

PREVENTIVE MAINTENANCE

NOTE: THE FOLLOWING SCHEDULE IS BASED UPON OPERATING ONE EIGHT (8) HOUR SHIFT FIVE (5) DAYS A WEEK. LONGER OPERATING TIMES WILL CHANGE SCHEDULE.

CAUTION:

**NEVER PERFORM MAINTENANCE ON BALER UNTIL MOTOR AND
ROTATING COMPONENTS HAVE STOPPED AND ARE ELECTRICALLY LOCKED OUT.
DO NOT REMOVE, PAINT OVER OR DEFACE WARNING INSTRUCTIONS
OR IDENTIFICATION LABELS.**

1. **HYDRAULICS**

- A. Hydraulic Oil Level: Height of oil can be read on dipstick located on top side of reservoir (See Page 19.03 for Oil Level).
- B. Oil Change: On a new machine, the oil in the hydraulic system should be thoroughly pumped out after 500 hours of initial running time (See Oil Change Schedule) and the tank cleaned using clean dry rags or equivalent. Inside the tank are two (2) magnets located under the oil suction line. If they are covered with residue and cannot be seen, feel around in the tank until found. Remove, clean and reinstall magnets under oil suction line after tank is thoroughly cleaned. After reinstalling magnets, refill reservoir at filler breather with clean premium grade hydraulic oil to proper level.

Under normal conditions, 500 hours of operation, the oil should be changed and the reservoir cleaned every 2000 hours of operation thereafter.

NOTE: SEE PAGE 19.04 FOR OIL/TEMPERATURE AND CAPACITY CHART.

- C. Air-Oil Cooler: From outside of oil cooler reverse blow with compressed air through cores every 100 operating hours or more often if necessary.
- D. Oil Leak Check: Inspect for oil drips on all tube and pipe fittings and tighten when necessary in accordance with approved hydraulic fitting practices.

NOTE: IT IS IMPORTANT THAT THE PROPER SIZE WRENCH BE USED SO AS NOT TO DAMAGE THE HYDRAULIC FITTINGS. OVER TORQUING IS JUST AS BAD AS UNDER TORQUING.

PREVENTIVE MAINTENANCE CONTINUED

2. MECHANICAL

- A. Ram Wiper: Inspect ram wiper to be sure that it rides on ram top plate. This should be done on a weekly basis. The wiper assembly is secured to the wiper support bracket which is located at the rear of the feed chute. If ram wiper requires adjustment, use the following instructions:
1. Determine the wear on the wiper by visual observation. If worn or cracked, replace.
 2. Remove the fasteners that holds the support bracket in place.
 3. With support bracket removed from the ram chamber, loosen the fasteners.
 4. After new wiper has been put in place, reinstall the fasteners.
 5. Replace the support bracket and tighten the fasteners which mounts the assembly to the ram chamber.
- B. Ram Chamber: On the bottom in the rear of the ram chamber area, is an opening with a tag that states "Clean Out Daily". If material is allowed to build up in the chamber because of failure to clean chamber daily, it will shorten cylinder life or cause other serious damage to the equipment.

CAUTION:

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- C. Ram Liners: Inspect the four (4) replaceable liners mounted on ram every 500 hours. Liners should just rub side plates and have no more than 1/8" clearance under baling ram gib bars.
- D. Balelock: Balelocks should be cleaned daily of material that builds up in the balelock frame during operations. The balelock assembly is located on top of bale chamber in front of feed chute. If material is allowed to accumulate in the balelocks, it would effect its primary function to prevent the bale from expanding back into the feed chute chamber and could destroy the springs.

PREVENTIVE MAINTENANCE CONTINUED

- E. Clean Plexiglas Lens: Assure cleanliness of all plexiglas on feed chute. Do not wipe with abrasive materials as it will scratch surface and reduce light transmission.

3. ELECTRICAL

- A. Motor: Reverse blow with compressed air every 500 hours, blowing from the coupling end.

Motor - except totally enclosed: Lubricate motor bearings every 2000 hours using Sinclair Oil Company - Durolube #22 or equivalent NLGI #2 consistency grease free from any chemical or mechanical impurities.

