LOADMASTER

ELITE SERIES

MAINTENANCE MANUAL

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Loadmaster distributor name .... _____

Distributor phone number ..... _____

Distributor contacts ..... _____

_____

_____

Serial numbers...

Left front body s/n tag

Unit _____ s/n _____ model _____ date _____

Unit _____ s/n _____ model _____ date _____

Unit _____ s/n _____ model _____ date _____

Unit _____ s/n _____ model _____ date _____

Unit _____ s/n _____ model _____ date _____

Unit _____ s/n _____ model _____ date _____

Unit _____ s/n _____ model _____ date _____

Unit s/n _____ model _____ date _____

Warning... Although many ELITE's are setup on chassis' that do NOT require the operator to possess a "CDL"…this does NOT imply that *this* manuals numerous SAFTEY PRECAUTIONS are less valuable or less important to understand and follow than any other REAR LOADER.

All of the same rear-loader *hazards* exist in the Elite rear-loader, even if it happens to be smaller and lighter than some other rear-loader.

Read, understand, and follow all of the information in this manual (including but not limited to all the Safe Operation, Safe Maintenance, and Safe Repair information) before approaching an ELITE.

Be sure all operator's, maintenance people, repairers, washers, lubers, etc. are trained for ELITE *operation* so that each person can SAFELY perform their assigned tasks.

TABLE OF CONTENTS ELITE

Section 01

SAFETY PRECAUTIONS

IMPORTANT SAFETY INFORMATION

READ AND UNDERSTAND THIS ENTIRE MANUAL BEFORE OPERATING, REPAIRING, OR ADJUSTING THE EXCEL REAR-LOAD REFUSE PACKER. PEOPLE WHOM USE OR MAINTAIN THIS EQUIPMENT MUST BE THOROUGHLY TRAINED AND FAMILIAR WITH THE MACHINE. IF INCORRECTLY USED OR MAINTAINED, THIS EQUIPMENT CAN CAUSE SEVERE INJURY OR DEATH.

Keep this manual where the people who maintain or operate the ELITE can have ready access to it. Additional copies are available by contacting LOADMASTER or a LOADMASTER dealer.

Some service operations may require special tools or blocking devices (such as the raised tailgate). If you require information on these items, contact LOADMASTER.

THE SAFETY PRECAUTIONS ARE FOR YOUR OWN PROTECTION!

DO NOT OPERATE OR MAINTAIN OR REPAIR THE ELITE UNTIL YOU HAVE READ THIS ENTIRE MANUAL AND UNDERSTAND ITS CONTENTS CLEARLY. PLEASE CALL LOADMASTER (906-563-9226) IF YOU REQUIRE ASSISTANCE!

If the operator of this machine or the servicer of this machine has **trouble reading**, then he/she must be assigned a mentor/trainer who will read and explain to such individual the entire contents of this manual as well as the safety precautions and the danger, warning, caution, and notice decals and placards affixed to the ELITE. SUCH INDIVIDUAL CAN NOT BE ALLOWED TO OPERATE OR MAINTAIN THE ELITE UNTIL HE/SHE COMPLETELY UNDERSTANDS ALL OF THESE MATERIALS. FAILURE TO DO THIS CAN RESULT IN SERIOUS INJURY OR DEATH!

SAFETY AND SAFE METHODS MUST BE ADHERED TO AT ALL TIMES. OSHA LOCKOUT PROCEDURES MUST BE FOLLOWED WHEN MAINTAINING THE LEGACY3. If you are not familiar with OSHA lockout procedures, contact the LOADMASTER or OSHA office.

⚠ DANGER

This **DANGER** symbolism precedes information pertaining to specific immediate hazards, which *if disregarded*, **WILL** result in **severe personal injury** or **death** of the user or others.

⚠ WARNING

This **WARNING** symbolism precedes information pertaining to hazards or unsafe practices which **COULD** result in **severe personal injury** or **death**.

⚠ CAUTION

This **CAUTION** symbolism precedes information pertaining to potential hazards or unsafe practices, which if disregarded, may result in a lesser personal **injury** or **damage** to the equipment.

NOTICE

This notice symbol will precede information which is vital to the proper operation or maintenance of the equipment.

⚠ DANGER

FOLLOW ALL LOCKOUT/TAGOUT PROCEDURES AS DEFINED IN THIS MANUAL, AS WELL AS WELL AS DEFINED BY YOUR SPECIFIC SHOP (EMPLOYER) AND OSHA! FAILURE TO HEED THIS WARNING OF DANGER MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

⚠ WARNING

BEFORE ENTERING THE BODY, ALWAYS SHUTDOWN THE DIESEL, PLACE THE IGNITION KEYS IN YOUR POCKET AND ATTACH A SIGN TO THE STEERING WHEEL THAT SAYS "DO NOT START ENGINE"! PERFORM YOUR SHOP'S DETAILED LOCKOUT/TAGOUT PROCEDURE. THE EJECTOR BLADE COULD MOVE UNEXPECTEDLY CAUSING SERIOUS INJURY OR DEATH.

IF ENTERING THE FORWARD (CAB) SIDE OF EJECTOR, FIRST EXTEND THE EJECTOR BLADE ALL THE WAY REARWARD (TOWARDS TAILGATE) AND "PARK" IT THERE. THEN DO YOUR COMPLETE LOCKOUT/TAGOUT PROCEDURE.

⚠ DANGER

STAY CLEAR OF MOVING HOPPER BLADES AND THE HOPPER LOADING SILL WHEN BLADES ARE MOVING! IF YOU OR A WORK PARTNER IS CAUGHT IN THE BLADE ACTION, SERIOUS INJURY OR DEATH WILL RESULT.

⚠ DANGER

BEFORE ENTERING THE LOADING HOPPER, ALWAYS SHUTDOWN THE DIESEL, PLACE THE IGNTION KEYS IN YOUR POCKET AND ATTACH A SIGN TO THE STEERING WHEEL THAT SAYS "DO NOT START ENGINE"! DO YOUR SHOP'S DETAILED LOCKOUT/TAGOUT PROCEDURE.

THE BLADES COULD UNEXPECTEDLY AND SUDDENLY BEGIN MOVING WHICH WILL CAUSE SERIOUS INJURY OR DEATH.

⚠ WARNING

WHEN REPAIRING THE TAILGATE'S RUBBER SEAL, ALWAYS PROVIDE *THREE DISTINCT MEANS* OF SUPPORT FOR THE PARTIALLY RAISED TAILGATE! TAILGATE COULD SUDDENLY FALL CAUSING SERIOUS INJURY OR DEATH IF TAILGATE IS NOT SUPPORTED IN THREE SEPARATE WAYS.

SEE THE REPAIR TOPIC CALLED "INSTALLING A FRESH TAILGATE SEAL" IN THE REPAIR SECTION OF THIS MANUAL FOR A DETAILED EXPLANATION OF BLOCKING AND PROPPING OF TAILGATE BEFORE BEGINNING SEAL REPLACEMENT.

⚠ WARNING

NEVER WORK BENEATH A RAISED TAILGATE THAT HAS A HYDRAULIC CYLINDER REMOVED!

NEVER WORK BENEATH A RAISED TAILGATE THAT HAS A TAILGATE LIFT CYLINDER'S HOSE, FITTING, OR VALVE COMPONENT REMOVED!

TAILGATE MAY SUDDENLY FALL CAUSING SERIOUS INJURY OR DEATH *EVEN IF* THE TAILGATE IS MECHANICALLY PROPPED AND BLOCKED UP. THE TAILGATE LIFT CYLINDERS SYSTEM *MUST BE* PROVIDING *ONE OF THE THREE* MEANS OF SUPPORT BEFORE *WORKING BENEATH* A RAISED TAILGATE.

THE TAILGATE'S HYDRAULIC LIFT SYSTEM MUST BE IN GOOD WORKING CONDITION (AND TWO ADDITIONAL MECHANICAL BLOCKING AND PROPPING MEANS SECURELY INSTALLED) BEFORE WORKING BENEATH A RAISED TAILGATE.

⚠ WARNING

ALWAYS FULLY LOWER THE TAILGATE BEFORE REMOVING A TAILGATE LIFT CYLINDER OR ANY OF IT'S PLUMBING COMPONENTS (VALVES, TUBES, FITTINGS, and HOSES)! DO NOT RELY *ONLY* ON MECHANICAL BLOCKING AND PROPPING TO SUPPORT A PARTIALLY RAISED TAILGATE! TAILGATE MAY SUDDENLY FALL CAUSING SERIOUS INJURY OR DEATH.

THE ELITE'S TAILGATE LIFT SYSTEM IS FULLY SERVICABLE WITH TAILGATE *FULLY LOWERED*.

⚠ DANGER

NEVER STAND UNDERNEATH OR WALK BENEATH A MOVING TAILGATE! THE TAILGATE MAY BE LOWERED UPON YOU OR MAY SUDDENLY FALL CAUSING SERIOUS INJURY OR DEATH.

A COMPONENT FAILURE (SUCH AS HOSE END "BLOW-OFF") COULD CAUSE TAILGATE TO SUDDENLY FALL.

⚠ WARNING

NEVER STAND UNDERNEATH OR WALK BENEATH A RAISED (OR PARTIALLY RAISED) TAILGATE WHEN SUPPORTED *ONLY* BY ITS HYDRAULIC SYSTEM!

TAILGATE MAY SUDDENLY AND UNEXPECTEDLY FALL DOWNWARD CAUSING SERIOUS INJURY OR DEATH.

SHOULD A HYDRAULIC COMPONENT FAIL, SUCH AS A HOSE-END "BLOW-OFF", THE TAILGATE WILL SUDDENLY FALL.

⚠ CAUTION

KEEP THE BODY SIDE ACCESS DOOR CLOSED WHEN EJECTOR BLADE IS IN MOTION! THE EJECTOR BLADE MOVES PAST THE DOOR OPENING AND COULD CAUSE INJURY.

⚠ DANGER

YOU MUST NOT OPERATE THE ELITE UNLESS:

YOU ARE QUALIFIED BY TRAINING AND EXPERIENCE IN THE SAFE OPERATION OF THIS MACHINE.

TRAINING INCLUDES COMPLETE KNOWLEDGE OF YOUR EMPLOYER'S WORK RULES, ALL GOVERMENTAL REGULATIONS, AND MANUFACTURER'S OPERATOR'S MANUAL RELATIVE TO THIS MACHINE'S SAFE USE.

AN UNTRAINED OPERATOR SUBJECTS HIMSELF/ HERSELF AND OTHERS TO SERIOUS INJURY OR DEATH.

⚠ DANGER

YOU MUST NOT SERVICE, MAINTAIN, OR REPAIR THE ELITE UNLESS:

YOU ARE QUALIFIED BY TRAINING AND EXPERIENCE IN THE SAFE *OPERATION* OF THIS MACHINE.

TRAINING INCLUDES COMPLETE KNOWLEDGE OF YOUR EMPLOYER'S WORK RULES, ALL GOVERMENTAL REGULATIONS, AND MANUFACTURER'S OPERATOR'S MANUAL RELATIVE TO THIS MACHINE'S SAFE USE.
A SERVICE TECHNICIAN WHO IS UNTRAINED IN THE SAFE *OPERATION* OF THE ELITE SUBJECTS HIMSELF/HERSELF AND OTHERS TO SERIOUS INJURY OR DEATH.

⚠ DANGER

YOU MUST NOT SERVICE, MAINTAIN, OR REPAIR THE ELITE UNLESS YOU ARE THOROUGHLY KNOWLEDGEABLE OF YOUR SHOP'S (YOUR EMPLOYER'S) DETAILED LOCKOUT/TAGOUT POLICIES AND PROCEDURES.

LOADMASTER HAS INCLUDED THE OUTLINE OF A SKELETON, BARE BONES LOCKOUT/TAGOUT PROCEDURE IN THIS MANUAL. IT IS THE RESPONSIBILITY OF THE OWNERS, SUPERVISORS, MAINTAINERS, AND OPERATORS OF THE LEGACY3 TO FULLY DEVELOP A "DETAILED" LOCKOUT/TAGOUT PROCEDURE/POLICY THAT SUITS YOUR SHOP'S SPECIFIC CIRCUMSTANCES.

⚠ CAUTION

THE RIDING STEP SHALL NOT BE USED WHEN:

- **SPEEDS EXCEED 10 MPH**
- **DISTANCE OF TRAVEL IS MORE THAN 2 TENTHS OF A MILE**
- **VEHICLE IS MOVING BACKWARDS (IN REVERSE)**

⚠ DANGER

TO PREVENT POSSIBLE INJURY, DEATH, OR PROPERTY DAMAGE, DO NOT USE THIS VEHICLE TO "TOW" OTHER EQUIPMENT. IT IS NOT INTENDED, DESIGNED OR EQUIPPED FOR TOWING.

⚠ DANGER

DO NOT ENTER UNDER OR CRAWL UNDER THE CHASSIS UNLESS THE DIESEL IS SHUTDOWN, THE IGNITION KEYS ARE IN YOUR POCKET, AND A SIGN HAS BEEN PLACED ON THE STEERING WHEEL THAT SAYS "DO NOT START ENGINE"! DO YOUR SHOP'S DETAILED LOCKOUT/TAGOUT PROCEDURE INCLUDING WHEEL CHOCKING!

THE VEHICLE WILL RUN YOU OVER CAUSING SERIOUS INJURY OR DEATH. YOU MAY BECOME ENTANGLED IN THE EXPOSED VEHICLE DRIVETRAIN OR THE ROTATING PUMP-PROPELLOR SHAFTING CAUSING SERIOUS INJURY OR DEATH.

⚠ WARNING

DO NOT OVERLOAD THE PACKER AND CHASSIS. DO NOT EXCEED THE CHASSIS MANUFACTURER'S POSTED GROSS VEHICLE WEIGHT RATINGS (OVERALL AND "PER AXLE"). GROSS VEHICLE WEIGHTS MUST ALSO MEET APPLICABLE FEDERAL, STATE, AND LOCAL WEIGHT LAWS. FAILURE TO COMPLY COULD CAUSE POOR HANDLING AND OUT OF COMPLIANCE BRAKING AND CAUSE SERIOUS INJURY OR DEATH.

WARNING

THE IN-CAB MASTER ROCKER SWITCH LABELED "THRTL" (THROTTLE) MUST BE IN THE "OFF" POSITION WHEN THE TRUCK IS BEING DRIVEN ABOVE 10MPH!

SHOULD THE THROTTLE ENGAGE DURING TRAVEL, LOSS OF VEHICLE CONTROL COULD OCCUR RESULTING IN SERIOUS INJURY OR DEATH.

WARNING

DO WEAR PERSONAL PROTECTION ITEMS SUCH AS HARD HATS, SAFETY GLASSES (EYE PROTECTION), HEAVY GLOVING, AND SAFETY SHOES WHEN OPERATING OR MAINTAINING THE ELITE OR CHASSIS. OPERATORS SHOULD WEAR VESTING THAT HAS A BRIGHT COLORATION (ORANGE) AND REFLECTIVE CHARACTERISTICS FOR DAY/NIGHT VISIBILITY. FOLLOW ALL OF YOUR EMPLOYER'S REQUIREMENTS FOR PERSONAL PROTECTIVE ITEMS.

WARNING

ALWAYS BE CERTAIN THE THROTTLE ADVANCE CAN *NOT* AUTOMATICALLY ADVANCE THE DIESEL RPM UNLESS THE VEHICLE TRANSMISSION IS IN *NEUTRAL*!

AUTOMATIC ADVANCEMENT OF THROTTLE WHILE VEHICLE IS IN A DRIVE OR REVERSE GEAR COULD RESULT IN LOSS OF VEHICLE CONTROL AND CAUSE SERIOUS INJURY OR DEATH.

SHOULD THIS MALFUNCTION EVER OCCUR, PARK THE VEHICLE IMMEDIATELY AND REPAIR *NEUTRAL INTERLOCK* OF THE THROTTLE ADVANCE SYSTEM.

WARNING

BEFORE OPERATING THE PACKER, BE CERTAIN TO CLEAR THE AREA OF ALL PEOPLE. ALWAYS BE ATTENTIVE WHEN OPERATING THE CONTROLS. WATCHDOG THE AREA FOR ACTIVITY. SCAN YOUR MIRRORS REGULARLY. NEVER BACK-UP THE VEHICLE UNLESS YOU ARE COMPLETELY CERTAIN IT IS SAFE TO DO SO. USE A HELPER/OBSERVER OR GET OUT YOURSELF, IF NECESSARY, TO ASSURE YOU CAN SAFELY BACK-UP. THOROUGHLY UNDERSTAND THE CONTROLS BEFORE OPERATING THE PACKER. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH TO YOURSELF OR OTHERS.

DANGER

NEVER OPERATE, MAINTAIN, OR REPAIR THE VEHICLE OR THE ELITE WHILE UNDER THE INFLUENCE OF ALCOHOL OR DRUGS! WORKERS UNDER THE INFLUENCE PRESENT A HAZARD TO THEMSELVES AND OTHERS AND CAN CAUSE SERIOUS INJURY OR DEATH.

DO NOT OPERATE, MAINTAIN, OR REPAIR THE VEHICLE OR THE ELITE UNLESS YOU ARE ALERT, CLEAR-HEADED AND WELL RESTED. IF YOU ARE FEELING TIRED, DO OTHER WORK CHORES THAT DO *NOT* REQUIRE YOU TO BE NEAR A HYDRAULICALY-POWERED MACHINE.

CAUTION

ALWAYS KEEP THE IN-CAB "GATE AJAR" PILOT LIGHT IN GOOD WORKING CONDITION. ALWAYS BE SURE THE BACK-UP ALARM SOUNDS WHENEVER THE TAILGATE IS RAISED-UP A FOOT OR SO. REPLACE LAMP BULB OR REPAIR ELECTRICAL WIRE SYSTEM IMMEDIATELY. FAILURE TO DO SO COULD LEAD TO SERIOUS SITUATIONS.

WARNING

DO NOT WEAR WATCHES, RINGS, AND JEWELRY WHILE WORKING WITH MECHANICAL OR ELECTRICAL EQUIPMENT. DO NOT WEAR LOOSE CLOTHING THAT COULD ENTAGLE YOU INTO MOVING OR ROTATING COMPONENTS. THESE TYPES OF THINGS WILL BE HAZARDOUS AND COULD CAUSE SERIOUS INJURY OR DEATH IF WORN NEAR MOVING MECHANICAL OR HYDRAULIC MACHINE PARTS.

WARNING

BEFORE RAISING THE TAILGATE, BE SURE THERE EXISTS ADEQUATE CLEARANCE BETWEEN TAILGATE AND ANY BUILDING STRUCTURE OR ELECTRICAL POWER LINES (OR ANY OTHER OBSTACLES). ALLOWING THE TAILGATE TO STRIKE OBJECTS OR POWER LINES COULD CAUSE SERIOUS INJURY OR DEATH.

⚠ DANGER

ALWAYS DRIVE CAREFULLY AND DEFENSIVELY! ALWAYS BE AWARE THE CHASSIS/PACKER IS A *HEAVY* VEHICLE AND NOT A PASSENGER CAR. THE CHASSIS/PACKER WILL REQUIRE SLOWER CORNERING SPEEDS AND LONGER STOPPING DISTANCES. THE CHASSIS/PACKER WILL HAVE A HIGHER CENTER OF GRAVITY WHICH PRESENTS A "ROLL-OVER" HAZARD IF DRIVING HABITS ARE NOT ADJUSTED. BE AWARE THE CHASSIS/PACKER'S HANDLING AND BRAKING CHARACTERSITICS WILL *CHANGE* AS YOU BUILD A PAYLOAD. FAILURE TO ACCOUNT FOR THESE FACTORS COULD LEAD TO ROLL-OVER OR LOSS OF CONTROL RESULTING IN SERIOUS INJURY OR DEATH.

⚠ WARNING

SOME CONTAINER HANDLING "OPTIONS", SUCH AS THE ROOF-MOUNTED CABLE REEVER (AKA….THE "2-10"), AND THE SPOOLING DRUM WINCH, WILL HAVE CABLES WITH A "HOOK' AT THE END OF THE CABLE. THERE WILL EXSIST A BENT PEG FOR HOOK "STOREAGE".

WHEN THAT OPTION's HOOK IS "NOT" ACTIVELY BEING USED, ALWAYS "STORE" THE CABLE'S HOOK ONLY AT THE PROVIDED "BENT PEG" HOOK STORE. DO NOT STORE THE HOOK ANYWHERE ELSE!!

NEVER, (NEVER) "STORE" THE CABLE'S HOOK BY ATTACHING THE HOOK TO THE GATESIDE "HAND HOLDS" (AKA …GATESIDE "GRAB HANDLES"). THE HAND-HOLDS ARE "ONLY" FOR THE 'HANDS" OF THE RIDERS & OPERATORS.

WRONGLY "HOOKING'THE CABLE's HOOK TO THE HAND-HOLD WILL RESULT IN SERIOUS INJURY (CABLE PINCHING/ CUTTING INJURIES), IF THE CABLE'S HOOK IS "WRONGLY" STORED AT THE GATESIDE "HANDHOLDS/ GRAB HANDLES".

ALWAYS "STORE" ANY CABLE's "HOOK" AT THE PROVIDED BENT PEG STYLE OF HOOK STOREAGE ONLY.

⚠ DANGER

ALWAYS EXERCISE YOUR HIGHEST SPECIAL CARE WHEN "BACKING-UP" THE CHASSIS/PACKER!

THE CHASSIS/PACKER IS TYPICAL OF ALL REAR LOADERS IN THAT IT HAS A "BLIND-SPOT" WHICH THE VEHICLE'S MIRRORS CAN *NOT* PUT INTO THEIR "FIELD OF VISION".

FAILURE TO ALWAYS USE THE MOST EXTREME CARE IN BACKING-UP THE CHASSIS/PACKER WILL RESULT IN SERIOUS INJURY OR DEATH TO BYSTANDER OR WORK PARTNER.

ALWAYS FOLLOW YOUR EMPLOYER'S "SAFEST WAY TO BACK-UP" PROCEDURES/POLILCIES. THESE SHOULD INCLUDE:

- **PLANNING YOUR COLLECTION ROUTES TO MINIMIZE THE NEED FOR BACK-UPS**
- **USING A HELPER/OBSERVER TO GUIDE THE PERSON BEHIND THE STEERING WHEEL WHEN BACKING-UP**
- **HELPER/OBSERVER MUST ALWAYS BE OFF TO THE SIDE OF THE CHASSIS/PACKER AND WITHIN THE MIRRORS' FIELD OF VISION**
- **NEVER EXCEEDING ¼ MPH WHEN IN REVERSE**
- **ALWAYS KEEPING THE BACK-UP-ALARM IN TOP WORKING CONDITON…(KEEP IN MIND THAT *JUST HAVING* A FUNCTIONAL BACK-UP-ALARM IS *NOT* ENOUGH TO ASSURE SAFEST "BACKING-UP").**
- **ANYTHING ELSE YOU AND YOUR EMPLOYER DEEM HELPFUL TO BACKING-UP WITH EXTREME SAFETY**

⚠ CAUTION

HYDRAULIC SYSTEMS ARE HOT! DO NOT TOUCH ANY HYDRAULIC COMPONENTS OR YOU MAY BURN YOURSELF.

ALLOW THE HYDRAULICS SYSTEM TO COOL DOWN TO 100 DEGREES FAIRENHEIGHT (OR LESS) BEFORE DOING ANY HYDRAULIC MAINTENANCE OR REPAIR ACTIVITIES.

⚠ WARNING

WHEN REPLACING A HYDRAULIC "PLUMBING" COMPONENT SUCH AS A HOSE, TUBE, OR A FITTING, BE CERTAIN YOU USE ONLY AN EQUIVALENT PRESSURE RATING (OR HIGHER) REPLACEMENT PART! FAILURE TO HEED THIS WARNING COULD RESULT IN SUDDEN FAILURE (BURSTS OR FORCEFUL LEAKS) OF THE INFERIOR REPLACEMENT AND COULD CAUSE SERIOUS INJURY OR DEATH.

HIGH PRESSURE OIL STREAMS CAN CAUSE SERIOUS BURNS OR CAN PENETRATE TISSUE. FIRE CAN OCCUR IF THE ESCAPING OIL HITS A HOT SURFACE (SUCH AS VEHICLE EXHAUST SYSTEM). MACHINE COMPONENTS COULD SUDDENLY FALL OR OTHERWISE MOVE UNCONTROLLABLY.

THE CORRECT LENGTH OF HOSE MUST ALSO BE USED. CALL LOADMASTER IF IN ANY DOUBT ABOUT CORRECT REPLACEMENT PARTS FOR YOUR ELITE.

GETTING YOUR REPLACEMENT HYDRAULIC PLUMBING COMPONENTS FROM LOADMASTER WILL ASSURE CORRECT SPECIFICATIONS. IF YOU MUST PROCURE IT IN YOUR LOCALITY, USE ONLY NAME BRAND PARTS AND USE A REPUTABLE HYDRAULIC HOSE/FITTING ASSEMBLY HOUSE. DO NOT ALLOW THE "MIXING" OF DIFFERENT BRANDS AS THEY WILL NOT CORRECTLY MATE.

⚠ CAUTION

THE HYDRAULICS SYSTEM MAY HAVE "TRAPPED" HIGH-PRESSURES EVEN WHEN DIESEL IS OFF. ALWAYS RELIEVE THESE TRAPPED PRESSURES BY RATTLING THE CONTROL LEVERS ABOUT THEIR CENTERED-NEUTRAL POSITIONS (WITH THE DIESEL SHUTDOWN) BEFORE LOOSENING ANY SYSTEM CONNECTIONS.

SOME MACHINE COMPONENTS COULD HAVE GRAVITY PULLING ON THEM AS THEY ARE HYDRAULICALLY HELD IN PLACE. ALWAYS STOP AND THINK FIRST IF A BLADE OR OTHER MACHINE COMPONENT NEEDS TO BE REPOSITIONED TO ITS "DEAD END" (OR OTHER POSITION) SO IT WILL NOT *MOVE BY GRAVITY* WHEN A HYDRAULIC CONNECTION IS LOOSENED FOR REPAIR.

⚠ WARNING

HYDRAULIC HOSES AND TUBING MUST BE INSPECTED ON A DAILY BASIS FOR LEAKS, CUTS, ABRASIONS, DAMAGE, RUBBING (NO CLEARANCE IN ROUTING), BEFORE THE TRUCK IS PUT IN SERVICE. IF YOUR INSPECTION DISCOVERS SUCH ADVERSE CONDITIONS, THE SITUATION MUST BE CORRECTED BEFORE TRUCK CAN BE PLACED IN SERVICE. LOADMASTER RECOMMENDS YOU REPLACE *ALL* OF YOUR RUBBER HOSES AND THE CLAMPING AT LEAST EVERY THREE YEARS.

FAILURE TO CLOSELY INSPECT AND MAINTAIN YOUR ELITE AND CHASSIS COULD LEAD TO SERIOUS INJURY.

⚠ WARNING

NEVER OPERATE THE HYDRAULIC SYSTEM IF ANY LEAK IS PRESENT. SERIOUS INJURY MAY RESULT.

⚠ WARNING

THE HYDRAULIC CYLINDERS COULD BE HOLDING A PARTICULAR COMPONENT (SUCH AS A "BLADE") IN A PARTICULAR POSITION WHEN THE DIESEL IS OFF. AN EXAMPLE OF THIS IS WOULD BE THE SLIDER BLADE HELD UPWARD IN ITS "HOME" POSITION BY THE OIL "LOCKED" INSIDE ITS CYLINDERS WITH DIESEL OFF. IF A HYDRAULIC HOSE OR FITTING IS THEN WORKED-ON, GRAVITY *WILL MOVE* THE COMPONENT TO A NEW POSTION IN A UNCONTROLABLE FASHION. FAILURE TO ACCOUNT FOR THIS FACT COULD RESULT IN SERIOUS INJURY OR DEATH.

OFTEN YOU CAN PURPOSEFULLY MOVE THE COMPONENT TO A POSITON WHERE GRAVITY CAN NOT MOVE IT *BEFORE* WORKING ON THE HYDRAULICS.

SOMETIMES YOU WILL NEED TO SECURE THE COMPONENT IN PLACE BY WELDING TEMPORARY STEEL "BLOCKING" OR "STOPS" ONTO THE PACKER.

CALL LOADMASTER IF YOU HAVE ANY DOUBTS ABOUT THE CORRECT AND SAFEST METHODS OF DOING THIS.

