

*The*  
**ROANOKE**

**The  
Gregory  
Manufacturing  
Company**

A North Carolina Corporation

P.O. Box 269

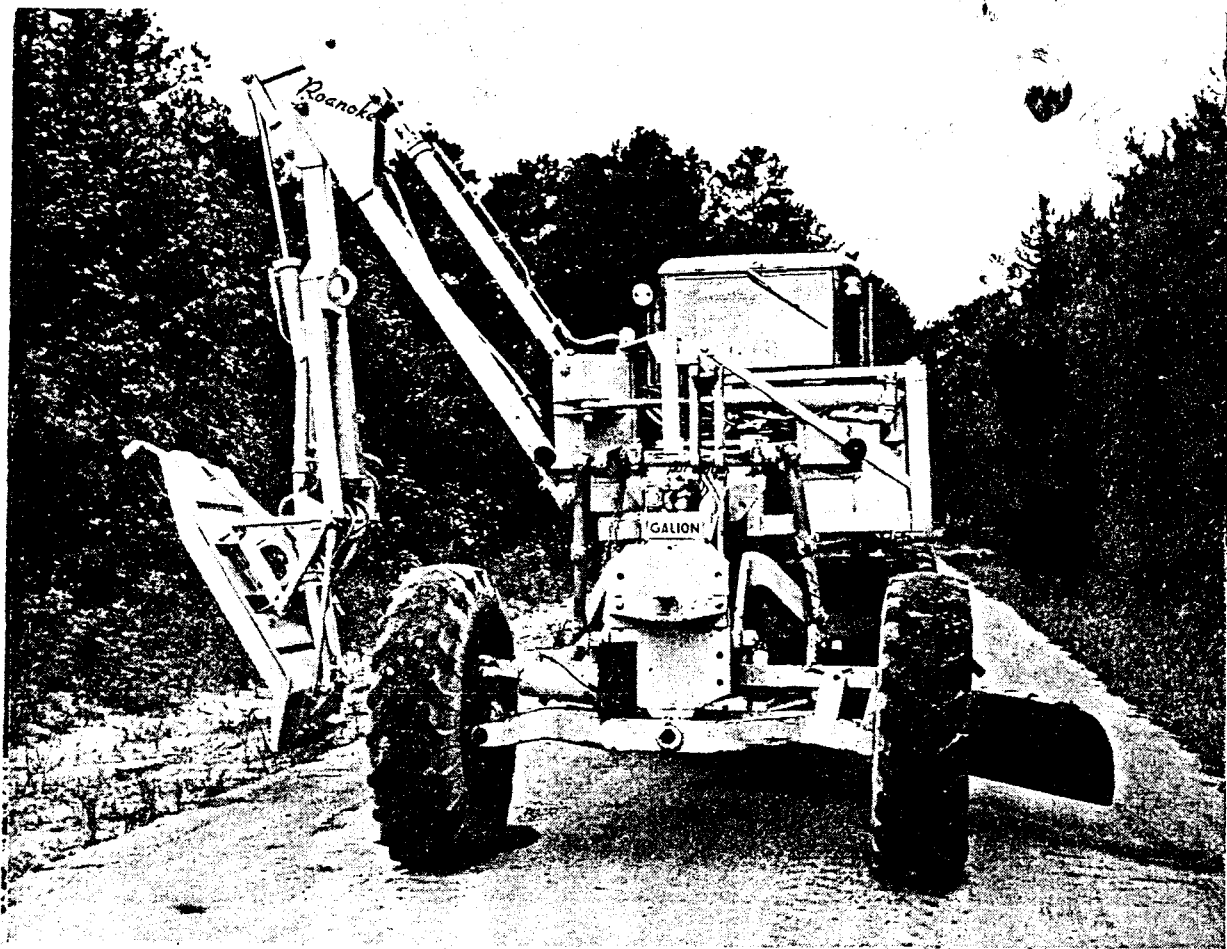
Lewiston-Woodville, NC 27849

Telephone 919 348-2531

**ROBOT**

**MODEL SB-110**

**Hydraulic Highway Cutter**



**OPERATORS SERVICE AND PARTS  
MANUAL**

MANUAL NO 37206

6GMC88

\$5.00



### SAFETY OPERATING PRECAUTIONS

The front of the cutter housing is not guarded, making it imperative that the area being cut be cleared of all debris and objects which are not brush. This is not a grass cutter and operating where the blade may strike the ground will create a hazard. Carrier cab should be protected with a safety shield (see parts manual) on the cutter side of the tractor between the cutter and the operator to prevent possible injury to the operator from flying objects. Do not operate the cutter around or near power lines. When using this equipment, it is your responsibility to have protected flagmen 500 feet away from the cutting area.



## LIMITED WARRANTY

### Brush Cutter

The Gregory Manufacturing Company warrants that each new Brush Cutter sold by it and its authorized dealers will be free from defects in material and workmanship under normal use and service for a period of 90 Days from date of purchase. Our obligation under this warranty is limited to repairing or replacing at our option in an authorized Dealer's place of business any part or parts that within the applicable period previously stated, is returned to the factory in Lewiston Woodville, North Carolina, transportation charges prepaid. Our examination must show that the returned part or parts were faulty at time of manufacture. Replacements made under this warranty shall be warranted only for the remainder of the period applicable to the Brush Cutter.

This warranty is expressly limited to the replacement of faulty parts as set forth herein, and is the only warranty given by the manufacturer or agent, distributor, dealer, or seller to the purchaser, and is in lieu of any and every warranty of every kind either expressed or implied, and this warranty cannot be changed, modified or added to except in writing by a duly elected officer of The Gregory Manufacturing Company, and no dealer distributor, agent, salesman or representative has any right or authority to change, modify or enlarge this warranty or to make any promise, stipulation and agreement inconsistent or in conflict therewith.

This warranty does not apply if the equipment has been subjected to misuse, negligence on the part of the owner or operator, or accident. This warranty does not extend to expendable items that within normal usage may be replaced within the warranty period including such items as Cutter Blades and bolts. The warranty does not cover normal maintenance, services such as cleaning or minor adjustments.

No other warranty whether of merchantability, fitness or otherwise, expressed or implied, in fact or by law, is given by The Gregory Manufacturing Company with respect to any new equipment or part and no other or further obligation or liability shall be incurred by reason of the manufacture or sale of any new Brush Cutter or part whether for breach of any warranty, negligence of manufacture of otherwise.

The obligations of The Gregory Manufacturing Company set forth in the first paragraph above shall be the exclusive remedy for any breach of warranty hereunder. In no event shall The Gregory Manufacturing Company be liable for any general, consequential, or incidental damages including, without limitations, any damages for loss of use or loss of profits.

The Gregory Manufacturing Company equipment sold through other than authorized dealers is not subject to standard Gregory Manufacturing Company warranty and service policies.

It is a policy of The Gregory Manufacturing Company to improve its products whenever possible. We reserve the right to make changes or improvements at any time without incurring any obligations to make such changes on products sold previously.

This warranty shall not apply to any equipment or part that has been repaired or altered outside of The Gregory Manufacturing Company's factory or an authorized dealer's shop.

The warranty becomes effective upon receipt by The Gregory Manufacturing Company, of a properly completed Pre-Delivery Inspection Form.

THE GREGORY MANUFACTURING COMPANY  
A North Carolina Corporation  
Lewiston Woodville, North Carolina, U.S.A. 27849

Section \_\_\_\_\_

Roanoke Bush Axe Rotary Cutter  
Model's - SB-110

Date \_\_\_\_\_

Dealer _____	Serial No. _____
Full Address _____	Model No. _____
_____ Capitals _____	State Code _____
_____ Please _____	Dealer Account No. _____
Owner's Name _____	Date Delivered to Dealer _____
Full Address _____	Date of Delivery to Owner _____
City _____ St _____ Zip _____ Phone _____	(I.E. Date of Warranty)

Inspect the following and adjust if necessary

NOTE: Any adjustment or corrections to be in accord with the Operators and Service Manual.

- \_\_\_1. Check for correct installation of universal joint drive shaft.
- \_\_\_2. Check all bolts, nuts, and screws for tightness.
- \_\_\_3. Fill oil resevoir with recommended oil.
- \_\_\_4. Check hydraulic lines for twisting or binding.
- \_\_\_5. Check hydraulic line fittings for tightness.
- \_\_\_6. Check cylinder rods for damage or paint.
- \_\_\_7. Check jack stands to see if they are in place.
- \_\_\_8. Check blade rotation - recommended right hand.
- \_\_\_9. Check blades for freedom of movement.
- \_\_\_10. Check to see if hitch pins are in place.
- \_\_\_11. With hydraulics hooked to tractor run thru all operations to see if cutter is field ready.
- \_\_\_12. Check Cutter blade bolts to see if properly tightened.
- \_\_\_13. Check to see if all safety decals are in place - Refer to Operator's Manual.
- \_\_\_14. Is Operator's Manual with Rotary Cutter \_\_\_Yes \_\_\_No

THE LIMITED WARRANTY PRINTED ON THIS FORM HAS BEEN RECEIVED AND EXPLAINED TO ME. I FULLY UNDERSTAND THE LIMITATIONS THEREIN.

I certify that this inspection has been completed, any faults corrected, and the unit passed fit for delivery.

Owner/Operator's Signature \_\_\_\_\_

Dealer Signature \_\_\_\_\_

Date \_\_\_\_\_

Date \_\_\_\_\_

(Submit within 10 days of sale date for Warranty Registration)

Form

# ROANOKE *Line* ROBOT HYDRAULIC HIGHWAY CUTTER



**MODEL SB-110**

## *Data and Specifications*

### GENERAL SPECIFICATIONS:

- (1) The Robot Rotary Cutter is designed for mounting on motor graders in lieu of a scraper blade.
- (2) The cutter is supported entirely by the horizontal beam that connects the front wheel assembly to the engine and transmission assembly.
- (3) The cutter assembly is supported by an outboard end of an articulated boom assembly, attached to the motor grader by its inboard end.
- (4) The cutter has a maximum side reach of 18'.
- (5) The boom is designed to support the cutter while it is in operation in any position from a minimum of 1" (one inch) to the right of the right wheels of motor grader to a maximum of 18' in the same direction.
- (6) With the boom in a fully extended position, the cutter may be rotated about a horizontal axis parallel to the direction of travel, 90 degrees in an outboard direction and 15 degrees in an inboard direction.
- (7) The boom lifting valve is equipped with a servo attachment that will cause the boom to lift any time that the hydraulic pressure raises above a pre-set pressure. This serves as a safety factor, so that any condition that stalls the cutter motor will automatically lift the cutter off the obstruction, thereby lessening the chances of causing damages to the cutter. The operator may then reposition the cutter by manual operation from the cab.  
(Applies to MG-20 only)
- (8) The mounting bracket is equipped with one hydraulic cylinder that will swing the boom and cutting head forward approximately 100 degrees, permitting the outer boom to be placed between the front wheels of the motor grader. With the boom and cutting head in this position, the entire Robot Cutter comes within the width and height of the motor grader.

### CUTTER SPECIFICATIONS:

- (1) The cutter housing is designed to give the maximum strength possible, and yet to reduce undesired excess overhanging weight.
- (2) The cutter blades are made of high carbon steel.
- (3) Blades are easily replaced.
- (4) Blades are free swinging.
- (5) The cutter shaft is mounted on heavy duty tapered roller bearings.
- (6) The cutter housing has replaceable skids or shoes.  
(Applies to earlier models only)
- (7) The cutting diameter of the blades overall is 66".
- (8) Blades swing on hardened bushings to prevent wear in the blades mounting holes.

### POWER TRAIN DATA:

- (1) A live hydraulic vane type pump is used to drive the motor.
- (2) The hydraulic pump is driven directly from the power source with the use of flexible couplings.
- (3) The cutter is driven by a hydraulic vane type motor.
- (4) The operator constantly controls the flow of oil in the complete hydraulic system which travels as follows: from the hydraulic pump through a selector valve; through a relief valve which is adjustable; through the motor; through a return line with filter; to the reservoir.

# *Model SB-110 Robot Hydraulic Cutter*

## *Assembly Instructions*

When your Roanoke Robot Hydraulic Cutter arrives you will notice there are three parts: (1) Main frame, (2) Boom and cutter, (3) One box of parts. When you are ready to install the Robot Cutter, first, open box of parts and check contents against packing list. Second, check to make sure the hydraulic pump adapter will fit the end of the crankshaft on the motor grader.

Now refer to Fig. 1. You will notice the Roanoke Robot Hydraulic Cutter is mounted in front of the cab, around the grader neck, and extends to the right side of the grader.

The first step to assemble should be to measure from front of cab forward on the grader neck approximately 65" and mark this. Then from this mark measure 41" forward on neck and mark. Check both sides, top and bottom of neck to see if there is anything attached to the neck between those marks. This 41" space can possibly be moved to the front or rear to clear any attachment on the neck. If it cannot be moved enough to clear, the attachments such as the blade circle and lift arms will have to be removed.

After the grader neck is cleared of all attachments that might interfere, place main frame below grader neck with the boom pivot circle and "A" frame to the right side of the neck. Remove break-away cylinder and brace (Items 25, 29, 33) Fig. 4, and remove hydraulic tank from main frame. Remove main frame mounting studs and posts Item 40 Fig. 4. Lift main frame up to bottom of neck and level with grader. Main frame mounting post should be tight on neck before welding post on left side of neck, Item 40 Fig. 4.

After main frame post has been welded and studs tightened, replace hydraulic tank, brace, and cylinder (Items 25, 29, 33) Fig. 4. Install control rods. Control rods may have to be shortened or lengthened for different make graders.

To mount hydraulic pump see Fig. 3. The mount will vary with each different make and model of grader. There will be a pump mount plate and channel that will work on the basic type grader that you ordered, but there are changes within the models so you may have to alter the mount some. See Fig. 3.

After the pump is mounted, install the hose from pump to hydraulic tank and control valve. See hydraulic schematic

Fig. 1. The hose should be run down the left or right side of grader to the pump. There are hose brackets in the box of parts that can be welded to side of grader. Then clamp the hose to the bracket.

Next check all hose connections with hydraulic schematic Fig. 1, and be sure all connections and fittings are tight. Then fill hydraulic tank with oil that is recommended on Page 5. The system requires a 55 gallon drum of oil.

After the hydraulic tank has been filled, the boom should be installed to the main frame, see Fig. 4 and Fig. 5 for detailed assembly information. When the boom is secured to the main frame, all hydraulic hose should be connected. See hydraulic schematic Fig. 1. Before starting grader engine, check all hydraulic fittings and connections for tightness and oil leaks.

With a grease gun, check all grease fittings. Be sure to check the grease fitting on the blade spindle. A grease overflow is provided in the spindle hub to prevent pushing out seals in the hub.

Your Robot Cutter is now ready to operate. Start the grader engine and check the Robot controls immediately. The hydraulic system should pressurize immediately when the grader engine starts. Special Note: Through the years in very rare instances, we have received pumps from the manufacturer with the cartridge in a reverse position. When the cartridge is in the pump backwards, the hydraulic system will not pressurize. Should this happen, stop the grader engine and reverse the cartridge in the large pump.

Once the hydraulic system has pressurized and the controls work correctly, you are ready to cut brush. To complete the installation and know that the Robot Cutter is in good working condition, you should stop the cutter after it has been cutting brush about 30 minutes and at this time check the tightness of the tapered bearings around the blade spindle. These bearings should fit snugly, and with the cutting head on its side, you should not be able to push or pull the blade spindle. Again, check all hydraulic fittings and tighten all bolts and nuts on the cutting head. This practice should be followed at least twice a day. See decal on boom of cutter.



## *Helpful Tips & Information*

1—In order for the operator to learn to operate the cutter, we are listing below the specific control handle for each separate movement of the cutter and boom.

Starting on the right hand side and going to the left you will find that the control rods are in sequence with the separate parts of the cutter and boom. The first control rod on the right positions the cutter in the angle desired. The second control rod from the right controls the center pivot joint of the boom. The third control rod from the right positions the height of the boom. The fourth control rod from the right swings the boom and cutting head from an angle perpendicular to the motor grader forward approximately 110 degrees to a position whereby the boom comes directly between the front wheels of the grader. The extreme left control rod is the on and off control for the cutter hydraulic motor.

2—If the operator finds that the cutter is continuously raising up out of the material being cut, there is usually two remedies for this. First, his ground speed is too great for the size material being cut, or the cutter itself is too low into the ground. However, this will still occur when the cutter hits an immovable object. (Applies to MG-20 only)

3—The operator should exercise caution when the cutter meets an obstacle that it cannot either pass over or get around. The boom will break back until all the travel is used up, then it becomes a rigid structure and damage will then

occur. The operator should never back-up the machine while the cutter is engaged in the work or material.

4—The motor grader motor should run at 1600 R.P.M. in order to get maximum power to the hydraulic motor.

5—In event that the cutter is raising up out of the work too easily this indicates that the relief valve should be adjusted. To do this you should screw down on the adjustment of the relief valve, 1/2 turn at the time until desired working condition is obtained. This relief valve is located at the pressure gauge. (Applies to MG-20 only)

6—If at any time the boom and cutter fails to actuate there usually will be found that, if the oil supply is sufficient, then there will probably be an obstruction of some nature in the hydraulic system. The most likely place for this to occur is in the relief valve located within the four spool valve bank. A small piece of foreign material can easily keep the relief valve from closing properly and cause the oil to run through the valve.

7—Control of the flow of material that has been cut can be accomplished by reversing the rotation of the cutter blade. The rotation of the cutter blades can be reversed with the motor control valve which has clockwise, neutral and counter-clockwise positions. Cutter blades are designed with double cutting edges to enable the cutter to be operated in either a clockwise or counter-clockwise direction.

## *General Hydraulic Information*

Recent trends to high pressure, high performance hydraulic systems has placed more emphasis on the need for oils with outstanding lubricating properties. Through extensive research we have found that many "good" industrial hydraulic oils do not provide sufficient lubrication for the high quality units used in our "Robot" cutters hydraulic system. However the load carrying ability is found in today's motor oils meeting the American Petroleum Institute service classification "M.S." (Maximum Severity)

The weight of the oil used should depend on the temperatures at which your system is operating. For our hydraulic system we recommend a 10 or 20 weight motor oil.

Below are listed some typical oils that are suitable for our equipment. All of these oils meet with the American Petroleum Institute classification of "M.S." (Maximum Severity.)

It is always good practice to use the best quality oil available for hydraulic systems and components.

## *Recommended Oils For Hydraulic Motor Circuit*

### AMERICAN OIL

American S-1  
Permalube  
American HDM  
Stanlube H.D.

### SUN OIL

Dynalube  
Ocnus H.D. Series 1  
Ocnus H.D. Series 2  
Ocnus H.D. MIL

### MOBIL OIL

Delvac 5-110  
Mobiloil  
Delvac 910 (SAE-10)  
Delvac 920 (SAE-20)  
Delvac 930 (SAE-30)

### SHELL OIL

Rotello  
X-100

### SINCLAIR

Extra Duty  
Tenol  
Rubilline  
Super Tenol  
Super Rubilline H.D.

### STANDARD OIL OF OHIO

Premex  
Sohio HQD

### CITIES SERVICE

Koolmotor Triple H.D.

### TEXACO

Ursa Oil H.D.  
Ursa Oil S-1  
Ursa Oil S-3  
Havoline Motor Oil

### ATLANTIC REFINING CO.

Ultramo

## *Hydraulic Fluid Recommendations & General Information*

### OIL-TYPE

Oils used in hydraulic systems perform the dual function of lubrication and transmission of power. Oil must be selected with care and with the assistance of a reputable supplier.