- B. Electrical Control Cabinet: Keep control cabinet door secured for personnel safety and cabinet cleanliness.

- C. Control Circuit Interrupter: Check to make sure control circuit interrupter switch on load door of feed chute is, in fact, stopping motor when door is not closed. If faulty, do not operate baler until adjusted or repaired.

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PREVENTIVE MAINTENANCE
HYDRAULIC OIL CHANGE SCHEDULE

RECOMMENDED OIL CHANGE SCHEDULE

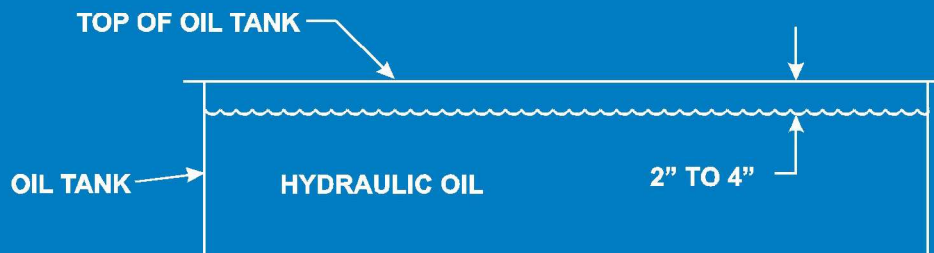
AFTER THE START-UP OF YOUR BALER CHANGE THE HYDRAULIC OIL AFTER 500 OPERATING HOURS, AND EVERY 2000 HOURS THERAFTER.

500 HOURS = 1 SHIFT OPERATION (5 DAYS) = CHANGE OIL AFTER 3 MONTHS
500 HOURS = 2 SHIFT OPERATION (5 DAYS) = CHANGE OIL AFTER 6 WEEKS
500 HOURS = 3 SHIFT OPERATION (5 DAYS) = CHANGE OIL AFTER 4 WEEKS

2000 HOURS = 1 SHIFT OPERATION (5 DAYS) = CHANGE OIL AFTER 1 YEAR
2000 HOURS = 2 SHIFT OPERATION (5 DAYS) = CHANGE OIL AFTER 6 MONTHS
2000 HOURS = 3 SHIFT OPERATION (5 DAYS) = CHANGE OIL AFTER 4 MONTHS

NOTE: THE ABOVE IS BASED ON A 40 HOUR SHIFT, AND A 52 WEEK YEAR. 6 OR 7 DAY OPERATION WILL REDUCE THE ABOVE OIL CHANGE INTERVALS. EXTERNAL OIL FILTRATION DOWN TO 3 MICRON AND/OR SPECTROANALYSIS OF THE OIL MAY EXTEND THE ABOVE INTERVALS. FAILURE TO CHANGE OIL AT PROPER INTERVALS WILL VOID WARRANTY. SEE MANUAL FOR ADDITIONAL INFORMATION.

HYDRAULIC OIL LEVEL



FILL HYDRAULIC OIL BETWEEN 2" AND 4" FROM THE TOP OF OIL TANK WITH THE BALING RAM IN A FULLY RETRACTED POSITION.

CHECK MANUAL FOR MORE INFORMATION

111A0079-00.CDR

NOTE: SEE FOLLOWING PAGE FOR HYDRAULIC OIL SPECIFICATIONS.

PREVENTIVE MAINTENANCE CONTINUED

| BALEMASTER SERIES BALER HYDRAULIC OIL/AMBIENT TEMPERATURE & CAPACITY CHART | | | | |
|---|--|----------|---------|---------|
| AMBIENT TEMPERATURE | | | | |
| 60°F TO 90°F | PREMIUM GRADE HYDRAULIC OIL-220/250 SSU* AT 100° F | | | |
| BELOW 60° F OR ABOVE 90° F | CONSULT YOUR LOCAL HYDRAULIC DEALER | | | |
| Horsepower | 20/25/30 | 50/60/75 | 100/150 | 225 |
| Operating Capacity Range (Gallons) | 116-132 | 244-269 | 336-380 | 482-544 |

* Capacity Range corresponds to an oil level between 2" and 4" from the top of the tank. Always measure oil level with ram in the retracted position.

