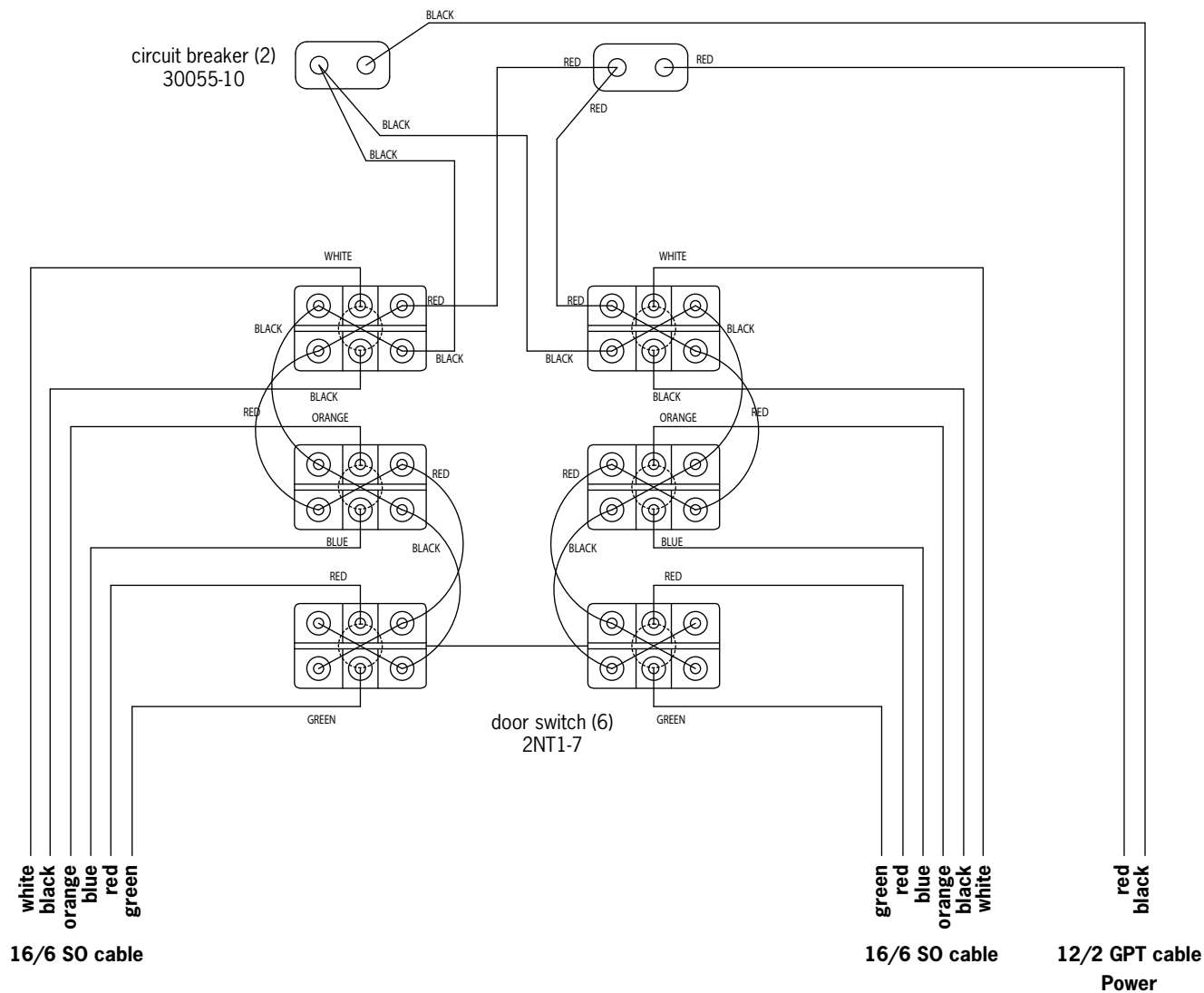
Vertical wall towers are divided into application zones. The handset model, right, illustrates a 3-zone air control system.