Crankcase oils meeting or exceeding the "Five Engine Test Sequence" for evaluation oils for API (American Petroleum Institute) service MS (Maximum Severity) best serve the needs of mobile hydraulic systems. These engine sequence tests were adopted by the Society of Automotive Engineers, American Society for Testing Materials, and automotive engine builders. The MS classification is the key to selection of oils containing the type of compounding that will extend the operating life of the hydraulic system. Oils meeting Diesel engine requirements, DG through DS classifications, may or may not have the type of compounding desired for high performance hydraulic systems.

The following table summarizes the oil types (viscosity and service classification) that are recommended for use

with our equipment. This selection is most important and should be made with considerable care.

Hydraulic System Operating Range (Min. to Max.)	SAE Viscosity	API Service Classification
0 degrees F. to 180 degrees F.	10W	SC, SD, SE
15 degrees F. to 210 degrees F.	20-20W	" " "
32 degrees F. to 230 degrees F.	30	" " "
0 degrees F. to 210 degrees F.	10W-30	" " "

## **ROBOT PREVENTIVE MAINTENANCE**

The old saying "A stitch in time saves nine" is certainly true with the operation of the Robot Cutter. The very nature of cutting heavy brush requires a rugged brush cutter that will work week after week without lengthy downtime. You, too, will agree that a cutter that will cut 4 to 6 inch diameter brush deserves a few minutes each day of the operator's time for inspection and adjustment. Our Engineering Department makes the following recommendations:

1. Have the operator thoroughly inspect the cutting head at least twice a day (more if cutting extremely large and heavy brush). This inspection should include:
  - A. Check all bolt heads and nuts for tightness.
  - B. Check for allowable bearing tolerance on spindle bearings. (These bearings are tapered with adjustment nut located on top of cutter housing.)
  - C. Grease spindle.
  - D. Check the blade arm — especially bolts holding construction together.
  - E. Cutting blades should be inspected for

fatigue marks or discoloration, usually found approximately 6½ inches from swivel end of blade where blade comes in contact with spacer bar.

2. It is very important to cut brush with the proper RPM's. The blade arm should be turning approximately 1150 to 1200 RPM's per minute. (Some operators have a tendency to cut at a slower speed, thus causing the blades to go back on the spacer bar and fatigue.)
3. It is very important to maintain good blade balance. Whenever blades become worn or chipped and the cutting head has a tendency to vibrate, the operator should install a new set of blades. This will eliminate the vibration.
4. Check all hydraulic lines for leaks; especially, when large brush has been falling on the cutting head.

The time spent by the operator checking the Robot "twice daily" will pay big dividends in the reduction of operational cost and satisfaction of operation.

**MAINTENANCE IS IMPORTANT FOR:  
LONGER LIFE  
BETTER SERVICE  
BETTER OPERATION  
EXTRA SAFETY FACTOR**

## OPERATING TEMPERATURES

These temperature ranges for each grade of oil are satisfactory if suitable procedures are followed for low temperature start-up conditions and if sustained operation is avoided at the upper temperature limits. Operation in excess of these temperatures results in increased wear of the system components and causes more rapid deterioration of the oil. For optimum operation, a maximum oil viscosity of 4000 SSU at the low temperature start-up condition and a minimum oil viscosity of 60 SSU for the sustained high temperature operating condition are recommended.

## ADDITIVES

Most oil companies have several brands of crankcase oils of somewhat varying formulation that will meet the API service classification of MS. The more desirable of these oils for hydraulic service will contain higher amounts of the type of compounding that avoids scuffing and wear of cam lobes and valve lifters. These oils will also be formulated to be stable under oxidative conditions and when in contact with small amounts of moisture. There should also be reasonable protection against rust to any ferrous materials submerged in the oil or covered by the oil's film.

## CLEANLINESS

Thorough precautions should be taken to filter the oil in the entire hydraulic system prior to its initial use to remove paint, metal chips, welding shot, lint, etc. If this is not done, damage to the hydraulic system will probably result. In addition, continuing filtration is required to remove sludge and products of wear and corrosion, throughout the life of the system.

## FILTER SYSTEM

The return hydraulic filter cartridge (R-1104) should be checked every 800 hours and replaced if necessary. The suction strainers (R-1102) inside hydraulic tank should be checked every 800 hours and replaced if necessary.

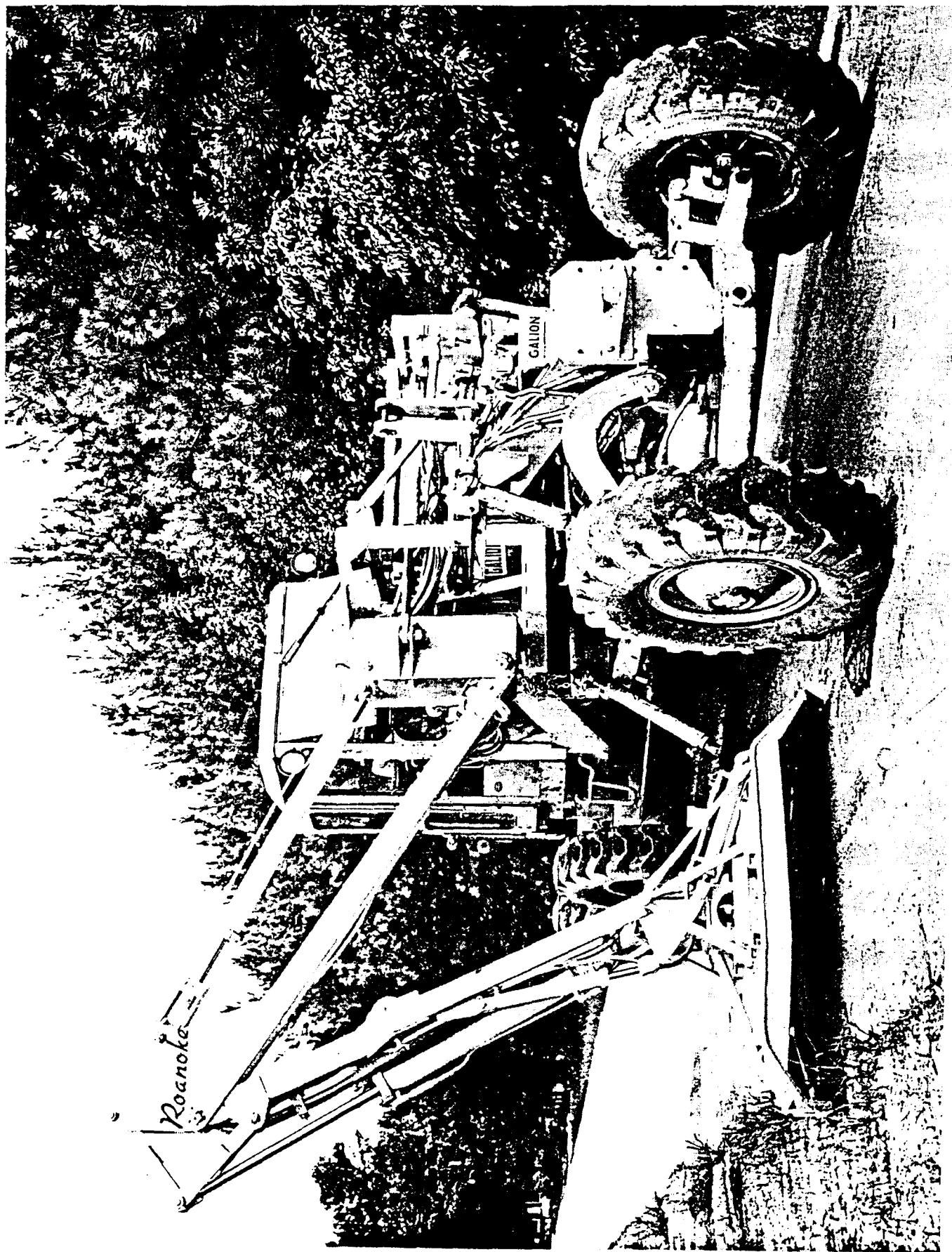
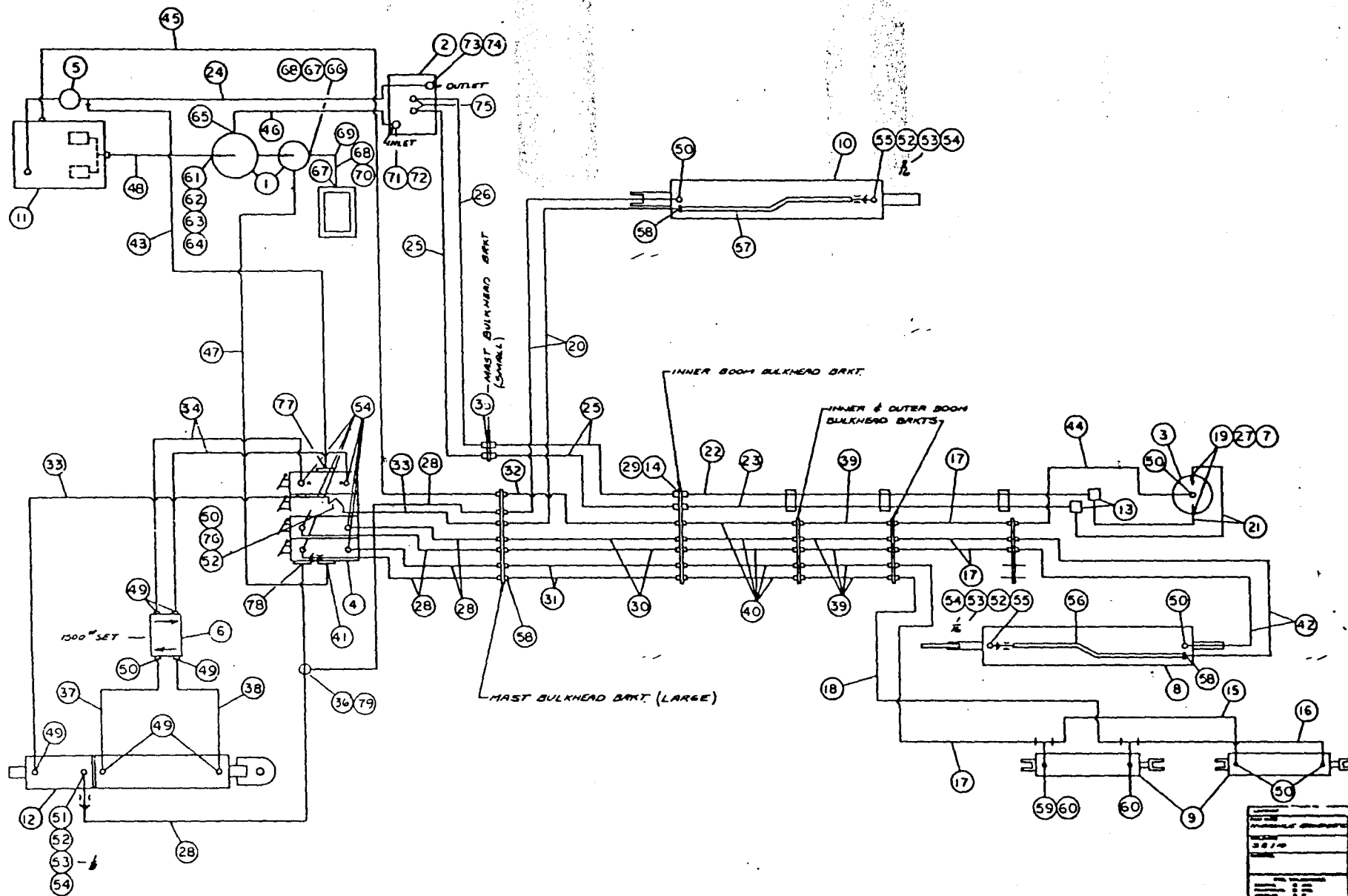


FIG. 2



# HYDRAULIC SCHEMATIC

ITEM NO.	PART NO.	DESCRIPTION	QTY
1	05201	Pump - Double	1
2	05202	Valve - Control	1
3	04996	Motor - Hydraulic	1
4	05203	Valve - Control	1
5	04968	Filter (See Hyd. Tank Group)	1
6	05204	Valve - Cushion	1
7	04991	Union	2
8	36601	Cylinder - Outer Boom Pivot	1
9	35046	Cylinder - Cutter Tilt	2
10	36597	Cylinder - Boom Lift	1
11	04962	Tank - Hydraulic (See Hyd. Tank Group)	1
12	36605	Cylinder - Boom Swing & Breakaway	1
13	05205	Swivel	2
14	05206	Bulkhead	2
15	03292	Hose Ass'y. 1/2 x 63 Female Swivel Both Ends	1
16	05207	Hose Ass'y. 1/2 x 38 Female Swivel and Short Elbow	1
17	04865	Hose Ass'y. 1/2 x 49 1/2 Female Swivel Both Ends	4
18	05208	Hose Ass'y. 1/2 x 66 Female Swivel Both Ends	1
19	04990	Flange Adapter	3
20	05209	Hose Ass'y. 1/2 x 30 Female Swivel and Short Elbow	2
21	05210	Hose Ass'y. 1 1/4 x 41 Female Swivel and Male Pipe	2
22	05211	Hose Ass'y. 1 1/4 x 12' - 1 1/4" Female Swivel and Male Pipe	1
23	05212	Hose Ass'y. 1 1/4 x 12' - 8 1/4" Female Swivel and Male Pipe	1
24	05213	Hose Ass'y. 1 1/4 x 84 Female Swivel Both Ends	1
25	05214	Hose Ass'y. 1 x 44 Female Swivel and Short Elbow	3
26	05215	Hose Ass'y. 1 x 46 Female Swivel and Long Elbow	1
27	05903	Bushing - Reducer 1 1/2 - 1 1/4	2
28	05216	Hose Ass'y. 1/2 x 60 Female Swivel and Short Elbow	7
29	05217	Adapter	2
30	05218	Hose Ass'y. 1/2 x 46 Female Swivel and Short Elbow	2
31	05219	Hose Ass'y. 1/2 x 46 Female Swivel and Long Elbow	2
32	05220	Hose Ass'y. 1/2 x 44 Female Swivel Both Ends	1
33	05221	Hose Ass'y. 1/2 x 60 Female Swivel Both Ends	2
34	04864	Hose Ass'y. 1/2 x 50 Female Swivel and Short Elbow	2
35	05222	Bulkhead	2
36	05223	Elbow (Aeroquip #2024-12-8)	1
37	05224	Hose Ass'y. 1/2 x 24 Female Swivel and Short Elbow	1
38	03033	Hose Ass'y. 1/2 x 24 Female Swivel Both Ends	1
39	05225	Hose Ass'y. 1/2 x 37 Female Swivel Both Ends	5
40	05226	Hose Ass'y. 1/2 x 59 Female Swivel Both Ends	5
41	05227	Elbow - Rework	1
42	05228	Hose Ass'y. 1/2 x 21 Female Swivel Both Ends	2
43	05229	Hose Ass'y. 1 x 84 Female Swivel and Short Elbow	1
44	05230	Hose Ass'y. 1/2 x 31 Female Swivel and Short Elbow	1
45	05231	Hose Ass'y. 1/2 x 88 Female Swivel Both Ends	1
46	05232	Hose Ass'y. 1 1/4 x 237 Female Swivel and 45" Split Flange	1
47	05233	Hose Ass'y. 1 x 237 Female Swivel Both Ends	1
48	05234	Hose - Suction 3' x 19"	6
49	03232	Union	8
50	03257	Elbow	1
51	05236	Hex Nipple	4
52	05237	Adapter	3
53	05238	Check - Line	10
54	05239	Adapter	2
55	05240	Elbow	1
56	03291	Hose Ass'y. 1/2 x 36 Female Swivel Both Ends	1
57	05235	Hose Ass'y. 1/2 x 42 Female Swivel Both Ends	27
58	03185	Bulkhead	1
59	05241	Elbow	2
60	05242	Tee	1
61	04992	Flange Adapter	1
62	05992	Nipple - Pipe	1
63	05890	Elbow	1
64	05891	Nipple - Combination	1
65	05243	Flange - Split	1
66	04802	Sprocket, 10T Keyed	2
67	04801	Sprocket, 10T Splined	1
68	04599	Chain Ass'y. 10 Link	1
*69		Shaft - Splined	1
*70		Adapter - Pump	1
71	05244	Adapter - Swivel	1
72	05245	Elbow - Rework	1
73	05246	Adapter	1
74	05247	Elbow	2
75	03233	Adapter	1
76	05248	Tee	1
77	05249	Elbow	1
78	03317	Adapter - Swivel (Aeroquip #2066-12-12)	1
79	06629	Adapter (Aeroquip #203102-8-8)	1
Order Parts by Make, Model, and Serial No. of Tractor			

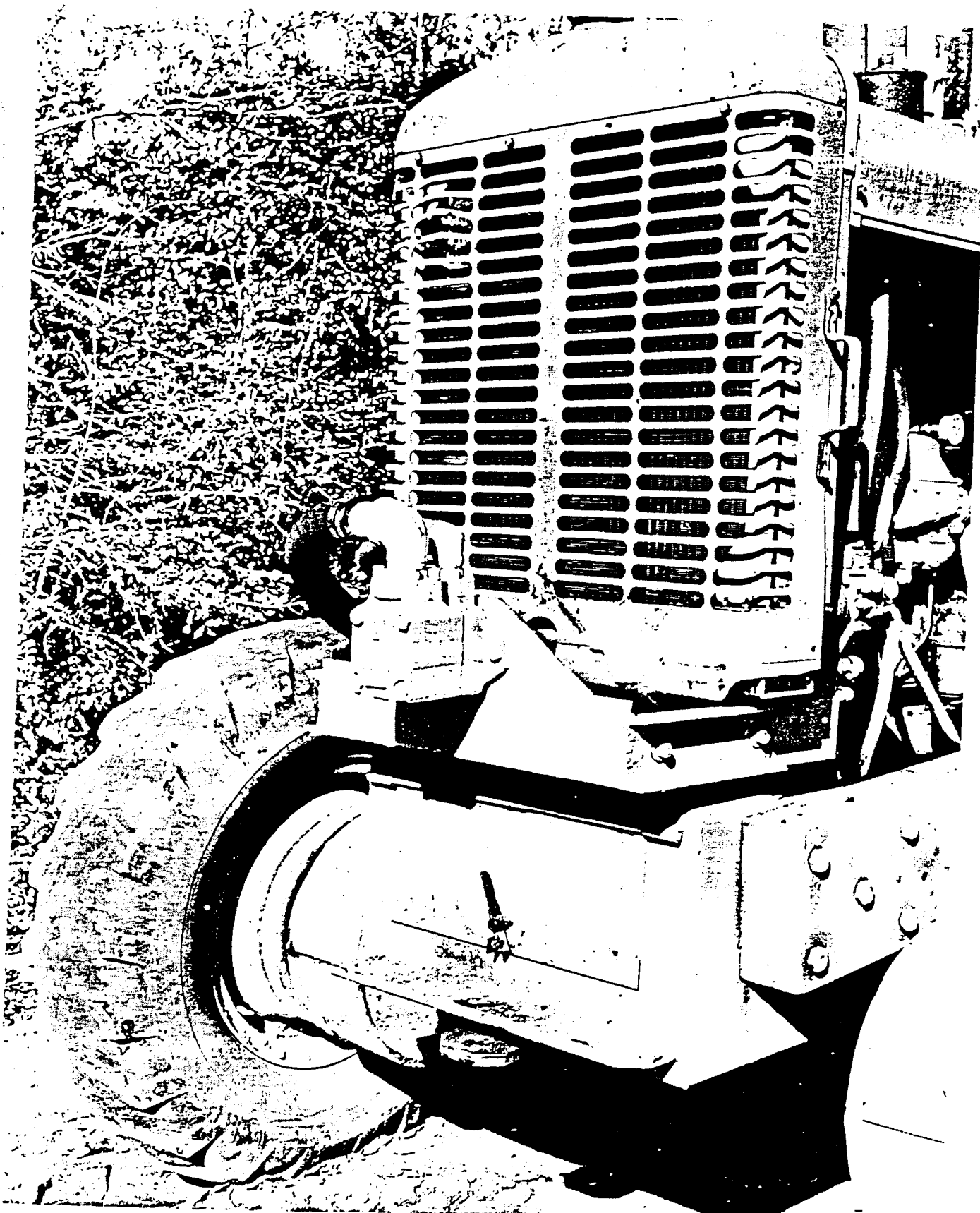


FIG. 3

Mounting the double pump is very similar to above photograph.



