

SERIAL 040070358
m HV-615



**OPERATOR
SERVICE**

MANUAL

**HARRIS
HORIZONTAL
CLOSED DOOR
BALER**

FORWARD

HARRIS Balers are quality built machines engineered to operate with a minimum of moving parts and maintenance and built for long service life.

Each Baler is factory tested to ensure it operates correctly and will perform to the design standards.

The use of non-standard, counterfeit or substitute parts may affect the performance and operational safety of your machine. Insist on genuine HARRIS replacement parts.

This manual was prepared for your use with the intention of providing clear, concise instructions to aid in the safe, efficient operation of HRB Balers.

Operator Safety is of the utmost importance to us at HARRIS. We strongly recommend that all persons operating or working around HARRIS Balers read this manual carefully for safety reasons. Only persons literate in the English language should be considered as potential operators for HARRIS Balers.



**If You Cannot
Do It Safely
Don't Do It**

NOTE

The baler operator must know and observe the capabilities and limitations of the baler. It is important to keep alert and watch for any condition or situation which may affect the normal performance of the baler, such as over-charged feed hopper, oversized bale, machine malfunction or personal safety in the work area. If a problem or unsafe condition does arise, shut the baler down by using

the emergency stop push button or the prescribed shut-down procedure. Notify the proper authority immediately. Corrective measures, service or baler repair must be performed only by trained authorized personnel. If at any time there is a question regarding safety, the operator should consult the manual, supervisor or HARRIS to ensure all precautions are taken before proceeding.



This manual is printed on recycled paper.

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DEFINITION OF TERMS

The terms **DANGER**, **WARNING**, **CAUTION** and **NOTE** appear throughout this manual and denote the following.

⚠ DANGER

The word **DANGER** precedes information pertaining to specific immediate hazards which, if disregarded, **WILL** result in **SEVERE INJURY** or **DEATH** of the user or others.

⚠ WARNING

The word **WARNING** precedes information pertaining to hazards or unsafe practices which **COULD** result in **PERSONAL INJURY** or **DEATH**.

⚠ CAUTION

The word **CAUTION** precedes information pertaining to potential hazards or unsafe practices which, if disregarded, may result in personal **INJURY** or **DAMAGE** to the equipment.

NOTE

The word **NOTE** precedes information which is vital to the proper operation or maintenance of the equipment.

⚠ WARNING

Failure to follow prescribed practices and requirements may result in **SEVERE INJURY** or **DEATH**



DECALS AND WARNING LABELS

See the accompanying illustrations for the location and label content of all safety decals.

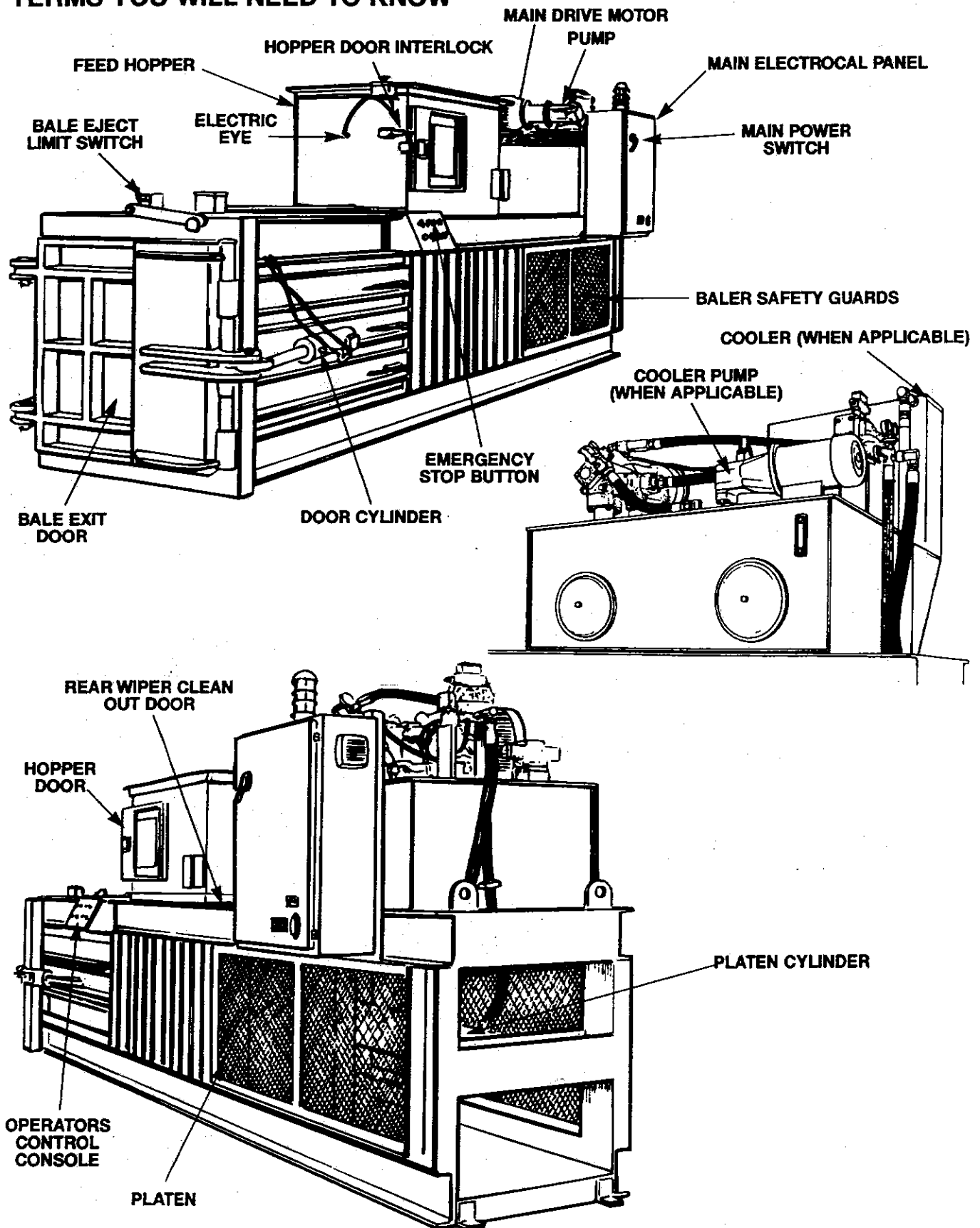
- Make certain warnings are obeyed at all times.
- Make certain decals are in place and readable at all times.
- Report any damaged or missed decals to the proper authority immediately
- Replacement decals can be ordered free of charge from your local distributor or from:

HARRIS WASTE MANAGEMENT GROUP, Inc.
P.O. Box 406, Jekyll Road
Baxley, GA 31513



SECTION 1 - OPERATION

TERMS YOU WILL NEED TO KNOW

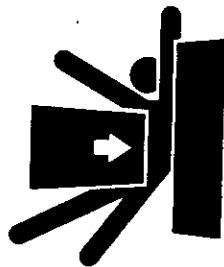


SECTION 1 - OPERATION

DECAL APPLICATION CHART

⚠ PELIGRO

Nunca entre en la empaquetadora a menos que la fuente de potencia este apagada y el área de trabajo este segura.



⚠ DANGER

Do Not Enter Baler unless main power is off and work area is secured.

⚠ CUIDADO

⚠ CAUTION

Stand clear when opening door and ejecting bale

Manténgase apartado cuando abra la puerta y expulse el fardo



FOR SERVICE OR CALL TOLL FREE
BALING WIRE GA. 1-800-847-3526
 U.S. 1-800-447-3526
56660 BALERS
 Baxley, Georgia

⚠ PELIGRO

ALTO VOLTAJE

Cierre la corriente principal y asegure el interruptor antes de comenzar cualquier trabajo de mantenimiento



⚠ DANGER

HIGH VOLTAGE

Turn main power off and secure switch before performing any maintenance.

CLEAN OUT DAILY

ANSI Z245.5

AVISO



NOTICE

INSTRUCCIONES DE SEGURIDAD

SAFETY INSTRUCTIONS

- Esta unidad se debe operar solo por personas autorizadas y entrenadas.
- Conozca la ubicación de todos los interruptores de emergencia para parar la máquina.
- Use equipo de seguridad apropiado.
- Antes de hacer funcionar la empaquetadora, asegúrese de que todos los dispositivos de advertencia y trabado estén funcionando.
- Nunca entre en la unidad o haga trabajos de mantenimiento a menos que la fuente de potencia esté apagada y el área de trabajo esté segura.
- Nunca coloque su cabeza, miembros ni otra parte de su cuerpo en lugares donde puedan ser aplastados.
- Nunca use los dedos para meter un cable en la parte trasera de la cámara empaquetadora.
- Manténgase apartado cuando abra la puerta de la cámara.
- Nunca opere la unidad sin la guarda de seguridad o con los interruptores defectuosos.
- Obedezca todos los dispositivos y etiquetas de advertencia.
- Nunca aplaste recipientes que contengan vapores o líquidos tóxicos, explosivos o desconocidos.
- Asegúrese de que todas las puertas estén cerradas antes de operar la unidad.
- Sepe dónde buscar ayuda en caso de una emergencia.
- Si tiene preguntas sobre la operación y el mantenimiento seguro de esta unidad, póngase en contacto con Selco Baler.

INSTRUCCIONES DE SEGURIDAD

Selco Baler no tendrá responsabilidad u obligación legal por las aplicaciones indebidas o el uso inapropiado de esta unidad, así como por la remoción no autorizada de sellos o por los ajustes de la presión. Cualquier modificación que se le haga a la empaquetadora sin el control directo de Selco Baler anulará todo tipo de garantías.

SAFETY INSTRUCTIONS

Selco Baler shall not be responsible or liable for misapplications or misuse of this unit, unauthorized removal of seals or pressure adjustments. Any modifications made to the baler not under direct control of Selco Baler will void all warranties.

⚠ MUCHO CUIDADO

Esta máquina se debe operar solo por personas especialmente entrenadas en su operación y mantenimiento. Esta prohibido que trabajadores menores de 18 años de edad operen esta máquina.

⚠ WARNING

This machine must be operated only by trained personnel familiar with all safe operating and maintenance procedures. Operation by employees under 18 years old is prohibited.

⚠ PELIGRO

Operate switch to "OFF" position and remove key Before performing any maintenance.

⚠ DANGER

Se debe se opacar la palanca y remover la la llave antes de nacer cualquier tipo de mantenimiento en la maquina.

⚠ CUIDADO

No opere la unidad con la puerta de acceso abierta

⚠ CAUTION

Do not operate unit with access door open

⚠ CUIDADO

⚠ CAUTION

Do not operate unit with safety guard removed.

No opere la unidad sin la guarda de seguridad.

⚠ PELIGRO

⚠ DANGER



High Voltage
Alto Voltaje

⚠ CUIDADO

⚠ CAUTION

Close and secure door before operating baler

Cierre y asegure la puerta antes de operar la empaquetadora.

⚠ MUCHO CUIDADO

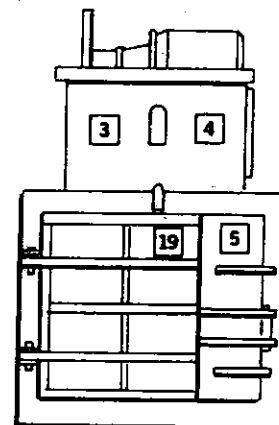
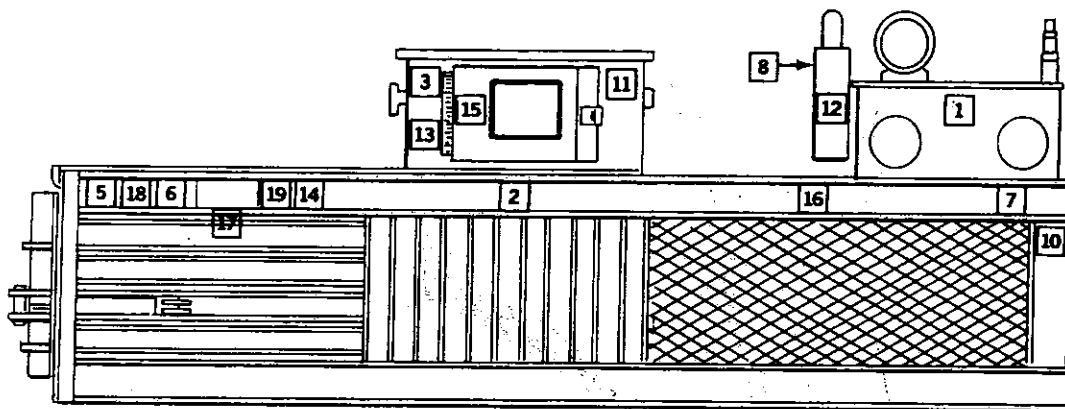
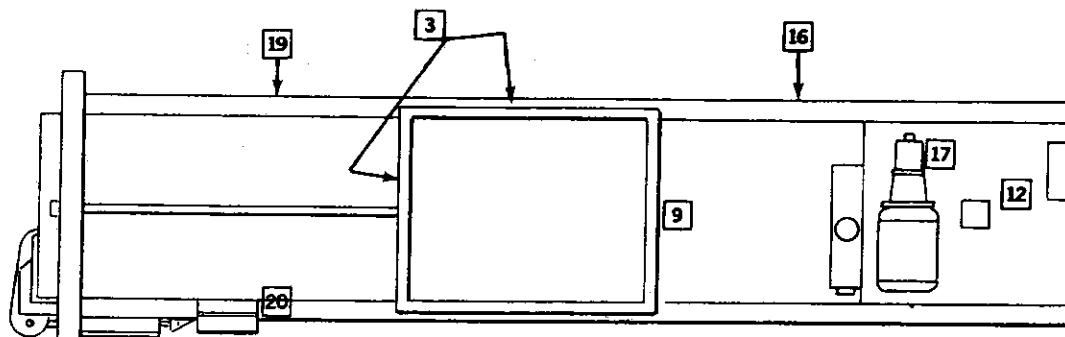
MANTÉNGASE APARTADO CUANDO ABRA LA PUERTA Y EXPULSA EL FARDO



⚠ WARNING

STAND CLEAR WHEN OPENING DOOR AND EJECTING BALE

DECAL APPLICATION CHART



1

3

⚠ MUCHO CUIDADO

MANTENGASE APARTADO
Mantenga todos las partes de la maquina durante su operacion.



⚠ WARNING

STAND CLEAR
Keep all body parts out of the machine during operation.

⚠ CUIDADO

Esta maquina arranca automaticamente. PUEDE EMPEZAR A FUNCIONAR EN CUALQUIER MOMENTO.

⚠ CAUTION

This machine is automatically controlled. IT MAY START AT ANY TIME.

102-020

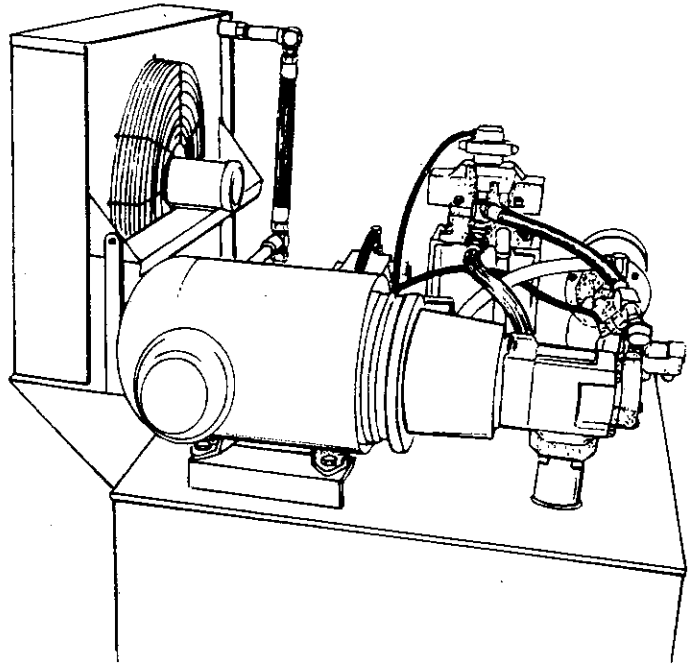
SECTION 1 - OPERATION

HYDRAULICS

- Hydraulic fluid operates under high temperatures. Avoid contact with piping, hoses or cylinders to prevent the possibility of burns.

⚠ WARNING

Never use hands to check hydraulic fluid leaks. Fluid escaping under pressure may cause severe injury. In the event of injury, seek medical treatment immediately.



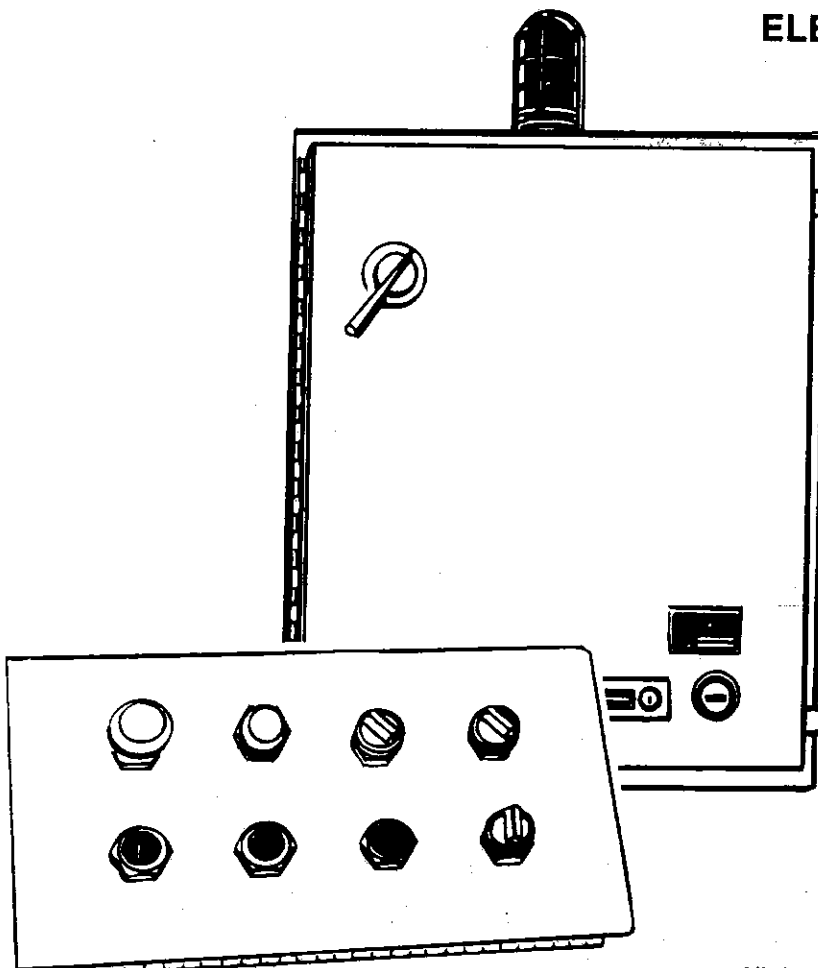
ELECTRICAL SYSTEM

BALERS require a high voltage external power supply. Each unit has two electrical circuits: main power and control power. The high voltage circuit furnishes power to operate the drive motors; a transformer converts the high voltage to 120 volts to operate the control circuit.

For the main power circuit, the high voltage enters the Main Electrical Control Panel and goes directly to a disconnect, which is connected to the motor circuit. For the control circuit, high voltage coming into the main electrical control panel is converted to 120 volts by means of a transformer.

