



ALAMO INDUSTRIAL

PO BOX 549
SEGUIN TX 78156-9967

Please fold (do not tear), tape, and drop in any mailbox.

**PLEASE FILL OUT OWNER WARRANTY REGISTRATION INFORMATION
SIGN, AND DROP LAST COPY IN ANY MAILBOX.**

IMPORTANT!
**TO PLACE THIS WARRANTY IN EFFECT,
THIS WARRANTY REGISTRATION MUST BE
FILLED OUT, SIGNED, AND MAILED WITHIN 30
DAYS OF DELIVERY DATE OF THIS MACHINE.
DEALER AND PURCHASER MUST SIGN.**

**ATTENTION: ANY CLAIM SUBMITTED TO ALAMO INDUSTRIAL®
WILL BE REFUSED UNTIL COMPLETED, SIGNED
WARRANTY REGISTRATION CARD IS ON FILE.**



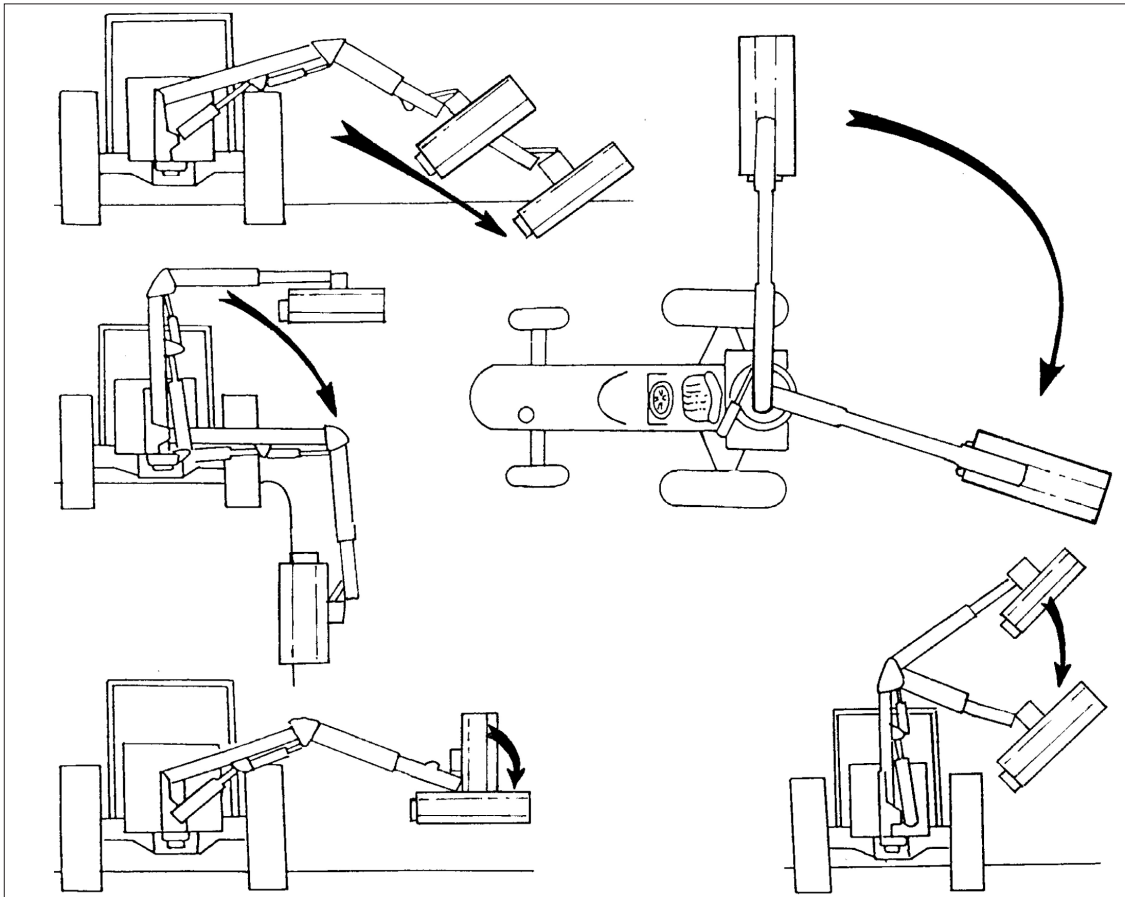
Double Swing Boom

Mower Booms and Heads

Rev 04-13

Part No. 02964279

Operators Manual with Parts Listing



ALAMO INDUSTRIAL

1502 E. Walnut
Seguin, Texas 78155
830-372-9595

¡ATENCIÓN!

LEA EL INSTRUCTIVO

Si No Lee Ingles, Pida Ayuda a Alguien
Que Si Lo Lea Para Que le Traduzca las
Medidas de Seguridad.



An Operator's Manual was shipped with the equipment in the Manual Canister. This Operator's Manual is an integral part of the safe operation of this machine and must be maintained with the unit at all times. **READ, UNDERSTAND, and FOLLOW** the Safety and Operation Instructions contained in this manual before operating the equipment. If the Operator's Manual is not with the equipment, contact your dealer or Alamo Industrial (800-356-6286) to obtain a Free copy before operating the equipment.

TO THE OWNER/OPERATOR/DEALER

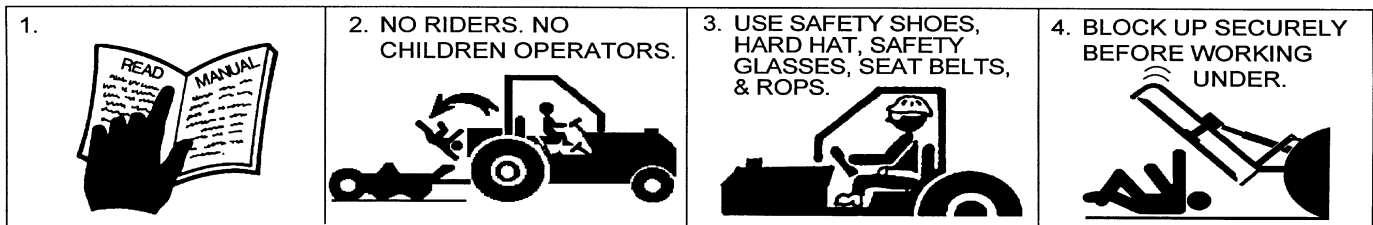
All implements with moving parts are potentially hazardous. There is no substitute for a cautious, safe-minded operator who recognizes the potential hazards and follows reasonable safety practices. The manufacturer has designed this implement to be used with all its safety equipment properly attached to minimize the chance of accidents.

BEFORE YOU START!!! Read the safety messages on the implement and shown in your manual. Observe the rules of safety and common sense!

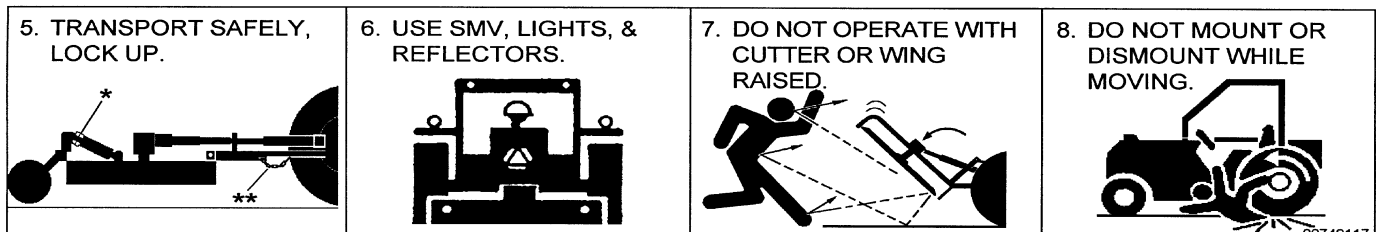


DANGER

FAILING TO FOLLOW SAFETY MESSAGES AND OPERATING INSTRUCTIONS CAN CAUSE SERIOUS BODILY INJURY OR EVEN DEATH TO OPERATOR AND OTHERS IN THE AREA.



1. Study and understand Operator's Manuals, Safety Signs, and Instructional Decals for tractor and implement to prevent misuse, abuse, and accidents. Practice before operating in a confined area or near passersby.
 - Learn how to stop engine suddenly in an emergency. Be alert for passersby and especially children.
2. Allow no children on or near implement or tractor. Allow no riders on tractor or implement. Falling off may cause serious injury or death from being run over by tractor or cutter or contact with rotating blades.
3. Operate only with tractor having Roll-Over Protective Structure (ROPS) and with seatbelt fastened securely and snugly to prevent injury and possible death from falling off or tractor overturn. Personal Protective Equipment such as Hard Hat, Safety Glasses, Safety shoes, and Ear Plugs are recommended.
4. Block up or support raised machine and all lifted components securely before putting hands or feet under or working underneath any lifted components to prevent crushing injury or death from sudden dropping or inadvertent operation of controls. Make certain area is clear before lowering or folding.
5. Before transporting, put Lift Lever in detent or full-lift position. Install *Cylinder Stops as Transport Blocks securely on pull-type and folding implements. Slow down when turning and on hillsides.
 - Attach **Safety Chain to cutter and towing unit securely. See Operator's Manual.
6. Make certain that SMV sign, Warning Lights, and Reflectors are clearly visible. Follow local traffic codes.
7. Never operate with Cutting Head raised if passersby, bystanders, or traffic are in the area to reduce possibility of injury or death from objects thrown by Blades under Guards or cutter structure.
8. Before dismounting, secure implement in transport position or lower to ground.
 - Put tractor in park or set brake, disengage PTO, stop engine, and remove key, and wait until noise of rotation has ceased to prevent entanglement in rotating parts which can cause injury or death.
 - Never mount or dismount a moving vehicle. Crushing from runover may cause injury or death.



WARRANTY INFORMATION:

Read and understand the complete Warranty Statement found in this Manual. Fill out the Warranty Registration Form in full and return it to Alamo within 30 Days. Make certain the Serial Number of the Machine is recorded on the Warranty Card and on the Warranty Form that you retain.

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SAFETY SECTION

SAFETY

A safe and careful operator is the best operator . Safety is of primary importance to the manufacturer and should be to the owner/operator Most accidents can be avoided by being aware of your equipment, your surroundings, and observing certain precautions. The first section of this manual includes a list of Safety Messages that, if followed, will help protect the operator and bystanders from injury or death. Read and understand these Safety Messages before assembling, operating or servicing this implement. This equipment should only be operated by those persons who have read the Manual, who are responsible and trained, and who know how to do so safely and responsibly

The Safety Alert Symbol combined with a Signal Word, as seen below, is used throughout this manual and on decals which are attached to the equipment. The Safety Alert Symbol means: "ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!" The Symbol and Signal Word are intended to warn the owner/operator of impending hazards and the degree of possible injury faced when operating this equipment..

Practice all usual and customary safe working precautions and above all---remember safety is up to YOU. Only YOU can prevent serious injury or death from unsafe practices.

CAUTION!



The lowest level of Safety Message; warns of possible injury. Decals located on the Equipment with this Signal Word are Black and Yellow.

WARNING!



Serious injury or possible death! Decals are Black and Orange.

DANGER!



Imminent death/critical injury. Decals are Red and White. (SG-1)

READ, UNDERSTAND, and FOLLOW the following Safety Messages. Serious injury or death may occur unless care is taken to follow the warnings and instructions stated in the Safety Messages. Always use good common sense to avoid hazards.

SAFETY INSTRUCTIONS



PELIGRO!



Si no lee Ingles, pida ayuda a alguien que si lo lea para que le traduzca las medidas de seguridad. (SG-3)



(SG-2)

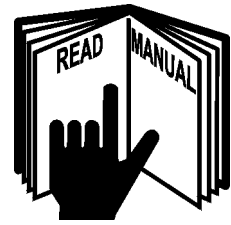
¡LEA EL INSTRUCTIVO!

SAFETY

DANGER!



Never operate the Tractor or Implement until you have read and completely understand this Manual, the Tractor Operator's Manual, and each of the Safety Messages found in the Manual or on the Tractor and Implement. Learn how to stop the tractor engine suddenly in an emergency. Never allow inexperienced or untrained personnel to operate the Tractor and Implement without supervision. Make sure the operator has fully read and understood the manuals prior to operation. (SG-4)



WARNING!

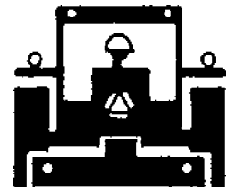


Always maintain the safety decals in good readable condition. If the decals are missing, damaged, or unreadable, obtain and install replacement decals immediately. (SG-5)

WARNING!



Make certain that the "Slow Moving Vehicle" (SMV) sign is installed in such a way as to be clearly visible and legible. When transporting the Equipment use the Tractor flashing warning lights and follow all local traffic regulations. (SG-6)



WARNING!



Operate this Equipment only with a Tractor equipped with an approved roll-over-protective system (ROPS). Always wear seat belts. Serious injury or even death could result from falling off the tractor--particularly during a turnover when the operator could be pinned under the ROPS. (SG-7)



WARNING!

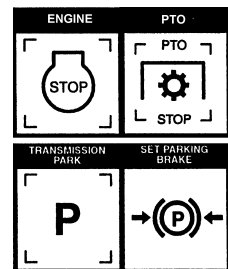


Do not modify or alter this Implement. Do not permit anyone to modify or alter this Implement, any of its components or any Implement function. (SG-8)

DANGER!



BEFORE leaving the tractor seat, always engage the brake and/or set the tractor transmission in parking gear, disengage the PTO, stop the engine, remove the key, and wait for all moving parts to stop. Place the tractor shift lever into a low range or parking gear to prevent the tractor from rolling. Never dismount a Tractor that is moving or while the engine is running. Operate the Tractor controls from the tractor seat only. (SG-9)



DANGER!



Never allow children or other persons to ride on the Tractor or Implement. Falling off can result in serious injury or death. (SG-10)



DANGER!



Never allow children to operate or ride on the Tractor or Implement. (SGM-11)



WARNING!



Do not mount the Tractor while the tractor is moving. Mount the Tractor only when the Tractor and all moving parts are completely stopped. (SG-12)



SAFETY

DANGER!



Start tractor only when properly seated in the Tractor seat. Starting a tractor in gear can result in injury or death. Read the Tractor operators manual for proper starting instructions. (SG-13)



DANGER!



Never work under the Implement, the framework, or any lifted component unless the Implement is securely supported or blocked up to prevent sudden or inadvertent falling which could cause serious injury or even death. (SG-14)



DANGER!



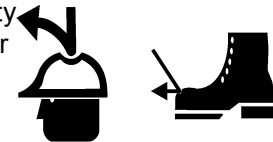
Do not operate this Equipment with hydraulic oil leaking. Oil is expensive and its presence could present a hazard. Do not check for leaks with your hand! Use a piece of heavy paper or cardboard. High-pressure oil streams from breaks in the line could penetrate the skin and cause tissue damage including gangrene. If oil does penetrate the skin, have the injury treated immediately by a physician knowledgeable and skilled in this procedure. (SG-15)



WARNING!



The operator and all support personnel should wear hard hats, safety shoes, safety glasses, and proper hearing protection at all times for protection from injury including injury from items thrown by the equipment. (SG-16)



CAUTION!



PROLONGED EXPOSURE TO LOUD NOISE MAY CAUSE PERMANENT HEARING LOSS! Tractors with or without an Implement attached can often be noisy enough to cause permanent hearing loss. We recommend that you always wear hearing protection if the noise in the Operator's position exceeds 80db. Noise over 85db over an extended period of time will cause severe hearing loss. Noise over 90db adjacent to the Operator over an extended period of time will cause permanent or total hearing loss. *Note:* Hearing loss from loud noise [from tractors, chain saws, radios, and other such sources close to the ear] is cumulative over a lifetime without hope of natural recovery. (SG-17)

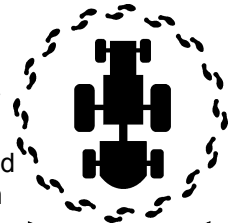


SAFETY

WARNING!



Periodically inspect all moving parts for wear and replace when necessary with authorized service parts. Look for loose fasteners, worn or broken parts, 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. (SG-21)



WARNING!



Never attempt to lubricate, adjust, or remove material from the Implement while it is in motion or while tractor engine is running. Make sure the tractor engine is off before working on the Implement.

(SG-20)



WARNING!

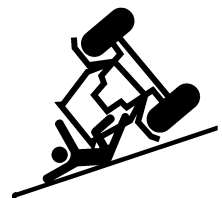


Transport only at safe speeds. Serious accidents and injuries can result from operating this equipment at unsafe speeds. Understand the Tractor and Implement and how it handles before transporting on streets and highways. Make sure the Tractor steering and brakes are in good condition and operate properly.



Before transporting the Tractor and Implement, determine the safe transport speeds for you and the equipment. Make sure you abide by the following rules:

1. Test the tractor at a slow speed and increase the speed slowly. Apply the Brakes smoothly to determine the stopping characteristics of the Tractor and Implement. As you increase the speed of the Tractor the stopping distance increases. Determine the maximum safe transport speed for you and this Equipment.
2. Test the equipment at a slow speed in turns. Increase the speed through the turn only after you determine that it is safe to operate at a higher speed. Use extreme care and reduce your speed when turning sharply to prevent the tractor and implement from turning over. Determine the maximum safe turning speed for you and this equipment before operating on roads or uneven ground.
3. Only transport the Tractor and Implement at the speeds that you have determined are safe and which allow you to properly control the equipment.



Be aware of the operating conditions. Do not operate the Tractor with weak or faulty brakes. When operating down a hill or on wet or rain slick roads, the braking distance increases: use extreme care and reduce your speed. When operating in traffic always use the Tractor's flashing warning lights and reduce your speed. Be aware of traffic around you and watch out for the other guy. (SG-19)

WARNING!



Always read carefully and comply fully with the manufacturers instructions when handling oil, solvents, cleansers, and any other chemical agents. (SG-22)



SAFETY

DANGER!



Never run the tractor engine in a closed building or without adequate ventilation. The exhaust fumes can be hazardous to your health.

(SG-23)

DANGER!



KEEP AWAY FROM ROTATING ELEMENTS to prevent entanglement and possible serious injury or death.

(SG-24)



DANGER!



Never allow children to play on or around Tractor or Implement. Children can slip or fall off the Equipment and be injured or killed. Children can cause the Implement to shift or fall crushing themselves or others. (SG-25)

WARNING!

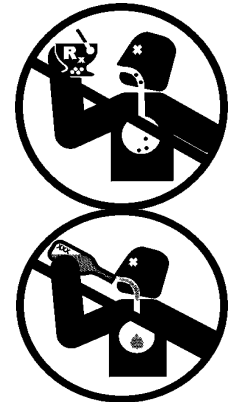


Do not exceed the rated PTO speed for the Implement. Excessive PTO speeds can cause Implement driveline or blade failures resulting in serious injury or death. (SG-26)

DANGER!



NEVER use drugs or alcohol immediately before or while operating the Tractor and Implement. Drugs and alcohol will affect an operator's alertness and coordination and therefore affect the operator's ability to operate the equipment safely. Before operating the Tractor or Implement, an operator on prescription or over-the-counter medication must consult a medical professional regarding any side effects of the medication that would hinder their ability to operate the Equipment safely. **NEVER** knowingly allow anyone to operate this equipment when their alertness or coordination is impaired. Serious injury or death to the operator or others could result if the operator is under the influence of drugs or alcohol. (SG-27)



WARNING!



Mow only in conditions where you have clear visibility in daylight or with adequate artificial lighting. Never mow in darkness or foggy conditions where you cannot clearly see at least 100 yards in front and to the sides of the tractor and mower. Make sure that you can clearly see and identify passersby, steep slopes, ditches, drop-offs, overhead obstructions, power lines, debris and foreign objects. If you are unable to clearly see this type of items discontinue mowing. (SGM-1)

DANGER!



There are obvious and hidden potential hazards in the operation of this Mower. **REMEMBER!** This machine is often operated in heavy brush and in heavy weeds. The Blades of this Mower can throw objects if shields are not properly installed and maintained. Serious injury or even death may occur unless care is taken to insure the safety of the operator, bystanders, or passersby in the area. Do not operate this machine with anyone in the immediate area. Stop mowing if anyone is within 100 yards of mower. (SGM-2)

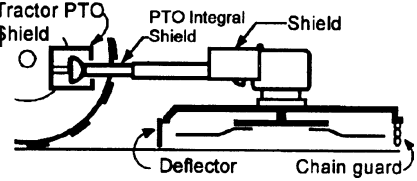


SAFETY

DANGER!



All Safety Shields, Guards and Safety devices including (but not limited to) - the Deflectors, Chain Guards, Steel Guards, Gearbox Shields, PTO integral shields, and Retractable Door Shields should be used and maintained in good working condition. All safety devices should be inspected carefully at least daily for missing or broken components. Missing, broken, or worn items must be replaced at once to reduce the possibility of injury or death from thrown objects, entanglement, or blade contact. (SGM-3)



DANGER!



The rotating parts of this machine have been designed and tested for rugged use. However, the blades could fail upon impact with heavy, solid objects such as metal guard rails and concrete structures. Such impact could cause the broken objects to be thrown outward at very high velocities. To reduce the possibility of property damage, serious injury, or even death, never allow the cutting blades to contact such obstacles. (SGM-4)

WARNING!



Extreme care should be taken when operating near loose objects such as gravel, rocks, wire, and other debris. Inspect the area before mowing. Foreign objects should be removed from the site to prevent machine damage and/or bodily injury or even death. Any objects that cannot be removed must be clearly marked and carefully avoided by the operator. Stop mowing immediately if blades strike a foreign object. Repair all damage and make certain rotor or blade carrier is balanced before resuming mowing. (SGM-5)



WARNING!



Many varied objects, such as wire, cable, rope, or chains, can become entangled in the operating parts of the mower head. These items could then swing outside the housing at greater velocities than the blades. Such a situation is extremely hazardous and could result in serious injury or even death. Inspect the cutting area for such objects before mowing. Remove any like object from the site. Never allow the cutting blades to contact such items. (SGM-6)

WARNING!



Mow at the speed that you can safely operate and control the tractor and mower. Safe mowing speed depends on terrain condition and grass type, density, and height of cut. Normal ground speed range is from 0 to 5 mph. Use slow mowing speeds when operating on or near steep slopes, ditches, drop-offs, overhead obstructions, power lines, or when debris and foreign objects are to be avoided. (SGM-7)

WARNING!

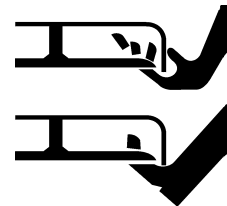


Avoid mowing in reverse direction when possible. Check to make sure there are no persons behind the mower and use extreme care when mowing in reverse. Mow only at a slow ground speed where you can safely operate and control the tractor and mower. Never mow an area that you have not inspected and removed debris or foreign material. (SGM-8)

WARNING!



Do not put hands or feet under mower decks. Blade Contact can result in serious injury or even death. Stay away until all motion has stopped and the decks are securely blocked up. (SGM-9)



SAFETY

DANGER!



Replace bent or broken blade with new blades. NEVER ATTEMPT TO STRAIGHTEN OR WELD ON BLADES SINCE THIS WILL LIKELY CRACK OR OTHERWISE DAMAGE THE BLADE WITH SUBSEQUENT FAILURE AND POSSIBLE SERIOUS INJURY FROM THROWN BLADES. (SGM-10)

WARNING!



Do not mow with two machines in the same area except with Cab tractors with the windows closed. (SGM-11)

DANGER!



Rotary Mowers are capable under adverse conditions of throwing objects for great distances (100 yards or more) and causing serious injury or death. Follow safety messages carefully.

STOP MOWING IF PASSERSBY ARE WITHIN 100 YARDS UNLESS:

- Front and Rear Deflectors are installed and in good, working condition;
- Mower Head is running close to and parallel to the ground without exposed Blades;
- Passersby are outside the existing thrown-object zone;
- All areas have been thoroughly inspected and all foreign material such as rocks, cans, glass, and general debris has been removed.

NOTE:

Where there are grass and weeds high enough to hide debris that could be struck by the blades, the area should be: inspected and large debris removed, mowed at an intermediate height, inspected closely with any remaining debris being removed, and mowed again at desired final height.(SBM-1)

DANGER!



Use extreme caution when raising the Mower head. Stop the Blades from turning when the Mower Head is raised and passersby are within 100 yards. Raising the Mower head exposes the Cutting Blades which creates a potentially serious hazard and can cause serious injury by objects thrown from the Blades or by contact with the Blades. (SBM-2)

DANGER!



Be particularly careful in transport. The Mower has raised the center of gravity for the tractor and has increased the possibility of overturn on curves or go up slopes only at low speed and using a gradual turning angle. Slow down on rough or uneven surfaces.(SBM-3)



WARNING!



Never Leave the mower unattended while the head is in the raised position. The mower could fall causing serious injury to anyone who might inadvertently be under the mower (SBM-4)



SAFETY

WARNING!



The rotating parts of this machine continue to rotate even after the Tractor has been turned off. The operator should remain in his seat for 60 seconds after the brake has been set, the PTO disengaged, the tractor turned off, and all evidence of rotation has ceased. (SBM-5)

“Wait a minute...Save a life!”

WARNING!

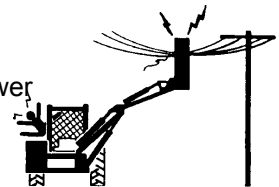


Relieve hydraulic pressure prior to doing any maintenance or repair work on the Implement. Place the Mower Head on the ground or securely supported on blocks or stands, disengage the PTO, and turn off the engine. Push and pull the control Levers or Joystick several times to relieve pressure prior to starting any maintenance or repair work. (SBM-6)

DANGER!



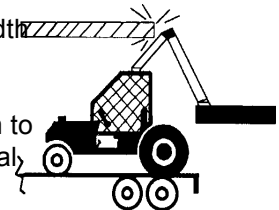
Always keep a careful lookout and use extreme care when working around overhead obstructions. Never allow the Mower head or boom within 10 feet of any power line. When working close to overhead power lines consult your electric company for a safe code of operation. (SBM-7)



DANGER!



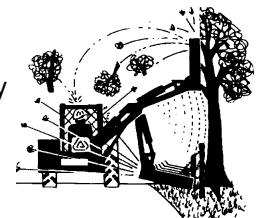
When transporting Boom Mower on a truck or trailer, the height or width may exceed legal limits when the boom is in the transport position. Contact with side or overhead structures or power lines can cause property damage or serious injury or death. If necessary lower boom to reduce height and/or remove mowing head to reduce width to the legal limits. (SBM-8)



DANGER!



Never operate the Tractor and Mower Unit without an OPS (Operators Protective Structure) or Cab to prevent injury from objects thrown from ground or from overhead trimming. Stop mowing if workers or passersby are within 100 yards. (SBM-9)



DANGER!



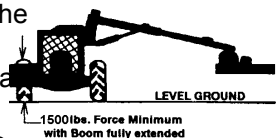
The center of Gravity of Tractors equipped with a Rear-Mounted Boom Mower is shifted to the rear and removes weight from the front wheels. Add front ballast until at least 20% of the tractors weight is on the front wheels to prevent rearing up, loss of steering control, and possibly injury. (SBM-10)



DANGER!



Each Rear Wheel must have a minimum of 1500 pound contact with the surface to prevent lateral instability and possible tip-over which could result in serious bodily injury or even death. Widen the wheel tread and add weights if needed. Refer to the mounting instructions or call Customer Service if you need assistance with Counterweight Procedure. (SBM-11)



SAFETY

WARNING!



Be particularly careful when transporting the Implement with the Tractor. Turn curves or go up hills only at a low speed and using a gradual steering angle. Rear mounted implements move the center of gravity to the rear and remove weight from the front wheels. Make certain, by adding front ballast, that at least 20% of the tractor's weight is on the front wheels to prevent rearing up, loss of steering control or Tractor tip-over. Slow down on rough or uneven surfaces to prevent loss of steering control which could result in property damage or possible injury. Do not transport unless 3-Point lift lever is fully raised and in the latched transport position. Dropping implement in transport can cause serious damage to the tractor and/or Implement and possibly cause the operator or others to be injured or killed. (S3PT-2)

DANGER!



A rear Implement can fall if not properly supported. Always use the stand on the front hitch (if equipped) or block up securely to prevent falling and possible crushing injury and/or other injury from holding or lifting heavy components. Use the stand to stabilize the implement during storage. (S3PT-3)

WARNING!



The rotating parts of this machine continue to rotate even after the PTO has been turned off. The operator should remain in his seat for 60 seconds after the brake has been set, the PTO disengaged, the tractor turned off, and all evidence of rotation has ceased. (3PT-10)

“Wait a minute...Save a life!”

DANGER!



This Implement is wider than the Tractor. Be careful when operating or transporting this equipment to prevent the Implement from running into or striking sign posts, guard rails, concrete abutments or other solid objects. Such an impact could cause the Implement and Tractor to pivot violently resulting in loss of steering control, serious injury, or even death. Never allow the Implement to contact obstacles. (S3PT-12)

PARTS INFORMATION

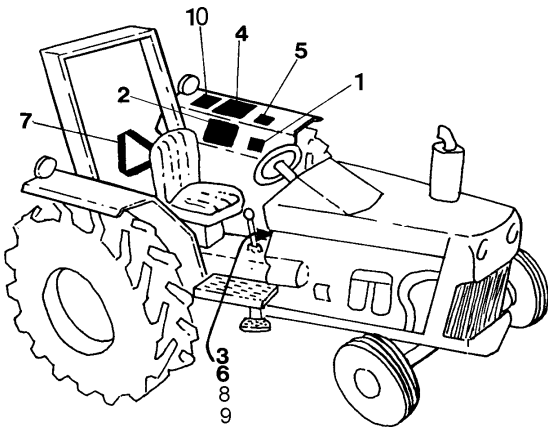
Alamo Industrial mowers use balanced and matched system components for blade carriers, blades, cuttershafts, knives, knife hangers, rollers, drivetrain components, and bearings. These parts are made and tested to Alamo Industrial specifications. Non-genuine "will fit" parts do not consistently meet these specifications. The use of "will fit" parts may reduce mower performance, void mower warranties, and present a safety hazard. Use genuine Alamo Industrial mower parts for economy and safety.

(SPAM-1)

SEE YOUR ALAMO DEALER

In addition to the design and configuration of this Implement, including Safety Signs and Safety 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 the machine. Refer also to Safety Messages and operation instruction in each of the appropriate sections of the Tractor and Equipment Manuals. Pay close attention to the Safety Signs affixed to the Tractor and Equipment. (SG-18)

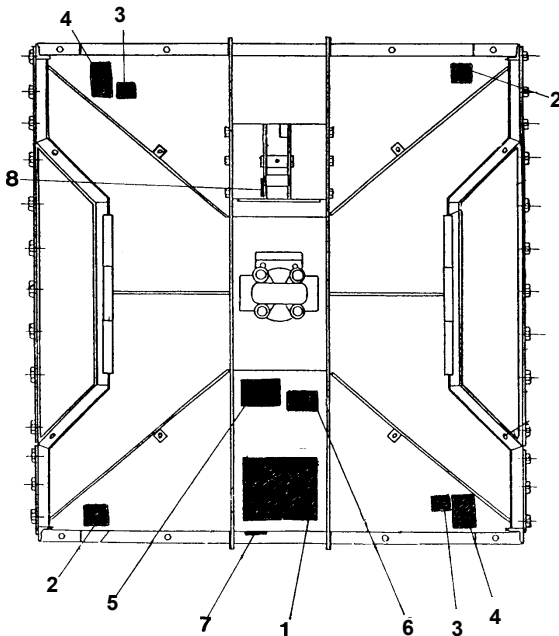
SAFETY



ON TRACTOR

ITEM	PART NO.	QTY	TYPE	DESCRIPTION
1	00749117	1	DANGER	Multi-Hazard
2	02958241	1	DANGER	Boom Mower Multi-Hazard
3	02963197	1	DANGER	Reversing Rotary Head
4	02963255	1	DANGER	Motor Rotation Revers. Valve
5	02963200	1	WARNING	Rotating Flail Axe Head
6	02962748	1	INSTRUC	Solenoid ON-OFF
7	03200347	1	REFLCTR	SMV Emblem
8	02962107	1	INSTRUC	Valve Oper. Plate (Mounted on Control Box)
9	02965093	1	INSTRUC	Do Not Overspeed Engine
10	02965252	1	WARNING	Hose Burst

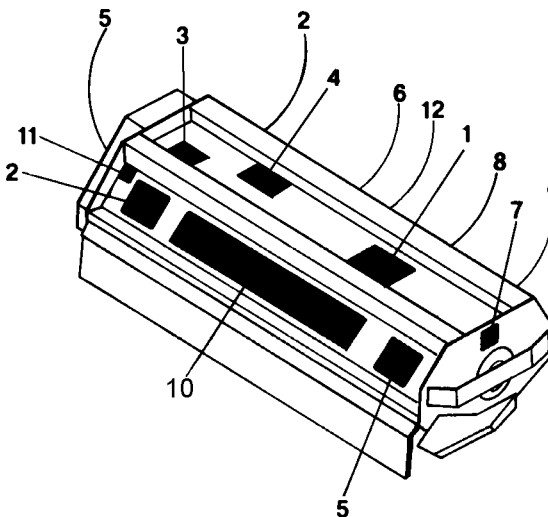
☐ = Furnished by tractor manufacturer



ON ROTARY MOWER HEADS

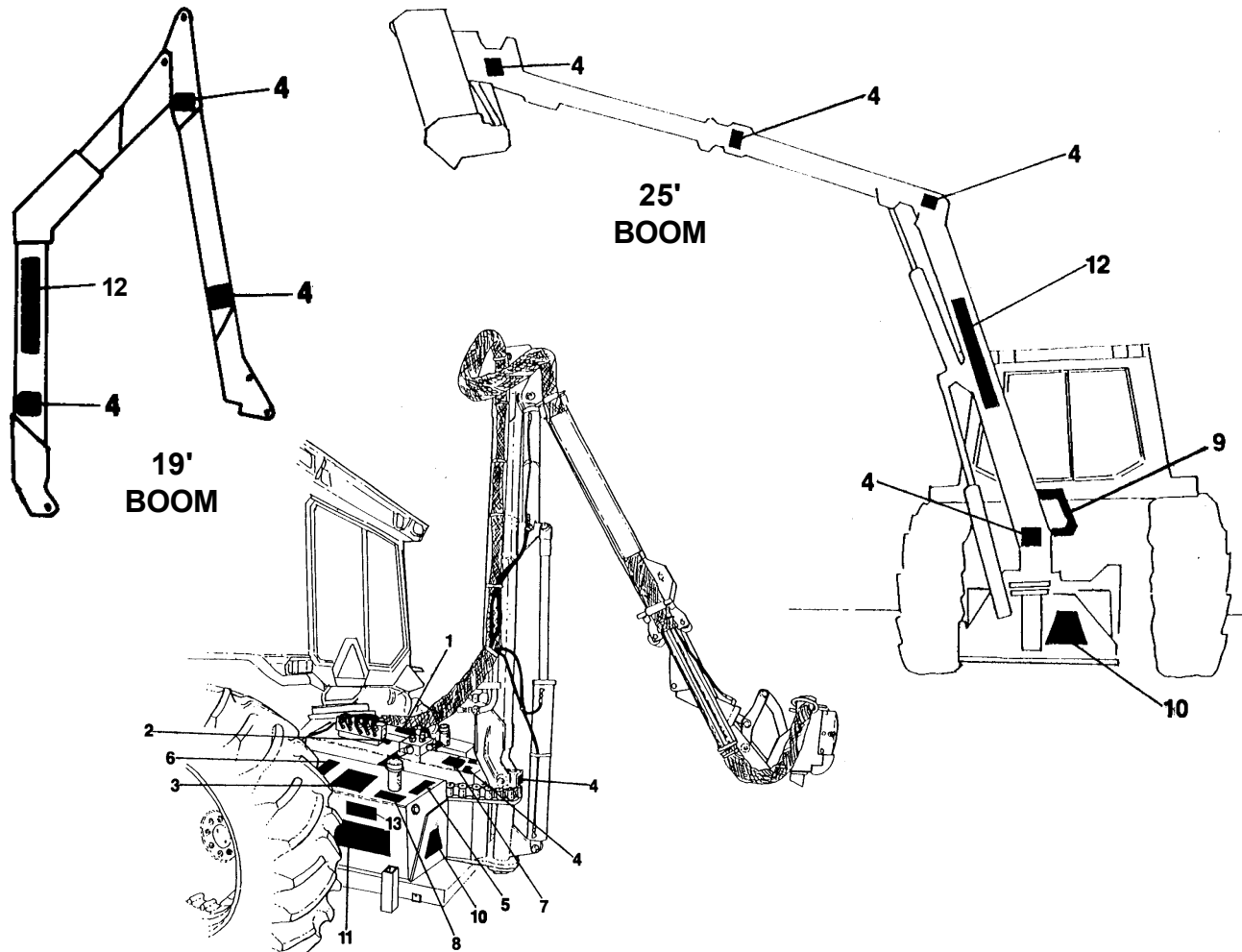
ITEM	PART NO.	QTY	TYPE	DESCRIPTION
1	00749117	1	DANGER	Multi-Hazard
2	00756485	2	DANGER	Cutting Blds, Thrown Obj.
3	02963197	1	DANGER	Reversing Rotary Head
4	02963263	2	DANGER	Close Shield, Rotation
5	00756007	1	WARNING	Use shields/Guards
6	02925100	1	INSTRUCT	Genuine Parts
7	00757141	1	LOGO	Alamo Group (5 x 19)
8	nfs	1	PLATE	Head Serial Plate

ON FLAIL MOWER HEADS



ITEM	PART NO.	QTY	TYPE	DESCRIPTION
1	002369	1	DANGER	Multi-Hazard
2	00756485	2	DANGER	Cutting Blds, Thrown Obj.
3	02963263	1	DANGER	Close Shield Rotation
4	02963255	1	DANGER	Reversing Motor Rotation
5	00758194	1	DANGER	Pinch Point - V-Belt
6	00756007	1	WARNING	Use Shields/Guards
7	02963200	1	WARNING	Rotating Flail Axe Head
8	03200432	1	INSTRUCT	Genuine Parts Flail
9	000108	1	INSTRUC	Operating Instruc., Flail
10	00757141	1	LOGO	Alamo Group(5 x 19)
11	nfs	1	PLATE	Head Serial Plate
12	02965141	1	DANGER	Boom Flails

SAFETY



ON TANK/MAIN FRAME/BOOM

ITEM	PART NO.	QTY	TYPE	DESCRIPTION
1	00749117	1	DANGER	Multi-Hazard
2	00756059	1	DANGER	Leak Detection
3	02958241	1	DANGER	Boom Mower Multi-Hazard
4	02962764	6	DANGER	Pinch Point, Scissors
5	02962765	2	DANGER	Crushing & Pinch Point
6	02971123	1	WARNING	Pressurized Tank
7	02925100	1	INSTRUCT	Genuine Parts
8	02966305	1	INSTRUC	Use Universal Tractor Hydraulic Oil
9	03200347	*	SMV	Slow Moving Vehicle
10	001650	2	LOGO	Alamo Group
11	00757139	2	LOGO	Alamo Group(A TK Product)
12	00757141	1	LOGO	Alamo Group(5 x 19)
	nfs	1	PLATE	Serial Plate(Not Shown)
13	02965262	1	WARNING	Hose Burst

* Furnished by tractor manufacturer

SAFETY

▲ **WARNING: PRESSURIZED TANK**

- ATTENTION: Oil Filler Cap Is Also the PRESSURE RELIEF CAP
- Remove Cap slowly to relieve pressure before removing Cap completely.
- Stay clear to prevent being scalded with hot oil that may spray out of tank that is still pressurized and may cause serious injury to eyes, face, and exposed skin.

02971123

02971123 Pressurized Tank



02963201 AG Logo

00749117 Multi-Hazard Decal
Located on Inside Front Cover

▲ **WARNING**

USE PAPER OR CARDBOARD TO CHECK FOR LEAKS. **NEVER USE YOUR HAND.** IF OIL PENETRATES SKIN, GANGRENE OR OTHER SERIOUS INJURY COULD OCCUR. **GET IMMEDIATE MEDICAL ATTENTION.**
See Operator's Manual.



00756059

00756059 Leak Detection

ATTENTION!

TO PREVENT PREMATURE HYDRAULIC COMPONENT FAILURE, DO NOT OVERSPEED ENGINE. WHEN USING THE MOWER ATTACHMENT, OPERATE TRACTOR AT THE ENGINE SPEED WHICH WILL DELIVER 540 PTO RPM ON THE TACHOMETER. OVERSPEEDING THE ENGINE AND PUMP WHEN OPERATING THE MOWER WILL OVERHEAT AND RAPIDLY RUIN THE OIL WHICH WILL DECREASE THE LIFE OF HYDRAULIC COMPONENTS

02965093

02965093 Proper Speed



00757141 AG Logo by TK

OPERATING INSTRUCTIONS

This Mower will give long satisfactory service with a minimum of upkeep cost if the following procedure is followed:

1. KEEP PROPERLY LUBRICATED
 - a. BEARINGS - Use a lithium-based #2 Bearing Grease such as Shell Alvania #2, Sinclair Litholene, Mobil BRB, Texaco Marfak #2, Standard Stanolith #57, etc.
 - b. GEARBOX - Use SAE EP90 oil.
2. KEEP FASTENERS TIGHTENED
 - a. Normally, if Fasteners loosen after being properly tightened, the Mower is vibrating more than is acceptable and permanent damage can occur rapidly.
 - b. See Bolt Chart for proper tightening torque.
3. KEEP THE MOWER RUNNING SMOOTHLY AND QUIETLY.
 - a. After hitting any obstruction and at the first sign of any unusual vibration or noise, STOP THE MOWER, and do not operate again until the problem is found and corrected. VIBRATION CAN DESTROY THE ENTIRE MOWER IN A SHORT TIME.
 - b. Inspect for broken or missing Knives, Knives restricted from swinging freely, worn Bearings, a bent Shaft, or other conditions causing out-of-balance rotation.
 - c. See Bulletin #5 for details on causes and correction of vibration of Flail Mowers.

