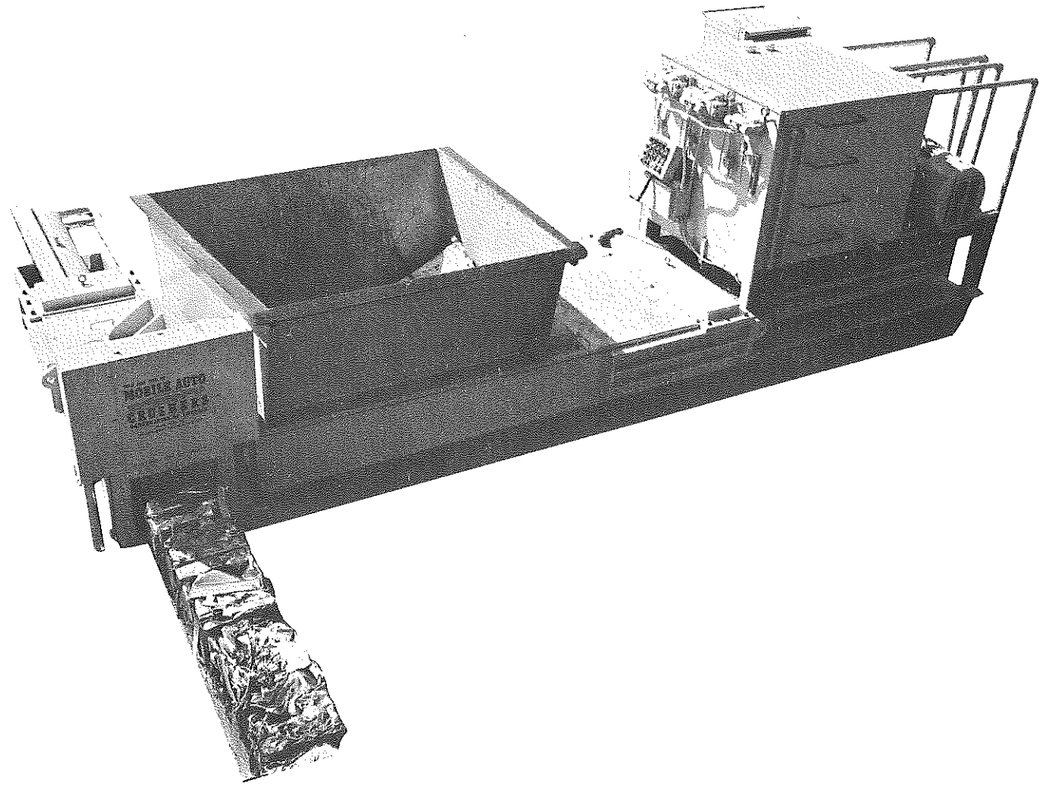
The MAC Automatic High-Density "Shear Power" Model 2100 Baler



Service On-Site-48 hrs.
MAC
214 • 634-7153

maintenance and warranty manual

MAC CORPORATION

1165 Empire Central Place
Dallas, Texas 75247

Division of Woods Corporation

forward

This Manual is prepared for the servicing and trouble-shooting for MAC Balers. A list of the various minor problems that can occur with your machine and a trouble-shooting guide is contained herein for correcting minor problems which may arise from time to time.

Although the machine is designed for rough treatment, you must bear in mind that proper operation, maintenance, and safety are most essential for optimum performance. All hydraulic valve settings are very critical and should not be changed or re-adjusted from factory settings unless first consulting with or advised by the manufacturer. If any adjustment from the original manufacturer's certified settings are made without such consultation, the Warranty will be null and void. By following the steps in this Manual, operational problems and hazards can be greatly reduced.

It is our intent to manufacture and provide for you a most efficient, versatile, and innovative machine. It is essential to establish a sound preventive maintenance program so that the minor problems can be corrected as necessary.

During early operation in cold weather, the machine may have a tendency to make more noise than under normal conditions. Cold weather or a quick change of temperature will cause the pressure switch differential to change, causing some minor erratic conditions when the machine is in automatic cycle. Although this is an unlikely occurrence, there is a possibility that it may occur. Hydraulic oil when cold is much heavier, therefore causing the above mentioned problems. After the machine has been operating for a short time, the oil should warm to a normal temperature and the flow of oil should be flowing properly. If under cold conditions the machine noise is excessive and hydraulic power is not properly responding, it is probably a good indication that the oil being used is too heavy, therefore requiring a permissible dilute with a lighter oil.

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maintenance and warranty manual

the MAC baler

The MAC Model 2100 Automatic High-Density Shear Power Baler is a versatile machine, capable of handling with efficient success any ferrous and non-ferrous baling job, loose steel sheet, frame stock, industrial sheets, clips, and trim stock.

With operator controls, fully automatic features and a hydraulic power system, the machine is designed to provide a most effective and maintenance-free operation. The MAC Tri-Cylinder units utilize only 150 hp., resulting in reduction of overall operational costs. Although controls are fully automatic, the machine is equipped with an automatic bale ejection override and a manual control panel. It is equipped with a motor starter, power disconnect, and main fuse box - all standard features.

The unique MAC Tri-Cylinder produces a system of both high speed and force. The special hydraulic power system, integrated with the MAC Tri-Cylinders, provides the most efficient and economical baling system available.

Compare the MAC Shear Power Baler: A two-compression shear press with a bale cycle approaching 55 seconds.

An unparalled feature of the MAC 2100 is the bale density which approaches 160 pounds per cubic foot. The 16" x 16" x Variable bale is the most marketable bale product that can be produced. Bale weights will range from 300 to 500 pounds on the average with a production of 50 to 60 bales per hour at 100% efficiency.

The machine is in compliance with all the most recent safety standards. The machine is skid mounted requiring only flat and level installation, thus eliminating the need for special installation or slabs. It is constructed of high-alloy wear plate and equipped with the finest hydraulic and electrical components.