For the electrical system to function correctly, electrical components must be kept clean and free from moisture.

In order for the unit to operate properly, all limit switches must be properly adjusted and free from foreign material to prevent the switches from giving false signals to the control circuit.



⚠ DANGER

HIGH VOLTAGE

High voltage, any service to the electrical system should be performed only by trained, authorized personnel.

SAFETY PRECAUTIONS

NOTE

Only trained authorized personnel familiar with the safe operating and maintenance procedures should be allowed to inspect, operate, or service the baler.

⚠ DANGER

Never place any portion of the body, head or limbs into a potential pinch point unless the machine is locked out in accordance with OSHA regulations before any service or maintenance is attempted.

- Obey all warning decals and labels.
- Never allow anyone to enter or ride on a feed conveyor.
- Always wear hand and proper eye protection when working with tie wire.
- Be certain all safety guards and access doors are maintained and secured in place while the machine is in operation.
- Make certain all warning signals and interlock devices are working before operating the machine.
- Be alert and aware of those persons who may be working in the vicinity of the baler.
- Know emergency shutdown procedures and where to get help in the event of an emergency.
- Never attempt to operate any equipment, perform service or maintenance without the proper training.
- Never operate the baler while under the influence of intoxicants or narcotics. Working under the influence of intoxicants or narcotics presents a major hazard to oneself and others in the work area.
- Never operate the baler while wearing jewelry or loose clothing which may catch on moving parts or controls.
- Always wear proper safety equipment as specified by the employer. Harris strongly recommends head, eye, foot protection and in noisy installations, hearing protection.

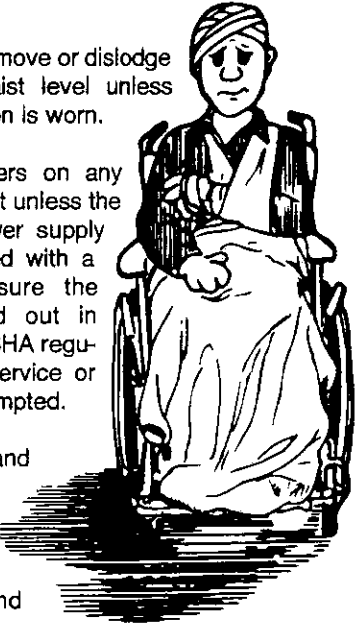
⚠ WARNING

The machine cycles automatically.

⚠ WARNING

Failure to follow prescribed practices and requirements may result in **SEVERE INJURY** or **DEATH**.

- Do not start or operate equipment which has a malfunction.
- Do not attempt to remove or dislodge material above waist level unless proper eye protection is worn.
- Never remove covers on any electrical component unless the main electrical power supply is OFF and secured with a padlock. Make sure the machine is locked out in accordance with OSHA regulation before any service or maintenance is attempted.
- Know the location and function of all emergency stop buttons, control switches, instruments, gauges and protection devices.



NOTE

Publication of these safety precautions does not imply or in any way represent an all inclusive list. It is the operator's responsibility to be familiar with the unit to ensure that the unit operation is in accordance with safety requirements and codes, including all applicable Occupational Safety & Health Act (OSHA) and American National Standards Institute (ANSI) regulations.

These regulations change and therefore, it is impossible to give a reference which will remain current. It is strongly recommended that current applicable OSHA and ANSI standards to be available to operators at all times.

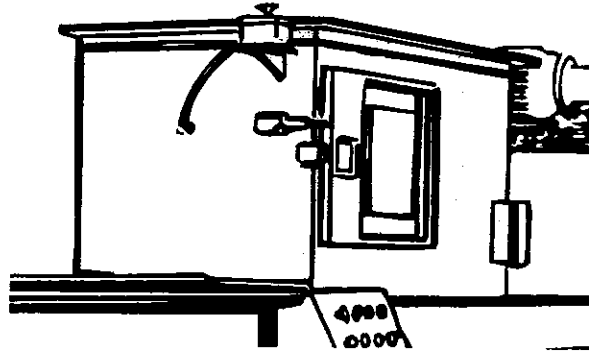
SECTION 1 - OPERATION

BALER FUNCTIONS

There are four basic functions in the operation of the Horizontal Closed Door Baler - loading, compaction, tying, and ejection.

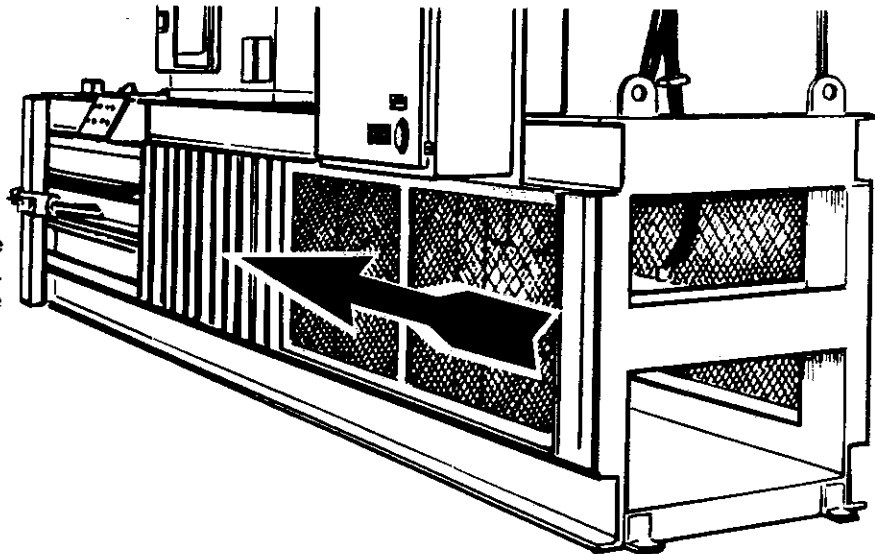
LOADING

Material is loaded into the baler chamber by a feed conveyor. A feed hopper is used to assist in the loading process. The electric eye measures the material and determines when the baler is cycled in the automatic mode.



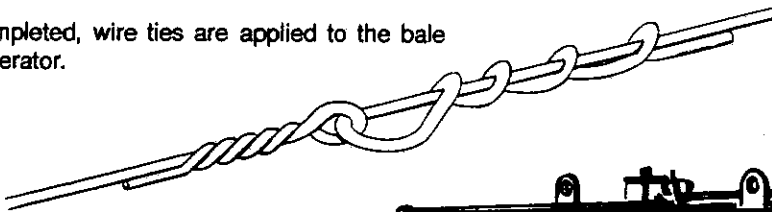
COMPACTION

The platen compresses material in the baling chamber, excess material is cut by the shear blade as the material is compressed. Material type and density will determine the number of cycles necessary to form a bale.



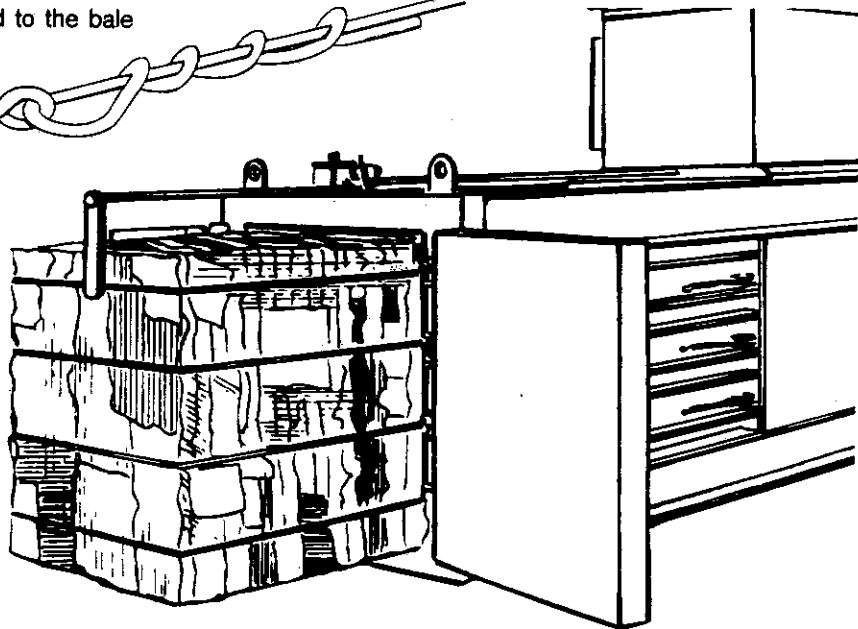
BALE TIEING

After a bale is completed, wire ties are applied to the bale manually by the operator.



EJECTING THE BALE

When the bale is complete and tied, the bale door is opened and the platen is used to push the bale out of the chamber, as the next bale is formed.



DESCRIPTION OF OPERATING CONTROLS

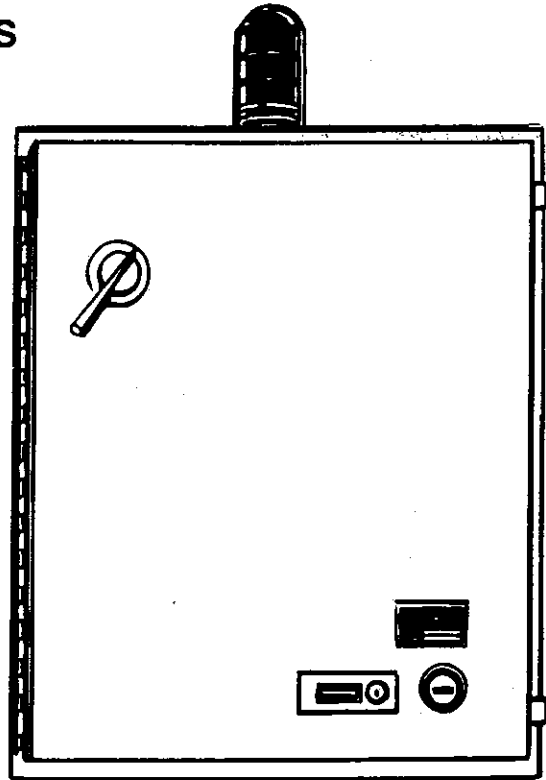
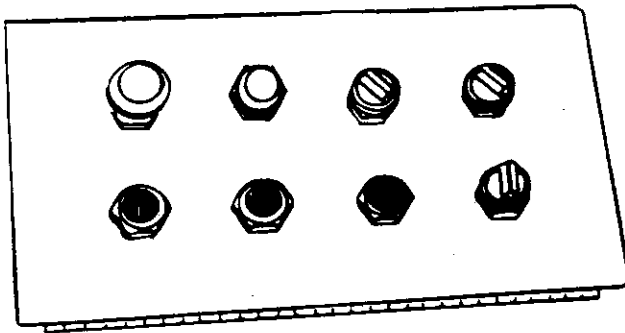
The following information is for descriptive purposes only to aid the operator in locating the control and understanding what they do. It is not to be misconstrued as operating instructions. For operating instructions, refer to OPERATING PROCEDURES later in this section.

NOTE:

This section contains a description of the **BALER** controls covering the control buttons for most **SELCO** **BALERS**.

MAIN POWER SWITCH [1]

Controls the electrical supply to the baler control panel. The baler will not operate while the switch is in the off position. For safety purposes, this control can be padlocked in the off position.



EMERGENCY STOP BUTTON [2]

This button, when depressed, stops all operating functions and shuts the machine down in the event of an emergency. The unit will not operate with this button depressed.

Emergency stop button locations for closed door models:

- A. Operators control panel
- B. Hopper
- C. Feed conveyor

POWER ON LIGHT [3]

(Located on main electrical panel)

A Red Light, when illuminated indicates there is electrical power to the control panel and the baler is functional.

BALER MODE SELECTOR SWITCH [4]

A. 3-position selector switch controls the mode at operation for the baler. When set in the "off" position, the baler will not function. When set in the "manual" position, the platen must be cycled manually by the operator. When set in the "auto" position, the baler will cycle automatically, controlled by the electric eye on the feed hopper.

NOTE:

This switch controls the baler cycle system only and has no control over the baler motor. The baler motor is controlled by the baler motor selector switch.

SECTION 1 - OPERATION

BALER MOTOR SELECTOR SWITCH

[5] (located on operator's control console)

A 3-position selector switch that controls the electrical power supply to the main pump motor. When turned to the "OFF" position, power to the main pump motor is turned off. When set on "MANUAL", the main pump motor will run continuously. When set on "AUTO", the main pump motor will start and stop automatically, allowing the baler to cycle as required to bale material.

CONTROL RESET BUTTON

[6] (located on operator's control console)

When depressed this button activates the power to all baler controls.

PLATEN FORWARD BUTTON

[7] (located on the operator's control console)

In the "MANUAL" mode, the button must be depressed and held to move the platen forward. When released, the platen movement will stop.

PLATEN REVERSE BUTTON

[8] (located on operator's control console)

In the "MANUAL" mode, the button must be depressed and held to retract the platen. When released, the platen movement will stop.

DOOR OPERATION SELECTOR SWITCH

[9] (located on operator's control console)

This switch operates the "Bale Door". The unit must be set on manual and the platen reverse button must be depressed and held. A three position switch opens the bale door when rotated counter clockwise, closes the bale door when rotated clockwise and automatically returns to neutral or lock when released.

BALE DENSITY SELECTOR SWITCH

[Optional]

A 2 position selector switch operating only in the automatic baling mode. Regulated by a pressure switch, this switch adjusts low and high bale density at predetermined pressure setting.

CONVEYORS SELECTOR SWITCH

[Optional]

A 3 position selector switch controls the feed conveyors. When set on "manual", the conveyors will run continuously. When set on "auto", the conveyor will stop automatically when material in the hopper breaks the beam of the electric eye. When turned "off", the conveyors will not operate.

COUNTER RESET

[Optional]

This push button is depressed to reset the bale length counter to its predetermined setting.

LOW OIL WARNING LIGHT

[Optional]

A red indicator light which will illuminate to show the oil in the hydraulic reservoir has dropped below the acceptable operating level.

COOLING SYSTEM SELECTOR SWITCH

[Optional]

A 2 position selector switch, when turned to the "on" position, activates the cooling pump to pump the hydraulic fluid through the cooler unit.

PRE-OPERATION INSPECTION

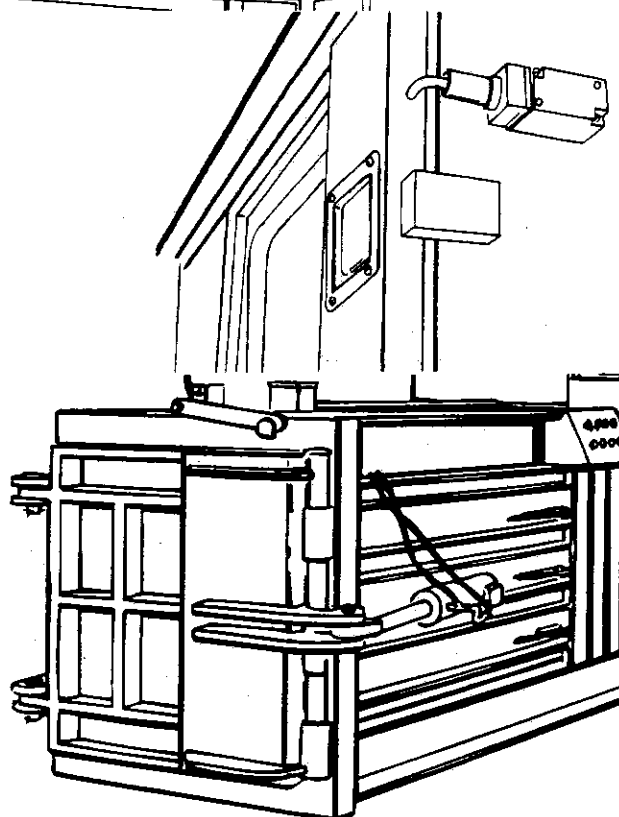
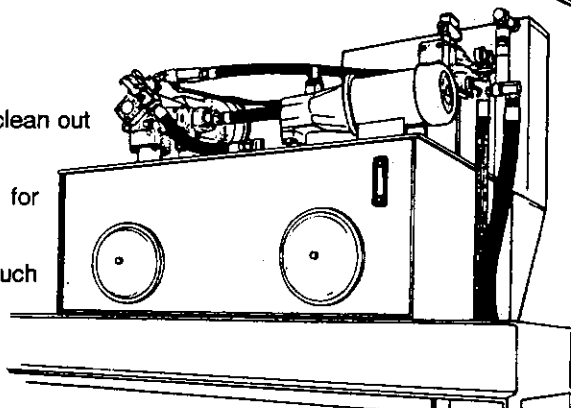
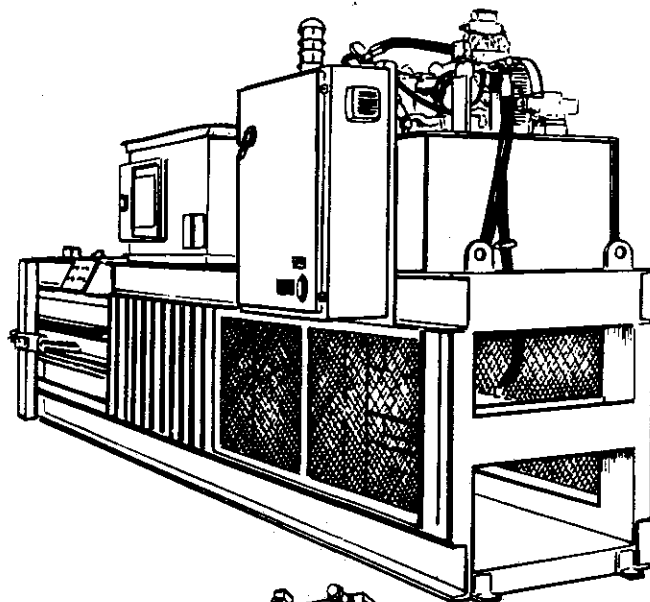
This inspection is essential for the safe and efficient operation of your HARRIS Horizontal baler. It should only be made by trained personnel who are familiar with safe operating procedures. While items listed are standard, there may be other checks required for some baler installations.

⚠ WARNING

Before performing pre-operation inspection, make sure certain the baler has been shut down and locked out in accordance with OSHA standards.

ITEMS TO INSPECT AND CHECK

1. Working area around baler.
 - A. Keep walk area clean.
 - B. Remove flammable materials.
 - C. Remove any oil or fluid spills.
2. Check behind platen for material build-up; clean out if necessary, before operating.
3. Check hydraulic lines, hoses and fittings for fluid leaks.
4. Look for worn, broken and damaged parts such as:
 - A. Hydraulic hoses.
 - B. Broken or missing cap screws, pins and keepers.
 - C. Wear Strips.
 - D. Welds broken or cracked.
 - E. Structural damage.
5. All warning signs, safety guards and interlock switches must be in place and functional.
WARNING: Never override a safety interlock switch.
6. Check wiper, clean out door for material build-up.
7. Make sure all electrical panels are closed and secure.
8. Check hydraulic reservoir oil level, add the correct fluid, if necessary.
9. See that the main power supply is on.
10. Bale discharge area is not obstructed.
11. Make sure feed hopper access door is closed.
12. On auto-tie models, make sure the tie wires and spools are not damaged or obstructed.
13. Lighting is adequate for safe operation. All parts of the machine should be visible during pre-operation inspection.
14. Note the position of fire extinguisher and make sure it is fully charged.
15. Have emergency telephone numbers available.