# PARTS LIST

MODEL SB-110

## *Roanoke Robot Highway Cutters*

All Prices F.O.B. Lewiston, North Carolina

### IMPORTANT!

When ordering parts, please give the following information:

1. Part number and name of part wanted; if part number is not available describe as fully as possible, or if practical send broken part.
2. Model and Serial Number of Cutter. This data is stenciled on the side of the machine. If this information is not available advise the age of machine and from whom purchased.
3. State if shipment is to be made by freight, railway express, bus or parcel post.
4. State your complete address; also give your nearest shipping point if shipment is to be made by freight or express.

Record your Machine Serial No. here for easy reference

I-BEAM AND ROTARY MAST GROUP

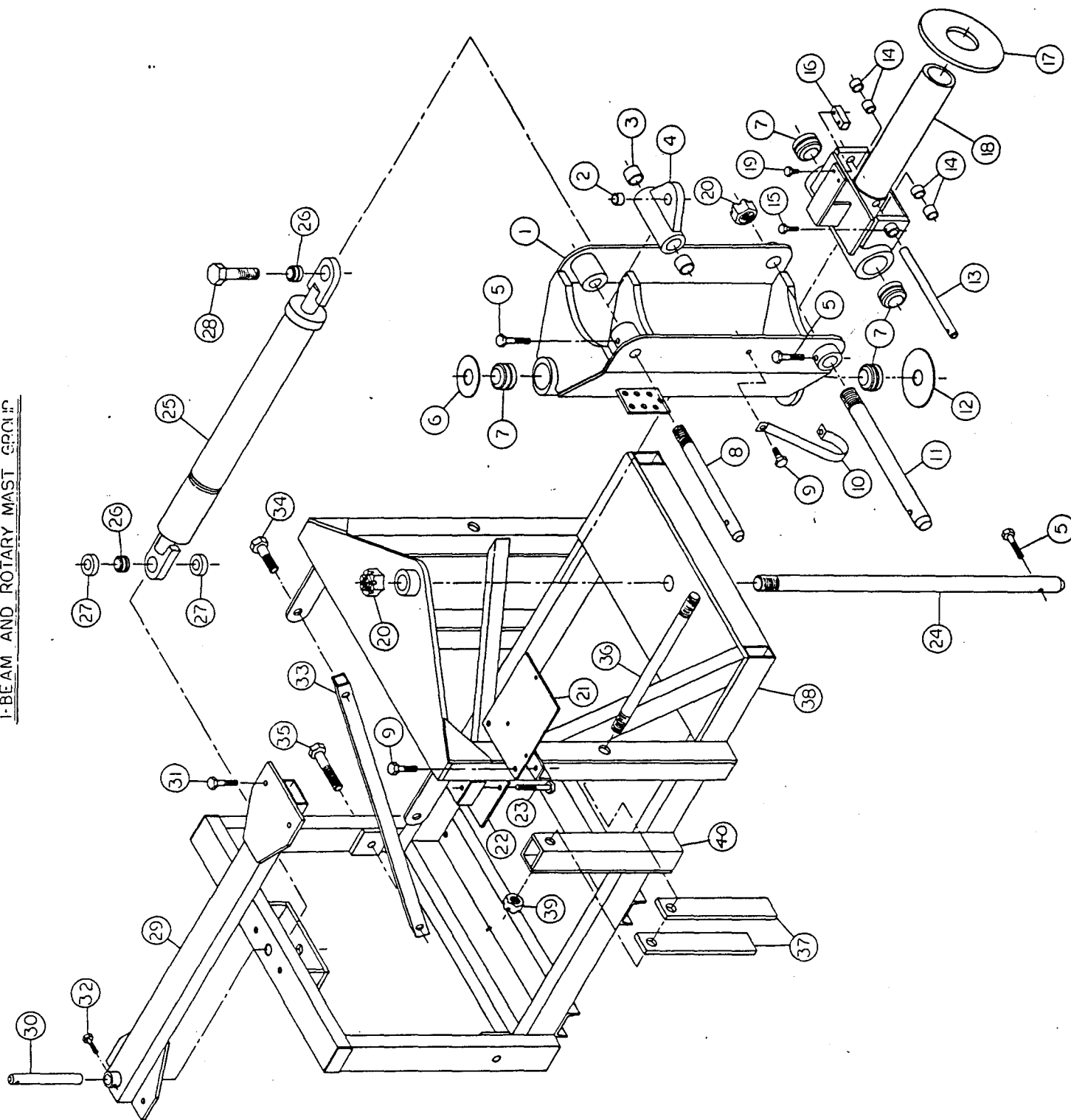


FIG. 4  
MAIN FRAME

# MAIN FRAME

ITEM NO.	PART NO.	DESCRIPTION	QUANTITY
1	4925	Mast Assembly	1
2	4900	Bushing	1
3	4926	Bushing	2
4	4927	Boom Lift Cyl.-Upper Pivot Assy.	1
5	22433	Bolt-Hex Hd. (1/2 x 3 3/4 N.F. GR No. 5)	3
6	4928	Spacer	1
7	4905	Bushing-Ball	4
8	4929	Pin-Upper Rotary Mast	1
9	22427	Bolt-Hex Hd. (1/2 x 1 1/4 N.F. GR No. 5)	3
10	4930	Retainer-Hose	1
11	4931	Pin-Lower-Rotary Mast	1
12	4932	Washer -- Thrust	1
13	4933	Pin -- Inner Boom Swivel	1
14	4597	Bushing	4
15	22410	Bolt-Hex Hd. (3/8 x 2 N.F. GR No. 5)	1
16	36738	Retainer -- Inner Boom	1
17	4935	Plate -- Thrust	1
18	36739	Inner Boom -- Swivel Assy.	1
19	22217	Bolt-Hex Hd. (3/8 x 1 N.C)	2
20	22095	Hex Slotted Nut (2" N.F.)	2
21	4937	Plate Valve Mount (Gresen CP Valve)	1
22	4938	Plate -- Valve Mount (Vickers CM2 Valve)	1
23		Bolt -- Hex Hd. (1/2 x 4 1/2 N.F. GR No. 5)	2
24	4939	Pin -- Rotary Mast	1
25	4907	Breakaway and Swing Cylinder	1
26	4902	Bushing - Ball	2
27	4941	Spacer - Cylinder	2
28	22456	Bolt-Hex Hd. (1 1/4 x 5 N.F. GR No. 5)	1
29	4942	I-Beam Top Brace Assy.	1
30	4943	Pin - Brace Assembly	1
31	22440	Bolt-Hex Hd. (5/8 x 3 1/4 N.F. GR No. 5)	4
32	1071	Bolt-Hex Hd. (3/8 x 2 3/4 N.F. GR No. 5)	1
33	4944	Side Brace I-Beam	2
34	26183	Bolt-Hex Hd. (1 x 4 N.F. GR No. 5)	2
35	23092	Bolt-Hex Hd. (1 x 6 N.F. GR No. 5)	2
*36		Pin	As Req'd
*37	2024	Spacer - I-Beam	4
*38	2000	I-Beam Assembly	1
39	27346	Hex Slotted Nut (1 1/2" N.F.)	As Req'd
40	4999	Frame Post	2

\*Parts to be ordered by make and model number of motor grader.

*2799	Stud I-Beam (1 1/2 x 18) Adams	1
2719	Stud I-Beam (1 1/2 x 21 1/2) Galion	2
2719	Stud I-Beam (1 1/2 x 21 1/2) Cat	1
2820	Stud I-Beam (1 1/2 x 22 1/2) Austin Western	4
2821	Stud I-Beam (1 1/2 x 24) Cat	1
2822	Stud I-Beam (1 1/2 x 27) Adams	1

INNER AND OUTER BOOM GROUP

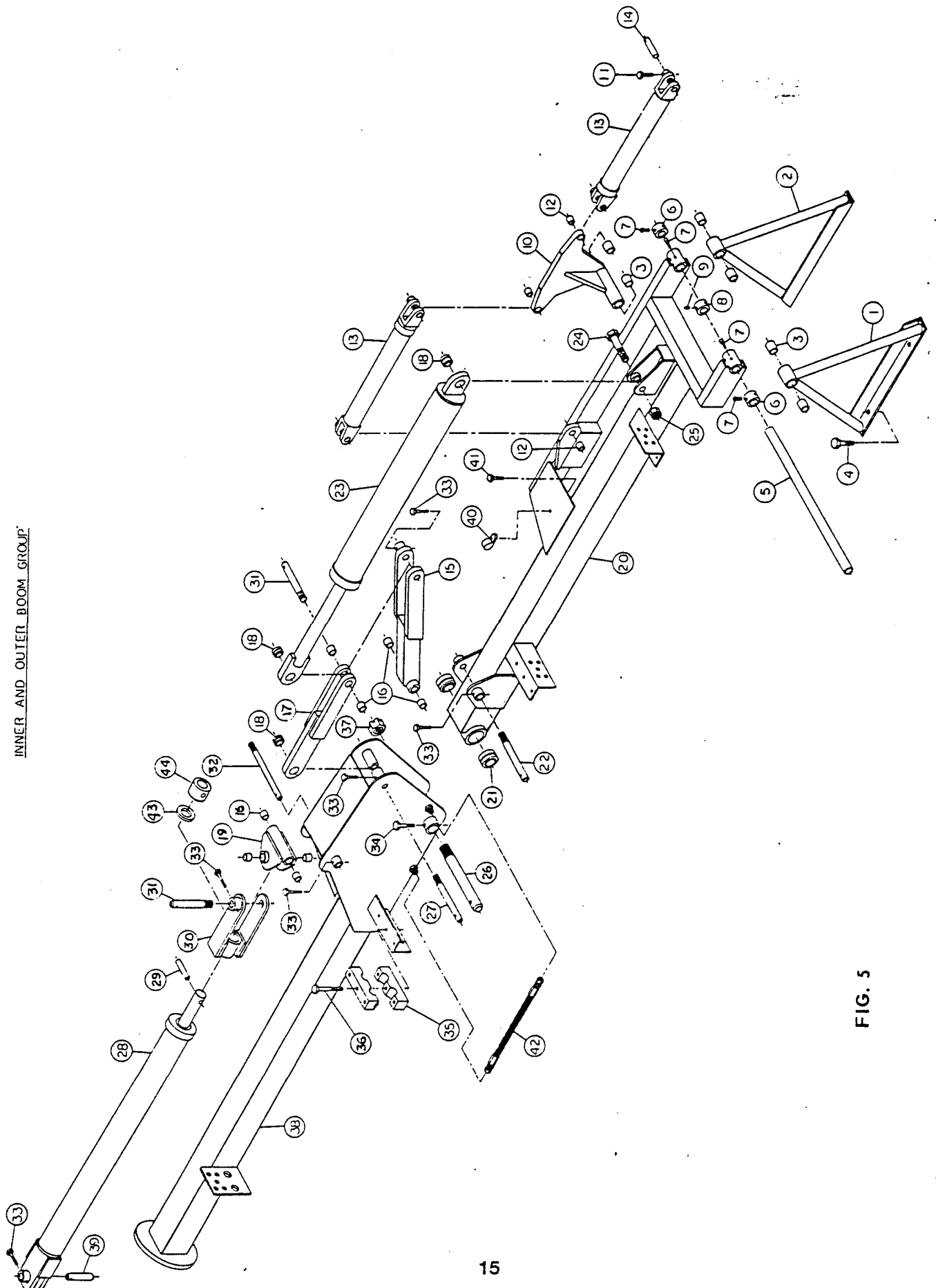


FIG. 5

# INNER AND OUTER BOOM GROUP

ITEM NO.	PART NO.	DESCRIPTION	QTY
1	04889	"A" Frame Assy. - Back	1
2	04890	"A" Frame Assy. - Front	1
3	03014	Bushing	6
4	22443	Bolt-Hex Hd. (3/4 x 2 N. F. GR No. 5)	4
5	04892	Pin - "A" Frame	1
6	04893	Retainer - Pin "A" Frame	2
7	22180	Set Screw- Sq. Hd. (1/2 x 1 N. C.)	8
8	04894	Retainer - Toggle	1
9	01754	Set Screw- Headless (1/2 x 1/2 N. C.)	2
10	04895	Toggle Assembly	1
11	22411	Bolt-Hex Hd. (3/8 x 2 1/4 N. F. GR No. 5)	4
12	04597	Bushing	3
13	04897	Cylinder Assembly	2
14	04898	Pin Cylinder	4
15	04899	Lower Boom Toggle Assembly	1
16	04900	Bushing	8
17	04901	Boom Toggle Link Assembly	1
18	04902	Bushing - Ball	3
19	04903	Lift Cylinder Rod End Linkage Assy.	1
20	04904	Outer Boom Assembly	1
21	04905	Bushing - Ball	2
22	04906	Pin - Lower Toggle	1
23	04940	Outer Boom Cylinder Assembly	1
24		Bolt-Hex Hd. (1 1/4 x 5 N. F. GR No. 5)	1
25	22094	Hex Slotted Nut (1 1/4 N.F.)	5
26	04908	Pin - Inner Boom Pivot	1
27	04909	Pin - Inner Boom Toggle	1
28	04910	Boom Lift Cylinder Assembly	1
29	04911	Pin - Boom Lift Cylinder	1
30	04912	Lift Cyl. Rod End Swivel Assy.	1
31	04913	Pin	2
32	04914	Pin - Lift Cylinder	1
33		Bolt-Hex Hd. (3/8 x 2 3/4)	6
34		Bolt-Hex Hd. (1/2 x 3 3/4)	1
35	04915	Clamp Half-Hose	6
36		Bolt-Hex Hd. (1/2 x 4 3/4 N. F.)	9
37	22095	Hex Slotted Nut (2 N. F.)	1
38	04916	Inner Boom Assembly	1
39	04917	Pin - Lift Cylinder Butt End	1
40		Clamp - Hose	2
41		Bolt-Hex Hd. (3/8 x 1 1/4 N. C.)	1
42		Hose Strap Assembly	1
43	02076	Washer	1
44	02074	Retainer	1

## CUTTER HOUSING GROUP

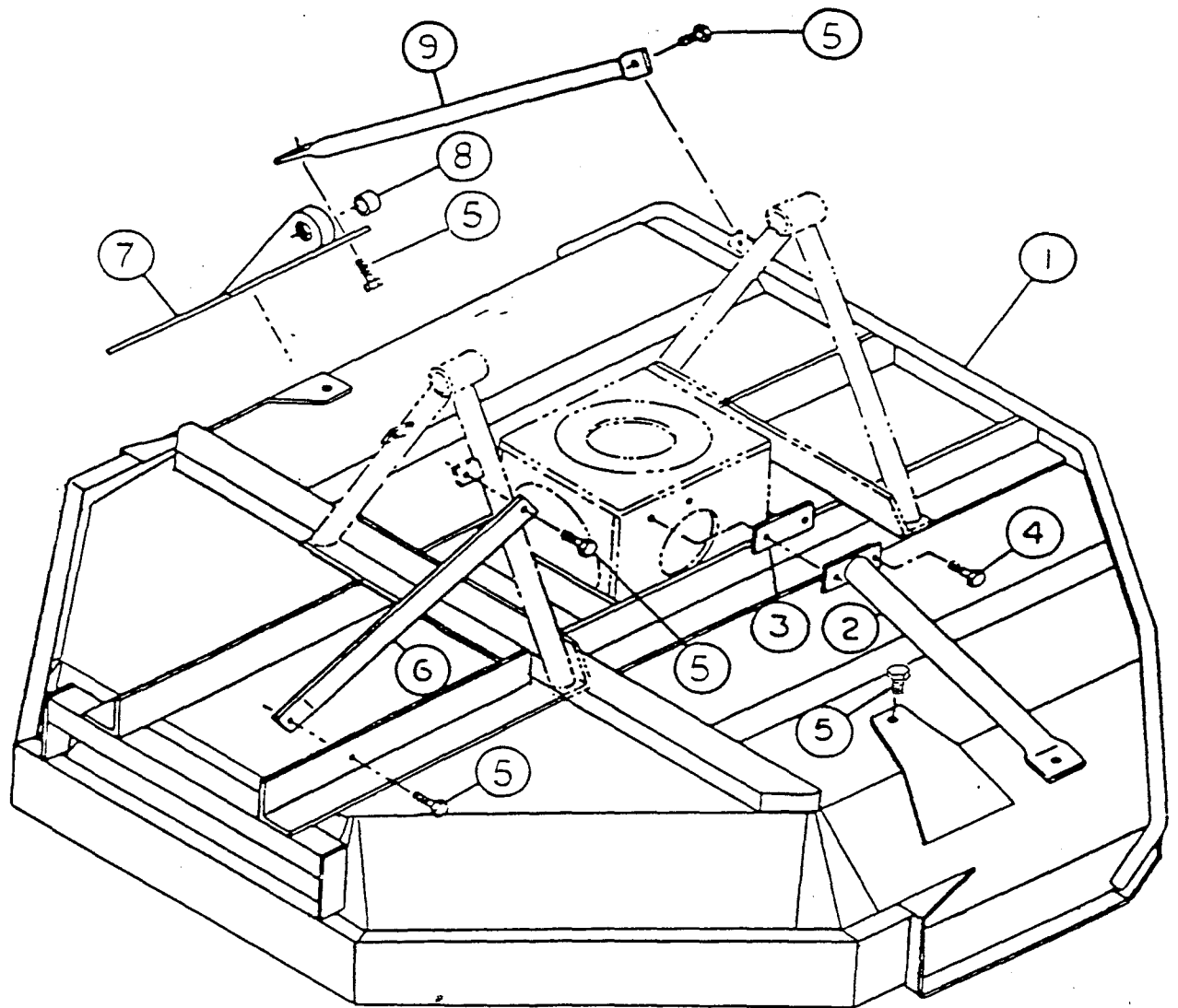


FIG. 6

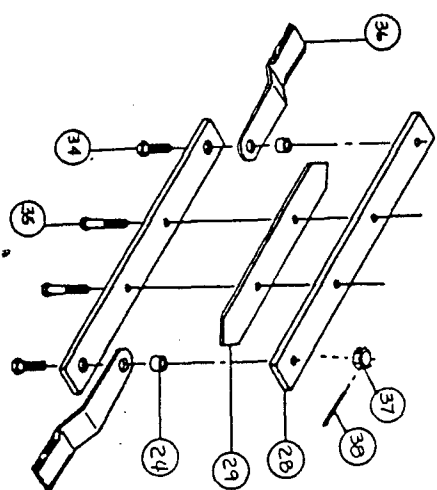
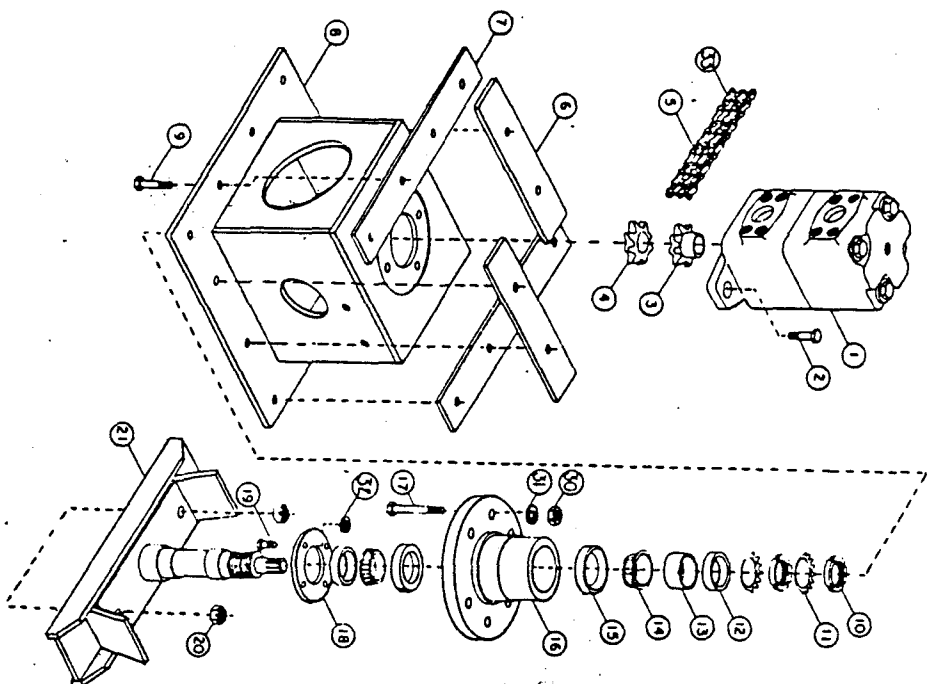
## CUTTER HOUSING GROUP