⚠ WARNING

ALL OF THE ELITE'S PRESSURE GUAGE READINGS ARE TO BE TAKEN AT THE GAUGE STEM LOCATED AT THE INLET COVER OF THE BODY-MOUNTED VALVE! USE A GLYCERIN FILLED GUAGE ON THE END OF A 24" HOSE (1/4" DIAMETER WITH 3000 PSI WORKING PRESSURE RATING) THAT ALLOWS YOU TO BE FULLY OUTSIDE THE BODY WITH BOTH FEET ON GROUND AND THEN TAKE THE GAUGE READING. DIESEL MUST BE SHUTDOWN AND KEYS IN YOUR POCKET BEFORE ENTERING THE BODY THROUGH THE ACCESS DOOR TO COUPLE THE GAUGE COUPLER.

NEVER ATTEMPT TO READ A GLYCERIN-FILLED GAUGE WHICH IS ATTACHED TO THE INLET COVER OF THE *TAILGATE*-MOUNTED VALVE. ALWAYS COUPLE YOUR GLYCERIN FILLED GAUGE TO THE BODY-MOUNTED VALVE'S GUAGE STEM. ALL LOADMASTER PRESSURE SPECS ARE CHECKED/ADJUSTED AT THE BODY-MOUNTED VALVE'S GAUGE STEM.

Section 02
PREVENTIVE MAINTENANCE…

This section provides information specific to the **ELITE** that will be the basis for your P-M program. Preventive maintenance actions are done to assure the ELITE will efficiently and safely collect garbage for many years.

At the core of your preventive maintenance activities will be *three* major needs…

Keeping all of the ELITE's safety related systems in good working condition.

A regular lubrication/greasing discipline

Keeping the ELITE's hydraulic fluid clean

Preventive maintenance will extend beyond these *three,* but they deserve special mention and your special attention.

Read and understand all of the safety precautions given in this manual. The very nature of the P-M activities will sometimes require service/maintenance people to be *inside of, underneath of, or on top of* the ELITE.

Your shop's *safety* policies and procedures must be followed. Be certain your shop has a detailed LOCKOUT/TAGOUT policy in place and be certain all service/maintenance people understand it and follow it.

The service and maintenance people must understand the safety precautions stated for the various, specific service/maintenance procedures.

The service/maintenance people must also have a thorough understanding of correct ELITE'S OPERATION methods and follow all of the *operational* safety precautions and those that apply to service/maintenance activities.

P-M activities follow a periodic *schedule*. A record-keeping system of some sort is invaluable, if not mandatory. Many of today's maintenance record keeping systems are computerized. LOADMASTER has attempted to keep things simple and realistic in this manual's recommendations for periodic preventive maintenance. The time periods/frequencies are stated in plain "calendar" terms. Many record-keeping systems are based upon "hours" given by the vehicles "hour-meter".

Use these conversions to suit your situation…

Every day means 8 hours
Every week means 40 hours
Once a month means about 160 hours
Every six months means 1,000 hours
Once a year means about 2,000 hours

You can "tweak" these intervals a little bit to suit your specific situation for *grouping* P-M actions so that the real world logistics of *getting them done* is the most practical. Use your best judgement.

Occasionally, LOADMASTER may mail bulletins with additional or updated product information. Keep those bulletins with this manual and make hand written notes at the appropriate places in this manual referencing the updated information.

DANGER

FOLLOW ALL LOCKOUT/TAGOUT PROCEDURES AS DEFINED IN THIS MANUAL, AS WELL AS WELL AS DEFINED BY YOUR SPECIFIC SHOP (EMPLOYER) AND OSHA! FAILURE TO HEED THIS WARNING OF DANGER MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

DANGER

YOU MUST NOT SERVICE, MAINTAIN, OR REPAIR THE ELITE UNLESS:

YOU ARE QUALIFIED BY TRAINING AND EXPERIENCE IN THE SAFE *OPERATION* OF THIS MACHINE.

TRAINING INCLUDES COMPLETE KNOWLEDGE OF YOUR EMPLOYER'S WORK RULES, ALL GOVERMENTAL REGULATIONS, AND MANUFACTURER'S OPERATOR'S MANUAL RELATIVE TO THIS MACHINE'S SAFE USE.

A SERVICE TECHNICIAN WHO IS UNTRAINED IN THE SAFE *OPERATION* OF THE ELITE SUBJECTS HIMSELF/HERSELF AND OTHERS TO SERIOUS INJURY OR DEATH.

DANGER

YOU MUST NOT SERVICE, MAINTAIN, OR REPAIR THE ELITE UNLESS YOU ARE THOROUGHLY KNOWLEDGEABLE OF YOUR SHOP'S (YOUR EMPLOYER'S) DETAILED LOCKOUT/TAGOUT POLICIES AND PROCEDURES.

LOADMASTER HAS INCLUDED THE OUTLINE OF A SKELETON, BARE BONES LOCKOUT/TAGOUT PROCEDURE IN THIS MANUAL (SEE TABLE OF CONTENTS). IT IS THE RESPONSIBILITY OF THE OWNERS, SUPERVISORS, MAINTAINERS, AND OPERATORS OF THE ELITE TO FULLY DEVELOP A "DETAILED" LOCKOUT/TAGOUT PROCEDURE AND POLICY THAT SUITS YOUR SHOP'S SPECIFIC CIRCUMSTANCES.

DANGER

NEVER OPERATE, MAINTAIN, OR REPAIR THE VEHICLE OR THE ELITE WHILE UNDER THE INFLUENCE OF ALCOHOL OR DRUGS! WORKERS UNDER THE INFLUENCE PRESENT A HAZARD TO THEMSELVES AND OTHERS AND CAN CAUSE SERIOUS INJURY OR DEATH.

DO NOT OPERATE, MAINTAIN, OR REPAIR THE VEHICLE OR THE ELITE UNLESS YOU ARE ALERT, CLEAR-HEADED AND WELL RESTED. IF YOU ARE FEELING TIRED, DO OTHER WORK CHORES THAT DO *NOT* REQUIRE YOU TO BE NEAR A HYDRAULICALLY-POWERED MACHINE.

WARNING

DO NOT WEAR WATCHES, RINGS, AND JEWELRY WHILE WORKING WITH MECHANICAL OR ELECTRICAL EQUIPMENT. DO NOT WEAR LOOSE CLOTHING THAT COULD ENTAGLE YOU INTO MOVING OR ROTATING COMPONENTS. THESE TYPES OF THINGS WILL BE HAZARDOUS AND COULD CAUSE SERIOUS INJURY OR DEATH IF WORN NEAR MOVING MECHANICAL OR HYDRAULIC MACHINE PARTS.

WARNING

DO WEAR PERSONAL PROTECTION ITEMS SUCH AS HARD HATS, SAFETY GLASSES (EYE PROTECTION), HEAVY GLOVING, AND SAFETY SHOES WHEN OPERATING OR MAINTAINING THE ELITE OR CHASSIS. OPERATORS SHOULD WEAR VESTING THAT HAS A BRIGHT COLORATION (ORANGE) AND REFLECTIVE CHARACTERISTICS FOR DAY/NIGHT VISIBILITY. FOLLOW ALL OF YOUR EMPLOYER'S REQUIREMENTS FOR PERSONAL PROTECTIVE ITEMS.

PREVENTIVE MAINTENANCE… THE "SAFETY SYSTEMS" AND OVERALL UNIT

1 CHECK THE BACKUP ALARM TO BE IN GOOD WORKING CONDITION WHEN TAILGATE RAISES UPWARD…IT MUST "SOUND" OFF
Check DAILY

2 CHECK THE BACKUP ALARM TO BE IN GOOD WORKING CONDITION WHEN CHASSIS SHIFTS INTO REVERSE IT MUST SOUND
Check DAILY

3 CHECK THAT THE "SIGNAL BUZZERS" TO BE IN GOOD WORKING CONDITION; ON BOTH SIDES
Check DAILY

4 CHECK THAT THE SIDE STEPS ARE SECURELY ANCHORED AND FLAT AND NOT IMPACT DAMAGED
Check DAILY

5 CHECK THAT THE VARIOUS LIGHTS AND SIGNALS NEEDED FOR SAFE STREET TRAVEL ARE IN GOOD WORKING ORDER
Check DAILY

6 CHECK THAT THE IN-CAB PILOT LITE FOR "TAILGATE RAISED" IS FUNCTIONING (ILLUMINATING) CORRECTLY
Check DAILY

7 CHECK THAT THE HAND-HOLD GRAB HANDLES ARE SECURELY ANCHORED
Check DAILY

8 CHECK THAT THE BODY ACCESS DOOR'S LADDER,HINGES, AND LATCH ARE IN GOOD CONDITION AND FUNCTIONAL
Check DAILY

9 CHECK THAT ALL INFORMATIONAL AND SAFETY RELATED DECALS ARE IN GOOD, READABLE, AND CLEAN
Check DAILY

10 CHECK FOR ANY HYDRAULIC SYSTEM EXTERNAL LEAKS HYDRAULIC FLUID IS VERY FLAMMABLE
Check DAILY

11 CHECK THAT THE KNOBBED CONTROLS MOVE FREELY AND RETURN TO THEIR "NEUTRAL" POSITION FREELY
Check DAILY

12 CHECK THE PACKER AND THE TRUCK CHASSIS TO BE CLEAN AND FREE OF DEBRIS (PRESSURE WASH ONCE A MONTH)
Check/wash at least MONTHLY

13

14

15 CHECK THAT THE SUCTION LINE "GATE" VALVE IS FULLY OPEN
Check DAILY

16 CHECK THE CONDITION OF THE RETURN LINE FILTER
Check WEEKLY

17 CHECK THE CONDITION OF THE TAILGATE'S MAIN PIVOT HINGE…CHECK THE PINNINGS AND PIN RETENTIONS
Check MONTHLY

18 CHECK THE CONDITION OF THE TAILGATE LIFT CYLINDERS' PINS (4), AND PINNINGS AND PIN RETAINERS (BOLTS AND/OR COTTER PINS
Check MONTHLY

19 CHECK THE WEAR PATTERN OF THE SLIDE BLADES SLIDER SHOEING
Check MONTHLY

20 CHECK THE CONDITION OF THE BODY-T0-CHASSIS MOUNTING PLATES, HARDWARE, SPRINGS
Check MONTHLY

21 CHECK THE EJECTOR BLADE'S SHOEING FOR WEAR
Check EVERY 6 MONTHS

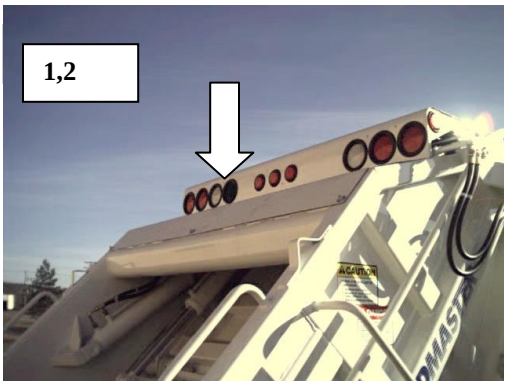
IF UNIT IS EQUIPPED WITH ANY OPTIONAL "CONTAINER LIFTING" MECHANISMS (SUCH AS THE OPTIONAL "2-10" ROOF MOUNTED REEVER) INVOLVING "CABLES"…THEN:

22 CHECK EACH CABLES "3-CLIP" ANCHORING TO BE SECURE AND IN GOOD CONDITION (ON THE BODY ROOF)
Check WEEKLY

23 CHECK THE CONDITION OF THE CABLE ITSELF
Check WEEKLY

24 CHECK THAT THE CABLE PROTECTING "THIMBLE" IS IN PLACE AND PARTICULARY CHECK THAT CABLE IS IN GOOD CONDITION AT THE ANCHORING "THIMBLE" AREA
Check WEEKLY

25 CHECK ALL THE PINNINGS, SHEAVE AXLES, ETC ARE ALL SECURLEY "RETAINED" AND IN GOOD CONDITION
Check WEEKLY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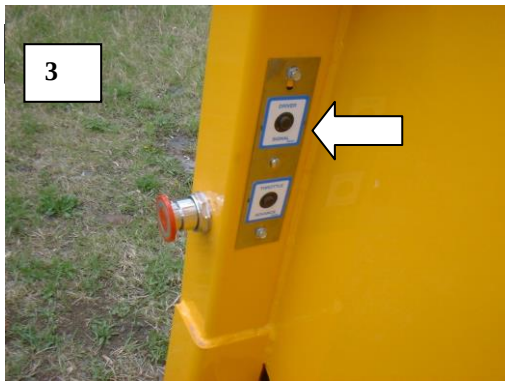
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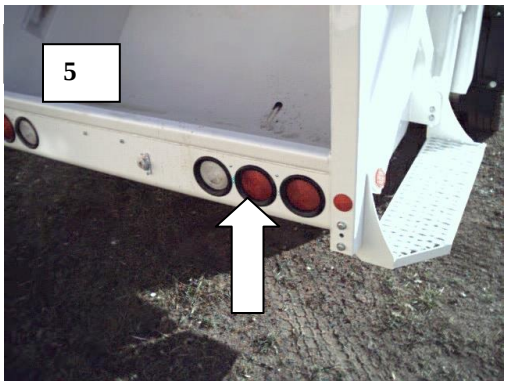
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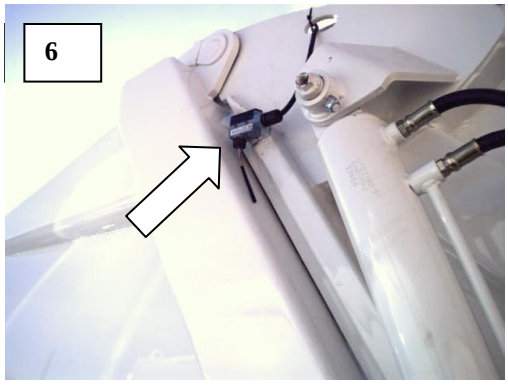
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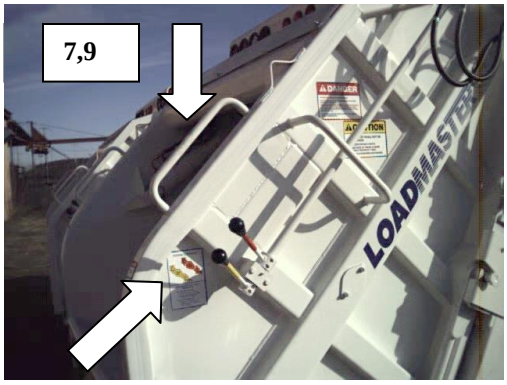
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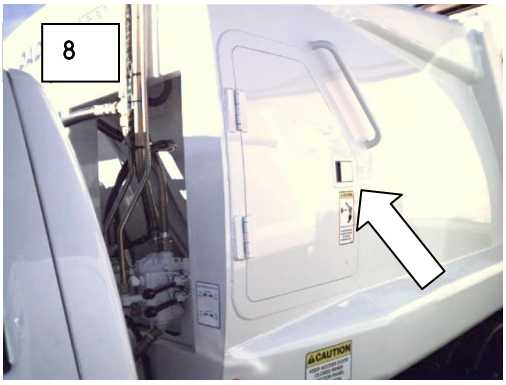
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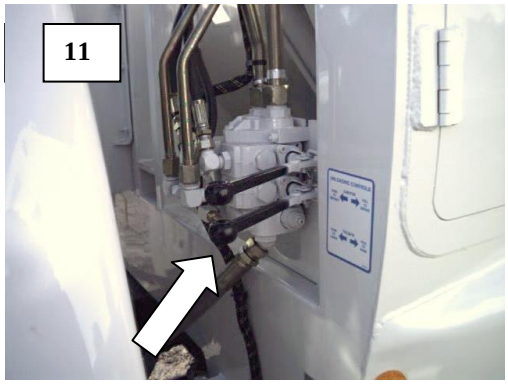
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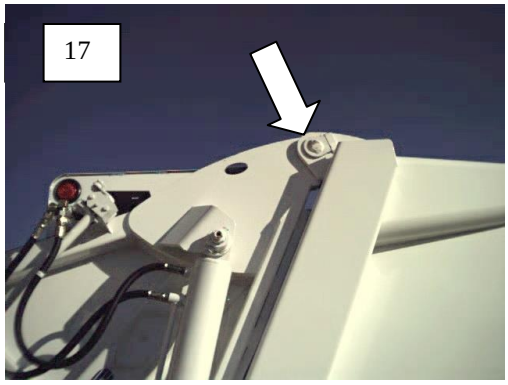
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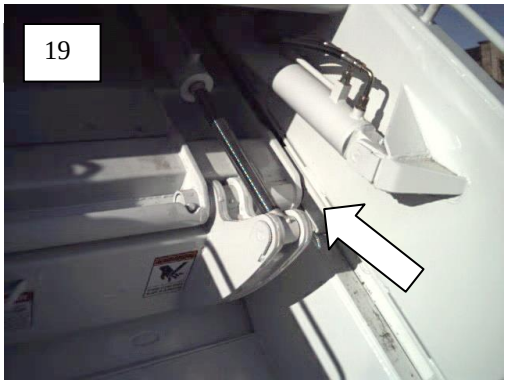
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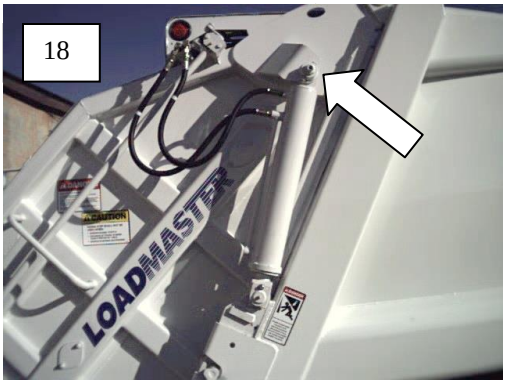
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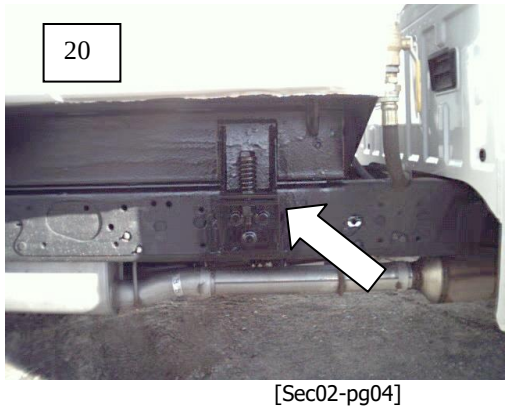
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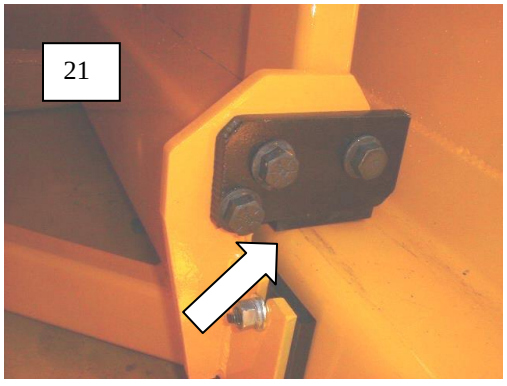
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P-M... SAFETY SYSTEMS AND OVERALL ELITE

1 & 2 CHECK THE BACKUP ALARM TO BE IN GOOD WORKING CONDITION...EVERY DAY

The ELITE has a back up alarm (grommet mounted) in the upper "light bar". This backup alarm is wired to sound *not only* with the transmission in reverse, but also whenever the tailgate raises up about a foot above fully closed. Repair this important system immediately if it does not "sound" when (a) the tailgate is raised upward about a foot *or* (b) when the chassis transmission is shifted into reverse. See the Table of Contents to locate the wiring schematic to aid in troubleshooting this system.

3 CHECK THE "DRIVER SIGNALLING BUZZERS" TO BE IN GOOD WORKING CONDITION…EVERY DAY

There are two "button switches". One switch is on the left side of tailgate and one on the right side of tailgate. They are labeled "driver signal". One "buzzer" is mounted under the dash and is controlled by either "driver signal" switch. Repair immediately. See Table of Contents for wiring schematics to aid in troubleshooting this signal system. The wiring scheme is for either of these switches to "make ground".

4 CHECK THE SIDE STEPS TO BE SECURELY ATTACHED, FLAT AND STRAIGHT, AND NOT IMPACT DAMAGED…EVERY DAY

LOADMASTER has these fabricated steel parts listed in the PARTS MANUAL. Repair or replace these steps as needed.

5 CHECK THAT THE VARIOUS LIGHTS AND SIGNALS NEEDED FOR SAFE STREET TRAVEL ARE IN GOOD WORKING CONDITION…EVERY DAY

Some of these lights are mounted to the ELITE body and some are a part of the chassis. See the Table of Contents for wiring diagrams (if needed) to troubleshoot a wiring problem. Most often a simple "lamp" (bulb) replacement is needed.

6 CHECK THAT THE "GATE AJAR" IN-CAB PILOT LITE IS IN GOOD WORKING CONDITION…EVERY DAY

This "gate ajar" light will properly illuminate whenever the tailgate is raised up about 1-2 foot. There is a wobble-stick switch located at the tailgate to body hinge on driver's side of body (left side). This wobble-stick limit switch's job is to control the "gate ajar" pilot light. This pilot light is the only light mounted in the "rocker switch" panel in the cab. The wobble-stick limit switch is wired NC (normally closed) and is held open when the tailgate is almost fully down. See Table of Contents to locate the wiring schematic to help trouble shoot.

7 CHECK THAT THE GRAB HANDLES ARE SECURELY ANCHORED…EVERY DAY

Look for any evidence of structural cracks. Repair if needed.

8 CHECK THAT THE BODY ACCESS DOOR'S LADDER, HINGES, AND LATCH ARE IN GOOD CONDITION…EVERY DAY

The ladder's fasteners must be snug and the hinges not worn. Once a month a little grease on the slam-latch's bolt will assures a good action. Repair worn or failed parts.

9 CHECK THE INFORMATIONAL DECALS, THE SAFETY DECALS AND OTHER LABELS TO BE READABLE, CLEAN, AND IN GOOD CONDITION…EVERY DAY

Make a photocopy of the decals shown in this manual. Walk around the ELITE and circle in red any that need replacement. LOADMASTER has them in stock. Replace immediately.

If you repaint either mask-off the decals or order a complete fresh set from LOADMASTER. They are not particularly expensive.

10 CHECK THE HYDRAULIC SYSTEM FOR ANY EXTERNAL LEAKS…EVERY DAY

Hydraulic fluid is flammable and messy. It can cause people to lose good footing and fall… on the ELITE and on the shop floor. Look for leaky connections, pump shaft leaks, valve leakage, etc and repair immediately.

Check the hoses for rubout spots that can later cause sudden hose failure. Check the steel tube runs for impact damage. Repair immediately.

11 CHECK THAT THE KNOBBED HAND LEVERS MOVE FREELY AND RETURN FREELY TO THEIR CENTERED-NEUTRAL POSITONS…EVERY DAY

The two hand-levers at the body-mounted valve (tailgate raise/lower and ejector extend/retract) are spring-centered. Make sure the spring itself (by itself) can return the spool to neutral-centered position. If the operator must add his own force to get to neutral, the spool needs repair. The *option* hand levers of the *tailgate-mounted valve* are the same types of operation…spring-centered. The two controls for the hopper blades (sweep and slide) have knockout positioners that properly "hold" the spool shifted, then release when pressure rises to their pressure settings.

Troubleshoot and repair any spool operation that is not as described above.

12 CHECK THAT THE ELITE ITSELF AND THE TRUCK CHASSIS ARE CLEAN AND FREE OF DEBRIS…MONTHLY

Actually make sure it is clean EVERY DAY. LOADMASTER suggests you pressure wash the ELITE *at least* MONTHLY. A weekly wash is even better. Keeping your ELITE clean will promote paint durability, significantly reduce your fire risks, reduce slippery hands and feet, and give the truck's operator a sense of order and professionalism. Also, all of the service/maintenance people will then have better working conditions. Stale garbage matter is foul and nasty.

Some debris will "blowby" the ejector blade settle on the cab's side of the ejector. Shovel this debris to the outside once a week. Always "park" the ejector blade fully rearward (towards the tailgate) before entering the body.

DANGER...Shutdown the diesel and place the ignition keys in your pocket before entering the body access door!

When pressure washing, do not *directly* "blast" the electrical components such as the various switches…you may water damage them.

When pressure washing, always keep both feet squarely on the *ground*. The ELITE's painted steel surfaces will become extremely SLIPPERY when doused in soapy water!

Shutdown the diesel and place the ignition keys in your pocket <u>before</u> doing any cleaning.

Clean out all the debris from inside the cab. Do not allow the occasional "pack-rat operator" to have loose stuff inside the cab.

When pressure washing, pay particular attention to the under the floor area of the body where road-spray and tire-tossed sands can accumulate and then perpetually hold "water against steel" together causing corrosion. Pressure-wash the inside of the ELITEs lower floor underside so it is clean of accumulated dirt *so it can dry out*. The ELITE has a thick undercoating that can be spot repaired if this undersurface is clean.

13

14

15 CHECK THAT THE SUCTION LINE "GATE" VALVE IS FULLY OPEN…EVERY DAY

The lever of the full port ball valve must be fully parallel to the valves' body to be fully open. A closed or partially closed suction valve is really hard on the pump.

16 CHECK THE CONDITION OF THE RETURN FILTER…WEEKLY

Monitoring the condition of the return filter and replacing it's element is so important (and easy) that this hydraulic P-M topic is repeated here again. See the P-M…HYDRAULICS section for complete details on this. This P-M action is a real value!

17 CHECK THE CONDITION OF THE TAILGATE'S MAIN HINGE PINNING…MONTHLY

Check the left side and the right side. Check that the cotter key and washer are still in-place. Check the body-side and the gate-side fabricated structures for cracks in welds or parts. Check the pins themselves for wear patterns such as undercutting or notching. Repair any problems immediately.

18 CHECK THE CONDITION OF THE TAILGATE LIFT CYLINDERS' PINNINGS, PIN RETAINERS, AND STRUCTURE….MONTHLY

Check the left side and the right side. Check that the cotter keys and washers are still in-place. Check the pins themselves for unusual wear patterns like notching and undercutting. Check pin cap retainer bolts are still in-place and snug.

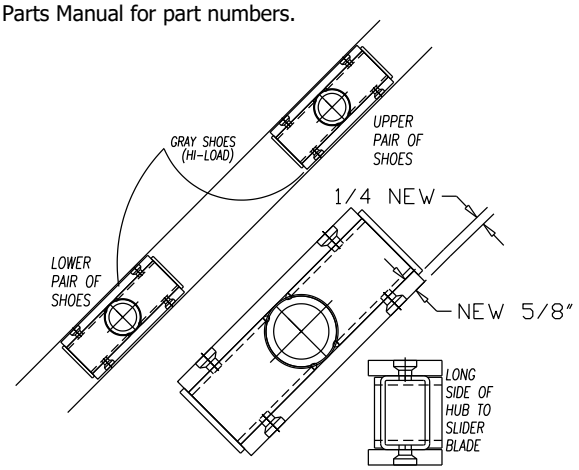
19 CHECK THE WEAR PATTERN OF SLIDER-BLADE SHOEING…MONTHLY

The uppermost surface of the lower shoe pair has the most load on it and will be the most important wear shoe to monitor. This is the shoe pair at the blades "pivot"… where the sweep pins to the slide blade.

These shoes (and the upper ones) have 5/8" thick plastic "wear pucks" *when new*. Replace the shoe when there is some area where the plastic shoe is worn to 1/8" of remaining plastic shoe *above steel*.

Don't operate the ELITE when badly worn plastic slider shoes will allow destructive "steel to steel" slide contact. Plastic must slide on steel….not steel on steel.

For the ELITE, all four shoe subassemblies are identical. The shoe's pivot is centered lengthwise, but the pivot hub is offset left to right… the side with more hub protruding is to the *inside*. The shoes on the HI-LOAD side are gray color nylatron NSM. The shoes on the low-load side are REPRO polyethylene (usually black, sometimes green).Over time…the all the plastic shoes will stain and blacken…scrape the plastic shoe with a pocket knife to reveal the any shoe's color. See Parts Manual for part numbers.