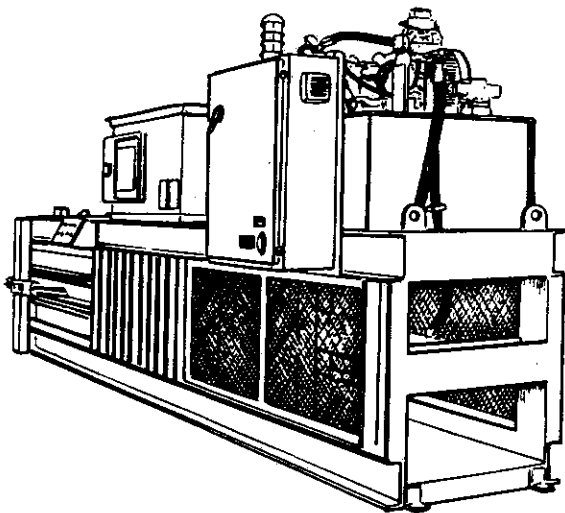


SECTION 1 - OPERATION

BALER START UP PROCEDURE

▲WARNING

Make certain all persons are clear of the charging hopper, bale chamber, ejection area, and conveyor before starting the machine



1. Set the baler on manual mode by moving the selector switch to "MANUAL".
2. Unlock the "MAIN POWER" switch and rotate the lever to the "ON" position.
3. Turn the "DRIVE MOTOR" selector switch to "MANUAL" and depress the push to start button to start the drive motor.
4. Manually cycle the platen and retract it to the home position.
5. Set the baler and drive motor selector switch to "AUTOMATIC" or "MANUAL".
6. Start feed conveyors (if applicable.).

BALER OPERATION

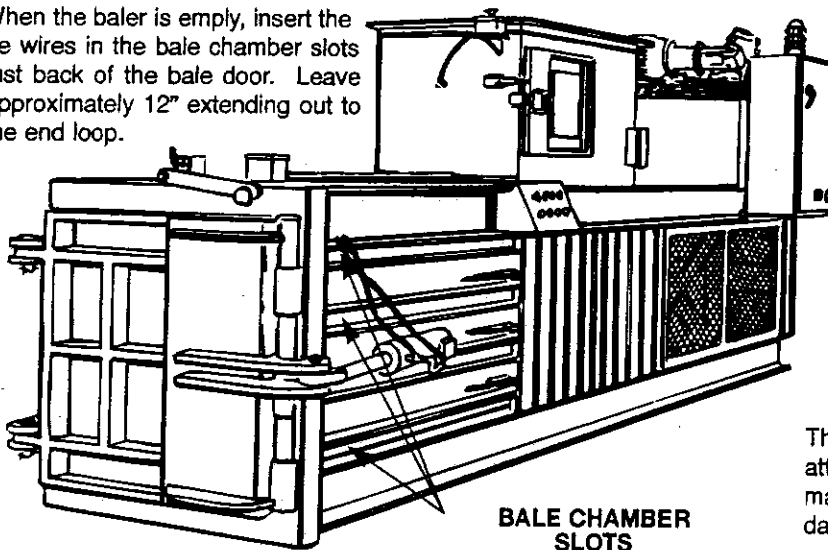
GENERAL

The Closed Door Baler bale material against the door, when the baler is empty, in a continuous baling process. Wire is inserted through the platen face slots at the start of a new bale.

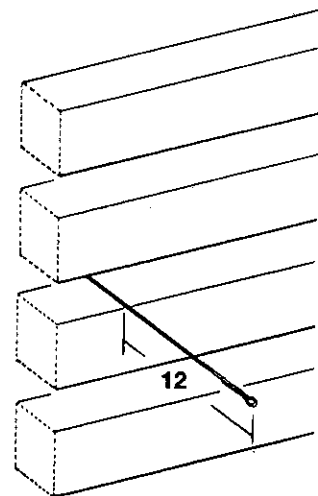
▲CAUTION

Hand and eye protection should be used when handling tie wires.

1. When the baler is empty, insert the tie wires in the bale chamber slots just back of the bale door. Leave approximately 12" extending out to the end loop.



BALE CHAMBER SLOTS

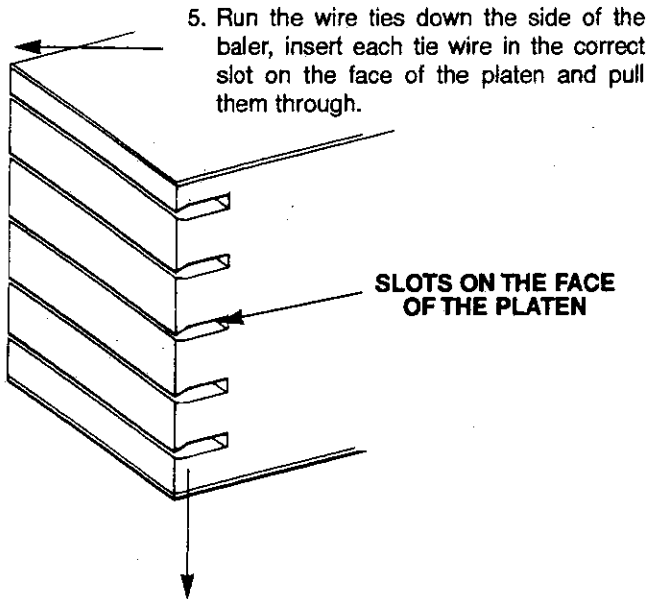


▲WARNING

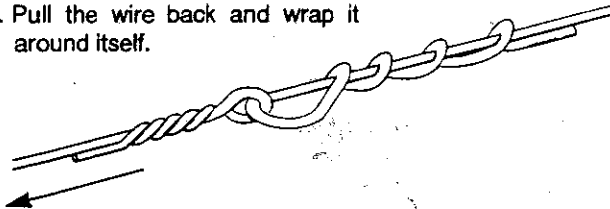
The machine cycles automatically. Never attempt to load or handle wire unless the machine is shut down and locked out in accordance with OSHA standards.

SECTION 1 - OPERATION

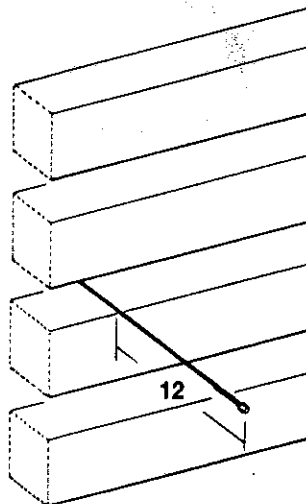
2. Set the baler on "AUTOMATIC" and start feed conveyor and allow material to feed and baler to cycle until the bale is complete.
3. The bale complete alarm will sound and the baler will shut down when the bale is complete, to inform the operator bale ties are needed.
4. Set the baler control on "MANUAL", turn the feed conveyors "OFF". Shut the baler down.



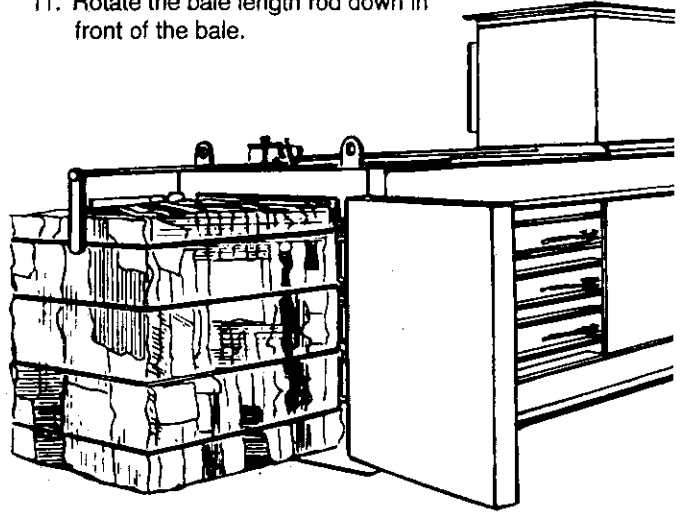
6. Pull the wire down the side of the baler, run it through the end loop on the tie wire.
7. Pull the wire back and wrap it around itself.



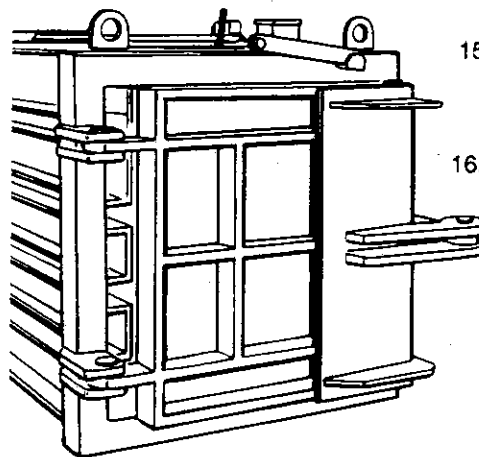
8. Insert new tie wires in the slots on the platen face, leaving approximately 12" extending out to the end loop.
9. Start the baler, fully retract the platen.
10. Release the door latch hydraulic/mechanical and open the bale door.



11. Rotate the bale length rod down in front of the bale.



12. Set the baler to "AUTOMATIC", start the feed conveyors and continue the baling process.
13. The alarm will sound, the baler will shut down, informing the operator the bale needs to be removed.
14. Shut the baler down, turn off feed conveyors.



15. Remove the bale length rod and return it to the storage position.
16. Remove the bale, close and latch the door.

17. Start the baler and the feed conveyors and allow the baler to continue baling in the automatic mode.

NOTE:

THIS COMPLETES ONE FULL BALING CYCLE.

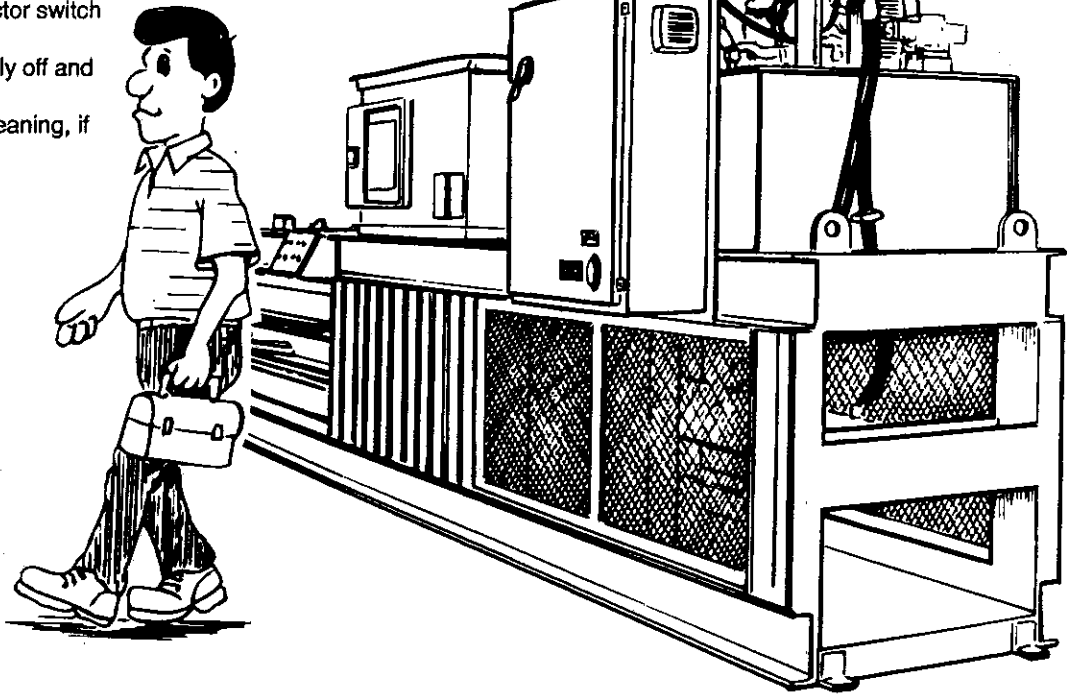
NOTE:

When baling in the "MANUAL" mode, the operator will operate the "PLATEN FORWARD" and "REVERSE" to make the bale. All shut downs and horn do not function as in the "AUTOMATIC" mode.

SECTION 1 - OPERATION

SHUTDOWN

1. Turn off material feed system.
2. Turn baler selector switch to off position.
3. Turn baler motor selector switch to "OFF" position.
4. Turn main power supply off and lock out baler.
5. Perform any house cleaning, if necessary.



JAM AT THE SHEAR KNIFE AND CORRECTIVE MEASURES

The high pressure alarm will notify the operator when an unusually large amount of material, foreign object or combination of both may prevent the shear knife from cutting the material allowing the platen to enter the bale chamber.

1. Stop the feed conveyor or material feed process.
2. Turn the baler to the manual mode.
3. Retract the platen halfway, observe the material in the hopper to see if it falls away from the shear knife.
4. Cycle the platen forward to see if the jam clears and the platen enters the bale chamber.
5. If the jam fails to clear:
 - A. Retract the platen approximately halfway.
 - B. Shut the machine down and lock out in accordance with the recommended SELCO shutdown procedure and OSHA ANSI requirements.
 - C. Remove obstruction.

⚠ DANGER

SERIOUS INJURY or DEATH will occur if the baler is started and operated with someone is inside the machine. To prevent serious injury or death, you must follow HARRIS recommendations and OSHA requirements on lockout procedures. Never allow anyone to place any part of their body in the machine unless all shutdown and lockout procedures have been followed. If you have any questions about the procedure for machine lockout, check with your supervisor before you or anyone else enters the machine.

PREVENTIVE MAINTENANCE GENERAL

The main objective of preventive maintenance program is to anticipate and prevent operational malfunctions before they require extended shutdown for major repairs.

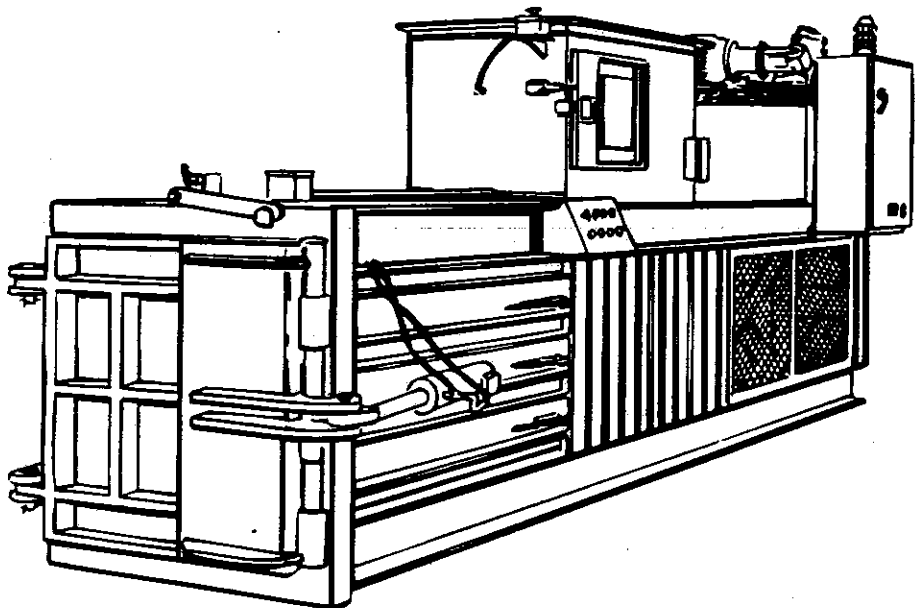
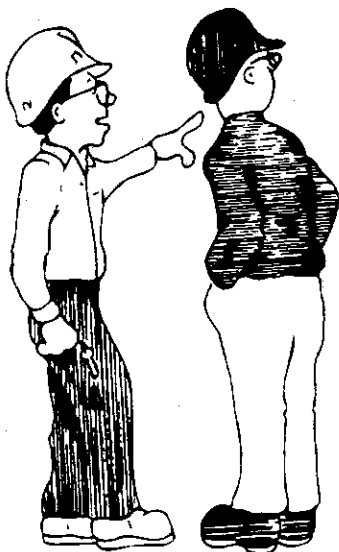
Careful attention to proper preventive maintenance will insure and extend trouble-free operation of the unit. Particular attention and care given to the hydraulic system will extend the service life of the machine.

MAINTENANCE RECORDS

Prepare and adhere to a regular maintenance schedule. Keep accurate records of all maintenance performed. A regular review of all maintenance records may provide an indication of potential problems.

⚠ WARNING

Do not get into the baler or put any part of your body into the baler at any point unless the baler is shut down and locked out in accordance with OSHA standards. This precaution must be taken before any service or maintenance is attempted, including clearing a jam or oversize bale.



SECTION 2 - PREVENTIVE MAINTENANCE

HYDRAULIC FLUID RECOMMENDATION FOR HYDRAULIC SYSTEMS HYDRAULIC OIL

To serve its purpose and give long and satisfactory service, the hydraulic oil must possess desirable physical and chemical characteristics. Since stability under agitation and wide ranges of temperatures are very important, the crude from which the finished product has been processed should be of such a nature as to inherently possess these desirable characteristics.

Premium hydraulic oil should be used in these hydraulic systems, and in addition to the above characteristics, be further fortified by application of selected additives to provide additional resistance to wear, corrosion, oxidation, decomposition, and foaming. All additive treatment should be done by the lubricant supplier with additives that are compatible with each other as well as the base oil into which they are blended.

VISCOSITY INDEX

This factor is very important. Oils having low Viscosity Index values tend to be sluggish at lower temperatures and thin out rapidly as operating temperatures increase. This change in viscosity, to a degree, results from the use of oils having Viscosity Indexes below that recommended. The result of using low Viscosity Index oils is unsatisfactory lubrication at

operating temperature. When the air temperature around the power unit varies from 32 to 100 Deg. F. a minimum viscosity index of 95 is required.

When the air temperature around the power unit varies from 10 to 110 Deg. F. a minimum viscosity index of 135 is required.

LOW TEMPERATURE

It is recommended that oils to be used in these hydraulic systems have a maximum viscosity of 4000 SUS at 15 Deg. F. Also, the ambient temperature of the hydraulic oil should be maintained at about 90 Deg. F. when the system is to be operated.

NEUTRALIZATION NUMBER

This characteristic is used in conjunction with other factors to determine the chemical and physical changes occurring within the oil as a result of extended use and service. The neutralization number of the oil should be given by the supplier and this information put on record by the operator. The change and rate of change occurring in the neutralization value is of utmost importance. It is this rate of change which is most important, rather than the actual neutralization number on the oil.

Some additives are given a higher neutralization number than others. It is therefore recommended that your compactor service supervisor assume responsibility for periodic sampling of the oil in the system. Then laboratory analysis should be made by the supplier and the results interpreted to the opera-

tor, advising as to whether or not the oil in use is safe and satisfactory for continued service. Most reputable oil companies maintain laboratories and technical staffs which are capable of analyzing hydraulic oil samples and advising the user as to the condition of the oil. Most such oil suppliers render the service on a no-charge basis to the customer.

We recommend the use of a commercial laboratory service for analysis of routine oil samples taken on a regularly scheduled basis. The cost per sample may vary depending on the laboratory service. The most important analysis are particle count, spectrochemical analysis, water content, and viscosity.

HARRIS will provide this service upon request.

CONTAMINATION

It is estimated that as much as 70% of all hydraulic problems may be traced directly to the fluid. It is of utmost importance that all foreign matter be kept from the hydraulic oil. Invisible quantities of abrasive type contamination may cause serious pump wear, malfunctioning of pumps and valves, and sludge accumulations within the system in relatively short periods of time. Since the recommended hydraulic oils for these machines are fortified with various additives, it is essential that moisture and water be kept from the hydraulic oils and system. Additive treated oils have a definite affinity far more critical than was true in year past when only straight mineral oils were available.