NOTICE: Warranty does not cover damage resulting from the failure to observe these reasonable procedures.

000108

000108 Flail Instructions

▲ **WARNING**

PINCH POINTS



02962764

02962764 Pinch Points

ATTENTION

SERVICE HYDRAULIC SYSTEM
WITH UNIVERSAL TRACTOR
HYDRAULIC OIL.

PART NUMBER 02966307.

02966305

02966305 Use Universal Tractor Hydraulic Oil

02960572 Use 15W-40

IMPORTANT

For your safety and to guarantee optimum product reliability, always use Genuine ALAMO INDUSTRIAL replacement parts. The use of inferior "will-fit" parts will void Warranty of your ALAMO INDUSTRIAL implement and may cause premature or catastrophic failure which can result in serious injury or death. If you have any questions concerning the repair parts you are using, contact ALAMO INDUSTRIAL, 1502 E. Walnut Seguin, TX 78155 (830) 372-3551.



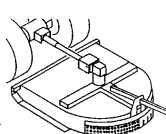
02925100

02925100 Genuine Parts

▲ **WARNING**

WHENEVER THIS MACHINE IS OPERATED IN ANY AREA WHERE THROWN OBJECTS COULD INJURE PERSONS OR PROPERTY, SAFETY SHIELDING MUST BE INSTALLED AND IN GOOD REPAIR TO REDUCE THE POSSIBILITY OF INJURY FROM THROWN OBJECTS.

CHAIN GUARDS, SOLID BANDS, RUBBER FLAPS, AND OTHER GUARDS ARE SUBJECT TO WEAR AND LOST OR BROKEN PIECES. IT IS THE OPERATOR'S RESPONSIBILITY TO SEE THAT THESE ITEMS OF SAFETY EQUIPMENT ARE REPAIRED AND/OR REPLACED AS SOON AS DAMAGE OCCURS, OR YOU WILL BE OPERATING MACHINE THAT IS IN AN UNSAFE CONDITION.



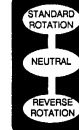
00756007

00756007 Use/Shields/Guards

▲ **DANGER**

REVERSING MOTOR ROTATION

NEVER MOVE VALVE LEVER TO REVERSE OPERATING DIRECTION UNTIL BLADE ROTATION HAS STOPPED. A SUDDEN REVERSAL OF ROTATION CAN CAUSE CATASTROPHIC FAILURE OF HYDRAULIC PARTS AND MAY CAUSE BODILY INJURY FROM HOT OIL OR THE SUDDEN DROPPING OF BOOM AND/OR HEAD.



CUTTER-HEAD OPERATION

02963255

02963255 Rev. Rotation Decal

SAFETY

DANGER

CRUSHING AND PINCH POINTS



MOVING MACHINERY PARTS CAN PINCH OR CRUSH OR FALL- WHICH MAY CAUSE INJURY OR DEATH.

02962765

02962765 Multi-Hazard Pinch Points

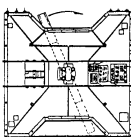
DANGER

CLOSE SHIELD & REVERSE BLADE ROTATION

1. OPEN AND LATCH SHIELD IN MOWING DIRECTION.
2. CLOSE AND LATCH OPPOSITE SHIELD (REAR).
3. NEVER CUT WITH BOTH SHIELDS OPEN.
4. SET ROTATION TO TURN BLADE FROM TRACTOR TOWARD OPEN SHIELD TO PREVENT THROWING OBJECTS ONTO TRACTOR AND OPERATOR. THROWN OBJECTS CAN CAUSE INJURY. KEEP CLEAR.
5. STOP MOWING IF ANYONE COMES WITHIN RANGE OF THROWN OBJECTS.

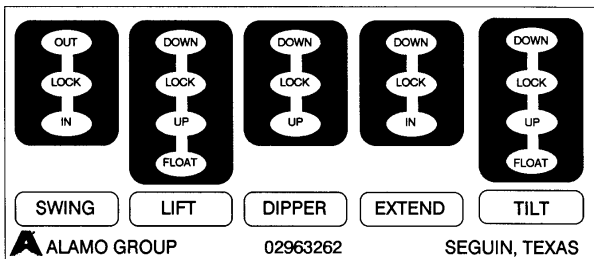
TRACTOR SIDE

MOWING DIRECTION



02963263

02963263 Close Shield Rotation

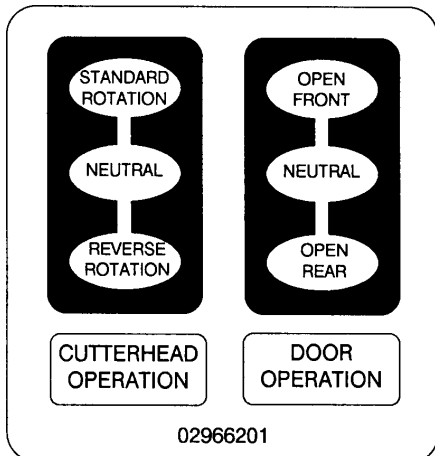


ALAMO GROUP

02963262

SEGUIN, TEXAS

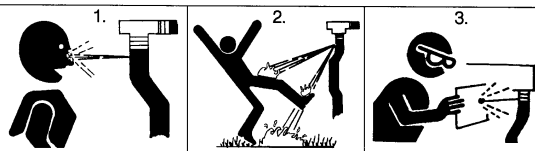
02963262 Valve Operating Plate



02966201

02966201 Cutter Valve & Door Operation

WARNING!



Failure to INSPECT and REPAIR or REPLACE Hoses may allow worn Hoses to rupture SUDDENLY and VIOLENTLY with resulting serious BODILY INJURY from SCALDING or FIRE with resulting BURN INJURY or DEATH.

1. Frayed, torn, or crimped Hoses may RUPTURE and spray BOILING OIL onto Operator and cause serious BODILY INJURY from scalding.
2. Boiling Oil may spray onto HOT TRACTOR PARTS and CATCH FIRE with SEVERE BURN INJURY or DEATH.
3. Use Paper or Cardboard to check for leaks. NEVER USE YOUR HAND. If oil penetrates skin, gangrene or other serious injury could occur. GET IMMEDIATE MEDICAL ATTENTION. See Manual.

KEEP SHIELDS OVER HYDRAULIC COMPONENTS IN PLACE. Inspect Hoses daily and repair or replace when needed. Stop all leaks. Repair or replace hoses as indicated to prevent unexpected failure and possible serious injury to operator or bystander.

02965262

02965262 Hydraulic Hose Burst

DANGER

1. EACH REAR WHEEL MUST HAVE A MINIMUM OF 1500 POUNDS CONTACT WITH THE SURFACE TO PREVENT LATERAL INSTABILITY AND POSSIBLE TIP-OVER WITH BODILY INJURY. WIDEN WHEEL TREAD AND ADD WEIGHTS IF NEEDED. SEE MANUAL OR CALL CUSTOMER SERVICE FOR COUNTERWEIGHT PROCEDURE.

2. TRANSPORT CAREFULLY! SLOW DOWN EVEN MORE ON SLOPES AND WHEN TURNING; NEVER TURN UP A SLOPE SHARPLY OR AT HIGH SPEED; AND USE EXTRA CARE IN ROUGH OR BUMPY AREAS TO PREVENT OVERTURN AND POSSIBLE CRUSHING INJURY OR DEATH. IF YOUR VIEW TO THE REAR IS BLOCKED, IT IS YOUR RESPONSIBILITY TO INSTALL MIRRORS THAT PROVIDE A REAR VIEW TO PREVENT ACCIDENTS FROM BLIND SPOTS.

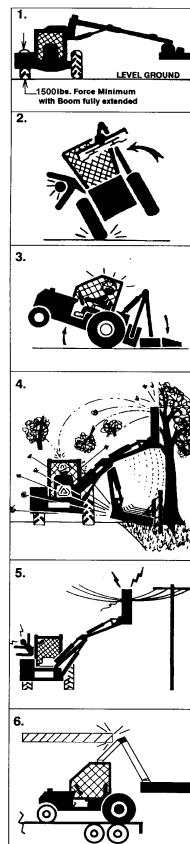
3. REAR-MOUNTED BOOM MOWERS MOVE CENTER OF GRAVITY TO THE REAR AND REMOVE WEIGHT FROM FRONT WHEELS. ADD FRONT BALLAST UNTIL AT LEAST 20% OF TRACTOR'S WEIGHT IS ON FRONT WHEELS TO PREVENT REARING UP, LOSS OF STEERING CONTROL, AND POSSIBLE INJURY.

4. NEVER OPERATE UNIT WITHOUT AN OPS (OPERATOR PROTECTIVE STRUCTURE) OR CAB TO PREVENT INJURY FROM OBJECTS THROWN FROM GROUND AND OVERHEAD TRIMMING. STOP CUTTING IF ANYONE IS WITHIN 100 YARDS.

5. KEEP THE BOOM AND CUTTERHEAD AT LEAST 10 FEET FROM ELECTRIC LINES AND PIPE LINES TO PREVENT ACCIDENTAL CONTACT AND POSSIBLE SERIOUS INJURY OR EVEN DEATH.

6. WHEN TRANSPORTING BOOM MOWERS ON A TRUCK OR TRAILER, THE HEIGHT OR WIDTH MAY EXCEED LEGAL LIMITS. CONTACT WITH SIDE OR OVERHEAD STRUCTURES OR POWER LINES CAN CAUSE SERIOUS INJURY OR DEATH. LOWER BOOM TO REDUCE HEIGHT AND/OR REMOVE MOWING HEAD TO REDUCE WIDTH TO THE LEGAL LIMITS, IF NEEDED.

02958241



02958241 Boom Mower Multi-Hazard

SAFETY

DANGER

FAILING TO FOLLOW SAFETY MESSAGES AND OPERATING INSTRUCTIONS CAN CAUSE SERIOUS BODILY INJURY OR EVEN DEATH TO OPERATOR AND OTHERS IN THE AREA.

<p style="font-size: 0.7em; margin: 0;">1. READ MANUAL</p>	<p style="font-size: 0.7em; margin: 0;">2. NO RIDERS, NO CHILDREN OPERATORS</p>	<p style="font-size: 0.7em; margin: 0;">3. USE SAFETY SHOES, HARD HAT, SAFETY GLASSES, SEAT BELTS, & ROPS</p>	<p style="font-size: 0.7em; margin: 0;">4. BLOCK UP SECURELY BEFORE WORKING UNDER.</p>
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1. Study and understand Operator's Manuals, Safety Signs, and Instructional Decals for tractor & flail mower to prevent misuse, abuse, & accidents. Practice before operating mower in a confined area or near passersby.

- Learn how to stop engine suddenly in an emergency. Be alert for passersby and especially children.

 2. Allow no children on or near implement or tractor. Allow no riders on tractor or implement. Falling off can cause serious injury or death from being runover by tractor or mower or contact with Flail Mower Blades.
 3. Operate only with tractor having Roll-Over Protective Structure (ROPS) and with seatbelt fastened securely and snugly to prevent injury and possible death from falling off or tractor overturn. Personal Protective Equipment such as Hard Hat, Safety Glasses, Safety Shoes, and Ear Plugs are recommended.
 4. Block up or support raised machine and all lifted components securely before putting hands or feet under or working underneath any lifted component to prevent crushing injury or death from sudden dropping or inadvertent operation of controls. Make certain that area is clear before lowering or folding.
 5. Before transporting, put Lift Lever in detent or full-lift position. Install Transport Safety Devices securely on folding implements. Slow down when turning and on hillsides.

- Install **Restrictor in folding circuit to slow down lowering and unfolding if action is faster than is desirable.

 6. Make certain that SMV sign, Warning Lights, and Reflectors are clearly visible. Follow local traffic codes.
 7. Never operate with Flail Mower or Folding Section raised if passersby, bystanders or traffic are in the area to reduce possibility of injury or death from objects thrown by Blades under Shields or implement structure.
 8. Before dismounting, secure flail mower in transport position or lower to ground.

- Put tractor in park or set brake, disengage PTO, stop engine, remove key, and wait until noise of rotation has ceased to prevent entanglement in rotating parts which may cause injury or death.
- Never mount or dismount a moving vehicle. Crushing from runover may cause injury or death.

<p style="font-size: 0.7em; margin: 0;">5. TRANSPORT SAFELY, LOCK UP.</p>	<p style="font-size: 0.7em; margin: 0;">6. USE SMV, LIGHTS, & REFLECTORS.</p>	<p style="font-size: 0.7em; margin: 0;">7. DO NOT OPERATE WITH MOWER OR WING RAISED.</p>	<p style="font-size: 0.7em; margin: 0;">8. DO NOT MOUNT OR DISMOUNT WHILE MOVING.</p>
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002369

002369 Multi-Hazard Decal

DANGER

CUTTING BLADES
THROWN OBJECTS

FLAIL

ROTARY

FLAIL

ROTARY

KEEP AWAY - ROTATING BLADES

SERIOUS INJURY OR DEATH CAN RESULT FROM THROWN OBJECTS OR BLADE CONTACT.

- * STOP MOWING IF PERSONS ARE NOT CLEAR OF THROWN OBJECTS.
- * DO NOT STAND ON OR NEAR MACHINE WHEN IN OPERATION.
- * DO NOT OPERATE WITH DEFLECTORS OR GUARDS REMOVED. 00756485

00756485 Keep Away - Rotating Blades

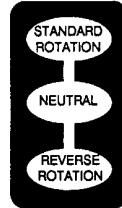
SAFETY



DANGER

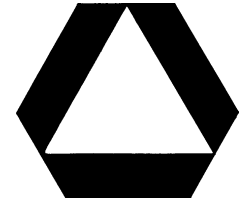
REVERSING MOTOR ROTATION

NEVER MOVE VALVE LEVER TO REVERSE OPERATING DIRECTION UNTIL BLADE ROTATION HAS STOPPED. A SUDDEN REVERSAL OF ROTATION CAN CAUSE CATASTROPHIC FAILURE OF HYDRAULIC PARTS AND MAY CAUSE BODILY INJURY FROM HOT OIL OR THE SUDDEN DROPPING OF BOOM AND/OR HEAD.



CUTTERHEAD OPERATION

02963255



03200347 SMV

02963255 Reversing Motor Rotation



WARNING

ROTATING HEAVY-DUTY FLAIL HEAD

1. LOWER FLAIL HEAD UNTIL IT JUST CLEARS THE SURFACE. MAKE CERTAIN HEAD IS PARALLEL TO SURFACE. HEAD IS VERY HEAVY AND CAN FALL WHEN PINS ARE REMOVED AND CAUSE CRUSHING/PINCHING HAND OR FOOT INJURIES.
2. TURN OFF SOLENOID, DISENGAGE PTO, STOP ENGINE.
3. REMOVE KEY, DISMOUNT AFTER ALL ROTATION STOPS.
4. STAY CLEAR OF HEAD, REMOVE TWO PINS FROM HEAD PIVOT PLATE. ROTATE HEAD 180 DEGREES WITH CARE. REPLACE PINS AND SPRING PINS SECURELY.
5. START TRACTOR TO IDLE SPEED, ENGAGE PTO, TURN ON SOLENOID TO START ROTATION. SPEED UP ENGINE TO PROVIDE 540 RPM ON PTO. TEST HYDRAULICS.
6. MAKE CERTAIN BYSTANDERS ARE CLEAR OF THE AREA. ROTATE BOOM TO OPPOSITE SIDE OF TRACTOR AND RESUME MOWING. STOP MOWING IF ANYONE IS IN THE AREA.

02963200

02963200 Rotating Flail Axe Head



DANGER

REVERSING ROTATION ON ROTARY MOWER HEAD

1. LOWER HEAD TO GROUND, TURN OFF SOLENOID, AND DISENGAGE TRACTOR POWER-TAKE-OFF.
2. SET TRACTOR BRAKE OR PUT IN PARK. REMOVE KEY AND DISMOUNT AFTER ALL ROTATION HAS STOPPED.
3. MAKE CERTAIN THAT ROTATION HAS STOPPED AND CLOSE OPEN BLADE GUARD. LATCH BLADE GUARD CLOSED.
4. OPEN CLOSED BLADE GUARD. LATCH BLADE GUARD OPEN.
5. MAKE CERTAIN NO BYSTANDERS ARE IN THE AREA. RE-START TRACTOR AND MOVE VALVE LEVER TO OPPOSITE OPERATING DIRECTION. ENGAGE PTO. TURN SOLENOID ON.
6. ACCELERATE ENGINE TO 540 RPM PTO. TEST HYDRAULICS.
7. WATCH OUT FOR CLEARANCE AND ROTATE BOOM TO THE OPPOSITE SIDE CAREFULLY. RESUME SAFE MOWING.

02963197

02963197 Reversing Rotary Head

SAFETY

FEDERAL LAWS AND REGULATIONS

This section is intended to explain in broad terms the concept and effect of federal laws and regulations concerning employer and employee equipment operators. This section is not intended as a legal interpretation of the law and should not be considered as such.

Employer-Employee Operator Regulations

U.S. Public Law 91-596 (The Williams-Steiger Occupational and Health Act of 1970) OSHA

This Act Seeks:

“...to assure so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources...”

DUTIES

Sec. 5 (a) Each employer-

- (1) shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;
- (2) shall comply with occupational safety and health standards promulgated under this Act.
- (b) Each employee shall comply with occupational safety and health standards and all rules, regulations and orders issued pursuant to this Act which are applicable to his own actions and conduct.

OSHA Regulations

OSHA regulations state in part: “At the time of initial assignment and at least annually thereafter, the employer shall instruct every employee in the safe operation and servicing of all equipment with which the employee is, or will be involved.”

Employer Responsibilities:

To ensure employee safety during Tractor and Implement operation, it is the employer's responsibility to:

1. Train the employee in the proper and safe operation of the Tractor and Implement.
2. Require that the employee read and fully understand the Tractor and Implement Operator's manual.
3. Permit only qualified and properly trained employees to operate the Tractor and Implement.
4. Maintain the Tractor and Implement in a safe operational condition and maintain all shields and guards on the equipment.
5. Ensure the Tractor is equipped with a functional ROPS and seat belt and require that the employee operator securely fasten the safety belt and operate with the ROPS in the raised position at all times.
6. Forbid the employee operator to carry additional riders on the Tractor or Implement.
7. Provide the required tools to maintain the Tractor and Implement in a good safe working condition and provide the necessary support devices to secure the equipment safely while performing repairs and service.
8. Require that the employee operator stop mowing if bystanders or passerbys come within 100 yards.

Child Labor Under 16 Years of Age

Some regulations specify that no one under the age of 16 may operate power machinery. It is your responsibility to know what these regulations are in your own area or situation. (Refer to U.S. Dept. of Labor, Employment Standard Administration, Wage & Home Division, Child Labor Bulletin #102.)

INTRODUCTION

INTRODUCTION SECTION

INTRODUCTION

This Mower is designed with care and built with quality materials by skilled workers. Proper assembly, maintenance, and operating practices, as described in this manual, will help the owner/operator get years of satisfactory service from the machine.

The purpose of this manual is to familiarize, instruct, and train. The Assembly Section instructs the owner/operator in the correct assembly of the Mower using standard and optional equipment. The Parts Listing section is designed to familiarize the owner/operator with replaceable parts on the Mower. This section provides exploded assembly drawings of each mower component illustrating each piece and the corresponding part number.

Careful use and timely service saves extensive repairs and costly downtime losses. The Operations and Maintenance sections of the manual trains the owner/operator how to work the Mower correctly and attend to appropriate maintenance. The Trouble-Shooting Guide helps diagnose difficulties with the mower and offers solutions to the problems.

Safety is of primary importance to the owner/operator and to the manufacturer. The first section of this manual includes a list of Safety Messages, that, if followed, will help protect the operator and bystanders from injury or death. Many of the Safety Messages will be repeated throughout the manual. The owner/operator/dealer should know these Safety Messages before assembly and be aware of the hazards of operating this mower during assembly, use, and maintenance. The Safety Alert Symbol combined with a Signal Word, as seen below, is intended to warn the owner/operator of impending hazards and the degree of possible injury faced when operating this machine.

CAUTION!



The lowest level of Safety Message; warns of possible minor injury. Decals located on the Mower with this Signal Word are Black and Yellow.

WARNING!



Serious injury or possible death! Decals are Black and Orange.

DANGER!



Imminent death/critical injury. Red and White Decals.

ATTENTION OWNER/OPERATOR

BEFORE OPERATING THIS MACHINE:

1. Carefully read the Operator's Manual, completely understand the Safety Messages and instructions, and know how to operate correctly both the tractor and Mower.
2. Fill out the Warranty Card in full, and mail promptly. Be sure to answer all questions, including the Serial Number of the Mower.

NOTE: Warranties are honored only if complete Owner Registration and Warranty cards are received by Alamo Group within thirty days of delivery of the mower.

3. Record the Mower Model and Serial Number on the Warranty card at the front of the Operator's Manual. Keep this as part of the permanent maintenance file for the Mower.

ASSEMBLY SECTION

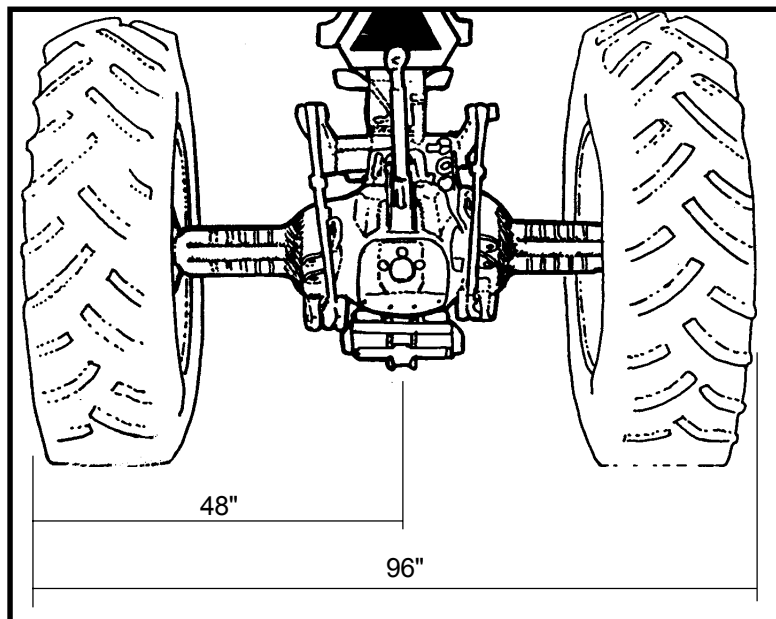
ASSEMBLY

To assemble your Double Swing Boom and mount it to your tractor, we assist you with drawings, instructions, information, and experiences of others. When needed, you may get some information or clarification from our engineering department over the phone.

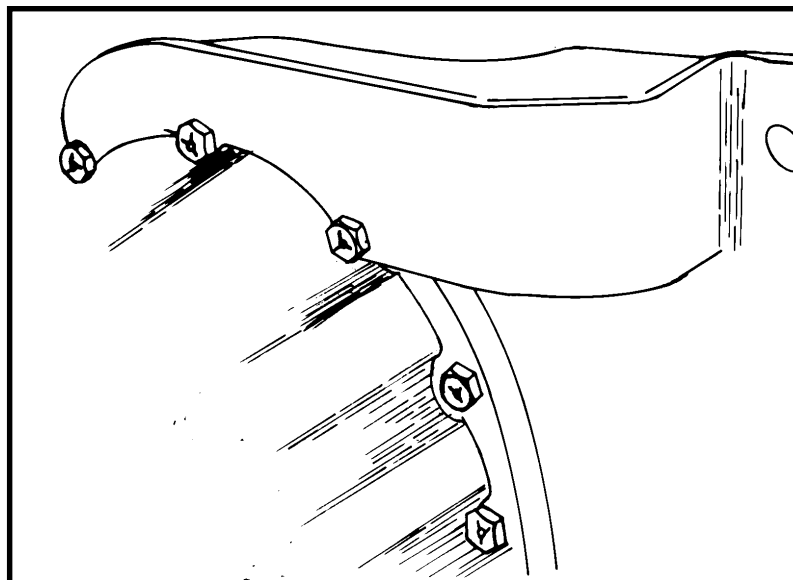
Listed below are some items of general information. Although they may not be specifically for your case or tractor, they might offer you some valuable assistance when used in connection with our drawings.

1. Preparations: First unbundle and lay out parts and identify with assistance of drawings.

Prepare tractor: Remove both fenders and change the left rear wheel tread setting to the outside position so that the dimension from center line of the tractor to outside tire is 48" or close to it. Move right rear wheel as far out as not to go over legal width of 96". Hydraflate both rear tire using a maximum amount of 5lb/gal watch/calcium chloride mixture for the rear tires on the tractor.

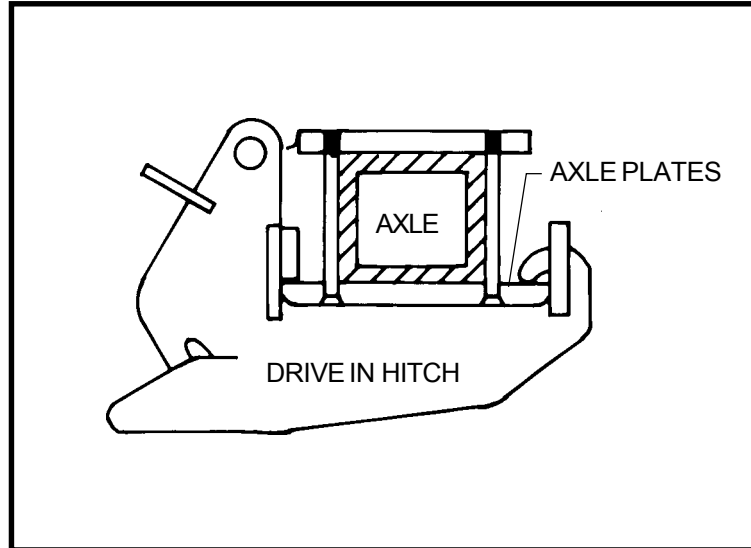


2. Attach the Top Axle Mount Plates to the rear Axle with existing hardware.



ASSEMBLY

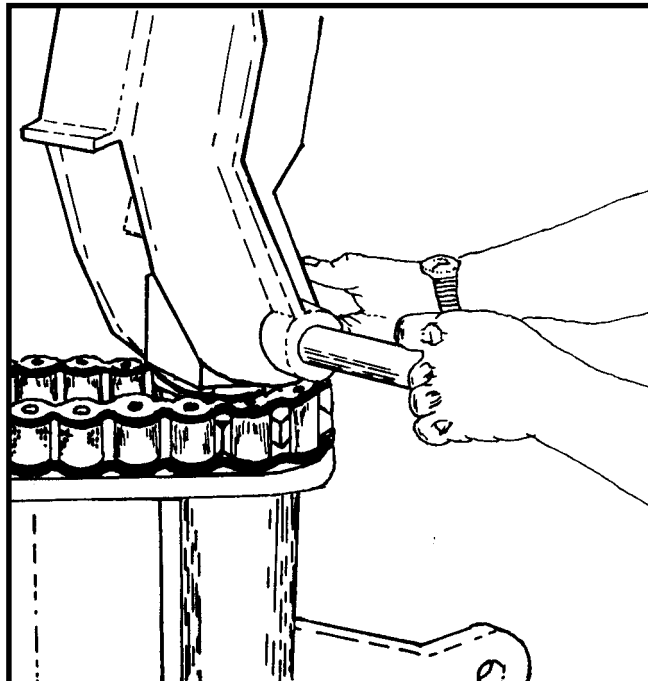
3. Bolt axle plates to the tractors axle. It may be necessary to remove the tractors check chain. Hook the catch assemblies onto the rear of the axle plates. Push firmly against the plate and vigourously pivot the catch forward and up until the spring loaded hook snaps into position. Back tractor until it locks into Drive In Hitch. Attach the Top Link with pins provided.



4. Attach the tractor to the Mainframe before attaching boom. Pull pin from Kingpost and lower the Boom in place carefully. (Pin maybe in packing box.) Secure pin with lockwasher and nut supplied. Attach Mower Head to boom by rolling it into position and lining it up with the end of the Dipper Section. Lift cylinder maybe now connected to boom.

DANGER

Be very careful not to allow fingers to be pinched by Swing Cylinders chain and sprocket.



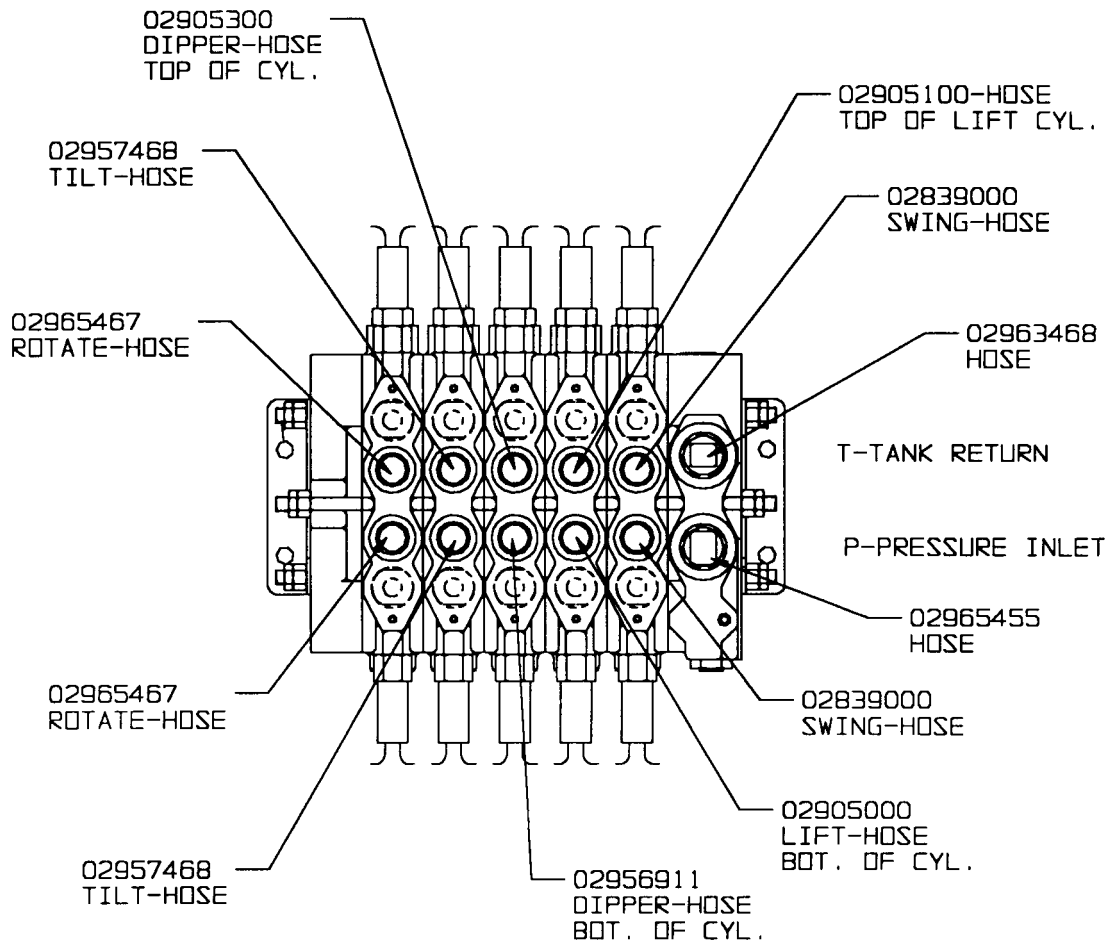
ASSEMBLY

CAUTION: Do not start engine with pump connected until pump is filled with oil as per instructions in this booklet.



5. Attach the Driveline onto the Speed Increaser and the Tractor PTO

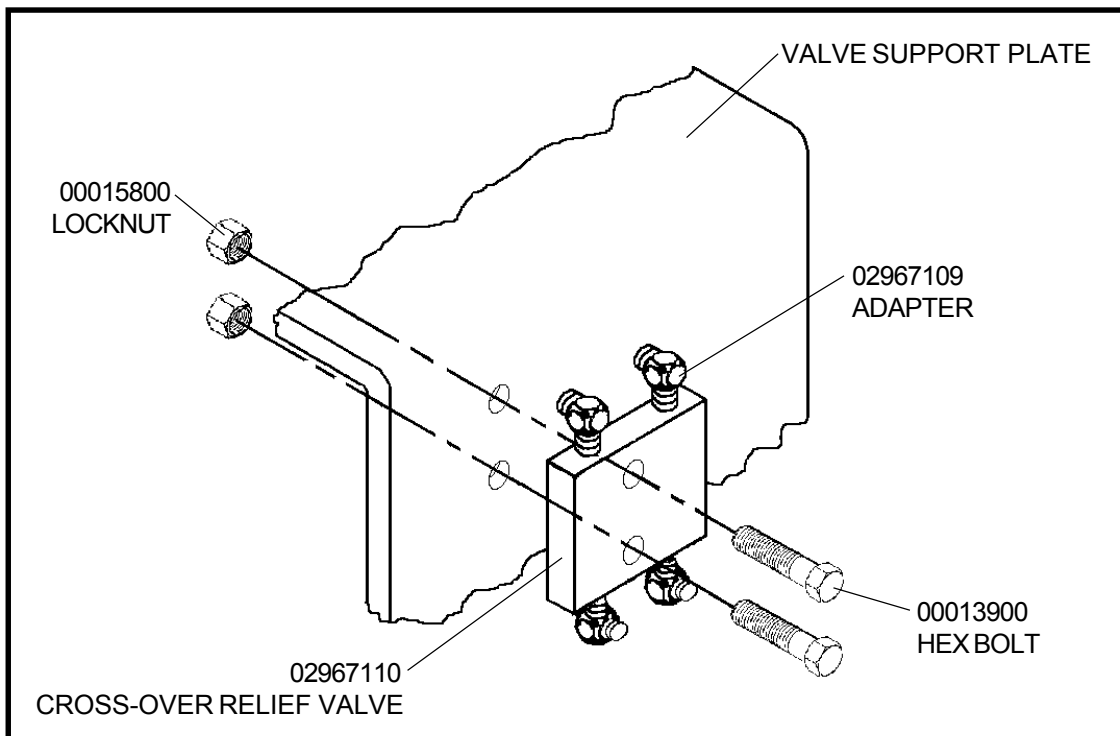
HOSE TO VALVE CONNECTIONS:



ASSEMBLY

6. Install Adapters into Cross-Over Relief Valve as shown. Mount Cross-Over Relief Valve to Valve Support Plate with Hex Bolts and Locknuts.

CROSS-OVER RELIEF VALVE MOUNT:



OPERATION SECTION

Operation Section 4-1

OPERATION

I. KEEP NUTS AND BOLTS TIGHT.

A. Most nuts and bolts will stay tight and therefore need only periodic checking. However, the following nuts and bolts are important and should receive special attention.

Spindle Housing Nuts:	Tighten to 400 Ft/LBS torque
Blade Bolts:	Tighten to 250 Ft/LBS torque
Blade Bar Bolts:	Tighten to 400 Ft/LBS torque

THESE NUTS AND BOLTS NEED TO BE CHECKED DAILY FOR TIGHTNESS.

II. KEEP THE SPINDLE TIGHT.

A. If the spindle is loose, remove the hydraulic motor from the spindle housing and tighten. Tighten the first nut closest to the bearing until the bearing will not move. Then, loosen the nut until the bearing is just free to turn. Finally, tighten the jam nut to lock and bend ears on locking washer.

III. MAINTAIN THE PROPER ENGINE SPEED. THE ENGINE SHOULD BE OPERATED AT 540 or 1000 RPM AT THE PTO FOR REAR MOUNTED PUMPS WITH SPEED INCREASER.

IV. DO NOT "RIDE THE CLUTCH" ON THE TRACTOR TO REDUCE GROUND SPEED.

V. DO NOT OPERATE AT SPEEDS EXCEEDING 2 MPH, EVEN ON SMOOTH TERRAIN. HEAVY BRUSH/LIMBS MUST NORMALLY BE CUT WITH TRACTOR SITTING STILL AND THE HEAD MOVED INTO THE WORK.

VI. READ THE OPERATOR'S MANUAL.

VII. LUBRICATION

A. Service daily to achieve the best operation and longest life. Two pumps of good quality grease from a hand grease gun in all grease fittings should be sufficient.

B. Lubricate dipper cylinder pin and kingpin.

C. Lubricate and inspect the spindle housing daily. Remove one of the overflow plugs on the spindle housing and add SAE EP 90 weight oil until the oil level is at the bottom of the hole. The mower head should be level with the ground when checking this oil level. Check the bottom seal on the spindle to insure oil is not leaking past this seal.

VIII. HYDRAULIC OIL, FILTERS, AND COMPONENTS

A. Filters and Oil - Change the return filter in tank and suction filters after the first 200 hours of operation. Change the filters again at 800 hours; then, change the oil and filters at 1600 hours. After that, continue to change the filter every 800 hours and the oil every 1600 hours. Hydraulic oil to be used is, Universal Tractor Hydraulic. Speed Increaser and Spindle Housing use SAE 90wt. Use the above procedures as part of a good filter maintenance program.

B. Between filter changes, monitor condition of filter by reading pressure gauge mounted on filter on top of the tank. If pressure reads 15 psi or greater at 1800 engine speed and normal operating temperature (140 deg. F. or greater) filter element should be changed. Pressure gauges are color coded to help indicate when to change element.

OPERATION

C. Keep all hoses and adapters tight. Repair any leaks immediately. Do not overtighten hose end fittings. Tighten to specifications only. (See Chart Below).

D. Check the hydraulic oil level daily.

RECOMMENDED HOSE END TORQUE VALUES FOR 37 DEGREE ANGLE STEEL HOSE END FITTINGS

DASH SIZE	NOMINAL SIZE (IN.)	TORQUE VALUE*	
		(IN.LBS.)	(FT.LBS.)
-4	1/4	140	12
-6	3/8	230	19
-8	1/2	450	38
-10	5/8	650	54
-12	3/4	900	75
-16	1	1200	100
-20	1-1/4	1600	133
-24	1-1/2	2000	167
-32	2	2800	233

* Straight threads do not always seal better when higher torque values are used. Too much torque causes distortion and may lead to leakage.

IX. BLADE CARE

A. Check the blades for cracks and wear and blade bolts for tightness, daily. Blades should be replaced when they are worn excessively, bent, deformed, or out of balance.

CAUTION: Blades should always be replaced in pairs. Blades of different weights can cause serious imbalance and damage to the machine and personnel. When replacing blades, take care to replace the blade bolts, bushings, nuts, and washers.



X. TROUBLE SHOOTING

A. **HYDRAULIC CYLINDER NOT WORKING** - Check level of hydraulic fluid (see sight gauge on tank). Check to see if pump is functioning properly by attempting to use another cylinder or pressure gauge. If pump is working properly, check the pressure on the line. The relief valve may be by-passing fluid at too low pressures. If cylinder is still not functioning properly, check the line for stoppage. The pistons in hydraulic cylinders are virtually trouble-free, but occasionally one will have a scored wall and allow oil to flow around the piston. In this case, replace the cylinder.

NOTE: Refer to repair parts section on valve bank for settings on individual relief cartridges.

B. **HYDRAULIC MOTOR NOT WORKING** - Check lines for kinks or pinched place. If the motor "is bogging down" under load, recheck the relief valve setting on the cutter valve - 2000 P.S.I.

C. **HYDRAULIC VALVE** - Failures in the hydraulic system are almost always caused by other elements in the system other than the valve; so the entire system should be checked before the valve is changed. A malfunction in any hydraulic valve section will require replacement of that section (but not the replacement of the valve bank) since the insides are honed to fit individually. Attachments such as the relief valves and detent may be serviced individually.

D. **STRUCTURAL MEMBERS** - Failure in structural members generally results from rough treatment. While the framework is constructed to withstand abuse, the members cannot be made strong enough to withstand abnormal abuse. The factory does not warrant these parts to any extent other than in normal use in grass, weeds, brush, small bushes, and small trees which the unit is designed to cut.

OPERATION

Before attempting to operate this equipment read these instructions completely. If you have any questions concerning safety of operation, contact your dealer or Alamo Group.