To adjust the air discharge in your desired zone select the corresponding switch: increase air discharge by holding the switch to the + symbol; decrease air discharge when holding to the -.

The door motor will engage immediately, but the change in air pattern will be observed gradually: make small changes in door position until you set your desired discharge target.

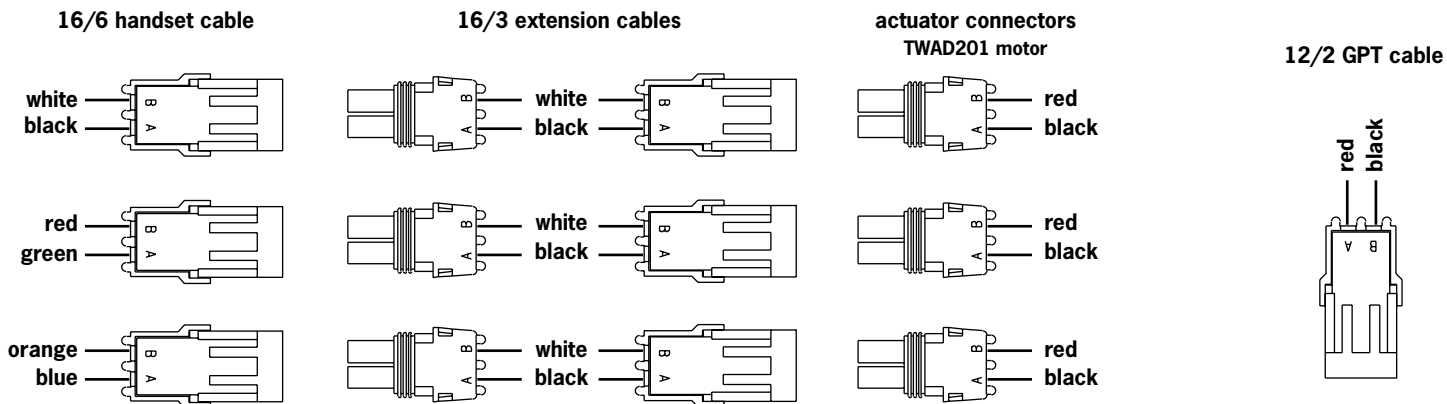


### wiring diagram electric air doors handset



### wiring diagram air door cable ends

Waytek 2 pin shroud connector 38042  
Waytek 2 pin tower connector 38043  
Waytek 2 pin repair kit WY142KIT



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

**adjusting air doors, gauge panel display**

Open or close the tower air doors to adjust the volume of air discharged from the side air slots. Electric air door systems use an actuator motor with a 3" stroke. Models with the TWAD202 air door actuators utilize the built in potentiometer to display air door position.

Vertical wall towers are divided into application zones. The handset model, right, illustrates a 3-zone air control system. Each zone, both left and right, displays the position of the air door.

To adjust the air discharge in your desired zone select the corresponding switch: increase air discharge by holding the switch to the + symbol; decrease air discharge when holding to the -.

The door motor will engage immediately, but the change in air pattern will be observed gradually: make small changes in door position until you set your desired discharge target.

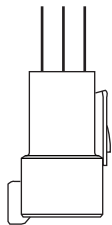
The door speed knob adjusts the actuation speed of the door motor. Turn the knob in the direction of the rabbit to increase door speed; slow the doors by turning the knob to the turtle symbol.