Adequate evidence of the ability of the oil to prevent undue pump wear may be shown by tests conducted as per ASTM D2882 with a total weight loss of 50 mg. maximum. Other vane pump tests with varying size of pump and/or length of time will be considered on the basis of the evidence submitted.

The base oil and its compounding should provide a finish oil that will not shrink or abnormally swell hydraulic sealing elements.

A reputable lubricant supplier backed up by a reputable oil company is an assurance of obtaining high quality products, and generally speaking, higher quality is worth the higher initial cost.

RECOMMENDED HYDRAULIC FLUID

General Specifications For Hydraulic Oil
10 Weight Premium Grade Oil (45)
Non-Foaming
Anti-Wear Additives
Viscosity Index, 150
Pour Point 30°F
Flash Point 430°F

Hydraulic Oil Companies With Brand Name

Amoco	Rykon Oil 21 or AW Oil 21
Arco	AWS-215
Chevron	EP Hydraulic 46
Citgo	Pacemaker XD-46 or A/W Hydraulic 46
Exxon	Nuto H-46
Gulf	Harmony 46 AW
Mobil	DTE25
Phillips	Magnus "A" 46
Shell	Tellus 46
Sun	Sunvis 821 WR or Sunvis 747
Texaco	Rando HD 46

HYDRAULIC FLUID TESTING

Hydraulic fluid samples should be taken periodically for laboratory analysis. The actual sampling method is critical. It should be done based on ANSI Standard B93.19M(R1980). This standard is available from the National Fluid Power Association, 3333 N. Mayfair Road Milwaukee, WI 53222.

HARRIS will supply you the SAMPLE KITS, or you may obtain your own.

Samples should be placed in a clean, dry, glass bottle with a non-shedding, screw-on cap, and labeled with the date, type of fluid, model and serial number of the machine.

Two identical samples should be taken, One for laboratory analysis and one for your own preliminary analysis while you are waiting for the lab report.

After your sample has been allowed to stand for 20 to 30 minutes to allow all air bubbles to dissipate, visually inspect by holding the bottle up to the light to check for debris in the oil and whether the oil is clear or cloudy.

Any debris is an indication of a severe solid contamination problem, the source of which must be located and corrected immediately. Common sources of this kind of contamination may be component wear, unsealed reservoir covers, or dirty breather filters.

SECTION 2 - PREVENTIVE MAINTENANCE

OIL SAMPLE COLLECTION PROCEDURE

The oil sample should be collected from the inside of the tank, when the inspection covers are removed to replace the oil strainers located on the intake or suction tube of the hydraulic pump.

Dip the sample bottle into the oil, make sure not to allow contamination material to enter the tank during the process.

The results of the analysis will determine any necessary action, which may need to be taken.

If the sample is the least bit "CLOUDY", it is an indication of water contamination, the source of which must be found and eliminated immediately. Common sources are inadequate outdoor storage, unsealed reservoir covers, or condensation.

A "BLOTTER SPOT TEST" may also be performed to test for OXIDATION. Place a DROP of oil on a piece of white blotter paper. Wait 20 to 30 minutes for oil to disperse on paper. (Several sheets of blotter paper are in the back of this manual.)

NOTE:

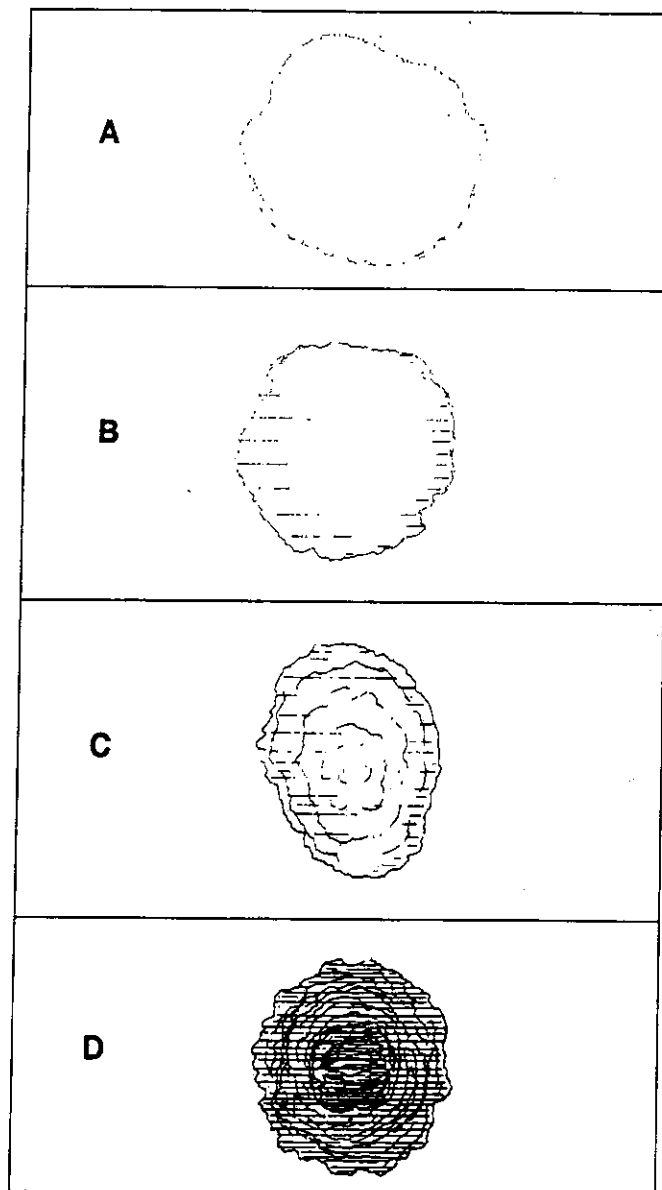
The blotter test will provide an indication that a more complete test may be necessary.

- A. If the blotter remains colorless or develops only a light yellow ring, oxidation is under control.
- B. If color develops but is uniform throughout, the oil is still serviceable but should be checked for correct additive content.
- C. If the sample shows distinct rings, the fluid should be changed.
- D. If a distinct dark spot remains in the middle, but a lighter colored oil migrates outward in the blotter paper, the oil is about to dump (or already has) sludge or other by-products into the system. The time for replacement of the fluid has already passed.

Kits are available from your supplier to test for acid content in much the same way you would test the condition of swimming pool water. A shift in acid content may indicate a breakdown in the fluid.

NOTE:

Keep accurate, dated records of all pertinent information gained from these tests.



SECTION 2 - PREVENTIVE MAINTENANCE

LUBRICATION

Scheduled lubrication is essential to keep the baler operating correctly. Insufficient lubrication will result in rapid wear and shortened service life of baler components.

When lubricating, make sure enough grease is pumped into the bearing to force out any moisture, dirt, or other abrasive material so the shaft can move freely during operation. Remove any grease build up to keep the area clean.

When applying oil, be certain the oil fully lubricates the area, wipe any excess oil from the surfaces of non-moving components so it does not collect dirt or foreign material.

ELECTRIC MOTOR BEARING LUBRICATION

The bearings are packed with grease by the motor manufacturer during assembly of the electric motor. Normally the grease supply is sufficient to last the lifetime of the motor. Where severe operating conditions exist additional lubrication may be required. Consult the motor manufacturer's manual for lubrication requirements.

LIFTING INSTRUCTIONS

Because the size and weight of many HARRIS Horizontal baler components, it is necessary to use a suitable lifting device for removal. Make sure that the lifting device, slings, chains and related hardware have the rated capacity to safely make the required lift.

CAUTION

Stand clear of any component being lifted, use a guide line if necessary for control during the lifting.

CAUTION

Due to the variations in the size of Horizontal balers manufactured, the weight ranges listed are intended to serve **ONLY AS A GUIDELINE**. If there is a question of lifting device capacity and exact weights are required contact the service dept. at HARRIS.

HARRIS Products
Box 406, Jekyll Road
Baxley, GA 31513
800-447-3526

WEIGHT (LBS)

	MIN	MAX
Platen Cylinder	1,000	15,000
Directional Valve	25	500
Electrical Motors w/pumps	200	1,600
Main	50	250
Pilot	11	200
Hydraulic Pumps	100	300
Complete Power Unit	1,500	1,500
Platen	—	—
Shear Knife	40	400

SECTION 2 - PREVENTIVE MAINTENANCE

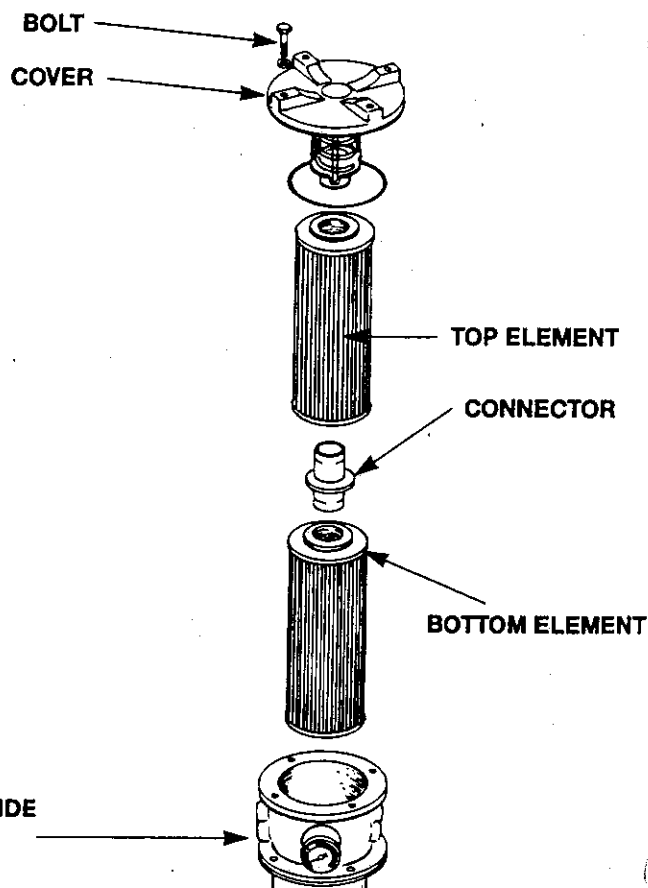
FILTER REPLACEMENT

⚠ WARNING

Never attempt to perform maintenance or service unless the baler is shut down and locked out in accordance with OSHA standards.

Make sure the oil is cool before replacing element.

1. Remove the four bolts and filter cover.
2. Remove the two filter elements and connector.
3. Clean the inside of the filter canister thoroughly with a non flammable cleaning solvent and wipe dry. Make sure there is no contamination inside the canister.
4. Place the connector on the bottom filter element and place in the canister.
5. Slide the top filter element into position and push it down on the connector.
6. Bolt the filter cover in place.
7. Check for leaks.



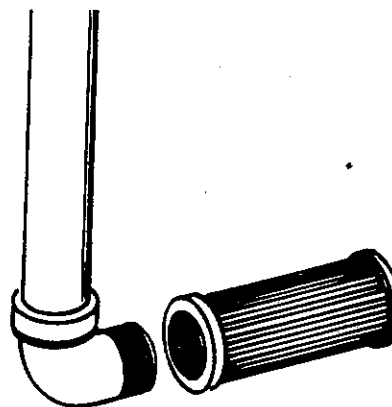
SUCTION STRAINER REPLACEMENT

⚠ WARNING

Never attempt to perform maintenance or service unless the baler is shut down and locked out in accordance with OSHA standards.

Make sure oil is cool.

1. Remove the access cover.
2. Reach down in the tank and use a pipe wrench to rotate the suction strainer counter clockwise.
3. Remove the strainer and replace with a new one.
4. Bolt the access covers in place and reseal with silicone sealant.



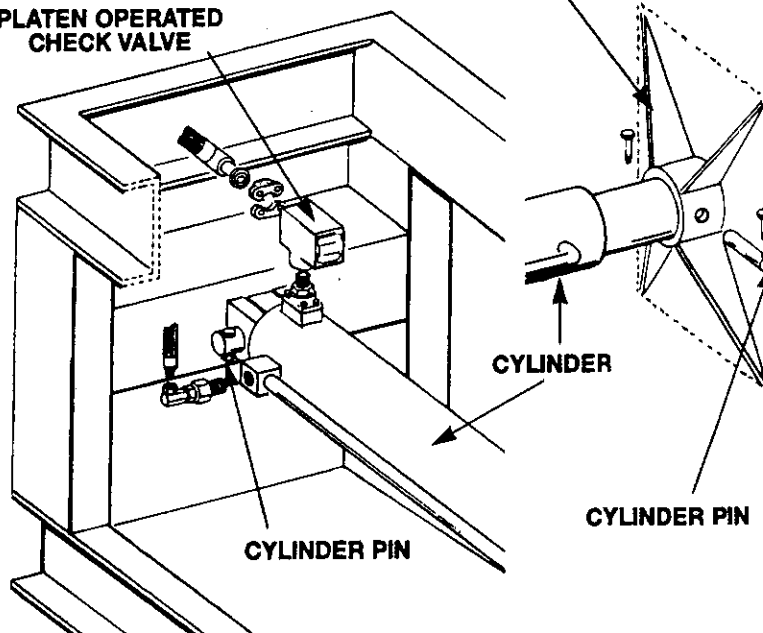
SECTION 2 - PREVENTIVE MAINTENANCE

SERVICE INSPECTION AND CLEANING REQUIREMENTS

DAILY

- A. Check behind the platen.
 - Baler floor clean if necessary.
 - Limit switches, cam bars, remove any foreign material.
 - Check cylinder and fittings for fluid leaks.
- B. Inserter
 - check inserter bars for damage.
 - Check inserter needles and rollers, make sure rollers move freely.
 - Check inside inserter frame, clean out if necessary.
 - Check inserter drive assembly, clean out if necessary.
- C. Baler Work Area
 - Sweep floor and clean area around baler.
 - Make sure the bale eject area is clean.
- D. Power Unit.
 - Check pumps, valves, fittings, and hoses for fluid leaks.
- E. Twister
 - Swing twister out, inspect twister hooks for damage.
 - Check for material buildup.
 - Make sure wire guide rollers are moving freely.
- F. Bale Counter
 - Make sure counter wheel and switch are free to operate correctly.

PLATEN OPERATED
CHECK VALVE



WEEKLY

- A. Clean off power unit using broom and forced air.
- B. Clean out fins on oil cooler using forced air.
- C. Check cylinder pins & bolts.
- D. Check platen cylinder rod for damage nicks and abrasions.
- E. Check platen hold down adjustment.
- F. Inspect baler floor for gouging or heavy abrasion.
- G. Inserter gear box fluid level.
- H. Twister gear box fluid level.

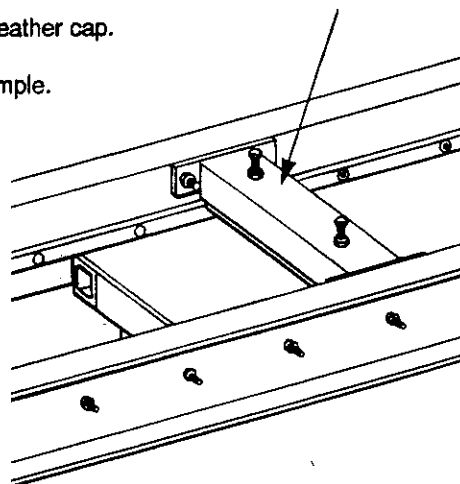
MONTHLY

- A. Clean off power unit using broom and forced air.
- B. Check platen guide bar clearance.
- C. Check platen wear strips by measuring.
 - Knife clearance $1/64"$ to $3/16"$.
 - Replace wear strips if knife clearance exceeds $3/16"$.

SEMI-ANNUAL

- A. Replace oil filter.
- B. Replace oil strainer.
- C. Replace breather cap.
- D. Take oil sample.

PLATEN HOLD DOWN

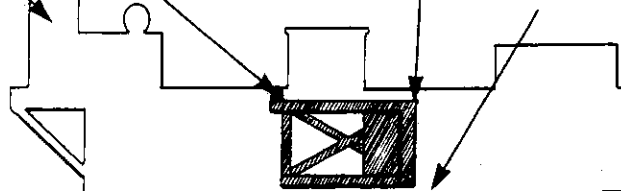


POWER UNIT

PLATEN HOLD DOWN

PLATEN

BALER FLOOR



SECTION 2 - PREVENTIVE MAINTENANCE

SECTION 3 - ADJUSTMENTS

PLATEN HOLD DOWN ADJUSTMENT

The platen hold-down is located on the back side of the feed hopper. The hold down keeps the rear of the platen from raising up during compaction, preventing the front of the platen from pushing down, damaging the baler floor.

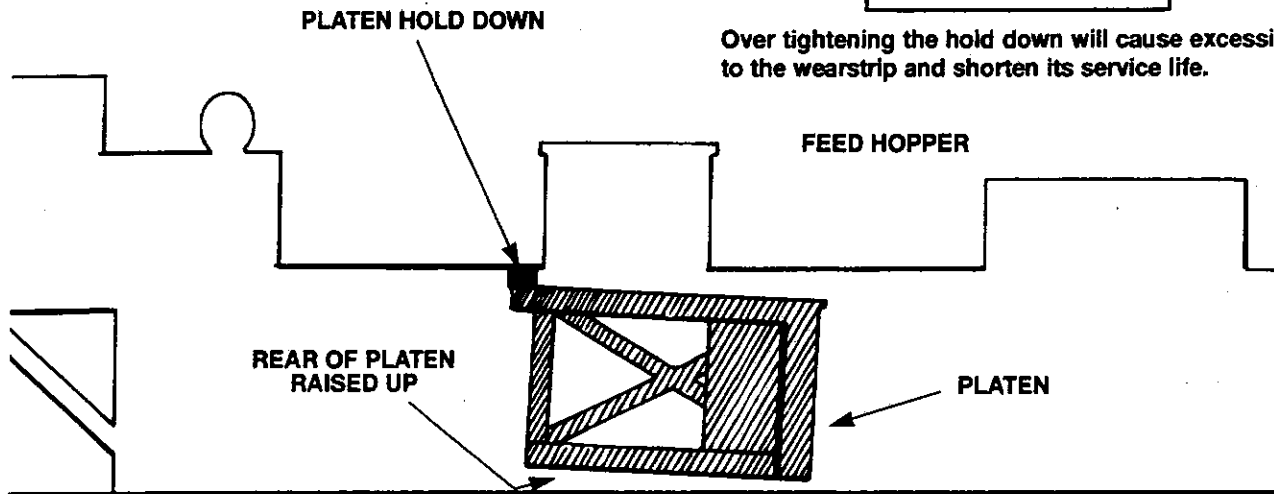
Maintaining correct adjustment of the hold-down is necessary for proper baler operation.

As normal wear occurs during operation, wear strips on the platen and platen hold-down gradually wear away, when this happens adjustment of the hold down is required.

To Make the adjustment extend the platen to the full forward position and shut the baler down.

CAUTION

Over tightening the hold down will cause excessive wear to the wearstrip and shorten its service life.



1. Loosen lock nuts on the platen hold-down adjustment bolts.
2. Turn the adjustment bolts clockwise to tighten the hold-down.

WARNING

Never attempt to make an adjustment unless the baler is shut down and locked out in accordance with OSHA standards.