Wear liner plates are plug welded for easy replacement. The MAC shearing capability allows continuous gravity feed on a fully automatic cycle. Shear knives are adjustable and shearing capacity is overpowering. Because of the continuous feed and shearing, the machine can continuously bale sheets, clips, frame stock and miscellaneous odd-sized materials with no feeding problems.

machine operation

There are three modes of operation: automatic, semi-automatic and manual operation is provided primarily for set up and maintenance purposes. However, it can be used on a continuous basis if so desired. The semi-automatic mode is provided so that the gathering ram will stop it's cycle after it has returned from making a bale. This allows the machine to sit in an idle position until the cycle start button is pressed. This can be done either at the control station or by remote control from any location including the crane cab. The semi-automatic mode in all other aspects is similar to the automatic mode.

The automatic cycle begins when the charge box is full of material to be baled. And the baling sequence is as follows: loose material is brought to the machine by crane or other loading device and placed in the charge box for baling. The machine is now put into the automatic cycle by turning the control knob to automatic and turning the control power on.

The first compression begins and compresses the material being baled into the compression chamber. Any material that extends above the charge box is cut by the 300 ton shear which is located on the moving gathering ram.

The second compression begins only after the first compression has been compressed and the gathering ram is fully extended. The complete extension of the head assures positive positioning and the head is hydraulically located in place. The second compression ram now extends, compressing the material in the compression chamber, producing a high density bundle. The second compression ram continues to extend until allowed maximum pressure is reached. When maximum pressure is relieved from the compression ram cylinder, the cylinder retracts several inches minimizing the force against the ejection gate door.

Now the ejection gate door opens and when fully opened the second compression ram fully extends, ejecting the bale from the compression chamber.

When the bale is totally clear of the ejection gate door, the second compression ram head reverses and returns to its fully retracted position. Simultaneously, the gate door closes to its fully closed position and when the second compression ram and the ejection gate door is in its closed and/or retracted position the first gathering ram head returns to its retracted position, allowing material which has been placed on top of the cover plate to fill the charge box.

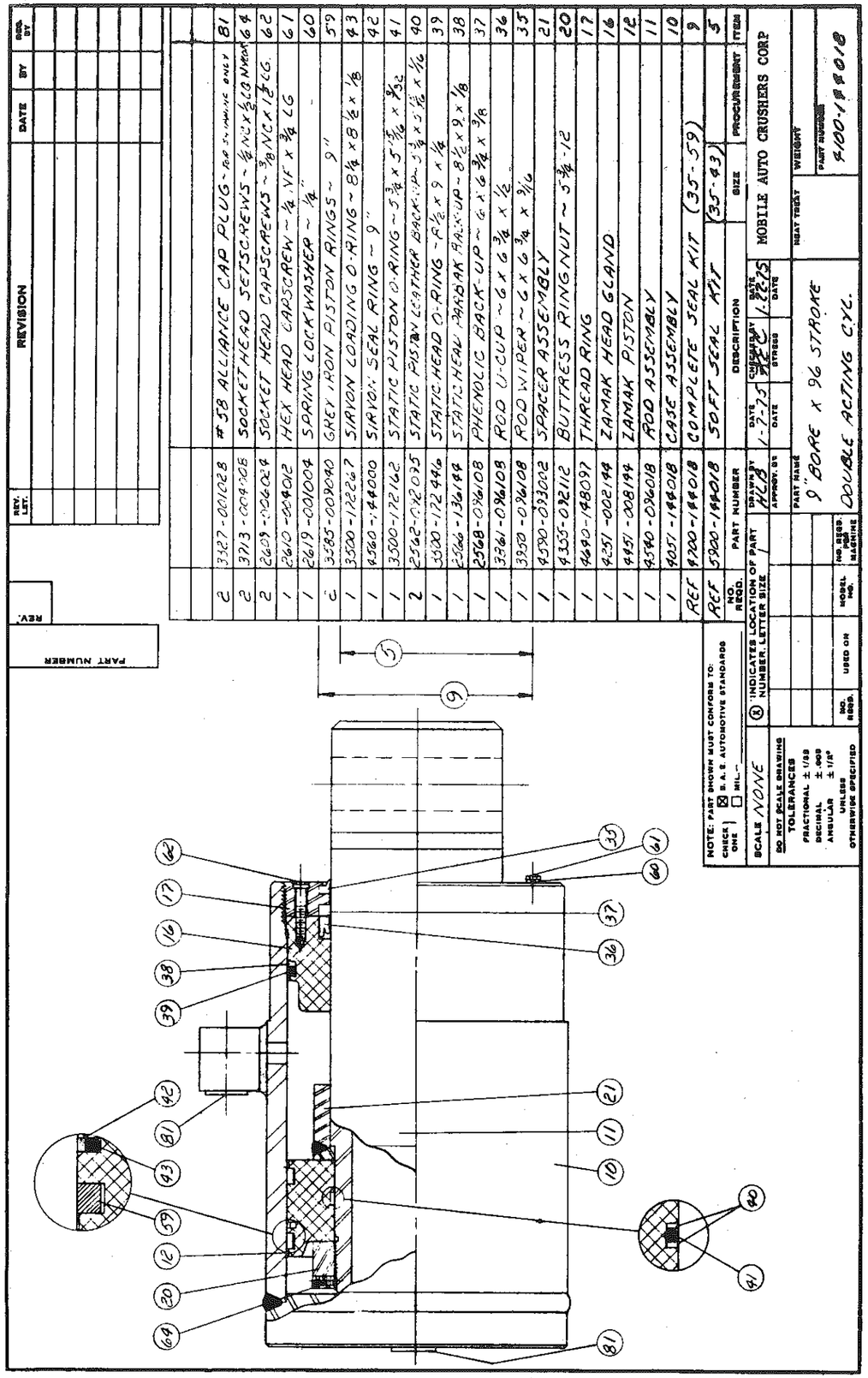
When the first gathering ram head is fully retracted, it automatically reverses and the automatic baling sequence is continued. If the machine is placed in semi-automatic, the gathering ram head will stay retracted until the cycle start button is pushed (any ram can be moved in any direction manually at any time for general, maintenance, or safety purposes).