**KNOB 296-1232  
POTENTIOMETER 296-4220**



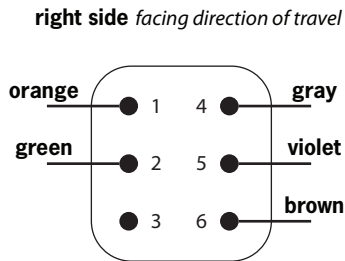
**cable end wiring**

**16/6 SO cable  
receptacle**

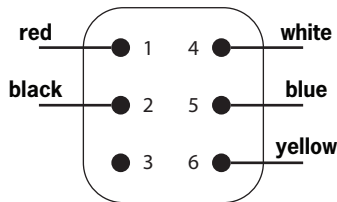


**5996C**

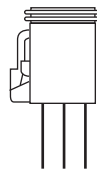
**pin assignment**



**left side facing direction of travel**

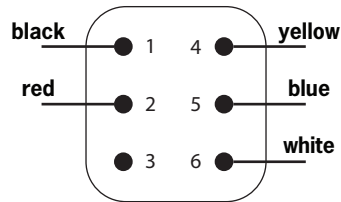


**actuator cable  
plug**

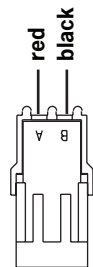


**5997C**

**pin assignment**

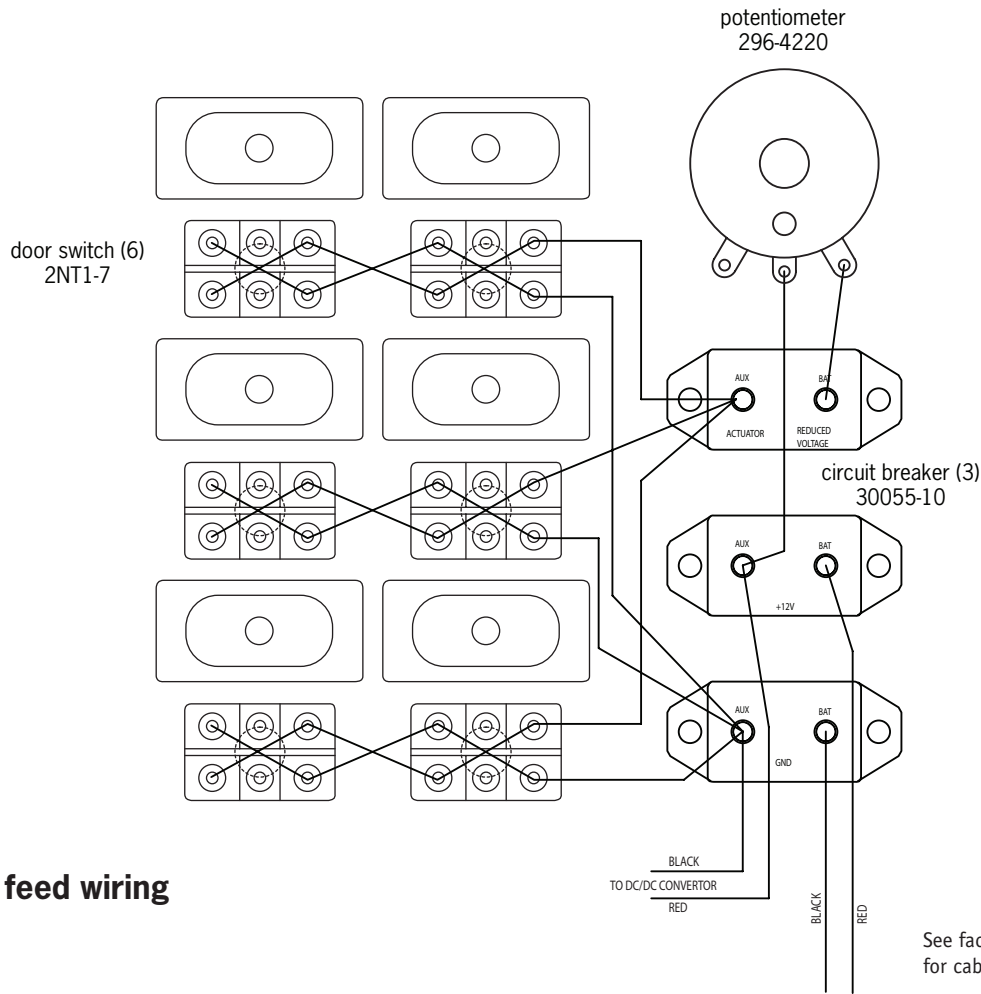


**power cable  
12/2 GPT cable**



**38042**

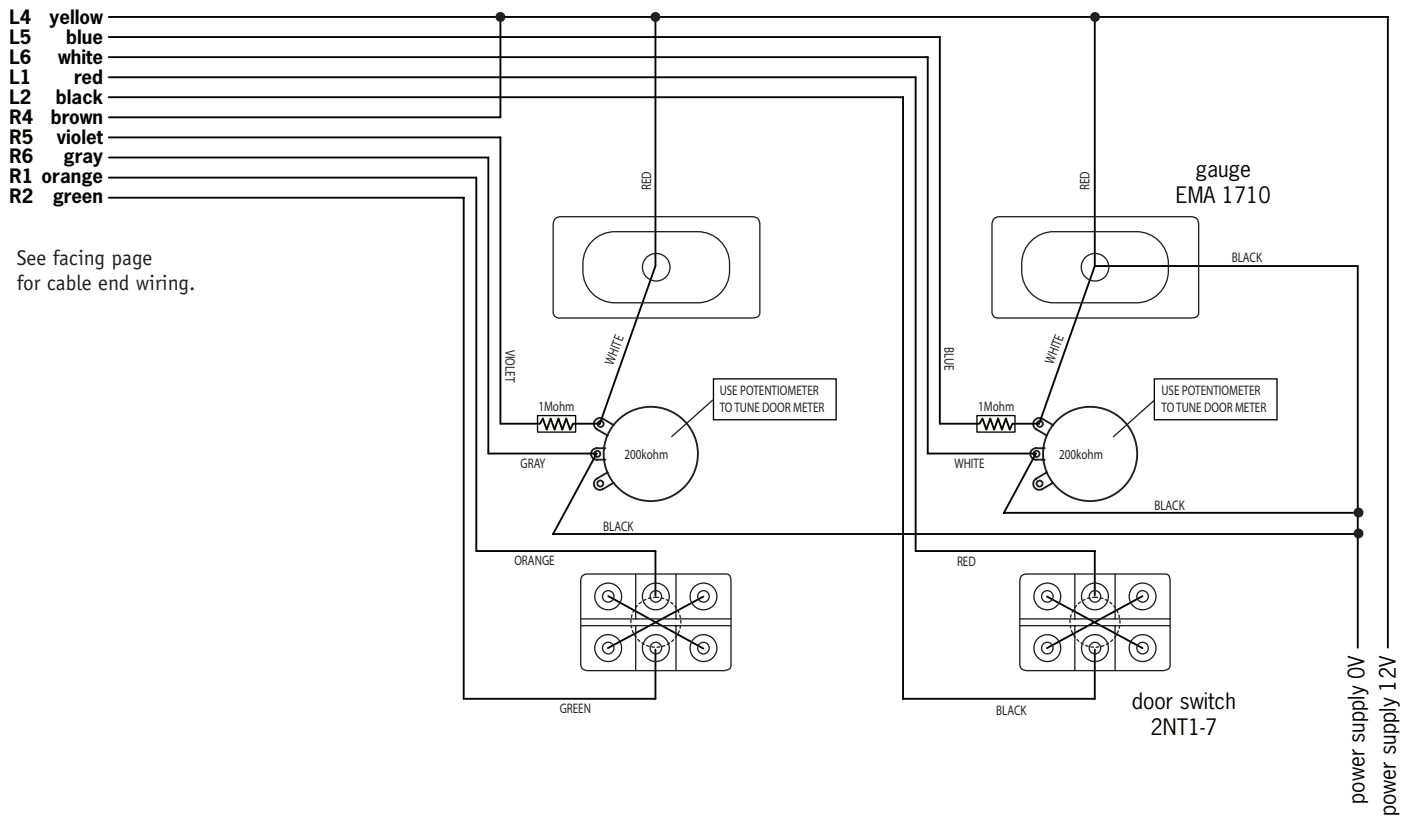




power feed wiring

See facing page for cable end wiring.

switch/panel meter wiring



See facing page for cable end wiring.