NOTE:

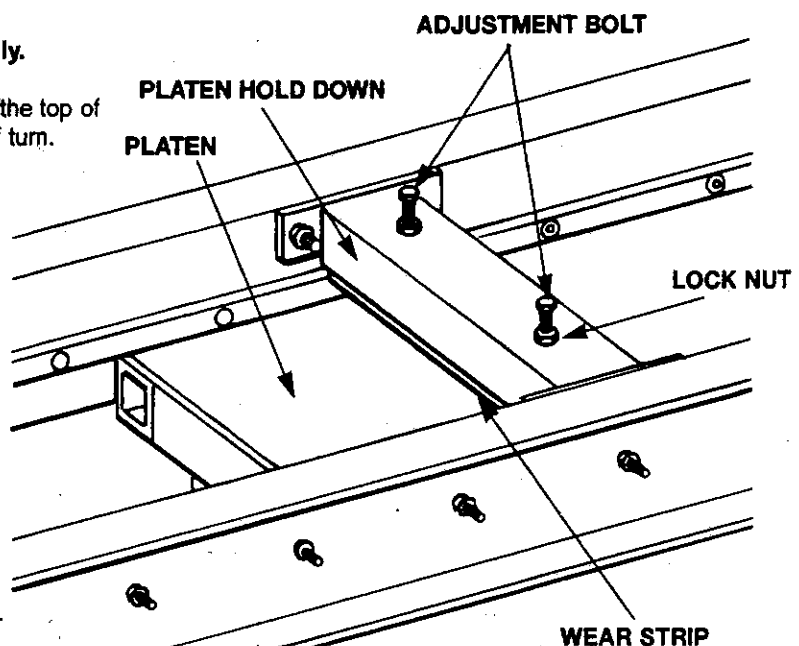
Make sure both bolts are adjusted equally.

3. Adjust the hold-down so it makes contact with the top of the platen, rotate the bolt an additional one half turn.
4. Tighten lock nuts.
5. Start up the baler using the proper procedure and observe the platen as it moves forward compacting material.

NOTE:

If the rear of the platen raises up the hold-down needs to be tightened more.

6. If the bolts are fully tightened down and the platen continues to push up it will be necessary to replace the platen hold-down wear strip and possibly the platen wear strips to prevent machine damage.



SECTION 3 - ADJUSTMENTS

HYDRAULIC SYSTEM PRESSURE ADJUSTMENT

1. Loosen the lock nut under the adjustment knob.
2. Rotate the adjustment knob counter clockwise, reducing the pressure.

NOTE:

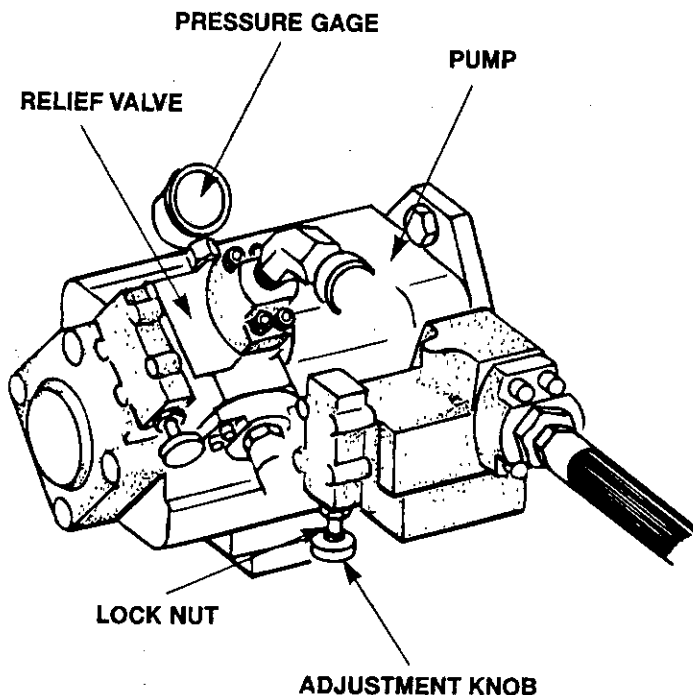
Any pressure adjustment must be made by "RAISING" the pressure.

3. Set the baler in the manual mode and move the platen to the full forward position.

NOTE:

It will take two people to make the adjustment. One to operate the controls and one to set the pressure.

4. Depress and hold the "PLATEN FORWARD" button.
5. Observe relief valve pressure gage.
6. Rotate the adjustment knob clockwise increasing the pressure to the correct PSI setting as called for on the hydraulic schematic.
7. Secure the adjustment knob by tightening the locking nut.



UNLOADING VALVE PRESSURE ADJUSTMENT

(For Machines without poppet block)

1. Set the hydraulic system pressure relief valve at the correct PSI setting as called for on the hydraulic schematic, as described in the HYDRAULIC SYSTEM PRESSURE ADJUSTMENT Procedure.
2. Loosen the lock nut under the adjustment knob on the unloading valve.
3. Rotate the adjustment knob counter clockwise reducing the unloading pressure.
4. Set the baler in the manual mode and move the platen to the full forward position.

NOTE:

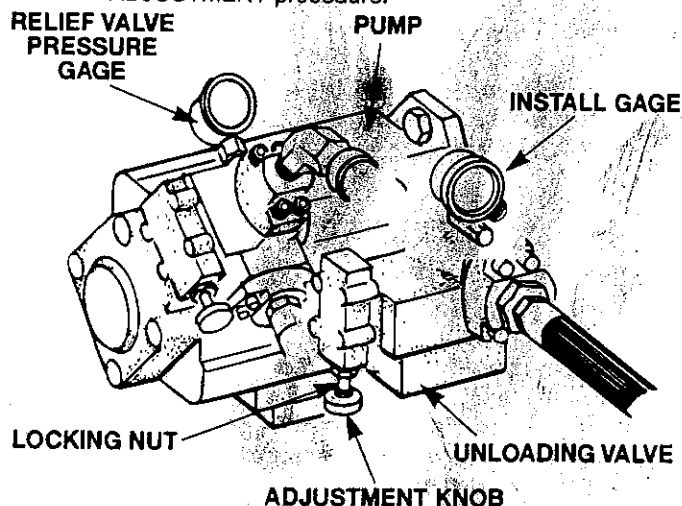
It will take two people to make the adjustment. One to operate the controls and one to set the pressure.

5. Install a pressure gage in the test port as shown.
6. Depress and hold the "PLATEN FORWARD" button.
7. Observe the pressure gage on the relief valve.
8. Rotate the adjustment knob on the unloading valve clockwise increasing the pressure to the correct PSI setting as called for on the hydraulic schematic.

NOTE:

Any pressure adjustment must be made by "RAISING" the pressure.

9. Secure the adjustment knob by tightening the locking nut.
10. Return the hydraulic system pressure to the correct PSI setting as called for on the hydraulic schematic as described in the HYDRAULIC SYSTEM PRESSURE ADJUSTMENT procedure.



SECTION 3 - ADJUSTMENTS

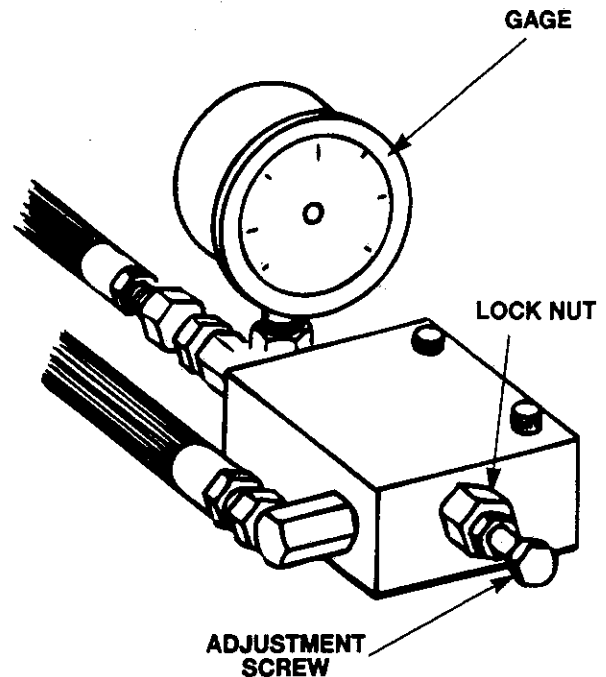
PILOT PRESSURE ADJUSTMENT

1. Loosen the lock nut under the adjustment screw.
2. Rotate the adjustment screw counter clockwise to reduce the pressure.

NOTE:]

Any pressure adjustment must be made by "RAISING" the pressure.

3. Observe the pilot pressure gage.
4. Rotate the adjustment screw clockwise increasing the pressure to the correct PSI setting as called for on the hydraulic schematic.
5. Secure the adjustment screw by tightening the lock nut.

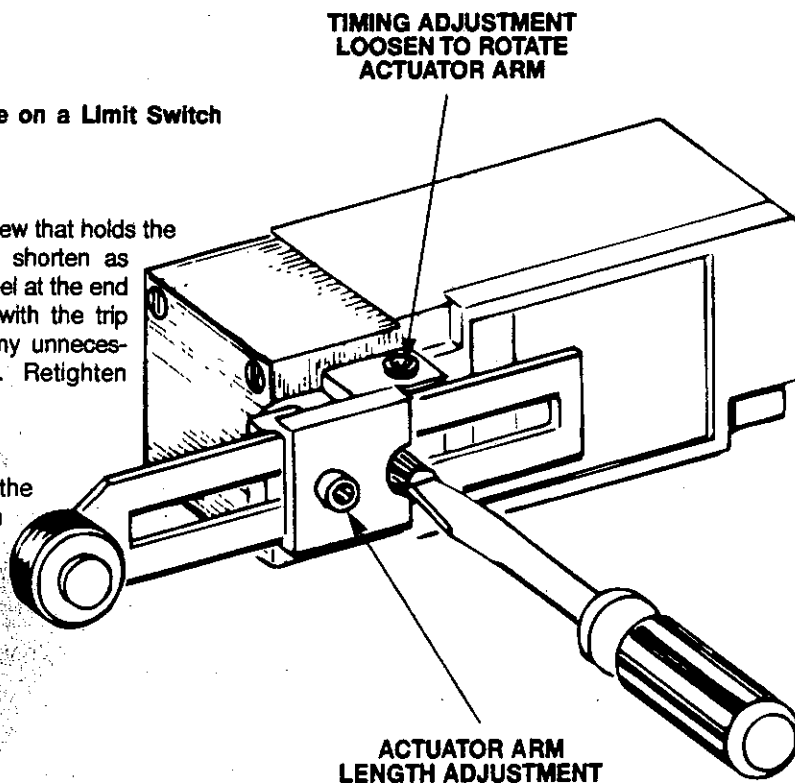


LIMIT SWITCHES

NOTE:

There are 2 adjustments to be made on a Limit Switch after installation is complete.

- A. Length of the actuator arm.
 1. Loosen the socket head capscrew that holds the arm shaft clamp, lengthen or shorten as necessary, so that only the wheel at the end of the arm comes in contact with the trip mechanism. That minimizes any unnecessary wear to actuator arm. Retighten setscrews.
- B. Adjusting timing.
 1. Determine which direction the switch should be adjusted, then loosen the shaft clamp screw, (SEE ILLUSTRATION) rotate the shaft and retighten screw.



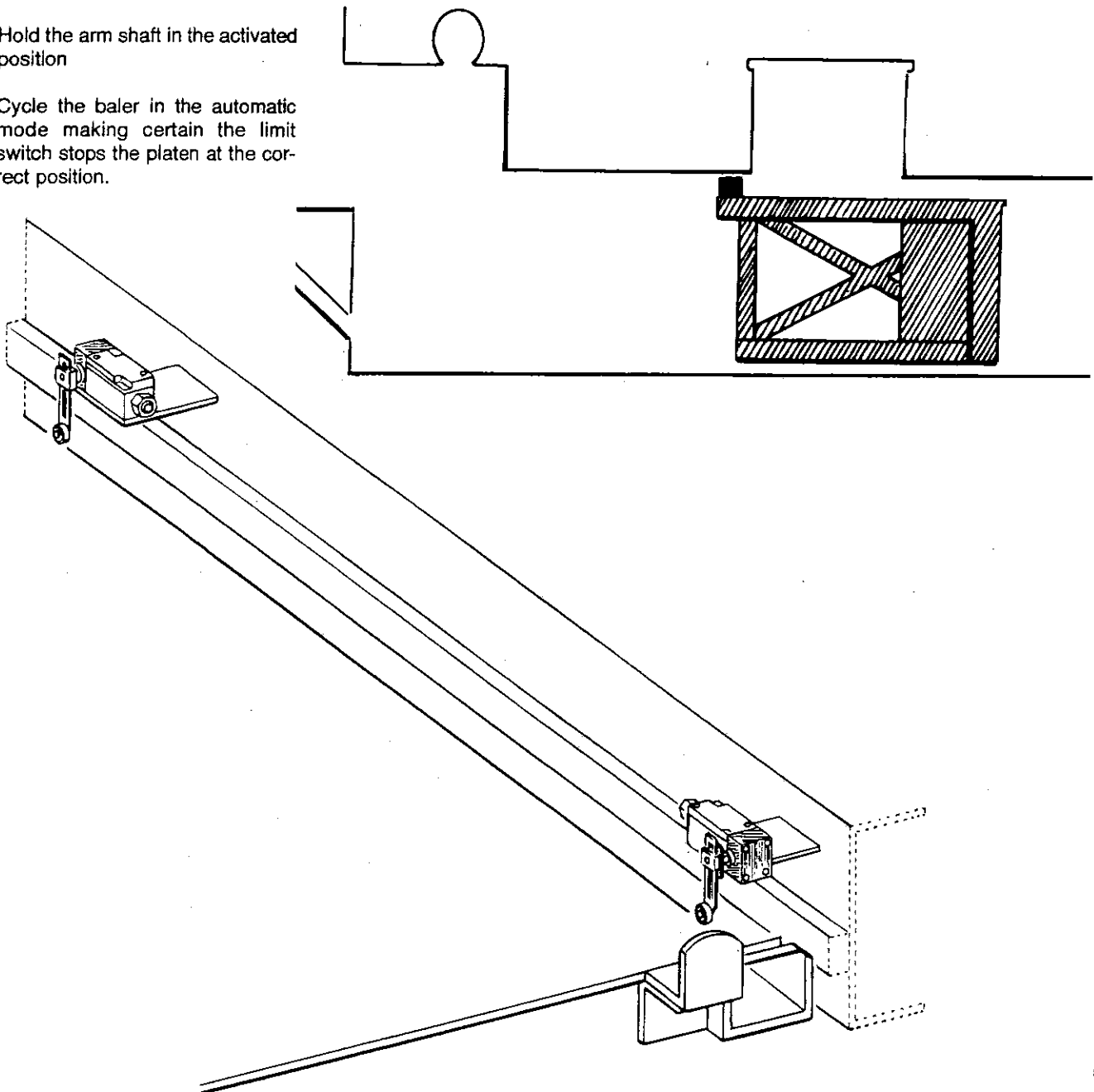
SECTION 3 - ADJUSTMENTS

PLATEN RETRACT STOP LIMIT SWITCH ADJUSTMENT

⚠ WARNING

Never attempt to make an adjustment unless the baler is shut down locked out in accordance with OSHA standards.

1. Set the baler in the manual mode. Retract the platen so the front of the platen is flush with the rear edge of the feed hopper. Shut the baler down.
2. Loosen the setscrew on the actuator arm and position the actuator on the cam as shown.
3. Insert a screwdriver in the slot on the arm shaft. Rotate the shaft until you hear the switch click. this indicates the switch is activated.
4. Hold the arm shaft in the activated position
5. Cycle the baler in the automatic mode making certain the limit switch stops the platen at the correct position.



LS-2 PLATEN FORWARD STOP LIMIT SWITCH ADJUSTMENT

NOTE:

LS-2 is used to stop the Platen Forward and Reverse its direction in the automatic baling mode.

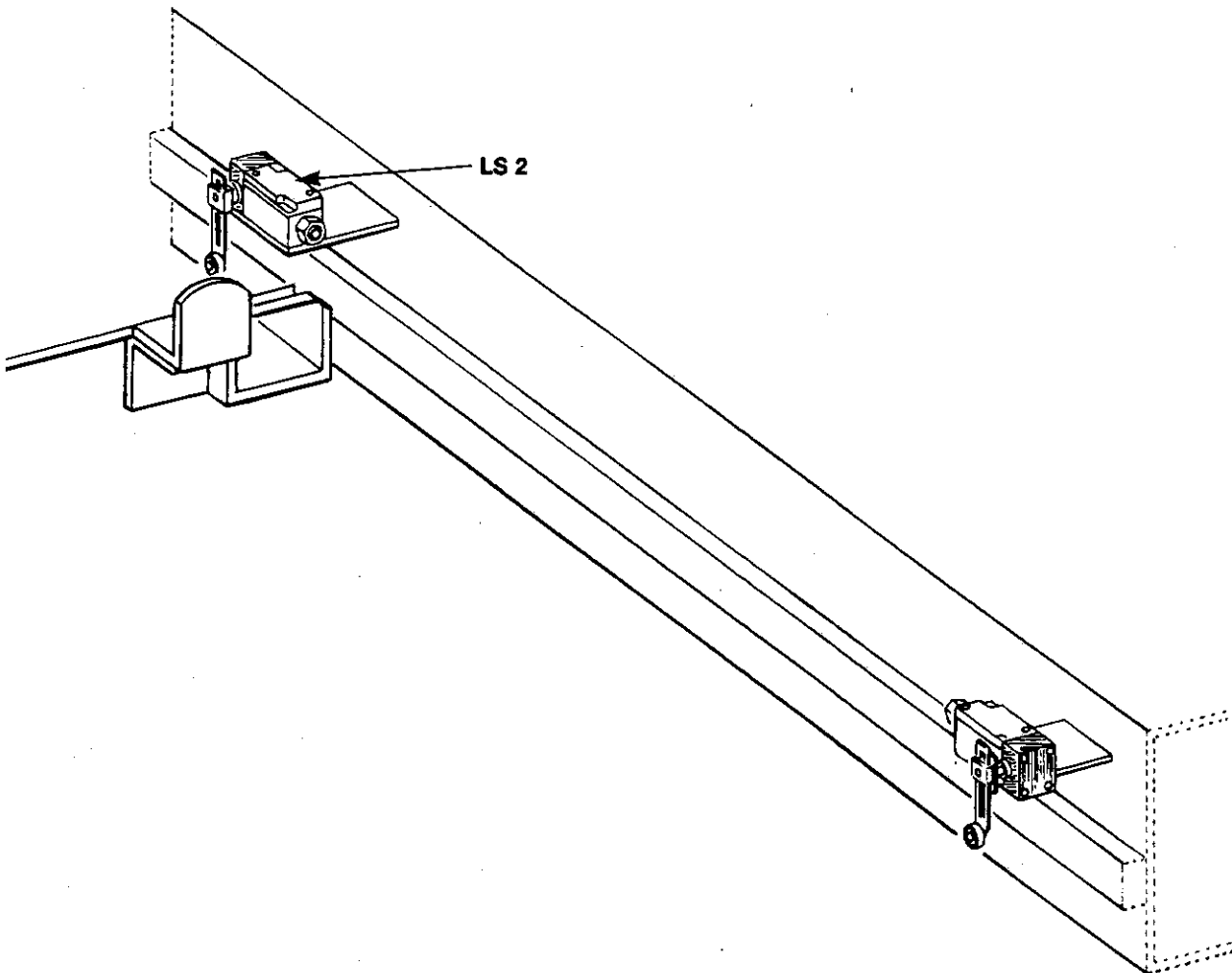
1. Set the baler in the "MANUAL" mode. Slowly extend the main ram to the full forward position with the cylinder fully extended.
2. Shut the baler down. Remove the top cover exposing the limit switches. Make a mark on the main ram and guide bar.
3. Start the baler and retract the platen 3". Shut the baler down.
4. Loosen the set screws on the actuator arm and position the actuator on the cam, as shown.