I. Perform the following checks prior to starting the tractor:

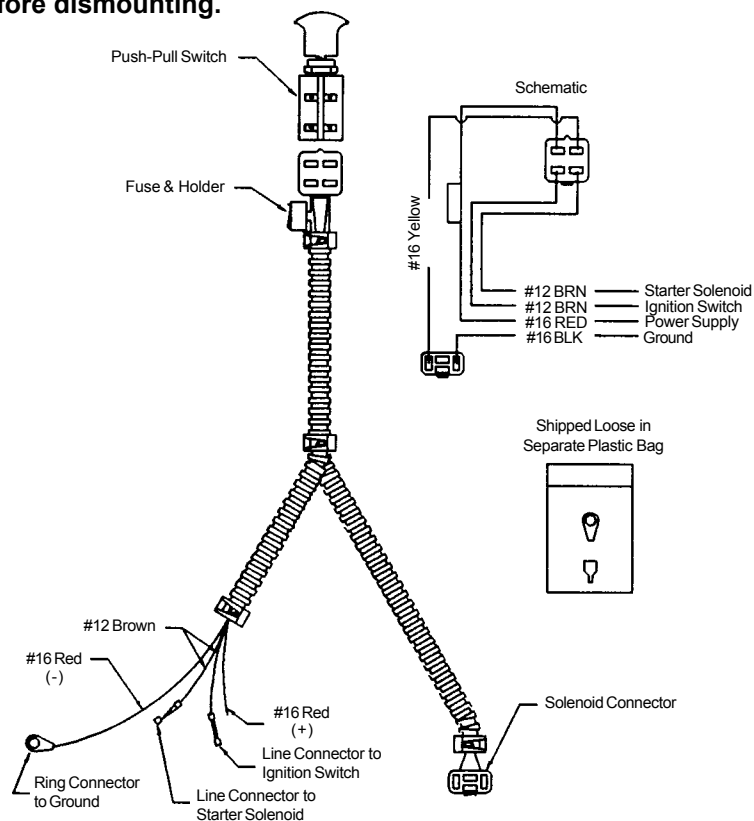
- A. Inspect the blades and blade bolts for cracks or wear. Replace any worn or damaged parts.
- B. Check the blade bolts and blade bar bolts to see that they are tight. (If loose, see maintenance instructions).
- C. Inspect the rubber deflectors for tears or openings which may allow thrown objects. Repair or replace as needed.
- D. Check all hydraulic connections for leaks and all bolts and pins to see that they are secure.
- E. Check the head control (on-off) valve to see that it is in the off (down) position.

II. Operating the Control Valves

The Double Swing Boom has two control valves. One is the on-off switch to the cutter motor and the other is the position control valve.

A. ON-OFF Switch (Mower Valve) - To operate the mower, pull the switch while the tractor is running. The push-pull operator will remain in the ON position PULLED or the OFF position PUSHED until the operator desires to start or stop the mower. Always start the mower head with the tractor at idle.

CAUTION: The operator should not leave his seat with this valve engaged or with the tractor engine running. Allow approximately 60 seconds for the blades to come to rest after turning the switch off before dismounting.



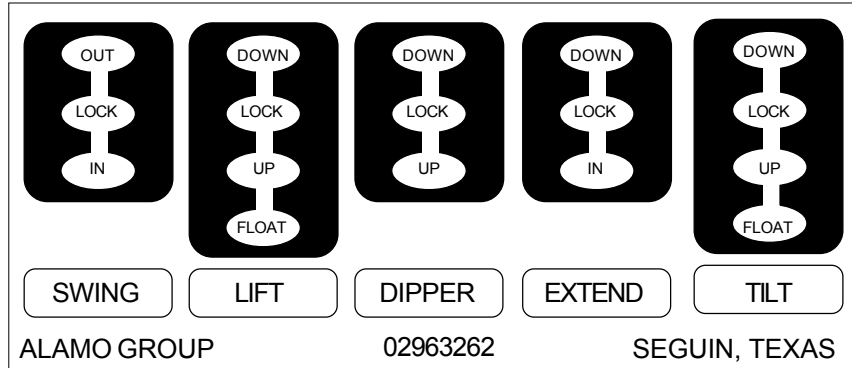
The cutter valve comes with a push-pull operator switch that, when properly installed, will prevent the tractor from starting if the switch is in the ON position (pulled out). To properly install the push-pull operator, follow the wiring diagram shown. Failure to properly install this switch could result in injury to the operator or bystander.

OPERATION

B. CONTROL VALVE -These valves are located to the right front of the operator. These are fastened together in a bank of five valves. Their use will be explained in the following pages of this manual. These valve are controlled by operating the Remote Control Valve Box mounted to the right of the operator at a convenient height.

NOTE: The stamped metal plate located above the control valve indicates each valve function.

With the exception of the relief valves, which are pre-set at the factory, these are all the controls for operating the machine other than the controls on the tractor itself and the rotation reversing controls (if specified) that are not a part of the valve bank.



III. Reversing Rotation on mower head:

DANGER

WHEN SWINGING BOOM FROM SIDE-TO-SIDE: BE VERY CAREFUL!



1. Stop tractor in a level place & set brakes to prevent tipping.
2. Cut off hydraulic power to Mower Head.
3. Fold Boom to bring Mower head close to tractor to prevent the tractor from rearing up which could cause loss of control and possible injury.
4. Make certain that the Boom swing path is clear of bystanders, power lines, and obstructions to prevent injury, electrocution, and possible machine damage.
5. Swing Boom slowly and Carefully. Avoid sudden starting and stopping.
6. Set Mower Head on ground.
7. Stop engine, remove key, and wait until all motion stops.
8. Dismount, reverse mower rotation.
9. Close the open Shield to prevent objects from being thrown outward which may cause injury or damage.
10. Latch front Cover open if cutting brush or heavy material. Where possible, KEEP BOTH COVERS CLOSED for maximum prevention of thrown objects.
11. Make certain all persons are clear before starting Mower Head.

DANGER

CLOSE SHIELD & REVERSE BLADE ROTATION

1. OPEN AND LATCH SHIELD IN MOWING DIRECTION.
2. CLOSE AND LATCH OPPOSITE SHIELD (REAR).
3. NEVER CUT WITH BOTH SHIELDS OPEN.
4. SET ROTATION TO TURN BLADE FROM TRACTOR TOWARD OPEN SHIELD TO PREVENT THROWING OBJECTS ONTO TRACTOR AND OPERATOR. THROWN OBJECTS CAN CAUSE INJURY. KEEP CLEAR.
5. STOP MOWING IF ANYONE COMES WITHIN RANGE OF THROWN OBJECTS.

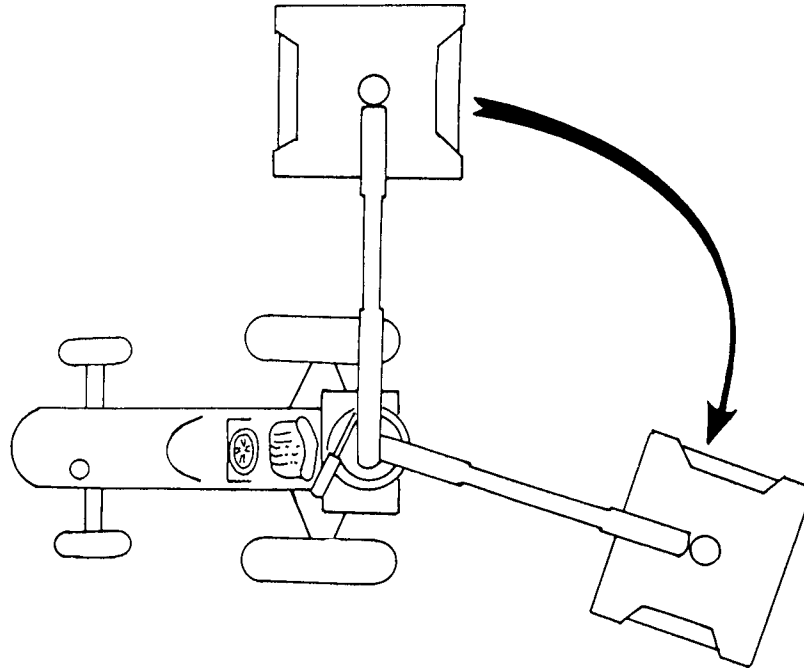
MOWING DIRECTION

TRACTOR SIDE

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OPERATION

SWING VALVE



The handle nearest the center of the tractor, in the bank of five valves, actuates the SWING cylinder. This valve has three positions and operates in three ways.

Push the valve handle forward and you admit hydraulic fluid to the Rod End of the right SWING cylinder, causing the boom to swing out to the right side of the tractor. (See Diagram).

If the handle is released, the valve will automatically return to center, and the boom will be LOCKED in position.

Pull the valve handle back towards you and admit hydraulic fluid to the Rod End of the left SWING cylinder causing the boom to swing back toward the rear of the tractor. If the handle is continually held in this position, the boom will continue to the left side of the tractor.

Again, if the valve handle is released, the valve will automatically return to center and the boom will be LOCKED in place.

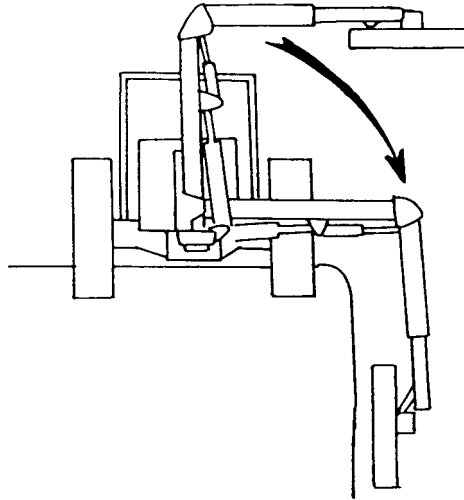
BOOM SAFETY VALVE - If a rigid object (guard railpost, tree, etc.) is struck by the extended boom while the unit is moving forward the boom safety valve will allow the boom to swing rearward, and minimize the possibility of damage.

NOTICE: This device will NOT work if the unit is mowing BACKWARDS and the boom is in the full forward position.

ALWAYS SWING THE BOOM 10 DEGREES TO 15 DEGREES TO THE REAR WHEN CUTTING IN REVERSE.

OPERATION

LIFT VALVE



The second handle from the left in the bank of five valves actuates the LIFT cylinder. This valve has four positions.

Pulling the valve handle back, toward the operator, causes the boom LIFT cylinder to lift the boom arm up.

CAUTION: Make certain that you do not lift the head in such a fashion that you lift a rear wheel off the ground. Install weight as needed to keep at least 1000 lbs. on each rear wheel.



If the handle is released, the valve will automatically return to center and boom will be LOCKED in position.

If the handle is pulled as far back as it will go it will be LOCKED in the float position. This will allow the boom to move freely up and down and follow the contour of the ground.

Pushing the handle forward from the locked position will lower the boom.

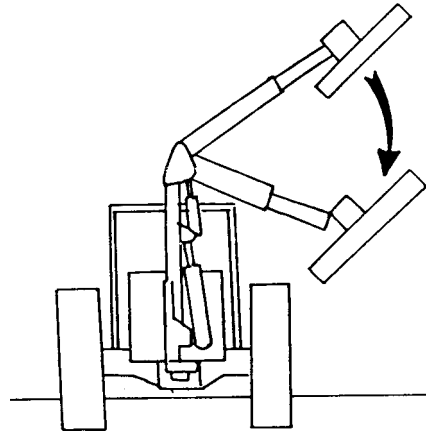
Again, if the handle is released, the valve will automatically return to center and the boom will be LOCKED in position.

DANGER Make certain that the Boom swing path is clear of bystanders, power lines, and obstructions to prevent injury, electrocution, and possible machine damage. Swing Boom slowly and CAREFULLY. Avoid sudden starting and stopping.



OPERATION

DIPPER VALVE



The third handle in the bank of five valves actuates the DIPPER cylinder.

Like the swing valves, this has three positions.

Pulling the valve handle causes the boom DIPPER cylinder to lift the small boom UP.

CAUTION: Make certain that you do not lift the head in such a fashion that you lift the left rear wheel off the ground. Install weight as needed to keep at least 1000 lbs. on the left rear wheel.



If the handle is released, the valve will automatically return to center, and the boom will be LOCKED in position.

Pushing the valve handle will lower the boom.

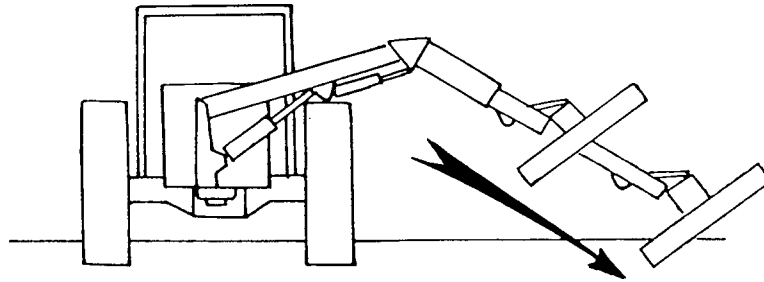
Again, if the handle is released, the valve will automatically return to center, and the boom will be LOCKED in position.

DANGER Make certain that the Boom swing path is clear of bystanders, power lines, and obstructions to prevent injury, electrocution, and possible machine damage. Swing Boom slowly and CAREFULLY. Avoid sudden starting and stopping.



OPERATION

EXTEND VALVE



The fourth handle in the bank of five valves actuates the Extension cylinder. This valve, like the lift valve, has three positions.

Push the valve handle forward to extend the end of the dipper boom out.

If the handle is released, the valve will automatically return to center and the boom will be LOCKED in position.

Pulling the handle backward will retract the dipper section.

Again, if the handle is released, the valve will automatically return to center and the boom will be LOCKED in position.

DANGER

CUTTING BLADES

FLAIL ROTARY

THROWN OBJECTS

FLAIL ROTARY

KEEP AWAY - ROTATING BLADES

SERIOUS INJURY OR DEATH CAN RESULT FROM THROWN OBJECTS OR BLADE CONTACT.

- * STOP MOWING IF PERSONS ARE NOT CLEAR OF THROWN OBJECTS.
- * DO NOT STAND ON OR NEAR MACHINE WHEN IN OPERATION.
- * DO NOT OPERATE WITH DEFLECTORS OR GUARDS REMOVED. 00756485

WARNING!

1.

2.

3.

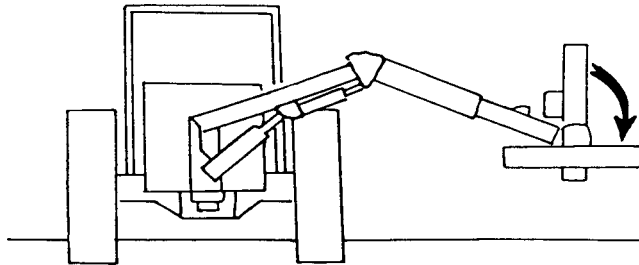
Failure to INSPECT and REPAIR or REPLACE Hoses may allow worn Hoses to rupture SUDDENLY and VIOLENTLY with resulting serious BODILY INJURY from SCALDING or FIRE with resulting BURN INJURY or DEATH.

1. Frayed, torn, or crimped Hoses may RUPTURE and spray BOILING OIL onto Operator and cause serious BODILY INJURY from scalding.
2. Boiling Oil may spray onto HOT TRACTOR PARTS and CATCH FIRE with SEVERE BURN INJURY or DEATH.
3. Use Paper or Cardboard to check for leaks. NEVER USE YOUR HAND. If oil penetrates skin, gangrene or other serious injury could occur. GET IMMEDIATE MEDICAL ATTENTION. See Manual.

KEEP SHIELDS OVER HYDRAULIC COMPONENTS IN PLACE. Inspect Hoses daily and repair or replace when needed. Stop all leaks. Repair or replace hoses as indicated to prevent unexpected failure and possible serious injury to operator or bystander. 02965262

OPERATION

TILT VALVE



The fifth handle in the bank of five valves actuates the TILT cylinder. This valve, like the lift valve, has four positions.

Pull the valve handle backward and you will cause the outer rim (farthest from the tractor) to move UP until the mower is cutting with the blade vertical, if you wish. This feature has been used successfully for trimming hedges many feet away from the tractor.

If the handle is released, the valve will automatically return to center and the boom will be LOCKED in position.

Pushing the handle forward will move the head in the opposite direction.

Again, if the handle is released, the valve will automatically return to center and the boom will be LOCKED in position.

If the handle is pulled as far back as it will go, it will be LOCKED in the float position. This will allow the head to pivot freely and follow the contour of the ground.



DANGER

FAILING TO FOLLOW SAFETY MESSAGES AND OPERATING INSTRUCTIONS CAN CAUSE SERIOUS BODILY INJURY OR EVEN DEATH TO OPERATOR AND OTHERS IN THE AREA.

<p>1. </p>	<p>2. NO RIDERS, NO CHILDREN, OPERATORS </p>	<p>3. USE SAFETY SHOES, HARD HAT, SAFETY GLASSES, SEAT BELTS, & ROPS </p>	<p>4. BLOCK UP SECURELY BEFORE WORKING UNDER. </p>
<p>5. TRANSPORT SAFELY, LOCK UP. </p>	<p>6. USE SMV, LIGHTS, & REFLECTORS. </p>	<p>7. DO NOT OPERATE WITH MOWER OR WING RAISED. </p>	<p>8. DO NOT MOUNT OR DISMOUNT WHILE MOVING. </p>

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OPERATION

III. TRANSPORT POSITION

Use the five-section control valve to move the double-swing boom to the transport position. The proper transport position for the machine is with the boom positioned directly behind the tractor. The lift section should be positioned so that the lift cylinder is completely EXTENDED. The extension part of the dipper section should be fully RETRACTED. Fold the dipper section in completely. Tilt the head using the tilt function on the valve bank. Position the mower head so that it will not hit the ground while being transported and so that it will not block the rear view of the tractor.

CAUTION!



The Boom and Mower Head change the balance of the machine in transport. Be especially careful when transporting on slopes. Never turn uphill in transport except at very slow speed and a low rate of turn. Never transport or operate this machine on steep slopes **BE CAREFUL!** Transport very slowly on rough surface to prevent front end's bouncing with loss of steering and possible injury.

IV. MOWING TIPS

- Maintain the proper engine speed. The engine should be operated at the speed necessary to yield 540 RPM or 1000 RPM at the PTO for rear-mounted pumps with speed increasers.
- DO NOT EXCEED 2 MPH while operating. For cutting heavy brush and limbs, it is usually best to stop the tractor & move mower head into work.
- Keep your right hand resting on the head control levers while you are mowing. This will allow you to react quickly if an unexpected obstacle is encountered.
- Stop mowing if anyone is in the range of thrown objects.

! DANGER

CRUSHING AND PINCH POINTS

MOVING MACHINERY PARTS CAN PINCH OR CRUSH OR FALL- WHICH MAY CAUSE INJURY OR DEATH.

02962765

! DANGER

- EACH REAR WHEEL MUST HAVE A MINIMUM OF 1500 POUNDS CONTACT WITH THE SURFACE TO PREVENT LATERAL INSTABILITY AND POSSIBLE TIP-OVER WITH BODILY INJURY.** WIDEN WHEEL TREAD AND ADD WEIGHTS IF NEEDED. SEE MANUAL OR CALL CUSTOMER SERVICE FOR COUNTERWEIGHT PROCEDURE.
- TRANSPORT CAREFULLY!** SLOW DOWN EVEN MORE ON SLOPES AND WHEN TURNING; NEVER TURN UP A SLOPE SHARPLY OR AT HIGH SPEED; AND USE EXTRA CARE IN ROUGH OR BUMPY AREAS TO PREVENT OVERTURN AND POSSIBLE CRUSHING INJURY OR DEATH. IF YOUR VIEW TO THE REAR IS BLOCKED, IT IS YOUR RESPONSIBILITY TO INSTALL MIRRORS THAT PROVIDE A REAR VIEW TO PREVENT ACCIDENTS FROM BLIND SPOTS.
- REAR-MOUNTED BOOM MOWERS MOVE CENTER OF GRAVITY TO THE REAR AND REMOVE WEIGHT FROM FRONT WHEELS.** ADD FRONT BALLAST UNTIL AT LEAST 20% OF TRACTOR'S WEIGHT IS ON FRONT WHEELS TO PREVENT REARING UP, LOSS OF STEERING CONTROL, AND POSSIBLE INJURY.
- NEVER OPERATE UNIT WITHOUT AN OPS (OPERATOR PROTECTIVE STRUCTURE) OR CAB TO PREVENT INJURY FROM OBJECTS THROWN FROM GROUND AND OVERHEAD TRIMMING.** STOP CUTTING IF ANYONE IS WITHIN 100 YARDS.
- KEEP THE BOOM AND CUTTERHEAD AT LEAST 10 FEET FROM ELECTRIC LINES AND PIPE LINES TO PREVENT ACCIDENTAL CONTACT AND POSSIBLE SERIOUS INJURY OR EVEN DEATH.**
- WHEN TRANSPORTING BOOM MOWERS ON A TRUCK OR TRAILER, THE HEIGHT OR WIDTH MAY EXCEED LEGAL LIMITS.** CONTACT WITH SIDE OR OVERHEAD STRUCTURES OR POWER LINES CAN CAUSE SERIOUS INJURY OR DEATH. LOWER BOOM TO REDUCE HEIGHT AND/OR REMOVE MOWING HEAD TO REDUCE WIDTH TO THE LEGAL LIMITS, IF NEEDED.

1500 lbs. Force Minimum with Boom fully extended

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MAINTENANCE SECTION

MAINTENANCE

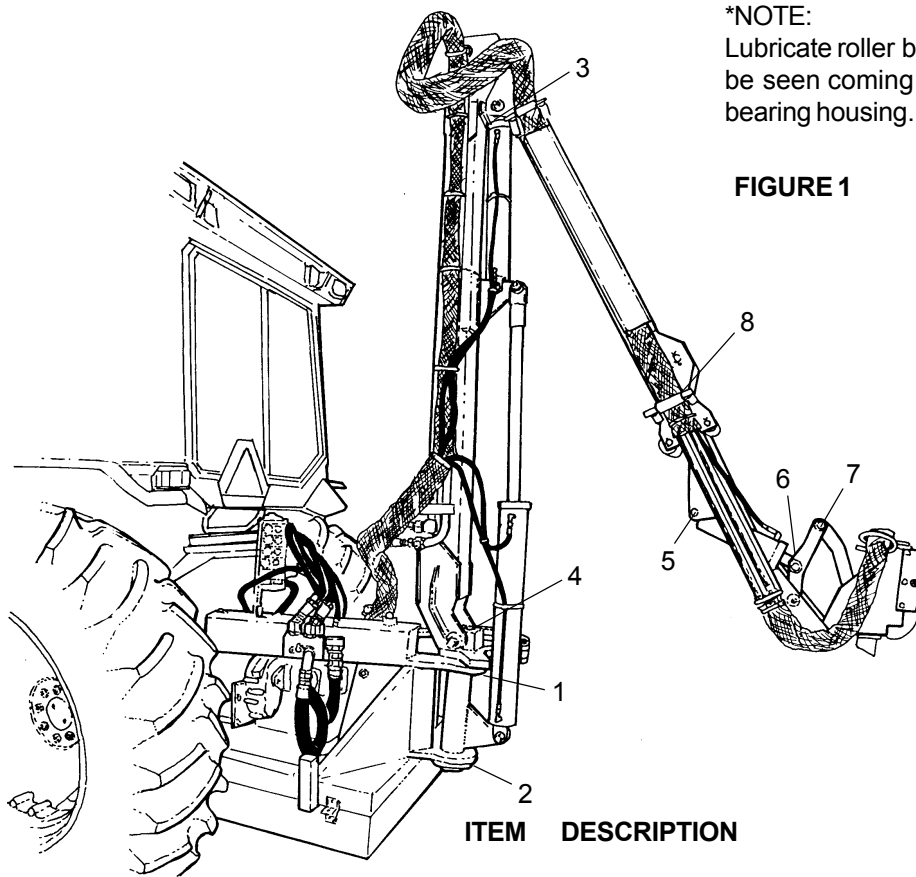
Before operating your Double Swing Boom, make sure it is properly lubricated and thoroughly inspected. Only a minimum of time and effort is required to regularly lubricate and maintain this machine to provide long life and trouble free operation.

LUBRICATION INFORMATION

Do not let excess grease collect on or around parts, particularly when operating in sandy areas. The accompanying illustration shows lubrication points. The chart gives the frequency of lubrication in hours, based on normal operating conditions. Severe or unusual conditions may require more frequent lubrication.

LUBRICATION

The Double Swing Boom must be serviced daily to achieve the best operation and longest life. Two pumps of a good quality grease from a hand grease gun in all grease fittings should be sufficient **Figure 1**.



***NOTE:**
Lubricate roller bearing until lubricant can be seen coming out between roller and bearing housing.

FIGURE 1

ITEM	DESCRIPTION	FREQUENCY
1.	Kingpin - Top	8 hours
2.	Kingpin - Bottom	8 hours
3.	Dipper Cylinder Pin - Live End	8 hours
4.	Dipper Section Arm Attachment	8 hours
5.	Tilt Cylinder Pin - Dead End	8 hours
6.	Tilt Cylinder Pin - Live End	8 hours
7.	Linkage Attachment	8 hours
8.	Boom Extension	8 hours
9.	Flail Roller Bearing (not shown)	8 hours

MAINTENANCE

HYDRAULIC OIL, FILTERS, AND COMPONENTS

Filters and Oil - Change the return filter tank and suction filters after the first 200 hours of operation. Change the filters again at 800 hours; then, change the oil and filters at 1600 hours. After that, continue to change the filter every 800 hours and the oil every 1600 hours. Hydraulic oil to be used is, Universal Tractor Hydraulic. Speed Increaser and Spindle Housing use SAE 90 wt. Use the above procedures as part of a good filter maintenance program.

Between filter changes, monitor condition of filter by reading pressure gauge mounted on filter on top of the tank. If pressure reads 15 psi or greater at 1800 engine speed and normal operating temperature (140 deg. F. or greater) filter element should be changed. Pressure gauges are color coded to help indicate when to change element.

Keep all hoses and adapters tight. Repair any leaks immediately. Do not overtighten hose end fittings. Tighten to specifications only. (See Chart Below)

Check the hydraulic oil level daily.

RECOMMENDED HOSE END TORQUE VALUES FOR 37 DEGREE ANGLE STEEL HOSE END FITTINGS

DASH SIZE	NOMINAL SIZE (IN.)	TORQUE (IN.LBS.)	VALUE* (FT.LBS.)
-4	1/4	140	12
-6	3/8	230	19
-8	1/2	450	38
-10	5/8	650	54
-12	3/4	900	75
-16	1	1200	100
-20	1-1/4	1600	133
-24	1-1/2	2000	167
-32	2	2800	233

* Straight threads do not always seal better when higher torques are used. Too much torque causes distortion and may lead to leakage.

BLADES

Check the Blades for cracks and wear and Blade Bolts for tightness, daily. Blades should be replaced when they are worn excessively, bent, deformed, or out of balance.

CAUTION



Blades should always be replaced in pairs. Blades of different weights can cause serious imbalance and damage to the machine and personnel. When replacing blades, take care to replace the blade bolts, nuts, and washers.

HARDWARE

Most nuts and bolts will stay tight and therefore need only periodic checking. However, the following nuts and bolts are extremely important and should receive special attention:

Spindle Housing Bolts: Tighten to 400 Ft./Lbs. Torque
Blade Bolts: Tighten to 400 Ft./Lbs. Torque
Blade Bar Bolts: Tighten to 600 Ft./Lbs. Torque

MAINTENANCE

WARNING



Be certain to clamp or securely support the Spindle Housing and sub-assemblies to prevent injuries to hands and feet due to inadvertent dropping or falling over.

WARNING



Always wear safety glasses and gloves to prevent eye and hand injury when chiseling or hammering on metal components. Hardened metal will chip un-expectedly.

WARNING



An assembled spindle housing is quite heavy. Use a hoist or get help to handle them safely. Lift carefully and properly using your legs to lift - NOT YOUR BACK.

DISASSEMBLY OF SPINDLE HOUSING

Remove blade bar or pan.

Remove hydraulic motor.

Remove spindle housing from unit.

Drain remaining oil from housing.

Remove locknut and lockwasher.

Using a chisel with a 3/16" wide cutting edge, place it parallel with and into one (1) of the staking slots in the threaded section of the shaft. Then drive it downward until the bent part of the staking flange on adjusting nut is bent outward and is free of the slot and threads of the shaft. This procedure is done in two (2) places on the shaft (Figure 2).

Using a chisel, bend the tang on the lockwasher until it is free from the slot in the nut. (Not all spindle housings are equipped with this lockwasher, but it should be installed with assembly.)

Unscrew locknut and remove locknut and lockwasher. Using the original bolts that hold the blade bar or pan on, insert the bolts into the spindle and turn the bolts until they contact the bearing ring (Figure 3).

In a clockwise bolt pattern, rotate each bolt 1/4 revolution (Figure 4).

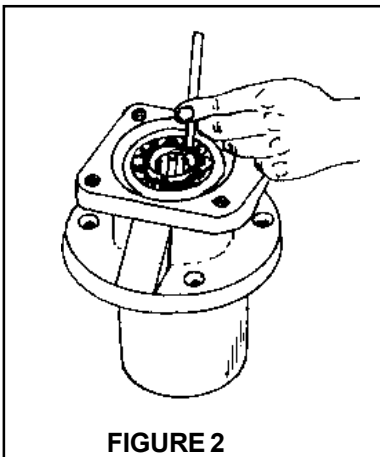


FIGURE 2

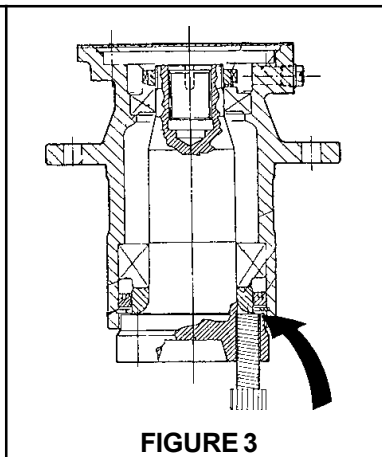


FIGURE 3

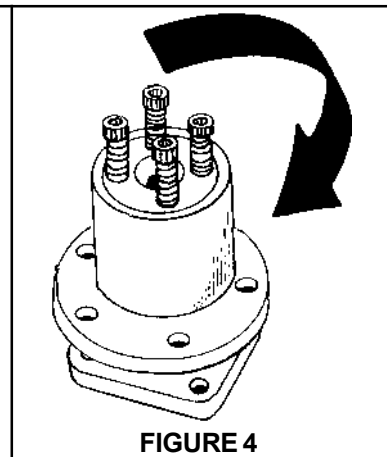


FIGURE 4

MAINTENANCE

Continue turning the bolts 1/4 revolution until shanked bolts will thread into the spindle (Do not turn original bolts more than 3 revolutions).

Remove the bolts and thread into the spindle four (4) shanked bolts (p/n 02964353).

In a clockwise pattern rotate each bolt 1/4 revolution until the spindle is free from the housing.

Using a flat blade screwdriver, remove retaining ring from the spindle housing.

To remove seal from housing, hold housing in a vise or clamp the housing so that it cannot be moved. Use a small pry bar and pry the seal out. Be careful not to damage the inside wall of the spindle housing.

Remove bearing.

If replacing bearings:

From the top of the spindle housing, using a punch, drive the bearing cup down.

BE CAREFUL NOT TO DAMAGE THE SPINDLE HOUSING!

Turn the spindle housing over and from the bottom side of the spindle housing, using a punch, drive the remaining bearing cup out.

Clean spindle housing, spindle and bearings thoroughly.

When rebuilding the spindle housing assembly, always replace the locknut, lockwasher, retaining ring, gasket, and seal.

INSPECTION

Bearing and cups:

Inspect bearings and bearing cups for nicks, pitting, discoloration and wear. If any exist, replace bearing and bearing cup.

Bearing ring:

Inspect bearing ring for grooves, pits, scratches, nicks, and sharp edges. If any exist, replace the bearing ring.

ASSEMBLY

If installing new bearings, be sure to install new bearing cups (races). When installing the bearing cups, make sure that they are properly seated. **DO NOT DRIVE AGAINST THE BEARING SURFACE.** Install both cups at this time.

Turn housing upside down, so that the larger bearing, seal, and retaining ring may be installed. Lubricate seal before installing. Install the bearing, then install the seal approximately 1/4" from the top. Place the retaining ring in the housing on top of the seal. Drive the retaining ring and seal down evenly, until the retaining ring is seated in the groove.

MAINTENANCE

Be sure the retaining ring is in the groove all the way around and the seal is against the retaining ring.

Be sure the seal is not cocked.

Place a thin coat of silicone on the inside of the bearing ring. Place the bearing ring on the spindle. Using a piece of 2-3/4" 16 gage tubing, 8" long, drive the bearing ring down on the spindle until the bearing ring bottoms out against the spindle. Remove any excess silicone from the spindle and bearing ring.

With the spindle sitting upright, set the spindle housing (with bearing, seal and retaining ring in place) down on the spindle so that the bearing is centered with the spindle. Using the same piece of tubing, drive the bearing down until the bearing bottoms out against the bearing ring. Be sure the bearing is seated against the bearing ring. Insert the upper bearing, lockwasher, and locknut.

***Important:** If the bearing ring is not properly seated or if the bearing is not properly seated against the bearing ring the assembly will lose its preload on the bearings, resulting in rapid leaking of oil and bearing failure.

Tighten the new locknut until a rolling torque of 12-15 in-lbs. is reached on the shaft.

Align the locknut with the lockwasher so that a tang may be bent into the slot. Bend tang into slot, then stake the locknut into the slots on the shaft (2 places).

Bolt the spindle housing to unit. (Torque bolts to 400 ft-lbs.)

Install gasket between the housing and motor. Torque bolts to 120 ft-lbs.

Fill spindle housing with NLGI 000 Grease, Alamo Group P/N 00765444.

To check the oil level, tilt the head of the unit on its side until the spindle housing is level. Remove the filter plug. At this point the oil should be flush with the bottom of the oil fill hole. (Figure 5)

Install the blade bar or pan and torque bolts to 400 ft-lbs.

***Important:** Make sure spindle housing is equipped with a vented breather pug. If breather plug is clogged or a pipe plug is installed, oil will be forced past the seal.

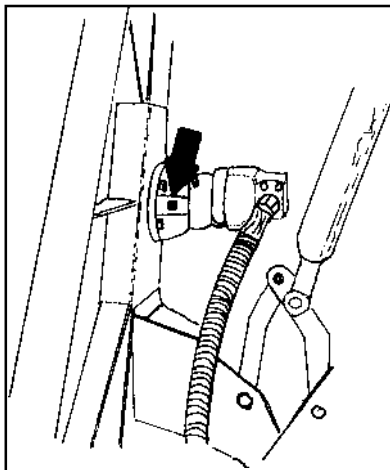
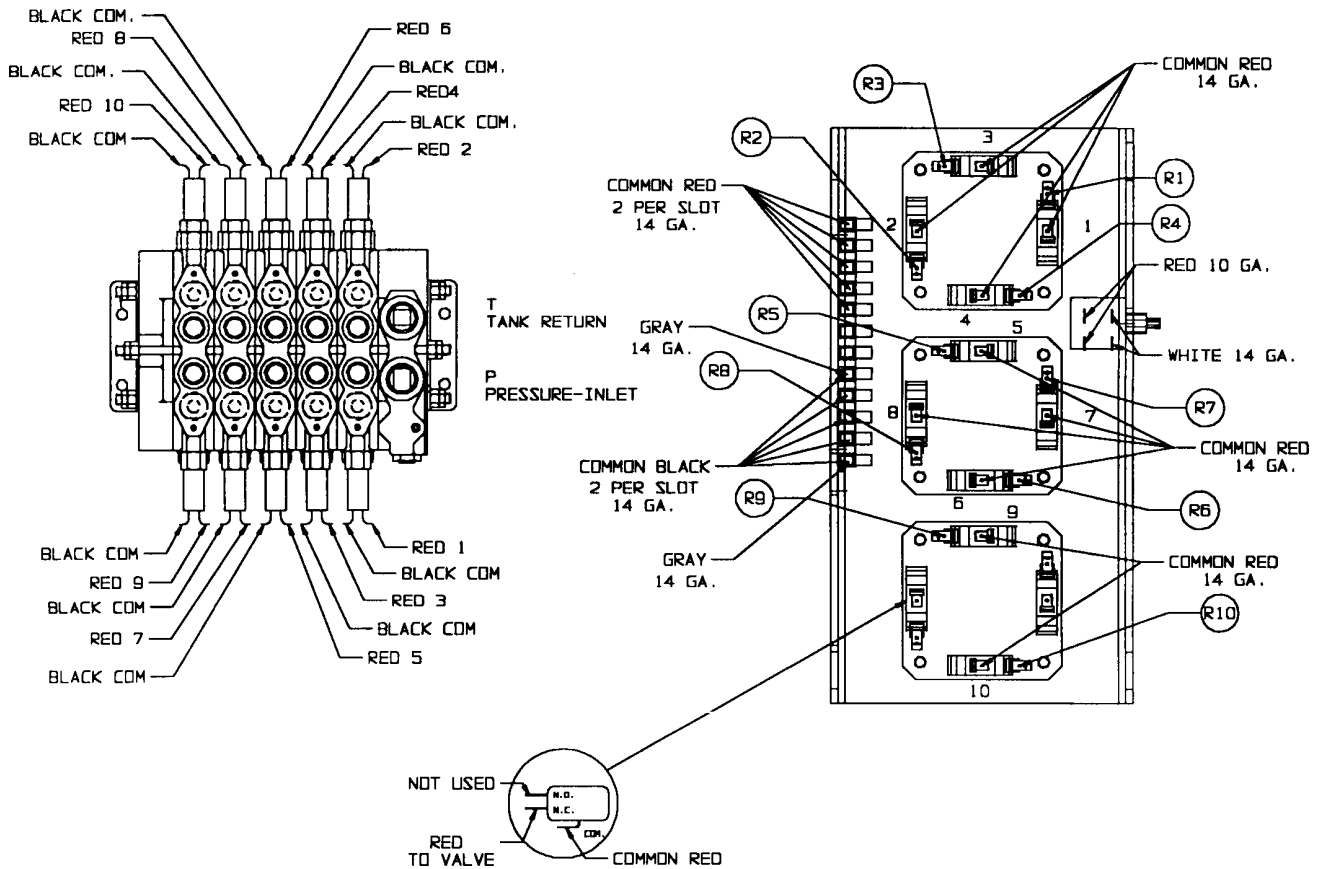


FIGURE 5

MAINTENANCE

ELECTRICAL CONNECTIONS:



MAINTENANCE




PROPER TORQUE FOR FASTENERS

The chart lists the correct tightening torque for fasteners. When bolts are to be tightened or replaced, refer to this chart to determine the grade of bolts and the proper torque except when specific torque values are assigned in manual text.





RECOMMENDED TORQUE IN FOOT POUNDS UNLESS OTHERWISE STATED IN THE MANUAL*

NOTE: These values apply to fasteners as received from supplier, dry or when lubricated with normal engine oil. They do not apply if special graphited or molydisulphide greases or other extreme pressure lubricants are used. This applies to both UNF fine and UNC coarse threads.

Proper Torque values for bolts that are measured in Inches

Bolt Diameter			
	Head Marking No Marks Grade Two	Head Marking Three Lines Grade Five	Head Marking Six Lines Grade Eight
	Pound - Foot Value Dry	Pound - Foot Value Dry	Pound - Foot Value Dry
1/4"	5.5	9	12.5
5/16"	11	18	26
3/8"	20	33	46
7/16"	32	52	75
1/2"	50	80	115
9/16"	70	115	160
5/8"	100	160	225
3/4"	175	280	400
7/8"	175	450	650
1"	270	675	975
1-1/8"	375	850	1350
1-1/4"	530	1200	1950
1-3/8"	700	1550	2550
1-1/2"	930	2100	3350

Proper Torque values for Metric bolts

Bolt Diameter				
	Head Marking 4.8	Head Marking 8.8 or 9.8	Head Marking 10.9	Head Marking 12.9
	Pound - Foot Value Dry	Pound - Foot Value Dry	Pound - Foot Value Dry	Pound - Foot Value Dry
6mm	4.5	8.5	12	14.5
8mm	11	20	30	35
10mm	21	40	60	70
12mm	37	70	105	120
14mm	60	110	165	190
16mm	92	175	255	300
18mm	125	250	350	410
20mm	180	350	500	580
22mm	250	475	675	800
24mm	310	600	850	1000
27mm	450	875	1250	1500
30mm	625	1200	1700	2000

To get Newton-Meters multiply pound-foot of torque by 1.356

*

PARTS SECTION

PARTS ORDERING GUIDE

The following instructions are offered to help eliminate needless delay and error in processing purchase orders for the equipment in this section.

1. The Parts Section is prepared in logical sequence and grouping of parts that belong to the basic machine featured in this manual. Part Numbers and Descriptions are given to help locate the parts and quantities required.
2. The Purchase Order must include the name and address of the person or organization ordering the parts, who should be charged, and if possible, the serial number of the machine for which the parts are ordered.
3. The Purchase Order must clearly list the quantity of each part, the complete and correct part number, and the basic name of the part.
4. The Manufacturer reserves the right to substitute parts where applicable.
5. Some parts are unlisted items which are special production items not normally stocked and are subject to special handling. Request a quotation for such parts before sending a Purchase Order.
6. The Manufacturer reserves the right to change prices without prior notice.

NOTE: Please refer to The Safety Section in the front of this Manual for the proper Part Number when ordering Replacement Safety Decals.