ITEM NO.	PART NO.	DESCRIPTION	QTY
1	30960	Cutter Housing Assembly	1
2	04817	Spindle Box Brace Assembly	2
3	04818	Shock Absorber Brace Assembly	2
4	22412	Bolt - Hex Head (3/8 UNF x 2½" - GR 5)	4
5	22428	Bolt - Hex Head (1/2 UNF x 1½" - GR 5)	10
6	04920	Brace - "A" Frame	2
7	04922	Cylinder Lug Pad Assembly	1
8	04597	Bushing	1
9	04923	Brace - "A" Frame	1

## CUTTER BLADE GROUP

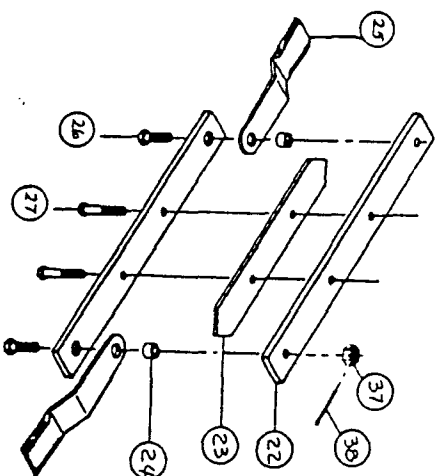
ITEM#	PART#	DESCRIPTION	QTY.
1	4996	Hydraulic Motor	1
2	22437	Hex Bolt(5/8 X 2 NF GR#5)	2
3	2944	RC80 10 Tooth Keywayed sprocket	1
4	2932	RC80 10 Tooth splined sprocket	1
5	4599	RC80 10 Link double chain	1
6	4593	Shock absorber(short)	2
7	4594	Shock absorber(long)	2
8	4995	Spindle box	1
9	22439	Hex bolt(5/8 X 2 1/2NF GR#5)	12
10	5932	Nut-brng-adj.	2
11	5933	Lock washer	2
12	5955	Seal	2
13	4803	Spacer-brng	1
14	5931	Cone-brng	2
15	5930	Cup-brng	2
16	4595	Hub-spindle	1
17	22441	Hex bolt(5/8 X 4NF GR#5)	6
18	4804	Plate-seal retainer	1
19	22341	Hex bolt(3/8 X 1NC)	4
20	22091	Hex slotted nut(7/8)	2
21	3433	Spindle	1
22	32065	Blade arm	2
23	32064	Blade spacer	1
24	4597	Bushing	2
25	2231	Blade	2
26	36719	Hex bolt(1 X 3 1/4UNF GR#5)	2
27	36720	Hex bolt(7/8 X 5 1/2UNF GR#5)	2
28	4598	Blade arm	2
29	4805	Spacer, blades	1
30	22117	Hex nut, 5/8	6
31	22040	Flat washer(5/8)	6
32	22309	Lock washer(3/8)	4
33	25747	Connecting link	1
34	23011	Hex hd.bolt(1UNF X 3GR#5)	2
35	22446	Hex hd.bolt(7/8UNF X 5GR#5)	2
36	4596	Blade	2
37	22092	Hex slotted nut(1")	2
38	22010	Cotter Pin	2





Mfg. prior to Feb.'82

Blade parts to be used (3/8"-thick) 4596 Blade only

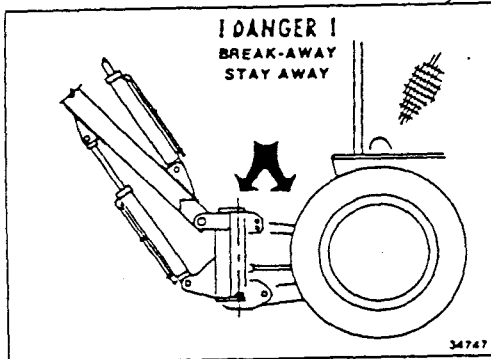


Mfg. after Feb.'82

Blade parts to be used (1/2"-thick) 2231 Blade only

# DECAL GROUP

# The Gregory Mfg. Co.

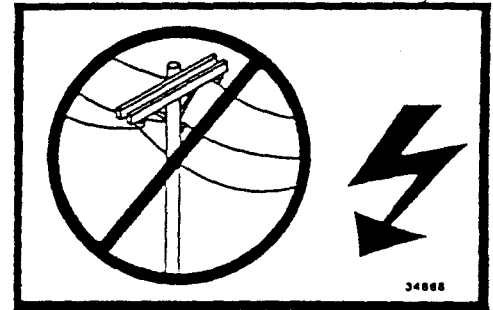


*Roanoke*

THE GREGORY MFG. CO. IS THE OWNER OF A LICENSE UNDER THE FOLLOWING PATENTS

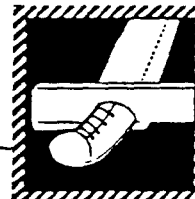
U.S. PATENTS	CANAD. PATENTS
2,100,000	1,110,770
2,100,001	1,110,771
2,100,002	1,110,772
2,100,003	1,110,773
2,100,004	1,110,774
2,100,005	1,110,775
2,100,006	1,110,776
2,100,007	1,110,777
2,100,008	1,110,778
2,100,009	1,110,779
2,100,010	1,110,780
2,100,011	1,110,781
2,100,012	1,110,782
2,100,013	1,110,783
2,100,014	1,110,784
2,100,015	1,110,785
2,100,016	1,110,786
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2,100,018	1,110,788
2,100,019	1,110,789
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2,100,021	1,110,791
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2,100,026	1,110,796
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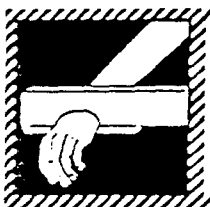


# THE GREGORY MFG. CO.

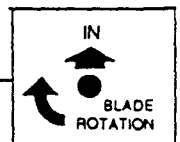
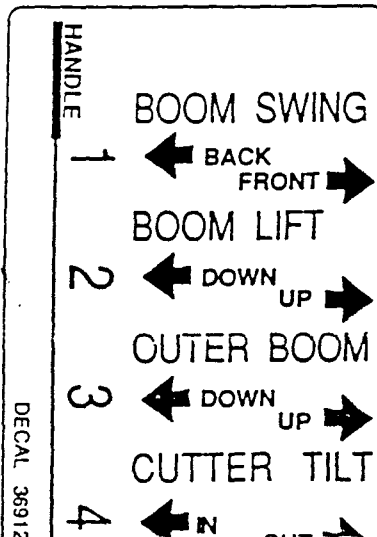
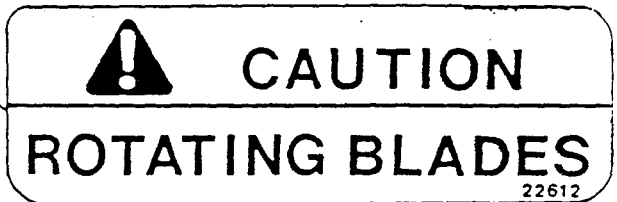
A NORTH CAROLINA CORPORATION  
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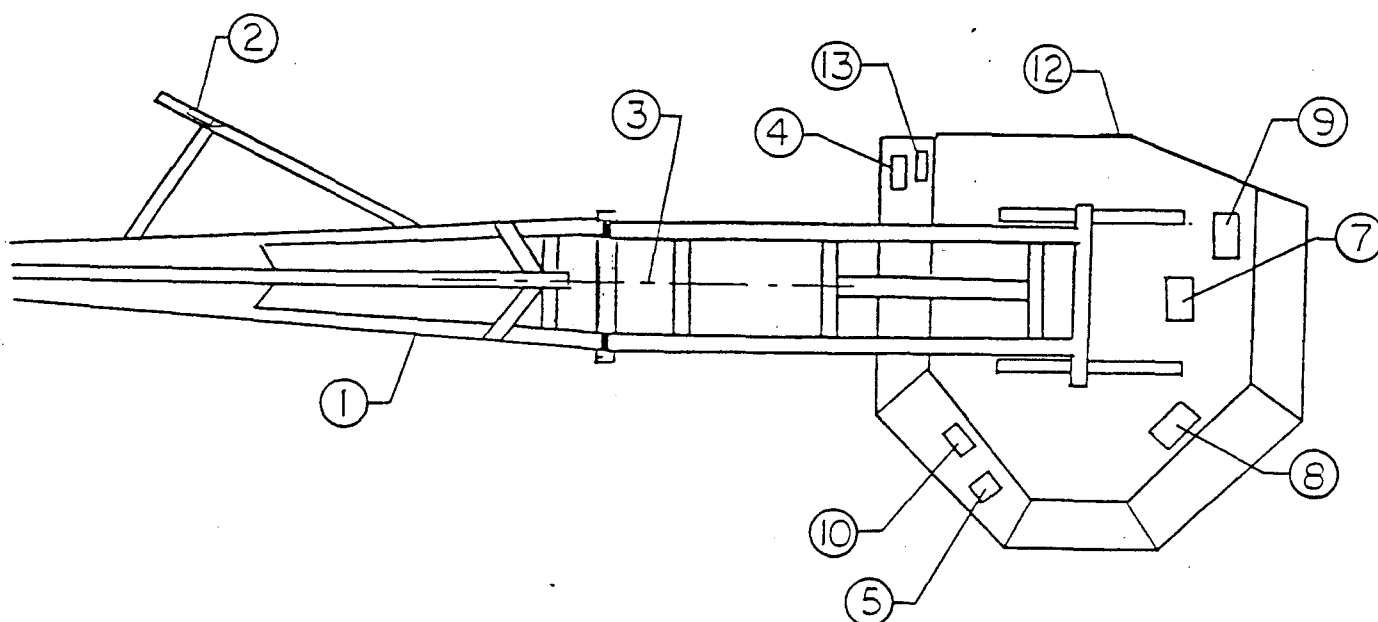


**DANGER!**  
STAY CLEAR WHEN  
BLADES ARE IN MOTION



**DANGER!**  
STAY CLEAR WHEN  
BLADES ARE IN MOTION





ITEM NO.	PART NO.	DESCRIPTION	QTY
1	35718	The Gregory Mfg. Company	1
2	34747	Breakaway	1
3	09376	Roanoke -(Located on Hydraulic Tank)	2
4	34868	Power Lines	1
5	32530	Patent	1
6	22691	Oil Specification--(Located on Hydraulic Tank)	1
7	22701	Gregory Manufacturing Company	1
8	34834	Foot Cut Off	1
9	34834	Hands Cut Off	1
10	22612	Caution - Rotating Blades	1
11	36912	Value Operation-(Located in Cab)	1
12	34833	Danger	1
13	26461	Check Blades	1
14	36951	Blade Rotation--(Located in Cab)	1
	20211	Decal Kit (Includes Items 1 thru 14)	1



# HYDRAULIC OIL TANK

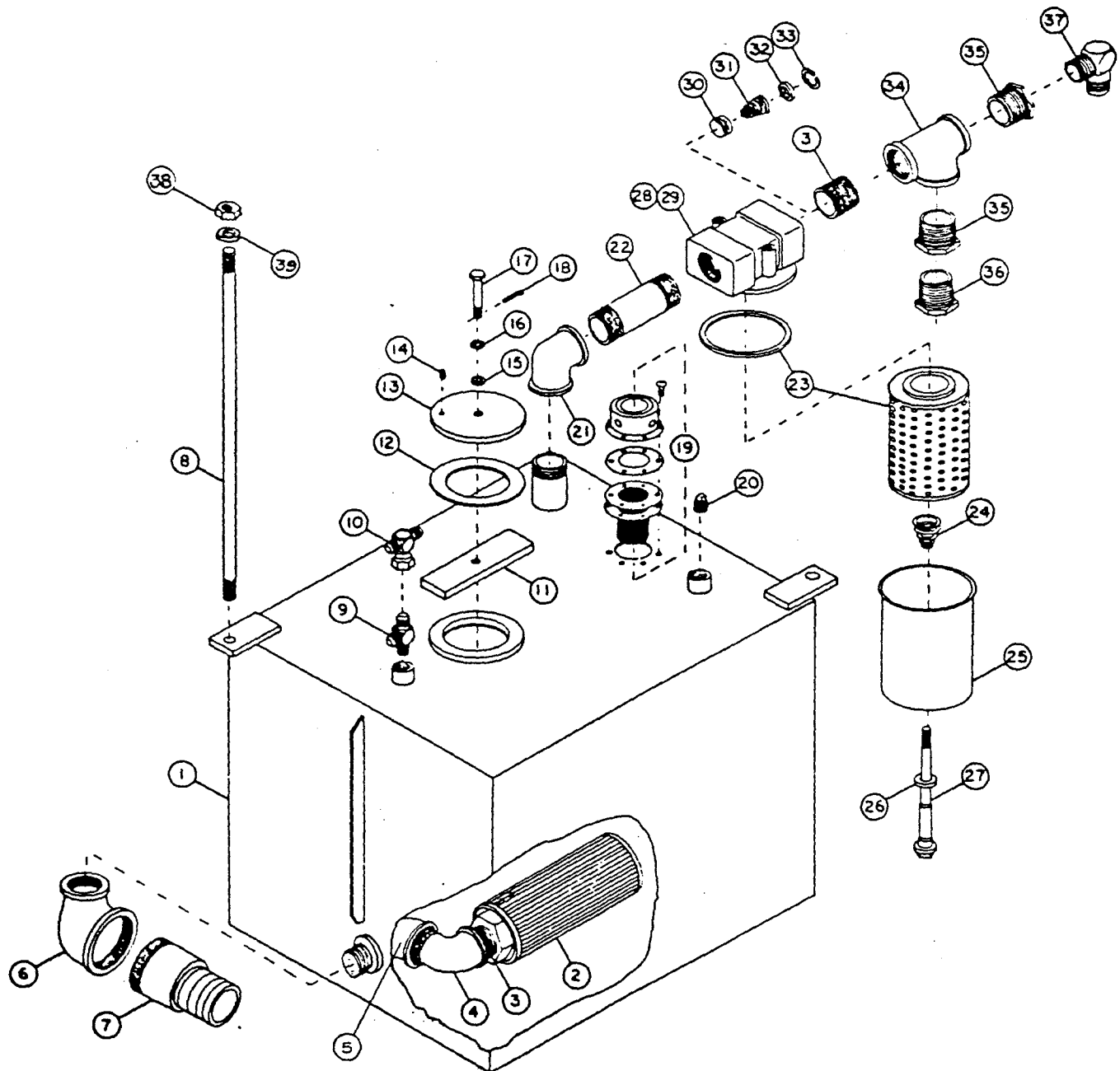


Fig. 8



## HYDRAULIC TANK GROUP

ITEM NO.	PART NO.	DESCRIPTION	QUANTITY
1	4962	Hydraulic tank	1
2	3162	Strainer	2
3	5885	1½ close nipple	3
4	5887	1½ 90° street el	2
5	5899	Pipe tee-reducing (2 x 1½ x 1½)	1
6	5898	90° elbow-reducing (2 x 3)	1
7	5891	3" combination nipple	1
8	4964	Stud	2
9	7163	½ pipe to ½ tube tee	1
10	2109	½ tube (run) to ½ swivel tee	1
11	3117	Retainer	1
12	3119	Seal	1
13	3196	Cap	1
14	5897	Pipe plug, ¼	1
15	5952	½ "o" ring	1
16		½ flat washer	1
17	4808	Hex bolt (½ x 3) reworked	1
18		Cotter pin (½ x 1½)	1
19	4970	Strainer Assy.	1
20	3114	½ pipe plug	1
21	5884	1½ 90° elbow	1
22	5900	1½ pipe nipple (6" long)	1
23	4971	Filter element (includes seal)	1
24		• Spring	1
25		• Filter body	1
26		• Washer	1
27		• Hex bolt	1
28	4968	Filter Assy. (complete)	1
29		• Filter base	1
30		• Poppet	1
31		• Spring	1
32		• Washer	1
33		• Snap ring	1
34	2782	1½" pipe tee	1
35	5903	Pipe reducer bushing (1½ x 1¼)	2
36	5896	Pipe reducer bushing (1¼ x 1)	1
37	5247	1¼ pipe to 1¼ tube 90	1
38		Hex nut, ¾	4
39		Flat washer, ¾	4

\*These items sold in assembly no. 4968 only.

Note: Order parts without part numbers by description only.