5. Insert a screwdriver in the slot on the arm shaft. Rotate the shaft until you hear the switch click. This indicates the switch is activated.

⚠ WARNING

Never attempt to make an adjustment unless the baler is shut down and locked out in accordance with OSHA standards.

6. Hold the arm shaft in the activated position and tighten the arm shaft set screw. Tighten the arm length set screw.
7. Cycle the baler in the automatic mode, making certain the limit switch stops the ram at the correct position. Make sure the cylinder does not bottom out.



SECTION 3 - ADJUSTMENTS

PRESSURE SWITCH ADJUSTMENT

1. Remove the cover plate, loosen the lock screw and rotate the adjustment nut clockwise to the full down or above the desired pressure setting.

NOTE:

The further down the adjustment nut is turned, the higher the pressure required to activate the switch.

2. Set the pump relief "Hydraulic System Pressure" at the desired pressure for the pressure switch to be activated. The hydraulic system pressure should be set between 1800 and 2000 PSI for the pressure switch adjustment.

NOTE:

Refer to the "Hydraulic System Pressure Adjustment" section in this manual for the correct procedure.

3. Depress and hold the "Platen Forward" pushbutton.

NOTE:

There are two types of control systems. If the baler is equipped with a SLC-150 control system, the procedure is different than machines with a relay system.

4. Relay system

Rotate the pressure switch counter clockwise until the TR-2 timer is activated. The solenoid and timer are located inside the main electrical panel. The solenoid will make a distinct click sound when it activates. Stop rotating the pressure switch adjustment nut when the click is heard.

SLC-150 System

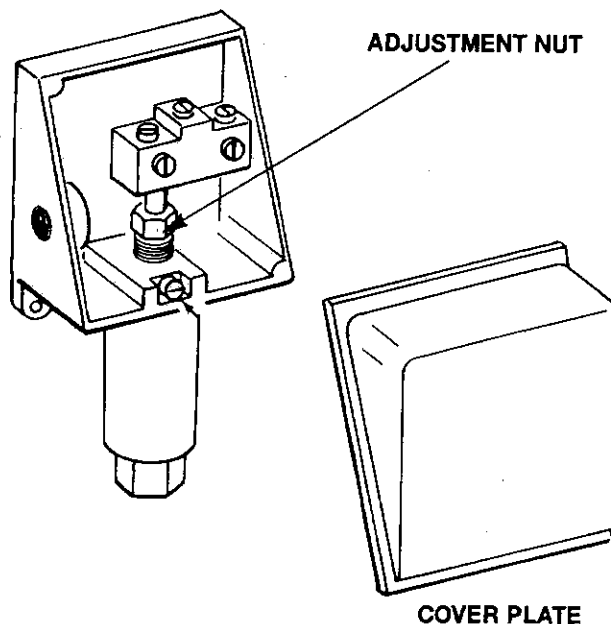
Rotate the pressure switch adjustment nut counter clockwise until the Input Light Number 103 comes on. The light will come on when the pressure switch is at the desired pressure.

NOTE:

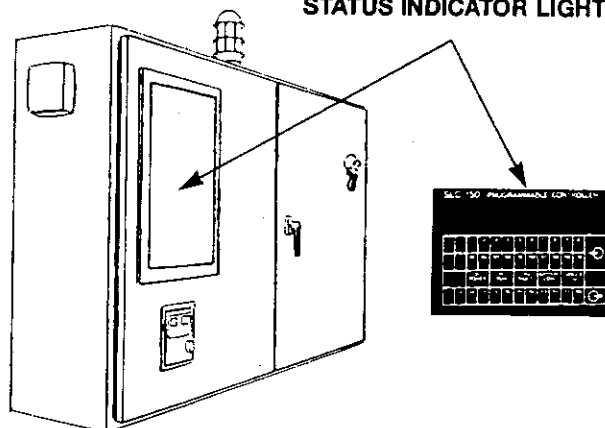
The light is on the SLC-150 module inside the main electrical panel and can be seen by looking through the window. It is not necessary to open the panel.

5. Re-adjust the hydraulic system pressure to the correct pressure setting as described in the Hydraulic System Pressure Adjustment section.
6. Tighten the lock screw and replace the cover on the pressure switch.

PRESSURE SWITCH



STATUS INDICATOR LIGHT



SECTION 3 - ADJUSTMENTS

PROCESSOR UNIT - SLC 150

TERMS YOU NEED TO KNOW

1. a) Incoming line wiring terminals. b) Wiring terminals for 20 inputs. Self-lifting pressure plates allow for easy wire insertion and secure connections. Terminals accept two #14 AWG wires. The hinged cover (shown in the open position) has write-on areas for identification of external circuits. The terminal block is removable for easy processor unit replacement. Terminal block removal:
2. Wiring terminals for 12 outputs. The removable terminal block has the same construction as the line-input terminal block. Hinged cover (shown in the open position) has write-on areas.
3. Color patch. Red, black, blue, green, purple or yellow. Identifies the 6 processor unit versions.
4. Five red LED diagnostic indicators:

DC POWER - Indicates that the processor unit is energized and DC power is being supplied.

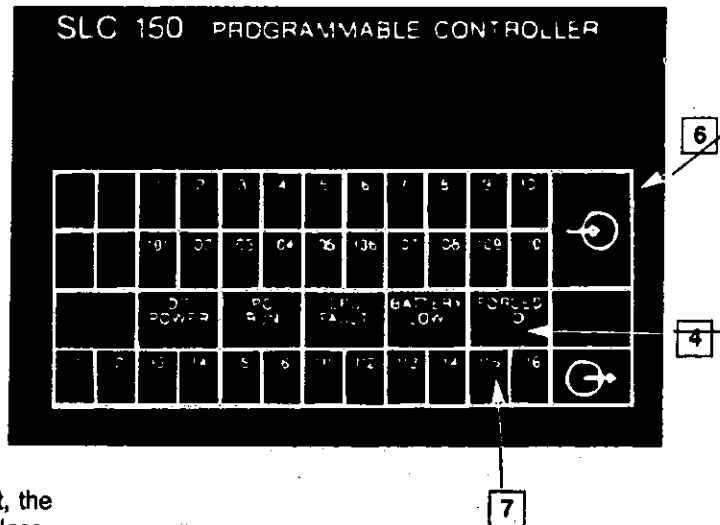
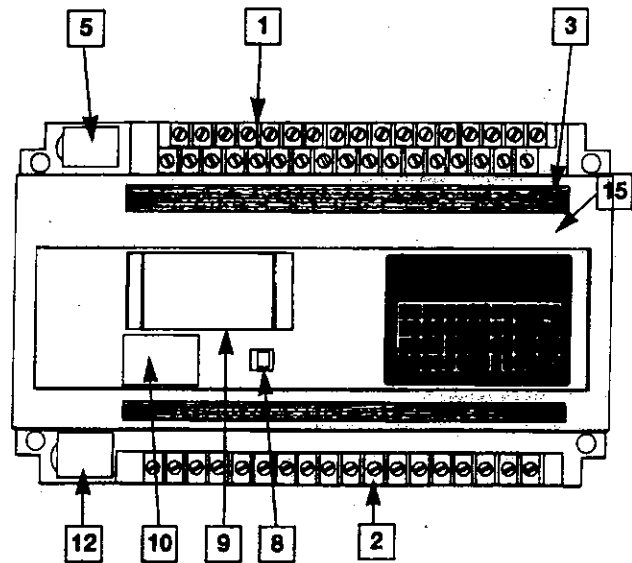
PC RUN - Indicates that the processor unit is in the Run mode.

CPU FAULT - Indicates the processor has detected an error in either the CPU or memory. Operation is automatically stopped.

BATTERY LOW - an optional battery provides back-up power for the CMOS RAM memory. This LED alerts you when the battery voltage level has fallen below a threshold level.

FORCED I/O - Indicates that one or more input or output addresses have been forced to an ON or OFF state.

5. Input power fuse compartment. If the terminal voltage is present but the DC POWER LED is not lit, the fuse may be blown. Refer to Page 17 for fuse replacement procedure.
6. Input status indicators. Twenty red LEDs, identified with address numbers 1 thru 10 and 101 thru 110, corresponding to numbers below the input wiring terminals. When an input circuit is energized, the corresponding status indicator will be lit.
7. Output status indicators. Twelve red LEDs, identified with address numbers 11 thru 16 and 111 thru 116, corresponding to numbers above the output wiring terminals. When a programmed output instruction is TRUE, the corresponding output circuit will be energized.



8. Auto/Manual switch. This switch controls restarting of the processor unit after a power loss or brown-out.

Auto-on power-up, the processor runs thru its normal diagnostic tests and then automatically enters the Run mode (if it was in the Run mode at the last power-down).

Manual-On power-up, the processor runs thru its diagnostic tests but will not enter the Run mode. To enter the Run mode, you must move the switch to the auto position or use the pocket programmer (or personal computer).

SECTION 3 - ADJUSTMENTS

9. EEPROM memory module compartment. The optional memory module can be plugged into the processor. (Cat. No. is 1745-M1.SLC 150 processor. requires a Series B module or a Series A module having a 28-pin chip.) The pocket programmer or personal computer software allows you to store your processor RAM program in the EEPROM. You can also load a program from the EEPROM into the processor RAM. In addition, the processor unit has an Auto-Load feature.

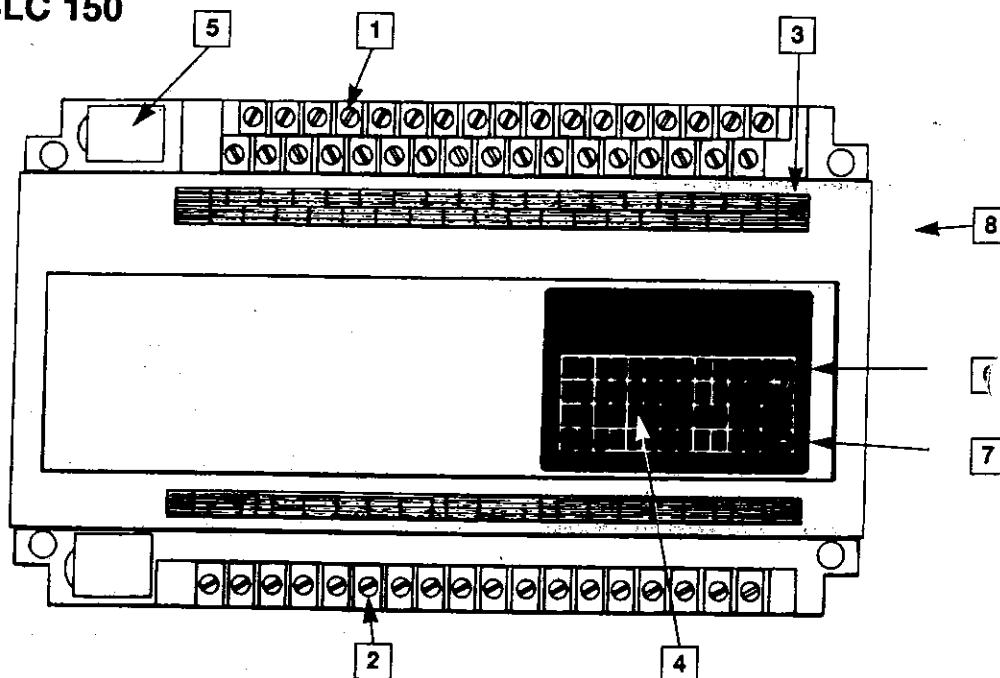
Further details on using the EEPROM module are found in the SLC programmable Controller User's Manual and in Publication 1745-2.4.

10. Communication port. The pocket programmer, interface converter, or TCAT cable is plugged into this socket.

11. Socket for connecting an expansion unit or high speed input module. We've included a 20-pin to 10-pin ribbon cable with the processor unit. **Save this cable.** You will need it if you want to connect an I/O expansion unit to the processor unit or if you want to connect both a high speed input module and an expansion unit.

12. Battery compartment. An optional battery assembly can be installed in this compartment. This will provide a typical 2-3 year back-up power for the CMOS RAM memory.

EXPANSION UNIT - SLC 150



TERMS YOU NEED TO KNOW

1. a) Incoming line wiring terminals. b) Wiring terminals for 20 inputs. Self-lifting pressure plates allow for easy wire insertion and secure connections. Terminals accept two #14 AWG wires. The hinged cover (shown in the open position) has write-on areas for identification of external circuits. The terminal block is removable for easy expansion unit replacement. Terminal Block Removal:
2. Wiring terminals for 12 outputs. The removable terminal block has the same construction as the line-input terminal block. Hinged cover (shown in the open position) has write-on areas.
3. Color patch. Red, black, blue, green, purple, or yellow. Identifies the 6 expansion unit versions.
4. Diagnostic indicator: DC POWER - Indicates that the expansion unit is energized and DC power is being supplied.
5. Input power fuse compartment. If line terminal voltage is present but the DC POWER LED is not lit, the fuse may be blown.
6. Input status indicators. Twenty red LEDs, identified with address numbers A01 thru A10 and B1 thru B10, corresponding to numbers below the input wiring terminals. When an input circuit is energized, the corresponding status indicator will be lit.
7. Output status indicators. Twelve red LEDs, identified with address numbers A11 thru A16 and B11 thru B16, corresponding to numbers above the output wiring terminals. When a programmed output instruction is TRUE, the corresponding output circuit will be energized.
8. Expansion unit connection. Hinged cover is shown open. The expansion unit is interconnected with the processor unit and other expansion units via ribbon cable.

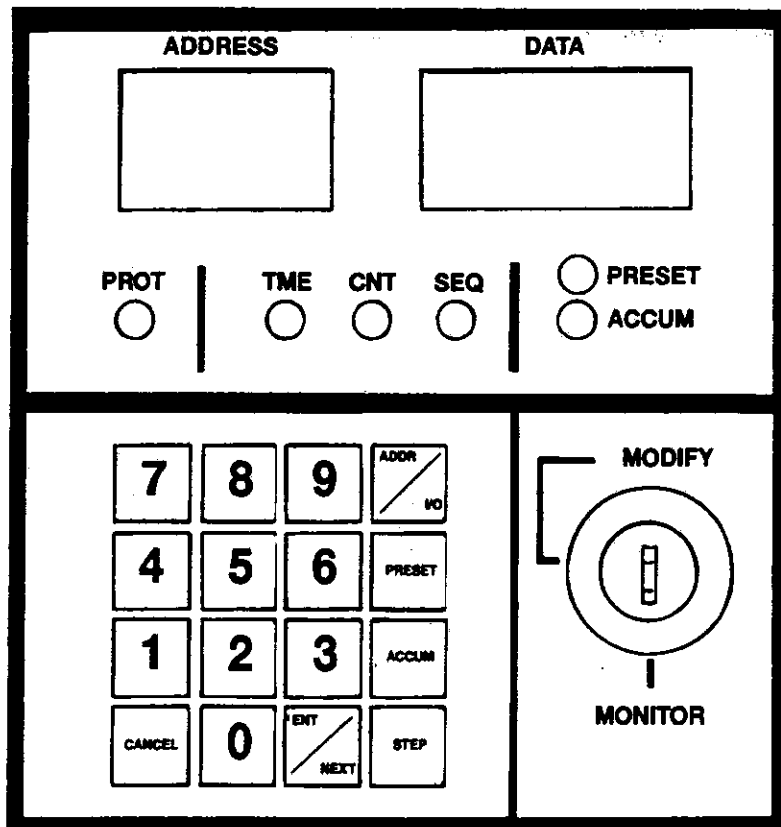
BALE COMPLETE TIME DELAY

This time delay is used to adjust bale density, it controls the amount of time the bale is held under pressure before the machine shuts down, when the bale is complete. Longer delay times will raise the bale density on some materials.

The bale complete time delay may be set from one to ten seconds. Longer delay times will not improve bale density and lower the bale production rate. Generally more delay time is required for aluminum cans and plastics, less time is required for newsprint and high grade paper.

BALE COMPLETE TIME DELAY ADJUSTMENT PROCEDURE (TCAT)

1. Open the cover, insert the control key and rotate the switch to "MODIFY" position.
2. Press the address key on the keyboard. The number "9" and two lines will appear flashing in the address display.
3. Press "0", press "1", press "ENTER". The address display will read 901. The Time and Accum indicator lights will come on.
4. Press "PRESET" on the keyboard. The preset time will appear on the data display. Example: three seconds = 3.0. The preset indicator light will also come on.
5. Press "PRESET" on the keyboard. Four lines will appear, flashing in the data display.
6. Enter the desired amount of time using the keyboard number keys. Example: four seconds = 004.0. The numbers will flash 4.0.
7. Press "ENTER", the numbers will stop flashing.
8. Rotate the control key to "MONITOR", remove the key and replace the cover.



SECTION 3 - ADJUSTMENTS

PLATEN FORWARD DELAY TIME ADJUSTMENT PROCEDURE (TCAT)

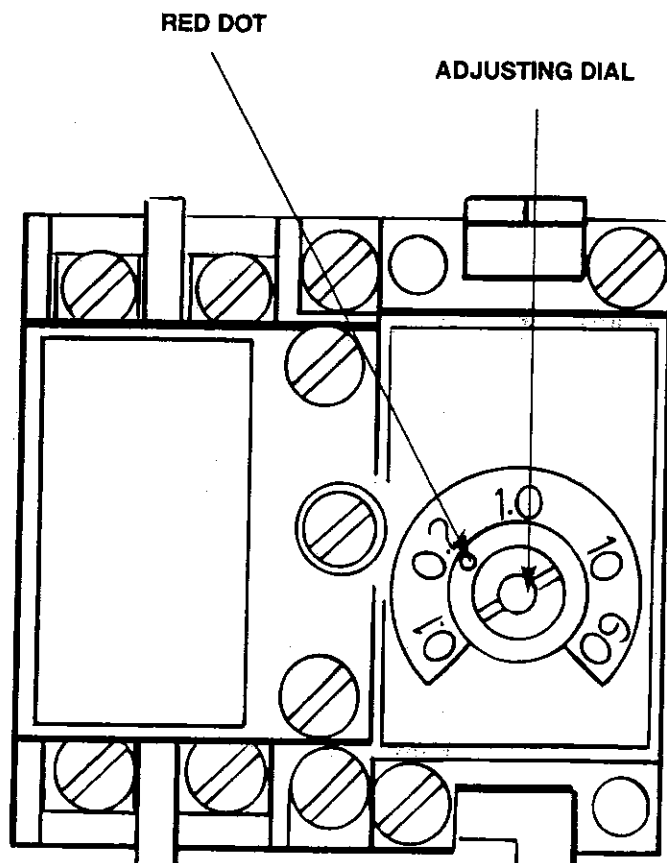
1. Open the cover, insert the control key and rotate the switch to "MODIFY" position.
2. Press the address key on the keyboard. The number "9" and two lines will appear flashing in the address display.
3. Press "0", press "2", press "ENTER". The address display will read 902. The Time and Accum indicator lights will come on.
4. Press "PRESET" on the keyboard. The preset time will appear on the data display. Example: three seconds = 3.0. The preset indicator light will also come on.
5. Press "PRESET" on the keyboard. Four lines will appear, flashing in the data display.
6. Enter the desired amount of time using the keyboard number keys. Example: four seconds = 004.0. The numbers will flash 4.0.
7. Press "ENTER", the numbers will stop flashing.
8. Rotate the control key to "MONITOR", remove the key and replace the cover.