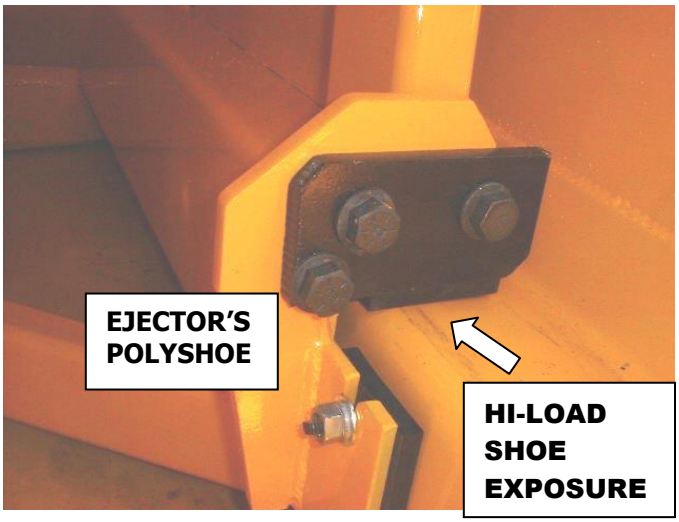


20 CHECK THE CONDITION OF THE BODY TO CHASSIS MOUNTING PLATES, BRACKETS, HARDWARE , AND SPRINGS…MONTHLY

Check that the all the mount parts that anchor the ELITE body to the truck chassis are in-place and in good condition. Check for any structural cracking.

21 CHECK THE EJECTOR BLADE'S SHOEING FOR WEAR PATTERN…MONTHLY

The shoe that sees the most load is the upper-shoe. It is the one that is captured by the retainer cap held on by three ½" flange head bolts. When this shoe is "new", it is 1-1/4" thick. Replace this shoe when there is only about ¼" of plastic shoe showing below the 3-bolt retainer cap. When new, ¾" of plastic is exposed beneath the lower edge of 3-bolt retainer cap.



REMINDER… <u>BEFORE</u> DOING ANY OF THE P-M ACTIVITIES…READ AND UNDERSTAND ALL THE <u>SAFETY PRECAUTIONS</u> GIVEN THROUGHOUT THIS ENTIRE OPERATION AND MAINTENANCE MANUAL!

PREVENTIVE MAINTENANCE... LUBRICATION

GREASING THE "ZERKS"...

1 MAIN WRIST PIVOT PIN OF SWEEP TO SLIDER BLADES (2 ZERKS)
Grease WEEKLY

2 SWEEP CYLINDERS RODSIDE PIN AT SWEEP BLADE (2 ZERKS)
Grease WEEKLY

3 SWEEP CYLINDERS BASESIDE PIN AT SLIDER BLADE (2 ZERKS)
Grease WEEKLY

4 SLIDER CYLINDERS RODSIDE PIN (2 ZERKS)
Grease WEEKLY

5 SLIDER CYLINDERS BASESIDE PIN (2 ZERKS)
Grease every 6 MONTHS...remove uppermost sheetmetal cover for access to these

6 CONTROLS RODS PLASTIC BEARING BLOCK (4 ZERKS)
Grease WEEKLY

7 TRACK CHANNELS FOR SLIDER SHOES (BRUSH-ON)
Grease MONTHLY

8 UPPER AND LOWER PINS OF TAILGATE LIFT CYLINDER (4 ZERKS)
Grease WEEKLY

9 ACCESS DOOR LATCH'S SLAM BOLT
Grease MONTHLY (or spray lube it)

10 TAILGATE HINGE TO BODY (2 ZERKS)
Grease MONTHLY

11

12

13 2-10 REEVER *OPTION* "MULTIPLE" GREASE ZERKS
Grease MONTHLY

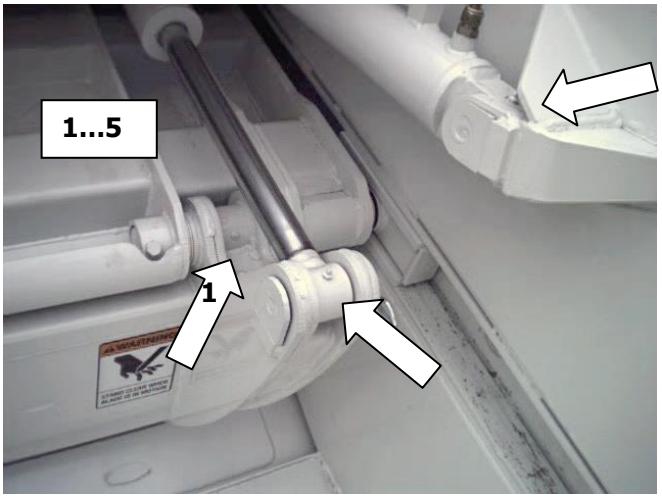
14 ROLL BAR *OPTION* "MULTIPLE" GREASE ZERKS
Grease MONTHLY

OTHER LUBRICANTS...

OVERHAUL THE HYDRAULIC FLUID ONCE EVERY TWO YEARS, OR SOONER IF CONDITIONS REQUIRE.
USE A BRAND-NAME HYDRAULIC FLUID IN **AW46 GRADE.**

This specification is a modern, "true" hydraulic fluid that has de-emulsifiers, anti-oxidation, controlled lubricity and a complete additive package tuned for hydraulic system durability.

- Always replace the hydraulic fluid if it appears milky (entrained water).
- Always replace your hydraulic fluid *whenever* you are installing a new pump (along with a new return filter).
- Always replace the fluid after a "catastrophic" pump failure (along with new return filter and new suction strainer AND doing a "clean-up" procedure *first*).
- Always install a new suction screen (in-tank..or remove old suction strainer and thoroughly clean old one) and install new return filter element *whenever* you do replace old hydraulic oil with new.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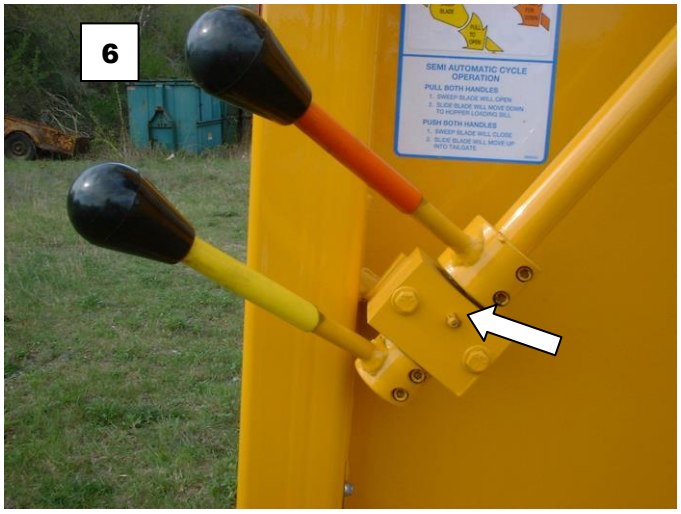
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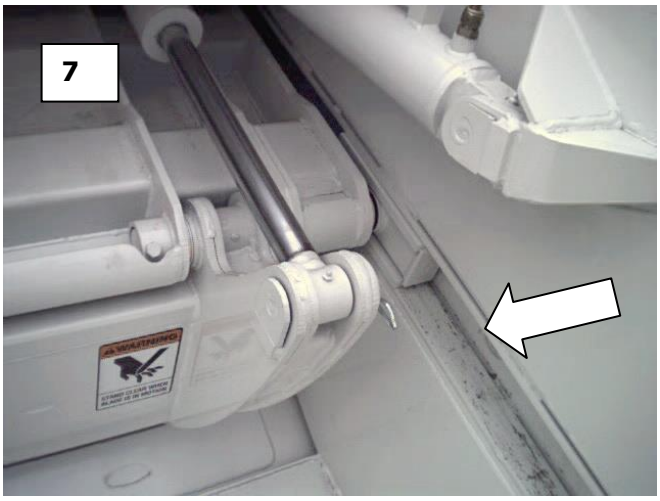
SEMI AUTOMATIC CYCLE OPERATION
PULL BOTH HANDLES
PUSH BOTH HANDLES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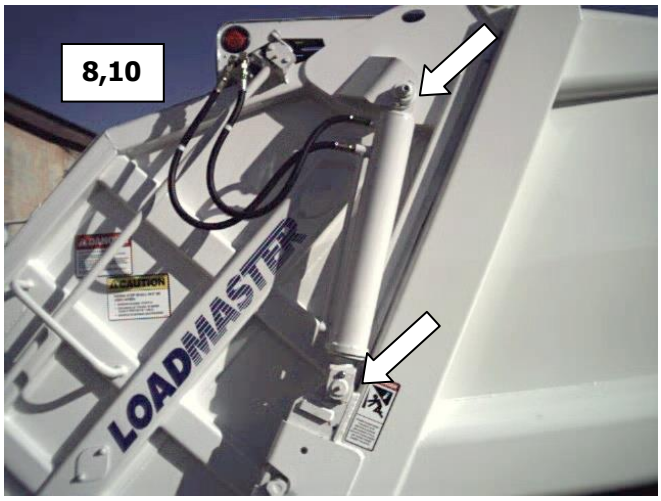
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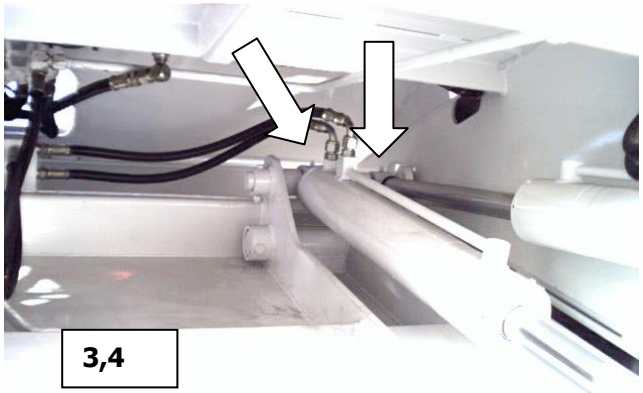
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PREVENTIVE MAINTENANCE… THE HYDRAULICS SYSTEM

1 CHECK CONDITION OF RETURN FILTER
Check WEEKLY

2 CHECK THE TANK'S FILL LEVEL
Check DAILY

3 CHECK THAT THE SUCTION LINE VALVE IS OPEN
Check DAILY

4 CHECK THE "PLUMBING" FOR ANY EXTERNAL LEAKS
Check DAILY

5 CHECK THE PUMP AND VALVES FOR ANY EXTERNAL LEAKAGE
Check DAILY

6 CHECK THE ROD CYLINDERS FOR EXTERNAL LEAKAGE
Check DAILY

7 INSPECT THE STEEL TUBES FOR DAMAGE/LOOSE CLAMPS
Check DAILY

8 CHECK THE FIRE EXTINGUISHER TO BE HAVE FULL CHARGE
Check DAILY

9 INSPECT HOSES FOR ABRASIONS, RUB SPOTS,ETC
Check DAILY

10 REPLACE THE IN-TANK SUCTION STRAINER
Yearly

11 REPLACE THE TANK'S FILLER/BREATHER
Yearly

12 REPLACE THE HYDRAULIC FULID
Every two years

13 PRESSURE WASH THE ENTIRE UNIT
Monthly

14 GREASE THE CONTROL RODS PLASTIC BEARINGS
Weekly

15

16

HYDRAULIC FLUID IS VERY FLAMMABLE. THE RISK OF A HYDRAULICS RELATED FIRE CAN BE REDUCED BY ATTENDING TO ANY LEAKAGE IMMEDIATELY, PRESSURE WASHING ONCE A WEEK, CLEANING OUT THE DEBRIS THAT BLOWS BY THE EJECTOR (INSIDE OF THE BODY TO THE FRONT SIDE OF THE EJECTOR BLADE). CARRY A FULLY CHARGED FIRE EXTINQUISHER ON-BOARD AND TRAIN YOUR OPERATOR FOR A "PLAN OF ACTION" IN CASE A FIRE DOES HAPPEN.


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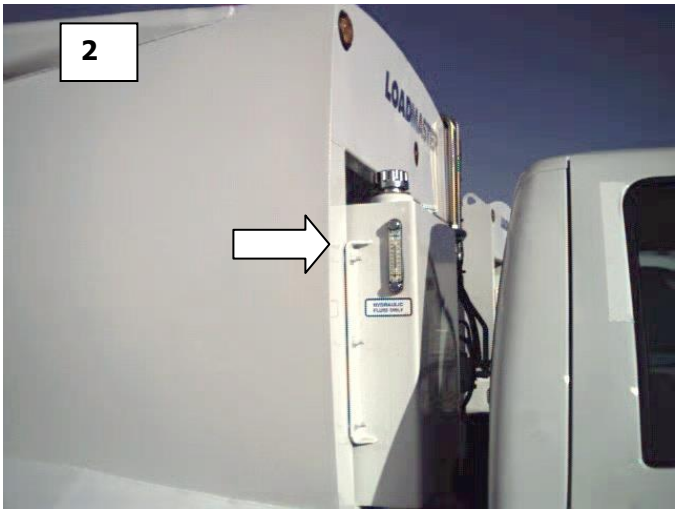
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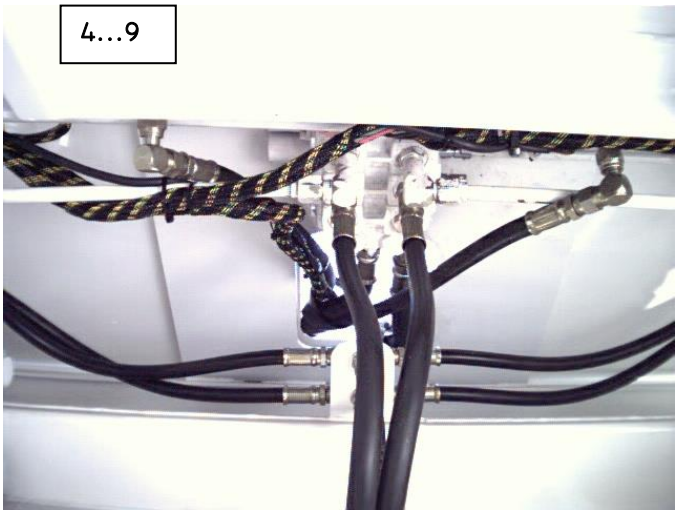
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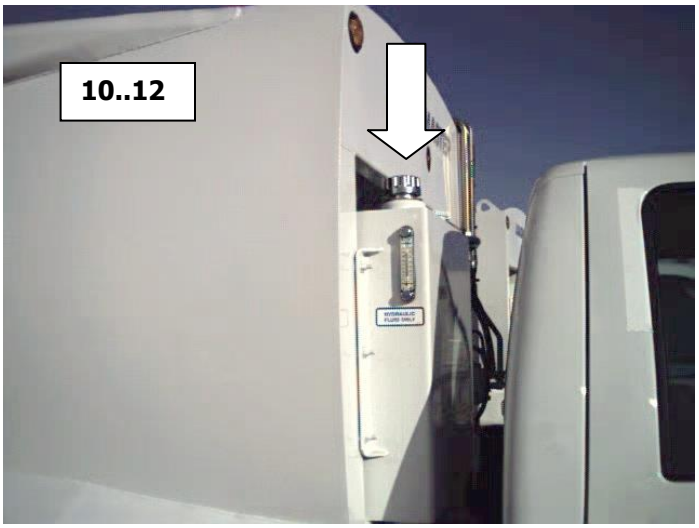
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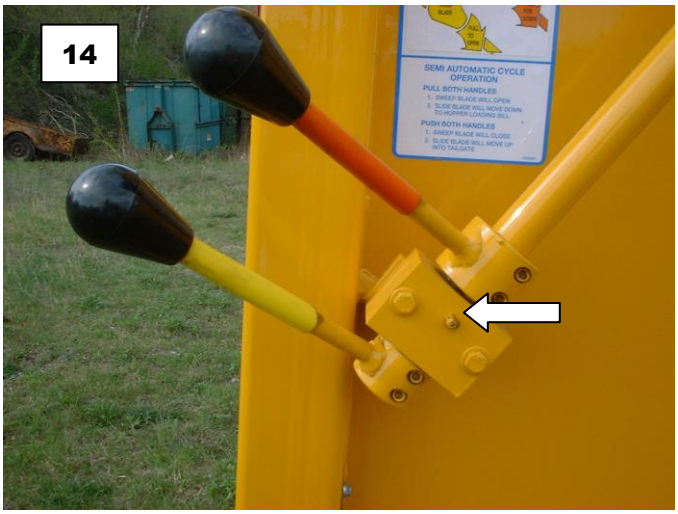

14
SEMI AUTOMATIC CYCLE OPERATION
PULL BOTH HANDLES
PUSH BOTH HANDLES

P-M… HYDRAULIC SYSTEM

1 CHECK CONDITION OF RETURN FILTER…ONCE A WEEK

The ELITE is equipped with a 5-micron Microglass premium-construction return line filter. The element is a "tank-top" style and has built-into the *element* by-pass valve. (see parts manual for p/n for serviceable element)

All ELITE's have a *condition indicator* attached to the filter's head casting. To check the condition of the return filter, follow this procedure.

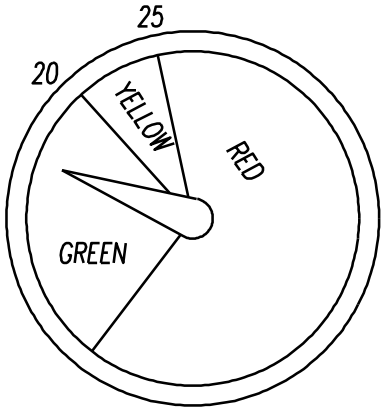
Checking procedure:

1- Diesel running; Transmission in Neutral; Park Brake applied on; PTO engaged on; Throttle Rocker off…
2- Using the chassis foot throttle, raise the diesel's RPM to about 1400 RPM and hold steady as you can
3- Turn your head around and look read the condition indicator. Observe through the cab's back window.

The face of the condition indicator is "zoned". The **green zone** is 0-20 PSI of "pressure drop" across the filter. The filter has additional dirt-holding capacity available and you do not need to replace the filter element. If the pointer needle is close to going into yellow, but still green, change out the filter now.

The **yellow zone** is 20-25 PSI of pressure drop and you *need to change out the filter <u>now</u>*. The filter is not yet in "bypass" but is very close to being so.

The **red zone** is something above 25 PSI. You have waited too long and now the filter is "bypassing". Change out the filter element right away.



Concepts worth understanding are *pressure drop*, *bypass* and *dirt holding capacity*. As the return filter does its job, it gradually collects more and more dirt on its media surface. The pressure drop across the filter will increase as the media loads up with dirt. This continues until the *pressure drop* is at 20 PSI and this is the point at which the element is said to be at its *dirt holding capacity*. The element must now be replaced. If it is not replaced, it will continue to load up with contaminants and the pressure drop will rise to 25 PSI. The bypass valve (built into the element) will open and the filter is said to be in *bypass*.

When a filter gets to bypass it is allowing contaminants to travel freely throughout your hydraulic system. The ELITE (all garbage packers) have components such as valve knockout positioners, valve spools, orifices, journal bearings that have some sensitivity to contamination.

Monitor the condition of this filter and replace it when indicated on the condition indicator.

There are other situations when you must changeout the return line filter…..

Always install a new filter whenever you have replaced your old hydraulic fluid with fresh fluid.

Always install new filter as part of installing a new pump.

Always install a *second* new filter 40 hours of run time after installing the first new filter following a catastrophic pump failure. A catastrophic pump failure can cause large amounts of debris to be generated. This must be *trapped out* of the system or face the real possibility of more expensive trouble occurring again.

Install a new filter at least once per year even if the condition indicator is not indicating the need.

Change-out Filter Element Procedure:

1- Park ejector blade fully rearward towards (the tailgate).
2- Shutdown the diesel and place the ignition keys in your pocket.

⚠ WARNING

Perform your shop's detailed LOCKOUT/TAGOUT procedure before entering the body area. Diesel must be shutdown and ignition keys in your pocket before entering the body or hopper area. NEVER ENTER THE BODY WITH THE DIESEL RUNNING.

3- Remove the filter's uppermost cap…it has a large (1-3/16") square wrenching spud. Rotate ccw to loosen.
4- Remove the hold-down spring. Remove the old filter element. The bypass valve is built-into the element.
5- Install fresh filter element and hold-down spring.
6- Re-instsall uppermost filter cap; assure the "o-ring" seal is in place.

2 CHECK THE OIL TANK'S FILL LEVEL…DAILY

The tank has a sight level gauge that is used to confirm the correct amount of hydraulic fluid is in the system.

Checking procedure:

1- Retract the ejector blade fully forward towards cab.
2- Tailgate fully lowered closed and latched.
3- The slider cylinders must be fully retracted (slider fully up) and sweep cylinders fully retracted (sweep rotated up).
4- PTO disengaged (diesel can be on or off).
5- Now read the tank's fill level gauge. The amber colored hydraulic oil's level should be visible
6- Fill to the upper black line (with all cylinders retracted).

DO NOT **OVERFILL** THE TANK. Oil will spray out of the tank's filler/breather if overfilled.

Be certain to position the ejector, tailgate, and compact blades are as described above *before* sighting the gauge. This positions the "cylinders" all retracted to assure you do not overfill.

Use a name brand hydraulic fluid in an AW46 grade whenever you add fluid.

3 CHECK THAT THE SUCTION LINE VALVE (GATE VALVE) IS FULLY OPEN…DAILY

The leverarm of the full-port ball valve must be "parallel" to its body to be fully open

4 CHECK THE "PLUMBING" FOR EXTERNAL LEAKS…DAILY

Hydraulic fluid is flammable and messy. When on the shop floor or on the ELITE, it can cause injuries from slipping and falling. Inspect the ELITE's various fittings, hoses, tubes for any evidence of oil escaping. Often by retorquing the hose end or fitting you can stop the leakage. Sometimes a hose or fitting will need to be replaced.

5 CHECK THE PUMP AND VALVES FOR EXTERNAL LEAKAGE…DAILY

The ELITE uses "0-ring boss" ports on all the valve ports and the pump. Leakage here is usually going to be correctable by retightening the attached fittings. In some rare cases the o-ring may be knicked or extruded, replace the o-ring or install fresh fitting. The valves have a group of o-rings seals between their cast sections. If oil seems to be weeping out between sections, try retorquing (evenly) the valve tie-rod bolts first (loosen valve's mounting foot bolts first). The pump has a seal on its input shaft that could eventually weep oil. This must be replaced if this is happening.

The most difficult job in fixing a leak is identifying where the oil is ***really*** escaping. Gravity, road travel blowage, etc can fool you into misidentifying origin. If in doubt, wash area and keep looking until confident.

6 CHECK THE ROD CYLINDERS FOR EXTERNAL LEAKAGE…DAILY

Rod cylinders have a bearing and seal system where the rod itself leaves the barrel. Repair if leakage occurs here.

7 INSPECT THE STEEL TUBE RUNS FOR DAMAGE AND LOOSE CLAMPING…DAILY

If a tube is impacted, it may become damaged. Check for this. Replace damaged tube so they do not rupture later.

8 CHECK FOR A FULLY CHARGED, ACCESSIBLE FIRE EXTINQUISHER…DAILY

Hydraulic fluid is flammable and could ignite if it sprays upon the diesel's hot exhaust surfaces.

9 INSPECT THE HOSES FOR ABRASIONS, RUB SPOTS,ETC…DAILY

Identifying possible hose weaknesses and repairing them promptly will reduce the possibility of a hose burst later on.

10 REPLACE THE IN-TANK SUCTION STRAINER…YEARLY

Near the floor of the oil-tank (submersed) is the suction filter/strainer. Whenever the tank has been drained of oil (for whatever reason), remove this filter and replace it (or clean it if in otherwise good condition). Make sure the 3-PSI bypass valve is "free" and will fully seat closed.

11 REPLACE THE TANK'S FILLER/BREATHER…YEARLY

There is a media inside this breather that will trap-out airborne dirt. This inexpensive unit is a "throwaway" part, don't bother trying to clean it…just get a new one from LOADMASTER and replace it. This breather is also your oil fill neck and has a wire basket to stop big stuff from falling into the tank when opened.

12 REPLACE THE HYDRAULIC FLUID…ONCE EVERY OTHER YEAR

This would be the minimum changeout frequency. A yearly changeout would be better. Modern hydraulic fluids have additive and lubricity packages that will deplete and wear down overtime. Always replace your hydraulic fluid when you are doing a "pump changeout" (along with a new return filter and suction filter).

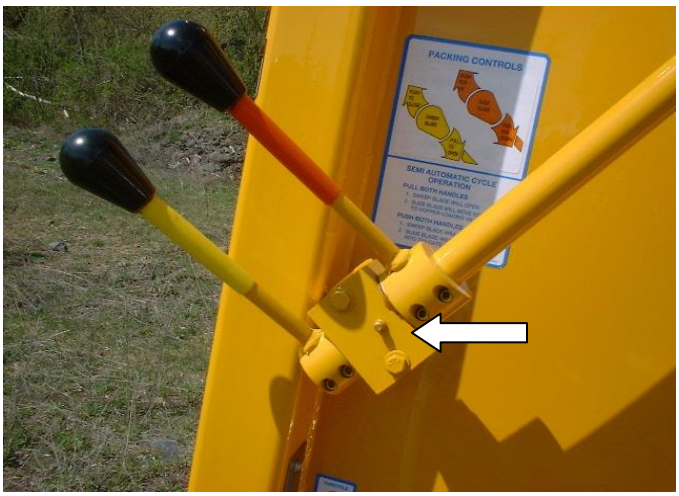
Replace your hydraulic fluid if you had a "contamination experience" such as a seized valve spool or if it has a milky (water contaminated) appearance.

13 PRESSURE WASH THE UNIT TO REDUCE FIRE RISK…WEEKLY

Well, at least once a month. Allowing any hydraulic fluid to accumulate will make putting out any fires much more difficult and also be a possible fire origin spot. A clean ELITE tends to be a better-maintained and safer ELITE.

14 GREASE THE CONTROL RODS PLASTIC BEARINGS…WEEKLY

If a lot of mechanical drag exists in the controls for the valves that have the knockout positioners, it may cause them to operate erratically. A regular greasing also forces out (displaces) moisture that can attack the steel shafting (corroding and pitting), thereby causing even more drag. Sometimes, what is thought to be a hydraulics problem is really a mechanical control problem.



LOCKOUT/TAGOUT OVERVIEW

LOADMASTER includes this procedure as a bare-bones (skeleton) lockout/tagout procedure. Your shop will need to flesh-out this procedure out to suit your specific circumstances. Your shop needs to develop a policy that outlines when this procedure will be implemented; include all the lockout/tagout call-outs throughout this manual.

Many times throughout this manual your will see the expression (or similar)….**Shutdown the diesel, place the ignition keys in your pocket, and place a sign on the steering wheel which reads "DO NOT START".**

This "phrasing" means the following (at the minimum):

1- **Be sure all the hydraulic control levers are in their centered-neutral positions.**
2- **Place the vehicle transmission in neutral.**
3- **Set the park brake to applied ON.**
4- **Turn the PTO rocker switch to OFF.**
5- **Turn the THRTL rocker switch to OFF.**
6- **Shut down (off) the diesel.**
7- **Place the vehicle ignition keys in your pocket.**
8- **Place a sign on the steering wheel that says, "DO NOT START ENGINE".**
9- **Chock the vehicle tires.**

The above 9 steps are a minimal, bare bones LOCKOUT/TAGOUT procedure.

LOADMASTER supplies the chained steering wheel sign with each unit shipped. Use plastic locking "ty-wraps" to attach the sign to the steering wheel (the kind that must be "cut off" to remove sign).

Your shop's fully detailed LOCKOUT/TAGOUT procedure will possibly include more steps than enumerated above.

Section 03
HOW IT WORKS..THE HYDRAULICS

This section of the manual is an overview of the various individual hydraulic components and how they all work together as a "system". Reading this section will have value to you because it will increase your overall understanding of "how your ELITE works", which will increase your problem solving skills and speed up any troubleshooting.