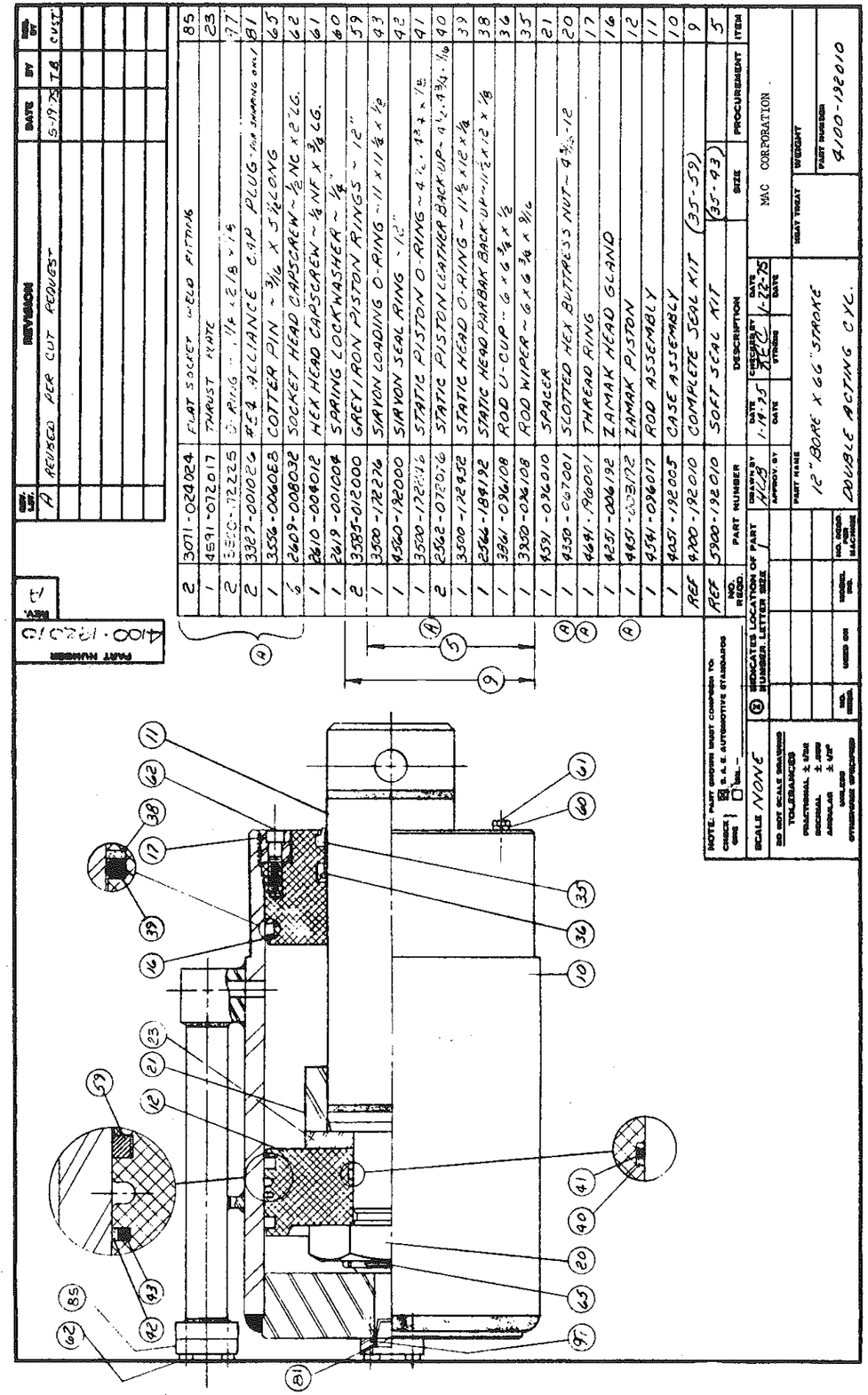
general mechanical maintenance

1. A check should be made of all nuts and bolts and they should be checked to be sure they are tight. Any procedure of making such check would be correct, however, we suggest that whichever procedure is used, it should be used systematically to provide from overlooking any bolt or nut. Bolts and nuts have a tendency to work loose when they are new.
2. A close check should be made on the main hydraulic cylinder for movement and proper alignment.
3. The blade bolts should be checked systematically for the same reason as in #2. Proper blade adjustment is most essential and proper care and inspection will increase production.
4. It is essential to keep the machine on a concrete base. For best performance, machine should be level with equal support on the entire surface of the machine base.
5. Keep the hydraulic oil clean from any foreign particles because these particles tend to wear the pumps and valves and can create minor problems with the Hydraulic System. The oil will not wear out as there is no great mixture, great friction, or great heat. Refer to Hydraulic Oil Maintenance Section (Vickers Hydraulic Oil Recommendations for Industrial Use).
6. Be sure Hydraulic Oil Filter Cartridges are properly installed and replaced every 3 to 6 months, depending upon dust conditions and operating hours.
7. The electric motor should be lubricated as specified by the manufacturer. The only other lubrication is that of gateways in which the gate slides. This should be greased and checked weekly.

Most Important:

8. The machine must be kept clean and a daily inspection of the following is essential:
   a. Clean behind the main compression head and inspect the hydraulic rams for any foreign particles, scratches, and burrs.
   b. Retract the main ram, open the gates and clean the compression chamber and gateways.
   c. Check the area above the gate for any material which may have fallen during daily processing.
   d. Clean area around electric motor because metallic particles, ferrous or non-ferrous, can create internal problems reducing the life of the machine motor even though the motor is enclosed.
   e. Clean beneath the machine directly below ram inspection cover.
   f. Clean around the top of the oil reservoir and air cleaner.
   After cleaning machine, inspect bolts, hydraulic cylinder, and check blades' adjustment and blade bolts as previously specified.





cylinders

The first compression cylinders are 9 inch bore, with 96 inch stroke, have a 6 inch diameter rod shaft. The second compression cylinder is a 12 inch bore, with 66 inch stroke and has a 6 inch diameter rod shaft. The cylinders have a honed barrel with 12 micro finish. The rods are heat treated, hard chrome plated with a 6 micro finish. These are repairable cylinders. Packing kits are available. Any part such as piston, gland rod assembly, or barrel assembly is readily available from stock for repair.