* SSU REFERS TO **SAYBOLT SECOND UNIVERSAL**, AND IS THE ONLY DROP TEST USED TO DETERMINE THE **VISCOSITY RATING** OF A GIVEN OIL AT A SPECIFIED TEMPERATURE.

OIL LEVEL/TEMPERATURE INDICATOR - (OPTIONAL)

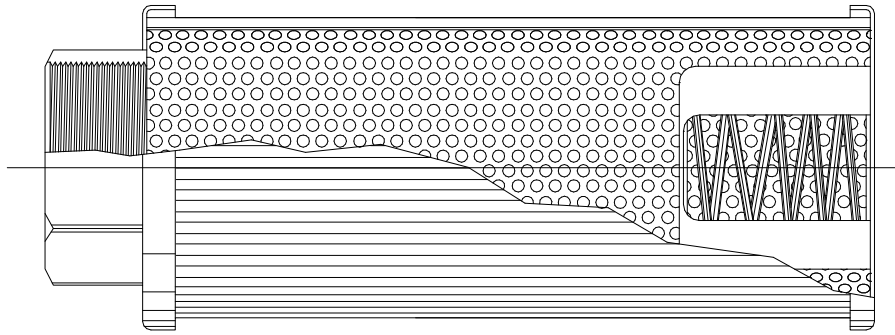
The Oil Level/Temperature Switch will stop the baler if the oil temperature exceeds 150° F or if the tank level drops to approximately half the tank depth.

**NOTE: SOME HYDRAULIC OIL WILL REMAIN IN SYSTEM WHEN EMPTIED.
THIS WILL NOT AFFECT RECOMMENDED QUANTITIES REQUIRED.**

PREVENTIVE MAINTENANCE

OIL FILTERS SHOULD BE CLEANED EVERY 30 DAYS.

PART #HHAOO020



(NPTF) WITH BY-PASS VALVE

216A0198-00

HOW TO CLEAN:

Remove filter element from suction line. Swish element in any non-caustic clean solvent for a short period of time.

CAUTION:

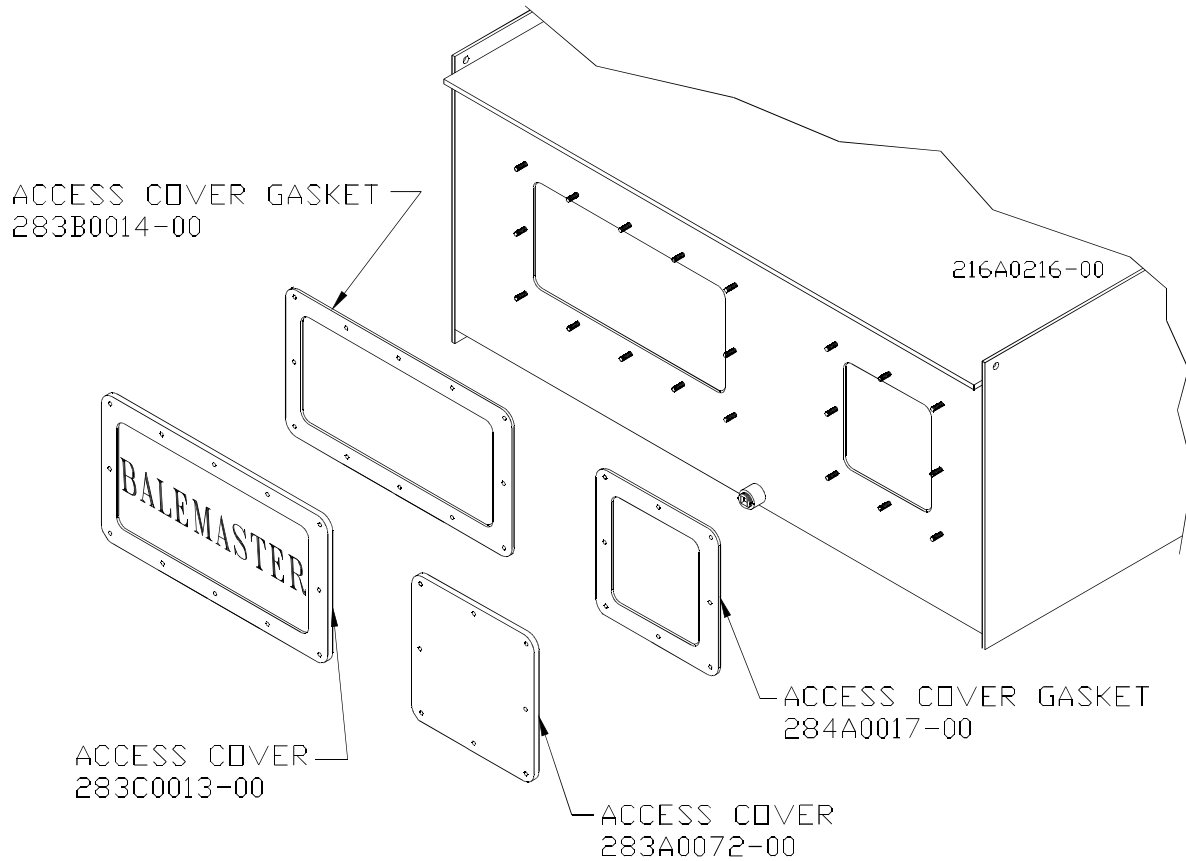
DO NOT LEAVE ELEMENT IN SOLVENT.