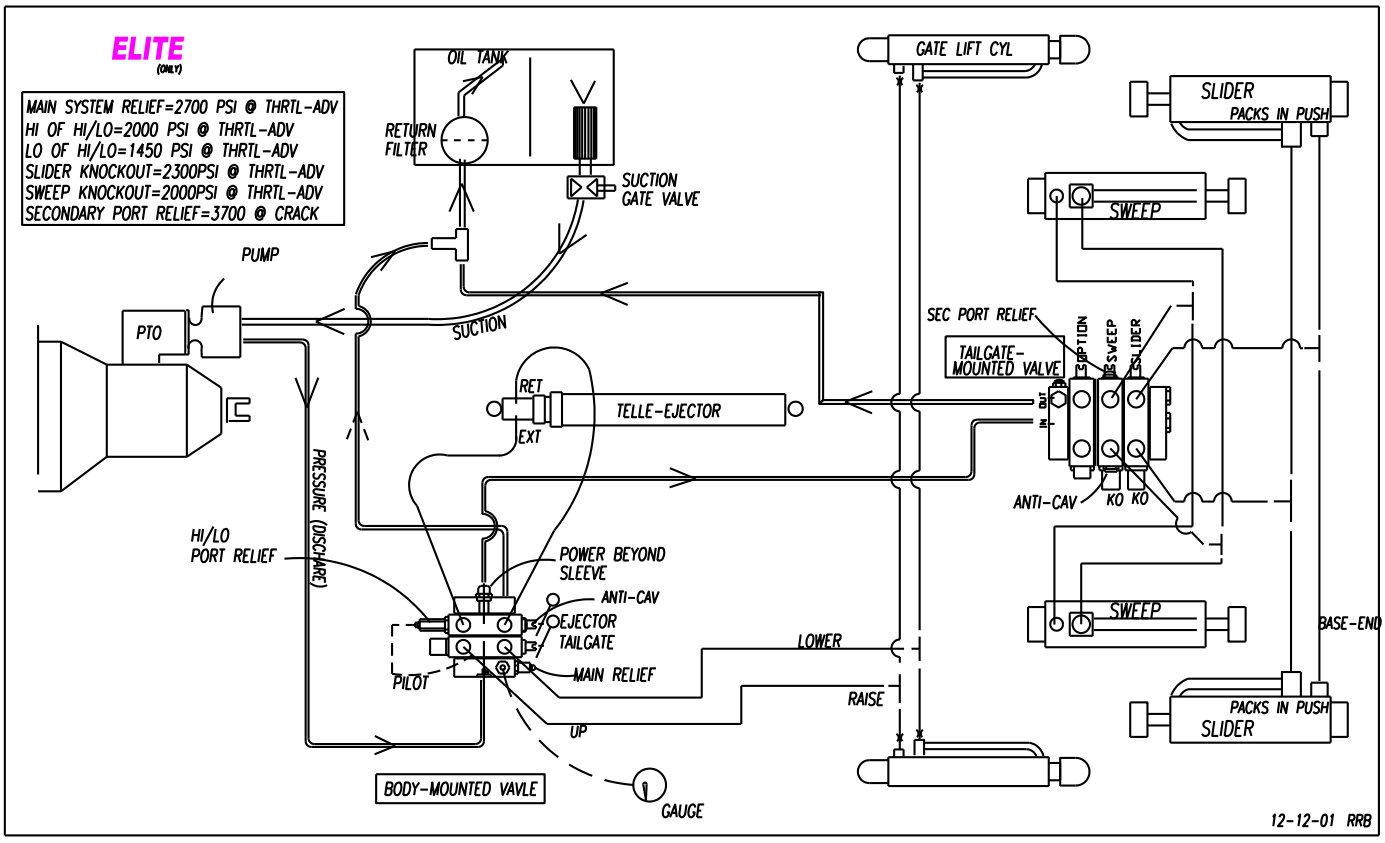
There will also be some reference to the electrics and pneumatics when needed.

The components... Most ELITE's are equipped with a CHELSEA *PTO*. The ELITE *pump* direct-couples to the PTO; no prop shafting is used. When the PTO is engaged on, the Pump will begin to rotate. The PTO typically has a drive ratio of 1:1.15. This means if the Diesel is rotating at 1200 RPM, the pump itself will be rotating at 1,380 RPM. The ELITE pump is typically a PARKER COMMERCIAL INTERTECH P20 SERIES. This is a modern gear pump that handles higher speeds and pressures well. Since it is a simple gear pump, any time the pump is rotating it will create flow in proportion to its rotational speed (RPM). The ELITE uses a 3 cubic inch per revolution pump. The circuit therefore is about a 18 GPM flow at a *diesel* speed of 1200 RPM.

The *body-mounted valve* is a 2-spool GRESEN V20. The lowermost cover is the *inlet cover.* The inlet cover is closest to the pump and directly connects to the pump by the *pump pressure hose.* The inlet cover holds the *main relief* and has a *gauge stem* from which all of your pressure gauge readings will be recorded. The ELITE'S main relief setting is 2700 PSI +/- 50 PSI @ throttle advanced. The inlet cover also connects the *auxiliary return hose* to tank. This auxiliary return provides a path to tank for the body-mtd valve's functions, since the outlet of the body-mtd valve has a *power beyond sleeve* that allows pressurized fluid to be available downstream to the tailgate-mounted valve.

The first spool section is the *tailgate section,* which is a double-acting spool in the case of the ELITE. This work section has no port devices installed (such as a port relief).

The second spool section (highest from body floor) is the *ejector section* which known as double acting. The ejector *telescopic cylinder's* extend (base-side) workport has a port relief called the *hi/lo port relief.* This hi/lo port relief is a pilot controlled cartridge. The pilot signal comes to the *hi/lo port* relief from the *tailgate cylinders* "raise" work port via the ¼" *pilot hose.* As the name implies, this hi/lo port relief relieves at two different "settings" controlled by the amount of pressure in the pilot hose. If the pilot pressure is 750 PSI OR LESS, then the hi/lo port relief will relieve at its low setting…which is 1450 PSI @ diesel ***advanced***. If the pilot pressure is greater than the threshold pressure of 750 PSI, then the hi/lo port relief will shift to its high setting, which is 2000 PSI @ throttle advanced for the ELITE. [sec03-pg01]



The position of the tailgate itself determines the pressure in pilot hose since the pilot hose connects to the tailgate *raise* plumbing. If the tailgate is raised (at time of payload pushout), the weight of the tailgate "induces" a pressure much greater than the 750 PSI threshold and the hi/lo shifts to its high setting and the full 2000 PSI @ throttle advanced is available for "pushout".

If the ELITE is "on the route" with the tailgate fully lowered and fully latched, there is low-pressure on the raise workport because there is no weight at all up in the air. The hi/lo port relief will therefore shift to its low setting, which is 1450 PSI @ throttle advanced for the ELITE. This is known as the automatic ejector *drift pressure.* As garbage is packed on-route, the ejector will slowly and automatically *drift* forward towards the cab until body is fully loaded.

The final section of the body-mounted valve is the *outlet cover.* The *power beyond sleeve* is mounted into the *outlet cover* of the body-mounted valve. The *PB sleeve* allows for feeding of pressurized fluid downstream…through the *roof tubing* and to the *tailgate-mounted valve.*

The *tailgate-mounted valve* controls the blade actions and most of the optional equipment, such as a drum winch or the "kick bar". It is a GRESEN V20 valve that usually has 3 or more working sections and hangs from the tailgate's roof. (The sections with the "spools" are called "work sections".)

The first section of the tailgate-mounted valve is the *inlet cover.* This inlet receives the flow from the roof mounted pressure tube. It also is the origin of the *return line* since the cover on the other side is a plugged *turnaround outlet cover.*

The next section(s) are the option work sections such as the "winch" and the "kickbar". Option work sections have "spools" which are spring centered and are manually shifted in or out to direct flow to a desired function. Typically there are no workport devices used for options on the ELITE.

The blade section closest to the pump is the *sweep blade work section*, and it always comes next, (which is "upstream" of the slider blade work section). This spooled section has a *knockout positioner.* This knockout postioner is a device that is controlled by one pressure "'trip" setting for both directions of spool shift. When the spool is manually shifted, the KO mechanically holds the spool shifted until the next time the pressure *rises* to its setting, whereupon it releases the spool and the spool knocks-out to centered-neutral position. This pressure rise typically occurs when the cylinders "bottom-out". This sweep section has a port relief mounted to the *sweep cylinders* base-side, known as the *secondary port relief.* This secondary port relief can allow the sweep blade to "unwrap" a little if the pressure induced should exceed "critical" structural loads. This protects the structure from excessively high loads that could otherwise cause structural damage or componentry damage.

Opposite the *secondary port relief* (at the opposite work port) is an *anticavitation check* that allows some "makeup oil" to go into sweep's rod-side during this slight blade unwrap. Whenever the secondary port relief is actually relieving, this anticavitation check precludes powerful suction effects that could extrude the sweep cylinder's piston seals.

The last working section (the one with the *throttle advance switch* trigger) is the *slider blade section.* This slider blade section has no port mounted devices. The slider section also has a *knockout positioner* directly coupled to one end of its spool.

The two hopper blade work sections have an internal flow path known as "tandem center". When a V20's tandem center spool section is shifted to do a function, it blocks the valve's power core on the *upstream side.* This characteristic is important in terms of proper blade *sequence.* Since the start of the first half and second half of the semi-automatic blade cycle is the "simultaneous" shifting of *both* blade spools, the *sweep blade* will always move *first* since its spool is *tandem center* and it is *upstream* (closest to pump) of the slide blade spool.

The last section of the tailgate-mounted valve is the *outlet cover.* In the case of the ELITE, this cover's outlet port is actually plugged but this section is casted to be a *turnaround* cover. The actual return hose is then connected to an outlet port of the *inlet cover*.

Leaving the tailgate-mounted valve, the oil flows through the *roof return tube* to the *return filter.*

The return filter is a 5-micron (nominal) with a bypass valve integral to "element". It is an in-tank element and has a *condition indicator* affixed to the head casting.

The *hydraulic reservoir* if fully dressed with a *level gauge with thermometer, magnet type drain plug, filler/media breather,* and *cleanout cover.*

The suction side of the tank has a 100 mesh replaceable *suction filter.* It has a 3-PSI bypass valve built into it. The tank has a baffle that separates the suction side from the return side to promote settling of dirt and entrained air.

The open loop...When no functions are being performed (all valve spools in their centered, neutral position); the oil flow follows a path known as the "open loop". It originates at the oil tank's *suction line filter*, through the *suction hose*, to the *pump*, through the pump *pressure hose*, to the *body-mounted valve*, up the *roof tube pressure*, to the *tailgate-mounted valve*, back through the *roof return tube*, through the *return line filter* and back at the *tank* again. As long as none of the spools are shifted, the oil will flow in this simple open loop.

The tailgate up/down function... The ELITE's tailgate is power-up and power-down (known as "double-acting"). The lowermost spool section of the body-mounted valve is the "tailgate" section and is plumbed to the tailgate lift cylinders.

When the hand lever is pulled *outward* the spool itself also moves outward and the pump's output flow is connected to the gate cylinders "up" port (which is the "base-end" cylinder port). At this very same moment, the same spool will also connect the "rod-side" ports to tank, so the gate will "raise".

You will notice that the tailgate base-end port (the "raise" port or "up" port) has a ¼" rubber hose connected. The other end of it connects to the hi/lo port relief. This will be explained.

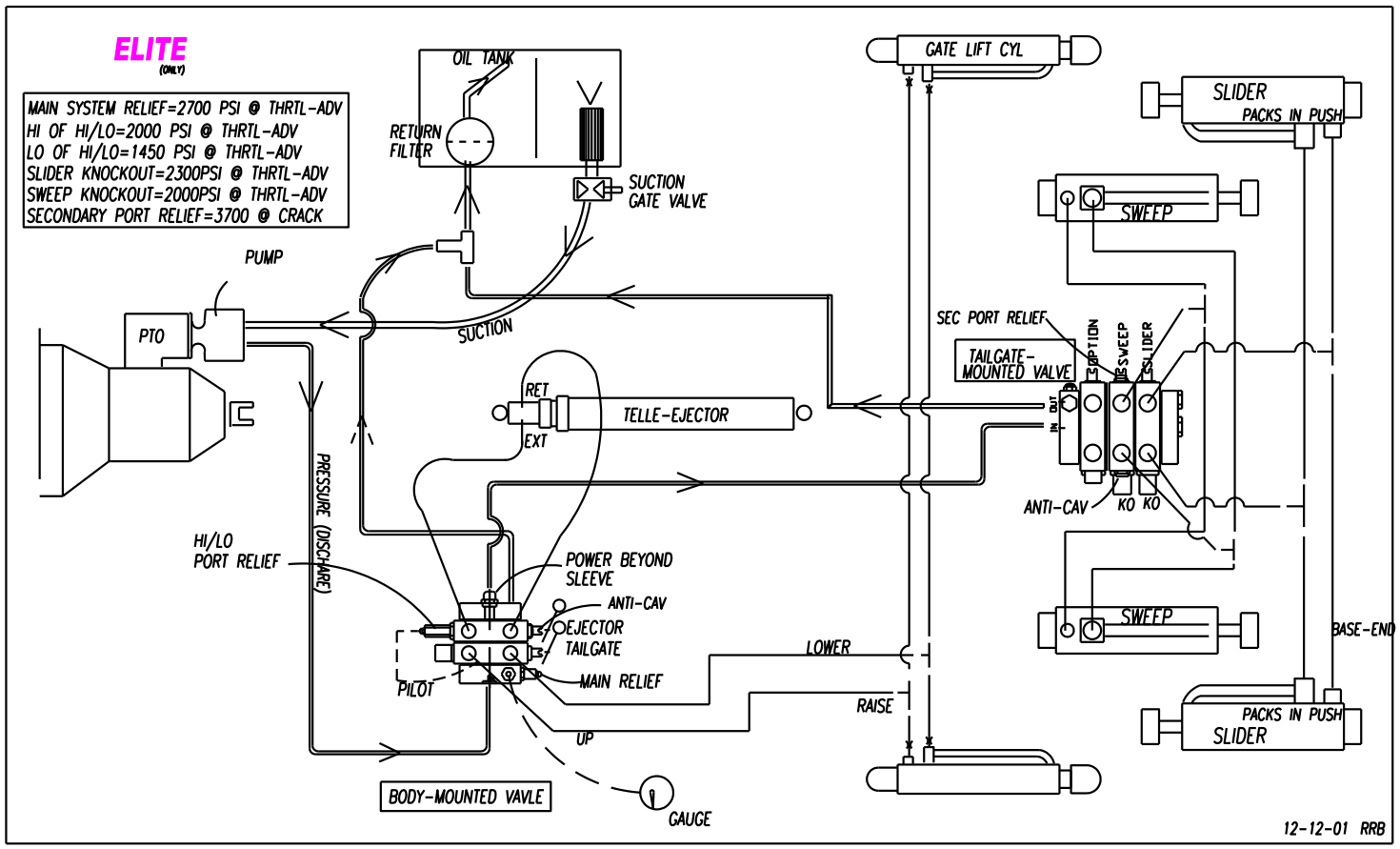
If the hand lever labeled tailgate is pushed *inward*, the tailgate cylinder will connect to tank and the gate will lower.

Since the tailgate spool section has no *port* relief at all, its *only* pressure-limiting device is the main relief of the body-mounted valve.

The tailgate cylinders have orifice restrictors built into each port (at the cylinder itself). This purposeful restriction precludes the tailgate from "over-running" the pump flow when lowering the gate, allowing the gate to lower smoothly. **Never stand or cross underneath a raised tailgate. Tailgate may unexpectedly and suddenly fall causing serious injury or death.**

The auxiliary return hose provides the return path to tank during tailgate raising or lowering.

The ejector function... The *telescopic cylinder* actuates the ejector blade. The upper work section of the body-mounted valve controls the ejectors telescopic. When the telescopic is fully *extended,* the ejector blade is fully rearward, towards the tailgate. The ejector blade does two jobs. When the tailgate is fully raised at the landfill or transfer station, the ejector blade is used to "push-out" the payload. This job requires the telescopic cylinder have available 2000 PSI @ throttle advanced.
[sec03-pg3]



When the ELITE is on the route (tailgate fully lowered and latched, of course), the ejector blade starts parked at rear of body and then slowly drifts forward (towards cab) as the garbage is collected and the payload builds. This *drift* will occur automatically as a pressure head of 1450 PSI (@ THROTTLE ADVANCED) is continuously maintained at the *extend* side of the telescopic. This second on-route job is to provide a resisting, yet drifting, front surface for the hopper blades to compress garbage against. This resistance is created by hydraulic pressure on the extend-side of telescopic as the telescopic *retracts* toward the cab (blade drifts forward towards the cab).

The hi/lo port relief installed at the *extend* workport will shift to one of these two different settings automatically. This HI/LO port relief receives a signal from a pilot hose that is plumbed to the tailgate cylinders *raise* port. Whenever the pressure in the pilot hose is lower than the threshold pressure of 750 PSI, the port relief will relieve at its low setting of 1450 PSI @ adv-throttle. Whenever the pilot pressure signal is greater than the threshold pressure of 750 PSI, this port relief will shift to and relieve at it's high setting, which is 2000 PSI @ throttle advanced for the ELITE.

When the tailgate is raised, the weight of the tailgate itself creates a pressure that is *greater* than the 750 PSI threshold pressure (that is transmitted to the pilot of hi/lo port relief by the ¼" diameter pilot hose). When the tailgate is lowered, the pilot pressure is *less* than the 750 PSI threshold pressure.

A tee (1/4" NPTF) can be installed at the pilot hose's ¼" tee so that a pressure gauge can be tapped into the pilot hose if needed for troubleshooting.

The hi/lo relief's low setting (drift pressure) is adjustable and the high setting is ***not*** adjustable. Do not shim adjust any of LOADMASTER'S *non*-adjustable relief's.

The compact blades function... Two of the *tailgate-mounted valve's* working sections controls the two compaction blades. The blade that pivots (rotates) is called the *sweep blade.* The blade that slides in the track channels is the *slide blade.* If the tailgate-mounted valve has more than two working sections (the sections with moveable "spools"), the extra work sections are for the "optional equipment". Work sections for the "options" are always "in front" (upstream; closest to the pump) of the blades work sections.

The sweep blade's work section is always upstream of the slider blade's work section. These two blade sections have a casted flow path known as *tandem center.* A V20 tandem center work section has the "power core" internally blocked *upstream*…this means that the shifted spool *closet to the pump* (the upstream sweep section) will consume *all* of the available pump flow with any downstream spools that are also shifted (the slider spool) getting no flow *until* the upstream section (the sweep) *shifts back to neutral.*

This creates a simple function "sequencing" effect. Since the correct operator's method of cycling the blades is to shift and release *both* spools' hand levers simultaneously, the sweep blade rotates (sweeps) *first* while the slide blade sits motionless waiting for the sweep's spool to knock-out to neutral. At the very moment the sweep's spool automatically shifts to neutral, all of the pump's flow is then directed to the slider blade's cylinders and the slider blade begins to move.

As mentioned earlier, both the sweep and the slider work sections have knock-out positioners. These knockouts, when teamed with the plumbing scheme and the "tandem" center section castings, provide for the sequencing of the semi-automatic cycling of the compaction blades. The blades must *both* sequence in their specific order and they must move distinct and separate of each other to be functioning normally.

The knockout positioner is the device that holds the blade spools shifted until the hydraulic pressure in that particular section *rises* to the knockouts *pressure setting.* When this setting is reached, the spool is released and it shifts to neutral (spool centered) position. The pressure setting specification for the ELITE is…sweep knockout spec is 2000 PSI @ throttle advanced and the slider knockout spec is 2300 PSI @ throttle advanced. The pressure *rise* typically occurs when the pair of cylinders bottom-out at the end of their stroke.

Having said all of this, the compact blades do a semi-automatic compaction cycle as follows…The cycle begins with both spools (via hand levers linkage controls) manually simultaneously shifted outward and released. Both knockout positioners grab and hold the spools shifted. The *sweep* cylinders begin to move first with all of the pump's flow going to the sweep cylinders. (The sweep's valve section is closest to the pump and its internal casted passages are "tandem-center", which means all of the pump oil goes to its own workport and nothing goes downstream.) The sweep blade continues to rotate until its cylinders complete their stroke and they bottom-out. This bottoming-out causes a rapid rise in sweep pressure and the sweep knockout will knockout the sweep spool to *neutral* centered. Meanwhile, the slider spool has been held shifted with no pump flow available to it. At the very moment the sweep spool knocks-out to neutral, all the pump flow is now available to the slider spool which begins directing the flow to the slider cylinders. The slider blade *now* begins to move and it continues to move until its cylinders bottom-out and the pressure rises to its setting. The slider knockout then knocks the spool to centered neutral and the first

half of the semi-automatic blade *cycle* is complete. *Both* spools are now at their centered neutral position. The blades are said to be stopped at their cycle *interrupted* position. This is correct and normal functioning.

The second half of the semi-automatic cycle begins *(after the operator visually assures it is safe to do so)* with both hand control levers being pushed inward simultaneously. The sweep blade again moves first (its valve section is still upstream of slider, of course) and the second half of the cycle occurs the same way but in the opposite direction of the first half.

The secondary port relief system... As mentioned earlier, the sweep work section has a port relief on the sweep cylinders extend-side (cylinder's base-end) and an anti-cavitation check opposite of it (on the retract-side; the rod-side). Acting together, these two port mounted cartridges are a *system* that can relieve the portion of the structural loads that are above allowable amounts. (This would be seen as a slight *unwrapping* of the sweep blade when the slider blade is nearly all the way up). In some applications this situation will rarely occur and in others it may sometimes occur when the ELITE body is near its full capacity.

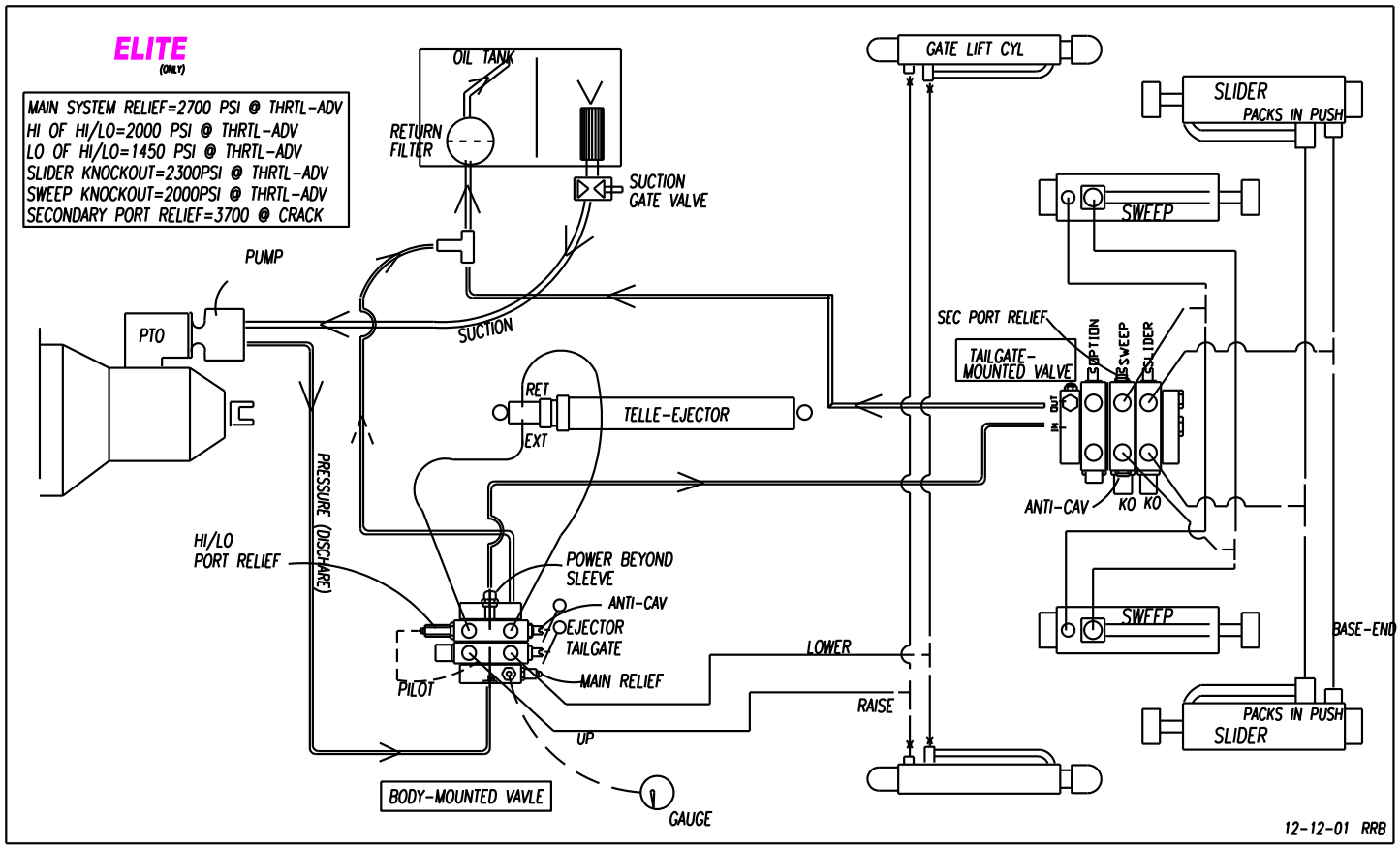
The sweep's secondary port relief is set to 3700 PSI @ "crack". (Crack being 2 GPM).

When the slider blade is travelling upward ("compacting" the garbage), the sweep blade has *already* been fully rotated down to "capture" the hopper's garbage and the sweep work-section will be in its centered neutral position. The compacting action of the slider blade travelling upward will necessarily *induce* a hydraulic pressure on the sweep cylinders base-side. The *only* relief located to relieve the excessive *portion* of this induced load is the relief on the cylinder *ports* side…the secondary port relief. (This is because the sweep spool is in its centered neutral position and the spool itself *blocks* any inlet cover mounted relief from "seeing" the induced pressure on the work port side).

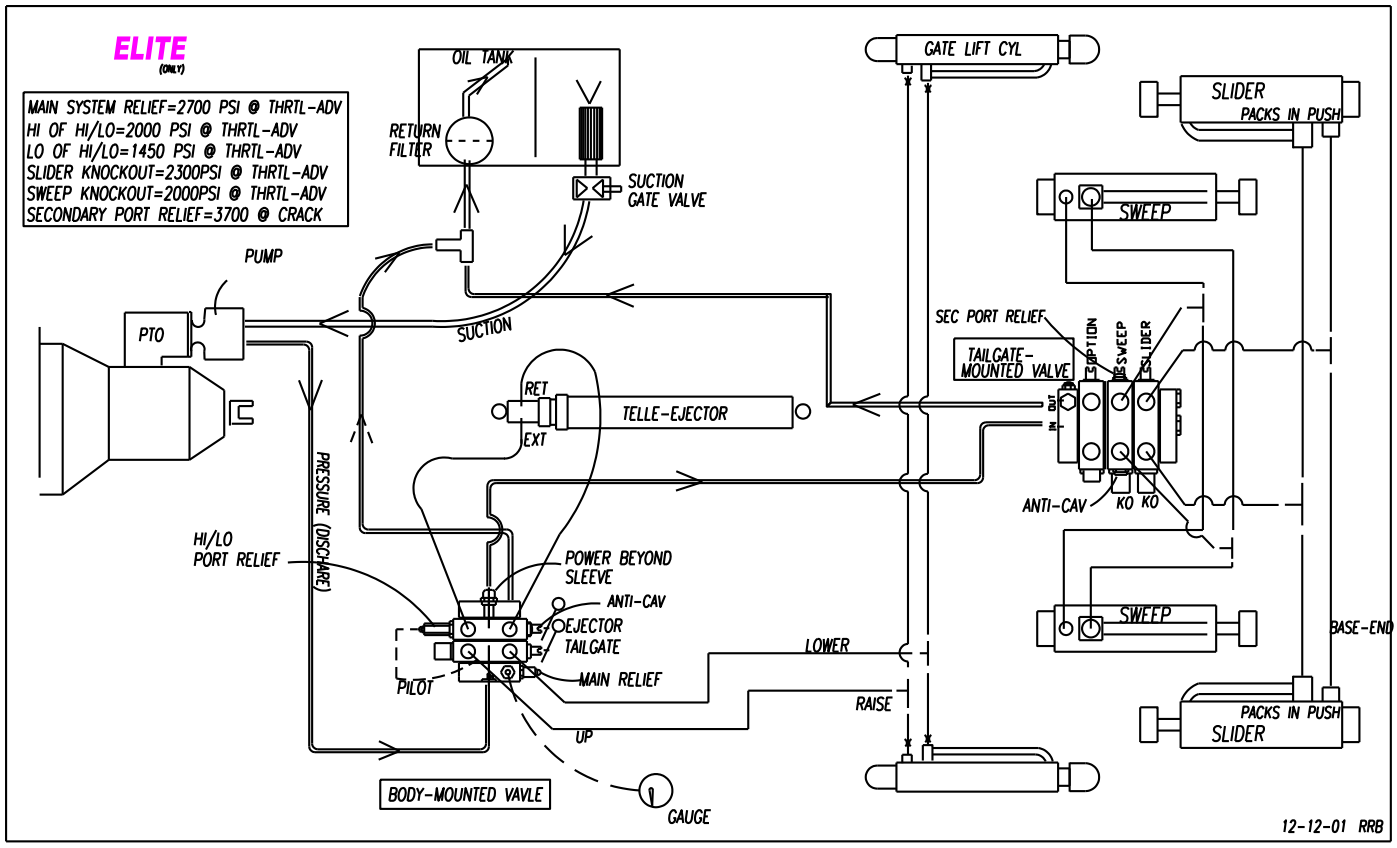
The anti-cavitation check simply allows for oil to be drawn into the sweep cylinder rod-side *during* any port relieving that may occur. This prevents any powerful *suction* effect from damaging cylinder seals.