In case of malfunction, look at the following points:

1. Rod seal leakage
2. Leakage across piston
3. Scored rod
4. Excessive dirt or foreign material in oil
5. Operating pressure of cylinder

1. Rod seal leakage:

Check for excessive oil around rod. To correct this situation:

a. Screw entire front bearing out for inspection.
b. Take rod assembly out.
c. Piston is welded on, so it is not detachable. Unscrew entire rod bearing, and pull rod. Repack on the piston whatever seals are in sight.
d. Thoroughly clean all parts. They must be washed in cleaning solution, completely dried, and inspected for foreign material. Apply light film of oil before assembly.
e. Manufacturer advised to replace all packing once the cylinders are disassembled. Insert new packing in groove. Packing is available in parts repair kit.
f. Reassemble.

2. Leakage across piston:

   If this condition is found to exist, then this procedure should be followed:

   a. Unscrew hose from back pipe port.
   b. Pressurize front pipe port.
   c. Leave pressure on for five minutes.
   d. Check rear port to see if any oil is coming out. If the oil flow is seen in the rear port, then proceed with maintenance procedure outlined from a.-f. under heading #1.

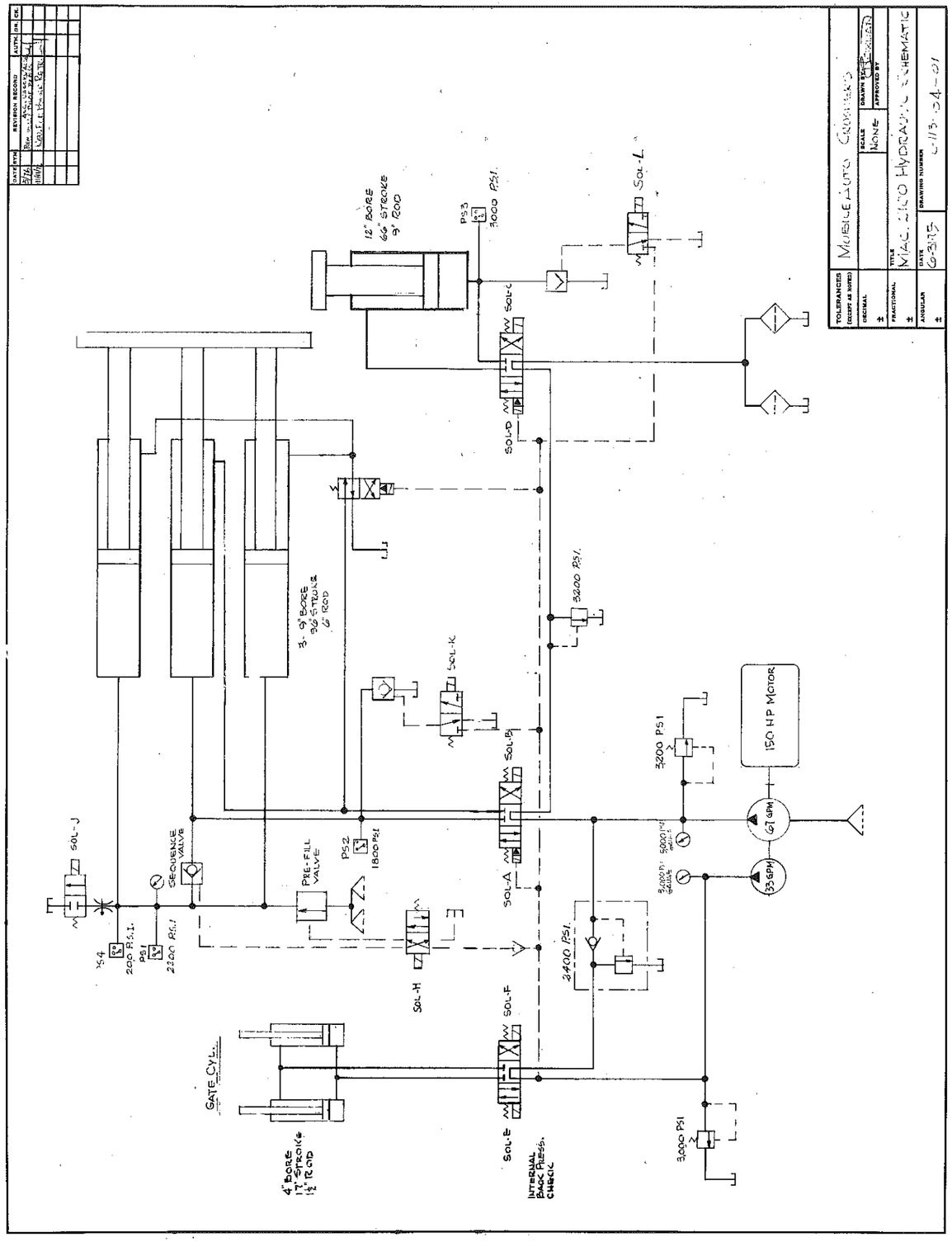
3. Scored rod:

   Undue side-load on cylinder will show up as a scored rod. There will be long scratches up and down the rod. To correct this situation, follow this procedure:

   a. Screw entire front bearing out.
   b. Take various parts out for inspection.
   c. Take rod assembly out.
   d. Inspect rod for scratches, cuts, dents, or abrasions. Check to see if rod is bent. If any of these conditions are found, it will be necessary to replace rod assembly. Rod assembly is available from stock.
   e. Thoroughly clean all parts.
   f. Replace all packing.
   g. Reassemble.