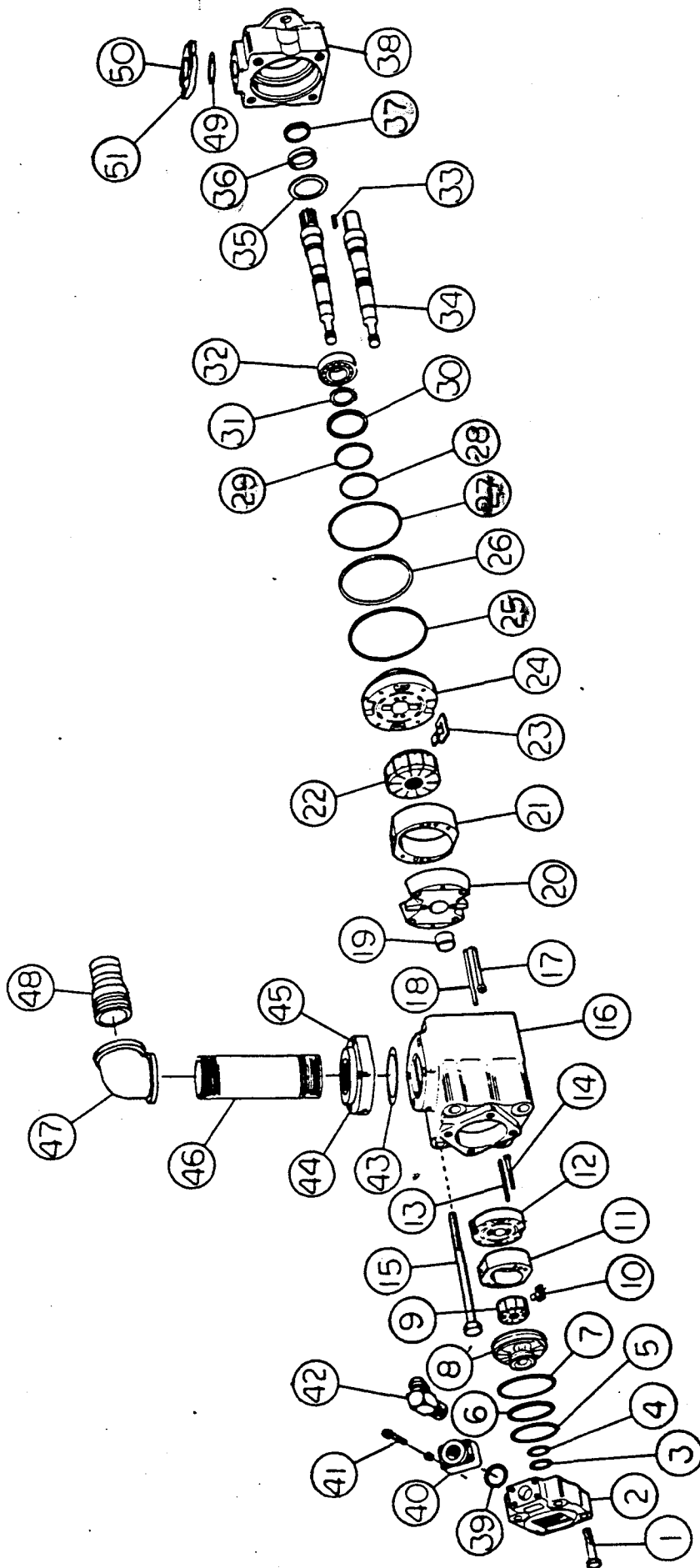
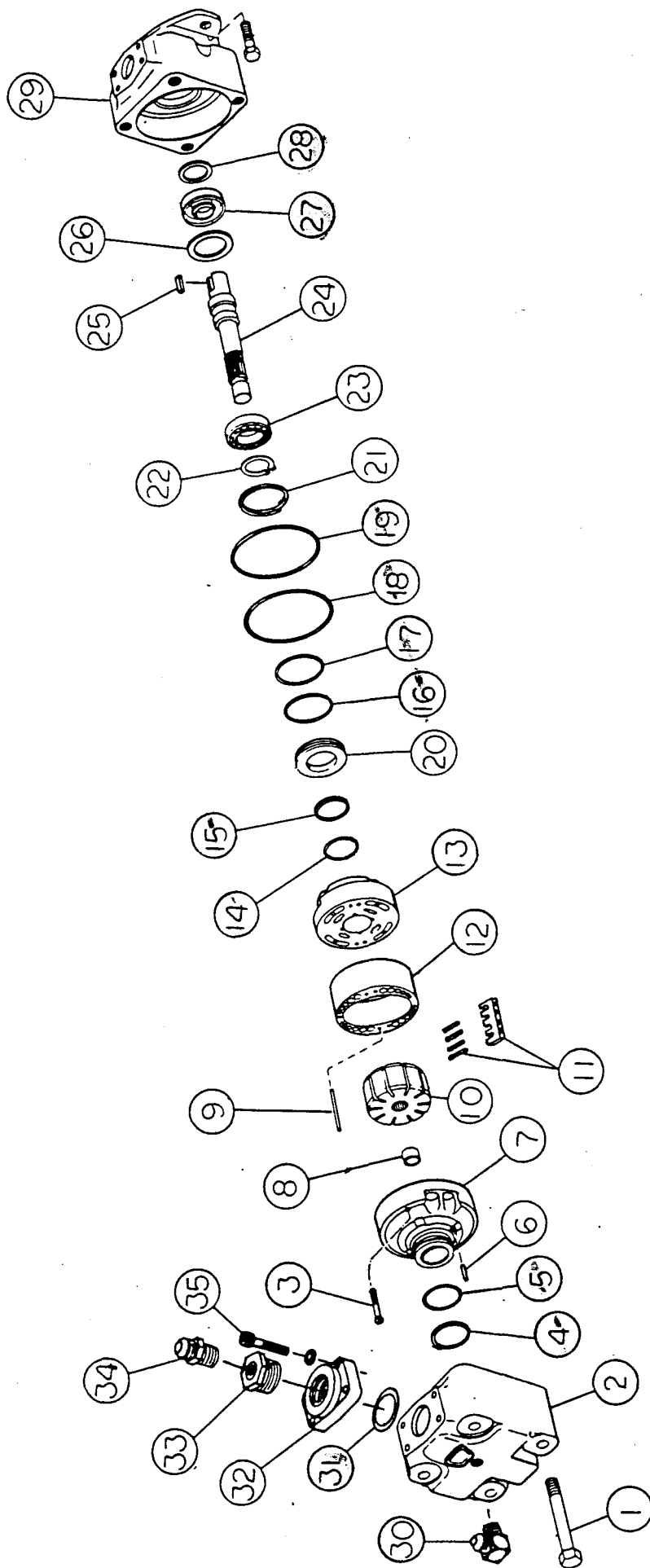


FIG. 9



# DOUBLE PUMP

ITEM NO.	PART NO.	DESCRIPTION	QUANTITY
	5201	Double Pump Complete (Less Fittings)	1
1	2542	Bolt	4
2	2543	Cover	1
3	5280	*Ring, Back-up	1
4	5281	*"O" Ring	1
5	2544	*"O" Ring	1
6	5283	*Ring, Back-up	1
7	5284	*"O" Ring	1
8	2546	Pressure Plate	1
9	5287	Rotor	1
10	5286	Vane Kit (10 Vanes-10 Inserts)	1
11	2547	Ring	1
12	2548	Wear Plate	1
13	2549	Pin	2
14	5292	Screw	2
15	2550	Bolt	4
16	2551	Housing-Inlet	1
17	2552	Screw	2
18	2553	Pin	2
19	2554	Bushing	1
20	2555	Wear Plate (Including Bushing)	1
21	2556	Ring	1
22	2557	Rotor	1
23	2558	Vane Kit (10 Vanes-10 Inserts)	1
24	2559	Pressure Plate	1
25	2560	*"O" Ring	1
26	2561	Ring Back-up	1
27	2562	*"O" Ring	1
28	2563	*"O" Ring	1
29	2564	Ring Back-up	1
30	2565	Lock Ring	1
31	2566	Snap Ring	1
32	2567	Bearing	1
33	2568	Key	1
34	2569	Shaft-Keyed	1
	2570	Shaft-Splined	1
35	2571	Washer	1
36	2572	*Seal	1
37	2573	*Wiper	1
38	2574	Body	1
39	5946	"O" Ring	1
40	4993	Adaptor	1
41		Bolt $\frac{3}{8}$ x $1\frac{3}{4}$ Socket Head	4
42	3112	Elbow 90 Degree	1
43	5947	"O" Ring	1
44	4992	Adaptor	1
45		Bolt $\frac{3}{8}$ x $2\frac{3}{4}$ Socket Head	4
46	5905	Nipple	1
47	5890	Elbow 90 Degree	1
48	5891	Combination Nipple 3"	1
49	5945	"O" Ring	1
50	4994	Split Flange	2
51		Bolt $\frac{1}{2}$ x $1\frac{3}{4}$	4
	2575	.12 GPM Cartridge Kit (Includes Item 3-14)—Sold in kit form only	1
	2576	.38 GPM Cartridge Kit (Includes Item 17-29)—Sold in kit form only	1
	2577	*Seal Kit—Sold in kit form only	1



# MOTOR

ITEM NO.	PART NO.	DESCRIPTION	QUANTITY
	4996	Motor, Hydraulic (Less Fitting)	1
1	2584	Bolt	4
2	2585	Cover	1
3	2586	Screw	2
4	2587	• Back-up Ring	1
5	2588	• "O" Ring	1
6	2589	Pin	2
7	2590	Pressure Plate (Including Bushing)	1
8	2591	Bushing	1
9	2592	Pin	2
10	2593	Rotor	1
11	2594	Vane Kit (10 Vanes-10 Inserts)	1
12	2595	Ring	1
13	2596	Pressure Plate	1
14	2588	• "O" Ring	1
15	2597	• Back-up Ring	1
16	2598	• "O" Ring	1
17	2599	• Back-up Ring	1
18	2600	• "O" Ring	1
19	2601	• "O" Ring	1
20	2602	Hub Adaptor	1
21	2565	Lock Ring	1
22	2603	Snap Ring	1
23	2604	Bearing	1
24	2605	Shaft	1
25	2606	Key	1
26	2571	Washer	1
27	2607	• Seal-Shaft	1
28	2608	• Wiper	1
29	2609	Body	1
30	3257	Elbow	1
31	5948	• "O" Ring	2
32	4990	Adaptor	2
33	5904	Reducer	2
34	4991	Fitting	2
35		Bolt, Socket Head 1/2 x 2	8
	2610	Cartridge Kit (Includes Item 3-19) — Sold in kit form only	1
	2611	• Seal Kit — Sold in kit form only.	1

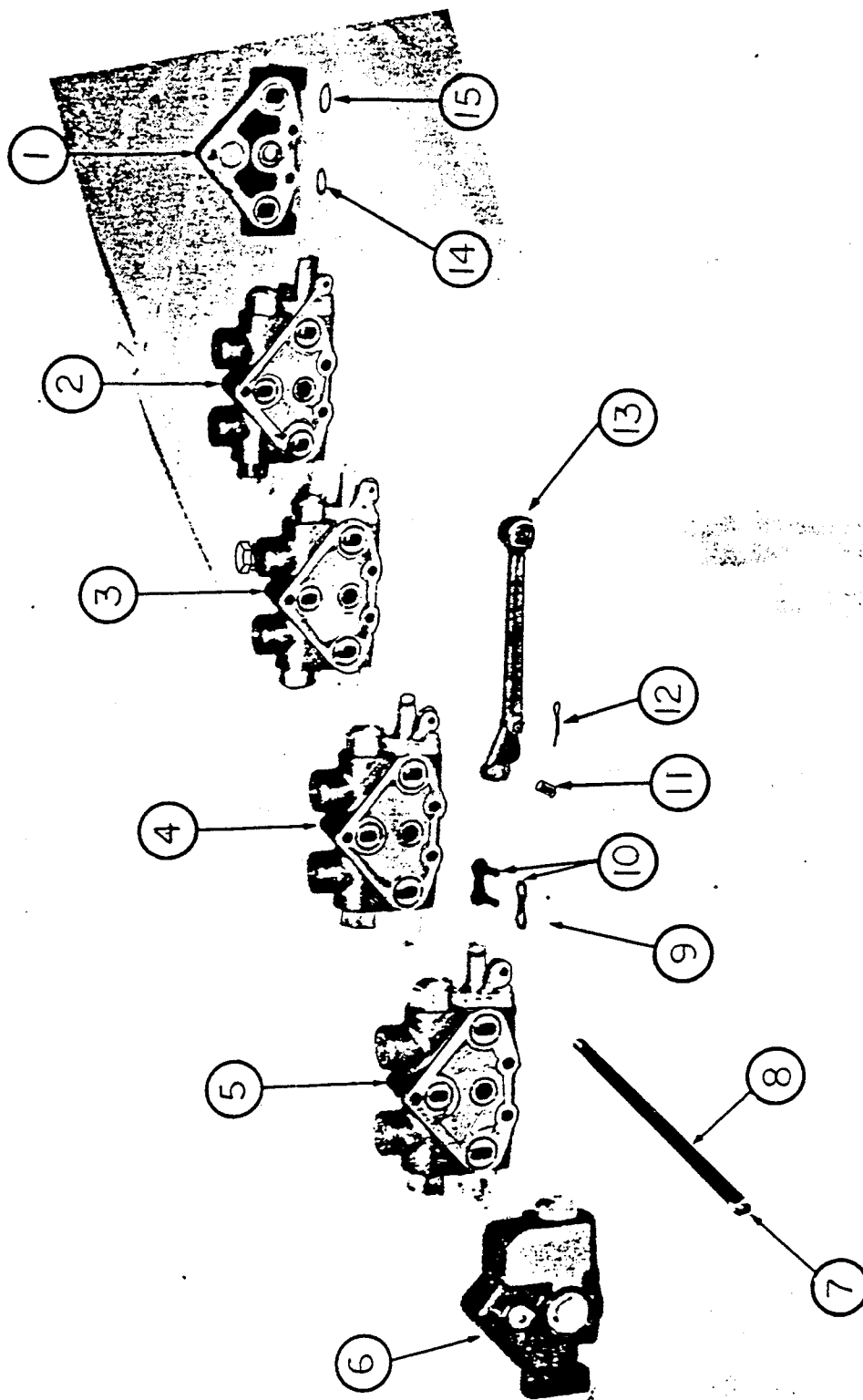


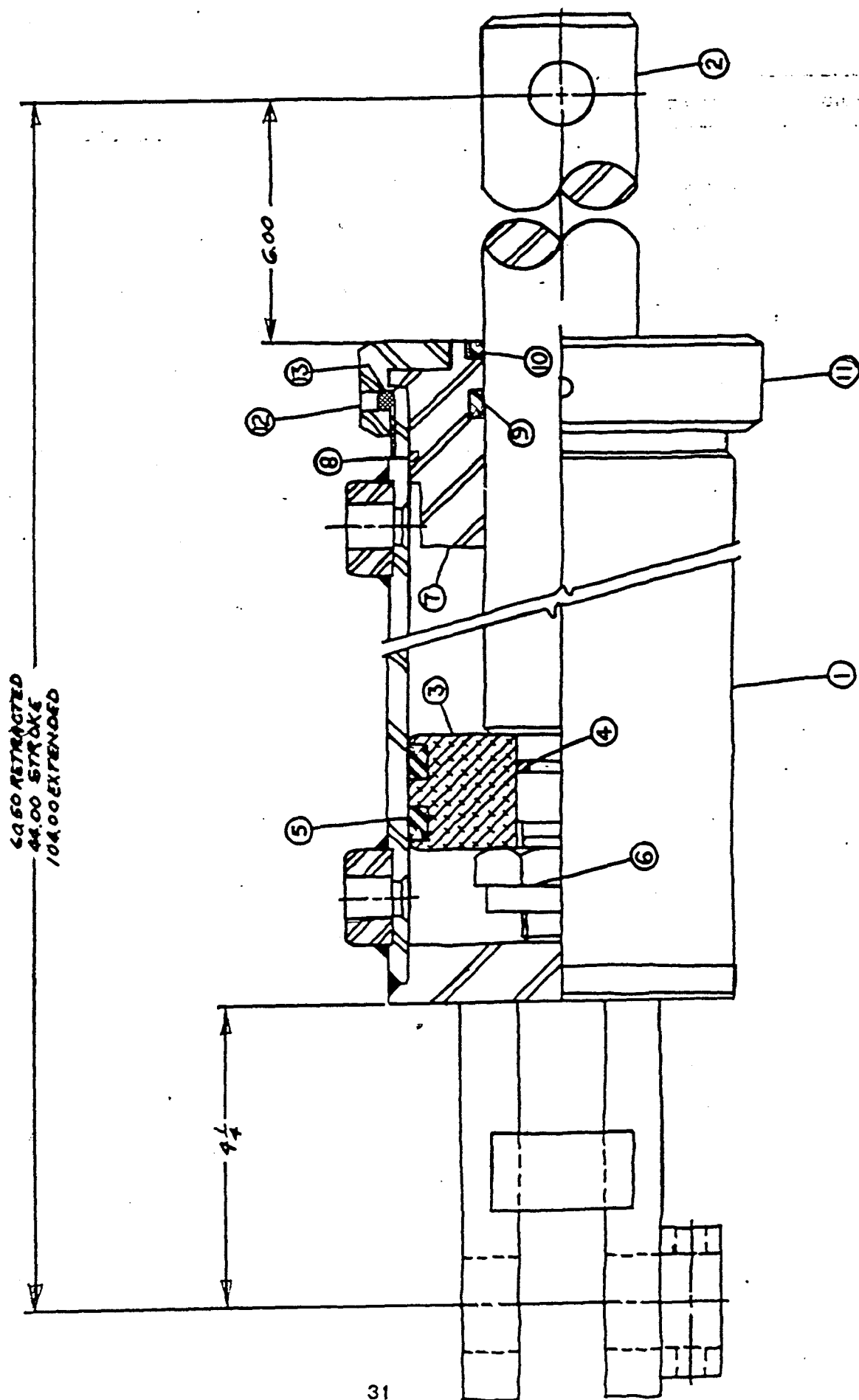
FIG. 11  
 FOUR SPOOL VALVE  
 29

## FOUR SPOOL VALVE

ITEM NO.	PART NO.	DESCRIPTION	QUANTITY
1	5251	Left Hand End Cover — Inlet	1
2	* 5252	Center Section Housing — Boom Swing	1
3	* 5253	Center Section Housing — Boom Lift	1
4	* 5254	Center Section Housing — Center Boom	1
5	* 5255	Center Section Housing — Cutter Tilt	1
6	5256	Right Hand End Cover — Outlet	1
7	—	3/4"-16 Lock Nut	6
8	5257	Assy. Stud	3
9	5258	Handle Link, Cotter	4
10	5259	Handle Link	4
11	5260	Handle Pin	4
12	5261	Handle Pin, Cotter	4
13	5262	Handle	4
14	5263	Small "O" Ring	5
15	5264	Large "O" Ring	10
	5203	Valve Assy. Complete — Less All Fittings	AR

\* Housings and Spools Not Available As Separate Items. Spools Are None Fitted To Each Housing.