## Hub Removal

---

1. Remove wheel.
2. Remove grease cap or bearing buddy.
3. Remove cotter pin.
4. Unscrew the spindle nut counter-clockwise.
5. Remove spindle washer.
6. Remove hub from spindle.

## Seal inspection and replacement

---

1. Replace seals each time the hub is removed.
2. Pry the seal from the hub with a screwdriver.
3. Tap new seal in place.

## Bearing maintenance

---

1. Inspect the hub bearing for corrosion or wear. If any rust or wear is found on the bearing then replace.
2. If bearings are found to be in good condition, then cleaning and repacking the grease is all that is needed.

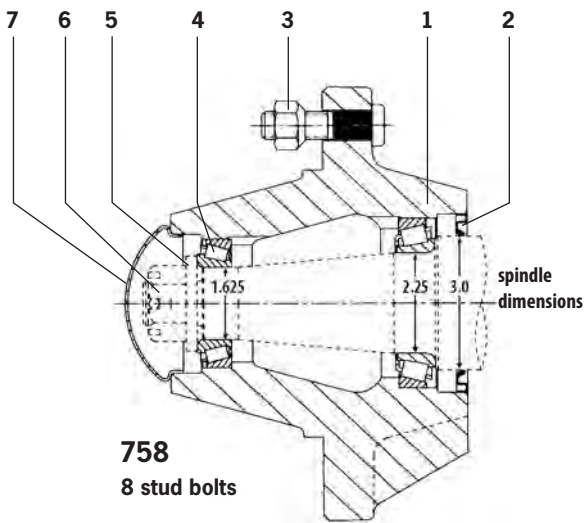
**Note: DO NOT spin bearings with compressed air.**