For maximum safety and to guarantee optimum product reliability, always use genuine Alamo Parts. The use of inferior replacement parts may cause premature or catastrophic failure which could result in serious injury or death. Direct any questions regarding parts to:



Alamo Industrial
1502 E. Walnut
Seguin, Texas 78155
830-372-3551

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25' Articulated Arm

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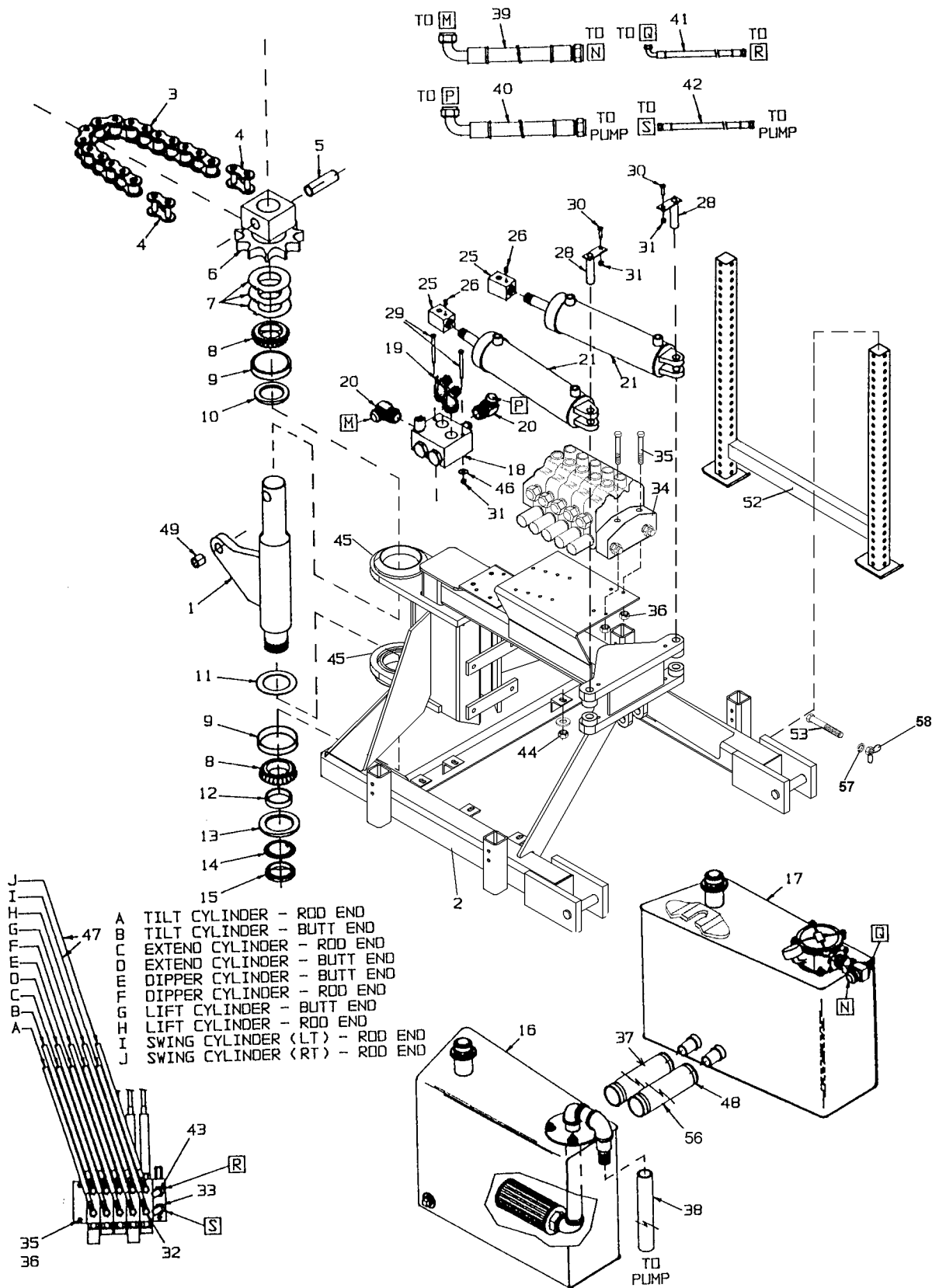
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FRAME ASSEMBLY



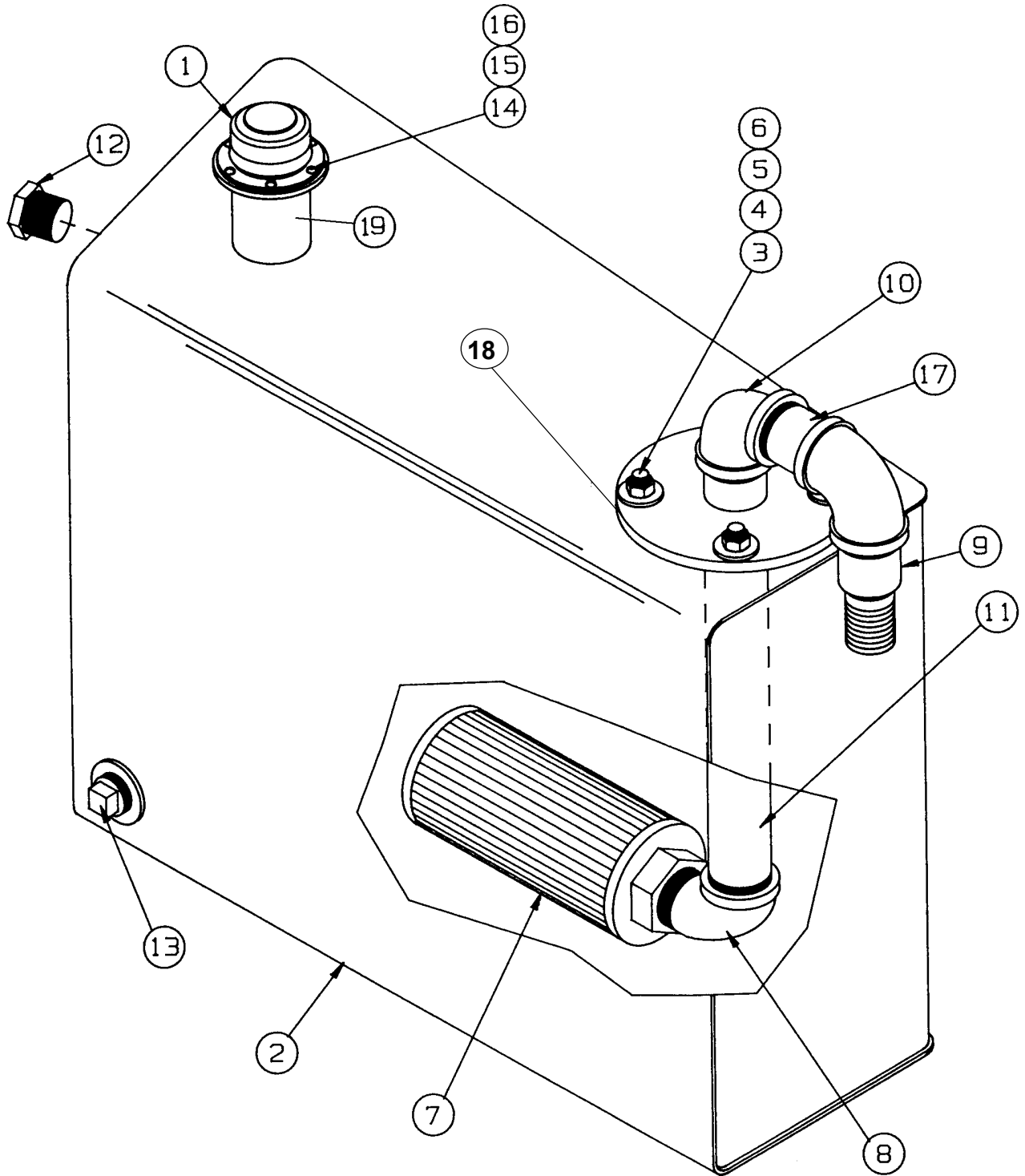
FRAME ASSEMBLY

ITEM	PART NO.	QTY	DESCRIPTION
1	02965546	1	Kingpin Weldment
2	02965605	1	Frame Weldment
3	02963825	1	Chain
4	02963826	2	Connecting Link
5	02965536	1	Bushing
6	02965541	1	Sprocket Weldment
7	02956941	3	Ring, Top Bearing Seal
8	02956834	2	Bearing Cone
9	02956835	2	Bearing Cup
10	02956836	1	Seal
11	02956882	1	Ring, Bottom Bearing Seal
12	02956818	1	Collar
13	02956837	1	Seal
14	02956838	1	Lockwasher
15	02956839	1	Nut
16	02964084	1	Tank Assembly, Right
17	02964083	1	Tank Assembly, Left
18	02960565	1	Cutter Valve
19	02962640	2	Elbow
20	02961089	2	Elbow
21	02965378	2	Cylinder
25	02963814	2	Chain Clevis
26	9A16165	2	Setscrew
28	02963846	2	Pin Weldment
29	10204000	2	Bolt
30	00013900	2	Bolt
31	00015800	2	Locknut
32	02962249	10	Adapter, Elbow
33	63042700	2	Adapter, Straight
34	02965482	1	Motor Control Valve
35	02044900	3	Bolt
36	00750940	3	Locknut
37	02965456	1	Bypass Hose - 16-1/2"
38	02965452	1	Suction Hose
39	02965453	1	Hose
40	02961094	1	Hose
41	02963468	1	Hose
42	02965455	1	Hose
43	02962749	2	Elbow
44	00001800	8	Locknut TLM 1/2 NC PLC
45	00752670	3	Grease Fitting
46	00011100	2	Flatwasher
47	02958511	2	Hose
48	00751858	8	Hose Clamp
49	02959225	1	Bushing
52	02965586	2	Stabilizer
53	02957009	4	Safety Clip Pin
56	02965840	1	Bypass Hose - 17-1/2"
57	00012101	4	Lockwasher
58	5F6160	4	Wingnut

LEFT TANK ASSEMBLY P/N 02964083

ITEM	PART NO.	QTY	DESCRIPTION
1	02209600	1	Filler Cap
2	02963878	1	Tank Weldment, Left
3	02963842	1	Adapter, Special
4	02961000	1	Filter Assembly
	02961001	ref	Filter Element
	02963770	ref	Filter Cover
	02961452	ref	O-Ring
	02961052	ref	Filter Gasket
5	000644	4	Carriage Bolt
6	02961255	4	Push Nut
7	00015800	4	Locknut
8	02825900	1	90 deg. Elbow
9	02960809	1	Straight Adapter
10	63067100	6	Bolt
11	63121700	6	Nut
12	63121800	6	Lockwasher
13	02016100	1	Plug
14	02049700	1	Sight Gauge
15	02962963	1	Dial Indicator
16	00751596	1	Elbow
17	02963328	1	Elbow
18	02965484	1	Spring Mount
19	02892100	1	Bolt
20	00002701	2	Flatwasher
21	00037200	1	Locknut
22	02957390	1	Filler Tube

RIGHT TANK ASSEMBLY P/N 02964084

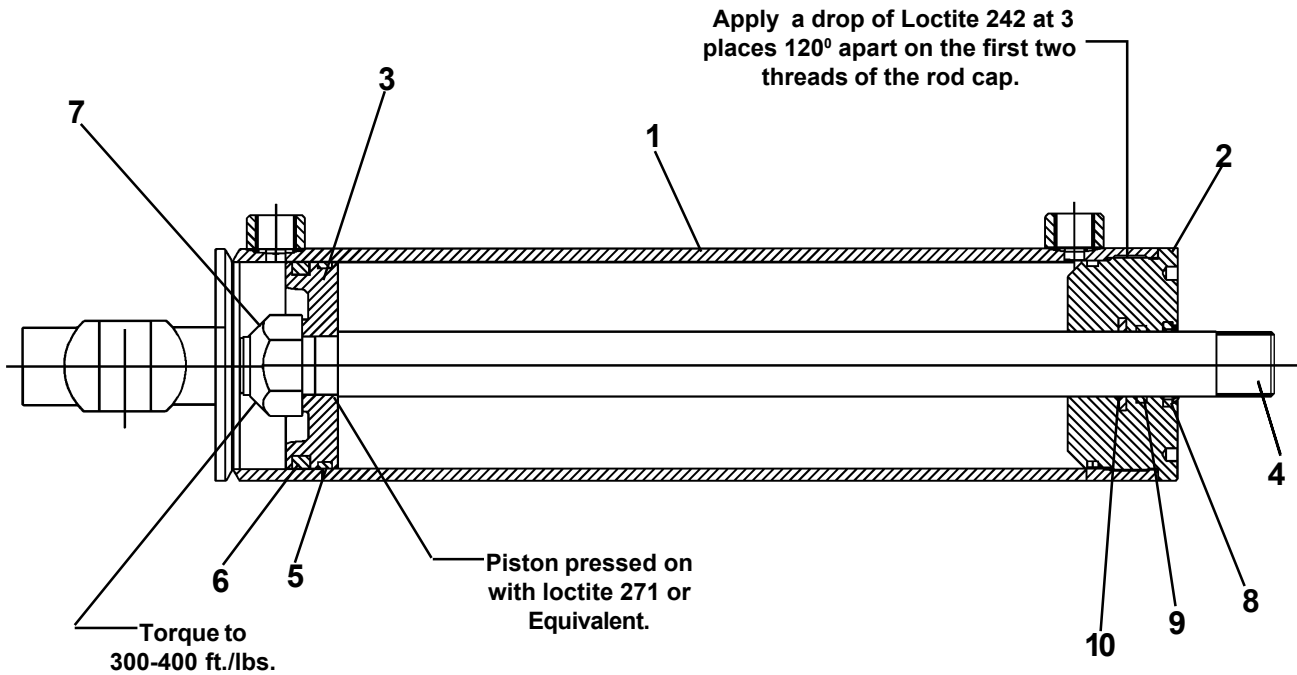


RIGHT TANK ASSEMBLY P/N 02964084

ITEM	PART NO.	QTY	DESCRIPTION
1	02209600	1	Filler Cap
2	02963877	1	Tank Weldment, Right
3	02208800	4	Carriage Bolt
4	63161900	4	Spring Nut
5	00002700	4	Flatwasher
6	00001800	4	Locknut TLM 1/2 NC PLC
7	02047400	1	Suction Filter
8	02047200	1	Elbow
9	02411000	1	Hose Bib
10	02208400	2	Elbow
11	02958339	1	Suction Pipe Weldment
12	02049700	1	Sight Gauge
13	02016100	1	Plug
14	63067100	6	Bolt
15	63121700	6	Nut
16	63121800	6	Lockwasher
17	02964155	1	Nipple
18	02958079	1	Rubber Gasket
19	02957390	1	Filler Tube

SWING CYLINDER ASSEMBLY P/N 02965373A

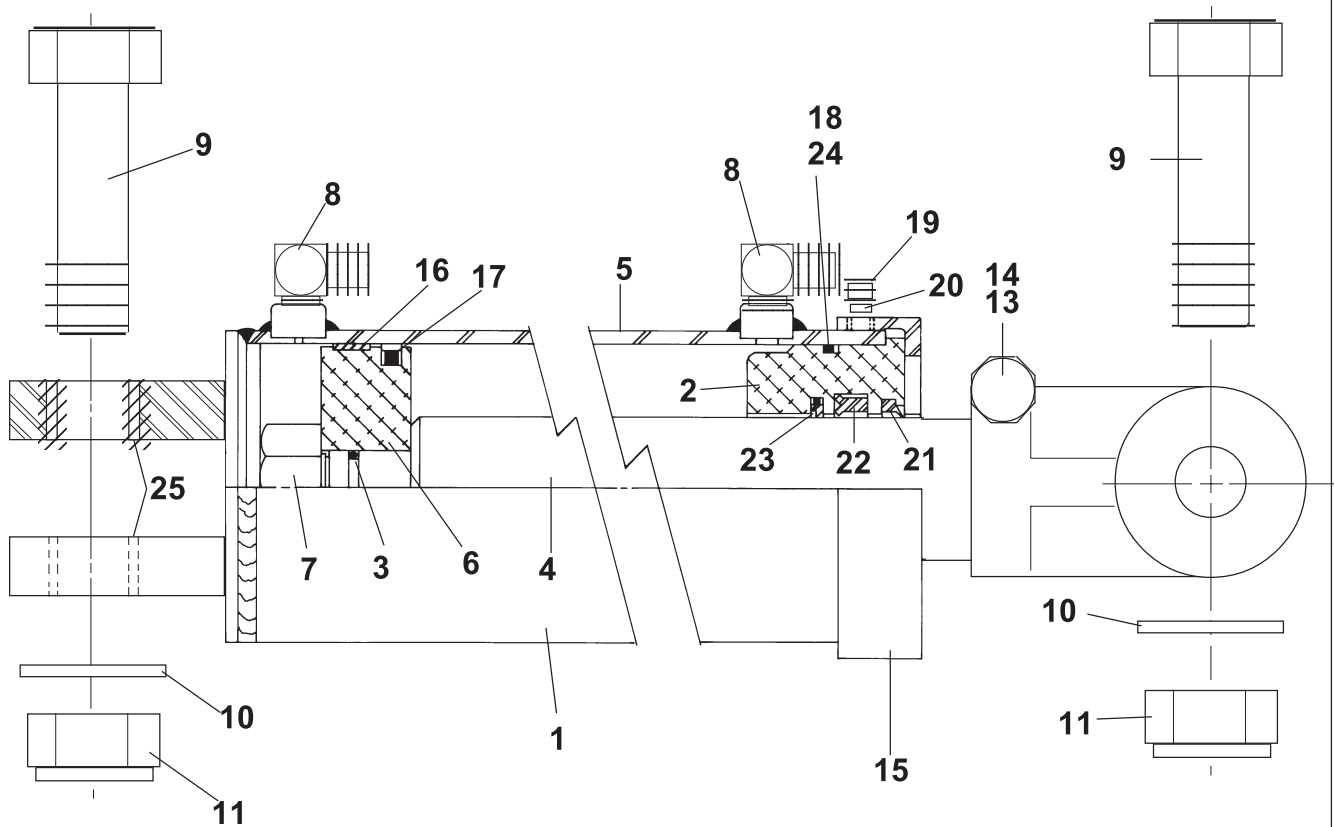
**02965373 Cylinder are no longer available. We are substituting 02965373A.
Retain tis parts listing for future use**



ITEM	PART NO.	QTY	DESCRIPTION
	02965373A	1	Hydraulic Cylinder
1	02977103	1	Tube Weldment
2	02977104	1	Cylinder Head
3	02977105	1	Piston
4	02977106	1	Rod Cylinder
5*	-----	1	Wear Ring
6*	-----	1	Piston Seal
7	1917155	1	Locknut
8*	-----	1	Rod Wiper
9*	-----	1	Rod Seal
10*	-----	1	Buffer Seal

* Included in Seal Kit P/N 02977119

LIFT CYLINDER ASSEMBLY P/N 02961779**



ITEM	PART NO.	QTY	DESCRIPTION
1	02961479	1	Hydraulic Cylinder
2	02962151	1	Gland
3*	-----	1	"O" Ring
4	02962150	1	Rod Assembly
5	02962149	1	Barrel Assembly
6	02962148	1	Piston
7	02252400	1	Locknut
8	02960018	2	Elbow
9	00750479	Ref.	Bolt
10	00749946	Ref.	Washer
11	02030300	Ref.	Nut
13	02960255	Ref.	Allen Head Bolt
14	02960254	1	Nut
15	02962152	1	Collar
16*	-----	1	Wear Ring
17*	-----	1	Piston Seal
18*	-----	1	"O" Ring
19	02962169	1	Set Screw
20	-----	1	Nylon Insert
21*	-----	1	Rod Wiper
22*	-----	1	Rod Seal
23*	-----	1	Buffer Seal
24*	-----	1	Back-Up Ring
25	02959891	2	Bushing

* Included in Seal Kit P/N 02962153

** Includes items # 1, 8, & 25

DS Boom 3-91

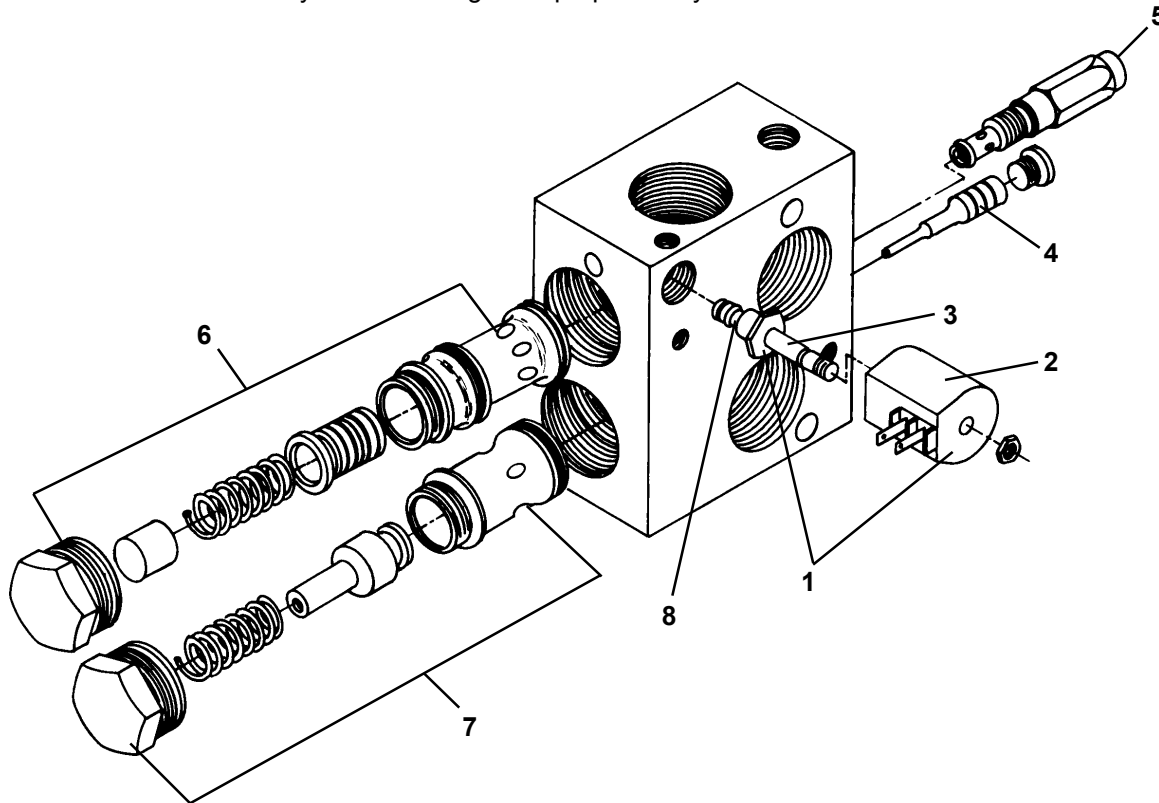
DS Boom 03/01

Parts Section 6-11

MOTOR CONTROL VALVE P/N 02960565

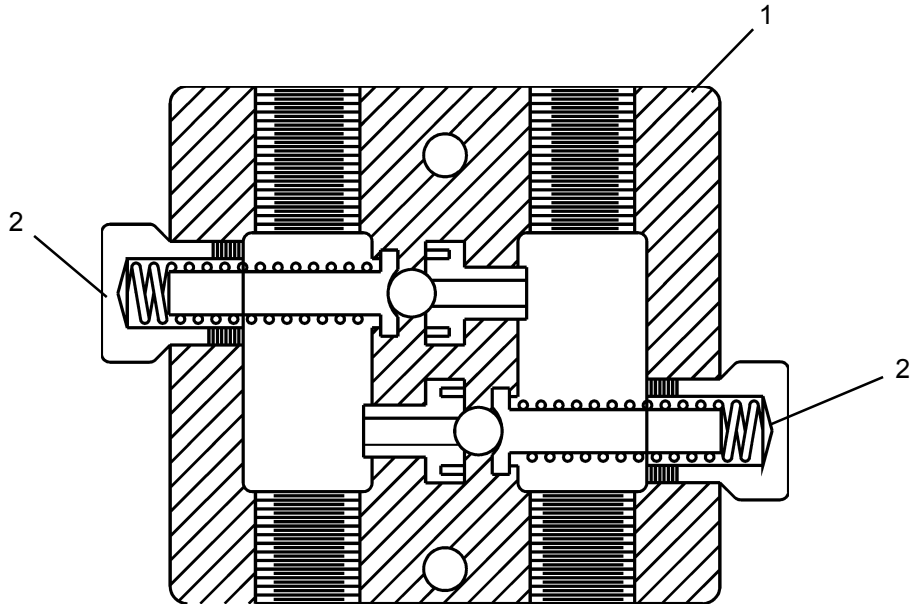
CARTRIDGE VALVE INSTALLATION PROCEDURE

1. Visually inspect the manifold block to make sure cavities are free of contamination including machining burrs and chips.
2. Check the cartridge valve to be sure it is free of visible contamination.
3. Be sure o-rings and/or split back-up rings are arranged properly on valve and are not damaged.
4. Dip cartridge valve in clean oil up to the threads to lubricate seals.
5. Carefully screw cartridge into proper cavity.



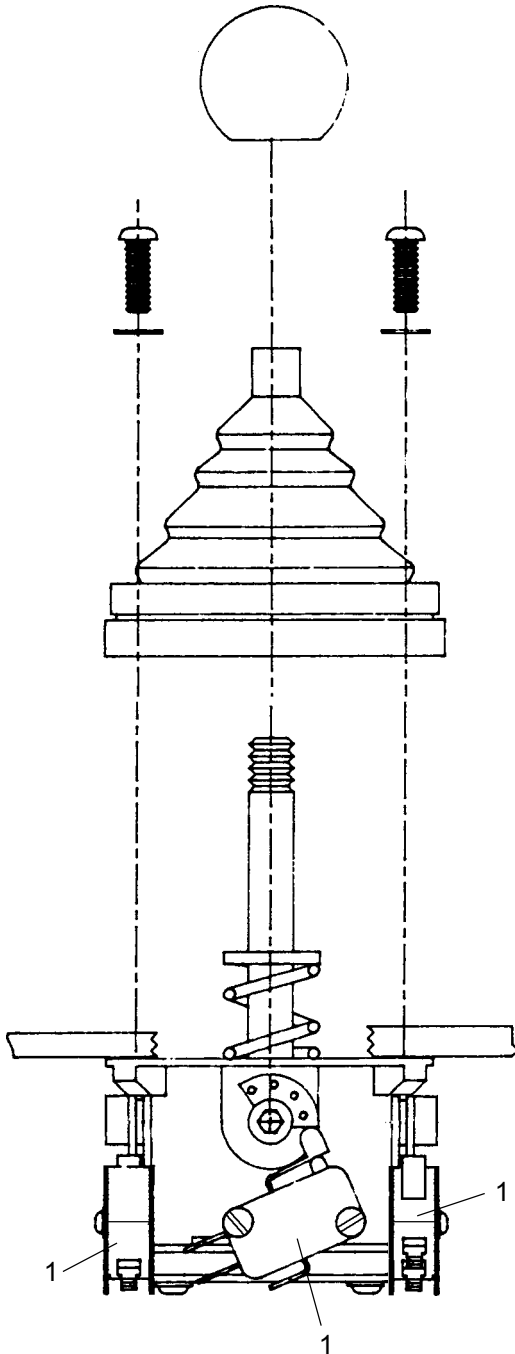
ITEM	PART NO.	QTY	DESCRIPTION
1	02965223	1	Solenoid Complete (S/N 01008 and After)
	02961265	1	Solenoid Complete (S/N 01007 an Prior)
2	02965222	1	Solenoid Coil (S/N 01008 and After)
	02961263	1	Solenoid Coil (S/N 01007 and Prior)
3	02965221	1	Solenoid Valve w/Seals (S/N 01008 and After)
	02961264	1	Solenoid Valve w/Seals (S/N 01007 and Prior)
4	02961271	1	Pilot Piston w/Seals
5	02961261	1	Relief Valve
	02961262	1	Relief Valve - Seal Kit
6	02961267	1	Logic Valve
	02961268	1	Seal Kit
7	02961269	1	Check Valve
	02961270	1	Seal Kit
8	02961266	1	Seal Kit - Solenoid Valve - All S/N's

CROSS OVER RELIEF VALVE P/N 02967110



ITEM	PART NO.	QTY	DESCRIPTION
1	02967121	1	Valve Body
2	02967120	2	Relief Cartridge (2500 psi)

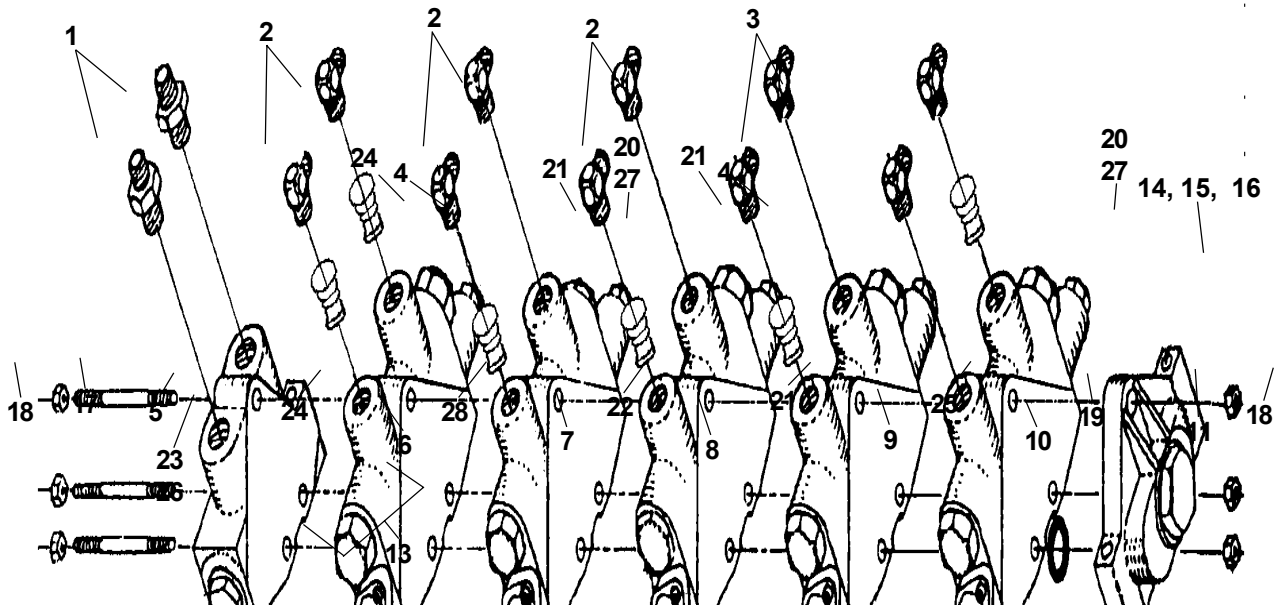
MULTIPLE AXIS CONTROLLERS P/N 02965671



ITEM	PART NO.	QTY	DESCRIPTION
1	02965690	4*	Micro Switch

* Qty per Controller

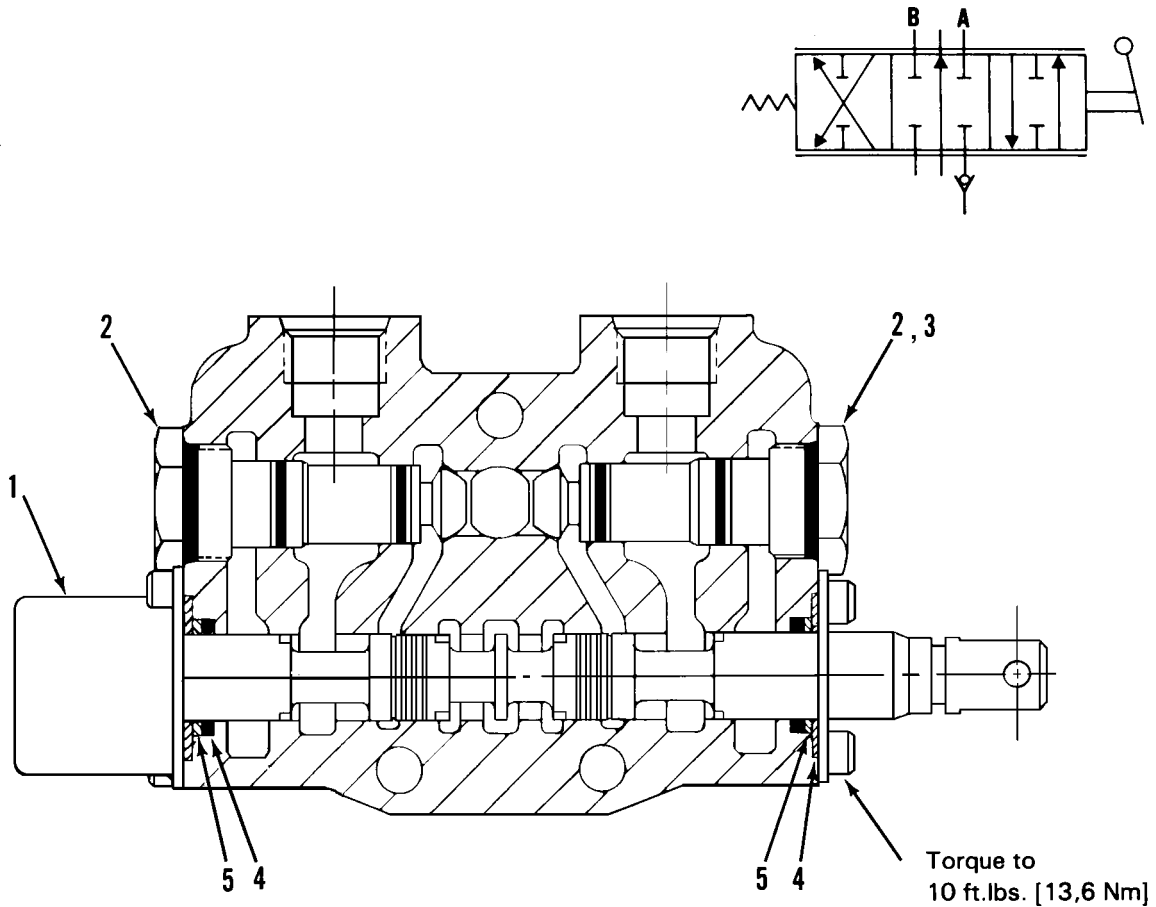
MANUAL CONTROL VALVE BANK P/N 02957610



ITEM	PART NO.	QTY	DESCRIPTION
1	63042700	2	Adapter
2	02962249	8	Elbow
3	03200588	2	Elbow
4	02750100	3	Detent Kit - Standard
5	02962303	1	Valve Section - Inlet Cover
6	02962300	1	Valve Section - Swing
7	02962028	1	Valve Section - Lift
8	02962301	1	Valve Section - Dipper
9	02962301	1	Valve Section - Extension
10	02962302	1	Valve Section - Tilt
11	02046700	1	Valve Section - Outlet Cover
13	02049600	ref	Handle-Linkage Bracket Repair Kit
14	00021800	3	Nut
15	00011700	3	Lockwasher
16	02044900	3	Bolt
17	02612200	3	Tie Rod
18	22504500	6	Nut
19	00545500	ref	O-Ring Kit*
20	02958734	2	Detent Kit - Float(incl. #27)
21	02728200	ref	Relief Cartridge (875 psi)
22	02962778	ref	Relief Cartridge (2500 psi)
23	02785300	ref	Main Relief Valve Seal Kit
24	02960327	ref	Relief Cartridge (1750 psi)
25	02957172	ref	Load Check Plug Assy (2000 psi)
26	02957191	ref	Main Relief (2000 psi)
	02286600		Main Relief Spring (2500 psi)
27	02962596	ref	Detent Cap Only
28	02957194	ref	Relief Cartridge (2000 psi)
	02962403	ref	Restrictor Assembly (not shown)
	02965115	ref	Seal Kit for Relief Cartridges

* Contains Spool Seals for **One** Section and **All** of the Seals between Sections.

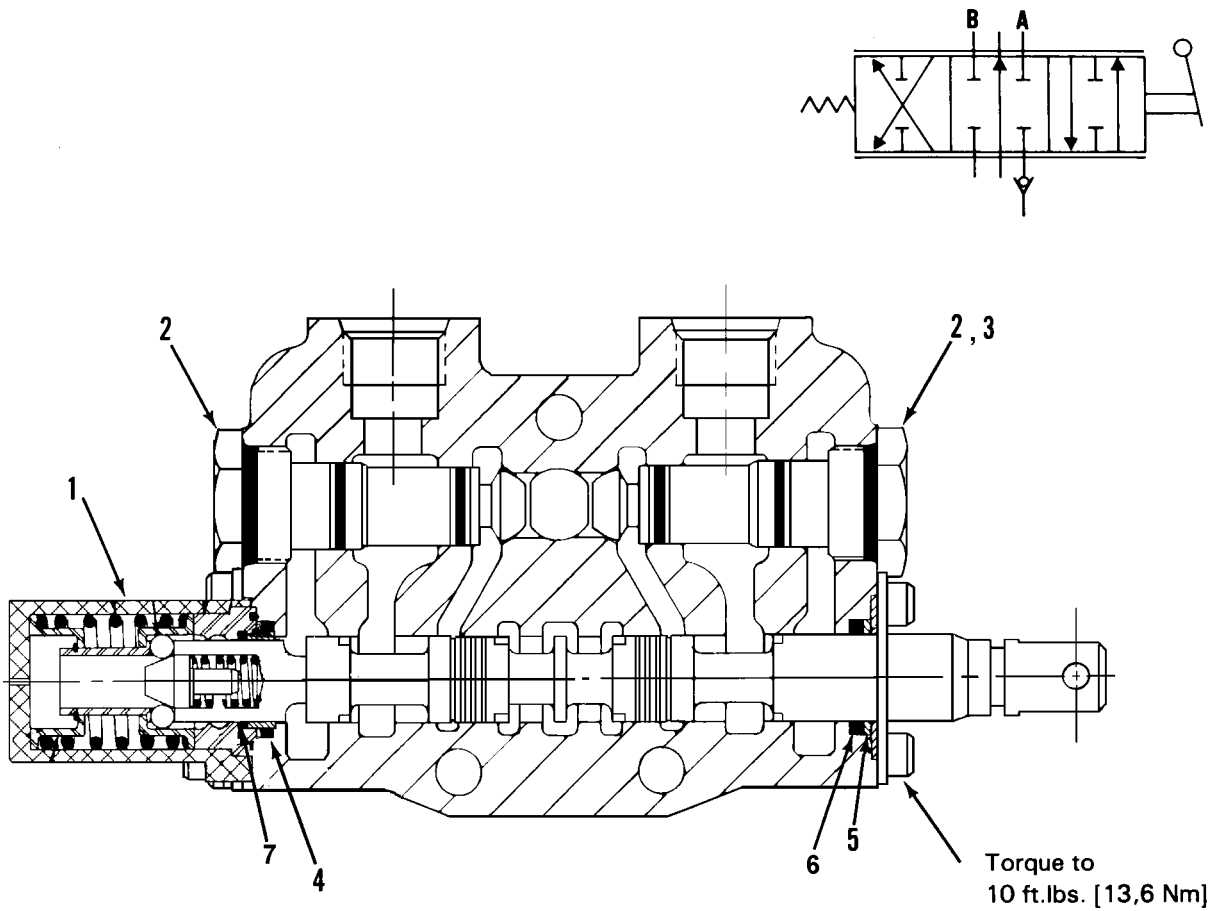
INDIVIDUAL VALVE SEGMENT (NON-FLOAT)



ITEM	PART NO.	QTY	DESCRIPTION
1	02750100	1	Positioner
2	-----	2	See Valve Bank for Part #
3	02965115	Ref.	Seal Kit for Relief Cartridge
4	00545500	Ref.	O-Ring Kit*
5	02962529	Ref.	Washer and O-Ring

* Contains Spool Seals for **One** Section and **All** of the Seals between Sections.