4. Excessive dirt or foreign material in oil:
   This condition will shorten seal life considerably. Also, it will cause scratches on rod and in barrel assembly that cannot be repaired but that can be corrected only by replacing part.

5. Operating pressure of cylinder:
   The cylinder is designed to operate at 3000 psi. Any excessive pressure can damage seals and piston assembly which voids Warranty.



hydraulic system

The hydraulic system consists of one double hydraulic pump with a delivery of approximately 100 gallons per minute to double 4-way directional valves which in turn directs the fluid to the hydraulic Cylinders which actuate the compression and shearing heads.

The pump is a tandem pump, delivering 100 gallons per minute at 3000 psi, at 1800 rpm. The pump has one suction line and two discharge lines. The suction line of the pump is protected by a General suction strainer.

Each discharge supplies a separate valve which in turn controls the hydraulic cylinders.

The directional valve is a stack type valve with two pressure inlets, two return ports, two safety relief valves, and two working sections, each working section controlling one cylinder. Each cylinder is protected by a relief valve in the directional valve.

Normal trouble-shooting hints are as follows:

1. Noisy pump
2. Aeration
3. Failure to build up system pressure
4. Slow or erratic operation
5. System will not compress load

1. Noisy pump - look for thes indications:
   a. Cavitation caused by restricted inlet or clogged strainer. The remedy is to clean, or replace strainer.
   b. Oil is too thick. Oil viscosity may be too high for the ambient temperatures. The solution is to use oil compatible with ambient temperatures. (See oil recommendations.)
   c. Excessive drive speed. The engine governor may be set too high for the pump to fill properly. The solution is to check and reset governor.
   d. Water is in the oil. This forms an emulsion which causes the same problem as oil of too high a viscosity. The only solution to this condition is to drain and replace oil.

2. Aeration - look for these conditions in case of malfunction:
   a. Damaged inlet line, loose or defective fittings. Tighten loose fittings and replace defective or damaged lines or fittings.
   b. Damaged return line, loose or defective fittings. Air can leak in where oil may not be able to leak out. Repair or replace.
   c. Oil level too low. This can cause vortexing at the pump inlet in the reservoir, thus drawing in air. Add oil to recommended level.
   d. Damaged shaft seal permitting air to enter system. Replace seal.
3. Failure to build up system pressure:
   a. Relief valve stuck open. Clean or replace valve.
   b. Broken pump shaft, sheared key or spline. Main trouble-shooting point is to check for proper meshing of gears.
   c. Pump seizure because of improper start-up, foreign material, excessive pressure. Correct cause of excessive pressure; back off relief valve. If this does not work, replace pump.
   d. Excessive pump slippage because of unusual internal wear. Usually, this causes excessive heat. Replace pump.
   e. Check valve held open. Inspect check valve and remove contaminant.
4. Slow or erratic operation - check for:
   a. Pump damage, usually from wear caused by contaminants. Solution here is replace pump and check cleanliness of entire system.
   b. Worn cylinder. Check, make repairs or replace if necessary.
   c. Air in oil, causing spongy action. Check for suction leaks letting air into the oil. Adding oil may be necessary.
   d. Worn directional valve spool or spools, and damaged relief valve. If these parts are damaged, replace parts.
   e. Restricted pump inlet, usually accompanied by excessive noise. Remove restrictions, and if the pump is still noisy, this means the pump has been damaged. Replace pump.
   f. Pump turning too slowly because of improper engine governor setting. The solution to this is to check and re-set governor at recommended speed.
5. System will not compress load - in case this condition exists, check for the following trouble points:
   a. Worn pump slipping internally. Replace the pump.
   b. Worn cylinder. Replace cylinder.
   c. Relief valve setting too low, broken relief valve spring, or dirt between the poppet and seat. Solution is to set relief valve at recommended setting, replace valve spring if broken, and remove dirt and clean between poppet and seat.

AUTOTRANSFORMER

The autotransformer has two coils for two-phase motors and three coils for three-phase motors, which give balanced starting currents and the maximum torque per ampere of line current.

For motors above 50 hp, three sets of starting taps are provided which furnish 50, 65, or 80 per cent of the line voltage with respective line currents of *25, *42, or *64 per cent of the current that would be required if no compensator were used.

Compensators are shipped with connection made to the 65 per cent tap of autotransformer.

If the motor will not start, or starts too slowly, disconnect the leads (three leads for three-phase and two leads for two-phase compensators) at the top of the autotransformer coils and move each of them to the next tap farther away from the core. Replace the insulating sleeves and try starting the motor again. If it still starts too slowly, connect the leads to the highest voltage set of starting taps. If the motor starts too quickly, move the leads to the lowest voltage set of starting taps. When changing the tap connections, be sure to thoroughly insulate every tap from every other tap before applying power again.

* Autotransformer excitation current not included.

"OTT" Autotransformer Protective Device

A thermal device is mounted on the autotransformer bracket to sense the heat radiated from the autotransformer. In the event of the starter cycling too rapidly, or for other malfunctions, this thermal device will trip the starter from the line before autotransformer damage can occur. In the event this device trips the starter off the line investigate and correct the source of trouble before it is manually reset.

MAINTENANCE

Do not wait until trouble occurs, but inspect all parts at regular intervals. Keep all parts free from dirt, oil, and grease. Replace the contacts when excessively worn. If the current-carrying parts are carefully inspected periodically, troubles will be reduced to a minimum. Keep on hand extra coils and contactor contacts.

Keep all contacts clean and free from burrs and pits. Do not lubricate the main copper contacts as lubrication shortens their life. In general the contacts will not need attention during their normal life, but if prominent copper beads form on the surface, or if the tips turn a dark color due to overheating, the contact faces should be dressed with a fine file.

When the contacts become worn so that adjustment cannot be maintained, new parts must be used.

OVERLOAD PROTECTION

The CR124 single-pole overload relay is designed to provide running overload and stalled rotor protection.