3. Hand pack each bearing individually using a premium water resistant wheel bearing grease.

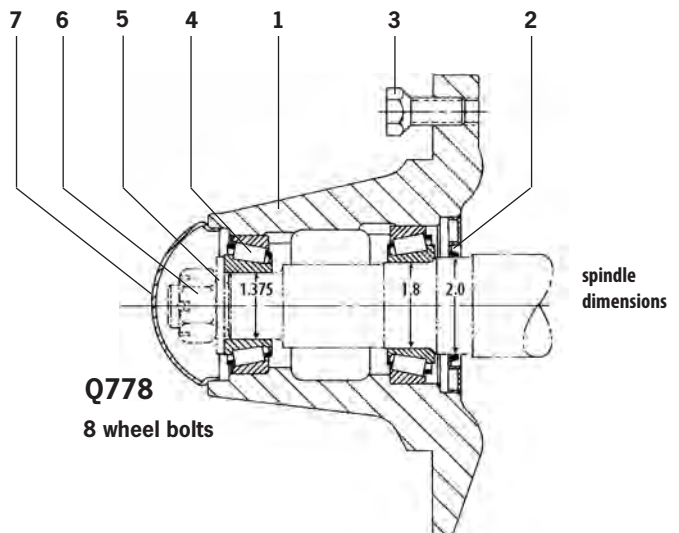
## Bearing adjustment- reinstall hub

---

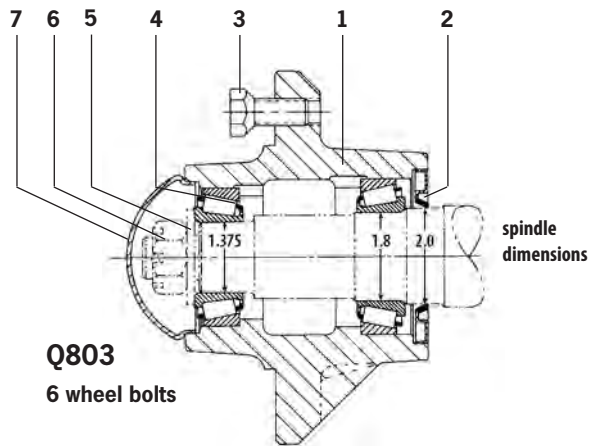
1. Before reinstalling the hub, inspect the spindle surface. The surface should be smooth and free of burrs or gouges. Use emery cloth to remove any burrs. Clean spindle surface and remove any grit.
2. Slide hub onto clean spindle, install hardened washer and loosely thread slotted nut onto spindle.
3. **Tighten the slotted nut to 50 ft-lbs. as you rotate the hub.** Rotating the hub while tightening the nut will seat the bearing on the spindle.
4. Loosen the slotted nut and finger tighten.
5. Insert a new cotter pin through the nut and spindle. If necessary loosen, ***never tighten***, nut to align the nut slot with the cotter pin hole. Bend one leg of the cotter pin over the end of the spindle and the other leg over the nut. Tap legs slightly to set: Cotter pin must be tight.
6. The hub should spin freely. If there is drag in the rotation: remove the cotter pin, loosen nut completely and repeat steps 3-5.
7. Install grease cap and mount wheel.



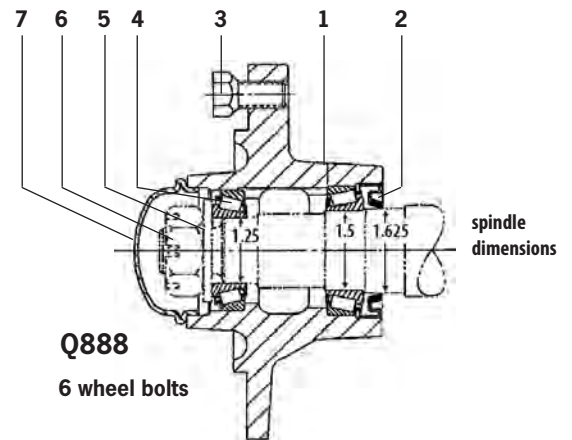
**758**  
8 stud bolts



**Q778**  
8 wheel bolts



**Q803**  
6 wheel bolts



**Q888**  
6 wheel bolts

No.	758		Q778		Q803		Q888		Description
	Part #	Qty	Part #	Qty	Part #	Qty	Part #	Qty	
1	HA-758400-8	1	HA-Q778	1	HA-Q803	1	HA-Q888	1	armstrong hub
2	387AS	1	25590	1	25590	1	JL69349	1	inner bearing cone
	382A	1	25520	1	25520	1	JL69310	1	inner bearing cup
	CR29968	1	CR20148	1	CR20148	1	CR16289	1	seal
			P101303	8	P101303	6	P101301	6	wheel bolt
3	P151407	8							stud bolt
	P201601	8							nut
4	LM501349	1	25877	1	25877	1	LM67048	1	outer bearing cone
	LM501310	1	25821	1	25821	1	LM67010	1	outer bearing cup
	0150175CP	1	0150175CP	1	0150175CP	1	0150175CP	1	cotter pin 5/32" x 1-3/4"
5	100WUSS	1	087WUSS	1	087WUSS	1	087WUSS	1	flat washer 7/8"
6	100NSL	1	087NSL	1	087NSL	1	087NSL	1	slotted nut 7/8"
7	P502008	1	615216	1	615216	1	612016	1	hub cap



# 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, whichever 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 prepaid, 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.

**Purchaser Name**

Purchase Date

Address

City

State/Zip

Model

Serial Number

**Dealer Name**

Sales person

Phone

Address

City

State/Zip