INDIVIDUAL VALVE SEGMENT (FLOAT)

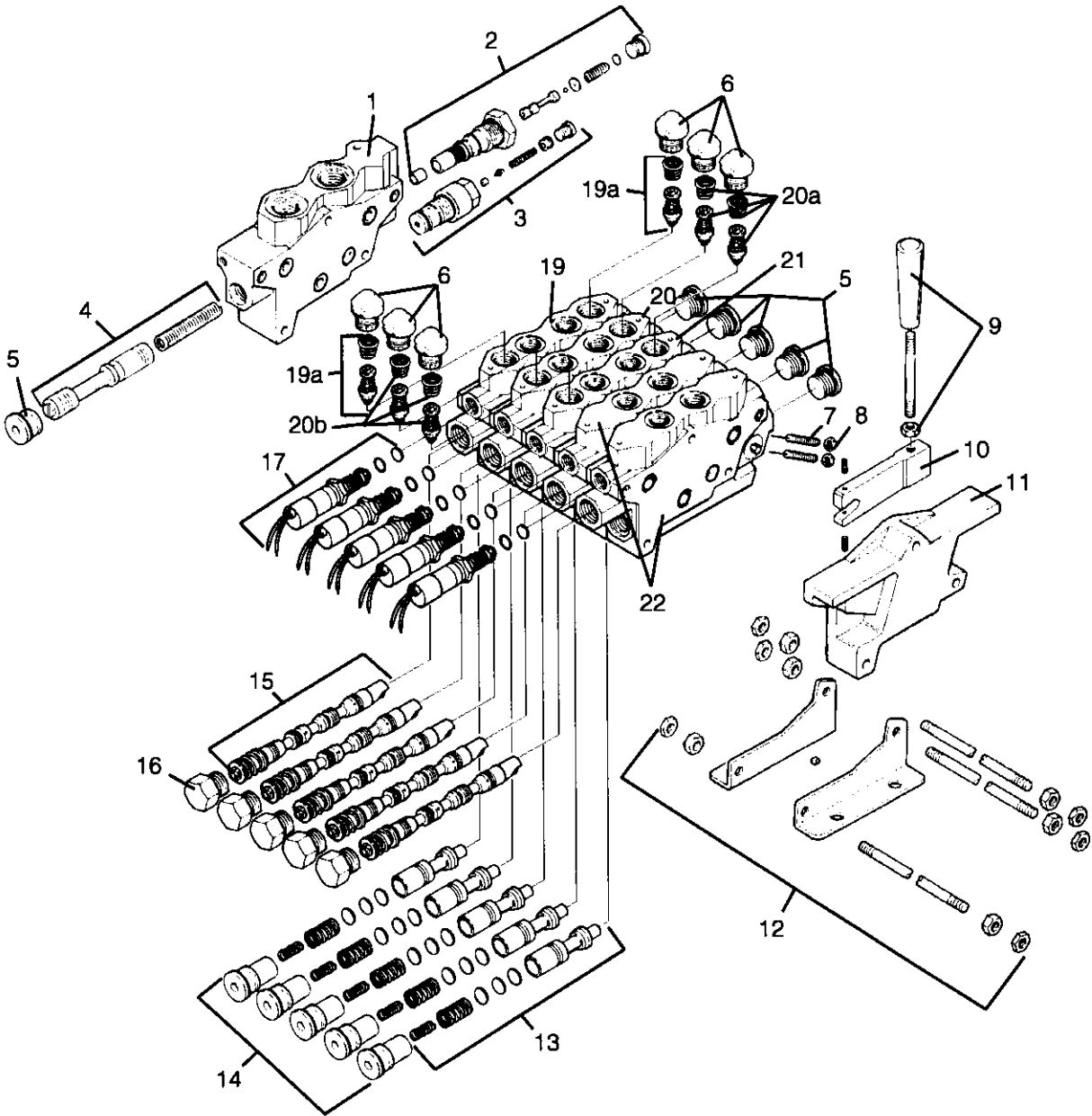


ITEM	PART NO.	QTY	DESCRIPTION
1	02958734	1	Positioner, Float
2	-----	2	See Valve Bank for Part # on Load Check or Work Port Relief.
3	02965115	Ref.	Seal Kit for Relief Cartridge
4	00545500	Ref.	O-Ring Kit*
5	02962529	Ref.	Washer and O-Ring
6	-----	Ref.	O-Ring (included in Seal Kit #00545500)
7	-----	Ref.	O-Ring (included in Seal Kit #00545500)

* Contains Spool Seals for **One** Section and **All** of the Seals between Sections.

ELECTRO HYDRAULIC CONTROL VALVE ASSEMBLY

P/N 02965672



ELECTRO HYDRAULIC CONTROL VALVE ASSEMBLY

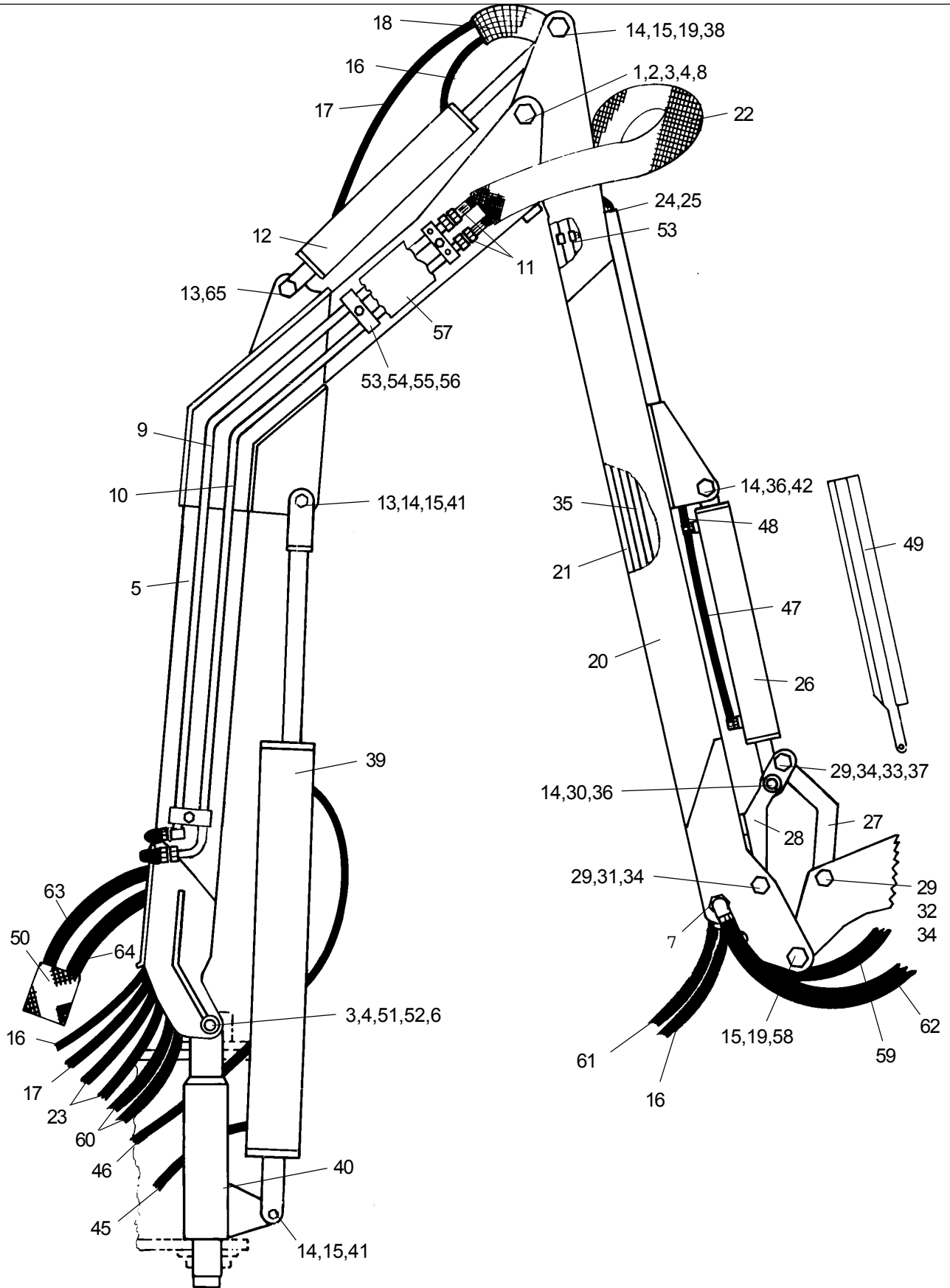
P/N 02965672

ITEM	PART NO.	QTY	DESCRIPTION
1	02965691	1	Bypass Inlet
2	02965692	1	Pilot Cartridge Kit
3	02965693	1	Relief Valve Cartridge Kit
4	02965694	1	Relief Inlet Spool Kit
5	02965695	6	Hex Plug
6	02965696	6	Work Port Option Plug Kit
7	02965697	10	Set Screw
8	02965698	10	Seal Nut
9	02965699	1	Handle Kit
10	02965700	1	Removable Operator Linkage
11	02965701	1	Stacking Plate-No Ports
12	02965702	1	Tie Rod Kit (5 Segments)
13	02965703	5	Compensator Spool Kit
14	02965704	5	Compensator Plug Kit
15	N/A	-	Spool Kit
16	02965705	5	Hex Plug
17	02965706	10	Pulsar
18	02965707	-	Work Segment Seal Kit (Not Shown)
19	02965708	1	Swing Section w/Relief 2550 psi
19a	02965712	2	Work Port Relief 2550 psi
20	02965709	1	Lift Section w/Relief 2050 psi (cl) 250 psi (c2)
20a	02965713	2	Work Port Relief 2050 psi
20b	02965714	2	Work Port Relief 250 psi
21	02965710	1	Dipper Section w/Relief 2050 psi (cl) 250 psi (c2)
22	02965711	2	Tilt & Rotate Section

N/A - Not Available as an individual part. Order Valve Section.

19' ARTICULATED ARM SECTION

19' ARTICULATED ARM P/N 02965466



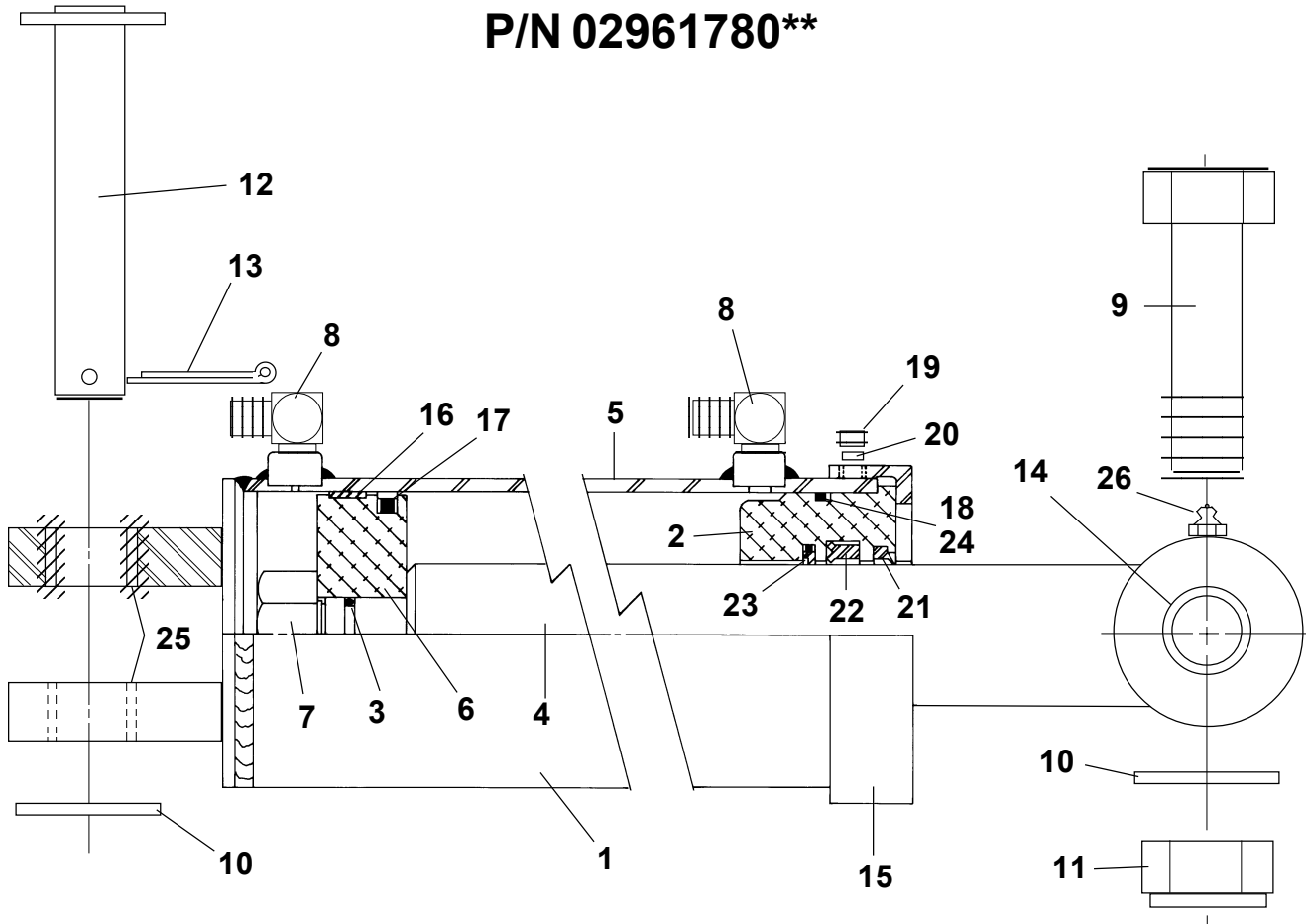
19' ARTICULATED ARM P/N 02965466

ITEM	PART NO.	QTY	DESCRIPTION	ITEM	PART NO.	QTY	DESCRIPTION
1	02958591	1	Main Pin Weldment	34	00037200	3	Nut
2	02966443	2	Main Pin Bushing	35	02960992	1	Tube Dipper
3	00748000	2	Lockwasher	36	00606000	5	Cotter Pin
4	02921700	2	Nut	37	00752670	9	Grease Fitting
5	02961082	1	Articulated Arm Weldment	38	00003500	1	Grease Fitting
6	02965536	1	Main Pin Bushing	39	02961779	1	Lift Cylinder Assembly
7	02960406	2	Bulkhead	40	02965546	1	King Pin Weldment
8	02960842	2	Bushing - Pivot Plate	41	02959225	2	Bushing
9	02965441	1	Tube - Top	42	02959024	Ref-1	Pin
10	02965442	1	Tube - Bottom	43	02961087	Ref-1	Hose
11	02961054	2	Hose	45	001773	Ref-1	Hose
12	02961780	1	Dipper Cylinder Assembly	46	02905100	Ref-1	Hose
13	02967013	1	Pin	47	02959177	1	Hose - Live End
14	00749946	2	Washer	48	02959178	1	Hose- Dead End
15	02030300	2	Nut	49	02959084	1	Cylinder Guard
16	02905300	2	Hose - Rod End	50	02961085	2	Sleeving
17	02956911	1	Hose - Dead End	51	02965538	1	Main Pin Weldment
18	00751838	1	Sleeving 30"	52	02960841	2	Bushing - Pivot Plate
19	02956972	2	Bolt	53	00605600	4	Hex Bolt
20	02961084	1	Dipper Weldment	54	02963154	3	Clamp
21	02960991	1	Tube - Dipper - Rear	55	00002700	5	Flatwasher
22	02961085	2	Sleeving 54"	56	00001800	3	Locknut TLM 1/2 NC PLC
23	02957467	2	Hose	57	02961067	1	Tubing Protector
24	02960869	1	Tube Clamp	58	02960650	2	Bushing
25	02957969	2	Rubber Gromment	59	*	1	Hose
26	02961781	1	Tilt Cylinder Assembly	60	02965467	2	Hose
27	02958716	1	Linkage Arm Assembly	61	02215700	1	Hose
28	02958719	1	Center Linkage Arm Ass'y	62	*	1	Hose
29	02958357	6	Bushing	63	02961282	1	Hose
30	02959070	1	Pin	64	02965591	1	Hose
31	02758400	1	Bolt	65	02967246	1	Set Screw
32	00752405	1	Bolt				
33	02958883	1	Bolt				

* See Page 6-22 Hydraulic Schematic in Parts Section

19' DIPPER CYLINDER ASSEMBLY

P/N 02961780**



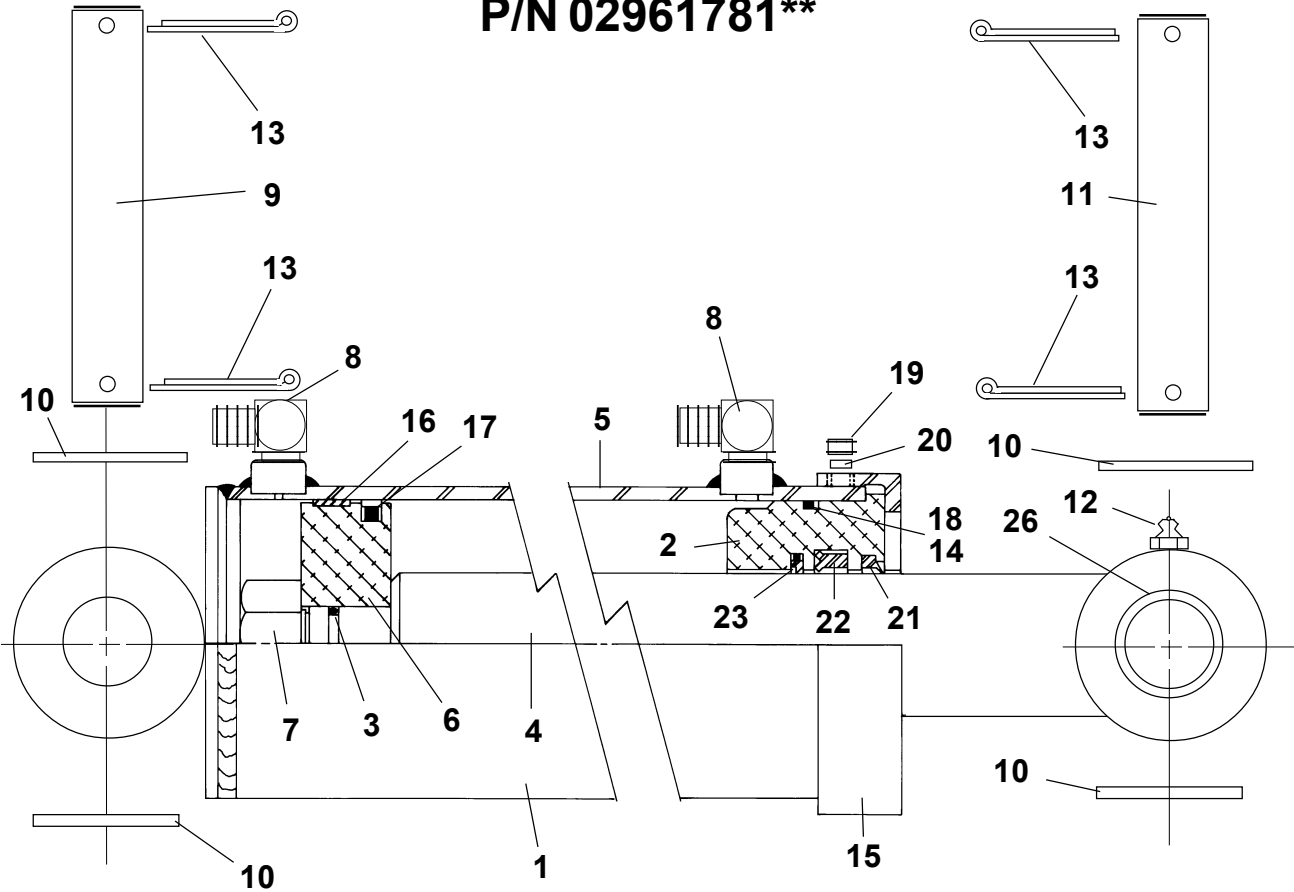
ITEM	PART NO.	QTY	DESCRIPTION
1	02961482	1	Hydraulic Cylinder
2	02962140	1	Gland
3*	-----	1	"O" Ring
4	02962139	1	Rod Assembly
5	02962138	1	Barrel Assembly
6	02962131	1	Piston
7	02252400	1	Locknut
8	02960018	2	Elbow
9	00750479	Ref.	Bolt
10	00749946	Ref.	Washer
11	02030300	Ref.	Nut
12	02963797	Ref.	Pin
13	00606000	Ref.	Roll Pin
14	02959889	1	Bushing
15	02962129	1	Collar
16*	-----	1	Wear Ring
17*	-----	1	Piston Seal
18*	-----	1	"O" Ring
19	02962169	1	Set Screw
20	-----	1	Nylon Insert
21*	-----	1	Rod Wiper
22*	-----	1	Rod Seal
23*	-----	1	Buffer Seal
24*	-----	1	Back-Up Ring
25	02959925	2	Bushing
26	00752670	1	Grease Fitting

* Included in Seal Kit P/N 02962141

** Includes items # 1, 14, 25, 8, 26

19' TILT CYLINDER ASSEMBLY

P/N 02961781**

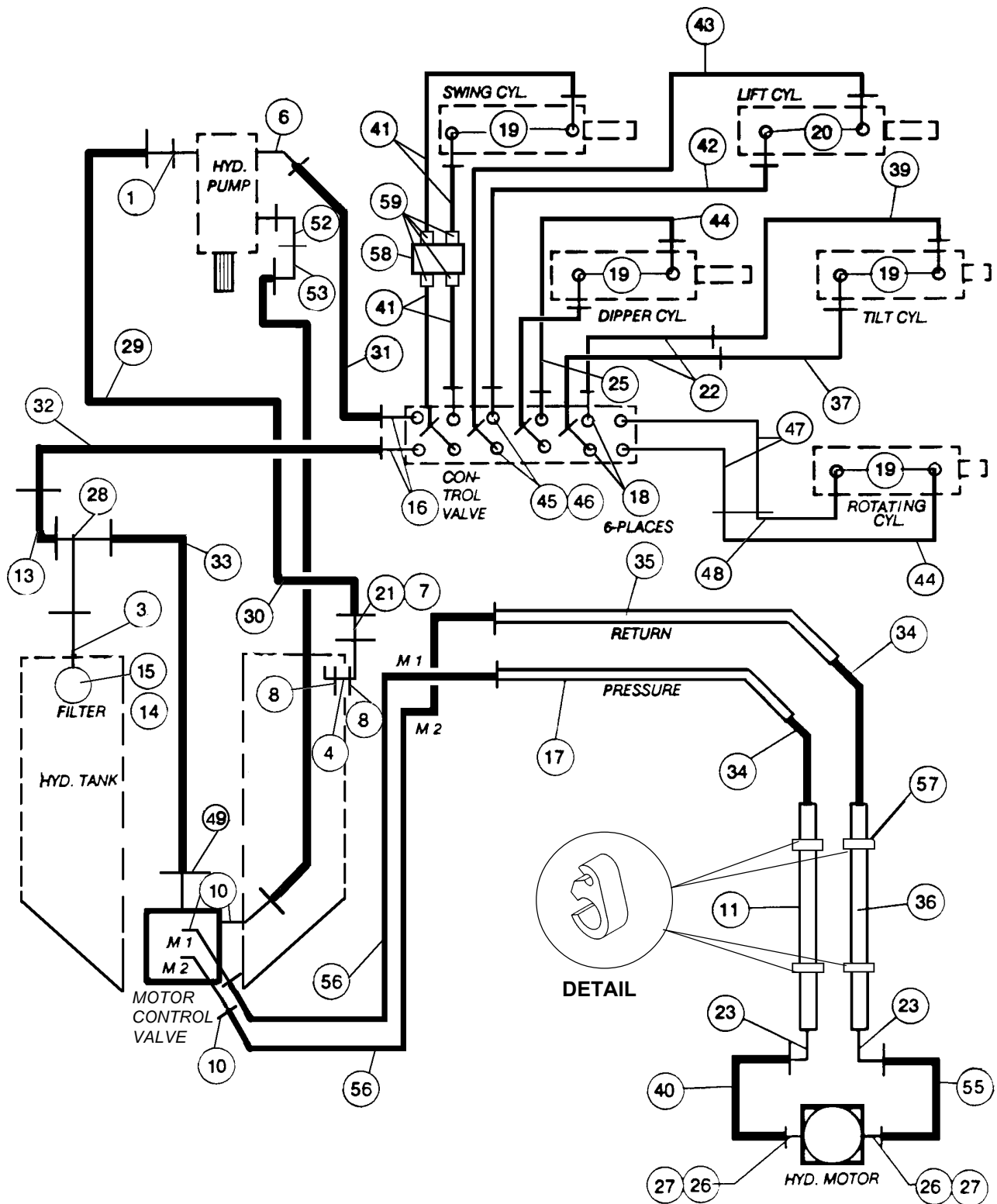


ITEM	PART NO.	QTY	DESCRIPTION
1	02961475	1	Hydraulic Cylinder
2	02962157	1	Gland
3*	-----	1	"O" Ring
4	02962168	1	Rod Assembly
5	02962167	1	Barrel Assembly
6	02962154	1	Piston
7	02252400	1	Locknut
8	02960018	2	Elbow
9	02959024	Ref.	Pin
10	00749946	Ref.	Washer
11	02959070	Ref.	Nut
12	00600000	1	Grease Fitting
13	00000400	Ref.	Cotter Pin
14*	-----	1	Back-Up Ring
15	02962158	1	Collar
16*	-----	1	Wear Ring
17*	-----	1	Piston Seal
18*	-----	1	"O" Ring
19	02962169	1	Set Screw
20	-----	1	Nylon Insert
21*	-----	1	Rod Wiper
22*	-----	1	Rod Seal
23*	-----	1	Buffer Seal
26	02959889	1	Bushing

* Included in Seal Kit P/N 02962159

** Includes items # 1, 12, 8, 26

19' HYDRAULIC SCHEMATIC W/ ROTATING HEAD

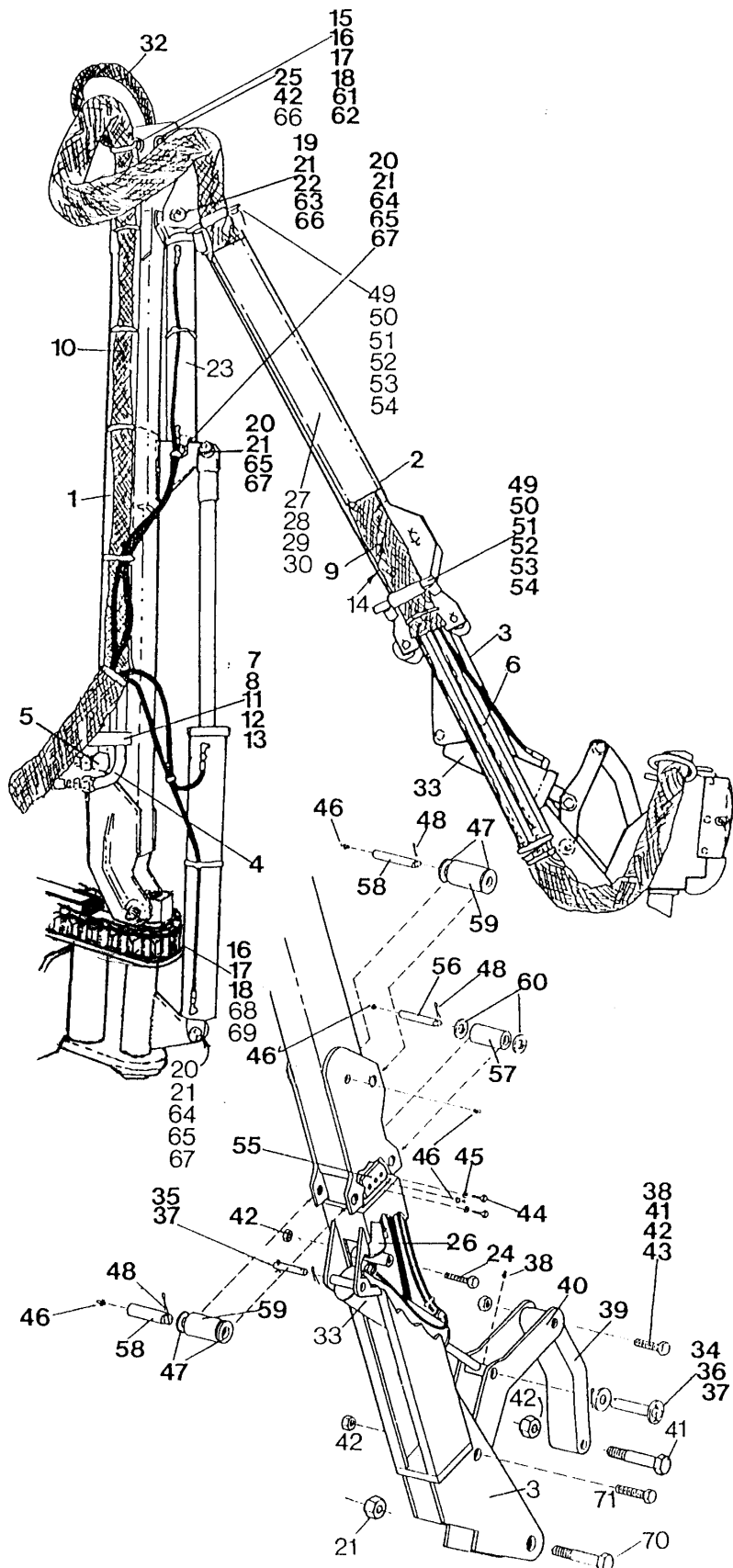


19' HYDRAULIC SCHEMATIC W/ ROTATING HEAD

ITEM	PART NO.	QTY	DESCRIPTION
1	00749101	1	Flange Kit
3	02960809	1	Adapter Straight
4	02964155	1	Nipple
6	02962213	1	Adapter
7	02411000	2	Hose Bib
8	02208400	2	Elbow-90 deg.
10	02961825	3	Elbow-45 deg.
11	02960992	1	Tube-Dipper
13	02825900	1	Elbow-90 deg.
14	02961000	1	Filter
15	02961001	1	Filter Replacement Element
16	02042400	2	Adapter-Straight
17	02965442	1	Tube-Lift Section Bottom
18	02823100	8	Elbow-90 deg.
19	02045200	10	Elbow-90 deg.
20	02822100	2	Elbow-90 deg.
21	02026200	2	Hose Clamp
22	02967467	2	Hose-Control Valve to Hose
23	02960406	2	Elbow-Bulkhead
25	02956911	1	Hose-Control Valve to Dipper Cylinder
26	00749101	2	Split Flange Kit
27	02960806	2	Adapter
28	02963842	1	Elbow
29	02965452	1	Hose-Reservoir Tank to Pump
30	02961094	1	Hose-Pump to Motor Control Valve
31	02965455	1	Hose-Pump to Control Valve
32	02963468	1	Hose-Control Valve to Tank
33	02965453	1	Tube-Motor Control Valve to Tank
34	02961054	2	Hose-Tube to Tube
35	02965441	1	Tube-Lift Section Top
36	02960991	1	Tube-Dipper Rear
37	02959178	1	Hose-Hose to Tilt Cylinder
39	02959177	1	Hose-Hose to Tilt Cylinder
40	02961282	1	Hose-Motor to Bulkhead
	02961057	1	Hose - Sq. Head
41	02967108	4	Hose-Control Valve to Swing Cylinder
42	001773	1	hose-Control Valve to Lift Cylinder
43	02905100	1	Hose-Control Valve to Lift Cylinder
44	02905300	2	Hose-Control Valve to Dipper Cylinder
45	02962022	2	Elbow-90 deg.
46	02822300	2	Adapter-Straight
47	02965467	2	Hose
48	02215700	1	Hose
49	02960807	1	Adapter
52	02961098	1	Adapter
53	02960407	1	Adapter
55	02965591	1	Hose - Flail
	02961057	1	Hose - Sq. Head
56	02965592	2	Hose
57	02966483	4	Clamp
58	02967110	1	Cross Over Relief Valve
59	02967109	4	Adapter

25' ARTICULATED ARM W/EXTENSION

25' BOOM WITH EXTENSION ASSEMBLY P/N 02963025



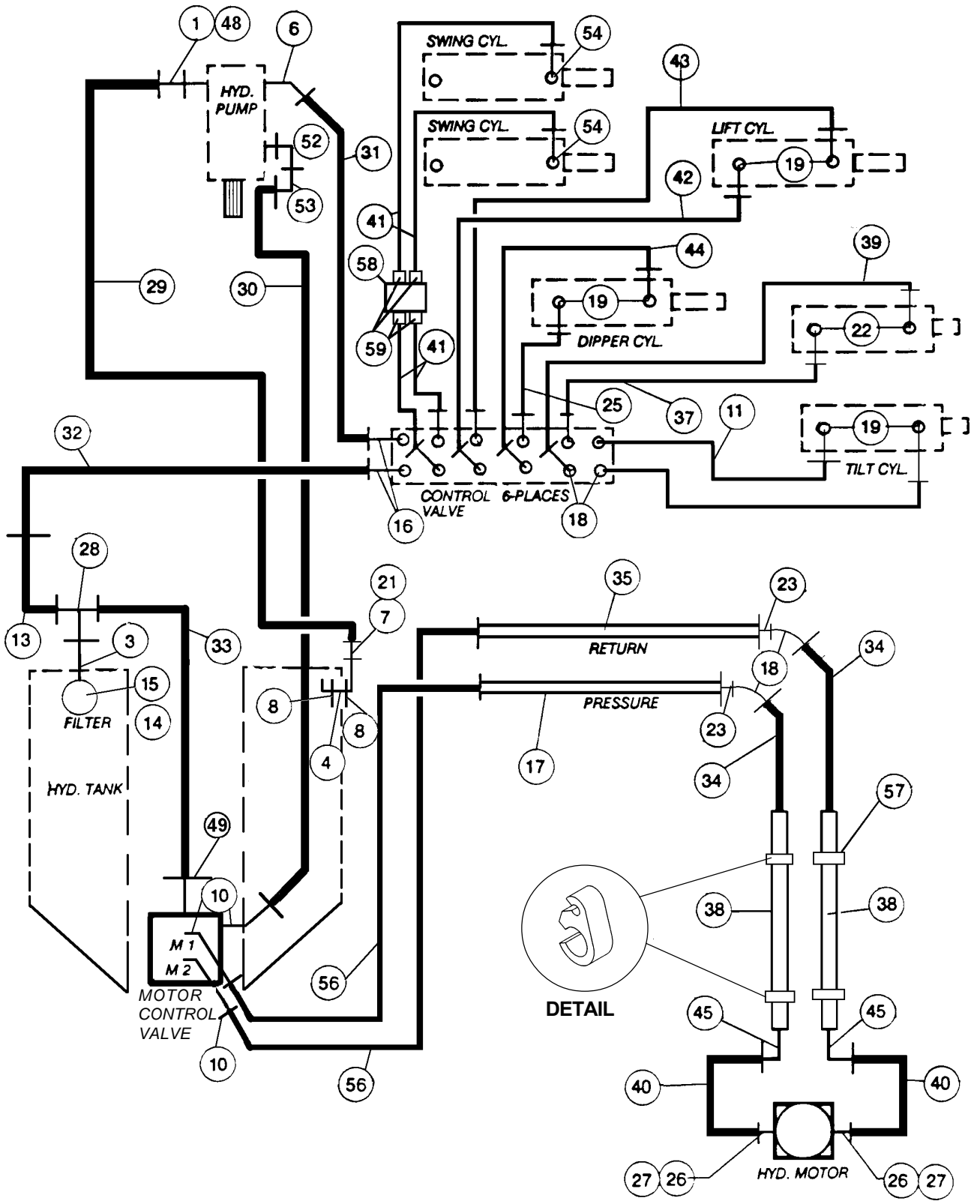
DS Boom 03/91

Parts Section 6-30

25' BOOM WITH EXTENSION ASSEMBLY P/N 02963025

ITEM	PART NO.	QTY	DESCRIPTION
1	02962609	1	Weldment Lift Section 25' Boom
2	02962352	1	Weldment T-Boom Sleeve
3	02962285		Weldment-Extension Arm 25' Extension Boom
4	02962654	1	Tube Hydraulic 25' Extend Boom
5	02962655	1	Tube Hydraulic 25' Extend Boom
6	02962656	2	Tube Hydraulic 25' Extend Boom
7	02962608	1	Bar, Tube Clamp
8	02960869	1	Clamp-Steel Tubing Twin
9	02963165	1	Sleeving-Cordura-160" Long
10	02963166	1	Sleeving-Cordura-90" Long
11	02152800	1	Bolt
12	02957009	2	Bolt
13	00015800	2	Locknut
14	02959283	1	Twin Series Tube Clamp
15	02958938	1	Pin-Main
16	02958345	1	Bushing
17	00748000	1	Lockwasher, Heavy
18	02921700	1	Nut
19	00016700	1	Bolt
20	00750479	1	Bolt
21	02030300	2	Nut Toplock
22	00752670	1	Grease Fitting
23	02962650	1	Cylinder Hydraulic
24	02958113	1	Bolt
25	00752671	1	Bolt
26	02962648	1	Cylinder Hydraulic
27	02963198	1	Channel-Hose Guide
28	02023100	6	Bolt
29	00023500	6	Flatwasher
30	00011700	6	Lockwasher
32	00751838	1	Cordorv Sleeving
33	02961787	1	Tilt Cylinder Assembly-28' Boom
34	02959024	1	Pin-Cylinder
35	02960528	1	Pin-Clevis-Long
36	00749946	8	Washer
37	00000400	8	Pin-Cotter
38	00752670	1	Grease Fitting
39	02958719	1	Linkage Arm Assembly
40	02958927	1	Linkage Arm Assembly
41	00752405	1	Bolt
42	00037200	1	Nut Toplock
43	02958357	2	Bushing
44	00750959	4	Bolt
45	02043900	4	Lockwasher, Highcollar
46	00003500	2	Zerk Fitting Straight
47	02774500	1	Washer Spacer
48	00606000	6	Pin-Cotter
49	02956953	2	Bolt
50	02716500	2	Nut Toplock
51	02957579	4	Hose Roller
52	02961401	4	Roller Guide & Bolt Weldment
53	00002700	12	Flatwasher
54	02961400	2	Roller, Plastic, 28' Boom
55	02962397	2	Plate, Wear
56	02962398	1	Pin, Small Roller
57	02735700	1	Small Boom Roller Assembly
58	02962399	2	Pin, Large Roller
59	02962653	2	Large Roller Assembly
60	02962400	4	Spacer
61	02960842	3	Bushing
62	00749185	2	Washer
63	02959889	3	Bushing
64	02959891	4	Bushing
65	00749946	3	Washer
66	02963260	2	Extension Cylinder Spacer
67	02959225	3	Bushing
68	02964017	1	Main Pin
69	02960841	2	Bushing
70	02956972	1	Bolt
71	02758400	1	Bolt

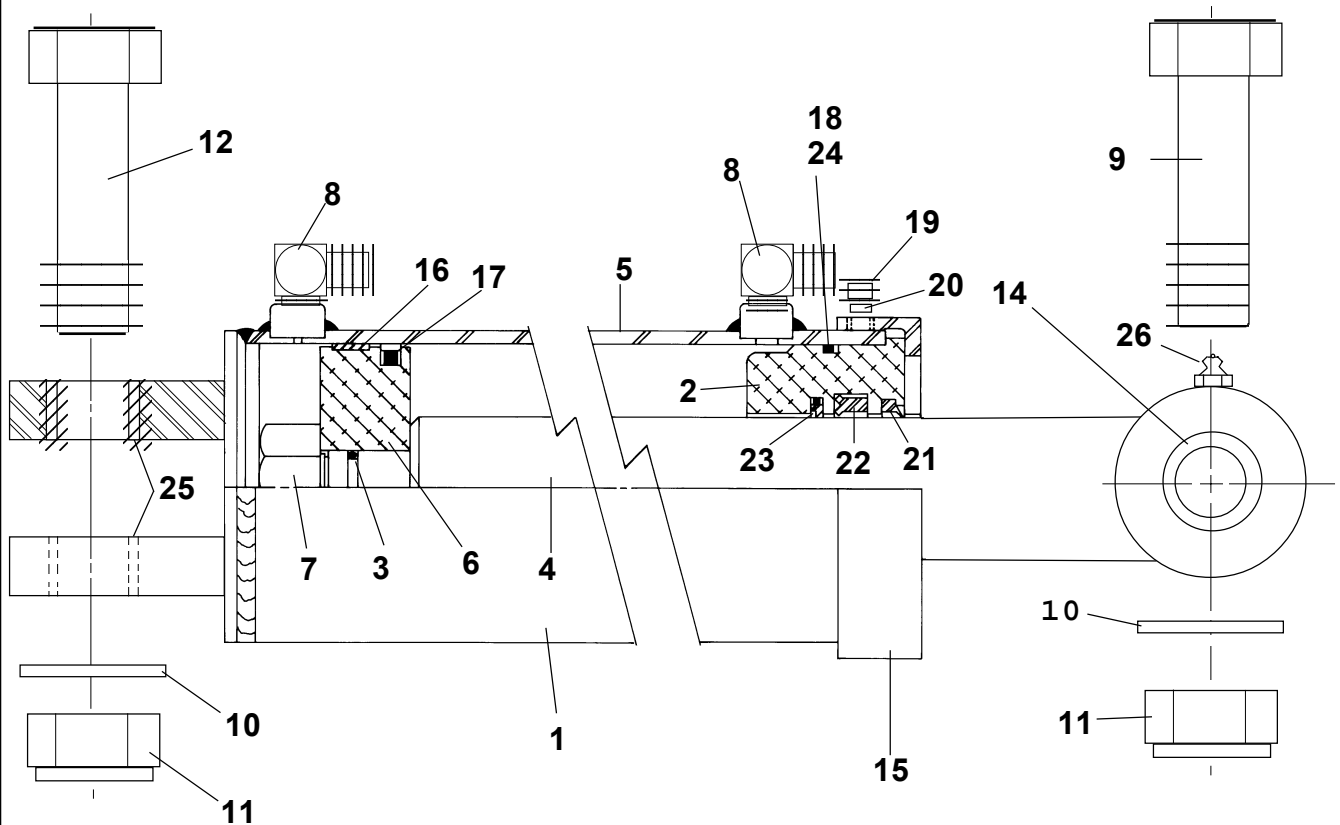
25' BOOM HYDRAULIC SYSTEM SCHEMATIC



25' BOOM HYDRAULIC SYSTEM SCHEMATIC

ITEM	PART NO.	QTY	DESCRIPTION
1	00749101	1	Flange Kit
3	02960809	1	Adapter Straight
4	02962213	1	Elbow-90 degree
6	02961098	1	Elbow-90 degree
7	02411000	1	Hose Bib
8	02208400	2	Elbow-90 degree
10	02961825	3	Elbow-45 degree
11	02963163	1	Hose-Valve to tilt cylinder
13	02825900	1	Elbow-90 degree
14	02961000	1	Filter
15	02961001	1	Filter Replacement Element
16	63042700	2	Adapter Straight
17	02962654	1	Tube-Lift Section Bottom
18	02961103	2	Bulkhead Adapter
19	02960018	8	Elbow-90 degree
21	02026200	2	Hose Clamp
22	02962181	2	Straight-Adapter
23	02959154	1	Elbow-Adapter
25	02956846	1	Hose-Control Valve to Dipper Cylinder
26	00749103	2	Split Flange Kit
27	02754100	2	90 degree Elbow
28	02963842	1	Elbow, Special
29	02964143	1	Hose-Reservoir Tank to Pump
30	02961309	1	Hose-Pump to Motor Control Valve
31	02960930	1	Hose-Pump to Control Valve
32	61026400	1	Hose-Control Valve to Tank
33	02965453	1	Hose-Motor Control Valve to Tank
34	02963162	2	Hose-Tube to Tube
35	02962655	1	Tube-Lift Section Top
37	02956853	1	Hose-Control Valve to Extension Cylinder
38	02962656	2	Tube-Dipper Section
39	02956855	1	Hose-Control Valve to Extension Cylinder
40	02949000	1	Hose-Motor to Bulkhead
41	02967108	4	Hose-Control Valve to Swing Cylinder
42	02959201	1	Hose-Control Valve to Lift Cylinder
43	02959885	1	Hose-Control Valve to Lift Cylinder
44	02957468	1	Hose-Control Valve to Dipper Cylinder
45	00751486	1	Straight Adapter-Bulkhead
48	02964196	1	Elbow
49	02960807	1	Adapter
52	02961098	1	Adapter
53	02960407	1	Adapter
54	02822100	2	Elbow
56	02965592	2	Hose
57	02966483	2	Clamp
58	02967110	1	Cross Over Relief Valve
59	02967109	4	Adapter