A stiff fiber brush may be used, if necessary, to remove impacted deposits between wire cloth serrations. Shake off excess solvent. If compressed air is available, blow dry from inside out.

CAUTION:

STOP BALER BEFORE REMOVING FILTERS.

PREVENTIVE MAINTENANCE
REPLACING ACCESS COVER GASKETS



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NOTE: When replacing Access Cover Gasket, be sure to seal with Dow Corning #732RTV Silicone Multi-Purpose Sealant on both sides (cork gaskets only). Foam rubber gaskets do not require sealant.

NOTE: Access Cover 283A0072-00 only used on 75 HP and higher.

NOTE: Tighten all nuts evenly. DO NOT OVER TIGHTEN.

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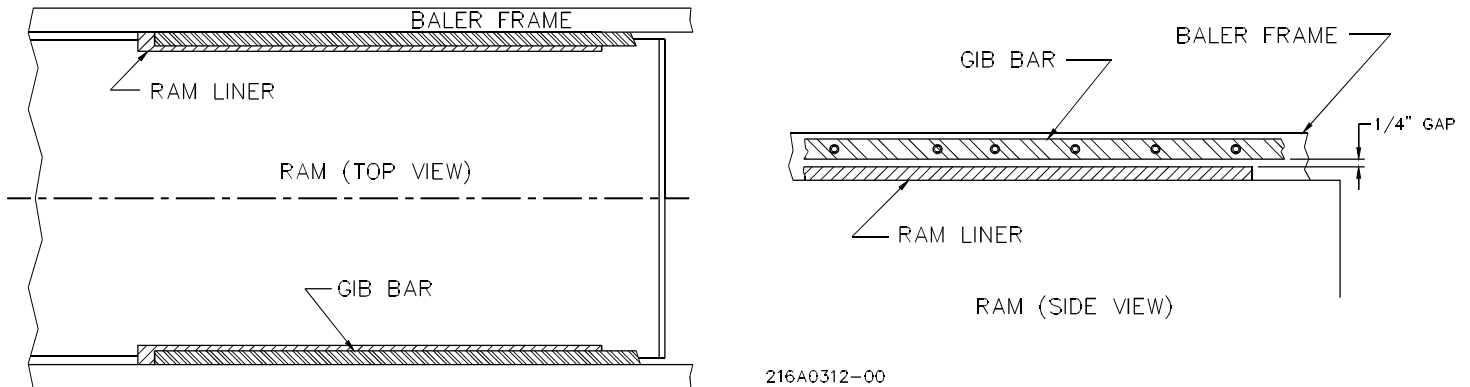
RAM MAINTENANCE

One of the most important observations to be made is to recognize excessive movement of the ram during its baling cycle, indicating the need to check/replace the ram liners and/or ram rollers. Timely replacement of these wear items will reduce the possibility of damage or premature wear to the ram, the main baling cylinder, and the baler frame itself. This is routine maintenance that cannot be neglected.