When an overload occurs, the heating elements are heated above their normal temperatures, causing the bimetallic strips to deflect sufficiently to open contact 2-8 and/or 5-9 and/or 9-10. The opening of any of these contacts will cause the motor to be disconnected from the line. After tripping, the Bimetallic strips must cool before the relay can be reset. The time for cooling is approximately three minutes, depending upon the severity of the overload.

The relays are shipped from the factory arranged for hand reset, but may be changed readily to automatic reset

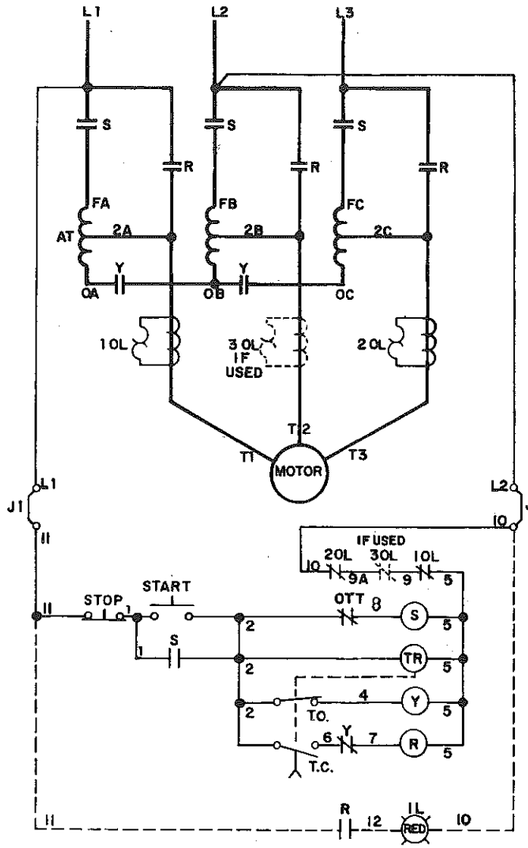


Fig. 2. Elementary Wiring Diagram

by moving the end of the reset spring from the lower position to the upper position by moving it out and up. Automatic reset should not be used if the control circuit is such that resetting of the relay will automatically cause power to be reapplied to the motor.

HEATER SELECTION — For Motor Overloads 1 OL, 2 OL and 3 OL (If Used)

The heaters are of the interchangeable type. A sufficient number of sizes is available to permit selection of the proper heater for any value of motor full-load current within the range indicated in the heater table.

The heaters provide approximately 115 to 125 percent protection. Select heaters from the table supplied with each magnetic starter.

TIME-DELAY RELAY

The timer (TR) is a pneumatic timer. This device has an actual timing range of 1/5 — 180 seconds. It is set by factory for approximately 10 seconds. It can be adjusted to any desired time by turning the adjustment screw on the front of the timing head. However this setting should never exceed 40 seconds without General Electric engineering approval.

Removal of Coil ("START" and "WYE" contactors)

1. Loosen coil retainer screws (B) Fig. 3. Press against coil and pull up and out on coil retainers (A) Fig. 3.
2. Pull one end of spring clip (C) forward and slide out of slot.
3. Draw movable portion of magnet assembly from the starter.
4. Coil can then be lifted out.
5. Replace coil and re-assemble, reversing the procedure.

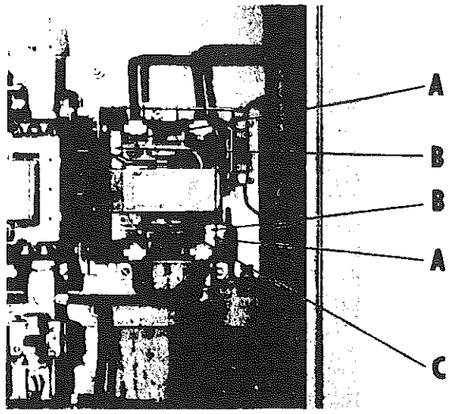


Fig. 3. Wye Contactor

Removal of Contacts ("START" and "WYE" contactors)

1. Remove coil as above.
2. Withdraw "E" magnet.
3. Withdraw molded cover and operating arm which carries the movable contacts.
4. Remove the return spring from the operating arm and then remove the operating arm from the arc chute cover.
5. Depress movable contact slightly and withdraw it and spring as a unit.
6. Remove screw which holds stationary contact to base support and remove stationary contact.
7. Reassemble by reversing the above procedure.

NOTE — Do Not Attempt to Remove or Replace Arc Traps in Arc Chute Cover.

When re-assembling, note that the arc chute cover will only fit one way and is marked "TOP" in upper right-hand corner. Magnet and movable arm will fit either way but will be quieter if reassembled the same way they were taken apart.

Removal of Coil ("RUN" contactor)

1. Loosen 4 coil retainer screws A Fig. 4. Press against coil and pull up and out on coil retainers Fig. 4.

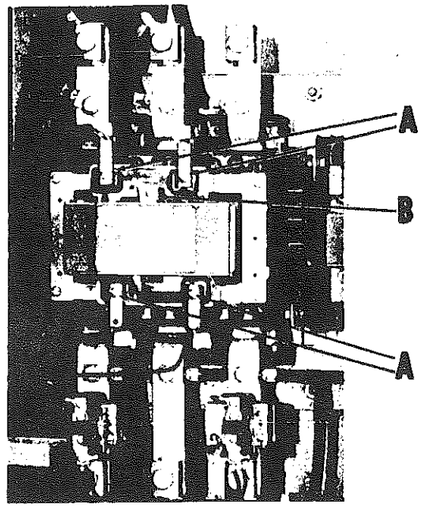


Fig. 4. Run Contactor

2. Draw movable portion of magnet assembly from the starter.
3. Pull one end of spring clip B forward and slide out of slot.
4. Coil can then be lifted out.
5. Replace coil and re-assemble, reversing the procedure.