25' DIPPER CYLINDER ASSEMBLY P/N 02963288**

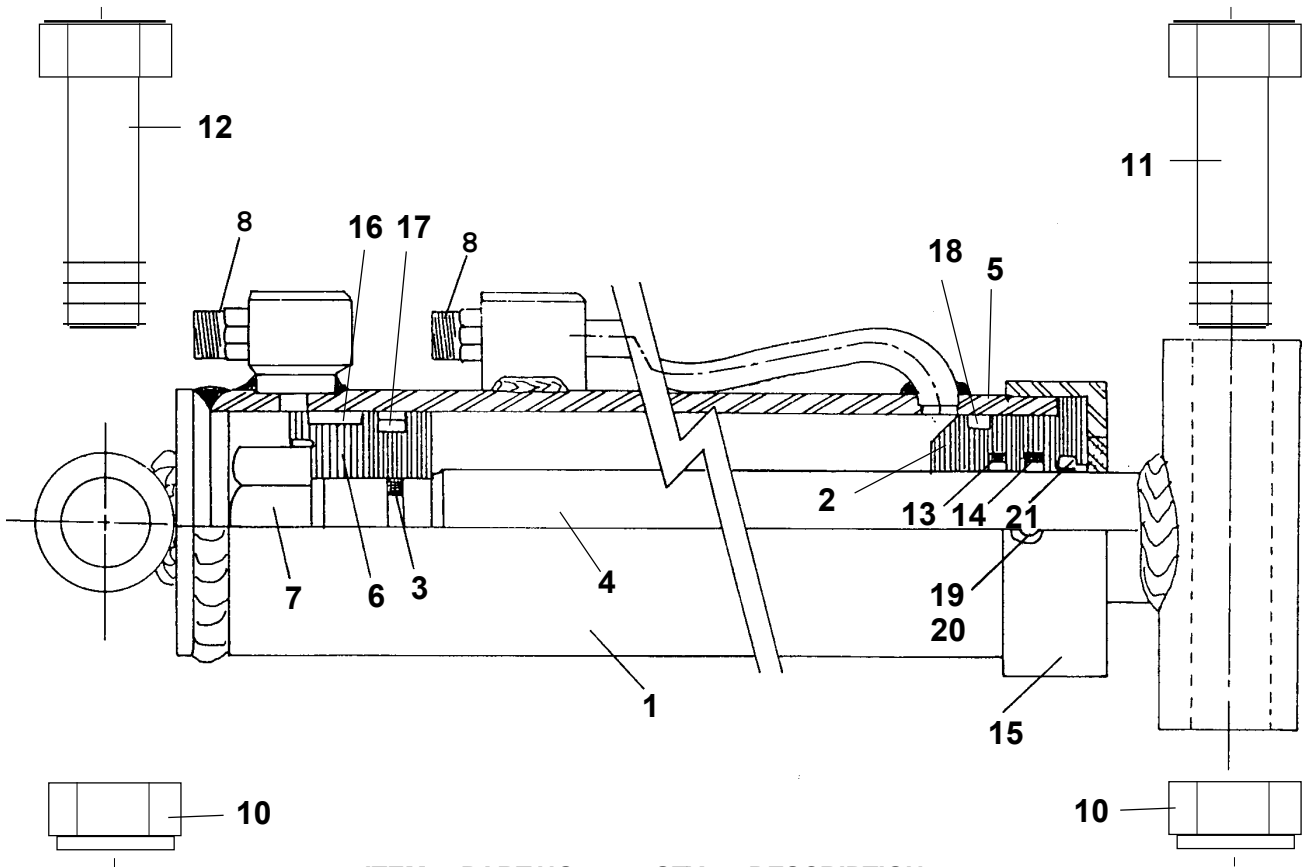


ITEM	PART NO.	QTY	DESCRIPTION
1	02963288	1	Hydraulic Cylinder
2	02962151	1	Gland
3*	-----	1	"O" Ring
4	02962650	1	Rod Assembly
5	02963283	1	Barrel Assembly
6	02962148	1	Piston
7	02840500	1	Locknut
8	02960018	2	Elbow
9	00016700	Ref.	Bolt
10	00749946	Ref.	Washer
11	02030300	Ref.	Nut
12	00750479	1	Bolt
14	02959889	1	Bushing
15	02962158	1	Collar
16*	-----	1	Wear Ring
17*	-----	1	Piston Seal
18*	-----	1	"O" Ring
19	02962169	1	Set Screw
20	-----	1	Nylon Insert
21*	-----	1	Rod Wiper
22*	-----	1	Rod Seal
23*	-----	1	Buffer Seal
24*	-----	1	Back-Up Ring
25	02959891	2	Bushing
26	00752670	1	Grease Fitting

* Included in Seal Kit P/N 02962153

** Includes items # 1, 8, & 25

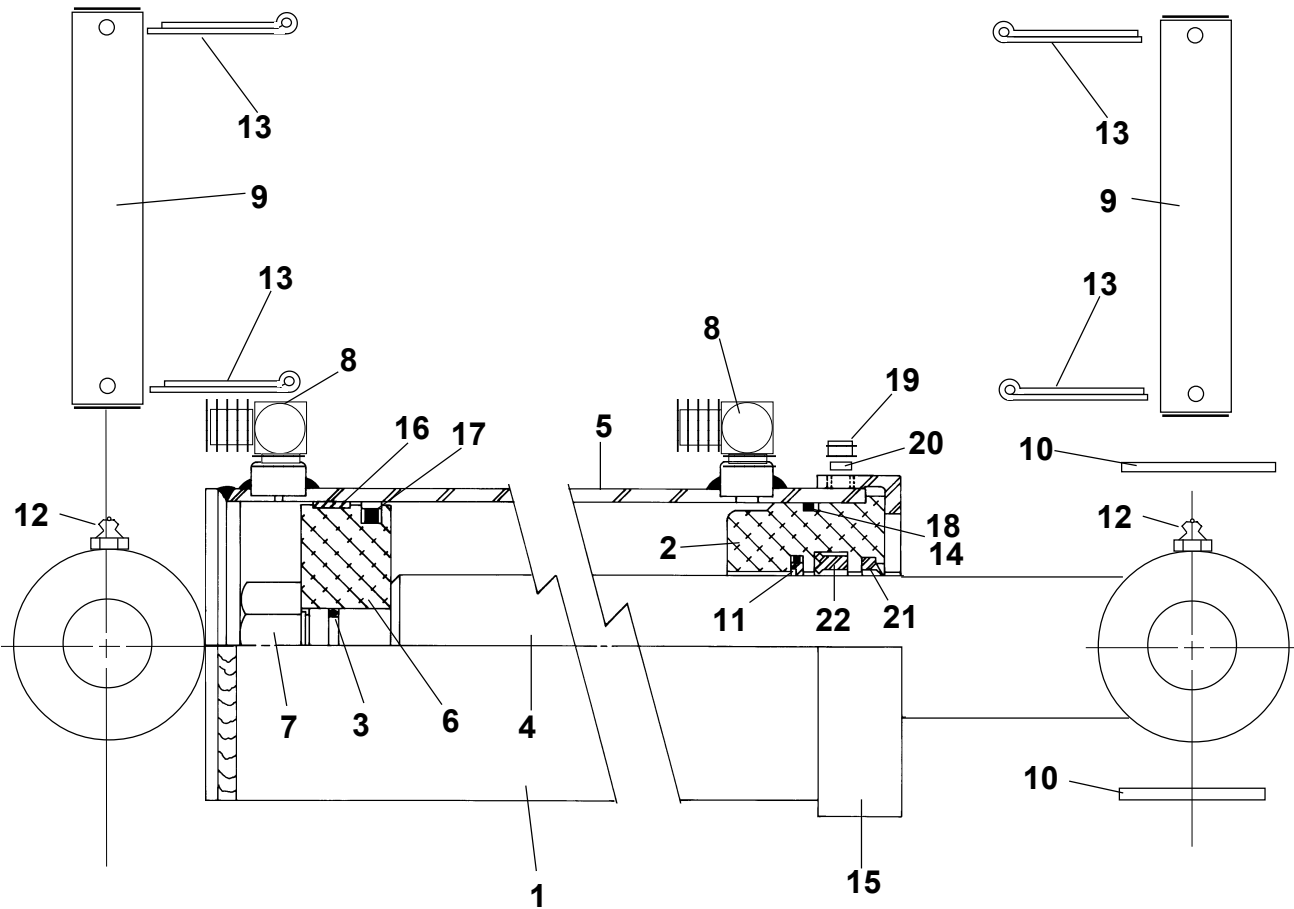
25' EXTENSION CYLINDER ASSEMBLY P/N 02962648



ITEM	PART NO	QTY	DESCRIPTION
1	02962648	1	Hydraulic Cylinder
2	02962128	1	Gland
3*	-----	1	"O" Ring
4	02963270	1	Rod Assembly
5	02963269	1	Barrel Assembly
6	02962125	1	Piston
7	00752671	1	Locknut
8	02962181	Ref	Straight Adapter
10	00037200	Ref	Locknut
11	02958113	Ref	Bolt
12	00601100	Ref	Bolt
13	-----	Ref	Rod Seal
14*	-----	1	Back-Up Ring
15	02962146	1	Collar
16*	-----	1	Wear Ring
17*	-----	1	Piston Seal
18*	-----	1	"O" Ring
19	02962169	1	Set Screw
20	-----	1	Nylon Insert
21*	-----	1	Rod Wiper
22*	-----	1	Rod Seal
23*	-----	1	Buffer Seal

*Included in Seal Kit P/N 02962130

25' TILT CYLINDER ASSEMBLY P/N 02961787



ITEM	PART NO.	QTY	DESCRIPTION
1	02961484	1	Hydraulic Cylinder
2	02962134	1	Gland
3*	-----	1	"O" Ring
4	02962133	1	Rod Assembly
5	02962132	1	Barrel Assembly
6	02962131	1	Piston
7	02840500	1	Locknut
8	02960018	2	Elbow
9	00749847	Ref.	PinA
10	00749946	Ref.	Washer
11*	-----	1	Buffer Seal
12	00752670	1	Grease Fitting
13	00000400	Ref.	Cotter Pin
14*	-----	1	Back-Up Ring
15	02962129	1	Collar
16*	-----	1	Wear Ring
17*	-----	1	Piston Seal
18*	-----	1	"O" Ring
19	02962169	1	Set Screw
20	-----	1	Nylon Insert
21*	-----	1	Rod Wiper
22*	-----	1	Rod Seal

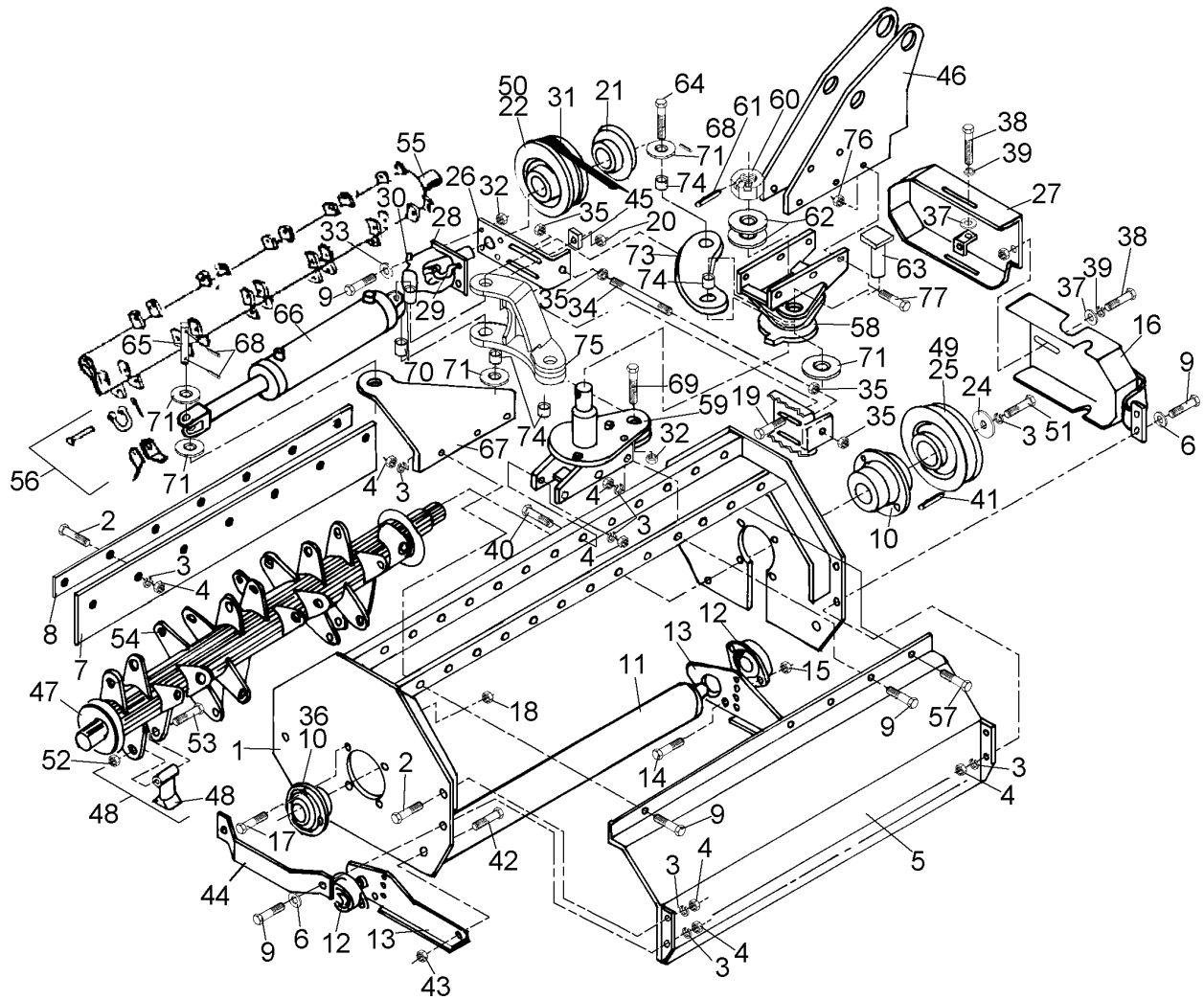
* Included in Seal Kit P/N 02962135

FLAIL HEAD ASSEMBLIES

FLAIL AXE HEAD ASSEMBLY

ITEM	PART NO.	QTY	DESCRIPTION
	02974056		Complete Flail Axe Head Assembly
1	00026200	1	Cotter Pin
2	00001800	11	Locknut TLM 1/2 NC PLC
3	00002700	15	Flatwasher
4	00011700	4	Lockwasher
5	00013500	3	Nut
6	00015800	4	Nut
7	00019300	8	Nut
8	00021400	2	Bolt
9	00023100	4	Nut
10	00023500	6	Flatwasher
11	02027400	4	Bolt
12	00035900	4	Nut
13	00037200	4	Nut
14	00752176	1	Grease Fitting
15	00753642	2	Nut
16	02716500	8	Nut
17	02892000	7	Bolt
18	02918600	6	Bolt
19	02956712	1	Rubber Flap
20	02956714	1	Clamp Bar
21	02956748	1	Skid Shoe
22	02957041	2	Roller Bearing & Flange
23	02957655M	1	Rotor with Knives (Includes items 48-51)
24	02958131A	2	Flange Bearing Assembly
25	02958198	1	Key
26	00750940	2	Nut
27	03200925	1	Carb
28	02967325	2	Pulley
29	02967328	1	Bushing
30	02970301	1	Flail Axe Head
31	02959099	1	Hitch Post
32	02970324	1	Plate-Hitch Post Clamp
33	02970325	1	Plate-Cover, Belt & Pulley
34	02970326	1	Rod-Hinge, F/A Door
35	02970465	1	Weldment, Door, Flail Axe
36	02970539	3	V-Belt
37	02970540	1	Roller
38	02970583	4	SHSS
39	02970585	1	Skid Shoe
40	02970586	2	Washer
41	02973256	1	Motor Mount
42	02970709	1	Plate-Inside
44	02970537	1	Hub
45	02961678	1	Motor
46	02962207	Ref	Key (part of motor)
47	23504500	8	Nut
48	02956949	16	Bolt
49	02958540	16	Blade Kit
50	02956943	32	Bushing
51	00695100	6	Nut, Toplock 5/8 NC PLC
52	02971725	1	Weldment, Door, Flail Axe
53	02675800	2	Bolt
54	00001400	2	Flatwasher
55	00010300	2	Lockwasher
56	02963338	1	Top Pivot Plate
57	00749130	6	Bolt
58	00001200	6	Nut
59	02974048	1	Bottom Pivot Plate
60	02963330	1	Bolt
61	02963331	1	Locknut
62	02963354	2	Bushing
63	02276800	2	Pinclip
64	02963332	2	Pin Retaining

ROTATING FLAIL AXE HEAD ASSEMBLY P/N 02965479

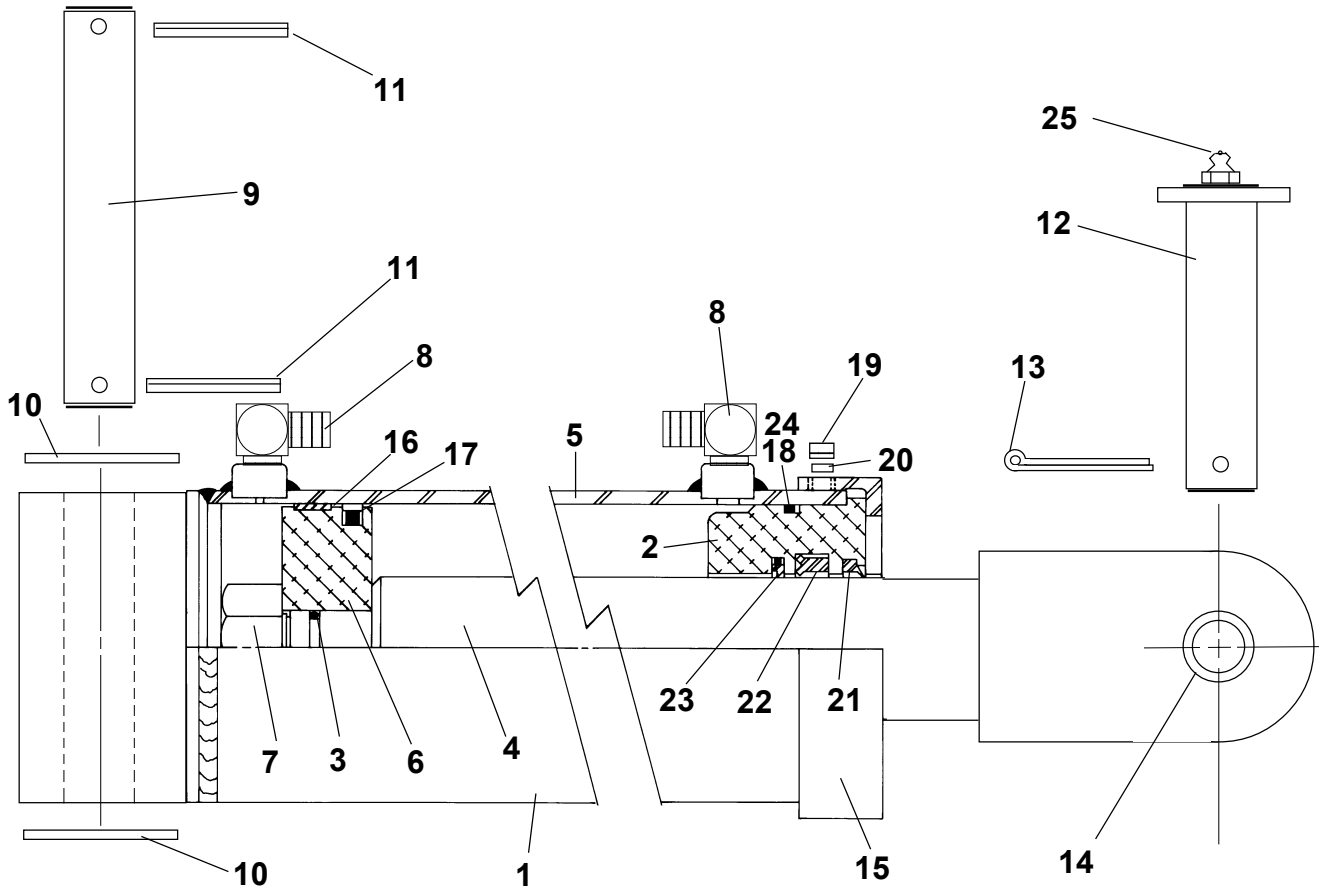


ITEM	PART NO.	QTY	DESCRIPTION
1	02963355	1	Flail Head Weldment
2	02892000	18	Bolt
3	00001300	25	Lockwasher
4	00001200	25	Nut
5	02960347	1	Top Front Deck Weldment
6	00002700	16	Flatwasher
7	02956712	1	Rubber Deflector
8	02956714	1	Clamp Bar
9	00012000	14	Bolt
10	02958131A	2	Flange Bearing Assembly
	02958175A	1	Housing
	02965827	1	Bearing Cartridge
11	02956741	1	Rear Roller Weldment
12	02957041	2	Roller Bearing and Flange
13	02956748	2	Skid Shoe Weldment
14	00023100	4	Bolt
15	00015800	4	Nut
16	02959930	1	Bumper and Cover Belt Weldment
17	00019300	8	Bolt
18	00019400	8	Nut
19	12621000	2	Bolt
20	00752036	6	Nut
21	000672	1	Hub - Motor Sheave

ROTATING FLAIL AXE HEAD ASSEMBLY P/N 02965479

ITEM	PART NO.	QTY	DESCRIPTION
22	000673	1	Brake Pulley
23	02959923	1	Key
24	100720S	1	Cutter Shaft Washer
25	02959835	1	Cutter Shaft Pulley
26	02959903	1	Motor Adjustment Plate Weldment
27	02959906	1	Belt Cover Motor Half Weldment
28	02963894	1	Hydraulic Motor (S/N 01006 and Above)
	02957328	1	Hydraulic Motor (S/N 01005 and Below)
29	00750316	2	Elbow
30	00750317	2	Split Flange Kit
31	000533	2	V-Belt
32	00001800	4	Locknut TLM 1/2 NC PLC
33	63000500	4	Washer
34	02959932	1	Thread Rod
35	61020600	4	Nut
36	00015000	1	Grease Fitting
37	00024100	3	Flatwasher
38	10058000	3	Bolt
39	00017000	3	Lockwasher
40	00752716	3	Bolt
41	02958198	1	Key
42	00008300	4	Bolt
43	00695100	4	Nut, Toplock 5/8 NC PLC
44	02958204	1	Guard
45	02060800	2	Square Washer
46	02959099	Ref	Hitch Post Assembly
	02958845	Ref-1	Hitch Post Weldment
	02958424	Ref-1	Bushing
	00003500	Ref-1	Grease Fitting
47	02957655M	Ref-1	Cuttershaft w/Blades
48	02958540	Ref-1	Blade Package
	02956707	16	Single Blade
49	02959014	1	Set Screw
50	02957001	1	Set Screw
51	00019300	1	Bolt
52	02956949	16	Hanger Bolt
53	00695100	16	Nut, Toplock 5/8 NC PLC
54	02956943	32	Flail Hanger Bushing
55	02959839	Ref-1	Optional Cuttershaft (For Grass Cutting)
56	700616	Ref-1	Two-Way Knife Package
57	00751582	3	Bolt
58	02965306	1	Top Pivot Plate Weldment
59	02965292	1	Bottom Pivot Plate Weldment
60	5D2460	1	Nut
61	205020	1	Roll Pin
62	00759941	2	Washer - Structural
63	02965309	1	Pin
64	02957536	1	Pin
65	02957535	1	Pin
66	02961778	1	Cylinder Assembly
67	02965316	1	Cylinder Mount Weldment
68	00606000	5	Pin - Cotter
69	02712500	1	Pin - Linkage
70	02965320	2	Spacer
71	02822500	6	Washer
73	02965313	1	Pivot Arm Weldment
74	02963467	2	Bushing
75	02966240	1	Pivot Arm Weldment
76	02716500	8	Nut
77	00749130	8	Bolt

SWING CYLINDER ASSEMBLY P/N 02961778**



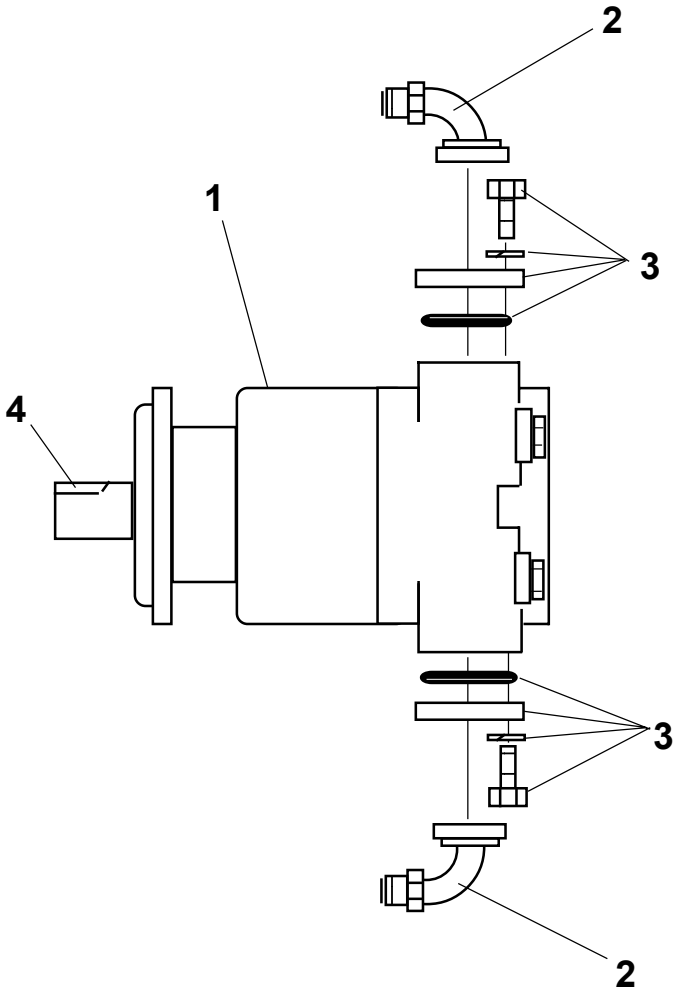
SWING CYLINDER ASSEMBLY P/N 02961778**

ITEM	PART NO.	QTY	DESCRIPTION
1	02961476	1	Hydraulic Cylinder
2	02962157	1	Gland
3*	-----	1	"O" Ring
4	02962166	1	Rod Assembly
5	02962165	1	Barrel Assembly
6	02962160	1	Piston
7	02252400	1	Locknut
8	02960018	2	Elbow
9	02930100	Ref.	Pin
10	00749946	Ref.	Washer
11	02958862	Ref.	Roll Pin
12	02960458	Ref.	Turning Arm Pin-Greaseable
13	00606000	Ref.	Cotter Pin
14	02959890	2	Bushing
15	02962158	1	Collar
16*	-----	1	Wear Ring
17*	-----	1	Piston Seal
18*	-----	1	"O" Ring
19	02962169	1	Set Screw
20	-----	1	Nylon Insert
21*	-----	1	Rod Wiper
22*	-----	1	Rod Seal
23*	-----	1	Buffer Seal
24*	-----	1	Back-Up Ring
25	00752670	1	Grease Fitting

* Included in Seal Kit P/N 02962159

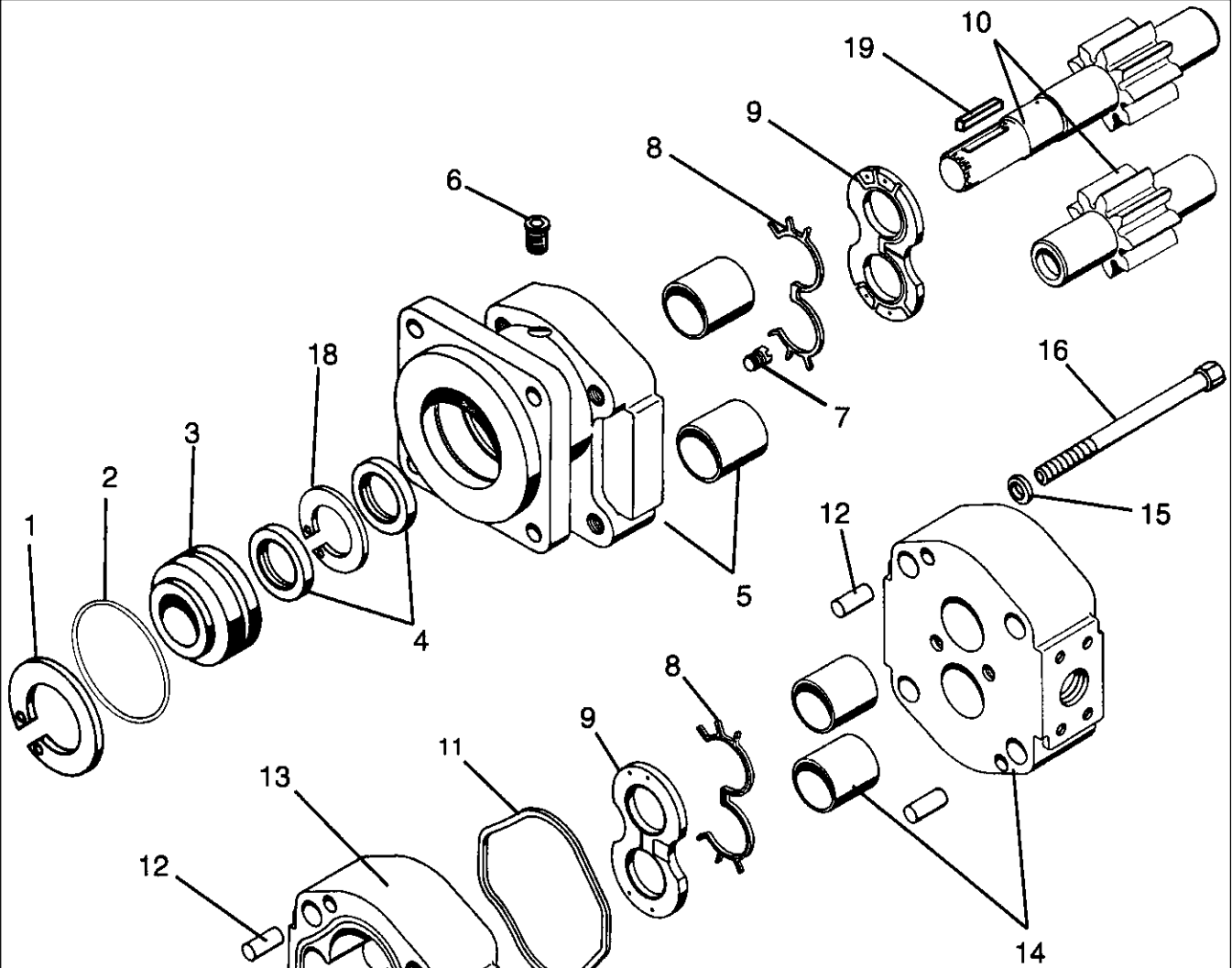
** Includes items # 1,14, & 8

HYDRAULIC MOTOR ASSEMBLY P/N 02963894



ITEM	PART NO.	QTY	DESCRIPTION
1	02961678	1	Hydraulic Motor
2	02754100	2	Elbow
3	00749103	2	Split Flange Kit
4	02962207	1	Key

HYDRAULIC MOTOR P/N 02961678

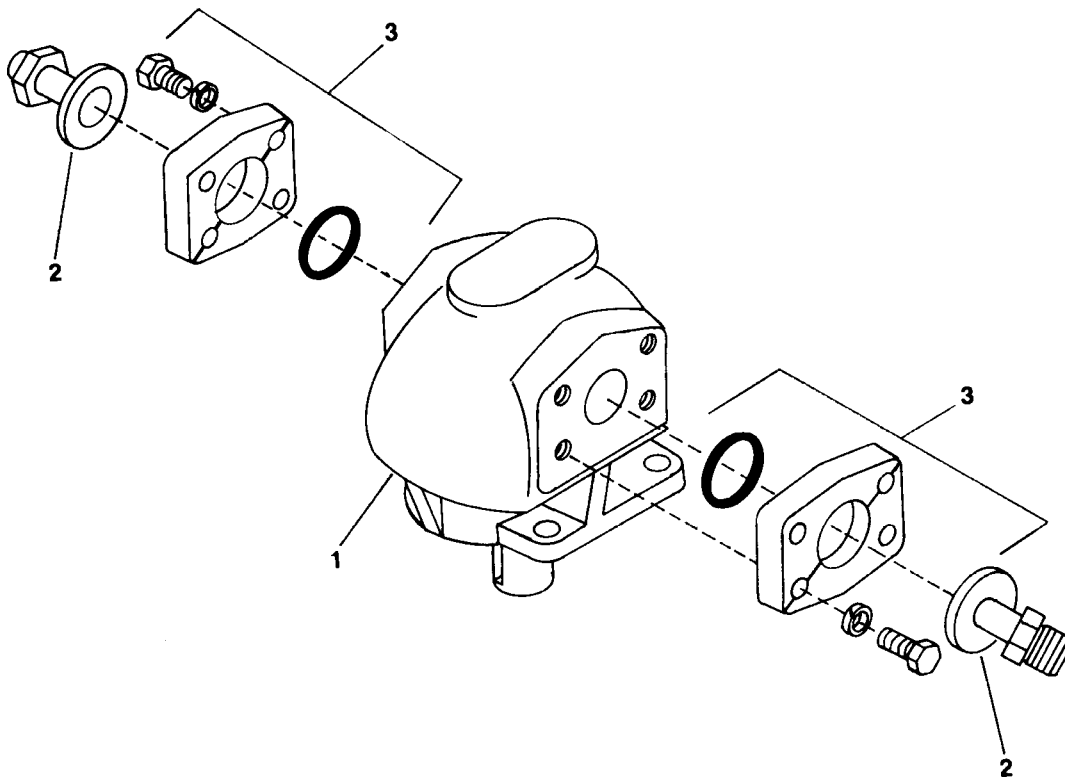


ITEM	PART NO.	QTY	DESCRIPTION
1	02962210	1	Snap Ring
2*	-----	1	"O" Ring
3	02962209	1	Seal Retainer
4*	-----	2	Seal
5	02962203	1	Mounting Flange w/Bushings
6	02961940	1	Plug
7	02961931	2	Check Assembly
8*	-----	4	Seal End
9*	-----	2	Thrust Plate
10	02962206	1	Gear Set
11*	-----	2	Square Seal
12	02961924	4	Dowel Pin
13	02962205	1	Gear Housing
14	02962204	1	Porting Flange w/Bushing
15	02961917	4	Washer
16	02962208	4	Bolt
17*	-----	4	Side Seal (not shown)
18	02962209	1	Retainer Seal
19	02962207	1	Key

* included in seal kit part number 02962211

FLAIL HYDRAULIC MOTOR W/FITTINGS

**DISCONTINUED
FOR REPLACEMENT
PARTS ONLY**



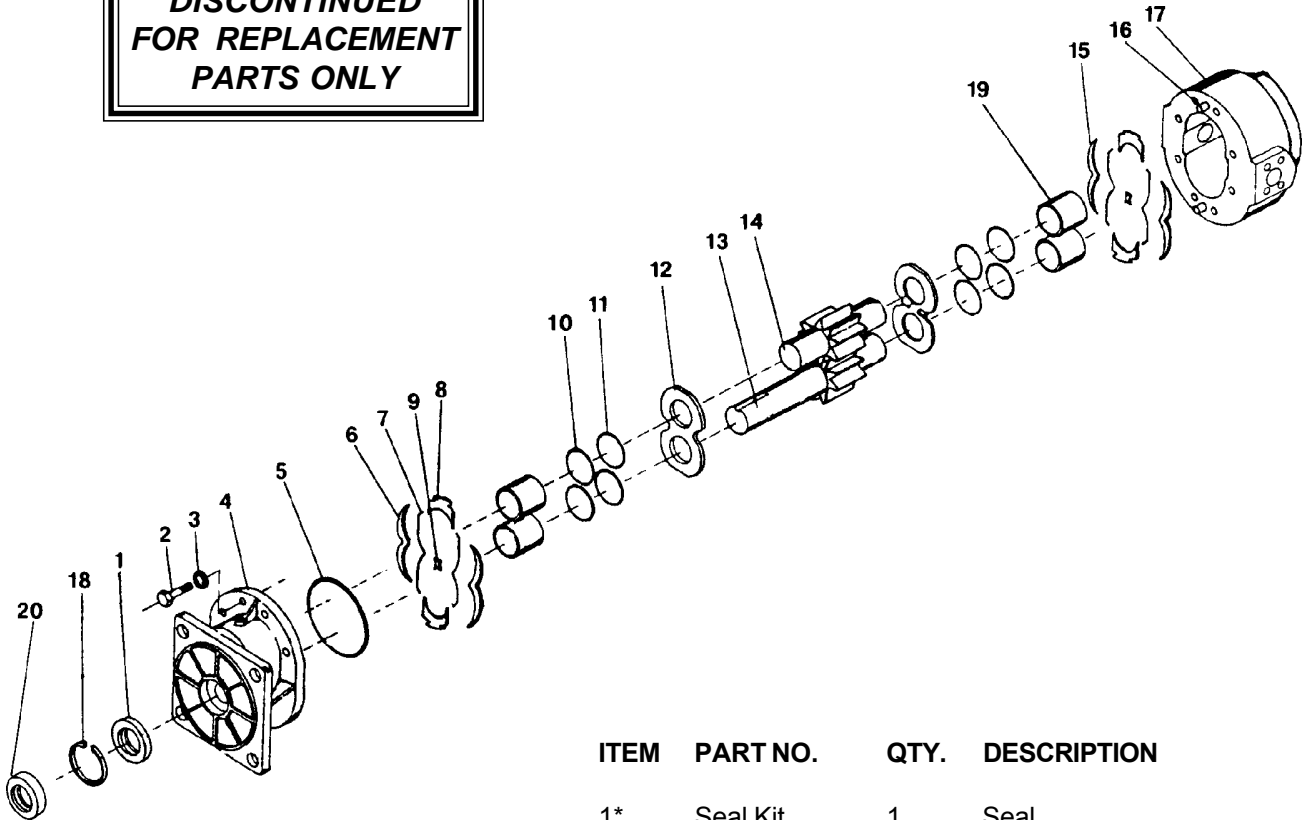
ITEM	PART NO.	QTY.	DESCRIPTION
1	02957328	1	Motor
2	00750316	2	Elbow
3	00750317	2	Split Flange Kit
4*	02949000	2	Hose - Motor to Boom
5*	02963166	1	Hydraulic Hose Slewing

* These items are not illustrated.