2534 - Valve and caps/Aluminum



# 4 x 44 HYDRAULIC CYLINDER

ITEM NO.	PART NO.	DESCRIPTION	QTY
1	36596	Cylinder Tube (4" ID x 1/4 Wall x 49 1/8 LG)	1
2	36595	Cylinder Rod	1
3	36594	Piston	1
4	*	O-Ring	1
5	*	U-Cup	2
6	---	Nut - Cylinder Rod (1 1/4-12 UNF)	1
7	36593	Head	1
8	*	O-Ring	1
9	*	Rod Seal	1
10	*	Wiper Seal	1
11	---	Head Cap	1
12	---	Hex Socket Set Screw - 5/16 - 18 UNC	2
13	---	Plug (Plastic)	2
	36597	4 x 44 Complete Cylinder	
	*36598	Seal Kit (Cyl. # 36597)	

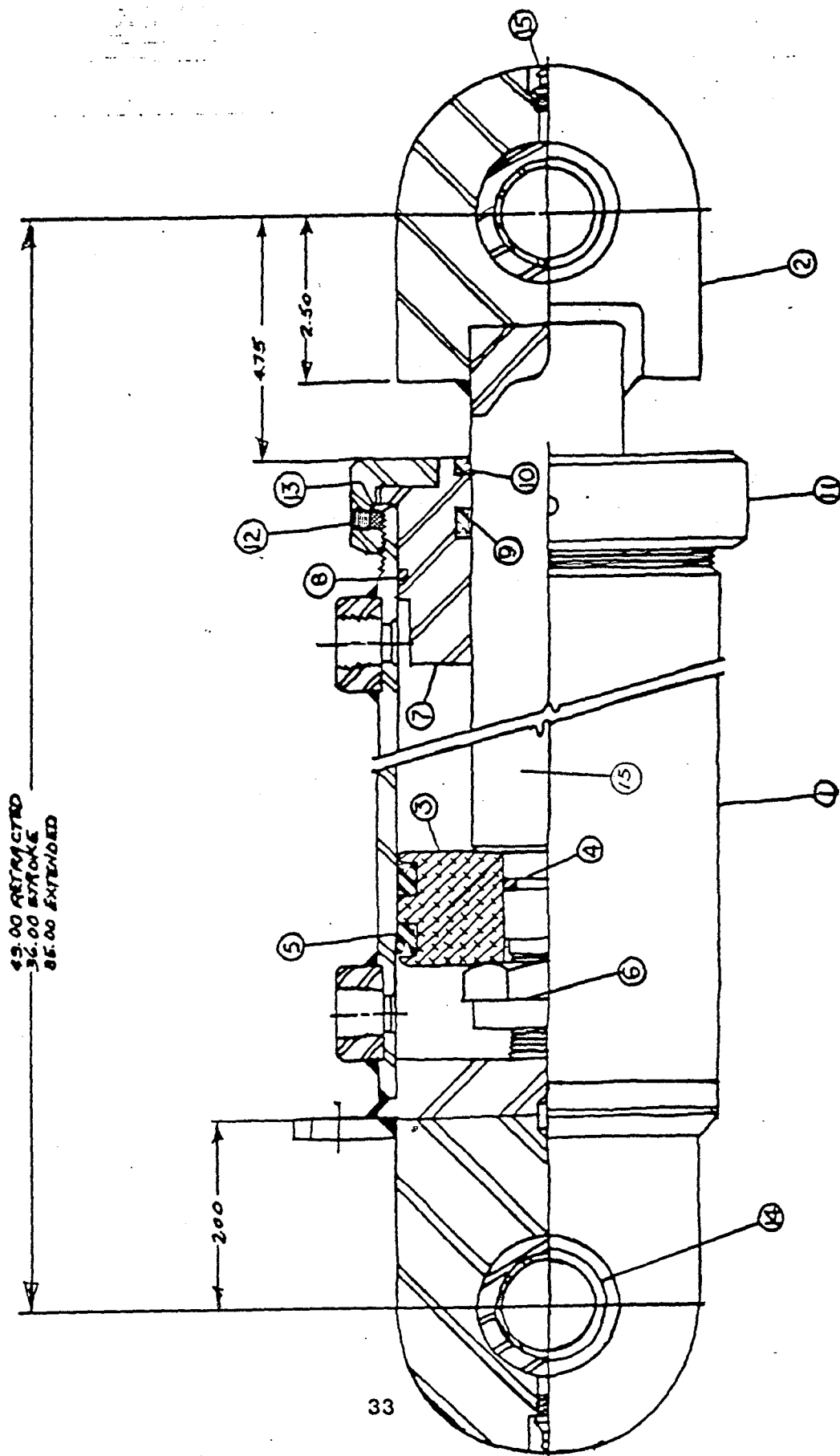


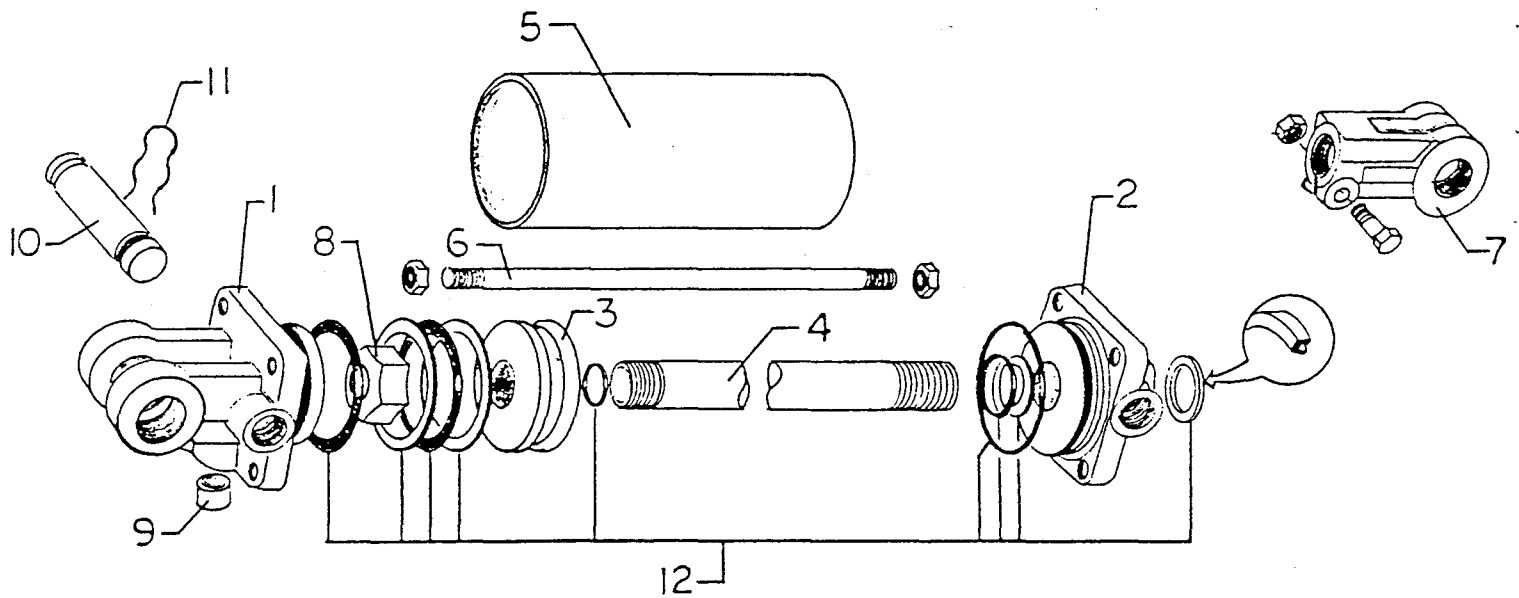
FIG. 14



# 4 x 36 HYDRAULIC CYLINDER

ITEM NO.	PART NO.	DESCRIPTION	QTY
1	36600	Cylinder Tube	1
2	---	Lug (4" x 1 x 4 1/4 LG)	1
3	36594	Piston	1
4	*	O-Ring	1
5	*	Piston Seals	2
6	---	Lock Nut (1 1/4 - 12 UNF)	1
7	36593	Head Plate	1
8	*	O-Ring -	1
9	* -	Rod Seal	1
10	*	Wiper Seal	1
11	---	Head Cap	1
12	---	Hex Socket Set Screw	1
13	---	Plug (Plastic - 3/16 Dia.)	2
14	---	Self Aligning Bushing	1
15	36599	Piston Rod	1
	36601	4 x 36 Complete Cylinder	
	*36598	Seal Kit	

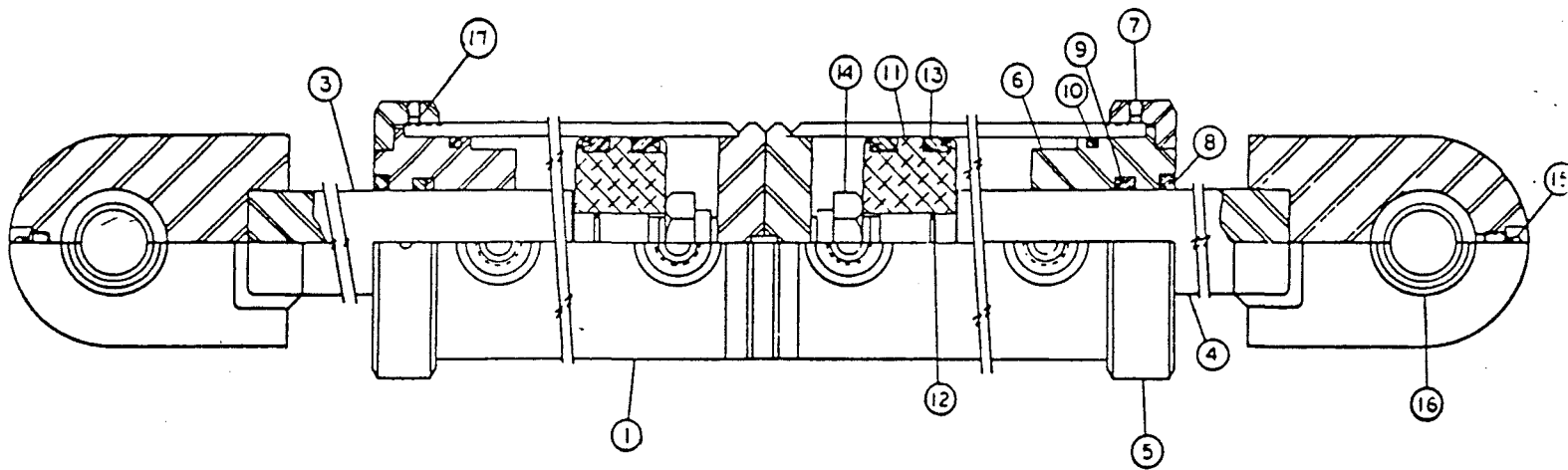
# 2 1/2 X 16 HYD. CYL.



## 2 1/2 X 16 HYD. CYL.

ITEM NO.	PART NO.	DESCRIPTION	QTY.
	35046	Cylinder Complete 2½ x 16	1
1	35228	Clevis Cap	1
2	35229	Rod Cap	1
3	35230	Piston	1
4	35231	Rod	1
5	35232	Tube	1
6	35233	Tie Rod	4
7	35234	Rod Clevis	1
8	35235	Nut-Piston	1
9	35236	Plug	1
10	*	Pin	2
11	*	Hair Pin Clip	4
12	35241	Seal Kit	1
	*35598	Pin Kit	1

# DOUBLE ACTING HYD. CYL. (4 X25)



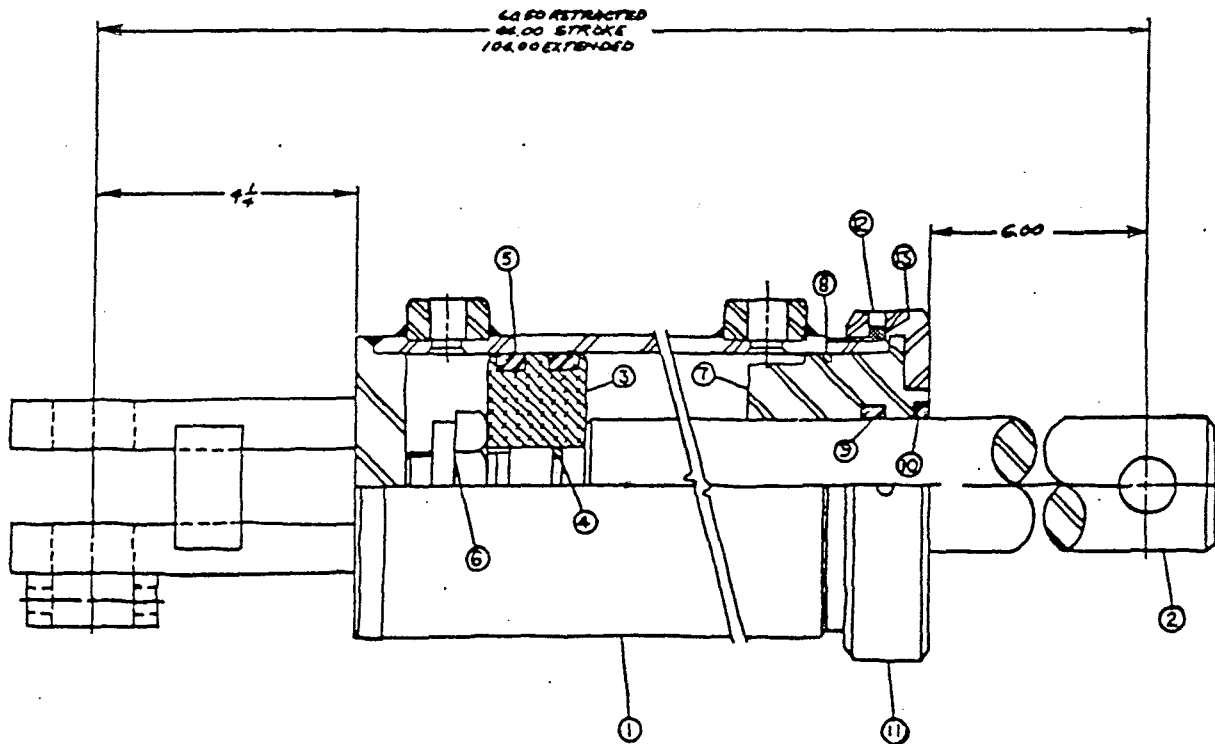
# DOUBLE ACTING HYD. CYL. (4 x 25)

ITEM NO.	PART NO.	DESCRIPTION	QTY
1	36604	Cylinder Tube (4 x 10 13/16	1
2	36604	Cylinder Tube (25 13/16) 1 & 2 Welded	1
3	36602	Piston Rod (2" Dia. x 14 1/4 LG)	1
4	36603	Piston Rod (2" Dia. x 28 1/4 LG)	1
5	---	Head Cap	2
6	36593	Head	2
7	---	Hex Socket Set Screw	2
8	*	Wiper Seal	2
9	*	Rod Seal	2
10	*	O-Ring	2
11	36594	Piston	2
12	*	O-Ring (Rod)	2
13	*	Piston Seal	4
14	---	Lock Nut (1 1/4 - 12 UNF)	2
15	---	Grease Fitting	2
16	---	Self Aligning Bushing	2
17	---	Plug (Plastic)	2
	36605	Complete Cylinder Assembly	1
	36598	Seal Kit	2

# Prior To 1987

## 4" x 44" HYDRAULIC CYLINDER

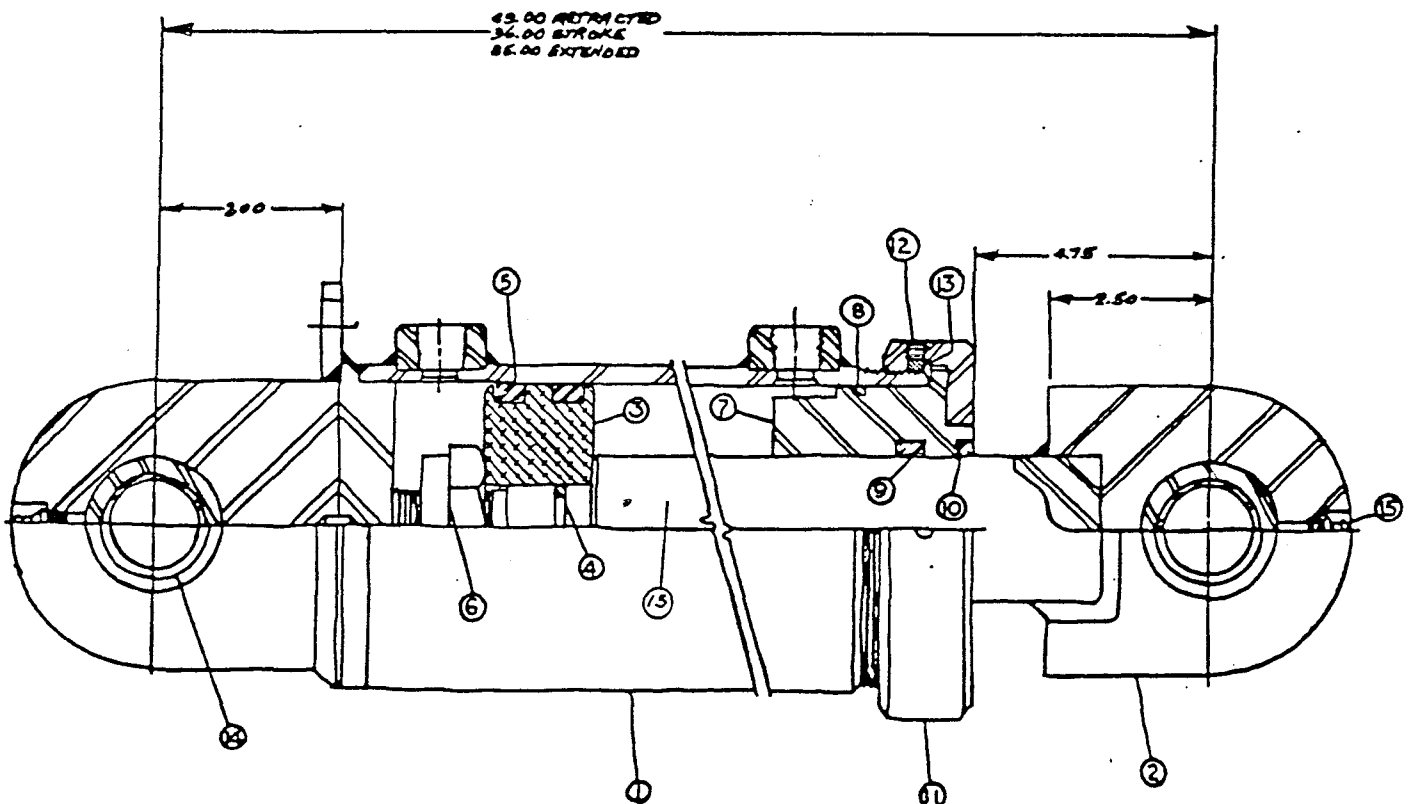
ITEM NO.	PART NO.	DESCRIPTION	QUANTITY
1	4910	Cylinder Complete	1
2	9880	Tube Assembly	1
3	9881	Rod Assembly	1
4	1736	Piston	1
* 4	3339	"O" Ring	1
* 5	2646	U-Cup	2
6	1737	Nut	1
7	2645	Head	1
* 8	2644	"O" Ring	1
* 9	2650	"U"-Cup	1
* 10	2643	Wiper Lip-Typ.	1
11	2642	Head Cap	1
12	1714	Set Screw	1
* 13	2619	Nylon Plug	1
* 2641 Seal Kit — Sold in kit form only.			