PLATEN FORWARD TIME DELAY ADJUSTMENT PROCEDURE (RELAY)

⚠ DANGER

HIGH VOLTAGE - Do not open the electrical panel unless the main power is off and locked out/tagged out in accordance with OSHA

1. Locate the CRT-1 Relay in the main electrical panel.
2. The adjusting dial on the Relay is located on the right side. There is a red dot on the dial to indicate the time setting.
3. Rotate the dial clockwise to increase, counter clockwise to decrease, to the desired time delay setting.



SECTION 4 - TROUBLESHOOTING

This section contains an outline for assisting service personnel in tracking down the cause when a baler develops a problem. The problem is listed along with a list of possible causes. A brief corrective action is given to assist in correcting the situation.

⚠ WARNING

Before attempting to take any corrective action, make sure all safety precautions are taken. Never attempt to enter the baler or make an adjustment unless the baler is shut down and locked out in accordance with OSHA standards.

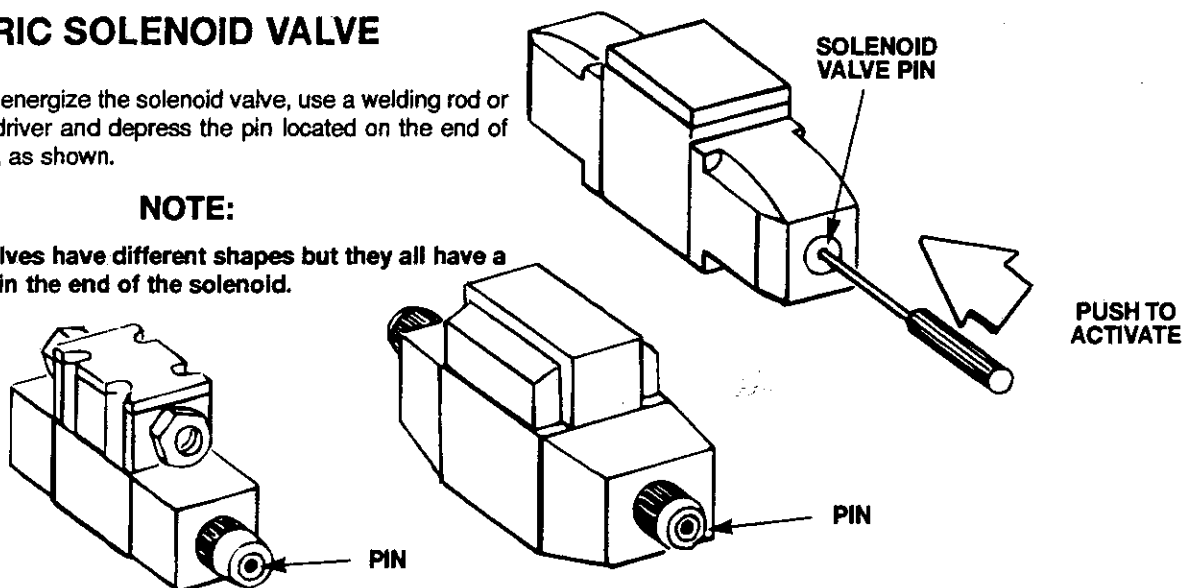
In the event that all checks are made and the problem cannot be corrected, contact the Harris Service Department at 1-800-447-3526.

ELECTRIC SOLENOID VALVE

To manually energize the solenoid valve, use a welding rod or small screwdriver and depress the pin located on the end of the solenoid, as shown.

NOTE:

Solenoid valves have different shapes but they all have a pin located in the end of the solenoid.



TEST FOR INTERNAL LEAKAGE OF CYLINDER

NOTE:

This test applies to all cylinders. The method used in blocking the rod will be different.

1. Set baler on manual mode.
2. Extend the piston rod to approximately 1/2 of the rod travel distance and shut baler down.

⚠ WARNING

Never attempt to perform service or repairs unless the baler is shut down and locked out in accordance with OSHA standards.

3. Block the piston rod to prevent it from moving forward. This can be done by blocking between the ram head and the baler wall.
4. Press the Platen Forward Push Button and hold. If the pressure gauge reading is considerably less than the specified operating pressure of the baler, internal leakage is possible.
5. If the pressure reading was low and the cylinder has internal leakage, there will be a rushing or spraying sound (like a water fall) caused by oil escaping past the packing ring (or piston seals on smaller cylinders).

SECTION 4 - TROUBLESHOOTING

MAIN MOTOR(S) WILL NOT START

POSSIBLE CAUSE	CORRECTIVE ACTION
A. No incoming power	1. Check Main Power Switch
B. Emergency stop button depressed	1. Pull button out.
C. Safety interlock switch	1. Check hopper door.
D. Motor overload tripped	1. Reset overload on motor starter. 2. Check current load (AMPS).
E. Electrical circuit malfunction	1. Perform electrical system continuity check.

PUMP NOISE

POSSIBLE CAUSE	CORRECTIVE ACTION
A. Oil level low in reservoir	1. Check oil fluid level; add if necessary.
B. Air leakage in oil intake	1. Check suction tube for broken seal. 2. Check vacuum indicator located on oil filter. 3. Pump shaft seal.
C. Worn pump	1. Repair or replace pump

MAXIMUM HYDRAULIC PRESSURE NOT OBTAINED

POSSIBLE CAUSE	CORRECTIVE ACTION
A. Pressure relief set to low or defective (PSI).	1. Check relief valve for pressure setting (2200 PSI). 2. Reset pressure if necessary. 3. Replace if necessary.
B. Cylinder bypass	1. Check for internal cylinder leakage.
C. Worn pump	1. Repair or replace pump.
D. Check valve on unloading valve	1. Repair or replace.
E. Solenoid Valve leaking	1. Repair or replace.

SECTION 4 - TROUBLESHOOTING

PLATEN WILL NOT MOVE FORWARD

POSSIBLE CAUSE	CORRECTIVE ACTION
A. LS-2 limit switch malfunction	<ol style="list-style-type: none"> 1. See if material is causing a false signal. 2. Perform continuity check on limit switch.
B. Photo cell malfunction (Auto Mode)	<ol style="list-style-type: none"> 1. Refer to STI manual.
NOTE: Set baler on manual mode. (manually shift solenoid as a starting point to locate malfunction.) If the manually shifted solenoid activates the function, the problems should be in solenoid or the electrical circuit.	
C. Solenoid valve malfunction	<ol style="list-style-type: none"> 1. Valve spool not moving. 2. Insufficient pilot pressure.
D. Electrical circuit malfunction	<ol style="list-style-type: none"> 1. Perform electrical circuit continuity check.
E. Cylinder bypass	<ol style="list-style-type: none"> 1. Check for internal cylinder leakage.

PLATEN WILL NOT RETRACT

POSSIBLE CAUSE	CORRECTIVE ACTION
A. LS-1 Limit switch malfunction	<ol style="list-style-type: none"> 1. See if material is causing a false signal. 2. Perform continuity check on limit switch.
B. Photo cell malfunction (Auto Mode)	<ol style="list-style-type: none"> 1. Refer to STI manual.
NOTE: Set baler on manual mode. (manually shift solenoid as a starting point to locate malfunction.) If the manually shifted solenoid activates the function, the problems should be in solenoid or the electrical circuit.	
C. Solenoid Valve malfunction	<ol style="list-style-type: none"> 1. Valve spool not moving 2. Insufficient pilot pressure.
D. Electrical circuit malfunction.	<ol style="list-style-type: none"> 1. Perform electrical circuit continuity check.
E. Cylinder bypass	<ol style="list-style-type: none"> 1. Check for internal cylinder leakage.
F. Cylinder rod pin missing	<ol style="list-style-type: none"> 1. See if cylinder rod is retracting. 2. Replace cylinder pin.
G. Wire tie selector switch on manual	<ol style="list-style-type: none"> 1. Move selector switch to auto.
H. Pilot operated check valve malfunction	<ol style="list-style-type: none"> 1. Check pilot pressure to valve. 2. Replace valve

SECTION 4 - TROUBLESHOOTING

BALE WILL NOT EJECT

POSSIBLE CAUSE	CORRECTIVE ACTION
A. Jam at shear knife	1. Look inside hopper. Refer to unjamming procedure in this manual if there is a jam.
B. Low system pressure	1. Check pressure gage on relief valve; adjust if necessary.
C. Bale tension pressure too high	1. Modular control valve malfunction.

MACHINE FALSE CYCLES IN AUTO MODE

POSSIBLE CAUSE	CORRECTIVE ACTION
A. Excessive dirt build up on sensor unit	1. Inspect and clean sensor unit inside feed hopper.
B. Material blocking sensor unit	1. Check feed hopper for bridging material or foreign material covering sensor unit
C. Sensor unit malfunction	1. Refer to sensor unit manual for troubleshooting procedure.

BALE EXIT DOOR WILL NOT OPEN

POSSIBLE CAUSE	CORRECTIVE ACTION
A. Platen not fully retracted	1. Check for material build up behind platen, clean, if required. 2. Manually retract platen.
B. Solenoid Valve SOL 3 malfunction	1. Valve spool not moving. 2. Insufficient pilot pressure
C. Limit switch LS1 malfunction	1. See if material is causing false signal 2. Perform continuity check on limit switch.
D. Electrical Circuit malfunction	1. Check door open switch 2. Perform electrical circuit continuity check
E. Cylinder bypass	1. Check for internal cylinder leakage
F. Hydraulic circuit malfunction	1. Check relief valve for correct operating pressure.

SECTION 4 - TROUBLESHOOTING

BALE EXIT DOOR WILL NOT CLOSE

POSSIBLE CAUSE	CORRECTIVE ACTION
A. Platen not fully retracted	1. Check for material build up behind platen, clean if required.
B. Solenoid valve malfunction SOL 4	1. Valve spool not moving 2. Insufficient pilot pressure
C. Electrical circuit malfunction	1. Check door close switches 2. Perform electrical circuit continuity check.
D. Cylinder bypass	1. Check for internal leakage
E. Hydraulic circuit malfunction	1. Check for damaged hoses or tubing 2. Check relief valve for correct operating pressure.

FALSE BALE COMPLETE SHUT DOWN

POSSIBLE CAUSE	CORRECTIVE ACTION
A. Limit switch malfunction LS3	1. See if material is causing false signal. 2. Perform continuity check on limit switch.
B. Timer malfunction TR2	1. Perform continuity check on timer.
C. Pressure switch malfunction	1. Check pressure switch.
D. Bale Eject Limit switch malfunction	1. See if material is causing a false signal.
E. Bale complete timer malfunction 901	1. Perform continuity check on timer.

SECTION 4 - TROUBLEHOOTING

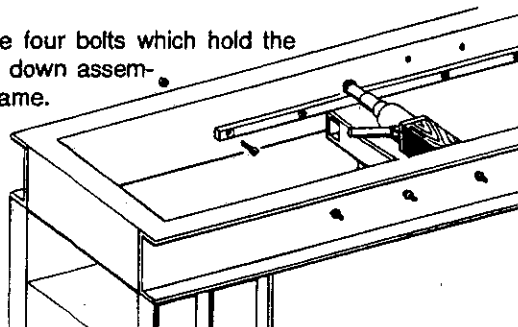
PLATEN AND CYLINDER REMOVAL

1. With the baler in the manual mode, use a suitable blocking material such as large wood beams. Place the block between the face of the platen and the bale and slowly push the bales out of the baler.
2. Fully extend the platen and shut down the baler.

WARNING

Never attempt to perform service or repairs unless the baler is shut down and locked out in accordance with OSHA standards.

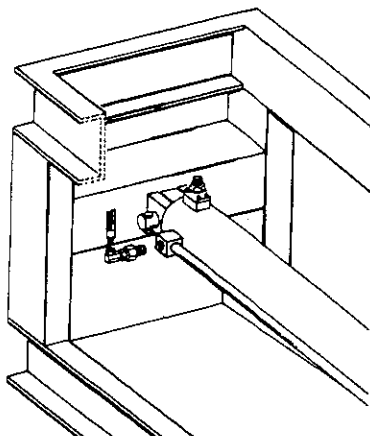
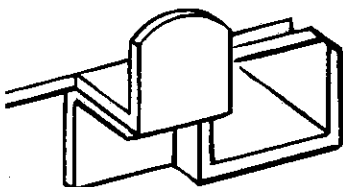
3. Clean out the inside of the baler and bale eject area. Make sure there are no flammable materials inside the baler.
4. Remove the safety guards from the top and sides of the baler.
5. Remove the four bolts which hold the platen hold down assembly to the frame.



NOTE:

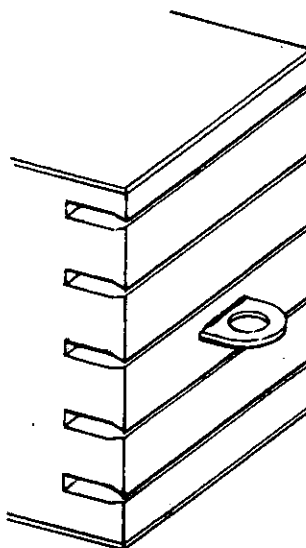
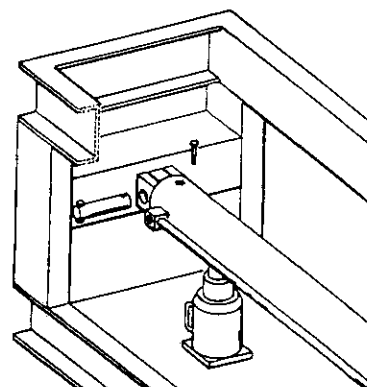
It may be necessary to place a hydraulic jack between the baler sides to allow removal.

6. Fully retract the platen and shut the baler down.
7. Remove the platen limit switch cam by unbolting it from the platen.



8. Make sure there is no pressure on the fluid going into either end of the platen cylinder. Disconnect the hydraulic lines and plug the parts and cap the hoses, to prevent fluid loss and contamination.

9. Use a hydraulic jack to support the rear of the cylinder. Remove the locking bolt and cylinder pin connecting the rear of the cylinder to the baler frame.

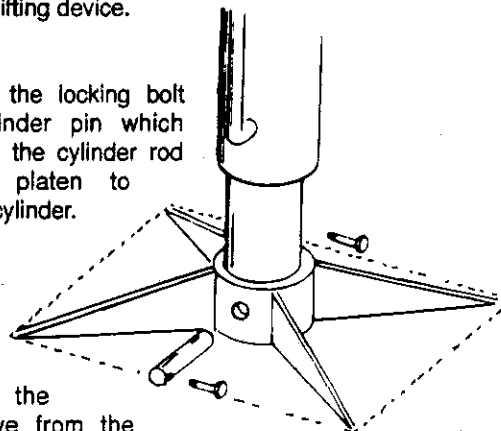


10. Weld an eye on the front of the platen.
11. Connect a chain or cable to the platen and slowly pull it out of the baler.

CAUTION

Make sure there is proper blocking at the bale exit so the platen does not drop when it clears the baler.

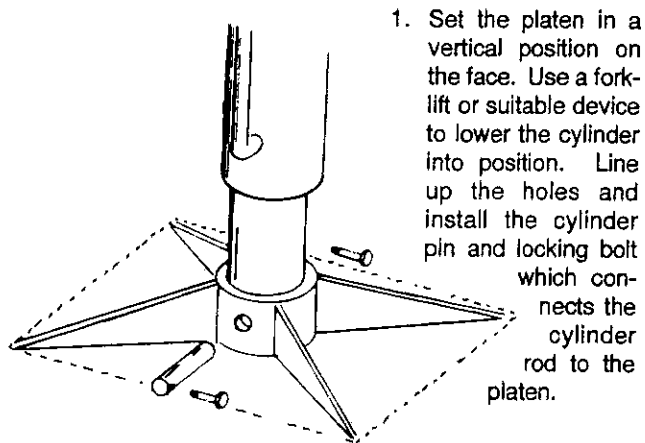
12. Support the cylinder by blocking with a forklift or suitable lifting device.
13. Remove the locking bolt and cylinder pin which connects the cylinder rod to the platen to remove cylinder.



14. Remove the lifting eye from the front of the platen.

SECTION 5 - REPAIR

PLATEN AND CYLINDER INSTALLATION



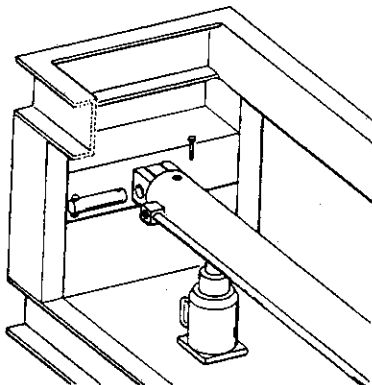
1. Set the platen in a vertical position on the face. Use a fork-lift or suitable device to lower the cylinder into position. Line up the holes and install the cylinder pin and locking bolt which connects the cylinder rod to the platen.

2. Carefully lower the platen back down to a horizontal position.
3. Carefully line up the platen. Slowly push the platen back into the baler.

NOTE:

It will be necessary to use an extension on the forks or blocking material to push the platen back into position.

4. Use a hydraulic jack to support the rear of the cylinder, line up the holes and install the cylinder pin and locking bolt which connects the rear of the cylinder to the baler frame.



5. Install the pilot operated check valve and reconnect the hydraulic lines. Make sure all hoses are connected to their original location.

NOTE:

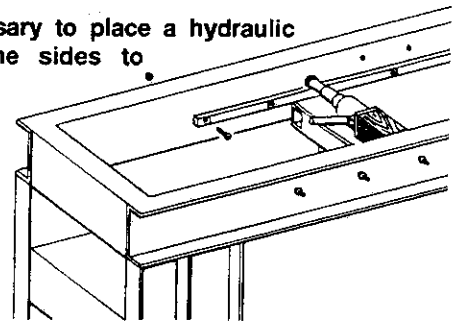
It is recommended that new o-rings be installed where applicable.

6. Loosen the lock nuts and turn the adjustment bolts counter-clockwise. Make sure all of the adjustment is taken out of the hold down.

7. Install the hold down assembly in the baler and bolt it to the baler frame.

NOTE:

It may be necessary to place a hydraulic jack between the sides to allow installation.

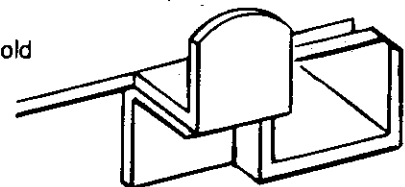


8. Turn the adjustment bolts clockwise to tighten the hold down.

NOTE:

Make sure both bolts are adjusted equally.

9. Bolt the platen limit switch cam to the platen. Make sure it is correctly replaced in the original position.
10. Replace the safety guards on the top and sides of the baler.
11. Remove the clamps or chains holding the bale eject side tension tubes against the baler frame.
12. Start up the baler and, using the procedures outlined in the adjustment section, adjust the baler:
 - A. Platen Retract Stop Limit Switch.
 - B. LS-2 Platen Forward Stop Limit Switch.
 - C. Platen Hold Down.



SECTION 5 - REPAIR

PLATEN HOLD DOWN LINER REPLACEMENT

1. Fully extend the platen and shut the baler down.

WARNING

Never attempt to perform service or repairs unless the baler is shut down and locked out in accordance with OSHA standards.