This secondary port relief *system* prevents expensive component and structural failures by preventing blade loads and pressures from exceeding allowable values. LOADMASTER uses a fixed, non-adjustable secondary port relief that is set to the *correct* value for the ELITE. **Do not shim adjust any of LOADMASTER's non-adjustable reliefs.**

The optional equipment... Most ELITE'S will have an optional attachment or two. The option work-sections are in the tailgate-mounted valve just upstream of the hopper blades work-sections. [sec03-pg05]



These option work sections are simple manually shifted spools that must be held shifted for their function to occur. The "kickbar option" and the "winch" may be installed options. They are always double-acting and the work sections do not have any port devices. Therefore, their only pressure limiting device is the main relief at the inlet cover. They are spring-centered.



OVERVIEW OF ELITE SPECIFICATIONS…

This page lists the ELITE specifications needed for checking and setup. These values apply only to the ELITE; other LOADMASTER models will have other specifications. Refer to the manual that specifically applies to that model. **Always pay attention to the diesel RPM specified…if you measure at some other diesel RPM, the reading will *not* be correct!**

MAIN RELIEF…
This is located in the inlet cover of the body-mounted valve. The body-mounted valve is the valve just inside the body access door. Take your reading at the gauge stem provided at the inlet cover of the body-mounted valve.
Spec is 2700 PSI +/-50 PSI @throttle advanced

HI/LO PORT RELIEF…
This is a cartridge screwed-in at the ejector extend work-port of the body-mounted valve. It is the device that has the ¼" diameter rubber hose connected to it. As the name implies, this device has two pressures controlled in one device. This is explained elsewhere in this manual.
Spec is 1450 PSI @ THROTTLE ADVANCED for "low"
The above setting is known as the ejector "drift" pressure and is adjustable.

Spec is 2000 PSI +/- 100 PSI @ throttle advanced for "high"
The "high" setting is *not* adjustable.
This setting is known as the ejector "push-out" pressure.

SWEEP KNOCK-OUT POSITIONER…
This device is directly coupled to the sweep work-section's spool of the tailgate-mounted valve.
Spec is 2000 PSI +/-50 PSI @ throttle advanced
This device is very fast acting and can *not* be measured with a common glycerin-filled gauge. A glycerin filled gauge will give a reading that is very false.

SLIDER KNOCK-OUT POSITIONER…
This device is directly coupled to the slider work-section's spool of the tailgate-mounted valve.
Spec is 2300 PSI +/- 50 PSI @ throttle advanced
This device is very fast acting and can *not* be measured with a common glycerin-filled gauge. A glycerin filled gauge will give a reading that is very false.

SECONDARY PORT RELIEF…
This cartridge type port relief is screwed into the sweep work-section (on the cylinder's *base*-end) of the tailgate-mounted valve.
Spec is 3700 PSI @ "crack" flow
This setting is *not* adjustable (and do not "shim").

For more detailed explanations of these specifications, see the "check and setup" write-up that applies to each particular specification.

THROTTLE ADVANCED RPM…
This is the *diesel* RPM that the diesel will raise to when the ELITE's electric controls signal the need.
Spec is 1200 RPM-1300 RPM (typically).
When the diesel speed does advance, it will be noticeable to the ear and can be read at the cab's tachometer.

DIESEL IDLING RPM…
This is the diesel RPM with diesel at idle
Spec is per whatever the diesel manufacturer says it is supposed to be; usually about 750 RPM.

*EVERY SPECIFICATION IS TO BE MEASURED WITH THE GAUGE COUPLED AT THE INLET COVER OF THE **BODY –MOUNTED VALVE!*** If the readings are taken at some other spot in the hydraulic circuit, the readings will be in error.

LOADMASTER has installed the male gauge stem for gauge coupling at the inlet cover of the body-mounted valve as standard equipment.

LOADMASTER has available the 3000 PSI glycerin filled gauge, 2 feet of hosing, and the matching female coupler all preassembled. (Order LOADMASTER P/N 0130014).

This particular type of coupler requires that the pressure be low to cleanly couple/uncouple. **Shut down the diesel** and disengage the PTO when coupling/uncoupling the gauge to avoid having hydraulic oil escaping.

OVERVIEW OF ELITE COMPONENTRY…

PTO… Usually a CHELSEA PTO that will allow the pump to be direct coupled to the PTO. Drive ratio is typically near 1:1.15, which is to say a 15% speed increaser. The specific part number will vary depending on the type of chassis transmission, rotation required, etc.

PUMP…Usually a COMMMERCIAL-INTERTECH P20 in a 3 cubic inch per revolution displacement. The specific part number will vary depending on the rotational direction needed

BODY-MOUNTED VALVE…A GRESEN V20 SERIES configured to LOADMASTER's specification. This valve always has 2 spooled work sections. One work-section controls the tailgate cylinders and the other work-section controls the ejectors telescopic

TAILGATE-MOUNTED VALVE…Again the GRESEN V20 SERIES configured to LOADMASTER's specification. This valve has usually has 3 work sections. Closet to the pump will be any "option" work-section, followed by the *sweep* work-section, and lastly the *slider* work-section. The sweep and the slider work-sections have devices called knockout positioners directly coupled to their spools.

RETURN LINE FILTER… An Internorman 5-micron (nominal), tank-top, in-tank filter premium Microglas element (with bypass valve integral to element) and a condition indicator gauge.

OIL RESERVOIR…In-the-body 20 gallon capacity tank with magnetic type drain plug, fill level gauge with thermometer, top surface clean-out cover, combo screened filler/breather, and a full port ball valve at suction line. Inside the tank, near the bottom, is a 100 mesh suction line strainer.

TELESCOPIC CYLINDER…The ejector blade is actuated by a HYCO telescopic cylinder. It is built to a LOADMASTER dimensional specification for to suit the ELITE. When the telescopic is fully extended, the ejector blade is fully rearward, towards the tailgate. The 6-yard (only) uses a PETTIBONE rod-type ejector cylinder.

SWEEP CYLINDERS…A pair of rod-type hydraulic cylinders. The ELITE uses a 3-1/2" bore x 19" stroke with a 1-3/4" rod diameter. Premium quality design and manufacture by PETTIBONE. All of the ELITE's various cylinders have zero-leak o-ring boss ports and feature chrome plated rodding.

SLIDER CYLINDERS… A pair of rod-type hydraulic cylinders. The ELITE uses a 3-1/2" bore x 19" stroke with a 1-3/4" rod diameter. Premium quality design and manufacture by PETTIBONE.

TAILGATE CYLINDERS… A pair of rod-type hydraulic cylinders. The ELITE uses a 3-1/2" bore x 20" stroke with a 1-3/4" rod diameter. These cylinders are double-acting since the ELITE has a automatic gate latches. These have port-mounted orifices.

IN-CAB ROCKER SWITCH PANEL…The various switched electrical circuits will have their "inside the cab" switches grouped together here. A switch is "on" (closed) if the red color band is visible. This switch panel is typically located just to the left of the steering wheel.

FUSE BLOCK…All of the various branch circuits originate at this ATO style fuse block which is typically located nearly under the dash in a protected location near the operator's left foot.

IN-CAB RELAYS…Some ELITE's require relays to control the "throttle advance" or other functions. The exact number of relays on any particular ELITE is dependent upon factors that include the particular chassis used. LOADMASTER uses IDEC brand quality relays. These relays are the yellowish, transparent "ice cube" relays that are typically located in a protected "inside-the-cab" spot usually somewhere near the driver's left foot.

FIREWALL TERM STRIP…Every ELITE has a term strip mounted to the firewall located "under the hood" ahead of the driver's side. The color-coded, labeled wires "pass through" this strip. LOADMASTER includes this as a "troubleshooting" feature to speed up finding the source of an electrical circuit malfunction.

HARNESSES…The electrical wires are bundled, labeled, colorized, and protectively covered in a "harness". The overall electrical harnessing is made up of several independent *subharnesses* connected together at strategic locations with premium quality DEUTSCH metallic body multi-pin connectors.

LIMIT SWITCHES…The throttle advance limit switch and the tailgate ajar switch is the same switch. The throttle advance switch is wired N.0. (and closes whenever the slider spool is shifted out of neutral) and the tailgate ajar switch is wired N.C.(and is held open by a lowered tailgate). This switch is a MICROSWITCH brand wobble stick with sealed body. A cable connector seals the cable as it enters the switch.

BUTTON SWITCHES…The "buzzer signal" and "throttle" advance switches are fully encapsulated and mounted to a stainless steel panel with a stainless *unpainted* grounding post. Has a "click" feel when it switches.

Section 04 Checks and Setups
CHECK and SETUP… BLADES "CYCLE TIME"

"CYCLE TIME" IS THE TOTAL NUMBER OF SECONDS IT TAKES THE SLIDE AND SWEEP BLADES TO COMPLETE ONE PACK CYCLE, WHILE THE DIESEL IS AT ADVANCED THROTTLE RPM.

The ELITE specification is 18-20 seconds with the diesel's RPM advanced to 1300-1400 RPM.

One complete pack cycle is to start with both blades at "home" position and end up also at "home" position.

HOPPER BLADES AT THEIR "HOME" POSITON

Checking Procedure:

1- Both the slider and sweep blades are parked in "home" position.

2- Diesel running; Transmission in neutral; Park Brake is applied on; PTO is engaged on; Throttle Rocker switch is on (red band will show)…
3- This is a two person task. One person with a stop watch and one person manning the blade's hand control levers.
4- Pull both control levers outward simultaneously (and release them) as stop watch is triggered on spoken "go".
5- The person manning the controls must be in a state of ready to "push in" (and release) the hand control levers at the very instant that both levers are seen to kick-out to neutral. (This is the "interrupted" or half-way point of the automatic cycle.) This interruption must be kept as brief as practical to correctly measure the "cycle time". Meanwhile, the stop watch has continued to run.
6- Now the stop-watch holding person must be alert to stop the watch at the exact moment the blades are both back to home position (both hand levers will have "kicked-out" to neutral).
7- Record this number of seconds and repeat the time measuring process a total of three times for best confidence of accurate measurement.

⚠ DANGER

STAY CLEAR OF MOVING HOPPER BLADES AND THE HOPPER LOADING SILL WHEN BLADES ARE MOVING! IF YOU OR A WORK PARTNER IS CAUGHT IN THE BLADE ACTION, SERIOUS INJURY OR DEATH WILL RESULT.

To adjust the cycle time, alter the diesel's throttle advanced RPM setting. *Do not adjust outside the previously specified range….damage to componentry may occur.*

Most diesels today are "E-DIESELS". You will most likely need to schedule a visit to your local chassis dealer since the *advanced throttle RPM* is a programmed setting and will require a programming device that you will most likely not posses.

If your chassis is not an "E-DIESEL", it probably will have a LOADMASTER installed air powered throttle advance system which you can adjust yourself.

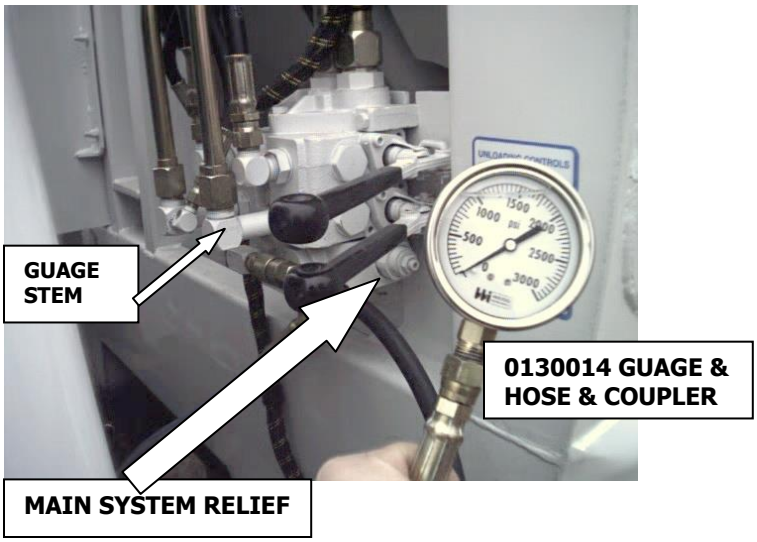
If you do adjust the diesel's advanced throttle to 1300-1400 RPM (maximum allowable ELITE RPM) and the measured "cycle time" is still "significantly slow", see troubleshooting section for identifying and remedying other causes of "too slow" blade movements.

The above cycle time information adjusts to blade speeds "as fast"' as the ELITE capabilities. LOADMASTER does not require this speed. A slower blade speed (longer cycle time) can be acceptable.

CHECK and SETUP…THE "MAIN RELIEF" OF BODY-MTD VALVE

THE MAXIMUM OVERALL HYDRAULIC SYSTEM PRESSURE IS REGULATED BY THE "MAIN RELIEF" VALVE, WHICH IS A CARTRIDGE TYPE VALVE SCREWED INTO THE INLET COVER OF THE ELITE'S BODY-MOUNTED VALVE.

The ELITE specification is 2,700-2750 PSI @ Throttle Advanced RPM (usually about 1400 rpm).



To check the setting of the system "main relief", do the following procedure.

Checking Procedure:

1- **Shut down diesel, place the ignition keys in your pocket and a sign on the steering wheel that says "DO NOT START".**
2- Connect a 0-3000 PSI glycerin filled pressure gauge (on a ¼" hose about 2 feet long) to the body-mtd valve's gauge stem that you will find at this valve's inlet cover. (The "body mounted valve" is the 2-section stack valve located just inside the body's access door). Exit the body and get your feet back on the ground.
3- Start Diesel running; Transmission in Neutral; Park Brake is engaged on; Throttle Rocker switch is on; Tailgate fully down and fully *latched on both* sides…
4- Extend the ejector blade fully rearward (all the way towards the tailgate) if it isn't already and leave it there. (**ALWAYS CLOSE BODY SIDE ACCESS DOOR** BEFORE AND DURING MOVING THE EJECTOR BLADE**!!!!!**)
5- Depress and hold the nearby "throttle" advance button switch…diesel RPM will be heard to raise to advanced RPM.
6- Shift "**tailgate**" hand lever to ***"lower"*** position (refer to the decal that is affixed to the body) and hold (soak)…read the gauge while *still holding throttle advanced*. This is the "setting" of the main relief valve. Release the hand lever labeled "tailgate" and then repeat taking a reading for a second time.

If the main relief setting needs adjustment to be brought within the above specification, follow this procedure.

Adjustment Procedure:

1- **Shutdown diesel, place ignition keys in your pocket and a place a sign on the steering wheel that says "DO NOT START".**
2- Open body side access door and enter the body.
3- Remove the acorn nut, which acts as a cover over the adjuster stem. (If equipped…mostly "exposed" adjuster.)
4- Loosen (ccw) the jambing nut.
5- Use a hex key to turn the adjuster…start with about 1/8 turn. Turning adjuster inward (cw) will increase the setting. Turning the adjuster outward (ccw) will decrease the setting.
6- Tighten jamb nut.
7- Never exceed the LOADMASTER specification. Expensive component failures and/or structural damage can occur. Also, if the main relief is set too low, loss of compaction and/or functional performance can occur.
8- Exit the body (your feet back on the ground) and restart diesel. Diesel running; Transmission in Neutral; Park Brake on; PTO engaged on; Throttle Rocker switch on…
9- Recheck the main relief's setting again using previously listed procedure. It is worth mentioning again that you must *advance the throttle* to accurately check this relief setting. If it is within specification, you are done. Otherwise repeat the checking and adjusting until it is "to spec".

TIP….Throughout this manual you will notice that all the pressure settings are stated at a certain diesel RPM speed. It is important that you check the setting at the stated RPM since pump flow is dependent on diesel's RPM. One "setting" of the main relief will measure differently @diesel idle (typically about 750 RPM) versus @ diesel throttle advanced (typically about 1200 RPM).

WARNING

BEFORE ENTERING THE BODY, ALWAYS SHUTDOWN THE DIESEL, PLACE THE IGNITION KEYS IN YOUR POCKET AND ATTACH A SIGN TO THE STEERING WHEEL THAT SAYS "DO NOT START ENGINE"! PERFORM YOUR SHOP'S DETAILED LOCKOUT/TAGOUT PROCEDURE. THE EJECTOR BLADE COULD MOVE UNEXPECTEDLY CAUSING SERIOUS INJURY OR DEATH.

IF ENTERING THE FORWARD (CAB) BODY SIDE OF EJECTOR, FIRST EXTEND THE EJECTOR BLADE ALL THE WAY REARWARD (TOWARDS TAILGATE) AND "PARK" IT THERE. THEN DO YOUR COMPLETE LOCKOUT/TAGOUT PROCEDURE.

CHECK and SETUP…EJECTOR'S AUTOMATIC DRIFT PRESSURE

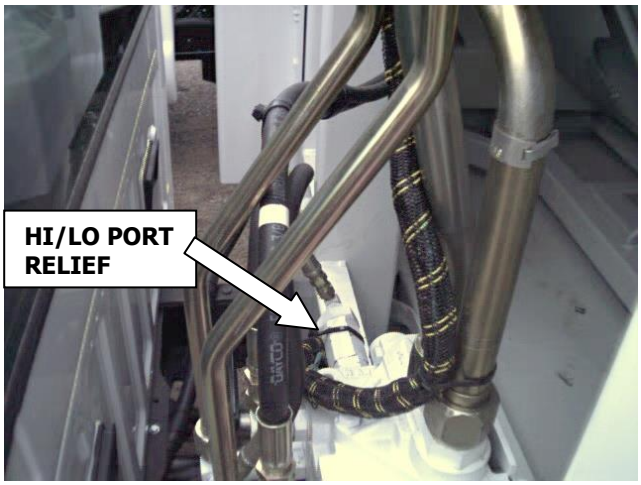
THE "DRIFT PRESSURE" OF THE EJECTOR IS THE PRESSURE AT WHICH THE EJECTOR BLADE WILL SLOWLY DRIFT FORWARD TOWARDS THE CAB AS THE ROUTE COLLECTION OF COMPACTED GARBAGE PROGRESSES.

THIS "DRIFT PRESSURE" IS AN IMPORTANT FACTOR IN PROPER PAYLOAD GENERATION AND IT IS ADJUSTABLE.

THE LOW SETTING OF THE "HI/LO PORT RELIEF" IS THE "DRIFT PRESSURE". THE "HI/LO PORT RELIEF" IS A CARTRIDGE TYPE PORT RELIEF SCREWED INTO THE EXTEND WORK PORT OF THE EJECTOR'S SECTION OF THE BODY MOUNTED VALVE.

See Table of Contents to read about "how" this particular valve works within the hydraulic system.

The ELITE spec is 1450 PSI @ THROTTLE <u>ADVANCED</u> (usually about 1400 rpm) (ELITE only)



Checking Procedure:

1- **Shut down diesel, place the ignition keys in your pocket and place sign on the steering wheel that says DO NOT START.**
2- Connect a 0-3000 PSI glycerin filled pressure gauge (on a ¼" hose about 2 feet long) to the body-mtd valve's gauge stem. (The body-mounted valve is the valve located just inside the body access door.) Exit the body.
3- Start Diesel running; Transmission in Neutral; Park Brake on; PTO engaged on; Throttle Rocker switch *on;* Tailgate fully down and fully latched…
4- Extend ejector blade fully rearward in body (towards the tailgate).
5- ***Dis-engage*** the PTO!! *Jiggle (rattle)* the <u>tailgate</u> up/down hand lever (see labeling decal affixed to body) about its neutral position to relieve to tank (atmosphere) any residual pressure that might be trapped in the ¼" hi/lo pilot hose. Now re-engage the PTO.
6- Using the <u>ejector</u> control lever, shift the lever to "extend" direction and hold it (soak) there whilst reading the gauge. Be certain the diesel RPM is at **advanced**. This is the "ejector drift pressure" setting (which is the low setting of the external pilot controlled dual setting HI/LO port relief).
7- Repeat above procedure a second time to confirm your first reading.

If this setting is not within the specification, follow this procedure to adjust it.

Adjustment Procedure:

1- **Shutdown diesel, place ignition keys in your pocket and place a sign on the steering wheel that says DO NOT START**. Enter body through side access door.
2- Loosen the nut of the (90 degree) hydraulic fitting that attaches the ¼" hose to the *hi/lo port* relief's pilot port.
3- Loosen the BIG jamb nut of male threaded adjuster stem. This stem will have wrenching flats cut into it.
4- Turning the stem inward (cw) increases the "drift pressure" setting. Turning the stem outward decreases the setting. Start with a ¼ turn adjustment in needed direction, jamb up jamb nut and retighten the fitting's nut.
5- Exit the body and repeat the "checking" procedure. Repeat this process until within specification. Never exceed LOADMASTER'S specification. Expensive component or structural damage could occur.
6- Remember to measure the "drift" pressure with diesel *at* **throttle advanced** (for the ELITE only).

(NOTE: the ELITE is the *only* model to have "lo" set at *thrtl-advanced*)

⚠ DANGER

BEFORE ENTERING THE BODY, ALWAYS SHUTDOWN THE DIESEL, PLACE THE IGNITION KEYS IN YOUR POCKET AND ATTACH A SIGN TO THE STEERING WHEEL THAT SAYS, "DO NOT START ENGINE"! PERFORM YOUR SHOP'S DETAILED LOCKOUT/TAGOUT PROCEDURE. THE EJECTOR BLADE COULD MOVE UNEXPECTEDLY CAUSING SERIOUS INJURY OR DEATH.

IF ENTERING THE FORWARD (CAB) SIDE OF EJECTOR, FIRST EXTEND THE EJECTOR BLADE ALL THE WAY REARWARD (TOWARDS TAILGATE) AND "PARK" IT THERE. THEN DO YOUR COMPLETE LOCKOUT/TAGOUT PROCEDURE.

CHECK and SETUP…EJECTOR'S "PUSH-OUT" PRESSURE

THE "PUSH-OUT PRESSURE" IS THE PRESSURE AVAILABLE WITH THE TAILGATE *FULLY OPEN* TO PUSH OUT THE COLLECTED GARBAGE AT THE LANDFILL OR TRANSFER YARD. (UNLOADING)

THE HIGH SETTING OF THE "HI/LO PORT RELIEF" IS THE "PUSH-OUT PRESSURE". There is no need to check this setting unless you are troubleshooting a payload ejection/"push-out" problem.

See Table of Contents for a write-up of how this works within the hydraulic system.

The ELITE specification is 2000 PSI +/-100 PSI @ Throttle Advanced RPM (usually about 1400 RPM) for this the non-adjustable "push-out" pressure.

Checking Procedure:

1- **Shutdown the Diesel, place the ignition keys in your pocket and a sign on the steering wheel that reads DO NOT START.**
2- Connect the hose mounted 0-3000 PSI pressure gauge to the body-mounted valve's inlet cover's gauge stem (as you will for **all** ELITE pressure checks). Exit the body.
3- Start Diesel running; Transmission in Neutral; Park Brake applied on; PTO engaged on; Throttle Rocker switch to on; Tailgate fully down and fully latched closed.
4- Extend the ejector blade the entire way rearward (towards tailgate) if it isn't there already.
5- Depress and hold the nearby Throttle button switch to advance the diesel RPM (you will hear it advance).
6- Raise the tailgate between a third to halfway "up" to create the gravity load needed to shift the HI/LO port relief to the HI side.

⚠ WARNING

NEVER STAND UNDERNEATH OR WALK BENEATH A RAISED (OR PARTIALLY RAISED) TAILGATE WHEN SUPPORTED *ONLY* BY ITS HYDRAULIC SYSTEM!

TAILGATE MAY SUDDENLY AND UNEXPECTEDLY FALL DOWNWARD CAUSING SERIOUS INJURY OR DEATH.

SHOULD A HYDRAULIC COMPONENT FAIL, SUCH AS A HOSE-END "BLOW-OFF", THE TAILGATE WILL SUDDENLY FALL.

7- Shift the hand lever labeled "ejector" to the position labeled "extend" and hold it there ('"soaking" the ejector extended since it is already fully extended). Read the gauge while holding the *throttle advanced*. This is the ejector's "push-out pressure".

Adjustment Procedure:

The HI setting of the HI/LO port relief is a *non-*adjustable factory fixed setting. This setting would be checked only if a problem pushing-out (ejecting) the payload occurs.

TIP…Always remember to measure the "push-out" pressure with diesel at throttle-advanced speed. Always remember to measure the "drift pressure" with the diesel at its throttle-advanced speed for the ELITE.

TIP…The hi/lo relief, as its name implies, actually controls two pressures on the ejector's telescopic extend-side (AKA, base side).

They are (a) the ejector's "drift pressure" which is the "lo" setting for on-route compaction (when the tailgate is closed…pilot line pressure is low since it gets it's signal from the tailgate up port), and (b) the ejector's "push-out pressure" which is the "hi" setting (tailgate is raised and pilot line pressure is greatest).

The hi/lo relief shifts to "hi" (which is 2000 PSI @ throttle advanced) when tailgate is raised. The weight of the raised tailgate (gravity pull) induces a pressure greater than 750 PSI in the pilot line, causing the valve to shift to "hi".

To understand this generically, always remember this "key"…anytime the pilot port sees greater than 750 PSI, the HI/LO shifts to HI…anytime the pilot port sees less than 750 PSI, the HI/LO shifts to LO. (The 750 PSI is GRESEN's internally set "threshold" or trip pressure.)

The ¼" pilot line connects the HI/LO's pilot port to the tailgate cylinder side of the tailgate "up" work port. This plumbing is done externally right at the body-mounted valve.

Before lowering the tailgate (just after checking the "push-out pressure), have a second person who is clearly visible to the person operating the body-mounted valve's hand lever's, stand off to the side of raised tailgate and "watchdog" the lowering process. Begin lowering slowly ("feather" the lever) and do not lower "abruptly".

Lowering the gate upon another person will cause serious injury or death to that person.

CHECKING AND ADJUSTING THE KNOCK-OUT POSITIONERS FOR ELITE

The ELITE's correct *knock-out* specifications are…

SLIDER **2300-2350 PSI @ THROTTLE ADVANCED**
(will "advance" automatically during procedure)
SWEEP **2000-2050 PSI @ THROTTLE ADVANCED**
(A second person will have to *hold depressed* a t-adv button switch for sweep).

The ELITE''s correct *system main relief* specification is
2950-3000 PSI @ THROTTLE ADVANCED

"CHECKING" WHERE THE ELITE'S SLIDER'S KNOCK-OUT POSITIONER ("K-O") IS PRESENTLY SET…

This procedure will identify the knockout-postioner's *present* setting. (See separate procedure below to "adjust" a k-o.) You will use the *system main relief's* adjustment feature to identify where the k-o is set. This relief is located at "body-mounted valve's" inlet.

- ❑ 1- Move the ejector blade fully rearward (towards tailgate) and **leave it there**.
- ❑ 2- Attach a 0-3000 psi glycerin filled gauge on a 2-foot hose with the female coupler…to the gauge stem that exists at the body-mounted valve's inlet cover. <FIG 1>
- ❑ 3- Loosen jamb nut at main relief. Arbitrarily turn outward (CCW) the main system relief 2 to 3 turns to lower its setting a great deal. <FIG 2>
- ❑ 4- Diesel running; PTO to engaged; Throttle's in-cab, master rocker switch to ON (red band will show)
- ❑ 5- Go the tailgate; move the orange slider control lever to shifted position (push for "up") and let go of lever. <FIG 3>
  The lever should *not* knockout to neutral because the main relief is very low and therefore undercutting the K-O. (Many people will call this "soaking" the relief.) The throttle should be automatically advancing to 1300-1400RPM.
- ❑ 6- Go back to the body-mounted valve. Affix your eyes upon the pressure gauge. Hold the gauge in one-hand so you can clearly read it…. the slider is still "soaking".
- ❑ 7- Begin slowly turning upward (cw) the main relief's hex key adjuster…slowly and smoothly. All the while, *keep your eyes affixed* upon the gauge. Soon you will feel and hear the slider's knock-out kick to neutral. Memorize and jot down on paper the gauge reading that occurred *at the very moment* it kicked-out. This is the *present* slider k-o setting.
- ❑ 8- Repeat steps 3-7 again…until you have confidence your "reading" is accurate…jot this down on paper.