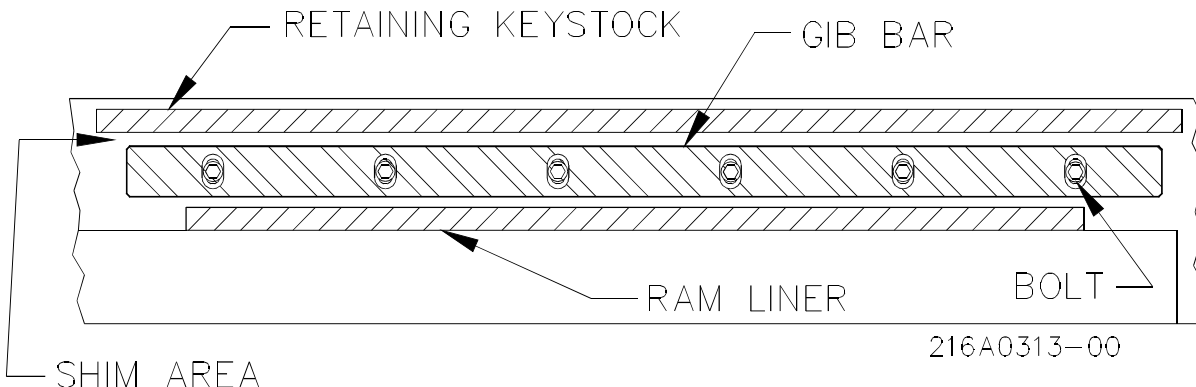
Some of the items to check are:

TOP LINERS/GIB BAR GAP

The gap between the gib bar and liner should never exceed 1/4". If the gap is not within specifications after the liners are replaced, it may indicate the gib bars also need replacement. The reason for the excessive gap must be determined and corrected.