# Prior To 1987

## 4" x 36" HYDRAULIC CYLINDER

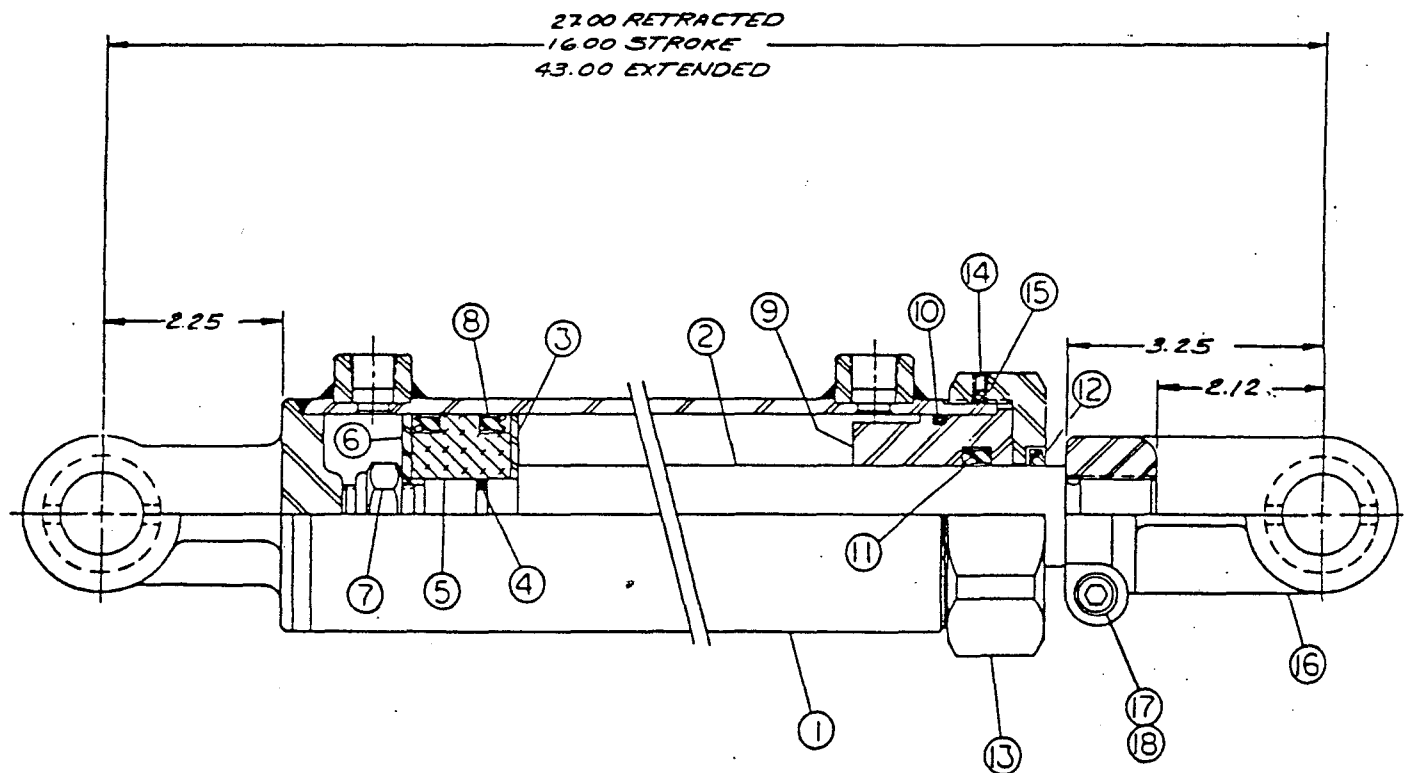
ITEM NO.	PART NO.	DESCRIPTION	QUANTITY
1	9877	Tube Assembly	1
2	9878	Rod Assembly	1
3	1734	Piston	1
* 4	8339	"O" Ring	1
* 5	2646	U-Cup	2
6	1737	Nut	1
7	2645	Head	1
* 8	2644	"O" Ring	1
* 9	2650	U-Cup	1
* 10	2643	Wiper Lip-Typ.	1
11	2642	Head Cap	1
12	1714	Set Screw	1
* 13	2619	Nylon Plug	1
14	4902	Bushing	2
15	1745	Lube Fitting	2
	4940	Cylinder Complete	1
	* 2641	Seal Kit — Sold in kit form only.	



# Prior To 1987

ITEM NO.	PART NO.	DESCRIPTION	QUANTITY
1	4077	Cylinder Complete	2
2	2626	Tube Assembly	1
3	2627	Rod	1
4	2622	Follower Plate, Upper	1
5	2617	"O" Ring	1
6	2625	Piston	1
7	2623	Follower Plate, Lower	1
8	6051	Nut — Piston	1
9	2616	Seal—"U"-Cup	2
10	2628	Head	1
11	2621	"O" Ring	1
12	2618	Seal—"U"-Cup	1
13	2620	Seal, Wiper — Lip Type	1
14	2629	Head Cap	1
15	1714	Set Screw	1
16	2619	Nylon Plug	1
17	2624	Clevis Assembly	1
18	2615	Cap Screw	1
	2614	Nut	1

\* 2613 Seal Kit — Sold in kit form only.



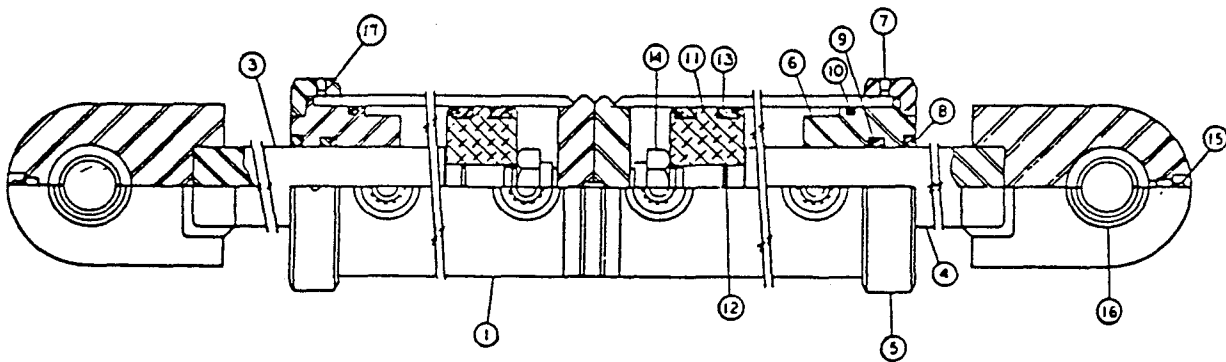


# Prior To 1987.

## DOUBLE ACTING HYDRAULIC CYLINDER (4 x 25)

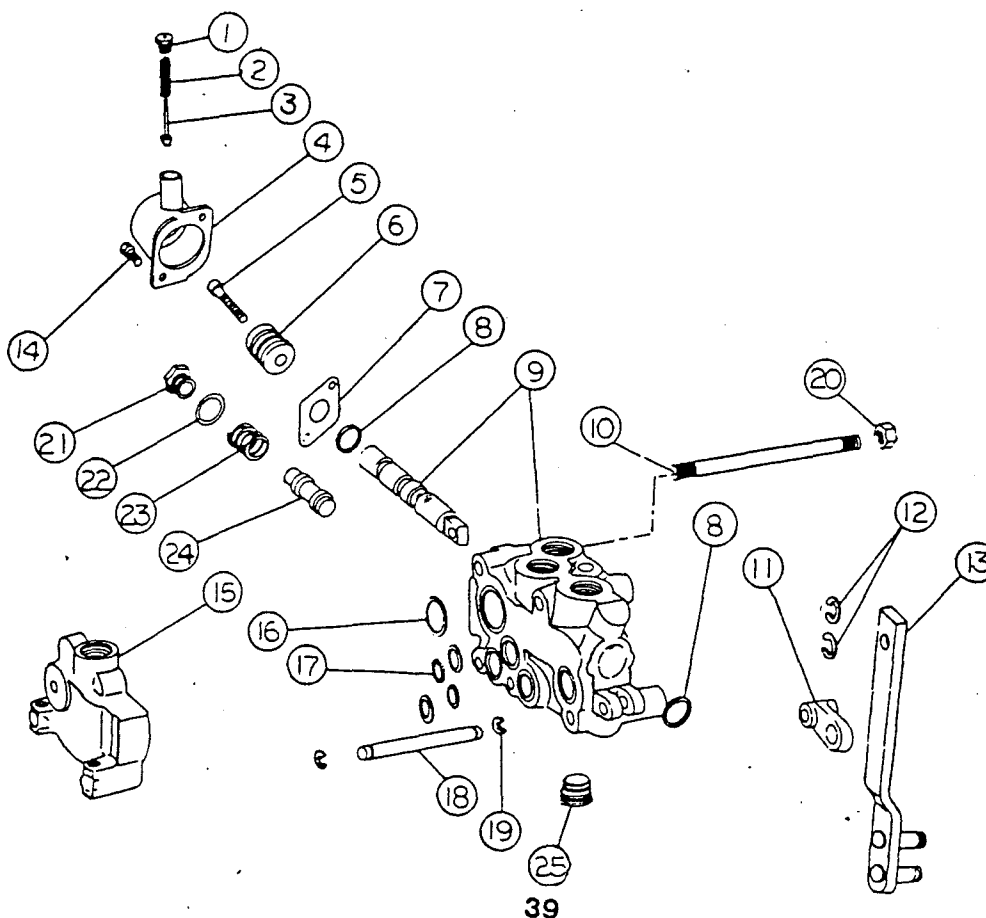
ITEM NO.	PART NO.	DESCRIPTION	QUANTITY
	4907	Hyd. Cylinder Complete	1
2	9873	Butt and Tube Assy.	1
3	9874	Piston Rod Assy. (Short)	1
4	9875	Piston Rod Assy. (Long)	1
5	2642	Head Cap	2
6	2645	Head	2
7	1714	Set Screw	2
* 8	2643	Wiper Lip Type	2
* 9	2650	U-Cup	2
* 10	2644	"O"-Ring	2
11	1734	Piston	2
* 12	5339	"O"-Ring	2
* 13	2646	U-Cup	4
14	1737	Nut	2
15	1745	Lub Fitting	2
16	4902	Bushing	2
* 17	2619	Nylon Plug	2
	2641	Seal Kit	2

\* Seal Kit — Sold in kit form only.



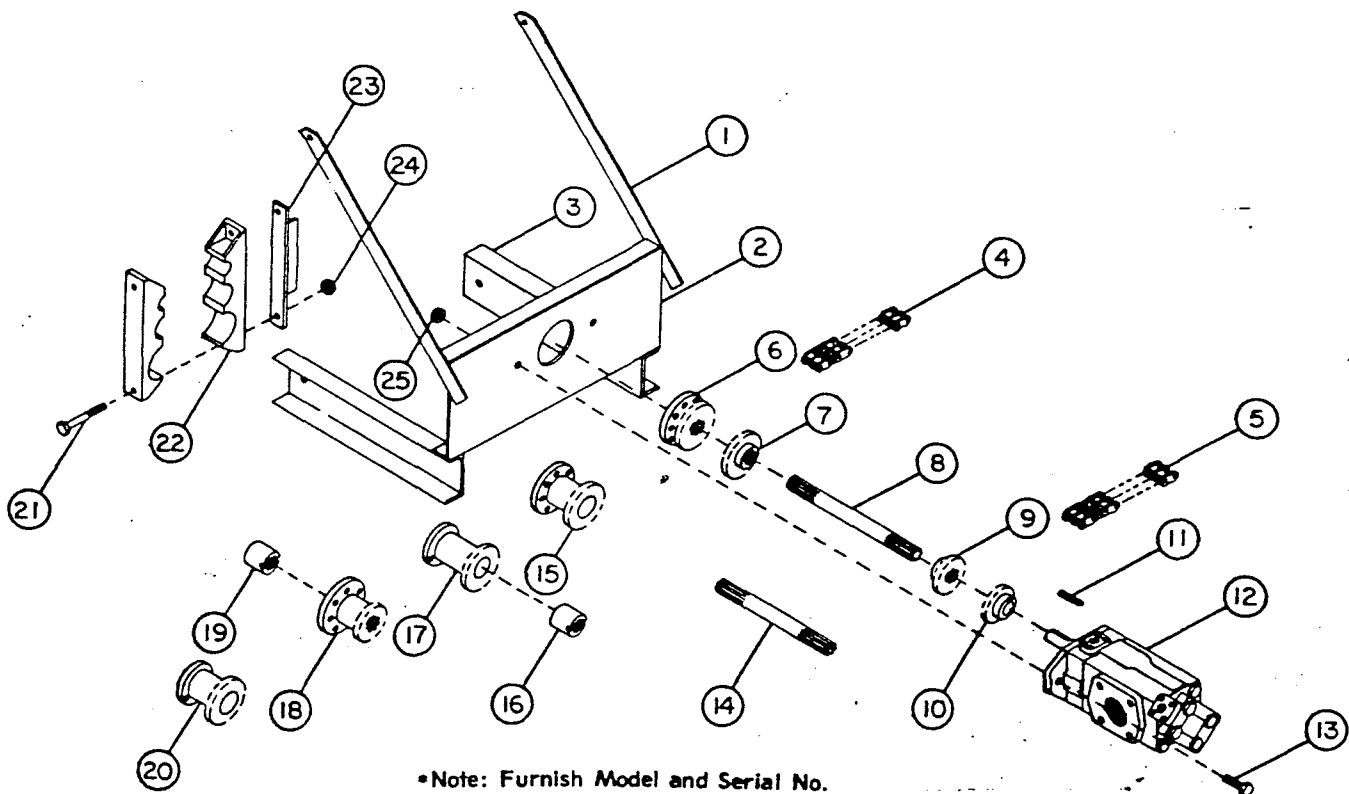
# SINGLE SPOOL VALVE GROUP

ITEM NO.	PART NO.	DESCRIPTION	QUAN.
1	5202	Control Valve Complete	1
2	5968	Plug	1
3	2489	Spring	1
4	5967	Piston	1
5	2491	Cap	1
6	2492	Screw	1
7	2493	Defent	1
8	2494	Retainer	1
9	2495	*"O" Ring	1
10	2496	Body and Spool	1
11	2509	Stud	4
12	2497	Link	1
13	2498	Retainer	2
14	2499	Lever	1
15	2500	Screw	2
16	2501	"L" Section	1
17	2502	*"O" Ring	1
18	2503	*"O" Ring	1
19	2504	Fulcrum Rod	4
20	2505	"E" Ring	1
21	2510	Nut	2
22	2508	Plug	4
23	2507	"O" Ring	1
24	2506	Spring	1
25	2504	Control Valve Sub-Ass'm	1
	2539	Plug	1
	2545	* Seal Kit — Sold in kit form only.	1

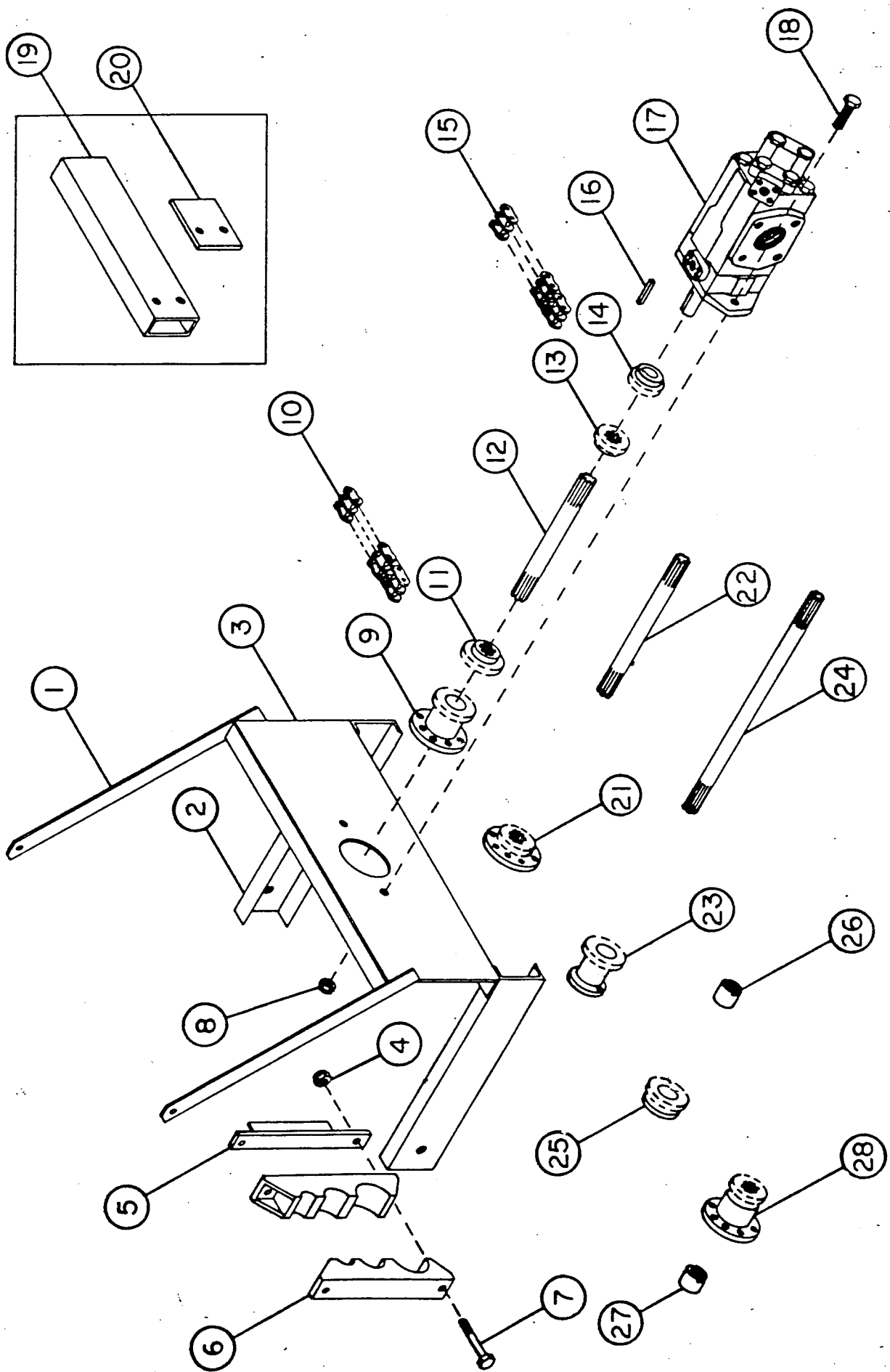


# PUMP DRIVE COMPONENTS FOR ALLIS CHALMERS

REF NO.	PART NO.	DESCRIPTION	QUANTITY
1	2805	Pump mount brace	2
2	2809	Pump mount plate	1
3	2785	Pump mount channel	1
4		RC 80 12 Link double chain	1
5		RC 80 10 Link double chain	1
6	2942	Pump drive adapter for all A. C. Graders with A. C. engine	1
7	2938	RC 80 12 Tooth splined sprocket	1
8	2802	Splined shaft, 1 3/8 x 14 Lg.	1
9	2932	RC 80 10 Tooth splined sprocket	1
10	2944	RC 80 10 Tooth Keywayed sprocket	1
11		5/16 x 1 1/2 Sq. key	1
12	5201	Double Pump	1
13		Hex Bolt (5/8 x 1 3/4) GR # 5	2
14	2801	Splined shaft, 1 3/8 x 12 1/2 Lg.	1
15	2929	Pump drive adapter for all graders with 1H-UD 14-A engine	1
16	2813	Crankshaft replacement nut for all graders with UD-14 and 14A engine	1
17	2936	Pump drive adapter for all graders with GM-371 and GM-471 engines	1
18	2928	Pump drive adapter for UD-16 engine	1
19	2922	Crankshaft replacement nut for 1H-16 engine	1
20		Pump drive adapter for Cummings Diesel engine	1
21		Hex Bolt (1/2 x 5 3/4)	2
22	2787	Casting 3 hose clamp	2
23	2844	Support 3 hose clamp	1
24		1/2 Lock nut	2
25		3/4 Lock nut	2









# PUMP DRIVE COMPONENTS FOR ADAMS

## MODELS 440, 550 & 660

REF. NO.	PART NO.	DESCRIPTION	QUANTITY
1	2805	Pump Mount Brace	2
2	2785	Pump Mount Channel	2
3	2809	Pump Mount Plate	1
4		1/2 Lock Nut	4
5	2844	Support Hose Clamp	2
6	2787	Casting 3 Hose Clamp	4
7		Hex Bolt (1/2 x 5 3/4)	4
8		3/8 Lock Nut	2
9	2929	Pump Drive Adapter for all Graders with 1H-UD 14A Engine	1
10		RC 80 12 Link Double Chain	1
11	2938	RC 80 12 Tooth Splined Sprocket	1
12	2801	Splined Shaft (1 3/8 x 12 1/2)	1
13	2932	RC 80 Tooth Splined Sprocket	1
14	2944	RC 80 10 Tooth Keywayed Sprocket	1
15		RC 80 10 Link Double Chain	1
16		5/16 x 1 1/2 Sq. Key	1
17	5201	Double Pump	1
18		Hex Bolt (5/8 x 1 3/4) GR #5	2
19	2804	I Beam Brace Tubing	1
20	2851	Lug I Beam Brace	2
21	*	Pump Drive Adapter for Cummings Diesel Engine	1
22	2802	Splined Shaft (1 3/8 x 14)	1
23	2936	Pump Drive Adapted for all Graders with GM-371 and GM-471 engine	1
24	2803	Splined Shaft used with GM-371 engine (1 3/8 x 22 )	1
25	*	Pump Drive Adapted for Cummings Diesel Engine	1
26	2813	Crankshaft replacement nut for all Graders w/UD-14 and UD-14A Engine	1
27	2928	Pump Drive Adaptor for 1H-UD-16 Engine	1
28	2922	Crankshaft replacement nut for all Graders w/UD-16 Engine	1