Removal of Contacts ("RUN" contactors)

1. Remove coil as above.
2. Remove complete magnet assembly by grasping magnet retaining straps and pull entire assembly from the contactor assembly.
3. With the magnet assembly resting on its side remove the movable tip carrier by sliding it out the back of the assembly.
4. Depress movable tip and spring and slide the movable tip out of the tip carrier.
5. While holding the spring and spring guide depressed, slide the new tip into position.
6. Remove the two screws holding the stationary tip to base support and remove stationary tip.
7. Reassemble by reversing the above procedure.

NOTE — Do Not Attempt to Remove or Replace Arc Traps in Arc Chute Cover.

When re-assembling, note that the arc chute cover will only fit one way. Magnet and movable arm will fit either way but will be quieter if reassembled the same way they were taken apart.

PRINCIPAL RENEWAL PARTS

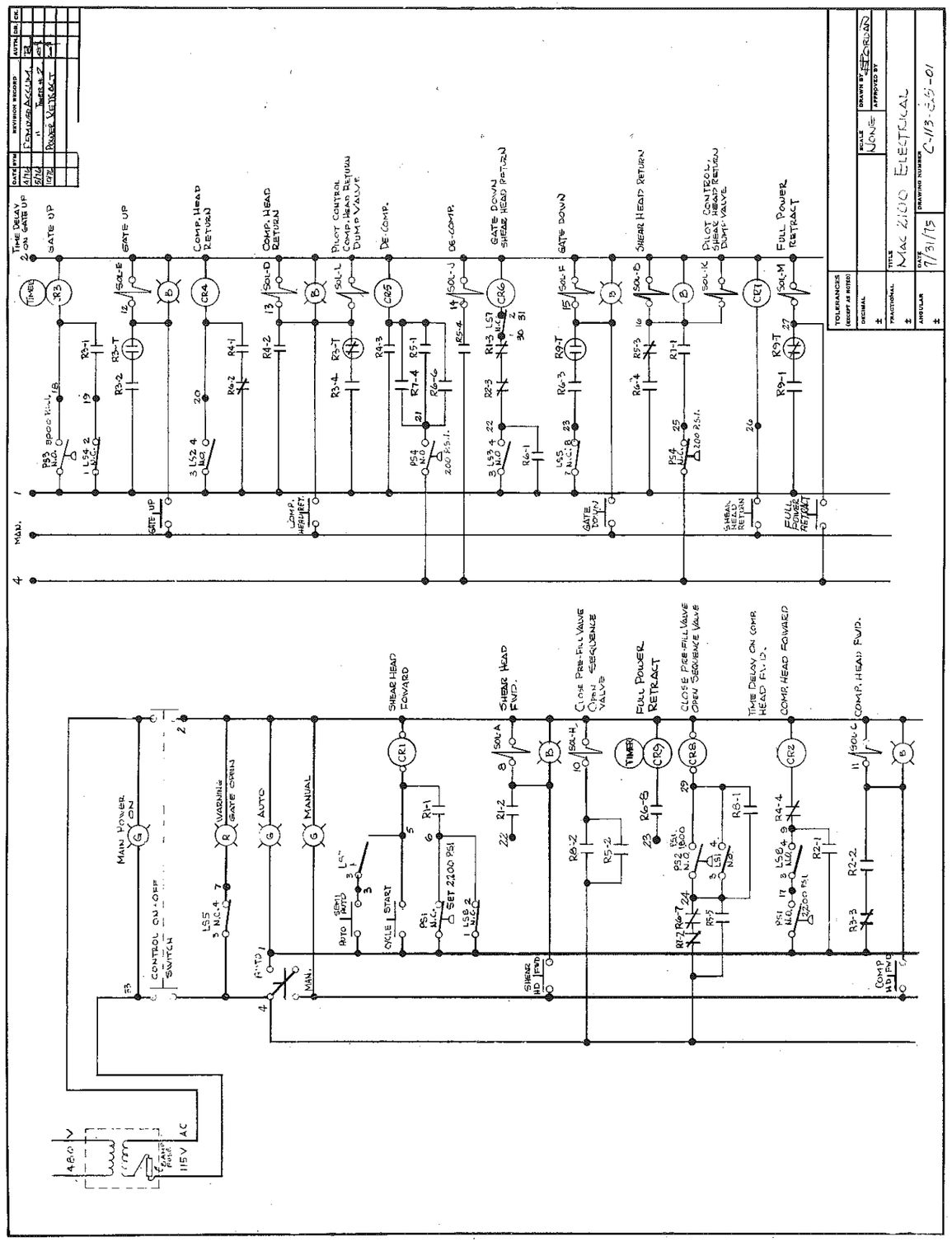
CONTACT SETS	CATALOG	QUAN
For "START" Contactor (Size 4)	55-153678G1	3
For "RUN" Contactor (Size 5)	55-154607G1	3
For "WYE" Contactor (Size 3)	55-153677G1	2

CONTACTOR OPERATING COILS (Quan. 1 Each)		For "START"	For "RUN"	For "WYE"
208/220V.	60 Cyc.	55-501463G3	55-501493G3	55-501336G3
380/440V.	50/60 Cyc.	55-501463G4	55-501493G4	55-501336G4
550V.	60 Cyc.	55-501463G5	55-501493G5	55-501336G5

AUTO-TRANSFORMER (Quan. 1)

Order by description giving complete nameplate stamping of starter, H.P., Volts, Phase, Cycles.

For additional parts data, refer to the nearest distributor.



oil specifications

Oil specifications are for 32 degrees plus, to 130 degrees plus, 150 SSU at 100 degrees. Oils recommended are high stability, rust and oxidation inhibited, and non-foaming, anti-wear hydraulic oils recommended for use in high speed, high pressure pump hydraulic systems.

The oil capacity is approximately 500 gallons.