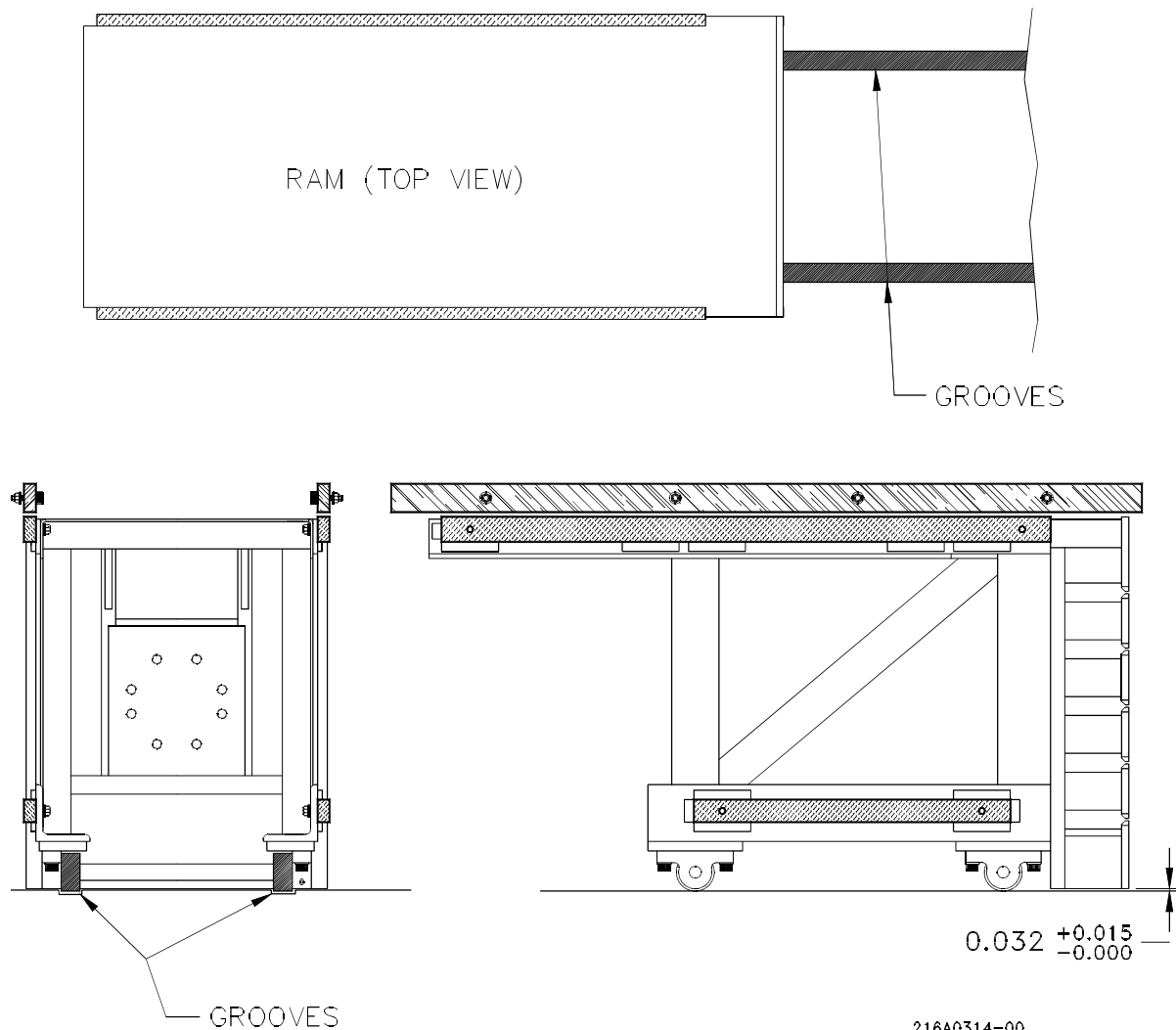
NOTE: Some shear bar equipped balers have adjustable gib bars that can be moved downward to eliminate the gap caused by wear. However, when the gib bars have reached their limit of adjustment, and the gap becomes excessive, the liner/gib bars will have to be replaced. When the gib bars are moved downward, a shim must be installed so they cannot move up during baling.



RAM MAINTENANCE CONTINUED
(FOR RAMS WITH ROLLERS ONLY)

GROOVES IN THE BALER FLOOR

Check the baler floor for any unusual wear, especially where the liners and rollers travel. For balers with roller equipped rams, grooves in the floor indicate one or more of the rollers is not rolling. The rollers must be checked and replaced as necessary before the grooves become deep enough to cause wear on the lower edge of the ram face as it is dragged along the baler floor. If the grooves become too deep they will have to be welded and ground smooth, a very time consuming, expensive process. The lower edge of the ram face may have to be welded and re-machined to maintain the proper clearance ($1/32"$) between the floor and bottom of the ram face. Excessive clearance between the floor and the ram face will allow material to pass under the ram and could cause the rollers or liners to ride on the accumulated material and jam the liners into the gib bars, thus stalling the ram.



RAM MAINTENANCE CONTINUED

MAIN BALING CYLINDER

Check for leaks at the cylinder rod bushing. Excessive movement of the ram causes side loading on the cylinder rod bushing, which will cause wear on the bushing and result in the seals leaking. Also, side loads can be exerted on the cylinder piston and may lead to internal wear and premature failure of the cylinder. Our latest baler designs, with the trunnion mounted cylinder, reduce the side forces in the cylinder and extends the seal life.

RAM WIPER

Check to make sure the ram wiper is in contact with the top of the ram. If not, adjust as necessary. One design mounts the wiper vertically and is adjusted downward to be in contact with the top of the ram. The other design mounts the wiper at a 45° angle to the top of the ram, and therefore rides on the top of the ram. This second design allows the ram wiper to stay in contact with the top of the ram has vertical movement during the baling stroke. Check to make sure the lip is long enough to maintain contact with the ram. The ram wiper helps keep dust and material out of the back part of the ram chamber, thereby slowing down the accumulation of material behind the ram. Excessive accumulation of material behind the ram can cause "reverse baling" between the ram and rear bulkhead preventing the ram from reaching limit switch 3LS, its fully retracted position.