[This procedure will also work for checking the *sweep's k-o*, but a second person must hold pressed a throttle-advance button switch.]

Important! Always remember to *return* the *main system relief* to its correct specification of 2700-2750 PSI @ throttle advanced *when you are finished* identifying what the knock-out is set to.
(Set "main relief" by shifting tailgate raise/lower lever to "LOWER" while holding *throttle advanced*. See earlier topic in this manual.)

"RESETTING/ADJUSTING" THE ELITE'S SLIDER'S K-O POSITIONER (aka…"dialing it in" to correct spec)

!DANGER! Be sure diesel is **not** running, **ignition keys** are in your pocket, and affix a **sign** on steering wheel that reads "*do not start*"… **before** you enter the hopper or get near the hopper's blades!
Repeat these lockout/tagout steps each and every time you must enter the hopper! (Your shop may have a more detailed LOCKOUT/TAGOUT procedure. If so, then perform the *detailed* LOCKOUT/TAGOUT procedure.)

To make a *adjustment* (the checking above has shown k.o. to be "out of spec")…

- ❑ 1-Remove the small, rubbery hole plug from the end of the K-O positioner's bonnet (at the end face of it)…the "adjuster" is behind it <FIG. 4>
- ❑ 2-Do the "checking" procedure (above) to find out "where" the K-O positioner is presently set at. (CONT'D NEXT PAGE)

TOOLS REQUIRED**:**
5/32" ALLEN WRENCH AND 9/16" OPEN END FOR MAIN RELIEF**;**
DETENT VALVE ADJUST TOOL (#8800316)
; 3000PSI GAUGE AND 2'-3' HOSE ASSY

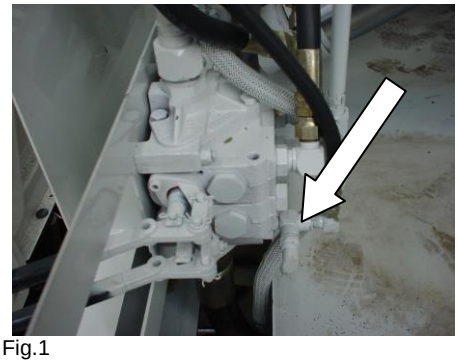


Fig.1

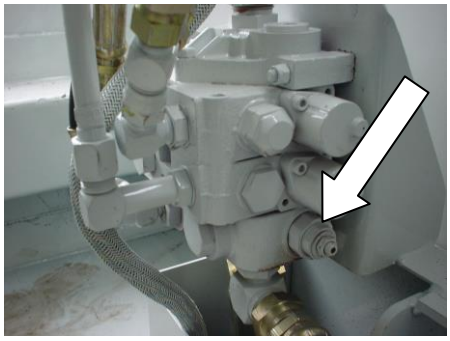
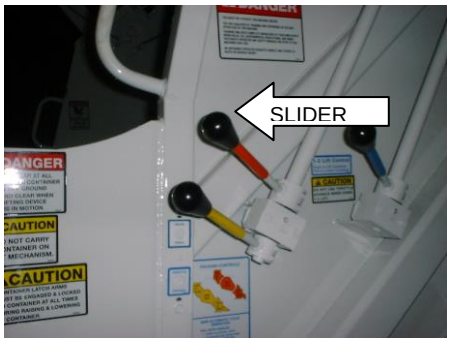


Fig. 2

Fig. 3



CHECKING AND ADJUSTING THE KNOCK-OUT POSITIONERS…CON'TD ELITE

- 3-The "rule of thumb" is…**1/4 turn** of the k-o's allen-head adjuster is roughly equivalent to **100 PSI** of setting change.
  Based upon where the k-o positoner is presently "checked" to be set at…turn the k-o's allen head adjuster inward (cw…raising the pressure setting) or outward (ccw…lowering the pressure setting) *to get closer* to the ELITE specification. <FIG. 5>
  EXAMPLE... The correct ELITE spec for the slider is 2**3**00 psi @ throttle advanced.
  Your "*checking*" procedure reveals the slider's knock-out to be presently set to 2**1**00 psi @ thrtl advanced.
  Calculate **23**00 minus **21**00=**2**00 psi "on the low side"…that is ¼ turn x 2= about ½ turn total *higher* is needed.
  Turn slider k-o adjuster's allen-hex inward (cw; the "raising" direction) **exactly** ½ turn.
  (The ELITE's V20 knock-out adjuster has a jamming nut…adjustment is held in place by this jamb-action.)
- 4-Now repeat the "previous page" *checking* procedure *again* (repeating steps 3-7)…jot down "where k-o setting is *now* set"
- 5-Continue if need be… using *smaller 1/8 turn or 1/16 turns* next, until you are "dialed" into the correct specification.

Note: There are two k-o positioners…be sure to first correctly identify the *one* you choose to work on. (The *slider* k-o is the lowest one, nearest to the hopper's loading sill; the *slider* work-section has the switch trigger on its push-pull rod.)

!DANGER! Be sure diesel is **not** running, **keys** are in your pocket, and affix a **sign** on steering wheel that reads "*do not start*"… **before** you enter the hopper or get near the hopper's blades!

Repeat these lockout/tagout steps each and every time you must enter the hopper! (Your shop may have a more detailed LOCKOUT/TAGOUT procedure. If so, then perform the *detailed* LOCKOUT/TAGOUT procedure.)

[This procedure will also work for adjusting the *sweep's k-o*, but a second person must press and hold a throttle-advance button switch. Sweep will not have automatic throttle-advance.]

Important! Always remember to return the ELITE'S *main system relief* to its correct specification of 2700-2750 PSI @ throttle advanced *when you are finished* adjusting the knock-out setting. (Set "main relief" shifting tailgate raise/lower lever to "LOWER" while holding *throttle advanced*.)

Important! Always remember to replace the rubber hole plug (see parts manual)…Do not allow dirt or water to enter the knock-out device. Always keep the knock-out "sealed" by installing the rubber hole plug.

End KnockOut check and adjust

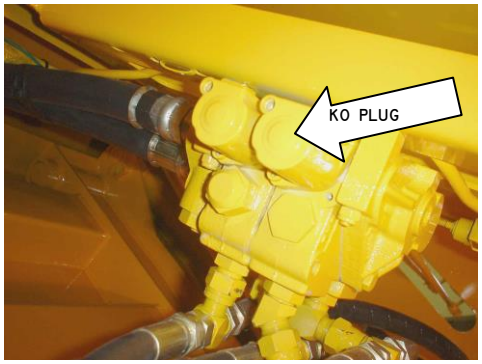


Fig 4

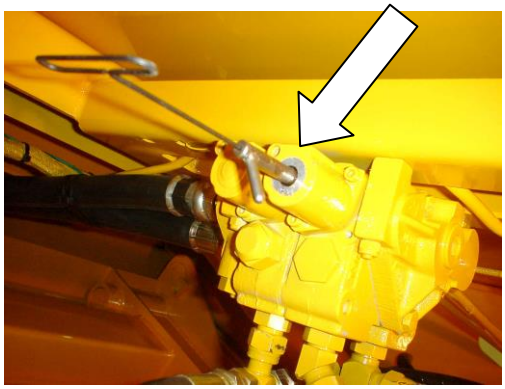
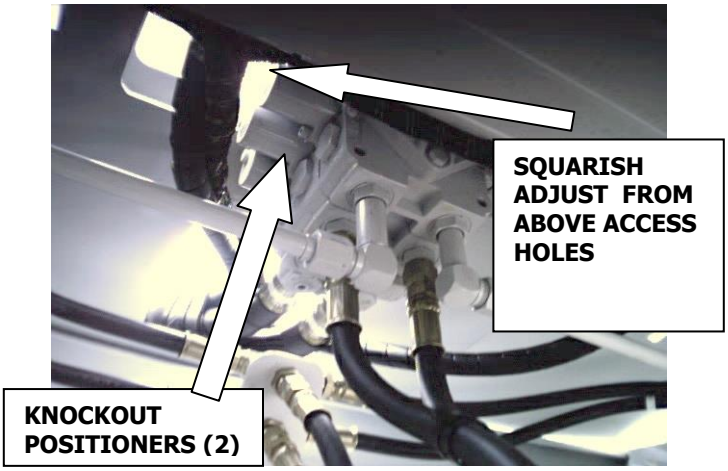


Fig 5

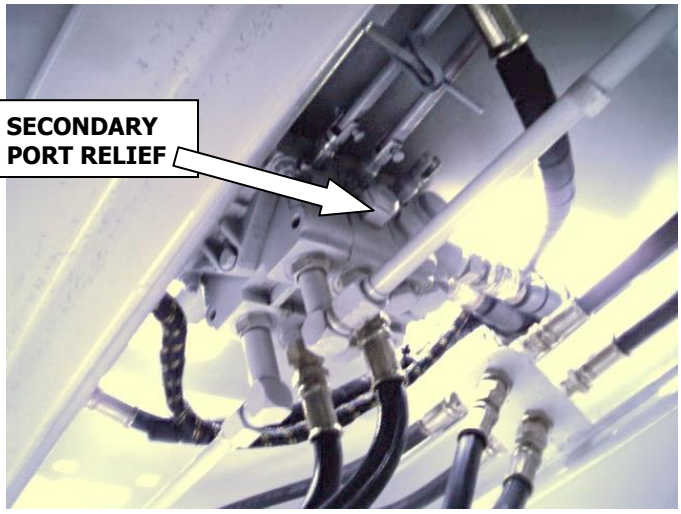


CHECK and SETUP…"SECONDARY PORT RELIEF"

THE TAILGATE-MOUNTED VALVE'S SWEEP SECTION HAS A PORT RELIEF INSTALLED ON THE BASE-SIDE OF THE SWEEP CYLINDERS PAIR.

THIS "SECONDARY PORT RELIEF" IS SET SIGNIFICANTLY HIGHER THAN THE OTHER RELIEF SETTINGS AND IS PROVIDED TO ALLOW FOR SOME RELAXING OF "INDUCED LOADS" THAT WOULD EXCEED THE CRITCAL ALLLOWABLE STRUCTURAL LOADS.

See Table of Contents for a write-up of how this particular hydraulic component functions in the system.



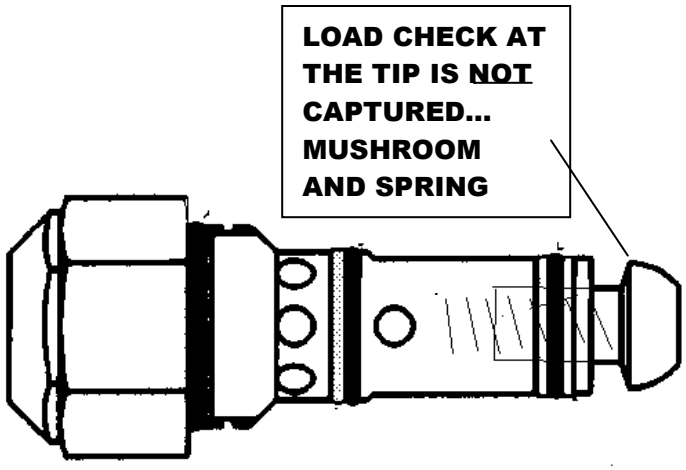
The ELITE'S specification for this S.P.R. is 3700 PSI @ "crack" (with crack being defined as 2 GPM).

Checking Procedure:

Actually, there is no commonly available method to **field** "check" where this relief is set. This is because it is "test-stand set" at its crack value of 3700 PSI *@ 2 GPM*. *If* you suspect that this port mounted relief is not correct, it is most practical to order from LOADMASTER a brand new *bench set* cartridge (LOADMASTER P/N 8800665 for the ELITE (3700PSI CRACK; seal kit included).

Fortunately, changing out this cartridge type valve is a relatively fast operation and the cartridge itself is not expensive. See the Table of Contents to locate a write-up on change out procedure in Repair Section. It is worth repeating here to *pay particular attention* to (a) assure a clean valve cavity (magnet wand and penlight and hooking tools) *before* putting in the new cartridge, and (b) the "cartridge tip seals" rubber 0-ring and plastic backup ring, and the load check mushroom are well doped up with axle grease when you (slowly & gently & straightly) insert the new preset cartridge into this cavity. All the *old junk* must be purposefully "fished out" of cavity; it does not come out on its own.

Sometimes it is a nicked or extruded "tip seal" that is the real culprit and the cartridge (and its setting) are actually fine.



A typical "symptom" that might lead you to replace this cartridge is that the sweep blade is "tending to unwrap" when the body is nearing its full rated payload capacity. Be careful in your observations here because some occasional unwrap of sweep blade is *normal* (such as when the body is *NEARLY full* and the payload is at its rated value).

One worthwhile *check* you can do is to physically trace the sweep cylinder's base side hoses to be sure the Secondary Port Relief is correctly located on the *base-side* (not the *rod-side) of the sweep's cylinders.*

Adjustment Procedure:

This S.P.R. is *not* adjustable; it must be replaced with a totally new preset and *fixed* cartridge.

Never *"shim adjust" this port relief cartridge. Eventually this could cause expensive structural damage and/or componentry damage. LOADMASTER warranties are void if this is done.*

Replace the entire port relief cartridge with a new LOADMASTER preset cartridge and always replace the old seals with new.

In the unlikely event that cartridge replacement does not solve the blade unwrapping symptom, refer to the Troubleshooting Section of this manual for other possible causes and remedies.

⚠ DANGER

BEFORE ENTERING THE LOADING HOPPER, ALWAYS SHUTDOWN THE DIESEL, PLACE THE IGNTION KEYS IN YOUR POCKET AND ATTACH A SIGN TO THE STEERING WHEEL THAT SAYS "DO NOT START ENGINE"! DO YOUR SHOP'S DETAILED LOCKOUT/TAGOUT PROCEDURE.

THE BLADES COULD UNEXPECTEDLY AND SUDDENLY BEGIN MOVING WHICH WILL CAUSE SERIOUS INJURY OR DEATH.

Section 05
TROUBLESHOOTING…

Troubleshooting is following a logical sequence of steps to identify the cause of a "symptom" and then taking corrective action. This entire manual presents ELITE-specific technical information needed for a basis of knowledge that will allow a mechanic to understand the steps to be taken in remedying problems. Basic knowledge allows the person to "envision" the most likely causes of problems and how to go about correcting them.

Getting a complete and accurate description of a "symptom" is the most worthwhile first step. Talk and listen to the "operator" who reports the symptom for a complete description of the problem. Listening carefully first and then asking a few "pointed" questions will often reveal useful clues.

This "troubleshooting" section will be helpful by listing some specific symptoms and then giving some suggestions as to possible causes and possible remedies (if not obvious). Breeze through this listing of symptoms until you find one that is similar to your symptom. Read about that symptom to get some ideas to begin with. LOADMASTER has written these in a "conversational" style.

Typical troubleshooting tools will include:

A 0-3000 PSI glycerin filled pressure gauge on a ¼" high-pressure hose with the female coupler at the other end (which attaches to body-mounted valves' male stem). (L-M P/N 0130014)

A inexpensive VOM electric meter (Radio Shack) for continuity checks and other checks

A voltage tester…the kind that looks like a ice pick with bulb and wire with alligator clip at wire's end

Some automotive wires in various lengths with alligator clips on both ends for "making a good ground", etc.

This manual is a useful tool for its diagrams, schematics, and other content.

MOST IMPORTANTLY…

SERVICE/MAINTENANCE PEOPLE WHO ARE RESTED, ALERT, CLEAR HEADED AND FOLLOW ALL OF YOUR SHOP'S SAFETY PRACTICES INCLUDING YOUR SHOP'S DETAILED LOCKOUT/TAGOUT PROCEDURES.

SERVICE/MAINTENANCE PEOPLE MUST UNDERSTAND THE SAFE *OPERATION* OF THE EXCEL AND RESPECT THE TREMENDOUS POWER OF ANY HYDRAULICALLY POWERED MACHINE.

DIESEL RPM DOES NOT ADVANCE WHEN A COMPACITION CYCLE IS STARTED…

Both hand levers are pulled outward to begin a blades cycle; the blades begin to move "slowly", but you can hear that the diesel speed is *not* advancing to the normal advanced speed of about 1400 rpm.

First check to be certain the in-cab rocker switch labeled "THRTL" is in ON position. The rocker is ON when the red color band is visible. This rocker switch is a "master switch", if it is not "on", then the throttle can not advance. (The chassis' ignition key switch must be "on", by the way.)

Check the condition of the ATO fuse for the throttle circuit. All the fuses are held by one fuse block, under the dash, to left of steering wheel. Test the throttle fuse for continuity (the wires have labels printed on them). A fuse *can* appear "good" but is actually open. If it is cooked open, then you will have to replace it and consider why the fuse blew in the first place. There may be a "short" that needs fixing.

Try to advance the throttle with one of the two manual *button switches.* If throttle does *not* advance from one of these button switches, then the problem is possibly an open-circuit (like a loose wire termination) on the "diesels' side of things". Focus then on the in-cab electric's, such as the throttle advance relay (if equipped it will be a yellowish "ice cube" relay located in-cab under the dash on the drivers side). This relay is a plug-in type that can be changed-out without touching the wires to the grayish base. Check for good wire connections in this area. Check the wiring that interfaces the LOADMASTER components to the truck chassis "electronic control module".

If the throttle *does* advance when you depress and hold a throttle button switch, then checkout the throttle advance *limit switch.* It is the wobble-stick MICROSWITCH that triggers from a loop on the slider spools push-pull control rod (at the tailgate-mounted valve). This switch is wired NO and closes whenever the slider spool is shifted out of its neutral position to advance the throttle automatically for blade cycling. This switch's bracket has slots for adjusting. Is the horseshoe shaped 'trigger" on the rod engaging the wobble stick? As always check out the wiring terminations, etc. Do a continuity check of the switch by moving the wobble stick, by hand, if you finally believe it is the switch itself.

DANGER…ALWAYS STAY CLEAR OF THE HOPPER AND BLADES WHENEVER THE DIESEL IS RUNNING! SERIOUS INJURY OR DEATH COULD OCCUR IF YOU OR A WORK PARTNER IS CAUGHT IN THE ACTION OF THE BLADES. BLADE ACTION COULD BEGIN UNEXPECTEDLY.

DIESEL MUST BE SHUTDOWN AND THE IGNITION KEYS KEPT IN YOUR POCKET *BEFORE* ENTERING THE HOPPER AREA. PERFORM YOUR SHOP'S FULLY DETAILED LOCKOUT/TAGOUT PROCEDURE BEFORE ENTERING THE HOPPER AREA.

Most chassis have E-DIESELS today, which means the diesel's brain has inputs/outputs for throttle advance that LOADMASTER will connect to. If your ELITE still uses the old-style pneumatic cylinder and air solenoid valve, this system could be the cause of the throttle *not* advancing. Test with voltage tester or VOM to see if the air solenoid gets power from the throttle advance circuit (when it's supposed to). If the power *is* getting to the firewall mounted air solenoid valve (the small blue MAC air solenoid valve) when it should; you have isolated the cause to the pneumatic solenoid valve, air cylinder, or possibly the cylinder's linkage.

Another possible cause is a "bad" ground somewhere. A lot to LOADMASTER's circuitry is designed as "make a ground and something is supposed to happen." (This is actually true of many DC circuits). Look at the electrical schematics provided in this manual to locate the various needed groundings. Sometimes by making a "good" ground

(scraping paint away, cleaning to bare steel, tightening existing grounding screws, even adding a fresh ground wire), any numbers of various, seemingly mysterious "symptoms" can be corrected. Oftentimes, a "erratic" symptom (it comes and it goes) is caused by a "weak ground". Sometimes an erratic symptom is a loose connection or terminator "anywhere" in the flow of power.

Another similar symptom may be that only one of the two "throttle button-head switches" will correctly cause the throttle advance. This situation points to a failed switch, or more likely, a wiring problem such as a loose or corroded wire terminator or 'bad" ground. These button switches again work on the "make a ground" concept. Focus on the specific switch and it's associated localized wiring to find the cause.

A reverse symptom is "diesel does not return to idle" even though the blades have completed their cycle movements. This would typically be caused by the "throttle advance limit switch" (the switch triggered from the slider's push-pull rod) position relative to the u-shaped trigger loop being in need of adjustment. This wobble-stick switch must be in its normal, untripped position (wired open) when the slider spool is in its centered-neutral position.

The throttle will not advance if the transmission is in any "gear" other than neutral. Check to be sure the operator is always going to neutral when at a vehicle stopped situation (and Park Brake Applied On).

If the throttle *does automatically* advance with the transmission in any drive or reverse gear…PARK THE TRUCK IMMEDIATELY AND CORRECT THIS MALFUNCTION.

DIESEL RPM DOES ADVANCE WHEN A COMPACTION CYCLE IS STARTED, BUT IT DOES NOT ADVANCE ENOUGH…

Typically, the ELITE's advanced throttle will be 1300-1400 RPM.

First be aware that "'most" ELITE's are setup to this specification, but not necessarily all. If your RPM is something above 1350 RPM then you *are* spinning too fast and probably should adjust downward to reduce noise emissions and not be "overspeeding" the componentry, which really will shorten their life. If your advanced RPM is say 1100 RPM your ELITE will still operate and packout fairly normally. The 1100 RPM mainly means your compact blades are a little bit "slower" than LOADMASTER's original intent, but not noticeably. Some ELITE owners actually may prefer this and LOADMASTER does not require a corrective adjustment be made. If the RPM at throttle advanced is down to about the 1000-1050 RPM you probably *would* want to correct upward if you believe, for example, that the unit is not "packing-out" near its expected performance or you perceive the blades "speed" to be slow.
If it is finally decided that the throttle advance setting really does need to be adjusted, you probably will need to schedule an appointment with your local chassis/diesel distributorship. Most ELITE's today are Electronic-diesels that require a special electronic calibration tool.

The older style pneumatic throttle advances will have an air cylinder that *can* be mechanically readjusted.

HYDRAULIC PUMP SEEMS TO BE EMITTING MORE NOISE THAN USUAL…

The ELITE pump/PTO is a direct-couple design with no propeller shafting and is for a relatively "quiet" setup.

Look for anything that could cause pump "cavitation". First make sure the full port ball valve (that is in the pump's suction hose) is *fully* open. The handle must be parallel to the valve's body to be fully open. If the handle is "skewed" off parallel, the valve may be partially closed. Check that the hydraulic reservoir is correctly filled. A *specific* checking procedure must be used to avoid overfilling as well as underfilling (see Table of Contents to find this procedure). Allowing an under filled condition can cause suction line "vortexing" which entrains huge amounts of air. The hydraulic fluid itself should not be "milky", which means water is contaminating the oil. The suction-strainer (in the tank, at the very bottom) may be plugged with contaminants or a shop rag and its built-in bypass is stuck closed (rare). Be certain the pump's suction line is not allowing air to be sucked (rare); re-tighten its connections.

Check the fasteners that attach the pump to the PTO and the PTO to the transmission. Re-torque. It may only *seem* to be the pump as the source of noise. The PTO may be malfunctioning. Check all the hydraulic tubing clamping for secure anchoring by retightening them. Is a damaged tube contacting a body panel and causing a metal-to-metal resonance? Check that the oil tank is securely anchored to body.

The pump may be beginning to "fail" and will require replacement. Most pumps actually begin to fail by internally wearing down and they begin to "slip" internally. This failure symptom is the pump "can't seem to consistently hold the pressures needed for normal functioning" and this usually occurs *quietly.*

The PTO may be malfunctioning. If the PTO was recently changed-out, the replacement PTO needed to be installed per CHELSEA's procedures, otherwise extremely noisy mismatched drive gearing or "gear backlash" problems will generate noise. The correct CHELSEA part number needs to be used for proper mating and proper speed ratio. Do not substitute to a different specification.

THE COMPACTING HOPPER BLADES CYCLE, BUT THEY SEEM TO MOVE "SLOW"…

The blade speed should be "timed" first. See Table of Contents for the checking cycle time procedure.

Make sure you stopwatch the blades first, it is common for speed "perceptions" to be variable. Then check the throttle advance to be advancing to ELITE specification. Adjust the throttle advance setting if it is too low and out of spec. Assure yourself the PTO drive ratio is per LOADMASTER spec (usually about 1:1.15 for ELITE) if it has been replaced in last few months. If PTO ratio is wrong, the pump itself will spin at wrong speed and you will not have the 18 GPM flow that is required. If the speed has been gradually been slowing down over a period of several weeks (hard to judge), the pump may simply be wearing out and it is beginning to internally "slip" under pressure. Is the diesel RPM "drooping" and not consistent? The diesel's governor or fuel system needs attention.

Hydraulically speaking, look for any way that some of the pump's flow is going directly back to tank and not doing any useful work. The blade cylinders must receive full pump flow to be at correct speed. Is a blade spool not *fully* shifting, thereby some of the pump flow is bled off to tank. A spool may not crisply return to its spring centered neutral position thereby allowing some oil to bleed directly to tank. The mechanical linkage should be checked for excessive drag (grease it up) or mechanical interference. Sometimes an unusually high level of hydraulic system heat is created as the wasted oil is "orificed" to tank and sometimes not. Is a relief valve stuck partially open causing some oil to bleed off to tank? A leak at the tip seal of any relief cartridge could waste oil to tank. Seals could be nicked, extruded, or not properly seated. These types of hydraulic leaks can sometimes have an audible sound, but it can be very hard for a human to filter-out this particular sound amongst other normal hydraulic sounds. Some people describe this as an unusual "hiss" sound. Some people can't describe it at all.

The tank must breathe freely through its filler/breather. This chrome plated, fluted cap contains a "media" that stops airborne dirt from sucking into the oil tank. Replace this inexpensive unit if you suspect it is fouled. The tank must be properly "filled".
The pump itself could be worn and internally slipping.

TROUBLESHOOTING...(CONT'D)

THE PAYLOAD GENERATION SEEMS TO BE ON THE "LOW' SIDE OF EXPECTATIONS...

The ELITE is capable of generating payloads of 950-1000 pounds per cubic yard.

Most people in the waste equipment industry would consider this a so-called "high compaction" unit.

Keeping records of your "full" loads (in pounds) will give a good rough idea of how the ELITE is performing in terms of payload generation. A "full" load is when the ejector blade has drifted all the way forward (towards the cab) and the operator can no longer clear the loading hopper. The operator *must* unload.

The ELITE is built in a few body volume choices, so you must multiply *your truck's* volume by 1000 to rough out what you should be capable of getting. Then compare this to several of your actual "full" loads that you have recorded and the picture will emerge. Expectations must match the specific model used. (You can expect an 10 cubic yard machine to haul bigger/heavier loads than a 6 yard…do the calculation.)

The *weight* of any particular load on-board the ELITE was influenced by a lot of different factors. The operating habits of an operator. Some operators will occasionally "backpack" on the route and others will not. If the truck is "brand new", it will perform best when all the painted surfaces have polished-up from usage. The time of year (season) is a **major** factor because the *weight* of a given collected volume of garbage is so dependent on *water content*. Dry garbage weighs a lot less than wet garbage. Winter garbage weighs a lot less than summer garbage. Today's routes were "on the curb" during the big storm…and so it goes. Many weighed "loads" are not *full* loads; they are partial loads. If there are commercial stops on your route, the larger amounts of cardboard will always reduce your scale ticket. Any residential rubbish or tree branches will lighten the payload.

Having said all of the above, the ELITE *may indeed have* an operational deficiency that needs correcting. A few key pressure checks are needed to troubleshoot the symptom of "payloads not up to par" from the perspective of the LOADMASTER product. If you suspect the ELITE is not packing-out properly…First check the *ejector's drift pressure.* The ELITE's low setting of the HI/LO port relief controls this pressure and it should be adjusted to 1450 PSI @ ***THROTTLE ADVANCED***. See Table of Contents for "check and setup" instructions. This drift pressure is directly proportional to the "resistance" that the ejector blade has against the payload as it slowly drifts forward towards the cab. It is an important factor in generating a "good" load.

Next assure that the sweep blade is not "unwrapping" frequently on the route as the slider blade slides upward compacting the garbage. See Table of Contents for "check and setup the secondary port relief" procedure.