2. Remove the top safety guards.
3. Remove the four bolts which hold the platen hold down assembly to the frame.

NOTE:

It may be necessary to place a hydraulic jack between the baler sides to allow removal.

4. Remove the countersunk bolts which hold the wear liner in place and remove the older liner.
5. Using the old liner as a guide drill and counter-sink the replacement liner.
6. Install the new liner. It is recommended that new bolts be used.
7. Loosen the lock nuts and turn the adjustment bolts counter-clockwise make sure all of the adjustment is taken out of the hold down.
8. Install the hold down assembly in the baler and bolt it to the baler frame.

NOTE:

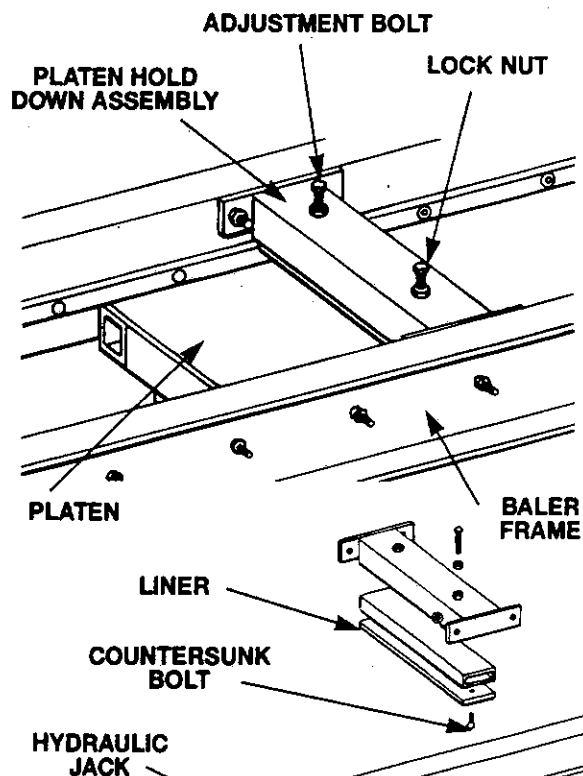
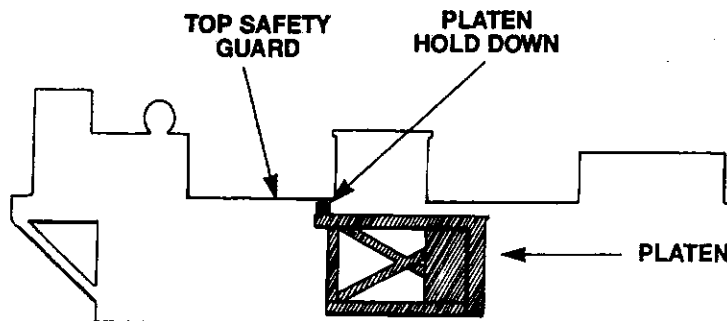
It may be necessary to place a hydraulic jack between the sides to allow installation.

9. Turn the adjustment bolts clockwise to tighten the hold down.

NOTE:

Make sure both bolts are adjusted equally.

10. Adjust the hold down so it makes contact with the top of the platen, rotate each bolt an additional one half turn.
11. Tighten the adjustment bolt lock nuts.
12. Start up the baler using the correct procedure, cycle the platen and observe the platen as it moves forward compacting material.



NOTE:

If the rear of the platen pushes up, the hold down needs to be tightened more.

13. Replace the safety guards on the top of the baler.

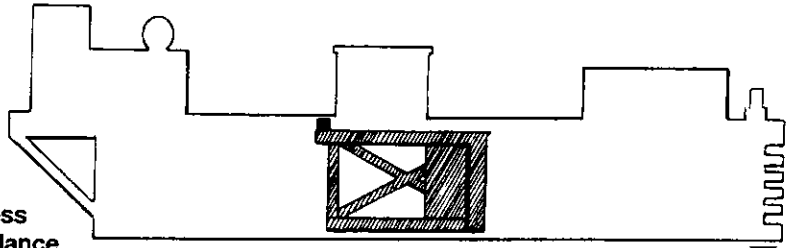
SECTION 5 - REPAIR

PLATEN GUIDE BAR REPLACEMENT

1. Fully extend the platen and shut the baler down.

WARNING

Never attempt to perform service or repairs unless the baler is shutdown and locked out in accordance with OSHA standards.



2. Remove the safety guards from the top and both sides of the baler.
3. Unbolt the platen hold down assembly and remove it from the baler.

NOTE:

It may be necessary to place a hydraulic jack between the baler sides to allow removal of the platen hold down assembly.

4. Remove the bolts which hold the guide bars to the side of the baler frame.

NOTE:

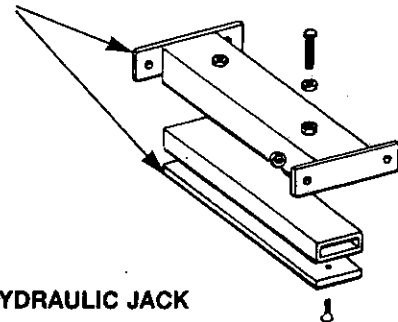
5. Install the new guide bars, replace any worn or damaged bolts.
6. Replace the platen hold down assembly, adjust if necessary. Refer to platen hold down adjustment.

NOTE:

It may be necessary to place a hydraulic jack between the baler sides to allow replacement of the platen hold down.

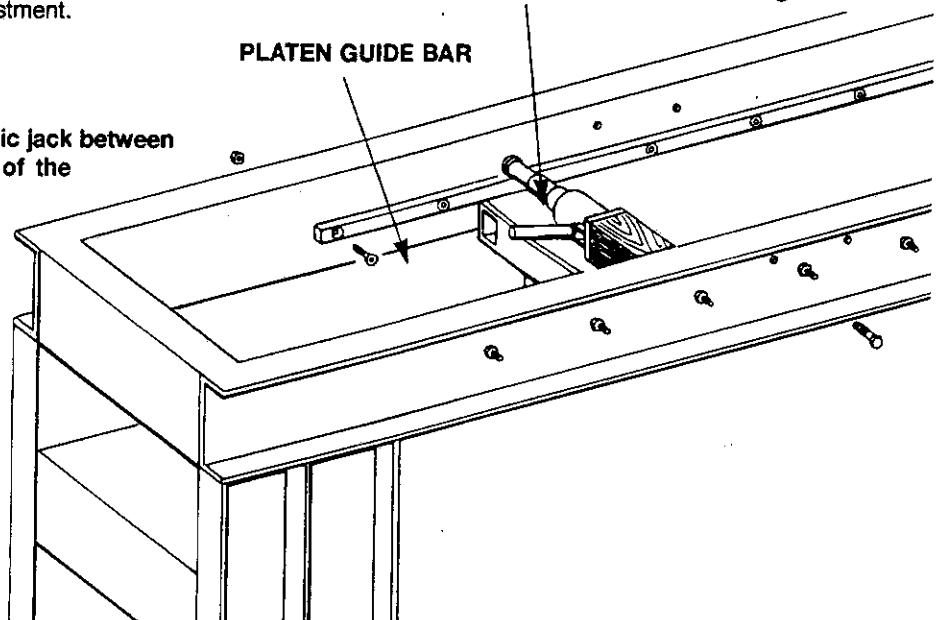
7. Replace the safety guards on the top and both sides of the baler.
8. Manually extend and retract the platen and check for proper adjustment and operation.

PLATEN HOLD DOWN ASSEMBLY



HYDRAULIC JACK

PLATEN GUIDE BAR



SECTION 5 - REPAIR

PLATEN WEARSTRIP REPLACEMENT

1. Remove the platen from the baler. Refer to the platen and cylinder removal section.
2. Set the platen upright on the face to gain access to all wear strips.

CAUTION

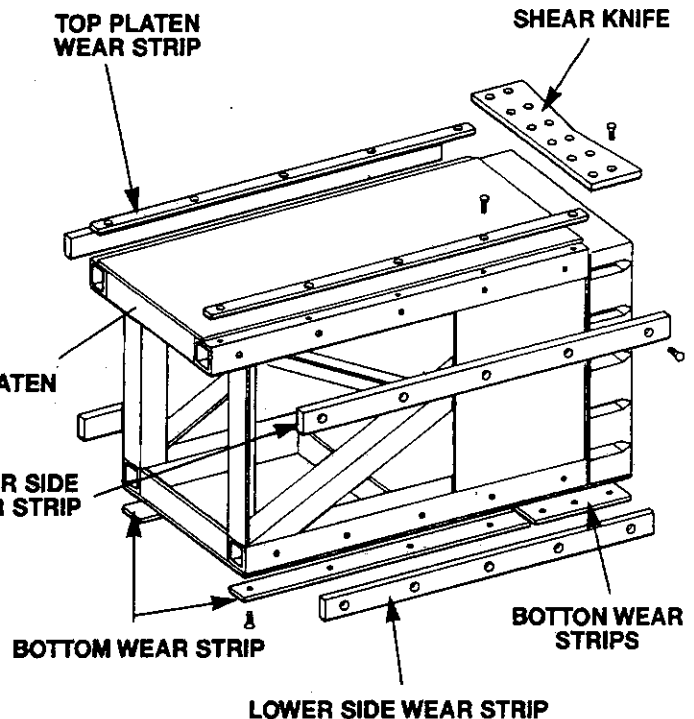
If the cylinder is not removed, support the assembly so it cannot fall over.

3. Remove the old wear strips, use care not to damage them during removal.

NOTE:

There are two wear strips on the top of the platen, an upper and lower wear strip on each side. The bottom may be in three parts or one solid strip.

4. Thoroughly clean the platen and inspect it for structural damage. Replace the shear knife if necessary.
5. Using the old wear strips as a guide drill and countersink the replacement parts.
6. Install all of the wear strips using new bolts.
7. Inspect the inside of the baler, platen hold down liner, guide bars and baler floor for structural damage, replace worn parts and repair as necessary.



8. Install the platen refer to platen and cylinder installation section.

NOTE:

Some platens have a single T-1 plate in place of the three bottom strips.

PLATEN WELDED WEARSTRIP LINER REPLACEMENT

NOTE:

On some models the platen wearstrips are welded rather than bolted.

1. Remove the platen as outlined in Platen and Cylinder Removal.
2. Use a grinder to polish the liner surface to locate plug welds.
3. Start at one end of the liner. Use a cutting torch or air arc to remove all welds.

CAUTION

Use care when cutting so the platen structure is not damaged, causing major problems for the liner replacement process.

4. Check all platen structure surfaces for damage, cutting scars, and remaining welds. It may be necessary to build up an area where damage has occurred. Make sure all surfaces are smooth and square.

NOTE:

All welding should be done by a certified welder.

5. Tack weld one edge of the wear strip liner in place after it is correctly positioned on the platen.
6. Start at the center plug hole work to the edges. It is important to make certain the liner mates the surface of the machine correctly. It will be necessary to strike the hot weld area with a heavy hammer to properly seat the wear strip at the welded point.
7. Make sure each strip is flat and square after it is welded.

SECTION 5 - REPAIR

CYLINDER REPAIR

1. Remove the cylinder from the baler. Refer to platen and cylinder removal.
2. Block the piston rod so it cannot drop causing damage when head gland is removed. Use a spanner wrench and unscrew the head gland from the cylinder.

NOTE:

There are two cylinder styles depending on bore size. On the larger size cylinders you must unbolt the rod seal retainer to remove the rod seal. The smaller size cylinders does not have a seal retainer to remove.

3. Check the cylinder rod for nicks, scratches, and burrs, remove any surface scars that could cause damage to the head gland during removal.
4. Slide the head gland off of the cylinder rod.
5. Unbolt the rod seal retainer (when applicable).
6. Remove all seals, o-rings, wear band and inspect the head gland for damage.
7. Use a suitable lifting device secure the tube end of the cylinder and pull the piston rod and piston out of the cylinder tube.

CAUTION

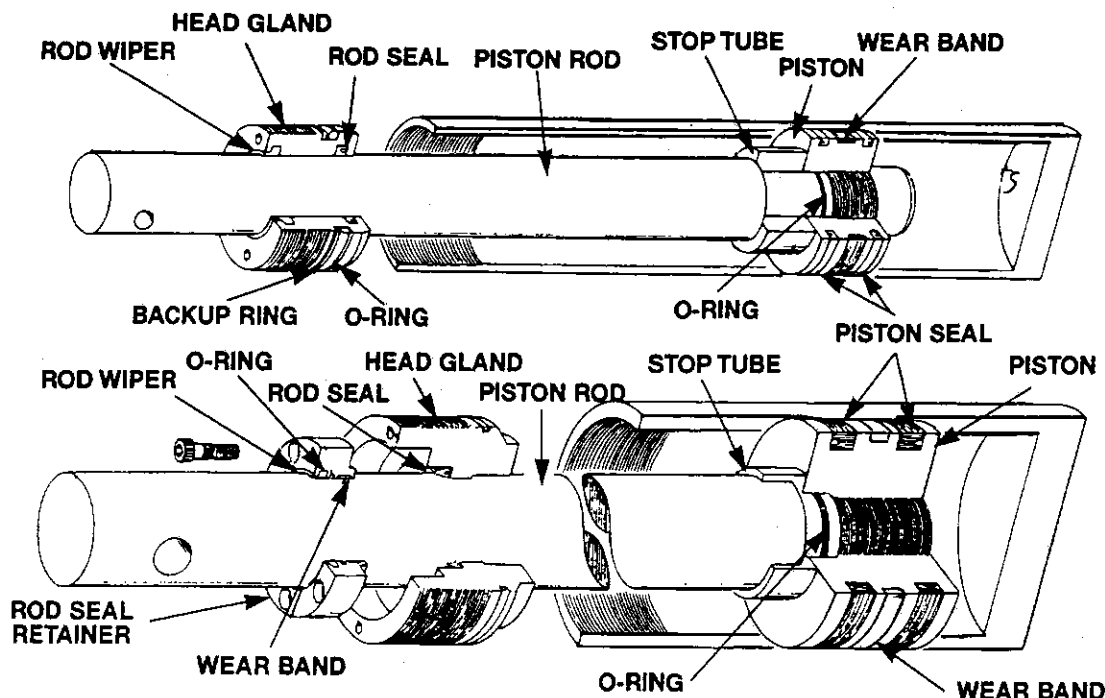
Block the cylinder rod so the rod and piston doesn't drop causing damage when it clears the tube.

8. Remove the piston seals and wearband from the piston.
9. Inspect the cylinder tube and piston for scoring or damage inspect the piston rod for scoring, nicks, burrs and scratches. Remove any surface scars which could cause damage.
10. If the piston needs to be replaced, remove it from the rod by rotating it counter clockwise, place a bar thru the cylinder rod pin hole and use a spanner wrench to unscrew it.

NOTE:

If the piston is removed from the rod replace the o-ring with a new one before placing the piston.

11. Apply a light coat of hydraulic fluid to the components. Install the new wear band and piston seals making sure they are correctly installed so they seal properly.
12. Carefully slide the piston and rod assembly back into the cylinder tube.
13. Apply a light coat of hydraulic fluid to the components. Install the new wear band, o-rings and wiper.
14. Replace the seal retainer and tighten all bolts (when applicable).
15. Slide the head gland onto the cylinder rod and tighten with the spanner wrench.



BALE DOOR CYLINDER REPAIR

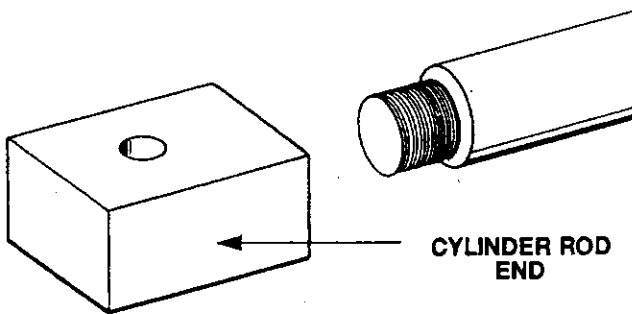
1. Remove the cylinder pin which holds the rod end of the cylinder to the door latch.
2. Leave the rod extended and protect it from damage when the cylinder is removed.
3. Disconnect the hydraulic hoses on both ends of the cylinder tube.

CAUTION

Whenever disassembling any hydraulic line, valve, or cylinder:

- a. Be sure to collect the hydraulic fluid which will drain from the loosened connection.
- b. Make sure there is no pressure on the fluid in the location of the work.
- c. Cover or cap the ends of the open connection to prevent contamination and fluid loss.

3. Take out the cylinder pin and remove the cylinder from the baler.
4. Check the cylinder rod for nicks, scratches and burrs. Remove any surface scars which could cause seal damage.
5. Hold the cylinder rod. Make sure the method of holding will not damage the rod surface. Remove the cylinder rod end, by unscrewing it.
6. Use a spanner wrench to unscrew the head gland and remove it from the cylinder rod.



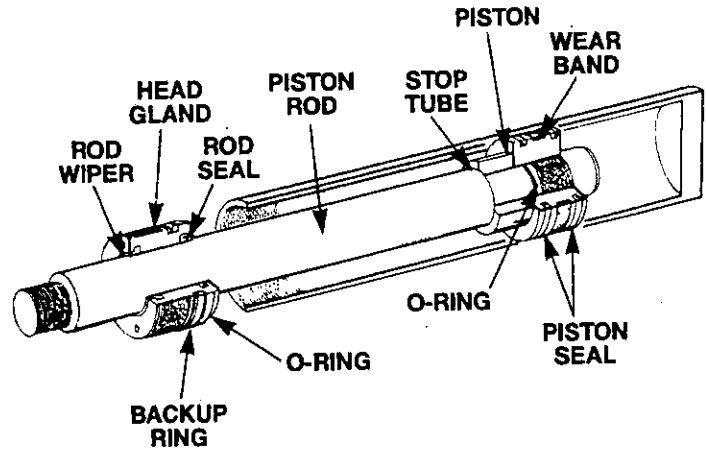
7. Secure the tube end of the cylinder. Replace the cylinder rod end. Pull the piston rod and piston out of the cylinder tube.

NOTE:

The size of the cylinder may require the use of a lifting device.

8. Remove the piston seals and wear band from the piston.

9. Inspect the cylinder tube and piston for scoring or damage. Inspect the piston rod for scoring, nicks, burrs and scratches. Remove any surface scars which could cause damage.
10. If the piston needs to be replaced, remove it from the rod by rotating it counter-clockwise. Place a bar through the cylinder rod pin hole and use a spanner wrench to unscrew it.



NOTE:

If the piston is removed from the rod, replace the o-ring with a new one before placing the piston.

11. Apply a light coat of hydraulic fluid to the components. Install the new wear band and piston seals making sure they are correctly installed so the seal properly.
12. Carefully slide the piston and rod assembly back into the cylinder tube.
13. Apply a light coat of hydraulic fluid to the components. Install the new rod wiper, o-ring, back-up ring and rod seal in the head gland.
14. Carefully slide the head gland onto the cylinder rod. Position it in the cylinder tube and tighten with the spanner wrench.
15. Replace the cylinder rod end and tighten securely. Use care not to damage the cylinder rod.
16. Mount the cylinder on the baler with the tube end cylinder pin.
17. Connect the hydraulic hoses to the cylinder.
18. Install the cylinder pin which holds the rod end of the cylinder to the door latch.
19. Start the baler. Slowly cycle the door latch cylinder to purge air from the hydraulic lines and make sure there are no hydraulic fluid leaks.

SECTION 5 — REPAIR