HYDRAULIC MOTOR REPLACEMENT PARTS

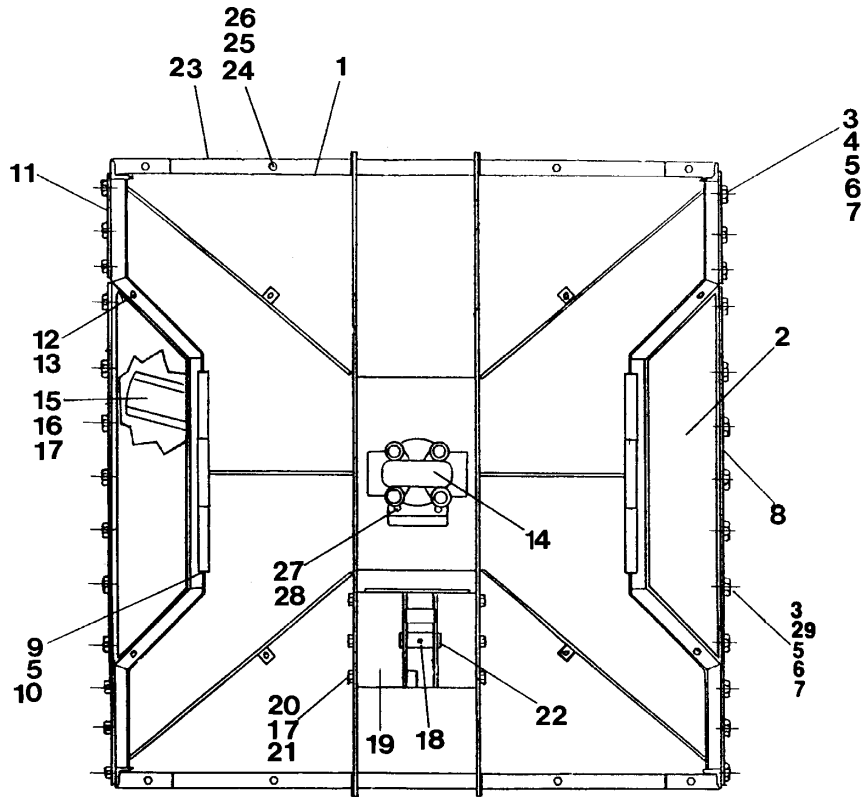
P/N 02957328

**DISCONTINUED
FOR REPLACEMENT
PARTS ONLY**



ITEM	PART NO.	QTY.	DESCRIPTION
1*	Seal Kit	1	Seal
2*	Seal Kit	8	Bolt
3*	Seal Kit	8	Flat Washer
4	02682500	1	Flange
5*	Seal Kit	1	"O" Ring
6	02721500	2	Bottom Isolation Plate
7*	Seal Kit	4	Sealing Strip
8*	Seal Kit	4	End Separator
9*	Seal Kit	2	Center Separator
10*	Seal Kit	4	"O" Ring
11*	Seal Kit	4	Back-up Ring
12	02655400	2	Pressure Plate
13&14	02957727	1	Drive and Idler Set
15	02721400	2	Top Isolation Plate
16	02655800	2	Dowel
17**	NFS	1	Body
18	02681400	1	Snap Ring
19	02655700	4	Steel Ring
20*	Seal Kit	1	Seal
*	02720000		Seal Kit
**	Not For Sale		

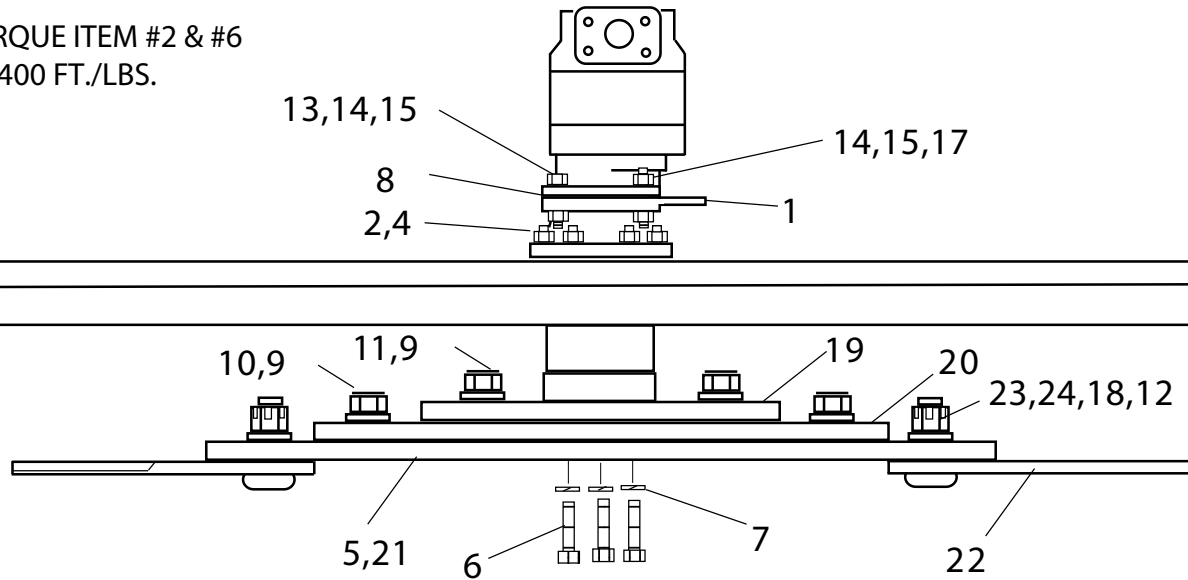
60" REVERSIBLE HEAD ASSEMBLY P/N 02963171



ITEM	PART NO.	QTY	DESCRIPTION	ITEM	PART NO.	QTY	DESCRIPTION
1	02963173	1	Weld. Reversible Head	d	00751842	2	Elbow
2	02963187	2	Weld. Hinged Guard	e	00749101	2	Split Flange
3	02035800	26	Woodwasher	f	02961038	1	Gasket
4	00023100	12	Bolt	15	02782300	1	Assembly, Blade Bar With Blades
5	00011100	28	Flatwasher	16	02782000	4	Bolt
6	00012101	26	Lockwasher	17	00003901	10	Lockwasher
7	00013901	26	Nut	18	00003500	1	Grease Fitting
8	02963195	2	Hinged Guard Flap	19	02958459	1	Hitch Post
9	02963185	2	Weld. Guard Hinge Pin	20	02892100	6	Bolt
10	40009000	2	Cotter Pin	21	00000200	6	Nut
11	02963194	4	Deflector Flap	22	02958424	1	Bushing
12	001623	4	Clevis Pin	23	02963193	2	Skid Shoe
13	001624	4	Split Ring	24	00059700	8	Bolt
14	02963264	1	Spindle Housing & Mtr. Assy. Consists of the following: a - f	25	00011100	8	Flatwasher
a	02892000	4	Bolt	26	00015800	8	Locknut
b	02961732	1	Hydraulic Motor	27	02960521	6	Bolt
c	02960553B	1	Spindle Assembly	28	00037200	6	Nut Toplock
				29	00011400	14	Bolt

60" REVERSIBLE HEAD ASSEMBLY

TORQUE ITEM #2 & #6
TO 400 FT./LBS.



DANGER



ROLL PIN #26 MUST BE INSTALLED TO PREVENT NUT FROM BECOMING LOOSE AND BLADE FROM BEING THROWN FROM THE MACHINE.

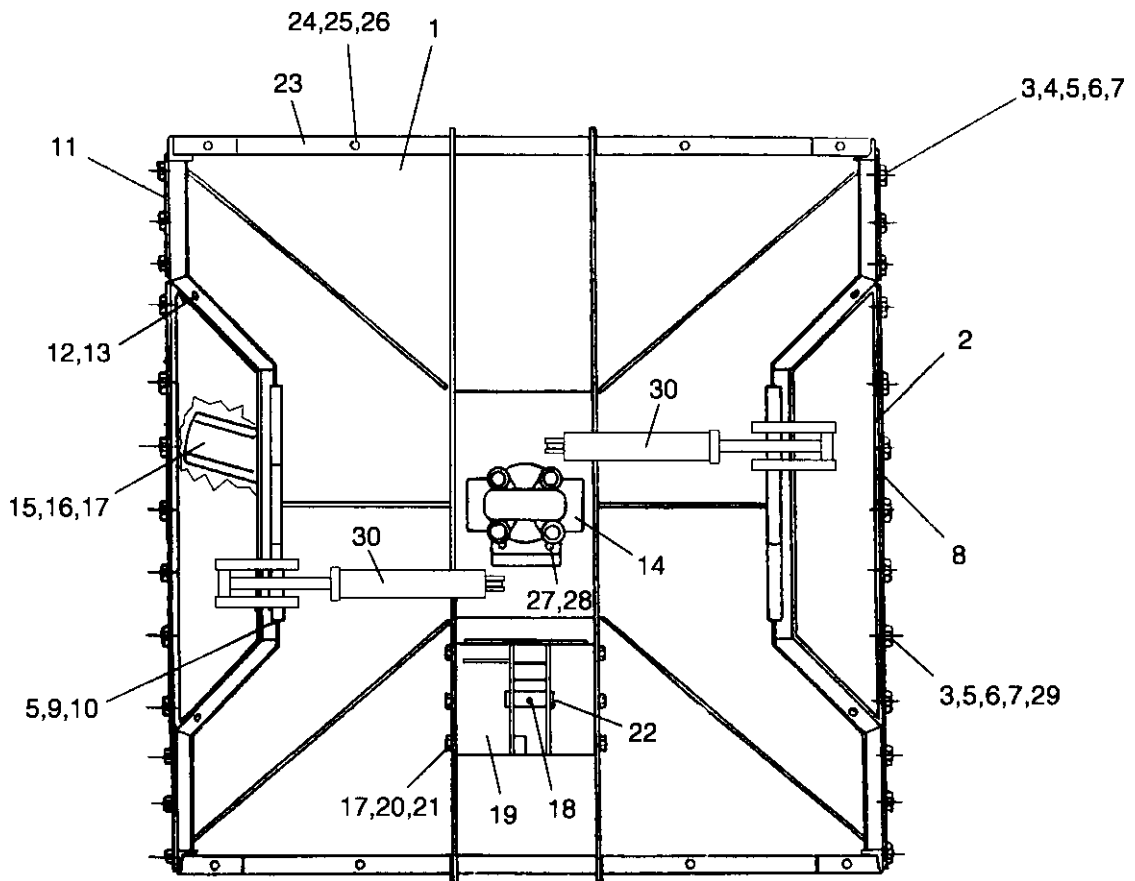
DANGER



BLADES SHOULD ALWAYS BE REPLACED IN PAIRS. BLADES OF DIFFERENT WEIGHTS CAN CAUSE SERIOUS IMBALANCE AND DAMAGE TO THE MACHINE AND PERSONNEL. WHEN REPLACING BLADES, BLADE BOLTS, BUSHINGS, NUTS AND WASHERS MUST BE CHANGED.

ITEM	PARTNO.	DESCRIPTION	QTY
1	02963264	Spindle Housing/Spindle Assembly w/Hydraulic Motor & Fittings	1
	02960553B	Spindle Housing & Spindle Assembly	1
	02961732	Motor	1
2	02960521	Bolt	6
4	00037200	Nut	6
5	02782300	Blade Bar Assembly (items 19-29)	1
6	02782000	Bolt	4
7	00003901	Lockwasher	4
8	02961038	Gasket	1
9	02032200	Lockwasher	4
10	02782100	Bolt	2
11	02782200	Bolt	2
12	02782800	Spiral Roll Pin	2
13	00749130	Bolt	2
14	63000500	Washer	4
15	00001800	Locknut TLM 1/2 NC PLC	4
17	00001200	Nut	2
18	00748000	Lockwasher	2
19	02781600	TopLeaf	1
20	02781700	MiddleLeaf	1
21	02781800	BottomLeaf	1
22	02761500	Blade Set	1
23	02782900	Blade Bolt	2
24	00020900	Slotted Nut	2

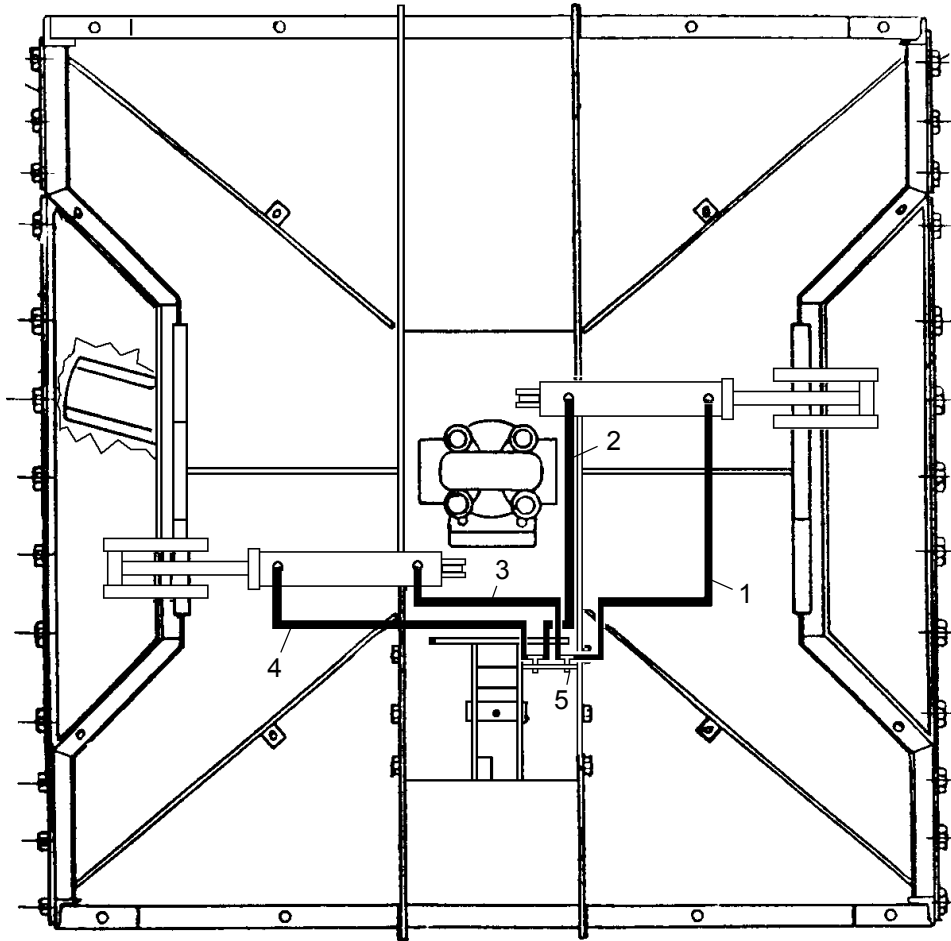
REVERSIBLE HEAD W/CYLINDER P/N 02965478



REVERSIBLE HEAD W/CYLINDER P/N 02965478

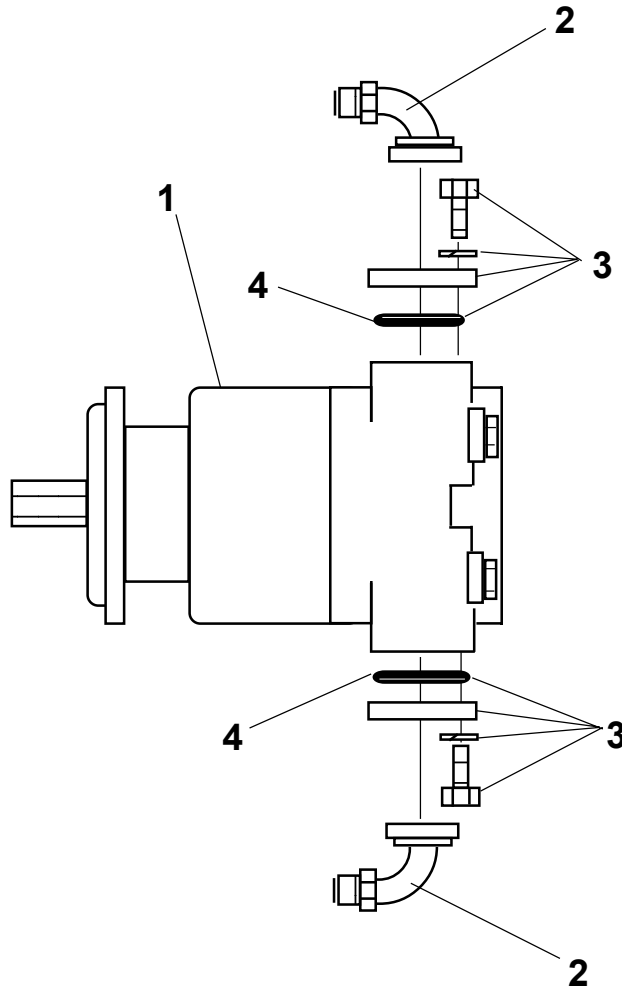
ITEM	PART NO.	QTY	DESCRIPTION
1	02965354	1	Weldment Reversible Head
2	02965353	2	Weldment Hinged Guard
3	02035800	26	Woodwasher
4	00023100	12	Bolt
5	00011100	28	Flatwasher
6	00012101	26	Lockwasher
7	00013901	26	Nut
8	02963195	2	Hinged Guard Flap
9	02963185	2	Weldment Guard Hinge Pin
10	4009000	2	Cotter Pin
11	02963194	4	Deflector Flap
12	001623	4	Clevis Pin
13	001624	4	Split Ring
14	02961798	1	Spindle Housing & Motor Assy. Consists of the Following:
	02892000	4	Bolt
	02961732	1	Hydraulic Motor
	02960553B	1	Spindle Assembly
	02962774	2	Elbow
	00749101	2	Split Flange
	02961038	1	Gasket
15	02782300	1	Assy. Blade Bar w/Blades
16	02782000	4	Bolt
17	00003901	10	Lockwasher
18	00003500	1	Grease Fitting
19	02965470	1	Hitch Post
20	02892100	6	Bolt
21	00000200	6	Nut
22	02958424	1	Bushing
23	02963193	2	Skid Shoe
24	00059700	8	Bolt
25	00011100	8	Flatwasher
26	00015800	8	Locknut
27	03200269	6	Bolt
28	00037200	6	Nut Toplock
29	00011400	14	Bolt
30	02961480	2	Hydraulic Cylinder

SQUAREHEAD SCHEMATIC



ITEM	PART NO.	QTY.	DESCRIPTION
1	02965477	1	Hose
2	02965476	1	Hose
3	02965474	1	Hose
4	02965475	1	Hose
5	02966193	2	Tee

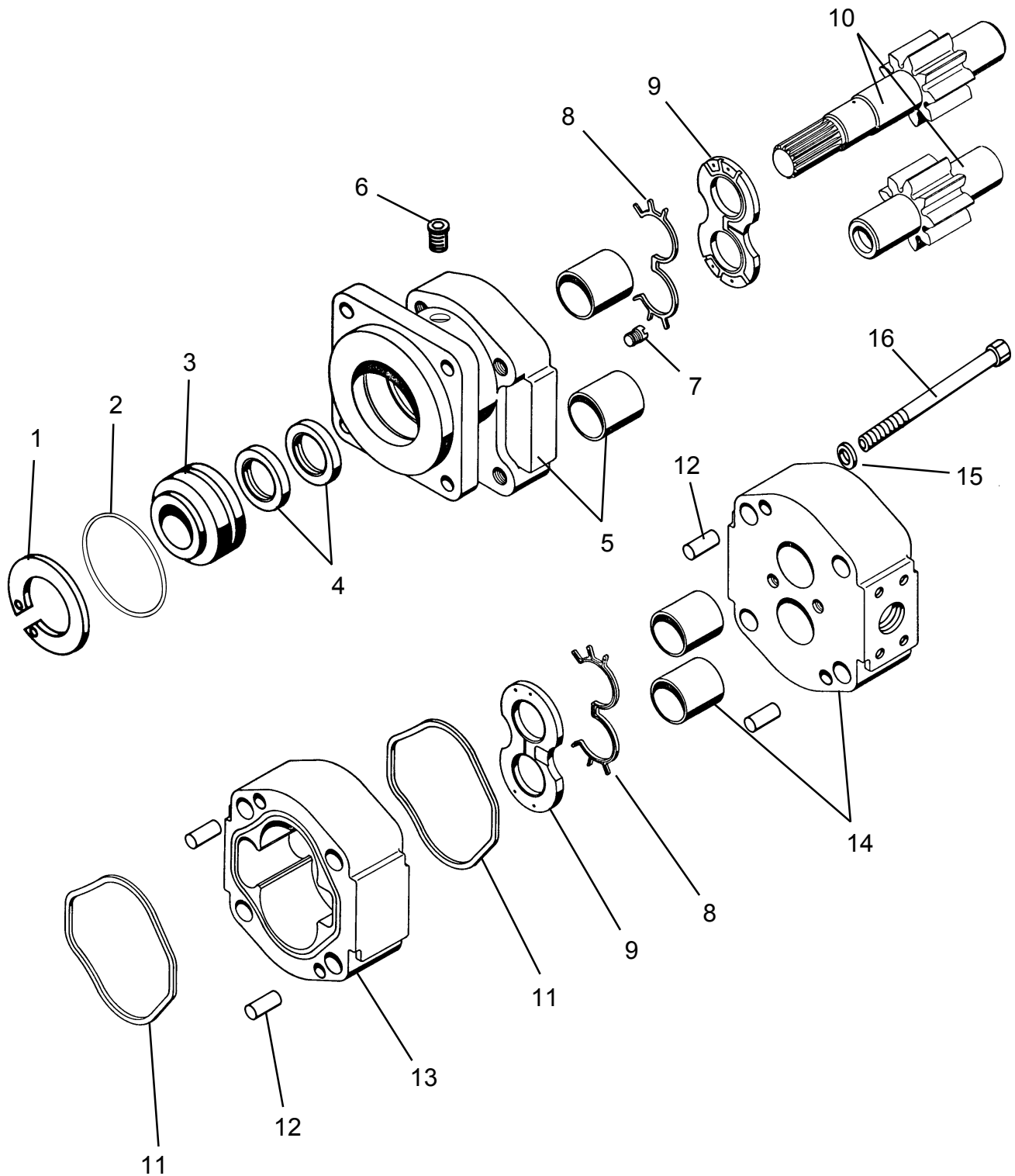
HYDRAULIC MOTOR ASSEMBLY



ITEM	PART NO.	QTY	DESCRIPTION
1	02961732	1	Hydraulic Motor
2	00751842	2	Elbow
3	00749101	2	Split Flange Kit
4	02044200	2	O" Ring
5*	02956883	1	Hose 48" - Bulkhead to Motor
6*	02742800	1	Hose 38" - Bulkhead to Motor

* NOT SHOWN

HYDRAULIC MOTOR REPAIR PARTS P/N 02961732



HYDRAULIC MOTOR REPAIR PARTS P/N 02961732

ITEM	PART NO.	QTY	DESCRIPTION
1	02961933	1	Snap Ring
2*	-----	1	"O" Ring
3	02961932	1	Seal Retainer
4*	-----	2	Seal
5	02961926	1	Mounting Flange w/Bushings
6	02961940	1	Plug
7	02961931	2	Check Assembly
8*	-----	4	Seal End
9*	-----	2	Thrust Plate
10	02961929	1	Gear Set
11*	-----	2	Square Seal
12	02961924	4	Dowel Pin
13	02961928	1	Gear Housing
14	02961927	1	Porting Flange w/Bushing
15	02961917	4	Washer
16	02961918	4	Bolt
17*	-----	4	Side Seal (not shown)

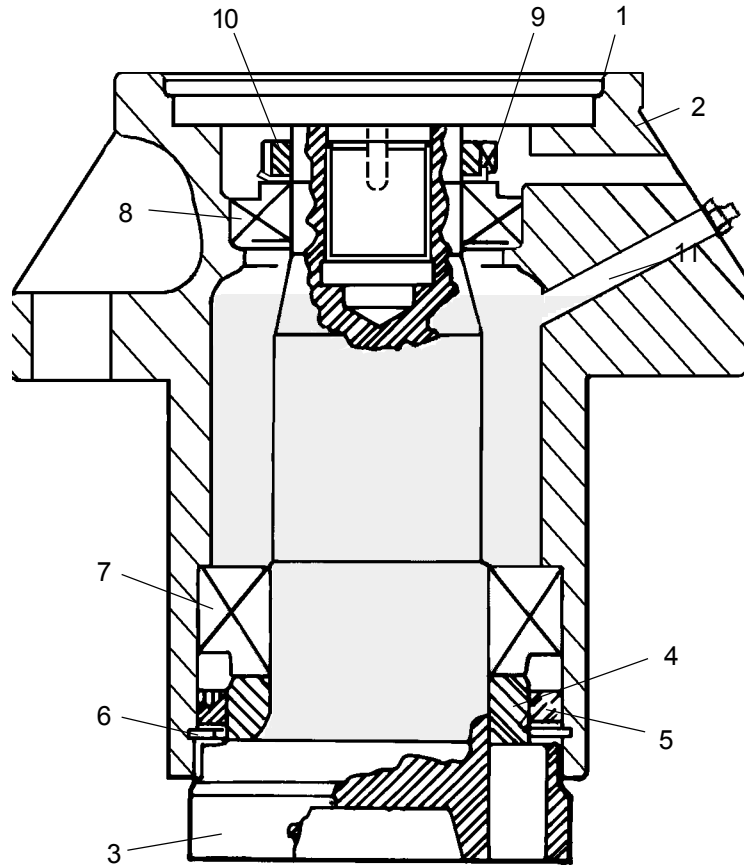
* included in major rebuild seal kit part number 02961939

** included in minor rebuild seal kit part number 02962538
(includes all parts of major rebuild seal kit except thrust plates)

SPINDLE HOUSING AND SPINDLE ASSEMBLY

Fill with NLGI 000 Grease
Alamo Group P/N 00765444
DO NOT OVERFILL!

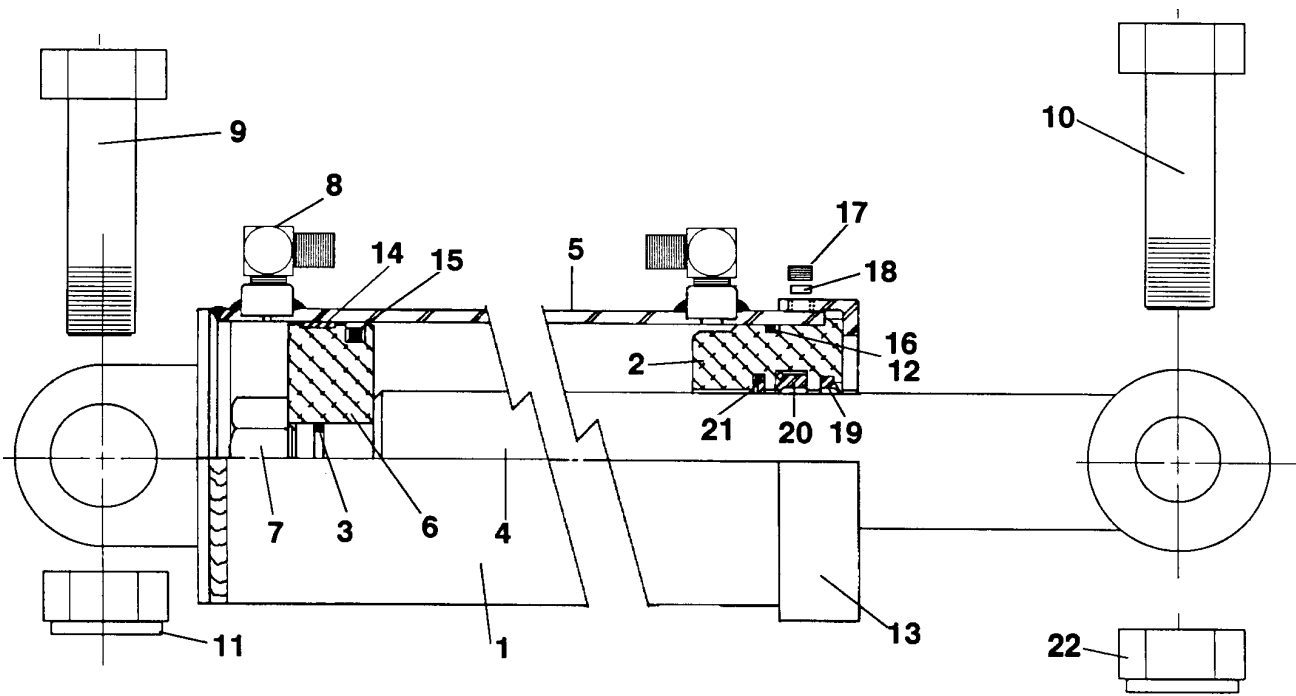
Note: #10
When installing new locknut, tighten nut, then using a hammer and set punch, indent tap side of nut into external keyway on spindle in order to lock nut in place. Nuts are not reusable.



P/N 02960553B

ITEM	PART NO.	QTY	DESCRIPTION
1	02961038	1	Gasket
2	02963815	1	Housing
3	02960561	1	Spindle
4	02960558	1	Bearing Ring
5	02960559	1	Seal
6	00754627	1	Snap Ring
7	02960557	1	Bearing
8	00755628	1	Bearing
9	02964269	1	Lockwasher
10	02962030	1	Nut
11	02959018	1	Grease Relief Fitting

HYDRAULIC CYLINDER ASSEMBLY

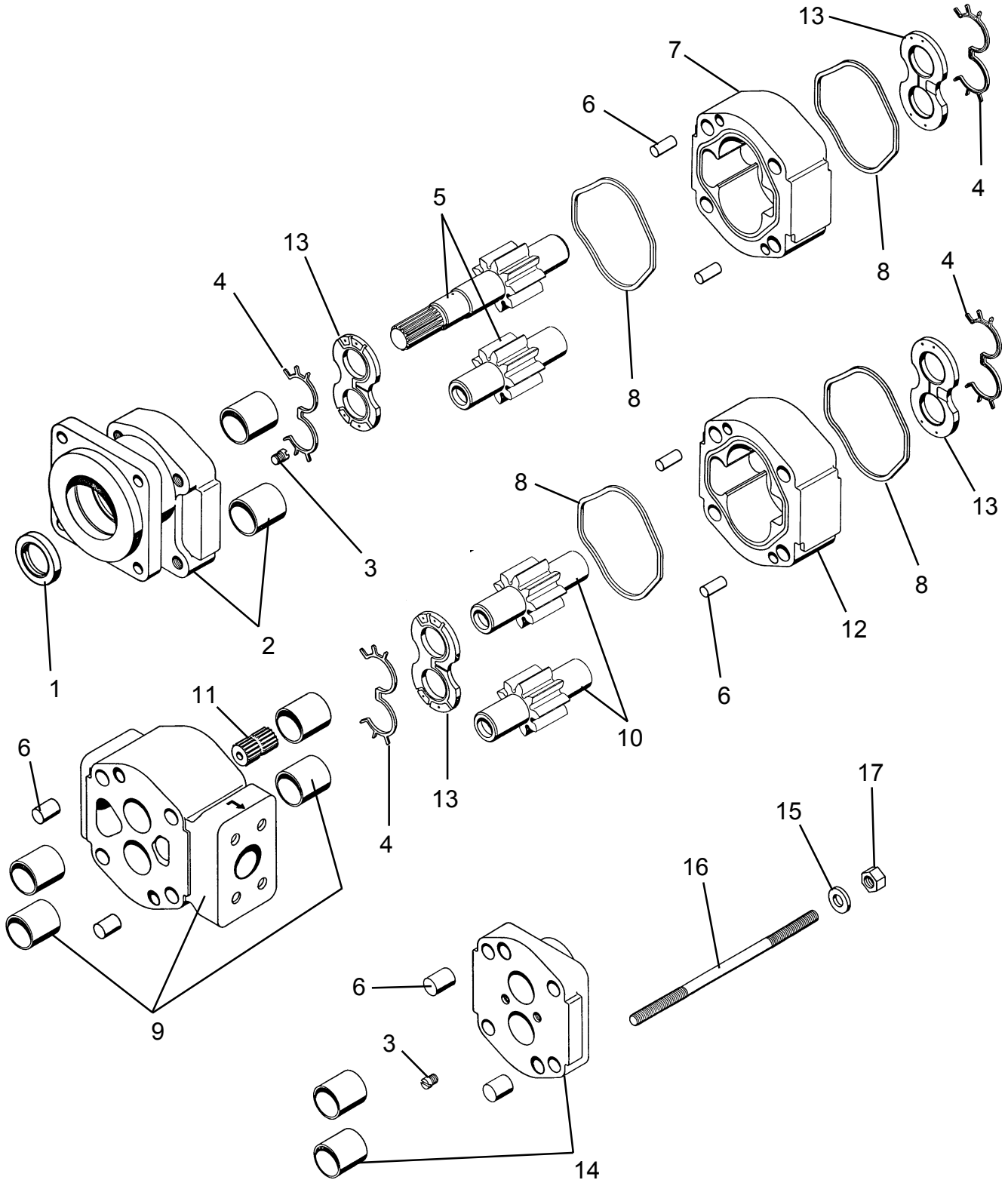


ITEM	PART NO.	QTY.	DESCRIPTION
1	02961480	1	Hydraulic Cylinder
2	02962145	1	Gland
3*	-----	1	"O" Ring
4	02962144	1	Rod Assembly
5	02962143	1	Barrel Assembly
6	02962125	1	Piston
7	02247100	1	Locknut
8	02960018	4	Elbow
9	02880900	4	Bolt
10	02845600	4	Bolt
11	00037200	4	Nut
12	-----	1	Back-Up Ring
13	02962146	1	Collar
14*	-----	1	Wear Ring
15*	-----	1	Piston Seal
16*	-----	1	"O" Ring
17	02962169	1	Set Screw
18	-----	1	Nylon Insert
19*	-----	1	Rod Wiper
20*	-----	1	Rod Seal
21*	-----	1	Buffer Seal
22	00695100	4	Nut, Toplock 5/8 NC PLC

* Included in Seal Kit P/N 02962147

TANDEM PUMP REPAIR PARTS

REAR MOUNTED - 540 PTO - P/N 02965439



TANDEM PUMP REPAIR PARTS

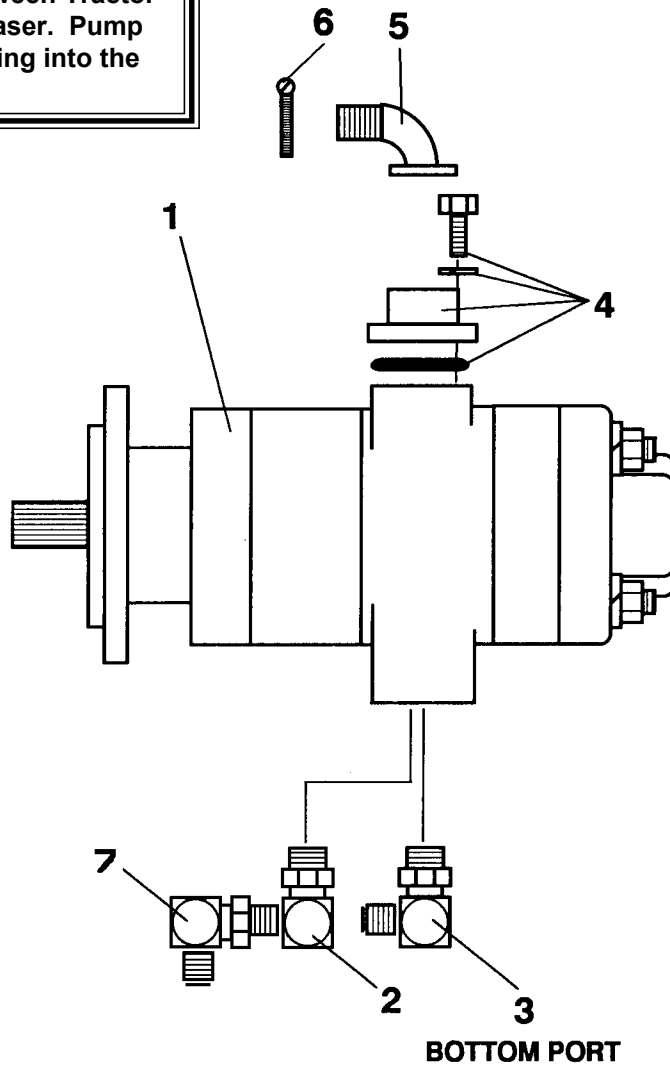
REAR MOUNTED - 540 PTO - P/N 02965439

ITEM	PART NO.	QTY	DESCRIPTION
1*	00763781	1	Seal
2	02961913	1	Mounting Flange w/Bushings
3	02961920	2	Plug
4*	-----	4	Seal End
5	02965091	1	Gear Set
6	02961924	8	Dowel Pin
7	02965092	1	Gear Housing
8*	-----	4	Square Seal
9	02962185	1	Bearing Carrier Housing w/Bushings
10	02962188	1	Gear Set
11	02962216	1	Connector Shaft
12	02962186	1	Gear Housing
13	02965611	4	Thrust Plate
14	02962184	1	End Flange w/Bushing
15	02961917	4	Washer
16	02965610	4	Studs
17	02962190	4	Nuts

* Seal Kit Part Number 02962539

TANDEM PUMP ASSEMBLY P/N 02965440

Use this Pump for Units that have a Short Drive Shaft Between Tractor PTO and Speed Increaser. Pump Rotation is CCW looking into the shaft.

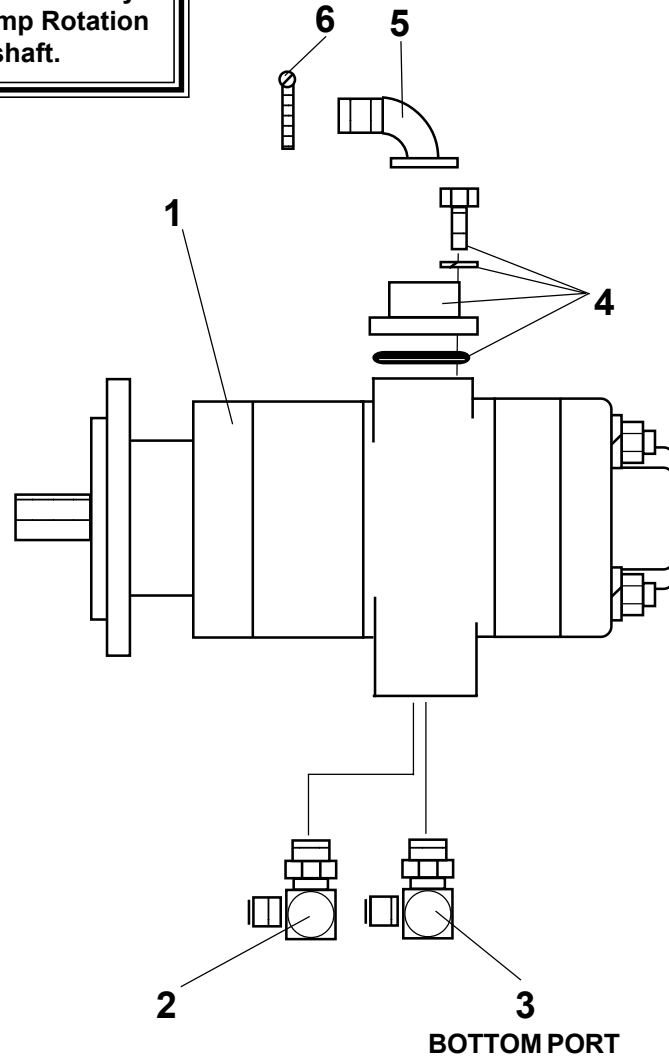


ITEM	PART NO.	QTY	DESCRIPTION
1	02965439	1	Hydraulic Pump
2	02961098	1	90 Deg. Elbow
3	02962213	1	90 Deg. Elbow
4	00749101	1	Split Flange Kit
5	02964196	1	Fitting, Hose End
6	02026200	1	Hose Clamp
7	02960407	1	90 Deg. Elbow

TANDEM PUMP ASSEMBLY

REAR MOUNTED - 540 PTO - P/N 02964197

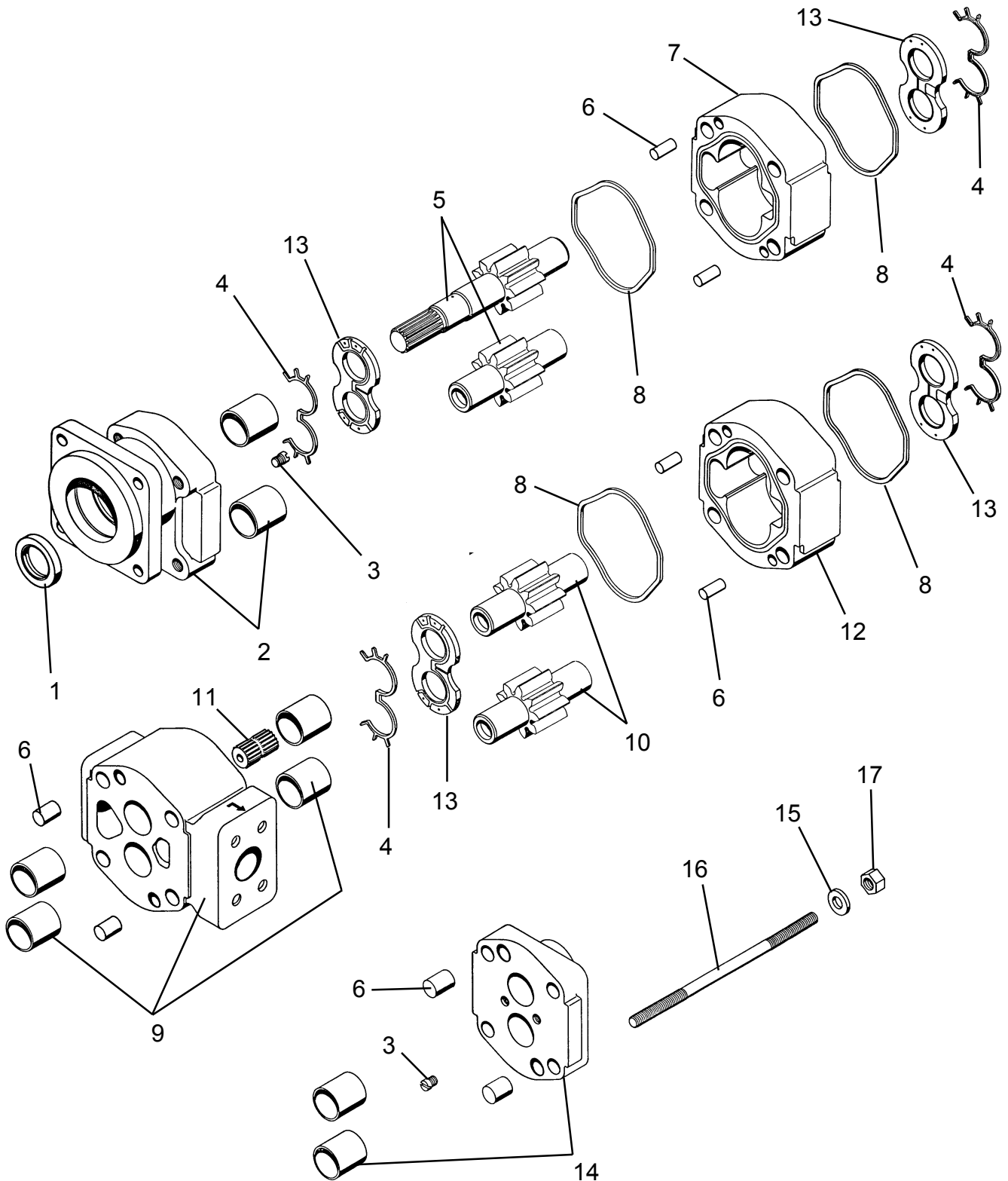
Use this Pump for Units that have a Speed In increaser mounted directly to the Tractor PTO. Pump Rotation is CW looking into the shaft.