Then run 2 or 3 complete blade semi-automatic cycles and observe that it operates "normal". The knockouts should knockout cleanly and consistently at full cylinder strokes. The knockouts should "hold" the hand levers/spools fully shifted during blade movements. Stopwatch the blade cycle time (see Table of Contents for correct procedure). The advanced RPM may be way below spec and this takes the pressures "down" with it. Listen to the hydraulics as you cycle blades for any hiss type sounds that indicate oil throttling back to tank (internal leaks waste power).

Check the main relief setting. See Table of Contents for "check and setup the main relief". This setting affects the "manual" override power.

THE SWEEP BLADE IS TENDING TO "UNWRAP/ROLLOUT" DURING THE SLIDER BLADES UPWARD COMPACT TRAVEL...

The sweep cylinder's base-ends have a port relief called the "secondary port relief". This port relief will purposefully crack open whenever loads exceed allowable levels. The "secondary port relief" is a cartridge type port relief installed in the sweep worksection of the tailgate-mounted valve.

Some of this unwrapping is normal such as when the body *really* is near its rated full load. As the payload "approaches" this point you may see a little sweep blade unwrap. This is normal. If it happens too frequently and too early in the payload generation process, it will not allow the ELITE to generate a "good" load.

If you have determined that it does occurs too frequently, you should first remove the secondary port relief from its cavity. Inspect the seal at the inboard tip of the cartridge. It may be nicked, extruded, or pinched. If it is damaged, it will allow leakage to tank at the higher pressures and the blade will tend to unwrap even if the relief and its setting are fine. Repair the seal system at the cartridges' tip and monitor results on the route. See the Repairs section for important details on reinstalling a port device correctly (so it doesn't leak again).

DIESEL MUST BE SHUTDOWN AND THE IGNITION KEYS KEPT IN YOUR POCKET *BEFORE* ENTERING THE HOPPER AREA. PERFORM YOUR SHOP'S FULLY DETAILED LOCKOUT/TAGOUT PROCEDURE BEFORE ENTERING THE HOPPER AREA.

If there is no evidence that the seal system at the tip of the cartridge was leaking, then the next step is to install a *new* preset "secondary port relief" cartridge with fresh seals. Again refer to the Repair section write-up for *correctly* installing this cartridge. This port relief is a fixed, non-adjustable cartridge. Do not use shims to adjust it upward as this will eventually cause serious structural damage or componentry damage. Since the setting is a "crack" setting, it is factory bench-set (at a "test stand") to 2GPM. The crack flow of only 2 GPM can not be duplicated in the field on the truck, so the cartridge must be replaced. This setting is not even easily *measurable* in the field, on the truck. LOADMASTER stocks this "secondary port relief" (with new seals) as P/N 8800665 for the ELITE. Never substitute something else, never shim adjust it upward, and never just "plug" the valve cavity…serious damage will almost certainly eventually present itself.

If the "too frequent" sweep blade unwrap symptom *still* persists, contact LOADMASTER.

ONE OF THE VALVE SPOOLS FEELS STIFF, BOUND, OR "HAS A LOT OF DRAG"...

The tailgate-mounted valve worksections have a "controls" linkage, which begins at the black knob and ends at the spool itself. Too much friction or outright mechanical interference can affect the sweep and slider blades "knockout positioners".

First visually inspect the mechanical linkage for the particular function with this symptom. Look for any damage; scrape marks, anything abnormal to the eye. The controls are rotating in bearings…try greasing these bearings. Be certain there is some clearance between the controls "lever arms" and the plastic bearing blocks and bearings "ell" mount bracket.

DANGER…ALWAYS STAY CLEAR OF THE HOPPER AND BLADES WHENEVER THE DIESEL IS RUNNING! SERIOUS INJURY OR DEATH COULD OCCUR IF YOU OR A WORK PARTNER IS CAUGHT IN THE ACTION OF THE BLADES. BLADE ACTION COULD BEGIN UNEXPECTEDLY.

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You can isolate the valve from the linkage by pulling the clevis pin right at the valve spool. With pin removed, now try moving the knobbed hand lever. If it feels "free", then the problem is internal to the valve itself. If the linkage itself is binding and you have not greased the plastic bearings in a "long time", then roadspray water may have washed out the grease and you now have corrosion on the steel shaft rotating surfaces. (Regular greasing is *not just* purely for lubrication, it will also displace outward water that migrated into bearing surfaces). Try to smooth the corroded, pitted surface with emery cloth before greasing, or replace the rusted controls with new ones.

If none of the above has helped, it could be internal to the spooled section itself. First, remove the detent cover from the spool on the side opposite the spool clevis (held by two long socket head fasteners). Look at the now exposed detent or knockout for anything that came loose. If something came mechanically loose the spool may totally "lockup or freeze". You may be able to correct this.

A contaminant may have wedged itself between the moving spool and the section's casting (this is a tight clearance surface). Replacement of that particular valve section will be required and then review your hydraulic PM practices. When ordering that particular valve section from LOADMASTER, be certain you order exactly "that" section… they may appear all the same but they are not. This type of failure sometimes has the spool nearly or completely "frozen" into the housing. See the GRESEN V20 service booklet or this manual Repairs section for details on "changing out a valve section".

Another possibility is that the tie-bolts (that hold the stack-up of GRESEN V40 sections) are overtorqued or unevenly torqued. Retorque these evenly to 26 ft-lbs.

TAILGATE WILL NOT RAISE OR ONLY PARTILALLY RAISES…

The only pressure control device for the tailgate is the "main relief valve" of the body-mounted valve.

First do a main relief "check and setup". See Table of Contents for this procedure. The ELITE's main relief is properly set to 2700 PSI @ diesel advanced. If this setting has "fallen-off", a possible symptom is the tailgate not going up fully or struggling to go fully up.

If one or both of the tailgate cylinders has a bypassing piston seal, there may not be enough thrust left to raise the tailgate. This is rare because the cylinders are of premium quality and are cycled only a couple of times a day. (The tailgate lift cylinders have a relatively easy life.) If you must dismount a tailgate cylinder from the ELITE, see the Repair section topic for the correct and safest method to do this.

DANGER… ALWAYS HAVE THE TAILGATE FULLY DOWN AND FULLY LATCHED *BEFORE* REMOVING THE CYLINDER ITSELF! ALWAYS POSITION THE TAILGATE FULLY DOWN AND LATCHED *BEFORE REMOVING* ANY TAILGATE HOSE OR STEEL TUBE! DO *NOT* "PROP-UP" THE TAILGATE AND *THEN* REMOVE A TAILGATE HOSE OR A TAILGATE CYLINDER. FULLY LOWER AND LATCH THE TAILGATE AND *ONLY THEN* DO MAINTENANCE/REPAIRS TO THE TAILGATE CIRCUIT.

A TAILGATE THAT IS "PROPPED-UP" WITHOUT THE ADDITIONAL SUPPORT OF THE FULLY OPERATIONAL TAILGATE LIFT CYLINDERS COULD SUDDENLY FALL CAUSING SERIOUS INJURY OR DEATH.

THE EJECTOR BLADE IS NOT STRONG ENOUGH TO "PUSH-OUT" THE FULL PAYLOAD…

The ejector telescopic cylinder needs to have 2000 PSI @ throttle advanced to consistently push out the payload.

First, be sure that the operator is advancing the throttle during load push-out. He must have the rocker switch labeled "THRTL" to ON and the throttle button head switch must be depressed and "held' depressed. If the throttle is not advanced, the ELITE may or may not have enough pressure available to push-out the payload.

Then do a "check and setup" of push-out pressure. This is the HI setting of the HI/LO port relief. See the Table of Contents for correct procedure. Before doing the push-out pressure check, do a main relief check to be sure it is not set so low and is "undercutting" the HI setting of the HI/LO port relief.

Section 06 REPAIRS...

CHANGE-OUT THE HYDRAULIC PUMP

A pump can fail either by gradual progressive wear down or by "catastrophic" failure (sudden and without forewarning). Follow this procedure to have a successful replacement pump "start-up".

If your pump has failed catastrophically, it probably put a lot of debris into your system. You must clean up the system when installing the new pump.

Changeout procedure:

1- Shut off the suction line valve by rotating its handle to 90 degrees to the body.
2- Disconnect the pressure hose (3/4" diameter, 4-wire) attached to the pump. Lead this hose into an oil waste receptacle.
3- Disconnect the suction hose (1-1/4" diameter) and lead into oil waste receptacle. Now open the suction line valve to *drain all* the hydraulic oil from tank. ELITE tank holds about 20 gallons of oil.
4- Remove the pump from PTO. Cast iron pumps are heavy so use a mechanical device to aid you.
5- Install the new pump to the PTO. Make sure you have the *same* pump as the original (available from LOADMASTER).
6- Clean up the system. Start by installing a new return line filter. Pull the tank's magnetic drain plug (in tank's floor) and clean it up. Remove the tank access cover after wiping this area clean. Remove the suction filter at the inside bottom of tank. Shine good light inside the tank and mop-up any and all debris. After the tank sides and floor are wiped clean, close the suction line valve and pour 3-5 gallons of fresh, clean AW46 hydraulic fluid into tank. Then fully open the suction line valve again and flush the suction line into waste oil receptacle. Now reinstall a new suction line filter (screwed onto suction piping inside tank; no dope needed here). Re-install the clean magnetic drain plug using pipe dope. Re-install the access cover paying attention to properly "groove" it's big O-ring. Shut off the suction line valve again and refill the tank with a brand-name grade AW46 HYDRAULIC FLUID. Now is a good time to replace the tank's filler/breather if it is about due.
7- Reconnect the two pump hoses using the old adapters if in good condition. Use new o-rings for the adapter fittings if using old adapters.
8- *Fully open up* the suction line valve and let the oil *soak* into the new pump's housing for at least 15 minutes.
9- After assuring it is safe to do so, start the diesel and engage the PTO. Let the truck idle for about 5 minutes with no functions engaged (oil flowing in its open loop). This will allow the new return filter to "trap-out" some debris in the system. Then, still with no functions, use the foot throttle to increase diesel speed to about 1200 RPM for another couple of minutes.
10- Cycle any optional equipment the vehicle may have, such as the "kickbar option" about 3 times. Then do a hopper blades semi-automatic cycles a couple of times.
11- Do a tank fill level check and top off. See Table of Contents for proper way to check tank's level.
12- If the old pump failed "catastrophically", change-out the return filter again after 40 hours of run time. [sec06-pg13]

REMOVAL/REPLACEMENT OF A V20 PORT RELIEF

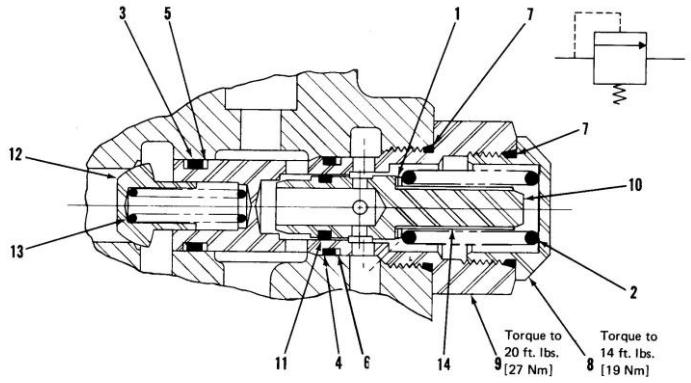
A port relief will screw into a cavity right next to the particular port it will relieve. A port relief is on the cylinder side (the workport side) of the spool. When the spool is in its centered-neutral position, this type of relief can still provide protection because of its location.

All ELITE's have a port relief mounted on the base-side of the sweep cylinders. This is known as the "secondary port relief".

All ELITE's have a port relief mounted on the base-side of the ejector's telescopic cylinder. This is known as the "hi/lo relief".

The GRESEN V20 style of port relief has a "load check" at the tip of the port relief cartridge. It is very important when removing/installing a V20 port relief to (a) assure a clean casting "cavity" and (b) assure the load check and seals "go into the cavity" without disassembling itself during the insertion process.

The load check is a simple device. The check itself has a "mushroom" shape and a lightweight spring that biases it closed. Items 12 & 13.



Removal procedure:

1- **Before removing any port relief, position the blades so it will not move *by gravity* when you remove the port relief. The slide blade *must be fully down*. The sweep blade must dangle *nearly vertical* so gravity will not move it. REMOVING THE PORT RELIEF WILL UNBLOCK THE PORT IT APPLIES TO! You may want to temporarily weld some steel scrap between a blade and the tailgate's shell. Disconnect both battery cables and any harness connectors found inside battery box, before welding to the ELITE. See the Repair topic "DISCONNECTING VEHICLE BATTERIES".**
2- Unscrew the cartridge by grabbing the wrenching flats *closest* to the section's casting. Turn CCW to loosen.
3- Remove the cartridge by pulling slowly and straightaway
4- The "load check" and its spring probably did NOT come out of the cavity because they are not mechanically held to the cartridge. Use a magnet wand to fish out the mushroom shaped check and spring. Use a penlight to

look inside cavity for any debris such as pieces of old O-rings or the backup ring. You must assure that the casting cavity is *cleaned-out.* It will NOT come out on its own, you must use a penlight, a magnetic wand, and hooking tools to assure a clean cavity. If the cavity is not truly clean when you reinstall the new parts, they will immediately malfunction.

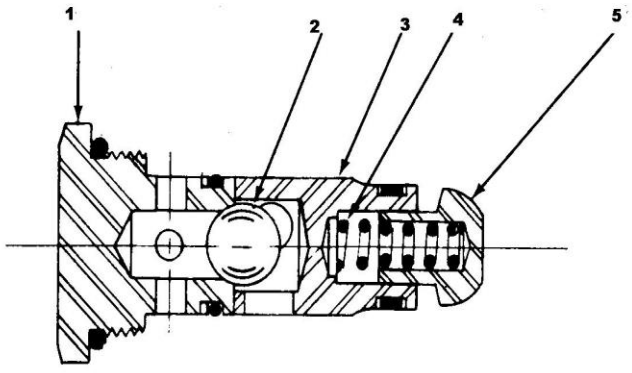
Re-installing procedure:

1- Preassemble the cartridge, the load check and spring. Use plenty of common grease to hold it all together. Smear some grease on the seals at the tip and the o-ring at the wrenching nut so they don't nick or tear.
2- Since you have already totally cleaned-out the cavity, insert the "greased together" unit by inserting into cavity slowly. Don't rattle it or bump it…your goal is to feed it as far into the cavity as you can without having it bump into anything. Start to turn when threads engage. Do not force together…if it is all still "together", it will go into cavity without much force.
3- Torque the cartridge body's wrenching flats snug to section casting.

REMOVING/INSTALLING A ANTICAVITATION CHECK

Another port mounted device is the "anticavitation check". The ELITE has one located at the workport opposite the "secondary port relief". Since the 'secondary port relief" is always mounted to the sweep cylinders' base-side; the anticavitation check is always mounted on the sweep cylinders *rod*-side. This check provides make-up oil to the sweep cylinder's rod-side whenever the secondary port relief is cracked open and the sweep blade unwraps a bit. This make-up oil precludes the possibility of a ''suction" effect damaging the sweep cylinders piston seals.

The GRESEN V20 anticavitation is built-up of 5 separate pieces.



Removal procedure;

1- **Before removing any port mounted anticavitation check, position the blades so it will not move *by gravity* when you remove the anticav. The slide blade *must be fully down*. The sweep blade must dangle *nearly vertical* so gravity will not move it. REMOVING THE ANTICAV CHECK WILL UNBLOCK THE PORT IT APPLIES TO! You may want to temporarily weld some steel scrap between a blade and the tailgate's shell. Disconnect both battery cables and any harness connectors found inside battery box, before welding to the ELITE. See the Repair topic "Disconnecting vehicle batteries".**
2- Use a 1-1/8" open end wrench to unscrew the anticav plug (item #1) from the valve housing.
3- Use a magnet wand to fishout the check ball (item #2).
4- Use a magnet wand to fishout the check housing (item #3). Use a hook tool to hook the housing if magnet doesn't grab it.
5- Use a magnet wand to fishout the load check spring (item #4) and the mushroom shaped load check (item #5).
6- All five independent pieces have now been removed. The housing cavity must be clean. Use a penlite, magnet wand, hooking tools to remove all parts and any old debris such as a torn o-ring.

Re-installing procedure:

1- Pack the check housings' (item #3) completely with axle grease.
2- Bed the load check mushroom and spring into the housing. Insert the check ball into the grease packed housing. This assembly in grease will be inserted into the clean cavity first.
3- Insert this group of 4 parts (held together by grease) into the valve cavity. Sometimes it is easiest to hold group with axis vertical and then rotate them 90 degrees into cavity and feed straight in without bumping cavity walls.
4- Feed this group of parts inward with a finger and then switch to a medium slotted screwdriver to push until you feel it seat in housing cavity.
5- Grease the plug's o-ring and screw the anticav plug (item #1) into housing snug with 1-1/8" open end.

DANGER…REMOVING ANY PORT MOUNTED DEVICE (RELIEF OR ANTICAV) WILL *UNBLOCK* THAT CYLINDERS PORT! GRAVITY CAN CAUSE THE SLIDER OR SWEEP TO MOVE IF THE FOLLOWING STEPS ARE NOT TAKEN FIRST.

A.. MOVE SLIDER BLADE FULLY DOWNWARD
B.. MOVE SWEEP BLADE TILL IT'S FACE IS VERTICAL

ALWAYS SHUTDOWN THE DIESEL AND PLACE THE IGNITION KEYS IN YOUR POCKET BEFORE ENTERING THE HOPPER AREA! DO YOUR SHOP'S COMPLETE LOCKOUT/TAGOUT PROCEDURE.

TIP…ALWAYS "CLEAN-OUT" THE CAVITY OF ANY DEBRIS. THERE MAY BE OLD CHUNKS OF BROKEN BACKUP RINGS OR PIECES OF A PINCHED O-RING STILL INSIDE THE CAVITY. THE LOAD CHECK AND IT'S SPRING DO NOT USUALLY COME OUT OF CAVITY WITHOUT FISHING THEM OUT. INSTALLING FRESH PARTS IN A CAVITY WITH DEBRIS WILL CAUSE MALFUNCTIONS. [sec06-pg14]

REPAIRS...(CONT'D)

REPLACING A VALVE'S SECTION

The body-mounted valve and the tailgate-mounted valve are built-up of valve "sections". The sections are stacked together and then 3 tie-rod type bolts are evenly torqued to hold the individual sections together. Sets of o-ring seals are installed between the sections.

The obvious service advantage is that an individual section can be repaired or replaced while re-using all the other sections.

It is important to order from LOADMASTER the particular section you will be replacing. Sections right next to each other are not necessarily *the same*. They may appear to be the same but the internal cast passages may be different. Even if the casted passages were the same, the different sections may have different port mounted devices or other differences. See your ELITE parts book and always order the *particular* section you need.

Follow this procedure when removing a valve section.

Procedure:

1- Look at the plumbing/mounting setup of the particular section and decide upon an overall disassembly "strategy" for the best way to get it removed and replaced. Sometimes it is best to totally remove the entire valve and do the work on the bench. Other times you can save time by removing only portions of the overall valve.

2- **Always park the hopper blades with the slider blade all the way down and the sweep blade with face dangling near vertical. When you begin to uncouple the valves hoses and fittings, the cylinders will no longer be "blocked" and the blades could then move by *gravity*.** You may chose to temporarily weld in place some steel blocking between the blades and the tailgate's shell…to preclude the possibility of blades moving by gravity.

3- Disconnect the hoses and fittings as needed. It is a good idea to "tag" these so you can replumb exactly as it was.

4- Before doing the actual valve disassembly, study the valve and label or number sections so you can reassemble it the same as it was.

5- Remove three assembly stud (tie-bolt) nuts. Do not remove the tie-bolts.

6- Remove the sections from tie rod bolts by sliding them to get at the one you are interested in.

7- Thoroughly clean o-ring counterbores and ground surfaces of each section.

8- Replace the 4 o-rings. See Parts Manual for correct o-ring kit part number.

9- Replace valve sections on assembly studs in the same order in which they were removed. O-ring counterbores must be pointed in the same direction as they were. Use care when replacing valve sections to avoid dislodging o-rings from counterbores.

10- When all valve sections are positioned on assembly studs, replace stud nuts and tighten evenly to 32 FT-LBS torque.

11- Reconnect the hoses and fittings exactly as they were.

12- After assuring everything is "tight", restart and check the hydraulics functions. You may need to "cycle" a few times to work out any air pockets in the hydraulic system.

13- Check the oil tanks fill level. See Table of Contents for the correct procedure to do this. (Do not overfill).[sec06-pg15]

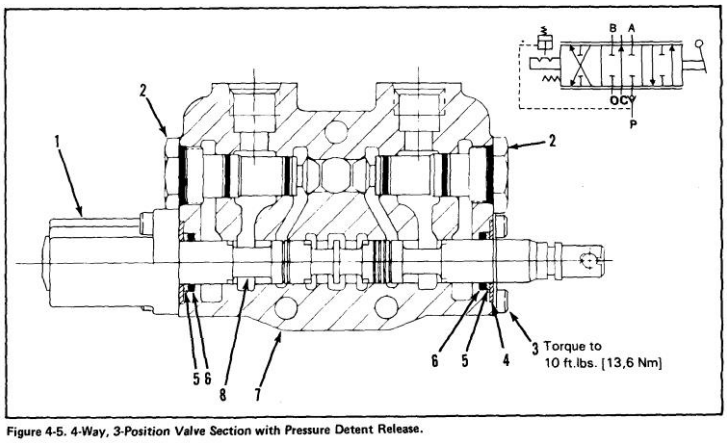


Figure 4-5. 4-Way, 3-Position Valve Section with Pressure Detent Release.

REPLACING SPOOL SEALS

If the spool has a handle bracket, then items 1 and 4 will be omitted from picture below.

Procedure:

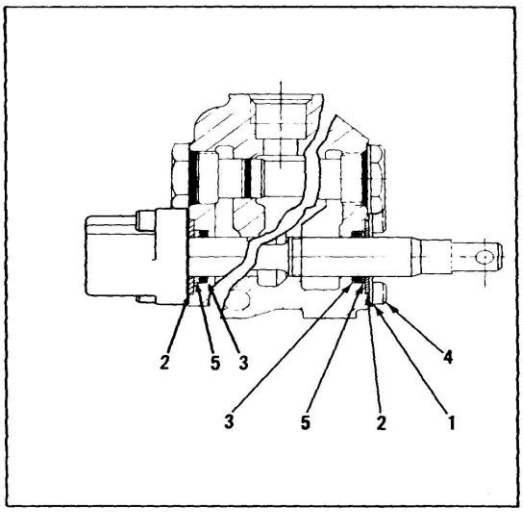
1- Remove bonnet assembly parts from back of valves and keep in order of dissassembly.

2- Remove all parts connected to the spool on the front of the valve, either the complete handle bracket assembly, or the seal retainer assembly if no handle. NOTE… Do not remove the spool as the seals can be replaced externally. Prevent spool from turning or moving by inserting a screw driver through clevis slot. Do not hold with a wrench as this will destroy the finish.

3- Remove retainer plate (item 1), retainer plate washers (item 2), backup washers (item 5), and spool seals (item 3).

4- Thoroughly clean counterbore.

5- Lightly oil new seals. Slide over spool and insert in seal counterbore.



Spool Seal Assembly

REPAIRING A TAILGATE LIFT CYLINDER

ALWAYS HAVE THE TAILGATE <u>FULLY DOWN</u> AND LATCHED BEFORE REMOVING ANY TAILGATE CYLINDER.

ALWAYS HAVE THE TAILGATE <u>FULLY DOWN</u> AND LATCHED BEFORE DOING ANY REPAIR TO THE TAILGATES' PLUMBING (SUCH AS REPLACING A TAILGATE HOSE)

NEVER MECHANICALLY PROP-UP THE TAILGATE AND THEN REMOVE A TAILGATE CYLINDER! TAILGATE MAY SUDDENLY FALL FROM Its MECHANICAL PROPS, CAUSING SERIOUS INJURY OR DEATH.

NEVER MECHANICALLY PROP-UP THE TAILGATE AND THEN REMOVE A TAILGATE HOSE OR TUBE OR FITTING! TAILGATE MAY FALL FROM Its MECHANICAL PROPS AND CAUSE SERIOUS INJURY OR DEATH.

To "prop-up" a tailgate securely requires both hydraulic support (the tailgate lift cylinders and its plumbing) and two mechanical props. (See the Repair topic "Installing a fresh tailgate seal" for a complete discussion of proper propping-up of the tailgate). Relying solely on the mechanical prop-up systems is ***<u>not</u>*** adequate.

If a tailgate cylinder needs repairs or a tailgate lift plumbing component needs removal…**fully lower and latch the tailgate *<u>first</u>* and then remove the cylinder or plumbing component (such as a hose or tube or fitting).** The ELITE tailgate lift cylinder mounting methods and plumbing methods are designed to allow tailgate lift cylinder or plumbing components to be serviced *with the tailgate fully down*.

LOADMASTER can fax to you at your request the service procedures for the repair the tailgate lift cylinders' seals. These procedures are written by LOADMASTER's supplier. It is not included in this manual because of space considerations. These premium design cylinders have a relatively easy life and should not require repair for many years.

Remember…always fully lower and latch the tailgate before doing any cylinder repairs (including removal).

Remember…always fully lower and latch the tailgate before doing any repairs to the tailgate cylinders' plumbing or valving.

Remember…**never** remove a tailgate cylinder or tailgate plumbing component with tailgate mechanically propped-up.

DISCONNECTING/RECONNECTING THE VEHICLE'S BATTERIES

Disconnect the truck's batteries ***before doing any welding*** to the ELITE. If the batteries are left connected during welding, the vehicles charging system will be damaged (alternator/regulator). Most truck chassis today have computers on board that could also be damaged if the battery cables and *any harness connectors* are left connected during welding. When you remove the battery box cover, you will often see one or two harnesses with coupling connectors inside the battery box…disconnect these prior to welding to protect the vehicle's sensitive electronic components.

Disconnect Procedure:

1- Remove the grounding cable **<u>FIRST!</u>** It is typically the black color cable labeled NEG or just -. Disconnect at the battery post that is directly connected to the *chassis* cable (not at the battery jumper cable).
2- Then remove the positive cable second. It is typically of red color and is labeled POS or just +.
3- Disconnect any harness connectors in the battery box.

*YOU MUST DISCONNECT THE <u>GROUNDED</u> CABLE **<u>FIRST</u>**! THIS IS TYPICALLY THE BLACK <u>NEGATIVE</u> CABLE.*

If you should *wrongly* try to disconnect the positive first, when your steel wrench "bumps into" any nearby steel chassis part…you will get *<u>arcing.</u>* Arcing can burn you and could trigger an explosion. BATTERY GASES CAN BE EXPLOSIVE!

DANGER… ALWAYS WEAR EYE PROTECTION WHEN PERFORMING ANY MAINTENANCE OR DOING ANY REPAIR JOBS!

Now do whatever welding task you intend to do. Finish the welding task completely and then reconnect the truck's batteries.

Reconnect Procedure:

1- Reconnect the red, positive battery cable **<u>FIRST!</u>**
2- Reconnect any harness connectors in battery box.
3- Reconnect the black, negative ground cable **<u>last.</u>**

The grounded cable (typically the black NEG) is the <u>FIRST</u> to be disconnected and the <u>LAST</u> to be reconnected.

The above battery cables disconnection/reconnection procedure is provided by LOADMASTER to help prevent damage to the chassis during a welding task. Refer to the chassis operating/maintenance manuals for further details. If any the information in the chassis manuals is different from the above…follow the information given in the <u>chassis manual</u> since it is most specific to that particular chassis.

REPAIRS...(CONT'D)

INSTALLING A FRESH TAILGATE SEAL

The very nature of this task requires a service technician to be underneath a *raised* tailgate. It is therefore extremely important the tailgate be securely *hydraulically and mechanically held* in this partially raised position.

The tailgates' hydraulic cylinders and plumbing *must* be installed and fully functional. The holding power of the tailgate's lift cylinders themselves will then be mechanically supplemented. Do not rely on the tailgate cylinders *only*…should a hose-end blowoff the tailgate will suddenly fall causing serious injury or death.