Specifications recommended if operating in 32 degrees or higher are:

Viscosity @ 100 degrees (F)	200
Viscosity @ 210 degrees (F)	47
Viscosity Index	97
Rust Prevention ASTM D665-60	No Rust
Corrosion, 3 hrs. @ 212 degrees (F)	1
Non Foaming ASTM D892-587	Excellent
Zinc %	0.08
Oxidation, hrs. to 2.0 ASTM D943	1500

Specifications recommended if operating in temperature 32 degrees or lower:

Viscosity @ 100 degrees (F)	150
Viscosity @ 210 degrees (F)	43.5
Viscosity Index	98
Pour Point at degrees (F)	-35
Rust Prevention ASTM D665-60	No Rust
Corrosion, 3 hrs. @ 212 degrees (F)	1
Non Foaming ASTM D892-587	Excellent
Zinc %	0.08
Oxidation, hrs. to 2.0 ASTM D943	1500

Contact your nearest bulk petroleum dealer for the above-specified oil.

Under field emergencies SAE 10 weight superior quality motor oil is acceptable until proper oil is available. At that time unit must be drained and correct oil installed. It will not be necessary to flush system.

blade adjustments and replaceable wear liner plates

The adjustment of the blades is as follows:

Stationary Blade

This blade should be lowered no lower than the compression chamber. When necessary, this blade can be adjusted by loosening the blade bolts and shimming between the knife and the surface directly above the knife. It is necessary that the shims cover most of the surface area to prevent excess stress. The blade is checked to insure that it is not below the top of the baling chamber.

Moving Blade

The moving blade is more frequently adjusted than the stationary blade. This blade is adjusted by loosening the blade bolts and shimming between the knife and the head area directly underneath the knife. To insure proper adjustment, move the head forward with the knife tightened and check for clearance between the two knife blades.

The knives may be sharpened as necessary to utilize the maximum life of the blade. In addition, the blades may be rotated as necessary. Any further information concerning the wear characteristics or performance for various materials may be obtained through the manufacturer.

Wear Liner Plates

Wear liner plates are plug welded and can be replaced as wear becomes evident. Exchangeable plates are available from the manufacturer.

general trouble-shooting

Trouble	Cause	Remedy
1. Main Control Power Off	A. Heater element diffused	A. Reset or replace.
	B. Fuses not making contact	B. Check for power across fuse box. Reset or replace.
	C. Power failure incline before machine circuit	C. Consult local electrician or manufacturer.
2. Control Power Failure	A. Blown fuse in electrical circuit	A. Check for short or burned-out solenoid.
	B. Defective transformer	B. Check output of transformer for voltage and amps.
3. Machine Running Too Hot	A. Dirty or low oil	A. Add oil or replace oil. (Check causes for dirty or low oil.)
4. Electric Motor Kicking	A. Overload	A. Check input draw and adjust maximum pressures to prevent excess motor amps.
	B. Overheating	B. Clean motor; check for pump-binding, mis-alignment, or internal motor winding problems.
5. Machine Will Not Develop Full Pressure	A. Loose or leaking hydraulic pipe	A. Tighten or replace.
	B. Pump inoperative	B. Check pump for rotation, noise and appearance.
	C. Worn seals, oil rings or leakage in hydraulic cylinders or valves	C. Check hydraulic cylinder for leaks and valves for smoothness of operation.
	D. Adjust pressure switch or main relief switch	D. Readjust to normal setting. This is unlikely to occur. Consult manufacturer for proper setting.
6. Machine Will Not Follow Thru Automatic Cycle	A. Solenoid inoperative or limit switch not contacting or stuck.	A. Place control in Manual Position. Check all manual functions. Check limit switches not contacting or stuck or electrical relay may be inoperative.
	B. Electrical relays not functioning properly.	B. Clean or replace contact points.
	C. Loose or broken electric wiring	C. Tighten or replace. Reset as necessary.
7. In Automatic Cycle Full Pressure Is Reached and Gate Won't Open	A. Pressure switch inoperative or setting incorrect	A. Replace or reset.
	B. Pressure holding on main ram arm	B. Check adjustment or timer. Check directional valve for proper operation.
8. Ram Head Moving At A Very Slow Rate	A. Sequence valve out of adjustment or inoperative.	A. Readjust or replace sequence valve.

warranty

This article is warranted to be free from defects due to defective materials or defective workmanship for a period of 90 days after the date of delivery, such period being hereinafter referred to as Warranty Period, and the sole obligation of Seller with respect to this warranty shall be to replace free of charge f.o.b. Dallas, Texas, any part or parts which may prove to be defective due to defective workmanship or defective materials within the warranty period, provided no disarrangement of, or injury to the machinery be caused voluntarily or by incompetency, carelessness, negligence, accident or want of attention upon the part of Purchaser, his servants, agents, or employee or third parties. THIS WARRANTY SHALL NOT INCLUDE NOR COVER NORMAL MAINTENANCE AND ADJUSTMENTS, AND THE SAME FURTHER SHALL NOT INCLUDE NOR SHALL SELLER BE LIABLE FOR OR RESPONSIBLE FOR, BLADES, BLADE BOLTS, PUMPS, HOSES, OIL, BELTING, PACKING, OR ANY OTHER EXPENDABLE MATERIAL NOR FOR NORMAL WEAR AND USAGE NOR FOR ANY DAMAGES BY REASON OF LOSS OF PRODUCTION OR DOWN TIME OR LOSS OF PROFITS OR INCOME ARISING FROM ANY REASON WHATSOEVER, IT BEING EXPRESSLY UNDERSTOOD AND AGREED BY AND BETWEEN THE PARTIES HERETO THAT ALL IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO MERCHANTABILITY, FITNESS AND QUALITY ARE HEREBY EXPRESSLY NEGATIVE AND NONE OF SAME SHALL BE DEEMED TO EXIST, AND THE SOLE WARRANTY IS THAT EXPRESSED IN THIS PARAGRAPH OF THE CONTRACT. Seller reserves the right to change the design and construction of said baler when in its sole opinion any such change represents an improvement of the article. All outside purchased equipment and accessories are guaranteed only to the extent that the manufacturer's guarantee may apply and are not subject to this warranty nor to any implied warranty.

service record

Date	Type of Service