ITEM	PART NO.	QTY	DESCRIPTION
1	02964948	1	Hydraulic Pump
2	02961098	1	90 Deg. Elbow
3	02962213	1	90 Deg. Elbow
4	00749101	1	Split Flange Kit
5	02964196	1	Fitting, Hose End
6	02026200	1	Hose Clamp

TANDEM PUMP REPAIR PARTS

REAR MOUNTED - 540 PTO - P/N 02964948

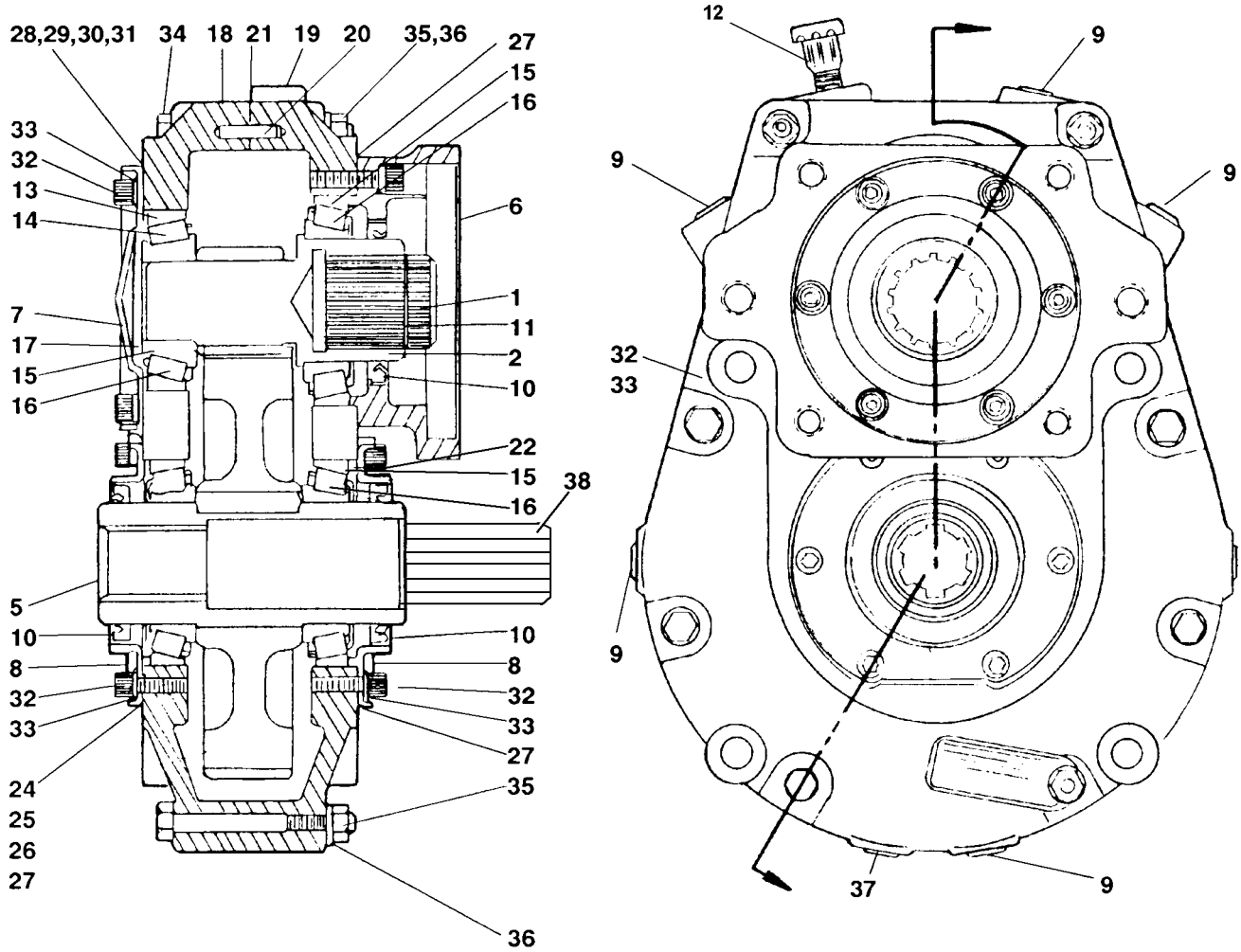


TANDEM PUMP REPAIR PARTS

REAR MOUNTED - 540 PTO - P/N 02964948

ITEM	PART NO.	QTY	DESCRIPTION
1	00763781	1	Seal
2	02961913	1	Mounting Flange w/Bushings
3	02961920	2	Plug
4	-----	4	Seal End
5	02965091	1	Gear Set
6	02961924	8	Dowel Pin
7	02965092	1	Gear Housing
8	-----	4	Square Seal
9	02962185	1	Bearing Carrier Housing w/Bushings
10	02962188	1	Gear Set
11	02962216	1	Connector Shaft
12	02962186	1	Gear Housing
13	02965611	4	Thrust Plate
14	02962184	1	End Flange w/Bushing
15	02961917	4	Washer
16	02962189	4	Studs
17	02962190	4	Nuts
	02962539	ref	Minor Rebuild Seal Kit (incl. 1,4,8)

SPEED INCREASER P/N 02897900

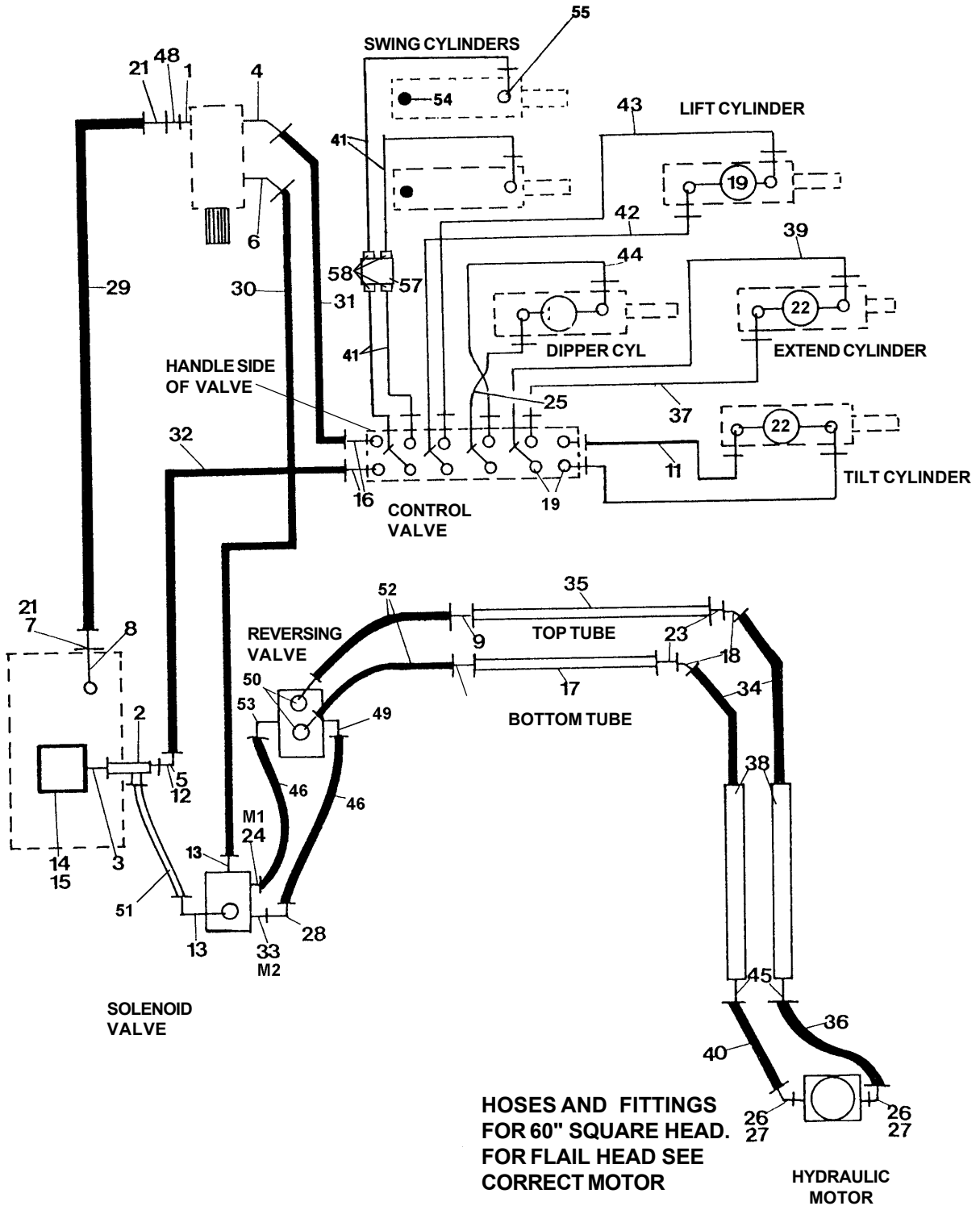


SPEED INCREASER P/N 02897900

ITEM	PART NO.	QTY.	DESCRIPTION
1	02922700	1	Adapter, Shaft
2	-----	1	Pinion Gear - High Speed
5	00752179	1	Shaft & Gear - Low Speed
6	02922600	1	Pump Flange
7	00751949	1	Cover, Closed
8	00751950	2	Cover, Open
9	00751970	8	Pipe Plug
10	00751535	3	Seal
11	00751954	1	Retaining Ring
12	00751942	1	Breather
13	00751951	1	Bearing Cup
14	00751533	1	Bearing Cone
15	00749201	3	Bearing Cup
16	00749200	3	Bearing Cone
17	00751953	1	Spacer Ring
18	00751955	1	Housing
19	00751956	1	Housing
20	00751957	2	Dowel
21	00751958	1	Gasket (.015)
22	00751971	2	Spacer Ring
24	00751959	AR	Shim (.005 Alum.)
25	00751960	AR	Shim (.007 Alum.)
26	00751961	AR	Shim (.020 Alum.)
27	00751962	3	Shim (.005 Fibre)
28	00751963	AR	Shim (.005 Alum.)
29	00751964	1	Shim (.005 Fibre)
30	00751965	AR	Shim (.007 Alum.)
31	00751966	AR	Shim (.020 Alum.)
32	00751967	24	Screw
33	00751968	24	Lockwasher
34	00751969	8	Screw
35	00013901	8	Nut
36	00012101	8	Lockwasher
37	00752772	1	Magnetic Plug
38	02965451	1	Shaft
	02965069	1	Collar
	02965449	1	Roll Pin
	02965068	1	Retaining Ring
39	02897900	1	Speed Increaser Complete less Shaft (Ref 38)

25' BOOM HYDRAULIC SYSTEM SCHEMATIC

DOUBLE SWING W/ REVERSING VALVE OPTION

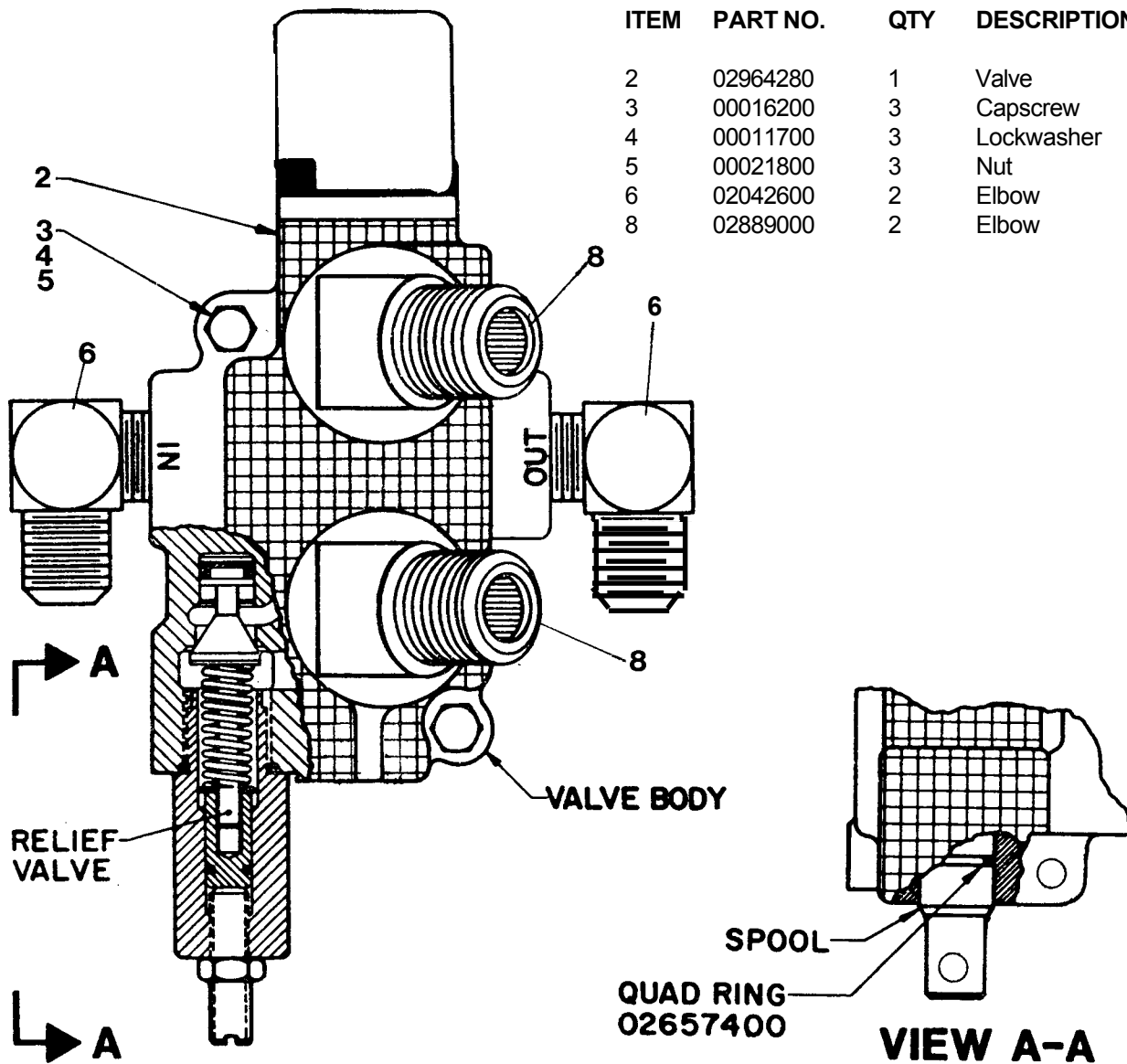


25' BOOM HYDRAULIC SYSTEM SCHEMATIC

DOUBLE SWING W/ REVERSING VALVE OPTION

ITEM	PART NO.	QTY	DESCRIPTION
1	00749101	1	Flange Kit
2	02963842	1	Adapter, Special
3	02960809	1	Adapter Straight
4	02962213	1	Elbow-90 degree
5	63067300	1	Reducer
6	02961098	1	Elbow-90 degree
7	02411000	1	Hose Bib
8	02208400	2	Elbow-90 degree
9	02961286	2	Straight Adapter
11	02963163	1	Hose-Valve to tilt cylinder
12	02049100	1	Elbow
13	02961098	2	Elbow-90 degree
14	02961000	1	Filter
15	02961001	1	Filter Replacement Element
16	63042700	2	Adapter Straight
17	02962654	1	Tube-Lift Section Bottom
18	02961103	2	Bulkhead Adapter
19	02960018	8	Elbow-90 degree
21	02026200	2	Hose Clamp
22	02962181	2	Straight-Adapter
23	02959154	1	Elbow-Adapter
24	02961006	1	Adapter Straight
25	02956846	1	Hose-Control Valve to Dipper Cylinder
26	00749101	2	Split Flange Kit
27	00751842	2	90 degree Elbow
28	02937300	1	Elbow
29	02964143	1	Hose-Reservoir Tank to Pump
30	02961309	1	Hose-Pump to Cutter Valve
31	02960930	1	Hose-Pump to Control Valve
32	61026400	1	Hose-Control Valve to Tank
33	02961005	1	Adapter
34	02963162	2	Hose-Tube to Tube
35	02962655	1	Tube-Lift Section Top
36	02956883	1	Hose-Bulkhead to Motor
37	02956853	1	Hose-Control Valve to Extension Cylinder
38	02962656	2	Tube-Dipper Section
39	02956855	1	Hose-Control Valve to Extension Cylinder
40	02742800	1	Hose-Motor to Bulkhead
41	02967108	2	Hose-Control Valve to Swing Cylinder
42	02959201	1	Hose-Control Valve to Lift Cylinder
43	02959885	1	Hose-Control Valve to Lift Cylinder
44	02957468	1	Hose-Control Valve to Dipper Cylinder
45	00751486	1	Straight Adapter-Bulkhead
46	02964299	2	Hose-Reversing Valve to Solenoid Valve Return
48	02964196	1	Elbow
49	02937300	1	Elbow - 90 degree
50	02889000	2	Elbow - 45 degree
51	02964144	1	Hose - Solenoid Valve to Tank
52	02751300	2	Hose - Solenoid Valve to Boom
53	02042600	1	Elbow - 45 Deg.
54	00758654	2	Vent Plug
55	02822100	2	Elbow
56	02962749	2	Elbow (Not Shown)
57	02967110	1	Cross Over Relief Valve
58	02967109	4	Adapter

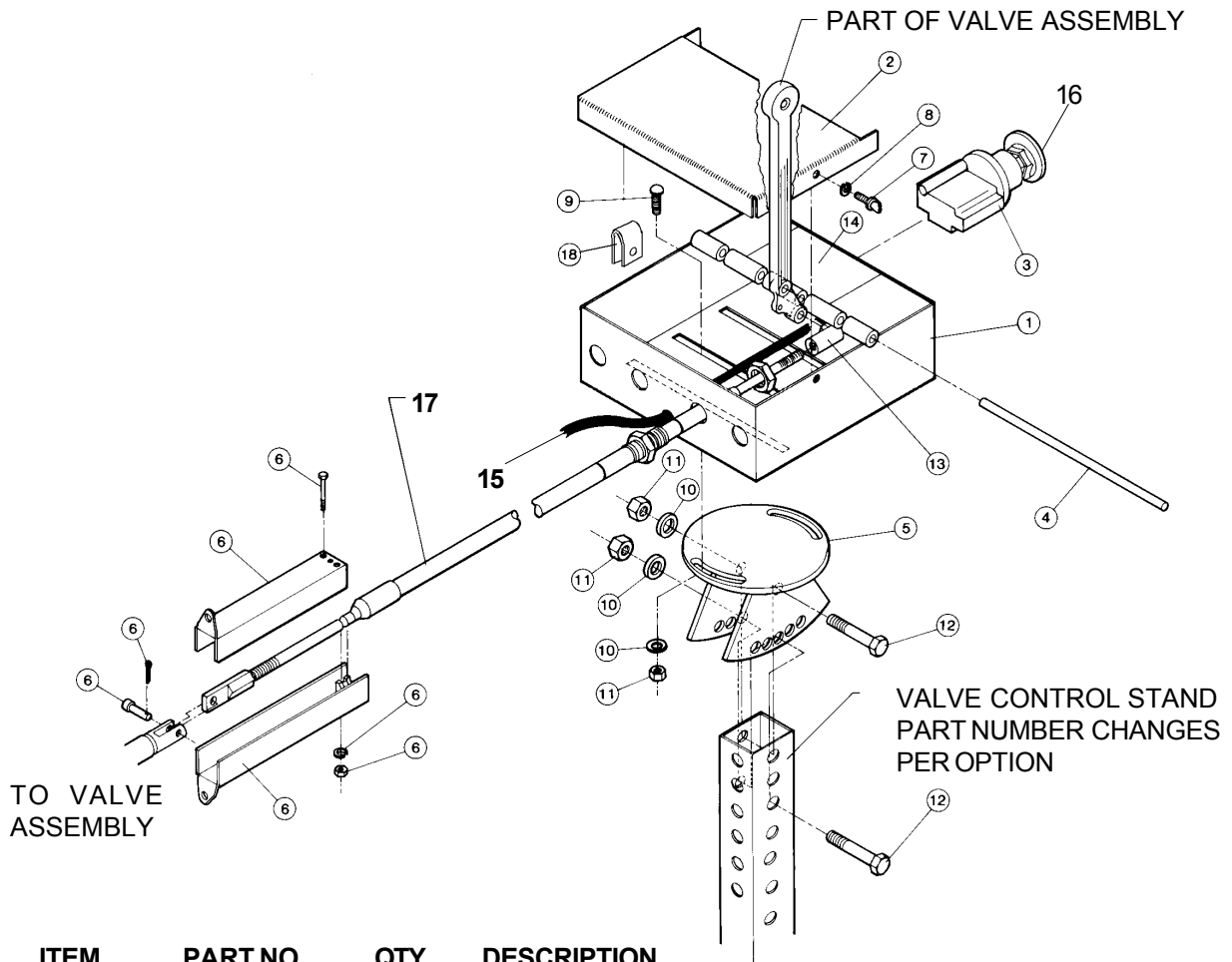
REVERSING VALVE ASSEMBLY P/N 02963261



Relief Valve Repair Kit - P/N 02719000
Consists of:

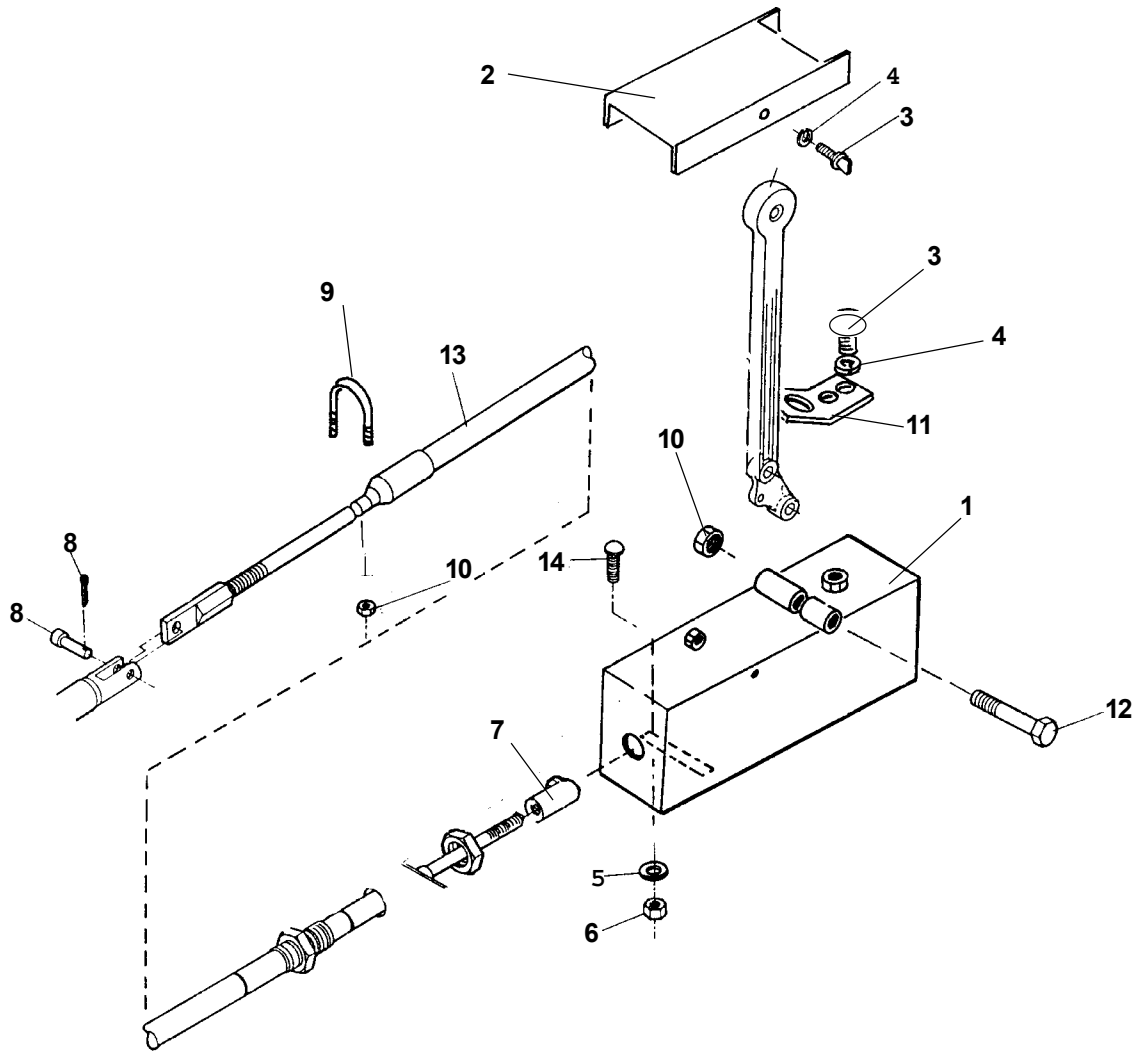
- I-Washer (Large)
- I-Adj. Screw
- I-Jam Nut
- I-Plug End
- I-"O" Ring (Small)
- I-Washer (Small)
- I-Spring
- I-Poppet Relief
- I-"O" Ring (Large)

VALVE REMOTE CONTROL



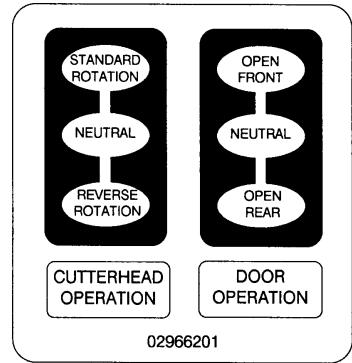
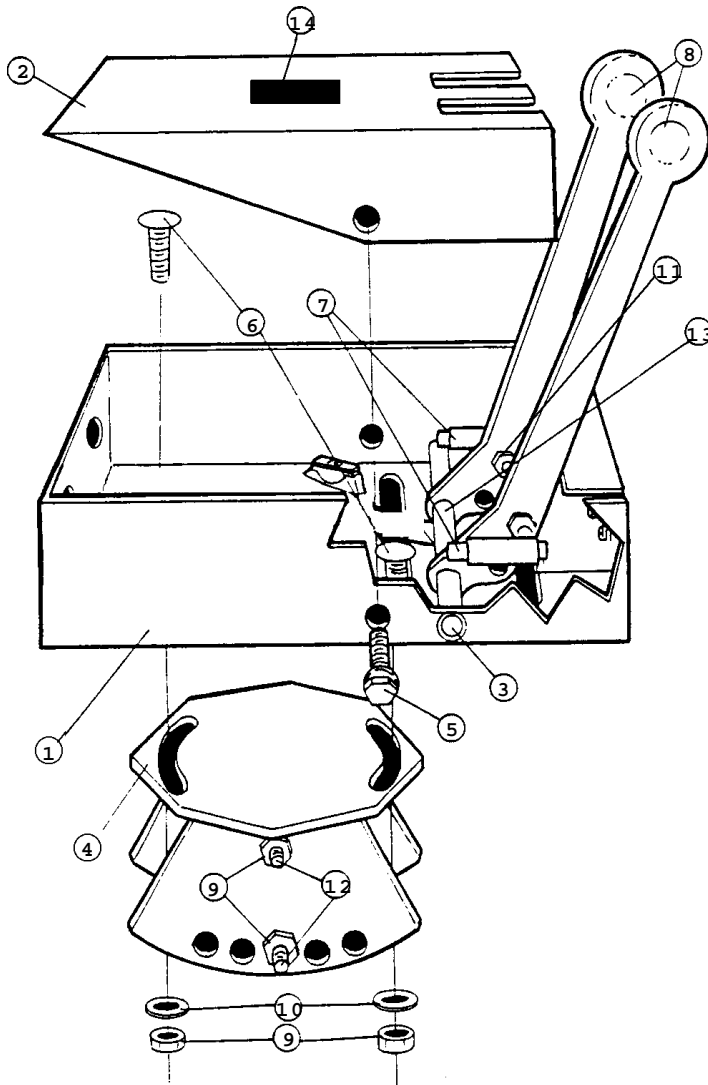
ITEM	PART NO.	QTY	DESCRIPTION
1	02963008	1	Base, Valve Control Weldment
2	02963007	1	Cover, Top, Valve Control
3	02964028	1	Switch Electric Push-Pull
4	02963009	1	Rod Hinge
5	02961489	1	Pivot, Plate Weldment
6	02961406	5	Cable Connection Kit
7	00751588	2	Thumbscrew
8	00024100	2	Lockwasher
9	12621000	2	Carriage Bolt
10	63065400	4	Flatwasher
11	00752036	4	Nut
12	00059900	2	Bolt
13	02961405	5	Terminal, Cable
	02962363	5	Nut, Cable Terminal (Not Shown)
14	02963262	1	Valve Operation Plate
15	02958203	1	Wire Harness
16	02964063	1	Knob, Switch
	02963681	1	Arm Rest (not shown)
17	02961407	Ref	47" Push-Pull Cable (End to End)
	02961408	Ref	60" Push-Pull Cable (End to End)
	02962879	Ref	75" Push-Pull Cable (End to End)
	02961409	Ref	8'-6" Push -Pull Cable (End to End)
18	00752536	2	Clip Nut

VALVE REMOTE CONTROL



ITEM	PART NO.	QTY	DESCRIPTION
1	02963298	1	Base, Valve Control Weldment
2	02963297	1	Cover, Top, Valve Control
3	00751588	3	Thumb, Screw
4	00024100	3	Lockwasher
5	63065400	2	Flatwasher
6	00752036	2	Nut
7	02961405	1	Terminal, Cable
8	02963295	1	Connection Pin Kit
9	02961809	1	U-Bolt
10	02959924	3	Nut, Top Lock
11	02963296	1	Handle, Lock
12	02956992	1	Bolt
13	02961409	1	Push-Pull Cable
14	12621000	2	Carriage Bolt

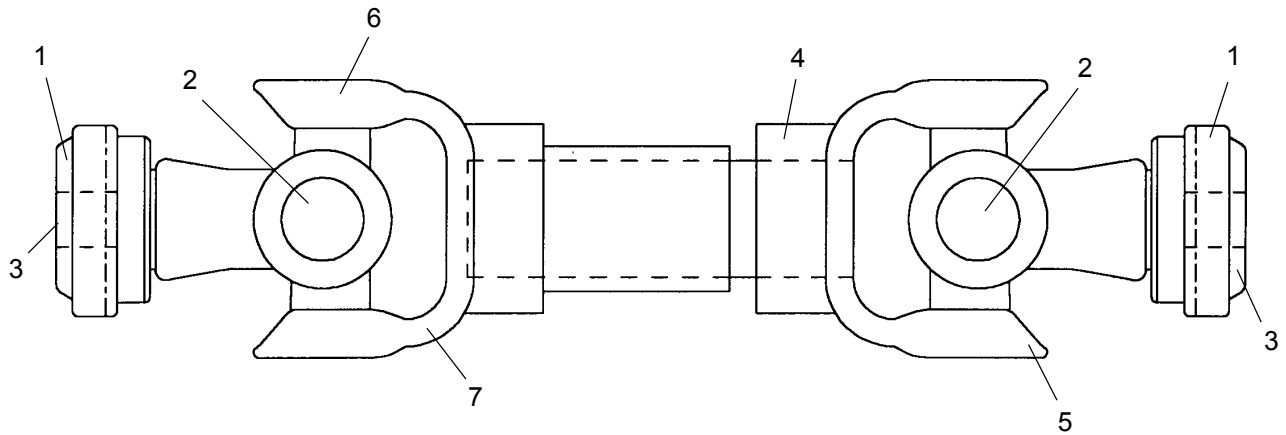
2 - HANDLE REMOTE BOX



#14 - Decal-Cutter Valve & Door Operation Plate

ITEM	PART NO.	QTY	DESCRIPTION
1	02963450	1	Two Handle Remote Box Weldment
2	02963451	1	Two Handle Remote Box Cover
3	02963454	1	Hinge Rod
4	02961489	1	Pivot Plate Weldment
5	00752735	2	Bolt
6	12621000	2	Carriage Bolt
7	02961405	2	Ball Joint Cable Terminal
8	02918400	2	Valve Handles
9	00752036	4	Locknut
10	00011100	2	Flatwasher
11	02962363	2	Locknut
12	00059900	2	Bolt
13	02961391	1	Inner Control Handle Hinge
14	02966201	1	Decal - Cutter Valve & Door Operation

DRIVELINE



ITEM	PART NO.	QTY	DESCRIPTION
1	00752883	1	Yoke
2	00752896	2	Bearing
3	00757144	1	Slide Collar Kit
4	02965686	1	Inner Tube
5	02965685	1	Inner Half
6	02965683	1	Outer half
7	02965684	1	Outer Tube

ALAMO INDUSTRIAL

LIMITED WARRANTY

1. LIMITED WARRANTIES

- 1.01. Alamo Industrial warrants for one year from the purchase date to the original non-commercial, governmental, or municipal purchaser ("Purchaser") and warrants for six months to the original commercial or industrial purchaser ("Purchaser") that the goods purchased are free from defects in material or workmanship.
- 1.02. Manufacturer will replace for the Purchaser any part or parts found, upon examination at one of its factories, to be defective under normal use and service due to defects in material or workmanship.
- 1.03. This limited warranty does not apply to any part of the goods which has been subjected to improper or abnormal use, negligence, alteration, modification, or accident, damaged due to lack of maintenance or use of wrong fuel, oil, or lubricants, or which has served its normal life. This limited warranty does not apply to any part of any internal combustion engine, or expendable items such as blades, shields, guards, or pneumatic tires except as specifically found in your Operator's Manual.
- 1.04. Except as provided herein, no employee, agent, Dealer, or other person is authorized to give any warranties of any nature on behalf of Manufacturer.

2. REMEDIES AND PROCEDURES.

- 2.01. This limited warranty is not effective unless the Purchaser returns the Registration and Warranty Form to Manufacturer within 30 days of purchase.
- 2.02. Purchaser claims must be made in writing to the Authorized Dealer ("Dealer") from whom Purchaser purchased the goods or an approved Authorized Dealer ("Dealer") within 30 days after Purchaser learns of the facts on which the claim is based.
- 2.03. Purchaser is responsible for returning the goods in question to the Dealer.
- 2.04. If after examining the goods and/or parts in question, Manufacturer finds them to be defective under normal use and service due to defects in material or workmanship, Manufacturer will:
 - (a) Repair or replace the defective goods or part(s) or
 - (b) Reimburse Purchaser for the cost of the part(s) and reasonable labor charges (as determined by Manufacturer) if Purchaser paid for the repair and/or replacement prior to the final determination of applicability of the warranty by Manufacturer.The choice of remedy shall belong to Manufacturer.
- 2.05. Purchaser is responsible for any labor charges exceeding a reasonable amount as determined by Manufacturer and for returning the goods to the Dealer, whether or not the claim is approved. Purchaser is responsible for the transportation cost for the goods or part(s) from the Dealer to the designated factory.

3. LIMITATION OF LIABILITY.

- 3.01. MANUFACTURER DISCLAIMS ANY EXPRESS (EXCEPT AS SET FORTH HEREIN) AND IMPLIED WARRANTIES WITH RESPECT TO THE GOODS INCLUDING, BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.
- 3.02. MANUFACTURER MAKES NO WARRANTY AS TO THE DESIGN, CAPABILITY, CAPACITY, OR SUITABILITY FOR USE OF THE GOODS.
- 3.03. EXCEPT AS PROVIDED HEREIN, MANUFACTURER SHALL HAVE NO LIABILITY OR RESPONSIBILITY TO PURCHASER OR ANY OTHER PERSON OR ENTITY WITH RESPECT TO ANY LIABILITY, LOSS, OR DAMAGE CAUSED OR ALLEGED TO BE CAUSED DIRECTLY OR INDIRECTLY BY THE GOODS INCLUDING, BUT NOT LIMITED TO, ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES RESULTING FROM THE USE OR OPERATION OF THE GOODS OR ANY BREACH OF THIS WARRANTY. NOTWITHSTANDING THE ABOVE LIMITATIONS AND WARRANTIES, MANUFACTURER'S LIABILITY HEREUNDER FOR DAMAGES INCURRED BY PURCHASER OR OTHERS SHALL NOT EXCEED THE PRICE OF THE GOODS.
- 3.04. NO ACTION ARISING OUT OF ANY CLAIMED BREACH OF THIS WARRANTY OR TRANSACTIONS UNDER THIS WARRANTY MAY BE BROUGHT MORE THAN TWO (2) YEARS AFTER THE CAUSE OF ACTION HAS OCCURRED.

4. MISCELLANEOUS.

- 4.01. Proper Venue for any lawsuits arising from or related to this limited warranty shall be only in Guadalupe County, Texas.
- 4.02. Manufacturer may waive compliance with any of the terms of this limited warranty, but no waiver of any terms shall be deemed to be a waiver of any other term.
- 4.03. If any provision of this limited warranty shall violate any applicable law and is held to be unenforceable, then the invalidity of such provision shall not invalidate any other provisions herein.
- 4.04. Applicable law may provide rights and benefits to purchaser in addition to those provided herein.

KEEP FOR YOUR RECORDS

ATTENTION: Purchaser should fill in the blanks below for his reference when buying repair parts and/or for proper machine identification when applying for warranty.

Alamo Industrial Implement Model _____ Serial Number _____

Date Purchased _____ Dealer _____

ATTENTION:
READ YOUR OPERATOR'S MANUAL

ALAMO INDUSTRIAL

An Alamo Group Company
Post Office Drawer 549
Seguin, Texas 78156
830-379-1480





TO THE OWNER/OPERATOR/DEALER

To keep your implement running efficiently and safely, read your manual thoroughly and follow these directions and the Safety Messages in this Manual. The Table of Contents clearly identifies each section where you can easily find the information you need.

The OCCUPATIONAL SAFETY AND HEALTH ACT (1928.51 Subpart C) makes these minimum safety requirements of tractor operators:

REQUIRED OF THE OWNER:

1. Provide a Roll-Over-Protective Structure that meets the requirements of this Standard; and
2. Provide Seatbelts that meet the requirements of this paragraph of this Standard and SAE J4C; and
3. Ensure that each employee uses such Seatbelt while the tractor is moving; and
4. Ensure that each employee tightens the Seatbelts sufficiently to confine the employee to the protected area provided by the ROPS.

REQUIRED OF THE OPERATOR

1. Securely fasten seatbelt if the tractor has a ROPS.
2. Where possible, avoid operating the tractor near ditches, embankments, and holes.
3. Reduce speed when turning, crossing slopes, and on rough, slick, or muddy surfaces.
4. Stay off slopes too steep for safe operation.
5. Watch where you are going - especially at row ends, on roads, and around trees.
6. Do not permit others to ride.
7. Operate the tractor smoothly - no jerky turns, starts, or stops.
8. Hitch only to the drawbar and hitch points recommended by the tractor manufacturer.
9. When the tractor is stopped, set brakes securely and use park lock, if available.

**Keep children away from danger all day,
every day...**

**Equip tractors with rollover protection (ROPS)
and keep all machinery guards in place...**

**Please work, drive, play and live each day with
care and concern for your safety and that of
your family and fellow citizens.**



BUILT SHARPER[®]

An Alamo Group Company

1502 E. Walnut St.
Seguin, Texas 78155



Sales and Marketing

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support@alamo-industrial.com

Warranty Registration/Claims

www.alamoparts.com

Return Authorizations

Online Part Orders
Techical Information
www.alamoparts.com
Tel 800.356.6286 Fax 800.322.5141
www.alamo-industrial.com