INFEEED SYSTEM

For conveyor feed baler systems, a carefully planned discharge system at the feed chute area can eliminate some of the wear problems associated with liner and floor wear. By adding a screen at the last few feet of the conveyor, debris can be eliminated from falling on top of or on other areas of the baler thus allowing material to fall only in the feed chute where it should be.

SIDE SWIPERS

On newer model machines, UHMW side swipers are installed on the face of the ram to prevent material from passing behind the ram. These wipers should be inspected for damage and replaced if worn to the point where they are not contacting the side walls of the baling chamber.

RAM SLOTS

Ram slots should be inspected by running the ram to Autoty position (5LS & 5LSA). It should be possible to clean out the slots using compressed air or a rod **AFTER LOCKING OUT THE MACHINE**. It may also be necessary to clean out the slot from the front of the ram. This is done in the feed chute with the ram retracted and the machine **LOCKED OUT**.

SHEAR BAR SPACING

For balers with shear bars, the gap between the top of the ram and the shear bar should be no greater than 1/16" - 3/16". Larger gaps or rounded shear points may cause the ram to stall during shear. The bottom ram liner can be replaced to minimize gap. The shear blade can be welded up and sharpened to increase shearing effectiveness. If the gap is not maintained, severe wedging may cause frame damage.

RAM MAINTENANCE CONTINUED

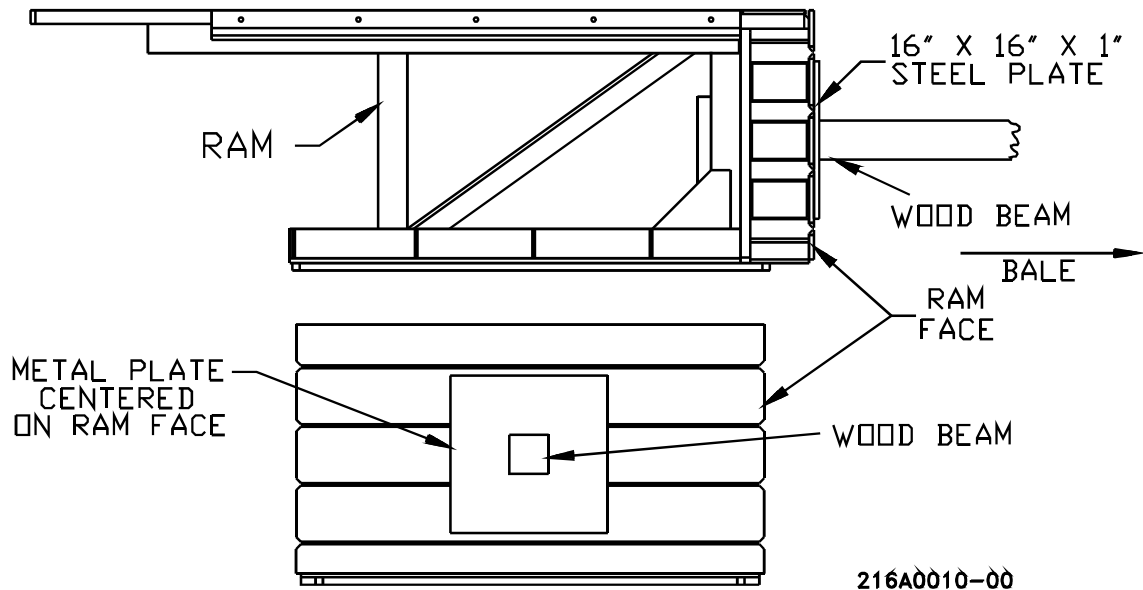
RAM REMOVAL

When the decision is made to change the ram liners, the ram must be removed first. There are two basic methods of removing the ram:

If the feed system to the baler can be removed along with the feed chute to a reasonable height, the ram can be taken out from the top of the baler. This eliminates the need to empty the machine of bales.