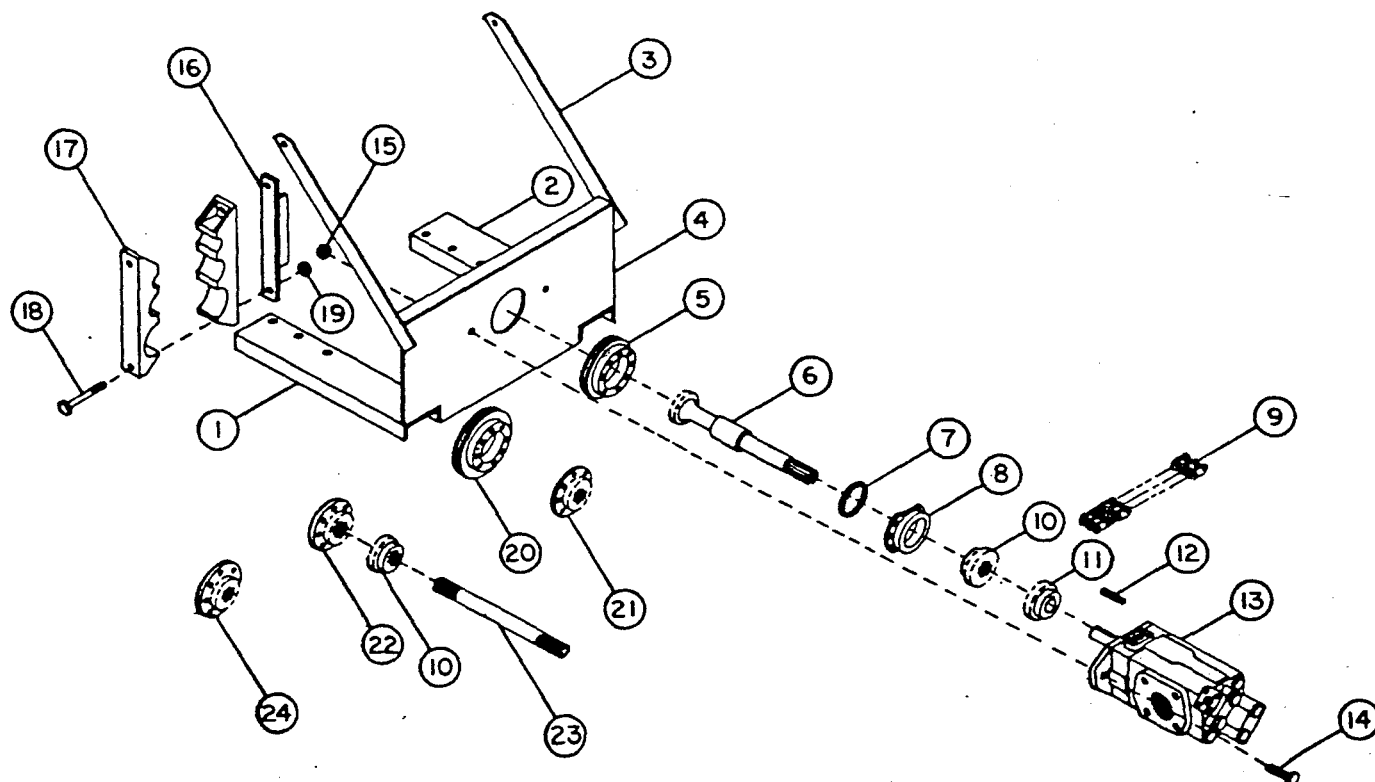
\*Furnish Model and Serial No.





# PUMP DRIVE COMPONENTS FOR CATERPILLAR

REF. NO.	PART NO.	DESCRIPTION	QUANTITY	
			CAT 12	CAT 112
1	2843	Pump Mt. Channel Lt.	1	1
2	2834	Pump Mt. Channel Rt.	1	1
3	2805	Pump Mt. Brace	2	2
4	2809	Pump Mt. Plate	1	1
5	2952	Crankshaft Pulley	0	1
6	2946	Pump Drive Gear Shaft	0	1
7	2949	"O" Ring for Pump Drive Gear	0	1
8	2950	Pump Drive Gear and Seal	0	1
9		RC 80 10 Link Double Chain	2	1
10	2932	RC 80 10 Tooth Splined Sprocket	2	1
11	2944	RC 80 10 Tooth Keyed Sprocket	1	1
12		5/16 x 1 1/2 Sq. Key	1	1
13	5201	Double Pump	1	1
14		Hex Bolt (5/8 x 1 3/4) GR #5	2	2
15		3/4 Lock Nut	2	2
16	2844	Support Hose Clamp	2	2
17	2787	Casting 3 Hose Clamp	4	4
18		Hex Bolt (1/2 x 5 3/4)	4	4
19		1/2 Lock Nut	4	4
20	2951	Crankshaft Pulley (8T & 70D Graders)	1	0
21	2953	Pump Drive Adaptor (8T & 70D Graders)	1	0
22	2943	Pump Drive Adaptor (Series 99E)	1	0
23	2802	Splined Shaft 1 3/8 x 14 Lg.	0	1
24	2945	Pump Drive Adaptor (7T & 9K Graders)	1	0

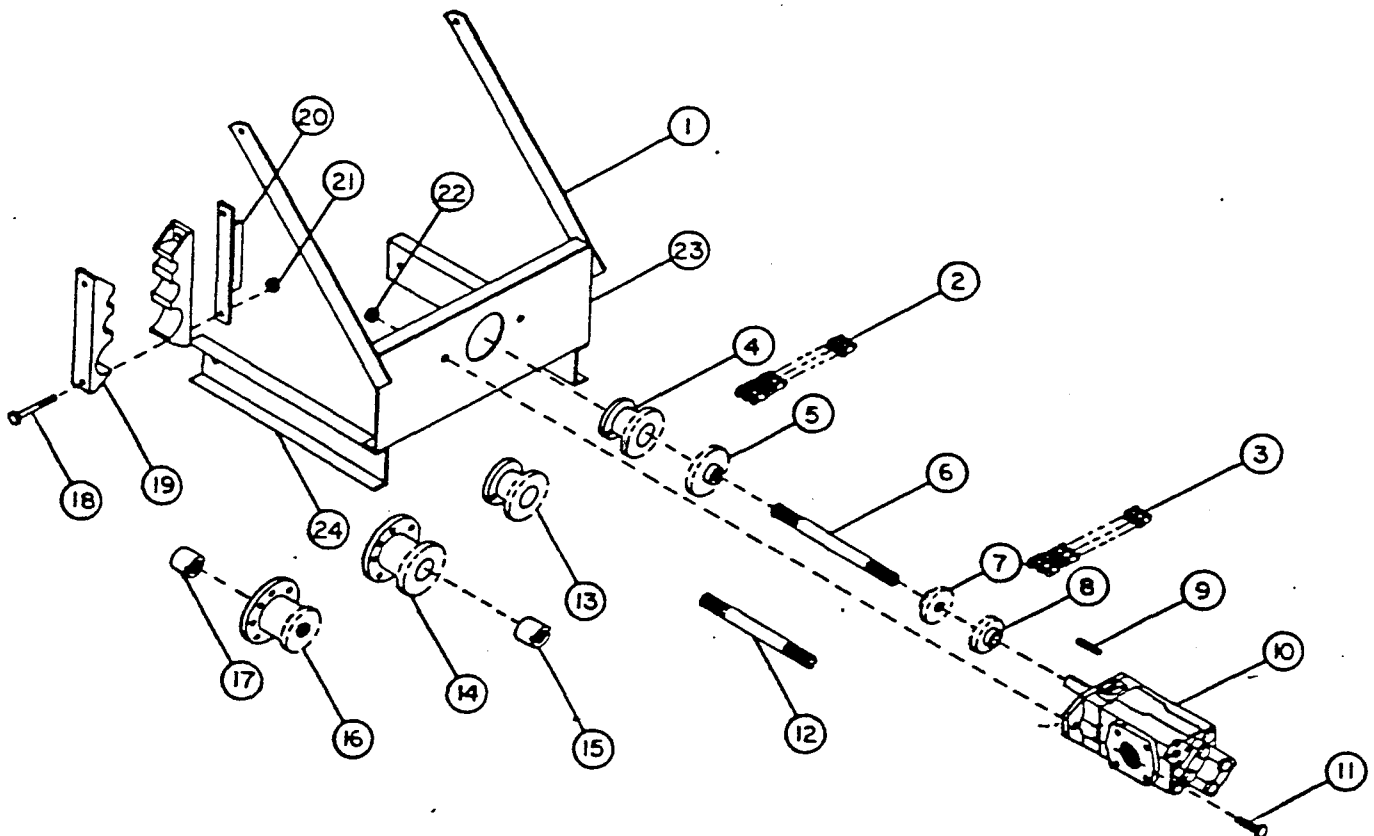




# PUMP DRIVE COMPONENTS FOR GALION MODELS 116, 118, 150 & 160

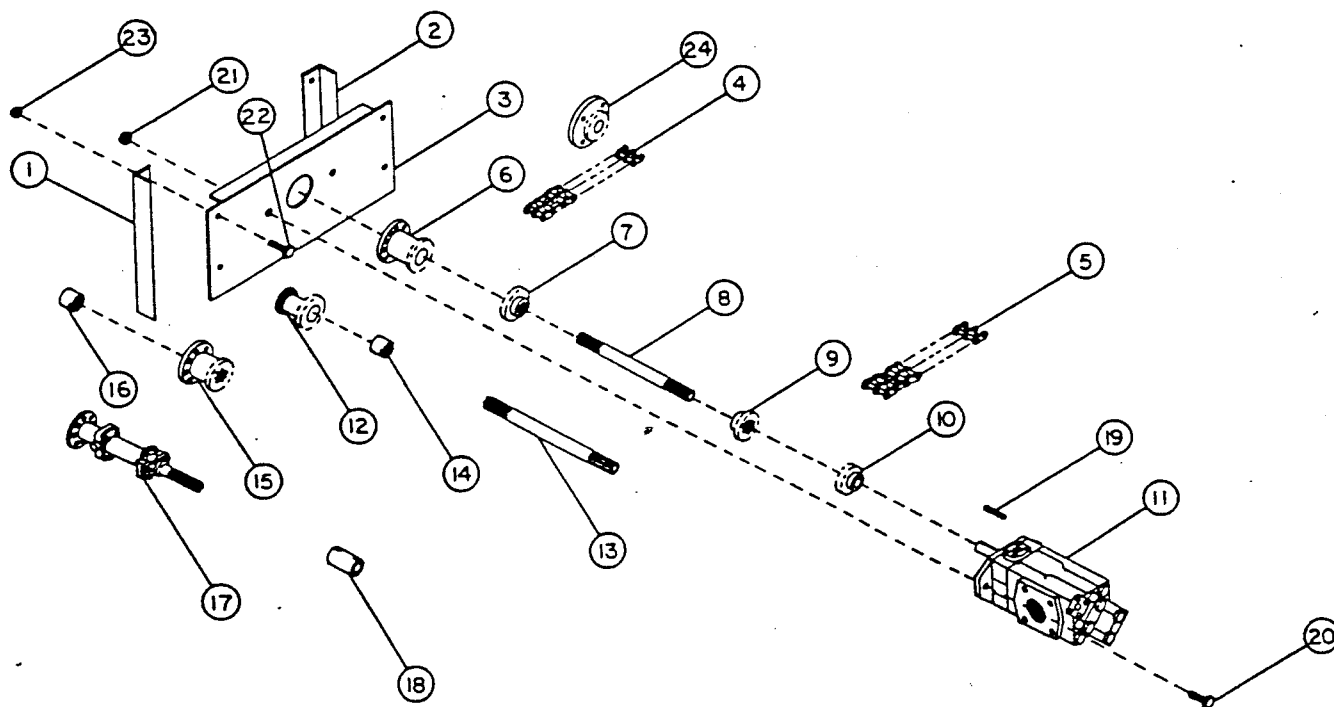
REF. NO.	PART NO.	DESCRIPTION	QUANTITY
1	2805	Pump mount brace	1
2		RC 80 12 Link double chain	1
3		RC 80 10 Link double chain	1
4	2936	Pump drive adapter for all graders with GM-371 or GM-471 engine	1
5	2938	RC 80 12 Tooth splined sprocket	1
6	2802	Splined shaft, 1 3/8" x 14	1
7	2932	RC 80 10 Tooth splined sprocket	1
8	2944	RC 80 10 Tooth Keywayed sprocket	1
9		5/16 x 1 1/2 Sq. key	1
10	5201	Double pump	1
11		Hex Bolt (3/4 x 1 1/4) GR # 5	2
12	2801	Splined shaft, 1 3/8" x 12 1/2	1
13		Pump drive adapter for Cummings Diesel engine	1
14	2929	Pump drive adapter for all Graders with 1H-UD-14A engine	1
15	2813	Crankshaft replacement nut for all Graders with 1H-UD-14 and UD-14A engine	1
16	2928	Pump drive adapter for 1H-UD-16	1
17	2922	Crankshaft replacement nut for UD-16 engine	1
18		Hex Bolt (1/2 x 5 3/4)	2
19	2787	Casting 3 hose clamp	2
20	2844	Support 3 hose clamp	1
21		1/2 Lock nut	2
22		3/4 Lock nut	2
23	2809	Pump mount plate	1
24	2785	Pump mount channel	2

\*Note: Furnish Model and Serial No.

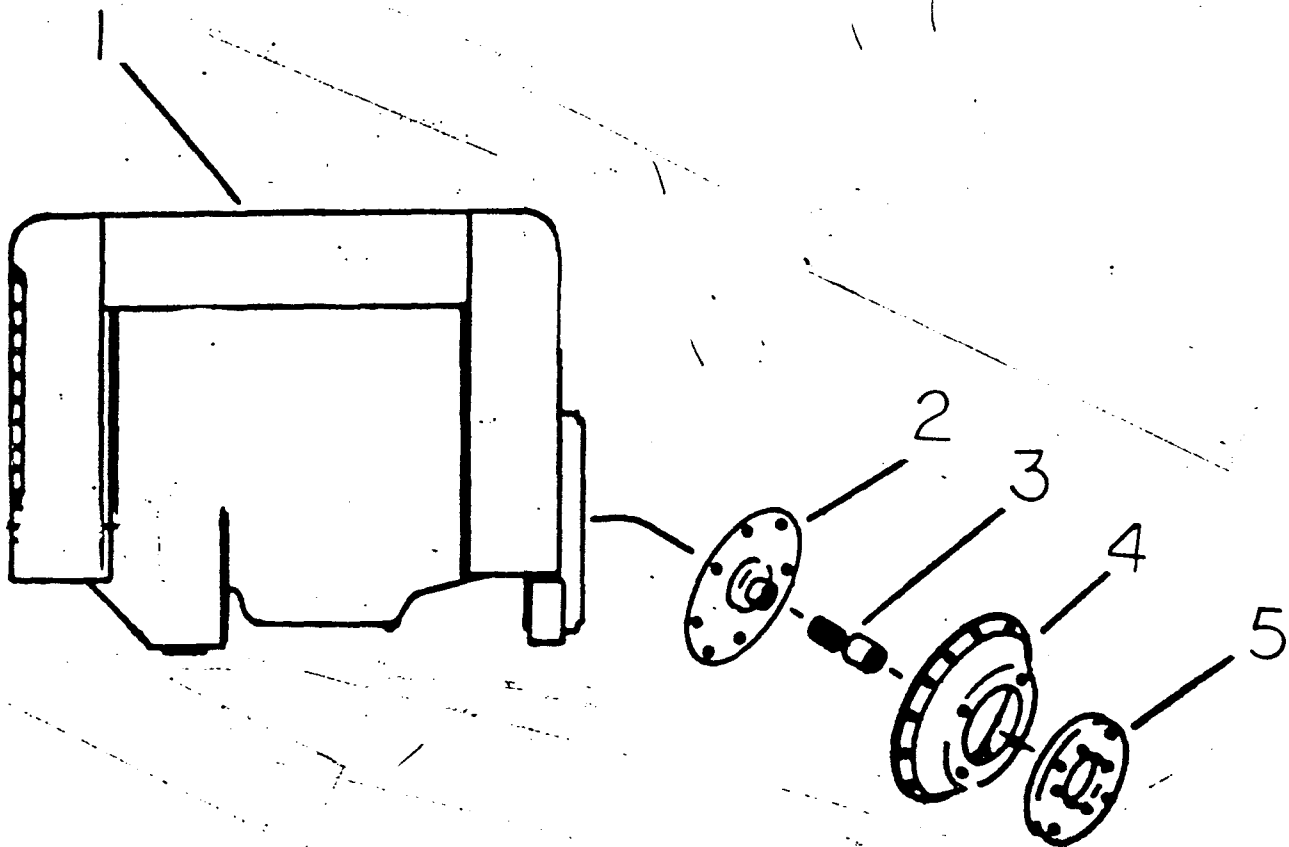


# PUMP DRIVE COMPONENTS FOR AUSTIN WESTERN MODELS 88H, 88L, 99M, SUPER 99 & 200

REF. NO.	PART NO.	DESCRIPTION	QUANTITY
1	2789	Pump mounting plate angle, Lt.	1
2	2789	Pump mounting plate angle, Rh.	1
3	2809	Pump mounting plate	1
4		RC 80-12 Link double chain	1
5		RC 80-10 Link double chain	1
6	2929	Pump drive adapter for all graders with 1H-UD-14A engine except 99H and 99M	1
7	2938	RC 80-12 tooth splined sprocket	1
8	2802	Splined Shaft, 1 3/8. x 14 Lg.	1
9	2932	RC 80-10 Tooth Splined Sprocket	1
10	2944	RC 80-10 Tooth Keywayed Sprocket	1
11	5201	Double Pump	1
12	2936	Pump Drive adaptor for all graders with GM-371 and GM-471 engines	1
13	2803	Splined shaft, 1 3/8. x 22 used with GM-371 engine	1
14	2813	Crankshaft replacement nut for all UD-14A engine except 99H and 99M	1
15	2928	Pump drive adaptor for 1H-UD16 engine	1
16	2922	Crankshaft replacement nut for UD-16 engine	1
17	2927	Pump drive universal for 99H and 99M graders with UD-14A engine	1
18	2812	Pump drive cuopling for 99H and 99M graders with 1H-UD-14A engine	1
19		5/16 x 1 1/2 sq. key	1
20		Hex Bolt (5/8 N. F. x 1 3/4 Gr. # 5)	2
21		5/8 Lock Nut, N.F.	2
22		Hex Bolt (1/2 N. C. x 1 1/4)	4
23		1/2 Lock nut, N. C.	4
24	2940	Pump adaptor for IHC 407	1



# AUXILIARY ENGINE DRIVE



ITEM NO.	PART NO.	DESCRIPTION	QUAN.
1	35712	Engine	1
2	27752	Drive Plate	1
3	27751	Spline Shaft	1
4	11777	Engine Adapter	1
5	11778	Adapter Plate For Pump	1
6	35713	Pump (Not Shown)	1