The procedure described here begins with resting the tailgate onto the ELITE's tailgate prop rods. The "end" of the prop rod must be lowered all the way *INTO* latchbox notch (as shown in photo). After this is done, your shop *must* add *shop-provided* mechanical blocking, such as the steel horse shown in the drawing. You must assure the tailgate is supported ***in three ways,*** *before* beginning the task of "installing a fresh tailgate seal". The three ways are:

1- **The tailgate's lift cylinders, plumbing and valving must be fully functional and in good working condition.**
2- **The tailgate must be supported by the integral "tailgate prop rods" and these prop rods must be positioned correctly (fully down;rod end in the latch box notch). USE BOTH PROPS.**
3- **Your shop must supplement the above two with additional mechanical support to eliminate any possibility that the gate could suddenly fall. LOADMASTER will offer some suggestions in this section, but your shop must ultimately satisfy this requirement.**

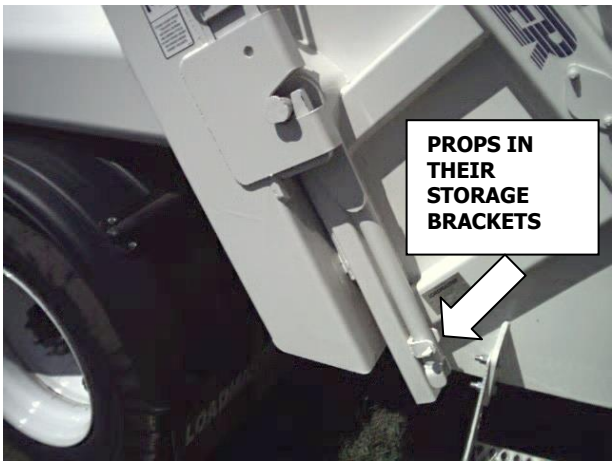
It is critical that it be understood that all three of the above support methods be provided. Using *just two* of them is NOT sufficient.

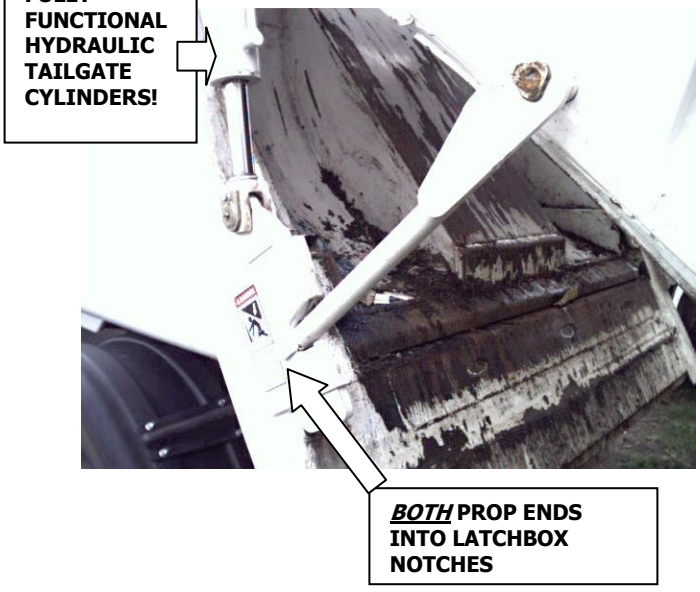
Just after the tailgate is secured (in three ways) in this position, the next step is to do your shop's detailed **LOCKOUT/TAGOUT** procedure. Always shutdown the diesel and place the ignition keys in your pocket *before* going underneath the securely propped up tailgate. Place a sign on the steering wheel that says DO NOT START ENGINE and **chock** the vehicle's tires.

Procedure:

1- Inspect the tailgate hydraulic system to be in good working condition.
2- Put the transmission in Neutral; set the park brake applied ON; start the diesel and engage the PTO
3- Raise the tailgate upward about three feet.

DANGER… STAY CLEAR OF A RAISED TAILGATE AT ALL TIMES! DON'T WALK BENEATH OR STAND UNDERNEATH A RAISED TAILGATE! DO NOT ALLOW PASSERBY'S TO BE ANYWHERE NEAR A RAISED TAILGATE!





4- Remove the tailgate prop rods from their storage pockets. Rotate the thumbscrews CCW to uncage props from their storage pockets. Rotate the entire prop rod until they are downward. Do not allow your body to be underneath the raised and unsupported tailgate. The props are moveable *while standing outside* the tailgate.

5- Very slowly begin lowering the tailgate ("feather it") until the props **ends are engaged in the notch**. See photo.

6- Be sure *both* the left and the right prop rods are fully down and ends engaged in notches. **Shutdown the diesel.**

7- Now provide a **third means of support** for the tailgate in this partially raised position. Always use **wheel chocks** to prevent the possibility of the truck chassis rolling away from your third means of support (in addition to setting the PARK BRAKE applied-on). [sec06-pg17]

Your shop's situation will influence how you achieve this third means of support.

A stout steel sawhorse positioned as shown in the drawing with welded-on steel blocking will additionally support the raised gate.

If available, park beneath a overhead hoist and carefully rig chains (or heavy strapping) to additionally support the raised tailgate. The hoist should be at least 2-ton capacity and the "slack" mostly removed from the rigging.
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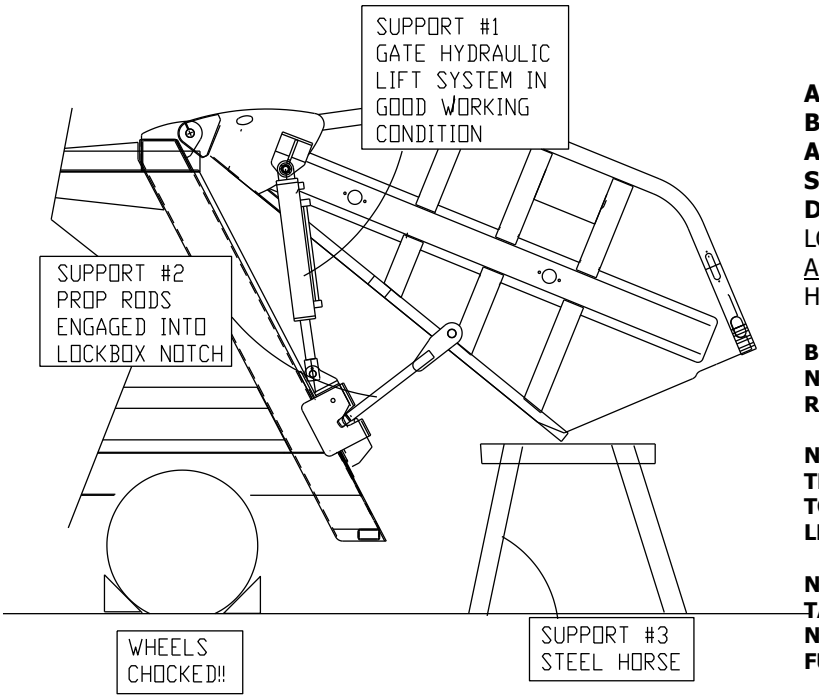
Your shop may have some other way to provide this additional support that LOADMASTER can not anticipate here. Be certain the first two means of support *remain effective* when rigging the third means of supporting the partially raised tailgate.



8- Once you are *completely satisfied* that the partially raised tailgate is secured in three ways in this raised position, institute your shop's detailed LOCKOUT/TAGOUT procedure.

9- Scrape the crud away from the seal's bulb and pounded-over clamp.

10- Use a pry bar to bend outward the unwelded edge of the pounded-over steel seal clamp. Bend just far enough outward to release the seal's rubber flange. Start at one end of the seal and work your way across to the other until old seal is totally free. Clean up the surface again.

11- Install the new seal by beginning at one end and pounding down the pound-over clamp while holding the new seal's rubber flange as *deep* into the clamp as it will go. Keep feeding the seal into the clamp and hammering down the clamp as you work your way across the tailgate. Apply a little "stretch" tension as you go so it lays flat.

12- After seal is completely installed, remove the mechanical support (steel horse or other means) *first* and then return the ELITE's prop rods to their storage pockets. When returning the prop rods to their storage pockets, do not stand underneath the raised tailgate…**stand off to the vehicle's side.**

13- Now fully lower and latch the tailgate. Before lowering the gate, be certain that no person is underneath the tailgate. LOADMASTER recommends that one person stand well off to the side of the gate (watching the pinch point between the gate and the body) while a second person (at the tailgate raise/lower hand lever) will very slowly lower the tailgate. The person at the hand lever must always maintain full vision of the person monitoring the pinch-point and be alert to any "stop lowering" voice signal as the tailgate "creeps" slowly down.

A SAFE PRACTICE IS TO NEVER ALLOW A TAILGATE TO BE RAISED OR PARTIALLY RAISED… UNLESS THERE IS A SPECIFIC NEED TO HAVE IT SO. WHEN THE NEED IS SATISFIED, FULLY LOWER AND LATCH THE GATE, AS DESCRIBED ABOVE, AS SOON AS POSSIBLE. A FULLY LOWERED AND LATCHED TAILGATE IS ALWAYS SAFER THAN ANY RAISED TAILGATE, EVEN IF THE TAILGATE IS HYDRAULICALLY AND MECHANICALLY SUPPORTED.

BEFORE LOWERING A TAILGATE, ALWAYS BE CERTAIN THAT NO PERSON IS UNDERNEATH OR NEARLY UNDERNEATH THE RAISED TAILGATE!

NEVER LOWER A TAILGATE IN AN ABRUBT FASHION! KEEP THE DIESEL AT IDLE RPM AND SLOWLY "FEATHER" THE GATE TO FULLY CLOSED BY ONLY PARTIALLY SHIFTING THE HAND LEVER TO "LOWER".

NEVER WORK, STAND, OR WALK UNDERNEATH A RAISED TAILGATE (EVEN IF MECHANICALLY SUPPORTED) THAT DOES NOT HAVE BOTH HYDRAULIC CYLINDERS FULLY INSTALLED, FULLY FUNCTIONAL, AND PURGED OF ALL AIR POCKETS!

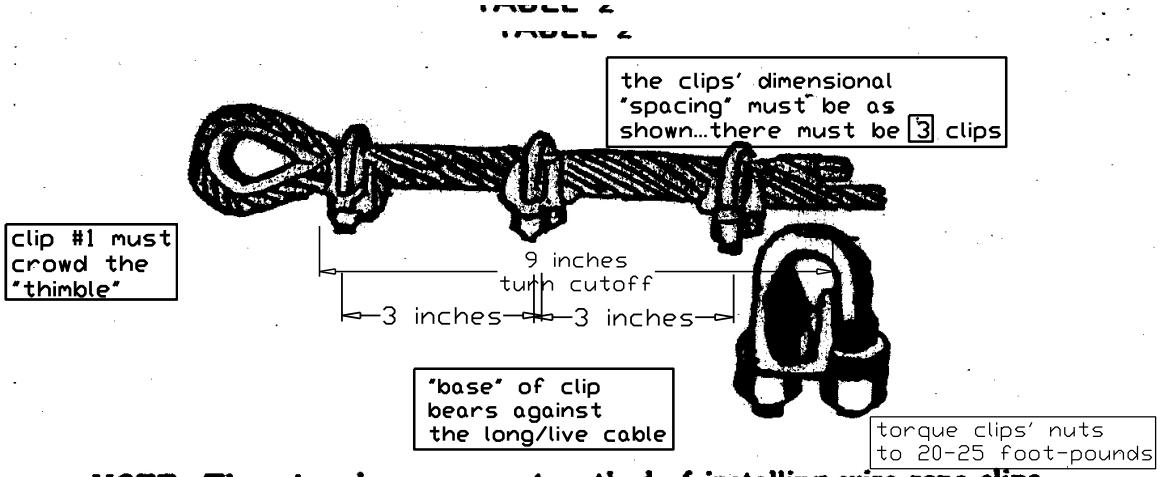
NEVER WORK, STAND, OR WALK UNDERNEATH A RAISED TAILGATE THAT HAS ONLY THE HYDRAULIC CYLINDERS SUPPORTING IT RAISED! THE TAILGATE MUST HAVE TWO ADDITIONAL MEANS OF MECHANICAL SUPPORT.

ALWAYS IMPLEMENT YOUR SHOP'S DETAILED LOCKOUT/TAGOUT PROCEDURE BEFORE WORKING UNDERNEATH THE HYDRAULICALLY AND MECHANICALLY PROPPED OPEN (HELD THREE WAYS) TAILGATE TO REPLACE THE SEAL!

REPLACING or ADJUSTING THE 2-10 CABLE…
CORRECT and SECURE CABLE "ANCHORING"

When installing a replacement cable…or making a cable "length" adjustment…for the 2-10 **option. The chart below shows the proper technique for "anchoring". The** 2-10 **uses ½" diameter cable. KEEP THE "CLIP" CLOSEST TO THE LOOP'S THIMBLE AS CLOSE TO THIMBLE AS IS PRACTICAL.**

INSPECT THE CABLE'S CONDITION AND CABLE'S ROOF-TOP CABLE "ANCHOR" AT LEAST WEEKLY [sec07-pg20]



NOTE: There is only one correct method of installing wire rope clips. They should be attached to rope ends as shown in photograph above. The base of each clip should bear against the live, or long rope end, and the U-Bolt should bear against the dead or short rope end.

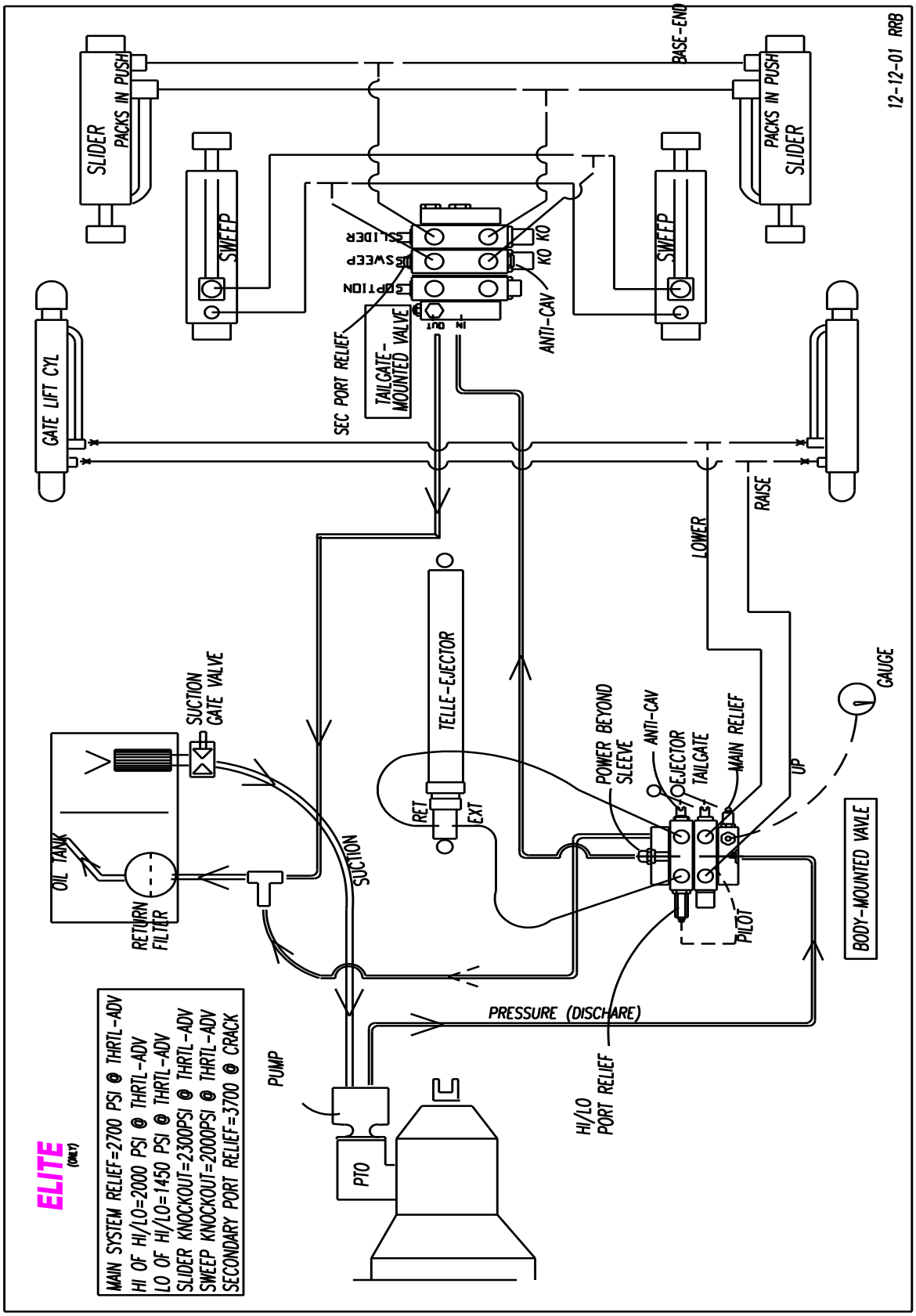
NUMBER AND SPACING OF CLIPS FOR ROPES OF VARIOUS SIZES

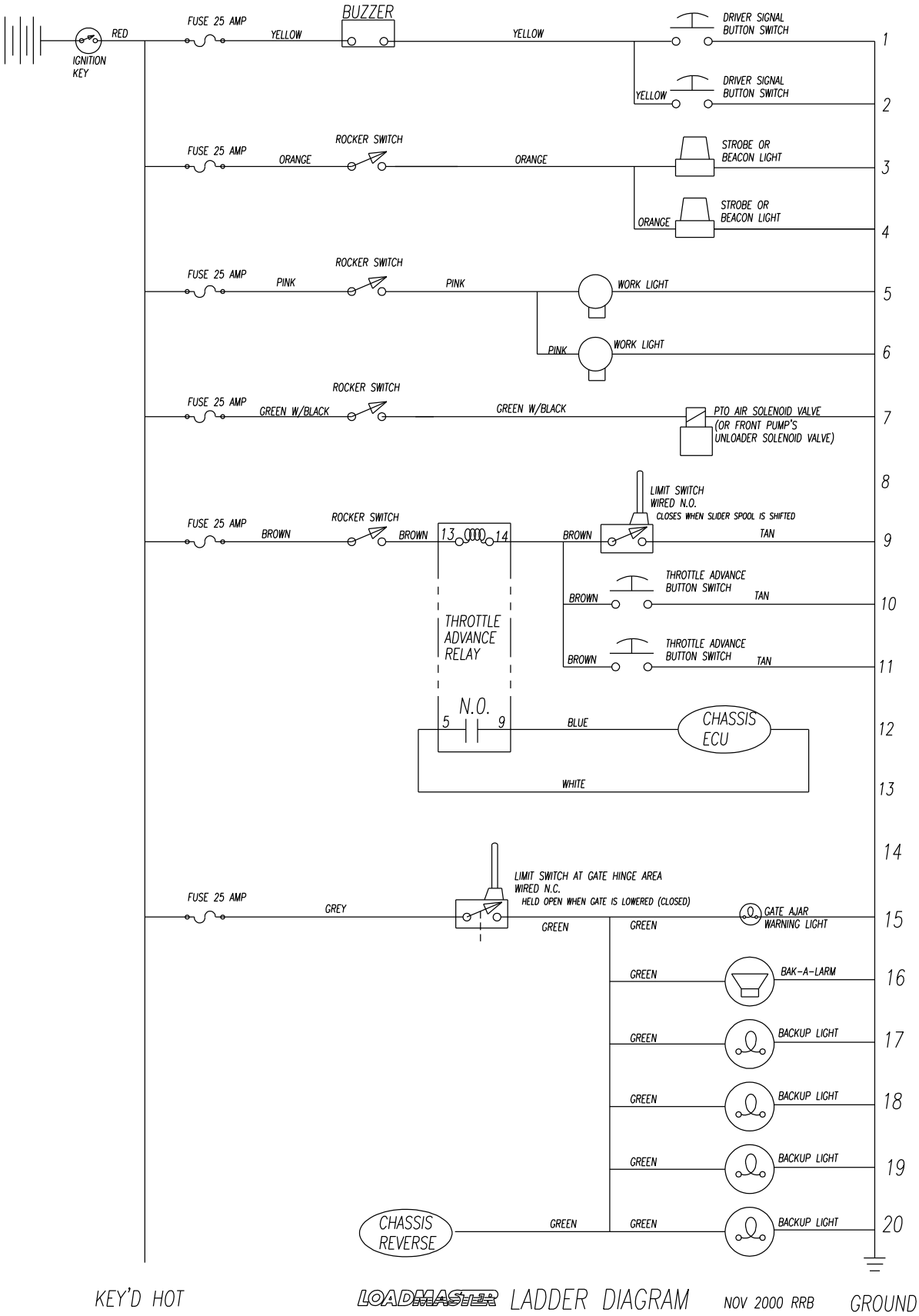
Diameter of rope (in.)	Number of clips	Center-to-center space between clips (in.)	Length of rope turned back exclusive of eye (in.)
1/4	2	1 1/2	3
5/16	2	1 7/8	4
3/8	2	2 1/4	5
7/16	2	2 5/8	6
1/2	3	3	9
5/8	3	3 3/4	12
3/4	4	4 1/2	18
7/8	4	5 1/4	21
1	4	6	24
1 1/8	5	6 3/4	34
1 1/4	5	7 1/2	38
1 3/8	6	8 1/4	50
1 1/2	6	9	54
1 5/8	6	9 3/4	60
1 3/4	7	10 1/2	74
1 7/8	8	11 1/4	90
2	8	12	96
2 1/8	8	13	104
2 1/4	8	14	112

Loadmaster uses ½" dia.

Section 07 SCHEMATICS

THIS SCHEMATIC IS SHOWN FOR "ELITE'



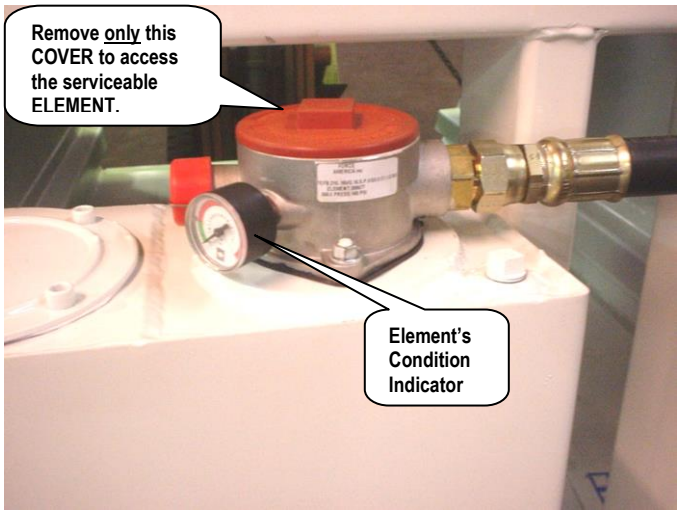

BUZZER
RED
IGNITION KEY
FUSE 25 AMP
YELLOW
YELLOW
DRIVER SIGNAL BUTTON SWITCH
1
YELLOW
DRIVER SIGNAL BUTTON SWITCH
2
ROCKER SWITCH
FUSE 25 AMP
ORANGE
ORANGE
STROBE OR BEACON LIGHT
3
ORANGE
STROBE OR BEACON LIGHT
4
ROCKER SWITCH
FUSE 25 AMP
PINK
PINK
WORK LIGHT
5
PINK
WORK LIGHT
6
ROCKER SWITCH
FUSE 25 AMP
GREEN W/BLACK
GREEN W/BLACK
PTO AIR SOLENOID VALVE (OR FRONT PUMP'S UNLOADER SOLENOID VALVE)
7
8
LIMIT SWITCH WIRED N.O.
CLOSES WHEN SLIDER SPOOL IS SHIFTED
ROCKER SWITCH
FUSE 25 AMP
BROWN
BROWN
13
14
BROWN
TAN
9
THROTTLE ADVANCE BUTTON SWITCH
BROWN
TAN
10
THROTTLE ADVANCE RELAY
THROTTLE ADVANCE BUTTON SWITCH
BROWN
TAN
11
N.O.
5
9
BLUE
CHASSIS ECU
12
WHITE
13
14
LIMIT SWITCH AT GATE HINGE AREA WIRED N.C.
HELD OPEN WHEN GATE IS LOWERED (CLOSED)
FUSE 25 AMP
GREY
GREEN
GREEN
GATE AJAR WARNING LIGHT
15
GREEN
BAK-A-LARM
16
GREEN
BACKUP LIGHT
17
GREEN
BACKUP LIGHT
18
GREEN
BACKUP LIGHT
19
CHASSIS REVERSE
GREEN
GREEN
BACKUP LIGHT
20
KEY'D HOT
LOADMASTER LADDER DIAGRAM
NOV 2000 RRB
GROUND

SERVICING THE RETURN FILTER *ELEMENT* **(ELITE)**

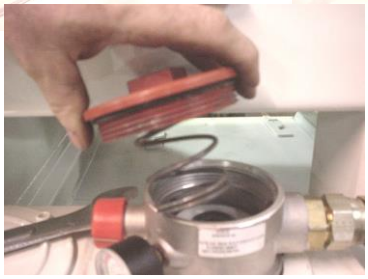
The Elite "return filter" uses a premium quality Microglass *element* of 5 Micron nominal. This element traps-out relatively small particulates and has a relatively high dirt holding *capacity*. Another "premium" feature of this INTERNORMAN (the "brand"… a German company) filter is that the Bypass valve is "integral" to the element itself. This means that each time you install a "fresh" element…you are simultaneously assuring a "fresh" filter *bypass valve*.

Read topic #1 in the manual's **P-M…HYDRAULIC SYSTEM** section for a "outline" of *when* you should service this return filter Element. The Elite (only), with the Internorman-brand of filter, uses Element p/n **8800685**.

1-Begin by cleaning/wiping away any Tank Top dirt that may have accumulated near the Tank Top Filter's plastic red cover (which has wrenching "square" of 1-3/16" wrench size).

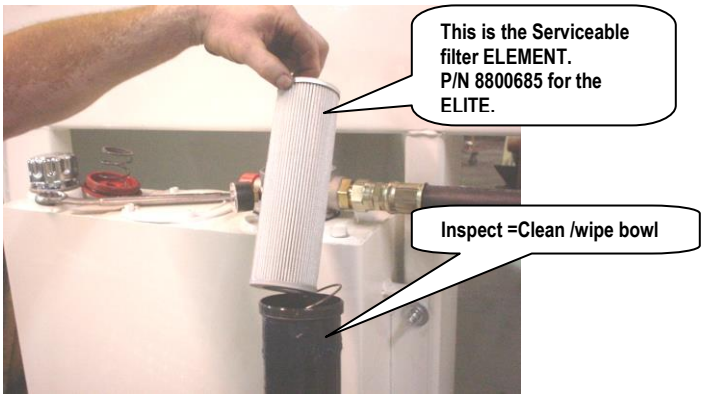


2- Remove the Filter's Top Cover by turning CCW. The Cover's compression spring will be "pushing"…so use your hand over the Red removeable polymer cover when it is close to being fully un-threaded to control.

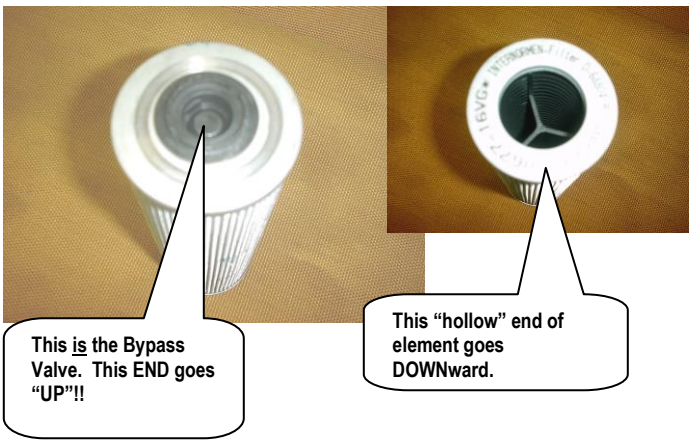


3- Grab onto the wire 'bail" and slowly-lift out the entire assy. Keep centered to allow OIL to drain back into tank.

4- Now remove the "old" element. Put it into clean garbage bag so you can later "study" what has been trapped-out of the hydraulic system (can offer "clues" as to the hydraulic system's "health").



5- Insert fresh element into the Bowl…this element has a "built-in" Bypass Valve. Assure the Bypass Valve is "UPWARD".



6- Now re-install the fiter housings COVER. Snug up with MEDIUM force.

Now would also be a good time to check your hydraulic oil "LEVEL". See Maint Manual to do a correct "fill".

<<End>> july27, 2005

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