If the ram cannot be taken out from the top of the machine, the ram must be removed from the front of the machine, emptying the machine of bales first.

UNDER NO CIRCUMSTANCE when removing the bales from an autoty machine, should a push bar be used directly against the ram face. A buttress should be used when attempting to eject the bales prior to ram removal. Depending on the material, a buttress is sometimes needed on the face of the bale to prevent embedding the push bar into the bale.



It is advisable to measure the face of the ram and to then measure the entire bale chamber in comparison. Balemaster balers are built to close tolerances and sometimes during the manufacturing process the gussets area contracts due to the welding at that area. If an area is slightly smaller than the face of the ram, it is recommended that the chamber at that point be ground wide enough to facilitate ram removal. The Balemaster strength and integrity will not be compromised by the grinding of material between the side cylinder gusset area.

RAM MAINTENANCE CONTINUED

RAM LINER REPLACEMENT

Ram liners are made of either ryertex, bronze, or steel, and can be found on the top, side, or bottom of the ram depending on the model of the baler.

1. Remove the ram from the baler.
2. Remove the old ram liners.

NOTE: Some older model balers had the screws that attach the ram liner to the ram installed with loctite products. To remove these screws, heat may have to be applied. Loctite must be used with the new screws also to prevent them from vibrating loose and causing damage to the liners and baler walls. Newer rams have the liners installed with through bolts and locknuts or through bolts and threaded brass inserts in the liners. If locknuts are used, make sure to use locknuts and not lock-washers and nuts.

NOTE: If any shims were removed they should be marked as to their location and saved. This will save time when re-installing the ram liners. Any shim that is added to the ram assembly must be secured to the ram either by welding/brazing or held in place by a mechanical fastener.

3. Place the new ram liners into the pocket on the ram.

NOTE: Ryertex ram liners may have to be ground down on the ends to correctly fit into the pocket. After fitting the liner into the pocket, make sure the bolt holes are aligned.

4. Make sure the liners fit snugly into the pocket.

5. Make sure new bolts and threaded brass inserts are used. Do not substitute another bolt of different length, size, or shoulder size. Bolt or ram liner failure might consequently occur. If you had the old style ram liners held on by bolts and lock-washers, you should have received or should replace with our new style liners consisting of only two holes and fasteners per liner. A threaded brass insert is placed into the hole on the liner which allows the bolt to self-thread from the inside of the ram. This allows changing of the top ram liners without removing the ram from the machine in most cases.

MAINTENANCE SCHEDULE

| | |
|--|---|
| Initial oil change * see note | 500 hrs |
| After initial oil change, every * see note | 2000 hrs |
| Inspect ram liners | 500 hrs |
| Inspect ram rollers (if equipped) | 500 hrs |
| Inspect gib bars | 4000 hrs |
| Inspect wire rollers | 500 hrs |
| Clean out: <div style="margin-left: 40px;">Bale Lock Chamber</div> <div style="margin-left: 40px;">Ram Chamber</div> <div style="margin-left: 40px;">Twister</div> <div style="margin-left: 40px;">Inserter</div> | <div style="margin-left: 40px;">8 hrs</div> <div style="margin-left: 40px;">8 hrs</div> <div style="margin-left: 40px;">8 hrs</div> <div style="margin-left: 40px;">8 hrs</div> |
| Clean up around the machine | 8 hrs |
| Clean out ram slots | 8 hrs |
| At initial start up, tighten all nuts and bolts, hose clamps and hose connections. | 8 hrs |
| - After initial start up, check every | 40 hrs |
| At initial start up, tighten all electrical connections | 40 hrs |
| - After initial start up, check every | 2000 hrs |
| Emergency Stop Buttons: These switches should be tested periodically to assure they will stop machine motion when needed. | |

In more severe or caustic environments reduce the time by 50% or more.

* For large oil tanks: remove the oil and clean the tank. Analyze the filter, and return the oil to tank.